AFMSS

U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 03/18/2026 11:37 AM

APD ID:	10400108984	Well Status:	AAPD
APD Received Date:	12/02/2025 02:50 PM	Well Name:	CHESHIRE CAT 2 STATE CO
Operator:	SPUR ENERGY PARTNERS LLC	Well Number:	21H

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 2 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 2 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 2 file(s)
  -- Casing Taperd String Specs: 4 file(s)
  -- Casing Design Assumptions and Worksheet(s): 8 file(s)
  -- Hydrogen sulfide drilling operations plan: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
  -- Other Facets: 4 file(s)
  -- Other Variances: 2 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- New Road Map: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Construction Materials source location attachment: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)
  -- Recontouring attachment: 1 file(s)
  -- Other SUPO Attachment: 4 file(s)

- PWD Report
- PWD Attachments

-- None

- Bond Report
- Bond Attachments
  -- None

Form 3160-3
(October 2024)

FORM APPROVED
OMB No. 1004-0220
Expires: October 31, 2027

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMLC067858

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.:

8. Lease Name and Well No.: CHESHIRE CAT 2 STATE COM 21H

2. Name of Operator: SPUR ENERGY PARTNERS LLC

9. API Well No.: 30-015-58063

3a. Address: 9655 KATY FREEWAY SUITE 500, HOUSTON, TX 77024

3b. Phone No. *(include area code)*: (832) 930-8548

10. Field and Pool, or Exploratory: RED LAKE/GLORIETA-YESO NORTHEA

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NENE / 720 FNL / 1126 FEL / LAT 32.7672354 / LONG -104.2442534

At proposed prod. zone: LOT 1 / 50 FNL / 715 FEL / LAT 32.7832857 / LONG -104.2431267

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 11/T18S/R27E/NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 1 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 320.79

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 20 feet

19. Proposed Depth: 3500 feet / 9522 feet

20. BLM/BIA Bond No. in file: FED: NMB001783

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3611 feet

22. Approximate date work will start*: 02/26/2026

23. Estimated duration: 60 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	SARAH CHAPMAN / Ph: (832) 930-8548	12/02/2025

Title: Regulatory Director

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	CODY LAYTON / Ph: (575) 234-5959	03/18/2026

Title	Office
Assistant Field Manager Lands & Minerals	Carlsbad Field Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/18/2026

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

0. SHL: NENE / 720 FNL / 1126 FEL / TWSP: 18S / RANGE: 27E / SECTION: 11 / LAT: 32.7672354 / LONG: -104.2442534 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 100 FSL / 715 FEL / TWSP: 18S / RANGE: 27E / SECTION: 2 / LAT: 32.7694737 / LONG: -104.2428963 (TVD: 3900 feet, MD: 4481 feet)

BHL: LOT 1 / 50 FNL / 715 FEL / TWSP: 18S / RANGE: 27E / SECTION: 2 / LAT: 32.7832857 / LONG: -104.2431267 (TVD: 3500 feet, MD: 9522 feet)

BLM Point of Contact

Name: CANDY VIGIL
Title: LLE
Phone: (575) 234-5982
Email: CVIGIL@BLM.GOV

PECOS DISTRICT

SURFACE USE

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Spur Energy Partners LLC.
LEASE NO.:	NMLC0067858
COUNTY:	Eddy County, New Mexico

Wells:

CHESHIRE CAT 2 STATE COM 1H

Surface Hole Location: 699 feet FNL and 1160 feet FEL, Section 11, T. 18 S., R. 27 E.

Bottom Hole Location: 50 feet FNL and 1470 feet FEL, Section 2, T. 18 S., R. 27 E.

CHESHIRE CAT 2 STATE COM 20H

Surface Hole Location: 678 feet FNL and 1194 feet FEL, Section 11, T. 18 S., R. 27 E.

Bottom Hole Location: 50 feet FNL and 2245 feet FEL, Section 2, T. 18 S., R. 27 E.

CHESHIRE CAT 2 STATE COM 21H

Surface Hole Location: 720 feet FNL and 1126 feet FEL, Section 11, T. 18 S., R. 27 E.

Bottom Hole Location: 50 feet FNL and 715 feet FEL, Section 2, T. 18 S., R. 27 E.

CHESHIRE CAT 2 STATE COM 50H

Surface Hole Location: 688 feet FNL and 1177 feet FEL, Section 11, T. 18 S., R. 27 E.

Bottom Hole Location: 50 feet FNL and 2015 feet FEL, Section 2, T. 18 S., R. 27 E.

CHESHIRE CAT 2 STATE COM 51H

Surface Hole Location: 710 feet FNL and 1143 feet FEL, Section 11, T. 18 S., R. 27 E.

Bottom Hole Location: 50 feet FNL and 960 feet FEL, Section 2, T. 18 S., R. 27 E.

Approval Date: 03/18/2026

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1. GENERAL PROVISIONS

The failure of the operator to comply with these requirements may result in the assessment of liquidated damages or penalties pursuant to 43 CFR 3163.1 or 3163.2. A copy of these conditions of approval shall be present on the location during construction, drilling and reclamation activity. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

1.1. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural resource (historic or prehistoric site or object) discovered by the operator, or any person working on the operator's behalf, on the public or federal land shall be immediately reported to the Authorized Officer. The operator shall suspend all operations in the immediate area (within 100ft) of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer, in conjunction with a BLM Cultural Resource Specialist, to determine appropriate actions to prevent the loss of significant scientific values. The operator shall be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the operator.

Traditional Cultural Properties (TCPs) are protected by NHPA as codified in 36 CFR 800 for possessing traditional, religious, and cultural significance tied to a certain group of individuals. Though there are currently no designated TCPs within the project area or within a mile of the project area, but it is possible for a TCP to be designated after the approval of this project. **If a TCP is designated in the project area after the project's approval, the BLM Authorized Officer will notify the operator of the following conditions and the duration for which these conditions are required.**

1. Temporary halting of all construction, drilling, and production activities to lower noise.
2. Temporary shut-off of all artificial lights at night.

The operator is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA), specifically NAGPRA Subpart B regarding discoveries, to protect human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered during project work. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and a BLM-CFO Authorized Officer will be notified immediately. The BLM will then be required to be notified, in writing, within 24 hours of the discovery. The written notification should include the geographic location by county and state, the contents of the discovery, and the steps taken to protect said discovery. You must also include any potential threats to the discovery and a conformation that all activity within 100ft of the discovery has ceased and work will not resume until written certification is issued. All work on the entire project must halt for a minimum of 3 days and work cannot resume until an Authorized Officer grants permission to do so.

Any paleontological resource discovered by the operator, or any person working on the operator's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. The operator will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the operator.

1.2. RANGELAND RESOURCES

1.2.1. **Cattleguards**

Where a permanent cattleguard is approved, an appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

1.2.2. **Fence Requirement**

Where entry granted across a fence line, the fence must be braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

1.2.3. **Livestock Watering Requirement**

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-

234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

1.3. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA, New Mexico Department of Agriculture, and BLM requirements and policies.

1.3.1 African Rue (Peganum harmala)

Spraying: The spraying of African Rue must be completed by a licensed or certified applicator. In order to attempt to kill or remove African Rue the proper mix of chemical is needed. The mix consists of 2% Arsenal (Imazapyr) and 2% Roundup (Glyphosate) along with a nonionic surfactant. Any other chemicals or combinations shall be approved by the BLM Noxious Weeds Coordinator prior to treatment. African Rue shall be sprayed in connection to any dirt working activities or disturbances to the site being sprayed. Spraying of African Rue shall be done on immature plants at initial growth through flowering and mature plants between budding and flowering stages. Spraying shall not be conducted after flowering when plant is fruiting. This will ensure optimal intake of chemical and decrease chances of developing herbicide resistance. After spraying, the operator or necessary parties must contact the Carlsbad Field Office to inspect the effectiveness of the application treatment to the plant species. No ground disturbing activities can take place until the inspection by the authorized officer is complete. The operator may contact the Environmental Protection Department or the BLM Noxious Weed Coordinator at (575) 234-5972 or BLM_NM_CFO_NoxiousWeeds@blm.gov.

Management Practices: In addition to spraying for African Rue, good management practices should be followed. All equipment should be washed off using a power washer in a designated containment area. The containment area shall be bermed to allow for containment of the seed to prevent it from entering any open areas of the nearby landscape. The containment area shall be excavated near or adjacent to the well pad at a depth of three feet and just large enough to get equipment inside it to be washed off. This will allow all seeds to be in a centrally located area that can be treated at a later date if the need arises.

1.4. LIGHT POLLUTION

1.4.1. **Downfacing**

All permanent lighting will be pointed straight down at the ground in order to prevent light spill beyond the edge of approved surface disturbance.

1.4.2. **Shielding**

All permanent lighting will use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the lowest part of the light source).

1.4.3. **Lighting Color**

Lighting shall be 3,500 Kelvin or less (Warm White) except during drilling, completion, and workover operations. No bluish-white lighting shall be used in permanent outdoor lighting.

2. SPECIAL REQUIREMENTS

2.1. WATERSHED

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g.

caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The topsoil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

2.1.1. **Tank Battery**

Tank battery locations will be lined and bermed. A 20-mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Secondary containment holding capacity must be large enough to contain 1 ½ times the content of the largest tank or 24-hourproduction, whichever is greater (displaced volume from all tanks within the berms MUST be subtracted from total volume of containment in calculating holding capacity). Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

2.1.2. **Buried/Surface Line(s)**

When crossing ephemeral drainages, the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons must be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences must be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars must be placed within the corridor to divert and dissipate surface runoff. A pipeline access road is not permitted to cross ephemeral drainages. Traffic must be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

2.1.3. **Electric Line(s)**

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion. A power pole must not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that does not promote further erosion.

2.2. CAVE/KARST

2.2.1. **General Construction**

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- This is a sensitive area and all spills or leaks will be reported to the BLM immediately for their immediate and proper treatment, as defined in NTL 3A for Major Undesirable Events.

2.2.2. **Pad Construction**

- The pad will be constructed and leveled by adding the necessary fill and caliche. No blasting will be used for any construction or leveling activities.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will be vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

2.2.3. **Road Construction**

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

2.2.4. **Buried Pipeline/Cable Construction**

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

2.2.5. **Powerline Construction**

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

2.2.6. **Surface Flowlines Installation**

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

2.2.7. **Residual and Cumulative Mitigation**

The operator will perform annual pressure monitoring on all casing annuli. If the test results indicate a casing failure has occurred, contact a BLM Engineer immediately, and take remedial action to correct the problem.

2.2.8. **Plugging and Abandonment Mitigation**

Upon well abandonment in high cave karst areas, additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

2.3 VISUAL RESOURCE MANAGEMENT

2.5.1 **VRM IV**

Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color, Shale Green from the BLM Standard Environmental Color Chart (CC-001: June 2008).

AND/OR

All above ground structures including but not limited to pumpjacks, storage tanks, production equipment, etc. must be shorter than 8 feet.

3. CONSTRUCTION REQUIRENMENTS

3.1 CONSTRUCTION NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at BLM_NM_CFO_Construction_Reclamation@blm.gov at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and COAs on the well site and they shall be made available upon request by the Authorized Officer.

3.2 TOPSOIL

The operator shall strip the topsoil (the A horizon) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. No more than the top 6 inches of topsoil shall be removed. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (the B horizon and below) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

3.3 CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No reserve pits will be used for drill cuttings. The operator shall properly dispose of drilling contents at an authorized disposal site.

3.4 FEDERAL MINERAL PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

3.5 WELL PAD & SURFACING

Any surfacing material used to surface the well pad will be removed at the time of interim and final reclamation.

3.6 EXCLOSURE FENCING (CELLARS & PITS)

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the well cellar is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

The operator will also install and maintain mesh netting for all open well cellars to prevent access to smaller wildlife before and after drilling operations until the well cellar is free of fluids and the operator. Use a maximum netting mesh size of 1 ½ inches. The netting must not have holes or gaps.

3.7 ON LEASE ACESS ROAD

3.7.1 **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

3.7.2 **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements will be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

3.7.3 **Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

3.7.4 **Ditching**

Ditching shall be required on both sides of the road.

3.7.5 **Turnouts**

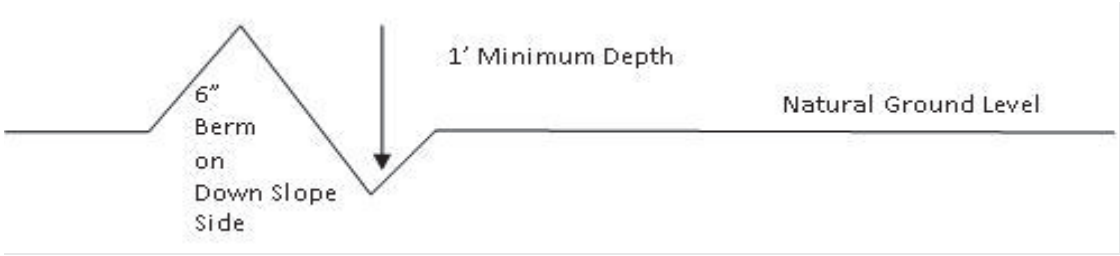
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

3.7.6 **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, leadoff ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4} + 100' = 200' \text{ lead-off ditch interval}$$

3.7.7 **Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

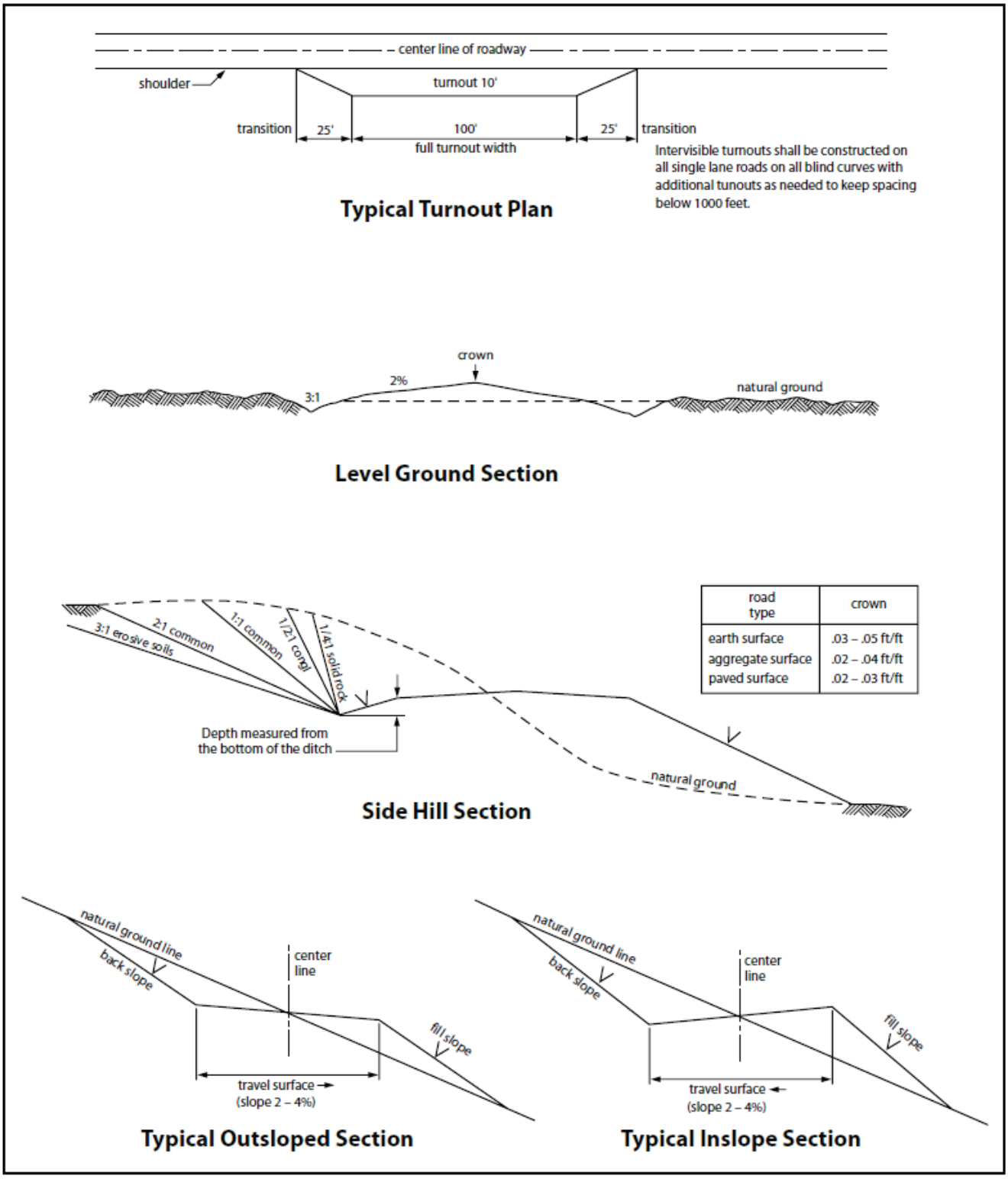


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

4. PIPELINES

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

4.1 BURIED PIPELINES

A copy of the application (APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request a copy of your permit during construction to ensure compliance with all stipulations.

Operator agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Operator shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this APD.

2. The Operator shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the operator shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the pipeline corridor or on facilities authorized under this APD. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The operator agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Pipeline corridor (unless the release or threatened release is wholly unrelated to the operator's activity on the pipeline corridor), or resulting from the activity of the Operator on the pipeline corridor. This agreement applies without regard to whether a release is caused by the operator, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant is discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of operator, regardless of fault. Upon failure of operator to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and

fish and wildlife habitats, at the full expense of the operator. Such action by the Authorized Officer shall not relieve operator of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized pipeline corridor.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this pipeline corridor will be 30 feet:

   - Blading of vegetation within the pipeline corridor will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation*.)

   - Clearing of brush species within the pipeline corridor will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

   - The remaining area of the pipeline corridor (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The operator shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately **36** inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this pipeline corridor and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire pipeline corridor shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted, and a 6-inch berm will be left over the ditch line to allow for settling back to grade.

10. The pipeline will be identified by signs at the point of origin and completion of the pipeline corridor and at all road crossings. At a minimum, signs will state the operator's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

11. The operator shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the operator before maintenance begins. The operator will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the operator to construct temporary deterrence structures.

12. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

13. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them alive at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30-degree slope and spaced no more than 500 feet apart) shall be placed in the trench. Before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them alive at least 100 yards from the trench.

14. Special Stipulations:
Karst:

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- If a void is encountered, alignments may be rerouted to avoid the karst feature and lessen the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
- Special restoration stipulations or realignment may be required at such intersections, if any.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

4.2 SURFACE PIPELINES

A copy of the APD and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.

Operator agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Operator shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this APD.

2. Operator shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Operator shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 et seq. (1982) with regard to any toxic substances that are used, generated by or stored on the pipeline corridoror on facilities authorized under this APD (see 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. Operator agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Pipeline corridor (unless the release or threatened release is wholly unrelated to activity of the Operator's activity on the Pipeline

corridor), or resulting from the activity of the Operator on the pipeline corridor. This provision applies without regard to whether a release is caused by Operator, its agent, or unrelated third parties.

4. Operator shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Operator shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the pipeline corridor or permit area:

   a. Activities of Operator including, but not limited to: construction, operation, maintenance, and termination of the facility;

   b. Activities of other parties including, but not limited to:
      (1) Land clearing
      (2) Earth-disturbing and earth-moving work
      (3) Blasting
      (4) Vandalism and sabotage

   c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant is discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Operator, regardless of fault. Upon failure of Operator to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as they deem necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Operator. Such action by the Authorized Officer shall not relieve Operator of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized pipeline corridor width of 30-feet. If the pipeline route follows an existing road or buried pipeline corridor, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline corridor. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or pipeline corridors.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Operator shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 6 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The operator shall minimize disturbance to existing fences and other improvements on public lands. The operator is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The operator will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the operator will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the operator to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – Shale Green, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the pipeline corridor and at all road crossings. At a minimum, signs will state the operator's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The operator shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the operator. The operator will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

16. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

4.3 OVERHEAD ELECTRIC LINES

A copy of the APD and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Operator agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The operator shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this APD.
2. The operator shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the operator shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the powerline corridor or on facilities authorized under this powerline corridor. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The operator agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive

Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Powerline corridor(unless the release or threatened release is wholly unrelated to the operator's activity on the powerline corridor), or resulting from the activity of the Operator on the powerline corridor. This agreement applies without regard to whether a release is caused by the operator, its agent, or unrelated third parties.

4. There will be no clearing or blading of the powerline corridor unless otherwise agreed to in writing by the Authorized Officer.
5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The operator shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this powerline corridor, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the operator without liability or expense to the United States.
6. Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.
7. The operator shall minimize disturbance to existing fences and other improvements on public lands. The operator is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The operator will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
8. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.
9. Upon cancellation, relinquishment, or expiration of this APD, the operator shall comply with those abandonment procedures as prescribed by the Authorized Officer.
10. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this APD, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.
11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly. Fill in any holes from the poles removed.
12. Karst stipulations for overhead electric lines
    - Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems. Larger powerlines will adjust their pole spacing to avoid cave and karst features.
    - The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction.
    - No further construction will be done until clearance has been issued by the Authorized Officer.
    - Special restoration stipulations or realignment may be required.

4.4 RANGLAND MITIGATION FOR PIPELINES

4.5.1 **Fence Requirement**

Where entry is granted across a fence line, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment operator prior to crossing any fence(s).

4.5.2 **Cattleguards**

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at road-fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

4.5.3 **Livestock Watering Requirement**

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment operator if any damage occurs to structures that provide water to livestock.

- Livestock operators will be contacted, and adequate crossing facilities will be provided as needed to ensure livestock are not prevented from reaching water sources because of the open trench.
- Wildlife and livestock trails will remain open and passable by adding soft plugs (areas where the trench is excavated and replaced with minimal compaction) during the construction phase. Soft plugs with ramps on either side will be left at all well-defined livestock and wildlife trails along the open trench to allow passage across the trench and provide a means of escape for livestock and wildlife that may enter the trench.
- Trenches will be backfilled as soon as feasible to minimize the amount of open trench. The Operator will avoid leaving trenches open overnight to the extent possible and open trenches that cannot be backfilled immediately will have escape ramps (wooden) placed at no more than 2,500 feet intervals and sloped no more than 45 degrees.

5. PRODUCTION (POST DRILLING)

5.1 WELL STRUCTURES & FACILITIES

5.1.1 **Placement of Production Facilities**

Production facilities must be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

5.1.2 **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the

location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

5.1.3. Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

5.1.4. Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone*.) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

5.1.5. Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

6. RECLAMATION

Stipulations required by the Authorized Officer on specific actions may differ from the following general guidelines

6.1 ROAD AND SITE RECLAMATION

Any roads constructed during the life of the well will have the caliche removed or linear burial. If contaminants are indicated then testing will be required for chlorides and applicable contaminate anomalies for final disposal determination (disposed of in a manner approved by the Authorized Officer within Federal, State and Local statutes, regulations, and ordinances) and seeded to the specifications in sections 6.5 and 6.6.

6.2 EROSION CONTROL

Install erosion control berms, windrows, and hummocks. Windrows must be level and constructed perpendicular to down-slope drainage; steeper slopes will require greater windrow density. Topsoil between windrows must be ripped to a depth of at least 12”, unless bedrock is encountered. Any large boulders pulled up during ripping must be deep-buried on location. Ripping must be perpendicular to down-slope. The surface must be left rough in order to catch and contain rainfall on-site. Any trenches resulting from erosion cause by run-off shall be addressed immediately.

6.3 INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations must undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators must work with BLM surface protection specialists (BLM_NM_CFO_Construction_Reclamation@blm.gov) to devise the best strategies to reduce the size of the location. Interim reclamation must allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche and any other surface material is required. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided in section 6.6.

Upon completion of interim reclamation, the operator shall submit a Sundry Notice, Subsequent Report of Reclamation (Form 3160-5).

6.4 FINAL ABANDONMENT & RECLAMATION

Prior to surface abandonment, the operator shall submit a Notice of Intent Sundry Notice and reclamation plan.

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding will be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM. After earthwork and seeding is completed, the operator is required to submit a Sundry Notice, Subsequent Report of Reclamation.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (BLM_NM_CFO_Construction_Reclamation@blm.gov).

6.5 SEEDING TECHNIQUES

Seeds shall be hydro-seeded, mechanically drilled, or broadcast, with the broadcast-seeded area raked, ripped or dragged to aid in covering the seed. The seed mixture shall be evenly and uniformly planted over the disturbed area.

6.6 SOIL SPECIFIC SEED MIXTURE

The lessee/permitee shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed land application will be accomplished by mechanical planting using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area. Smaller/heavier seeds tend to drop the bottom of the drill and are planted first; the operator shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast, and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory BLM or Soil Conservation

District stand is established as determined by the Authorized Officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding or until several months of precipitation have occurred, enabling a full four months of growth, with one or more seed generations being established.

Seed Mixture 1 for Loamy Sites

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

Pecos District

Application for Permit to Drill

Conditions of Approval

Geology Concerns

Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst	☐ Medium	☒ High	☐ Critical
H2S	☐ None	☐ Below 100 PPM	☒ Above 100 PPM
Other	☐ 4 String Area	☐ Capitan Reef	☐ SWD Well

Note: The geology of the area where the well is being drilled determines the COAs that apply, not the above table.

Additional Engineering Requirements

Surface casing must be set at: 625 feet

Intermediate casing must be set at: 2,540 feet

General Requirements

1. Changes to the approved APD casing program need prior approval.

2. The Bureau of Land Management (BLM) will be notified in advance for a representative to witness:
   a. Well spudding (minimum of 24 hours notice)
   b. Setting and/or cementing of all casing strings (minimum of 4 hours notice)
   c. BOPE tests (minimum of 4 hours notice)

   Eddy County
   620 East Greene Street, Carlsbad, NM 88220
   (575) 361-2822
   BLM_NM_CFO_DrillingNotifications@BLM.GOV

   Lea County
   414 West Taylor, Hobbs, NM 88240
   (575) 689-5981

3. The initial wellhead installed on the well will remain on the well with spools used as needed.

4. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig:
    i. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
b. When the operator proposes to set surface casing with a Spudder Rig:
    i. Notify the BLM when moving in and removing the Spudder Rig.
    ii. Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    iii. BOP/BOPE test to be conducted per 43 CFR 3172.6 as soon as 2nd Rig is rigged up on well.

5. Floor controls are required for 3M or greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller, and will always be operational during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table or the area immediately above the substructure on which the draw works are located (this does not include the doghouse or stairway area).

6. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

Pressure Control

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in 43 CFR 3172.6 and API STD 53 Sec. 5.3.

2. 5M or higher systems require an HCR valve, remote kill line, and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE, and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
    b. The results of the test shall be reported to the appropriate BLM office.
    c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
e. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per 43 CFR 3172.6(b)(9).
f. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
g. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, no tests shall commence until the cement has had a minimum of 24 hours setup time.
h. The tests shall be done by an independent service company utilizing a test plug, not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to 43 CFR 3172 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

4. If the operator has proposed using a 5,000 (5M) Annular on a 10M BOP:
   a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 10,000 (10M) psi.

5. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
   a. Wellhead shall be installed by manufacturer's representatives (submit documentation with subsequent sundry).

b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172 must be followed.
e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed, and another wellhead installed.

6. If a variance is approved for break testing the BOPE, the following requirements apply:
   a. BOPE break testing is only approved for a BOP rated at 5M or less.
   b. Approval is only for the intermediate hole sections, so long as those sections do not go deeper than the Bone Springs formation.
   c. The Annular Preventer must be tested to a minimum of 70% of BOPE working pressure and shall be higher than the MASP.
   d. A full BOP test shall be performed every 21 days (at a minimum).
   e. A full BOP test is required prior to drilling the first intermediate hole section (if applicable). If any subsequent intermediate hole interval is deeper than the first, a full BOP test shall be required (a maximum 200 foot difference in true vertical depth (TVD) is allowed).
   f. BOPE break testing is not permitted for drilling the production hole section.
   g. While in transfer, the BOP shall be secured by the hydraulic carrier or cradle.
   h. If any repairs or replacements of the BOPE is required, the BOPE shall be tested as required by 43 CFR 3172.
   i. Pressure tests shall be performed on any BOPE components that have been disconnected. A low pressure (250-300 psi) and a high pressure (BOP max pressure rating) test are required.
   j. If a testing plug is used, pressure shall be maintained for at least 10 minutes. If there is any bleed off in pressure, the test shall be considered to have failed.
   k. If no testing plug is used, pressure shall be maintained for at least 30 minutes. If there is a decline in pressure of more than 10 percent, the test shall be considered to have failed.
   l. The appropriate Bureau of Land Management (BLM) office shall be notified a minimum of 4 hours before testing occurs.
   m. Any well control event while drilling require notification to the BLM Petroleum Engineer (575-706-2779) prior to the commencement of any BOPE Break Testing operations.
   n. If break testing is not used, then a full BOPE test shall be conducted.

7. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply:
   a. The flex line must meet the requirements of API 16C.

b. Check condition of flexible line from BOP to choke manifold (replace if exterior is damaged or if line fails test).
c. Line is to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements.
d. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating.
e. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, shall be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

Casing and Cement

1. Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

2. On any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. The formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

3. Provide compressive strengths (including hours to reach required 500 pounds compressive strength) prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

4. The surface casing shall be set at a minimum of 25 feet into the Rustler Anhydrite and 80 feet above the salt and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of 8 hours (or 24 hours in the Potash Area) or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

5. Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

6. Intermediate casing must be cemented to surface. For medium/high cave/karst, potash, and Capitan Reef, wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

7. The production cement should tie-back at least 200 feet (500 feet in Secretary Potash, surface in R-111-P potash) into previous casing string. Operator shall provide method of verification.

8. Production liner cement should tie-back at least 100 feet into previous casing string. Operator shall provide verification of cement top.

9. In WIPP Areas, cement must come to surface on the first three casing strings.

10. If cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

11. No pea gravel permitted for remedial cement or fall back remedial cement without prior authorization from a BLM petroleum engineer.

12. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

13. DV tools:
    a. First stage to DV tool (The DV tool may be cancelled if cement circulates to surface on the first stage):
        i. Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
    b. Second stage above DV tool:
        i. For intermediate casing, cement to surface.
        ii. For production casing, cement should tie-back at least 200 feet (500 feet in Secretary Potash, surface in R-111-P potash) into previous casing string. Operator shall provide method of verification.
        iii. If cement does not circulate, contact the appropriate BLM office.

14. Potash Areas:
    a. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    b. After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met:
        i. Cement reaches a minimum compressive strength of 500 psi for all cement blends
        ii. Until cement has been in place at least 24 hours.
    c. WOC time will be recorded in the driller's log.
    d. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.
    e. In R111 Potash Areas, if cement does not circulate to surface on the first two salt protection casing strings, the cement on the 3rd casing salt string must come to surface.
    f. In Secretary Potash Areas, if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

15. Wait on cement (WOC) for Water Basin:
    a. After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met:
        i. Cement reaches a minimum compressive strength of 500 psi at the shoe
        ii. Until cement has been in place at least 8 hours.
    b. WOC time will be recorded in the driller's log.

16. Medium/High/Critical Cave/Karst Areas:
    a. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    b. In Critical Cave/Karst Areas cement must come to surface on the first three casing strings.
    c. In Medium and High Cave/Karst Areas, if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
    d. In Critical Cave/Karst Areas, if cement does not circulate to surface on the first three casing strings, the cement on the 4th casing string must come to surface.

Drilling Mud

1. Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation and shall be used until production casing is run and cemented.

Waste Material and Fluids

1. All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and

disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Special Requirements

1. Communitization Agreement
    a. The operator will submit a Communitization Agreement to the Santa Fe Office (301 Dinosaur Trail, Santa Fe, NM 87508), at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division.
    b. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
        i. The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in 43 CFR 3171 and 3172.
        ii. If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
    c. In addition, the well sign shall include the surface and bottom hole lease numbers.
        i. When the Communitization Agreement number is known, it shall also be on the sign.

2. Unit Wells
    a. The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers.
        i. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.
    b. Commercial Well Determination
        i. A commercial well determination shall be submitted after production has been established for at least six months (this is not necessary for secondary recovery unit wells).

3. Hydrogen Sulfide (H2S)
    a. If H2S is encountered, provide measured values and formations to the BLM.
    b. An H2S area must meet 43 CFR 3176 requirements, which includes equipment and personnel/public protection items.

c. An H2S Drilling Plan shall be activated 500 feet prior to drilling into any formation designated as having H2S.
d. Hydrogen Sulfide monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet 43 CFR 3176 requirements, which includes equipment and personnel/public protection items.

4. Capitan Reef
   a. If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following (Use this for 3 string wells in the Capitan Reef, if it is a 4 string well ensure fresh water based mud is used across the Capitan interval):
      i. Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
      ii. Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports.
      iii. The daily drilling report should show mud volume per shift/tour.
      iv. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval.
      v. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.

5. Salt Water Disposal Wells
   a. The operator shall supply the BLM with a copy of a mudlog over the permitted disposal interval and estimated in situ water salinity based on open-hole logs.
   b. If hydrocarbons are encountered while drilling, the operator shall notify the BLM.
   c. The operator shall provide to the BLM a summary of formation depth picks based on mudlog and geophysical logs along with a copy of the mudlog and open-hole logs from total depth to top of Devonian.
   d. An NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:
      i. Properly evaluate the injection zone utilizing open-hole logs, swab testing and/or any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.
      ii. Restrict the injection fluid to the approved formation.
      iii. If a step rate test will be run, an NOI sundry shall be submitted to the BLM for approval.

e. If off-lease water will be disposed in this well, the operator shall provide proof of right-of-way approval.

6. WIPP Requirements
   a. If the proposed surface well or bottom hole is located within 330 feet of the WIPP Land Withdrawal Area boundary:
      i. Daily drilling reports, logs, and deviation survey information are required to be submitted to the Bureau of Land Management Engineering Department and the U.S. Department of Energy (per requirements of the Joint Powers Agreement) until a total vertical depth of 7,000 feet is reached. These reports will have at a minimum the rate of penetration and a clearly marked section showing the deviation for each 500-foot interval. Operator may be required to do more frequent deviation surveys based on the daily information submitted and may be required to take other corrective measures.
      ii. Information will also be provided to the New Mexico Oil Conservation Division after drilling activities have been completed.
      iii. Upon completion of the well, the operator shall submit a complete directional survey.
      iv. Any future entry into the well for purposes of completing additional drilling will require supplemental information.
   b. Required information shall be emailed to OilGasReports@wipp.ws.
      i. Attached files must not be greater than 20 MB.
      ii. Call WIPP Tech Support at 575-234-7422, during the hours of 7:00am to 4:30pm, if there are any issues sending to this address.

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

03/18/2026

Operator

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: SARAH CHAPMAN **Signed on:** 12/02/2025

Title: Regulatory Director

Street Address: 9655 KATY FREEWAY SUITE 500

City: HOUSTON **State:** TX **Zip:** 77024

Phone: (281)642-5503

Email address: SCHAPMAN@SPURENERGY.COM

Field

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data
03/18/2026

APD ID: 10400108984 **Submission Date:** 12/02/2025

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400108984 **Tie to previous NOS?** N **Submission Date:** 12/02/2025

BLM Office: Carlsbad **User:** SARAH CHAPMAN **Title:** Regulatory Director

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMLC067858 **Lease Acres:**

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? N

Permitting Agent? NO **APD Operator:** SPUR ENERGY PARTNERS LLC

Operator letter of

Operator Info

Operator Organization Name: SPUR ENERGY PARTNERS LLC

Operator Address: 9655 KATY FREEWAY SUITE 500 **Zip:** 77024

Operator PO Box:

Operator City: HOUSTON **State:** TX

Operator Phone: (832)930-8548

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Field/Pool or Exploratory? Field and Pool **Field Name:** RED LAKE **Pool Name:** GLORIETA-YESO NORTHEAST

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** CHESHIRE CAT 2 STATE COM **Number:** 1H 20H 21H 50H 51H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: **Distance to nearest well:** 20 FT **Distance to lease line:** 1 FT

Reservoir well spacing assigned acres Measurement: 320.79 Acres

Well plat: Cheshire_Cat_2_State_Com_21H_Site_Plan_20251202120808.pdf

Cheshire_Cat_2_State_Com_21H_C_102_20251202120808.pdf

Well work start Date: 02/26/2026 **Duration:** 60 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 14400 **Reference Datum:** GROUND LEVEL

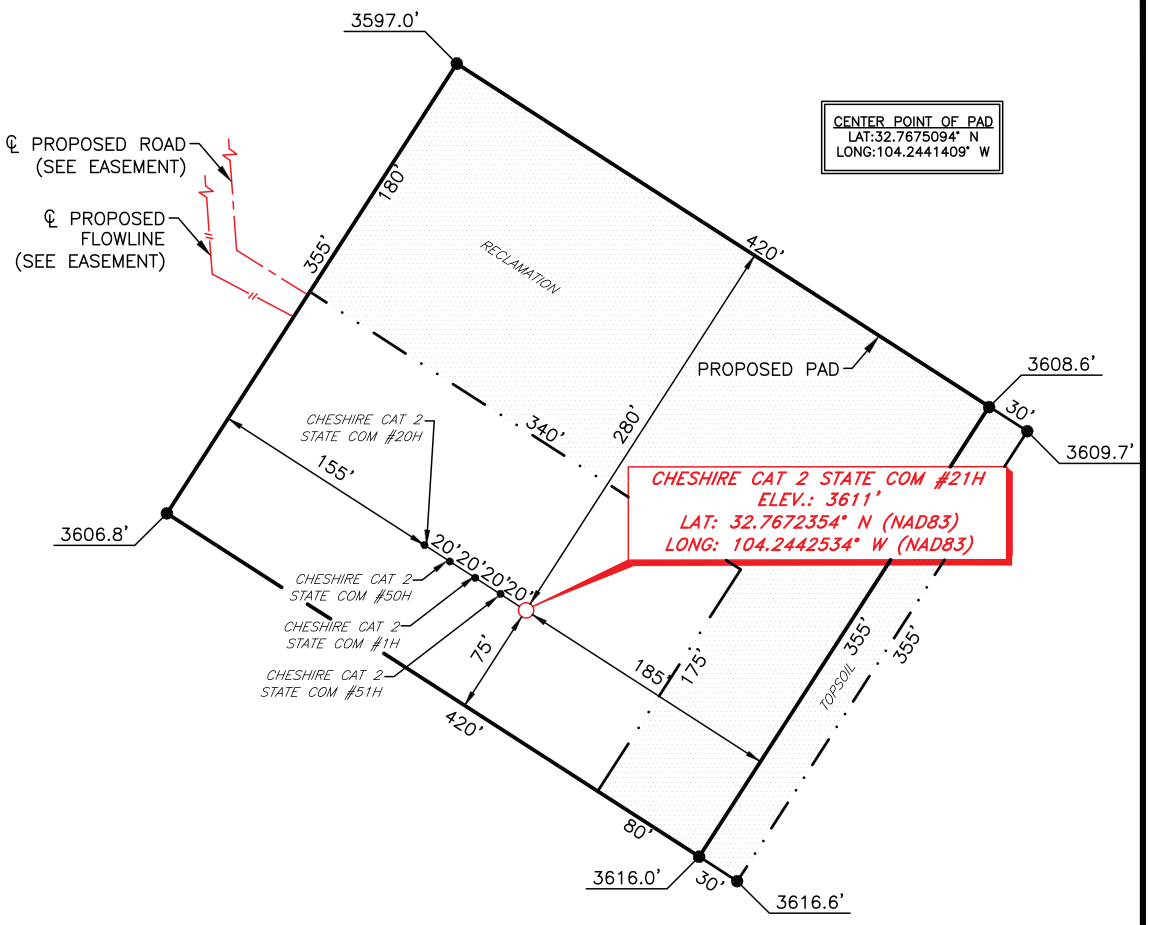
Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
SHL Leg #1	720	FNL	1126	FEL	18S	27E	11	Aliquot NENE	32.7672354	-104.2442534	EDDY	NEW MEXICO	NEW MEXICO	F	NMLC067858	3611			N
KOP Leg #1	885	FNL	782	FEL	18S	27E	11	Aliquot NENE	32.7667683	-104.2431394	EDDY	NEW MEXICO	NEW MEXICO	F	NMLC067858	784	2857	2827	N

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
PPP Leg #1-1	100	FSL	715	FEL	18S	27E	2	Aliquot SESE	32.7694737	-104.2428963	EDDY	NEW MEXICO	NEW MEXICO	S	STATE	-289	4481	3900	Y
EXIT Leg #1	100	FNL	715	FEL	18S	27E	2	Lot 1	32.7831483	-104.2431245	EDDY	NEW MEXICO	NEW MEXICO	S	STATE	107	9472	3504	Y
BHL Leg #1	50	FNL	715	FEL	18S	27E	2	Lot 1	32.7832857	-104.2431267	EDDY	NEW MEXICO	NEW MEXICO	S	STATE	111	9522	3500	Y

SPUR ENERGY PARTNERS LLC.
CHESHIRE CAT 2 STATE COM #21H
(710' FNL & 1126' FEL)
SECTION 11, T18S, R27E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. HWY 62 and CR #225 (Hilltop Rd.);

Go Southeast on CR #225 approx. 2.5 miles to a lease road on the right;

Turn right and go West approx. 0.6 miles to a lease road on the left;

Turn left at and go Southwest approx. 0.6 miles to a "Y";

Turn right and continue West approx. 0.7 miles to a proposed road on the left;

Turn left and go South approx. 0.1 miles to location on the right.

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 83 GRID – NM EAST DISTANCES ARE GROUND.

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100861
DWG. NO.: 25100861-5

RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

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C-102 Submit Electronically Via OCD Permitting	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024 Submittal Type: ☒ Initial Submittal ☐ Amended Report ☐ As Drilled

WELL LOCATION INFORMATION

API Number	Pool Code	Pool Name
30-015-58063	96836	RED LAKE; GLORIETA-YESO, NORTHEAST

Property Code	Property Name	Well Number
339063	CHESHIRE CAT 2 STATE COM	21H

OGRID No.	Operator Name	Ground Level Elevation
328947	SPUR ENERGY PARTNERS LLC.	3611'

Surface Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal | Mineral Owner: ☒ State ☐ Fee ☐ Tribal ☐ Federal

Surface Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
A	11	18S	27E		720 FNL	1126 FEL	32.7672354°N	104.2442534°W	EDDY

Bottom Hole Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
A	2	18S	27E	1	50 FNL	715 FEL	32.7832857°N	104.2431267°W	EDDY

Dedicated Acres	Infill or Defining Well	Defining Well API	Overlapping Spacing Unit (Y/N)	Consolidation Code
320.79	DEFINING	CHESHIRE CAT 2 STATE COM 1H	N	F & C

Order Numbers. R-24159 SLO CA: PENDING | Well setbacks are under Common Ownership: ☐ Yes ☐ No NA

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
A	11	18S	27E		885 FNL	782 FEL	32.7667683°N	104.2431394°W	EDDY

First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
P	2	18S	27E		100 FSL	715 FEL	32.7694737°N	104.2428963°W	EDDY

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
A	2	18S	27E	1	100 FNL	715 FEL	32.7831483°N	104.2431245°W	EDDY

Unitized Area or Area of Uniform Interest	Spacing Unit Type	Ground Floor Elevation:
NA	☒ Horizontal ☐ Vertical	3611' GL

OPERATOR CERTIFICATIONS

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and , if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.

Sarah Savino 12/05/2025

Signature Date

SARAH SAVINO

Printed Name

SSAVINO@SPURENERGY.COM

Email Address

SURVEYOR CERTIFICATIONS

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me under my supervision, and that the same is true and correct to the best of my belief.

DALE E. BELL NEW MEXICO 14400 PROFESSIONAL SURVEYOR 11/26/2025

Signature and Seal of Professional Surveyor

Certificate Number	Date of Survey
14400	10/15/2025

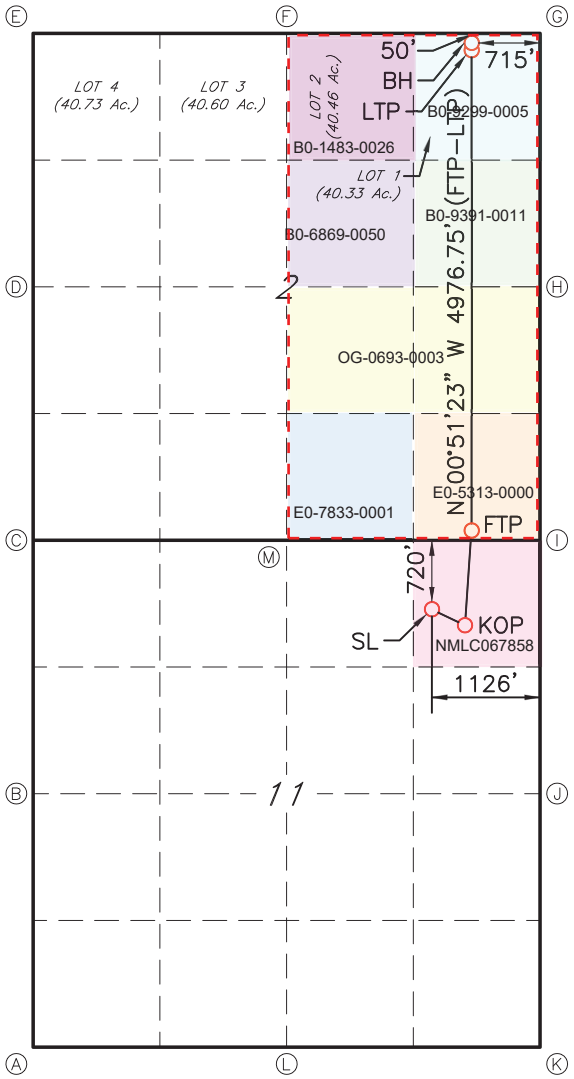
Note: No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

ACREAGE DEDICATION PLATS

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is a directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.

CHESIRE CAT 2 STATE COM #21H



GEODETIC DATA
NAD 83 GRID – NM EAST

SURFACE LOCATION (SL)
720' FNL & 1126' FEL SEC.11
N: 642863.8 – E: 568718.8

LAT: 32.7672354° N
LONG: 104.2442534° W

LAST TAKE POINT (LTP)
100' FNL & 715' FEL SEC.2
N: 648653.4 – E: 569060.9

LAT: 32.7831483° N
LONG: 104.2431245° W

KICK OFF POINT (KOP)
885' FNL & 782' FEL SEC.11
N: 642694.1 – E: 569061.4

LAT: 32.7667683° N
LONG: 104.2431394° W

BOTTOM HOLE (BH)
50' FNL & 715' FEL SEC.2
N: 648703.3 – E: 569060.1

LAT: 32.7832857° N
LONG: 104.2431267° W

FIRST TAKE POINT (FTP)
100' FSL & 715' FEL SEC.2
N: 643678.4 – E: 569135.2

LAT: 32.7694737° N
LONG: 104.2428963° W

CORNER DATA
NAD 83 GRID – NM EAST

A: FOUND BRASS CAP "1941"
N: 638374.3 – E: 6564542.8

B: FOUND BRASS CAP "1941"
N: 641004.4 – E: 564565.8

C: FOUND BRASS CAP "1941"
N: 643576.8 – E: 564594.9

D: FOUND BRASS CAP "1941"
N: 646146.3 – E: 564555.8

E: FOUND BRASS CAP "1941"
N: 648742.6 – E: 564515.4

F: FOUND BRASS CAP "1941"
N: 648748.5 – E: 567145.0

G: FOUND BRASS CAP "1941"
N: 648755.1 – E: 569774.2

H: FOUND BRASS CAP "1941"
N: 646158.7 – E: 569812.5

I: FOUND BRASS CAP "1941"
N: 643569.0 – E: 569851.5

J: FOUND BRASS CAP "1941"
N: 640937.2 – E: 569825.3

K: FOUND BRASS CAP "1941"
N: 638302.5 – E: 569800.0

L: FOUND BRASS CAP "1941"
N: 638335.5 – E: 567187.6

M: FOUND BRASS CAP "1941"
N: 643603.5 – E: 567239.7



JOB #: LS25100861D1

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report
03/18/2026

APD ID: 10400108984
Submission Date: 12/02/2025

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM
Well Number: 21H

Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
17672762	QUATERNARY	3611	0	0	DOLOMITE, OTHER : CALICHE	USEABLE WATER	N
17672763	YATES	3361	250	250	DOLOMITE, LIMESTONE, SHALE, SILTSTONE	NONE	N
17672764	SEVEN RIVERS	3086	525	525	DOLOMITE, LIMESTONE	NATURAL GAS, OIL	N
17672765	QUEEN	2536	1075	1075	ANHYDRITE, DOLOMITE, SANDSTONE	NATURAL GAS, OIL	N
17672766	GRAYBURG	2076	1535	1535	ANHYDRITE	NATURAL GAS, OIL	N
17672767	SAN ANDRES	1651	1960	1999	DOLOMITE	NATURAL GAS, OIL	N
17672768	GLORIETA	186	3425	3550	DOLOMITE, SILTSTONE	NATURAL GAS, OIL	N
17672769	PADDOCK	-4	3615	9522	DOLOMITE, LIMESTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 5000

Equipment: A 5000psi 5000' rated BOP stack with annular preventer and blind and pipe rams will be used before drilling the surface hole and continuously to TD. See attached BOP and choke manifold diagrams. A conventional wellhead system will be used. The wellhead and connection to the BOPE will meet all API 6A requirements.

Requesting Variance? YES

Variance request: : Spur requests a variance to use a flex line from the BOP to the choke manifold. A typical flex line certificate is attached. Certificate for actual flex line in use will be on site. Flex line will have no external damage. Flex line will be installed as straight as possible to avoid bends. Spur requests a variance to adjust the BOP break testing requirements as follows: BOP break test will be conducted under the following conditions: - After a full BOP test is conducted - When skidding to drill the production section, where the surface casing point is shallower than the 3rd Bone Spring or 10,000 TVD. - When skidding to drill a production section that does not penetrate the 3rd Bone Spring or deeper. If the kill line is broken prior to the skid, then 4 tests will be performed. - The void between the wellhead and the spool (this consists of 2 tests) - The spool between the kill lines and choke manifold (also 2 tests) If the kill line is not broken before the skid, then 2 tests will be performed. - The void between the well head and the pipe rams.

Testing Procedure: : BOP/BOPE will be tested by an independent service company. Annular will be tested to 70% of its working pressure. Rams will be tested to 250 psi low and 3000 psi high. The system may be

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

upgraded to a higher pressure, but still tested to the above listed working pressure. If the system is upgraded, then all the installed components will be functional and tested. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other BOP accessories will include a Kelly cock and floor safety

Choke Diagram Attachment:

Cheshire_Cat_2_State_Com_13.625ChokeBOPDiagramUpdate_20251201134537.pdf

Cheshire_Cat_2_State_Com_FlexHoseCert_20251201134537.pdf

BOP Diagram Attachment:

Cheshire_Cat_2_State_Com_13.625ChokeBOPDiagramUpdate_20251201134546.pdf

Cheshire_Cat_2_State_Com_FlexHoseCert_20251201134546.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	625	0	625	3611	2986	625	J-55	54.5	BUTT	1.125	1.2	DRY	1.4	DRY	1.4
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2325	0	2300	3610	1311	2325	J-55	36	BUTT	1.125	1.2	DRY	1.4	DRY	1.4
3	PRODUCTION	8.75	7.0	NEW	API	Y	0	4200	0	3854	3610	-243	4200	L-80	32	OTHER - GBCD	1.125	1.2	DRY	1.4	DRY	1.4
4	PRODUCTION	8.75	5.5	NEW	API	Y	4200	9522	3854	3499	-243	112	5322	L-80	20	OTHER - GBCD	1.125	1.2	DRY	1.4	DRY	1.4

Casing Attachments

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cheshire_Cat_2_State_Com_Csg13.375_54.50_J55_20251202121746.pdf

Casing_Assumptions_Sheet_20251201135548.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Assumptions_Sheet_20251201135352.pdf

Cheshire_Cat_2_State_Com_Csg9.625_36_J55_20251201135352.pdf

Casing ID: 3 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing_Assumptions_Sheet_20251202121635.pdf
Cheshire_Cat_2_State_Com_Csg5.5_GBCD_20_L_80_20251202121635.pdf

Casing Design Assumptions and Worksheet(s):

Cheshire_Cat_2_State_Com_Csg7_GBCD_32_L_80_20251202121648.pdf

Casing_Assumptions_Sheet_20251201134704.pdf

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Casing Attachments

Casing ID: 4 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing_Assumptions_Sheet_20251201135641.pdf

Cheshire_Cat_2_State_Com_Csg7_GBCD_32_L_80_20251201135641.pdf

Casing Design Assumptions and Worksheet(s):

Casing_Assumptions_Sheet_20251201135656.pdf

Cheshire_Cat_2_State_Com_Csg5.5_GBCD_20_L_80_20251201135657.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0	0	NONE	NONE
SURFACE	Tail		0	625	383	2.32	13.2	888.56	100	CLASS C PREMIUM PLUS	0.25 LBS/SK LCM
INTERMEDIATE	Lead		0	625	124	1.84	12.2	228.16	50	CLASS C PREMIUM PLUS	0.25 LBS/SK LCM
INTERMEDIATE	Tail		625	2325	467	2.32	13.2	1083	100	CLASS C PREMIUM PLUS	0.25 LBS/SK LCM
PRODUCTION	Lead		0	3200	602	2.54	11.8	1529.08	0	CLASS C PREMIUM PLUS	0.25 LBS/SK LCM
PRODUCTION	Tail		3200	9522	1244	1.81	13.2	2251.64	50	CLASS C PREMIUM PLUS	0.25 LBS/SK LCM + 0.35% RETARDER

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with 43 CFR 3172:

Diagram of the equipment for the circulating system in accordance with 43 CFR 3172:

Describe what will be on location to control well or mitigate other conditions: : Mud products (e. g., barite, bentonite, gypsum, lime, soda ash, caustic soda, nut plug, cedar bark fiber, cotton seed hulls, drilling paper, saltwater clay, CaCl2) will be on site to handle any abnormal hole condition that may be encountered while drilling. High viscosity sweeps will be pumped as needed to clean the hole.
Describe the mud monitoring system utilized: Mud system will be monitored visually and electronically with a Pason PVT system or its equivalent.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	625	WATER-BASED MUD	8.6	8.9							
2325	9522	SALT SATURATED	9	10							
625	2325	SALT SATURATED	9	10							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A mud logger will be used from surface casing point to TD. A gamma ray log will be run from TD to the surface casing point. No other logs are planned at this time.

List of open and cased hole logs run in the well:

MUD LOG/GEOLOGICAL LITHOLOGY LOG,GAMMA RAY LOG,

Coring operation description for the well:

No core of drill stem test is planned at this time.

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1805 **Anticipated Surface Pressure:** 947

Anticipated Bottom Hole Temperature(F): 112

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

Cheshire_Cat_2_State_Com_H2S_20251201140731.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Cheshire_Cat_2_State_Com_21H_Directional_Plan_20251202122131.pdf

Other proposed operations facets description:

Spur Energy Partners LLC. requests the option to contract a Surface Rig to drill, set surface/intermediate casing and cement for this well. If the timing between rigs is such that Spur Energy Partners LLC. would not be able to preset surface/intermediate the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.
Spur requests a variance to use a flex line from the BOP to the choke manifold. documentation will be attached in the APD and readily available. No external damage to flex line and it will be installed as straight as possible (no bends).

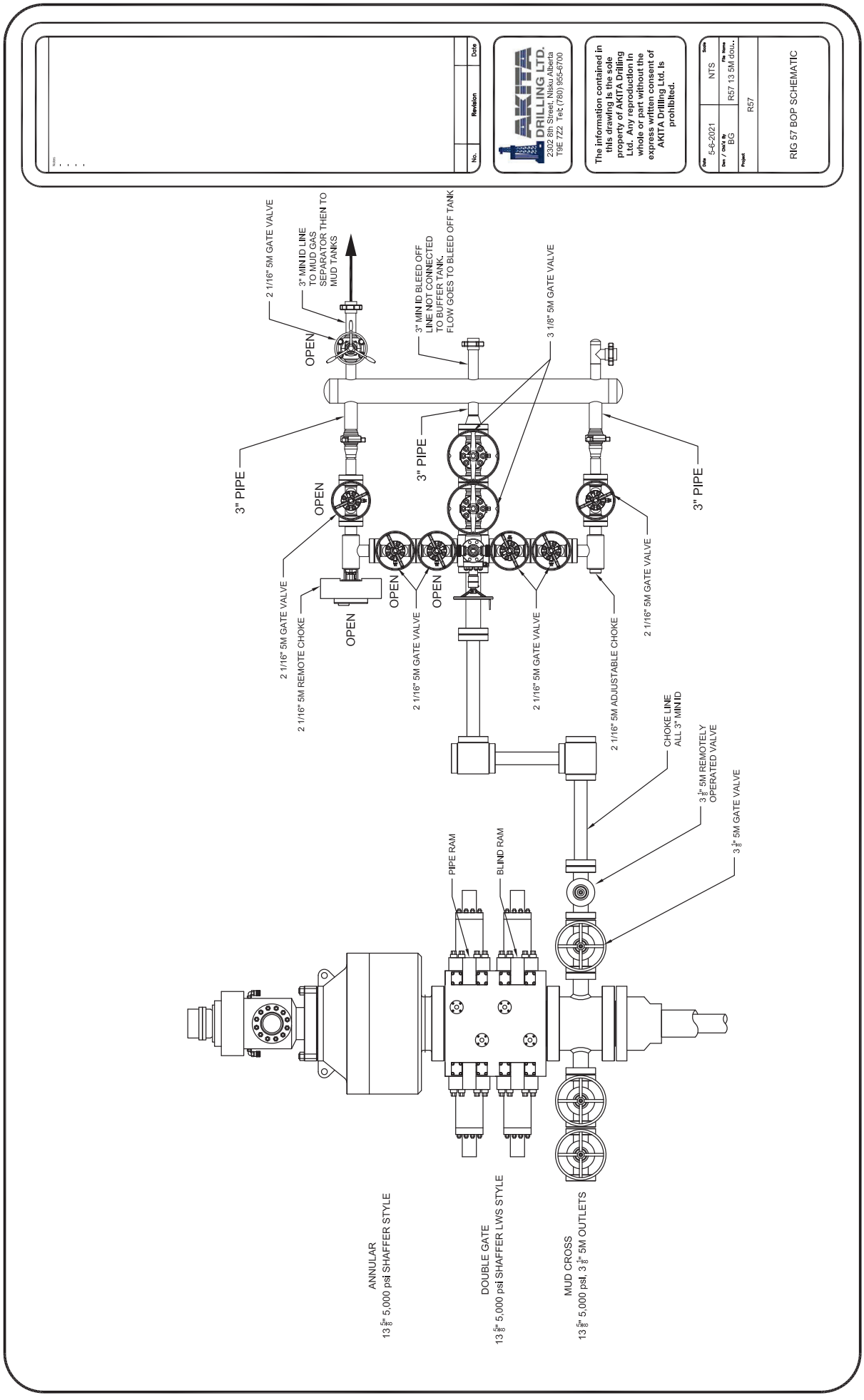
Other proposed operations facets attachment:

Cheshire_Cat_2_State_Com_21H_Drill_Plan_20251202122143.pdf
Cheshire_Cat_2_State_Com_RigSpecs_20251201140820.pdf
Cheshire_Cat_2_State_Com_SpudderRig_20251201140819.pdf
Cheshire_Cat_2_State_Com_WMP_20251201140820.pdf

Other Variance request(s)?: Y

Other Variance attachment:

Cheshire_Cat_2_State_Com_13.625ChokeBOPDiagramUpdate_20251202120632.pdf
Cheshire_Cat_2_State_Com_FlexHoseCert_20251202120632.pdf


Notes:
No.
Revision
Date
AKITA DRILLING LTD.
2302 8th Street, Nisku Alberta
T9E 7Z2 Tel: (780) 955-8700
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Date
5-6-2021
Des. / Dft'd. By
BG
Project
RS7
Scale
NTS
File Name
RS7 13 5M dou..
RIG 57 BOP SCHEMATIC
2 1/16" 5M GATE VALVE
3" MIN ID LINE TO MUD GAS SEPARATOR THEN TO MUD TANKS
OPEN
3" MIN ID BLEED OFF LINE NOT CONNECTED TO BUFFER TANK. FLOW GOES TO BLEED OFF TANK
3 1/8" 5M GATE VALVE
3" PIPE
OPEN
3" PIPE
3" PIPE
2 1/16" 5M GATE VALVE
2 1/16" 5M REMOTE CHOKE
OPEN
OPEN
2 1/16" 5M GATE VALVE
OPEN
2 1/16" 5M GATE VALVE
2 1/16" 5M GATE VALVE
2 1/16" 5M ADJUSTABLE CHOKE
CHOKE LINE ALL 3" MIN ID
3 1/8" 5M REMOTELY OPERATED VALVE
3 1/8" 5M GATE VALVE
PIPE RAM
BLIND RAM
ANNULAR
13 5/8" 5,000 psi SHAFFER STYLE
DOUBLE GATE
13 5/8" 5,000 psi SHAFFER LWS STYLE
MUD CROSS
13 5/8" 5,000 psi. 3 1/8" 5M OUTLETS

POWERING PROGRESS™

MTR DATA BOOK

CL2013

CUSTOMER: GATES CANADA INC
DATE: 12/19/2017
Purchase Order: D235455 (PO 45750)
Sales Order #: 509128
Product Description: 5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill Gates Hose Assembly c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached

Hose S/N: H-121917-14
PART NUMBER: FR5K3.517.0CK31/85KFLG S/C

CONTENTS INCLUDED

GMCO FITTINGS

17-309-1	INSERT STEM
15-095-1A	FERRULE

3 1/8 in. 5K FIXED FLANGE X 3 1/8 in. 5K FLOAT FLANGE

V4131	FIXED FLANGE
V5054	FLOAT FLANGE

WELDING SPECIFICATIONS
Certification and Procedure for welding

NDE RESULTS
1622371-03/1622371-01 Ultrasonic Test Results and Imaging

Safey Clamps
34145/34144

TEST CHART
Chart Recording of Hydrostatic Test

TEST CERTIFICATE
Document Product Details & Positive Results of Hydrostatic Testing

CERTIFICATE OF CONFORMANCE
A Declaration of the conformity with the type approval

IMAGES
Images of the product prior to shipping.

PACKING LIST
Details of Shipping Contents, Dimensions and Weights

BLACK GOLD®

GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr. Suite 190
Houston, TX. 77086

PHONE: +1 (281) 602-4100
FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

PRESSURE TEST CERTIFICATE

Customer:	GATES CANADA INC	Test Date:	12/19/2017
Customer Ref.:	D235455 (PO 45750)	Hose Serial No.:	H-121917-14
Invoice No.:	509128	Created By:	Cristian Rivera

Product Description:	5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached

End Fitting 1:	3 1/8 in. 5K FIXED FLG	End Fitting 2:	3 1/8 in. 5K FLOAT FLG
Oracle Star No.:	68903550-9725917	Assembly Code:	15M5019042016H-121917-14
CUSTOMER P/N:	FR5K3.517.0CK31/85KFLG S/C	Test Pressure:	7,500 psi.
		Working Pressure:	5,000 psi.

Gates Engineering & Services North America certifies that:

The following hose assembly has successfully passed all pressure testing requirements set forth in Gates specifications: GTS-04-052 (for 5K assemblies) or GTS-04-053 (10K assemblies) or GTS-04-048 (15K assemblies), which include reference to Specification API 16C (2nd Edition); sections 7.5.4, 7.5.9, and 10.8.7. A test graph will accompany this test certificate to illustrate conformity to test requirements. This hose assembly was pressure tested using equipment and instrumentation that has been calibrated in accordance with the requirements set-forth in the GESNA management system.

Quality:	QUALITY	Production:	PRODUCTION
Date :	8/5/2021	Date :	8/5/2021
Signature :		Signature :	

F-PRD-005B

Revision 6_05032021

Gates **BLACK GOLD®**

GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr.
Houston, TX. 77086

PHONE: +1 (281) 602-4100
FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

CERTIFICATE OF CONFORMANCE

This is to certify that all parts and materials included in this shipment have manufactured and/or processed in accordance with various Gates and API assembly and test specifications. Records of required tests are on-file and subject to examination. Test reports and subsequent test graphs have been made available with this shipment. Additional supporting documentation related to materials, welding, weld inspections, and heat-treatment activities are available upon request.

CUSTOMER:	GATES CANADA INC
CUSTOMER P.O.#:	D235455 (PO 45750)
PART DESCRIPTION:	FR5K3.517.0CK31/85KFLG S/C
PART DESCRIPTION:	5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached
SALES ORDER #:	509128
QUANTITY:	1
SERIAL #:	H-121917-14

SIGNATURE: J Rivera

TITLE: QUALITY ASSURANCE

DATE: 8/5/2021

Released to Imaging: 4/14/2026 10:51:34 AM
Received by OCD: 3/18/2026 12:49:31 PM

Gates E&S

North America

7603 Prairie Oak dr.

Houston,TX

Hydrostatic Test

Customer= GATES CANADA

Date of test= 12/19/17

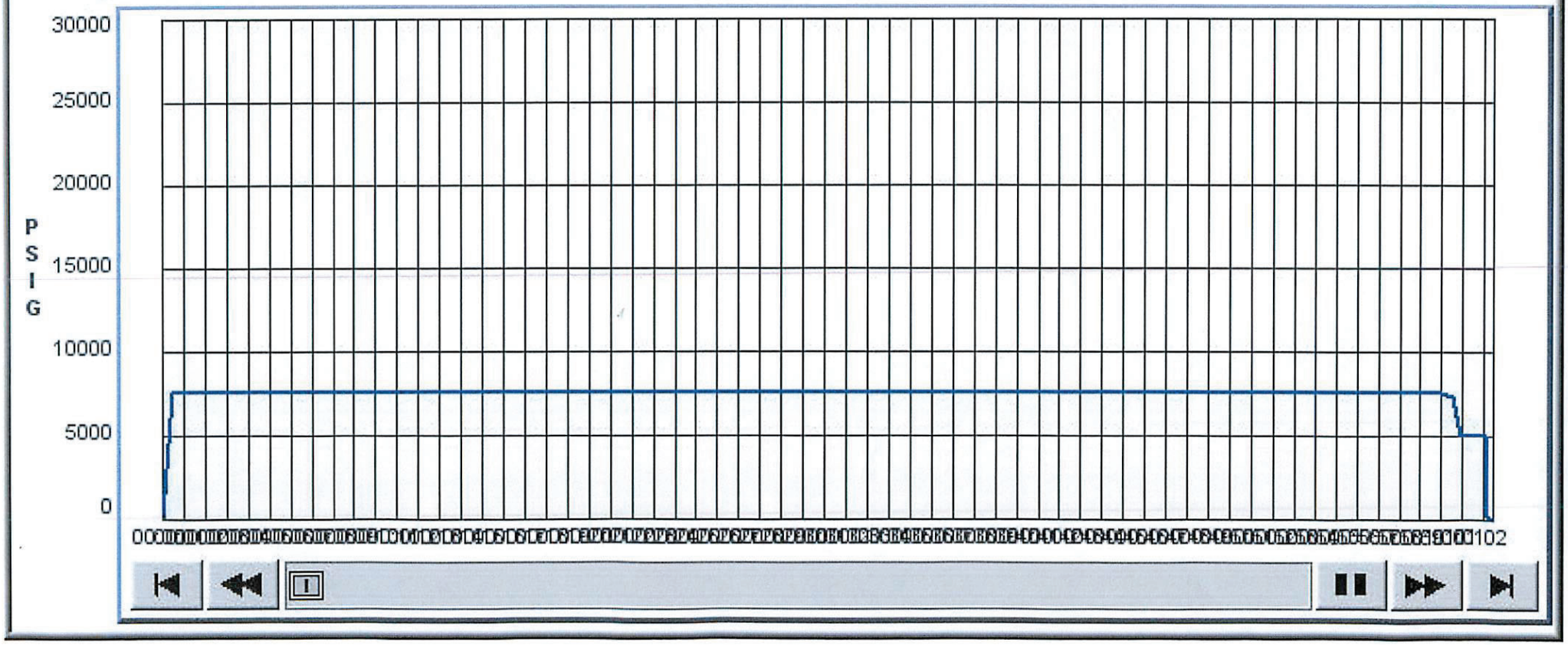
Serial # = H-121917-13,-14

Description = 3.5 5K 3 1/8 FLG 5K

Technician= CHRIS OLIVO

12/19/2017 16:53:26

17:55:52



Edwards Fabrication LLC

1385 Hwy. 35 Bypass S.
P.O. Box 2350
Rockport, TX 78381

O: (361) 790-7910
F: (361) 790-7927

tedwards@edwardsfabrication.com
www.edwardsfabrication.com

CERTIFICATE OF TEST

Client:
Gates E & S North America
134 44th Street
Corpus Christi, TX 78405

Purchase Order: 1592198/0

Certificate Number				Date of Examination
34145				04/27/17
ID#	Part Number	Description	SWL*	Proofload
34145	E3.5S	3.5" E Safety Clamp	6016 lbs.	12031 lbs.

The Safety Clamp unit identified on this certificate has been load tested completely assembled; including the clamp body, (2) 3/4" shackles, 5/8" x 48" wire rope sling and anchor tab. Thus, all components are tested at the "Proof" load. Do not disassemble. Do not interchange any part or parts of this tested unit with parts of other Safety Clamp units. DO NOT WELD, CUT, ADD-TO, TAKE AWAY ANY COMPONENTS OR MAKE ANY MODIFICATION TO THIS CLAMP UNIT. Doing so voids this test certificate.

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** Safe Work Load*

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We hereby verify that the above information is correct
as contained in the records of Edwards Fabrication L.L.C.

ISO 9001:2008
BUREAU VERITAS
Certification

Edwards Fabrication L.L.C. is certified as having a Quality Management System.

Thomas F. Edwards
President
Edwards Fabrication L.L.C.

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134 44th Street
Corpus Christi, TX 78405

Purchase Order: 1592198/0

Certificate Number				Date of Examination
34144				04/27/17
ID#	**Part Number**	**Description**	**SWL***	**Proofload**
34144	E3.5S	3.5" E Safety Clamp	6014 lbs.	12027 lbs.

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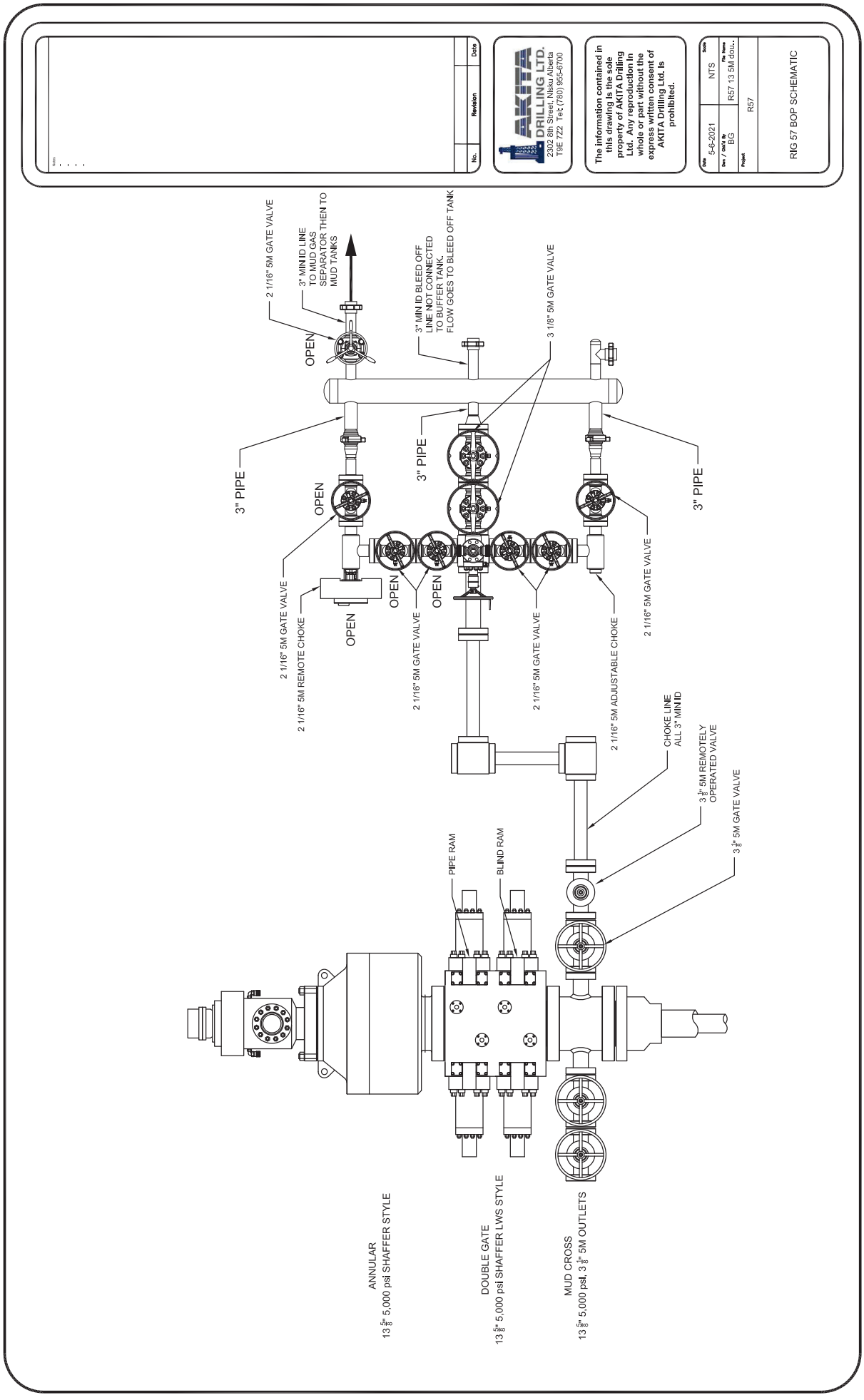
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President
Edwards Fabrication L.L.C.


Notes:
No.
Revision
Date
AKITA DRILLING LTD.
2302 8th Street, Nisku Alberta
T9E 7Z2 Tel: (780) 955-8700
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Date
5-6-2021
Des. / Ck'd. By
BG
Project
RS7
Scale
NTS
File Name
RS7 13 5M dou..
RIG 57 BOP SCHEMATIC
2 1/16" 5M GATE VALVE
3" MIN ID LINE TO MUD GAS SEPARATOR THEN TO MUD TANKS
OPEN
3" MIN ID BLEED OFF LINE NOT CONNECTED TO BUFFER TANK. FLOW GOES TO BLEED OFF TANK
3 1/8" 5M GATE VALVE
3" PIPE
OPEN
OPEN
OPEN
OPEN
2 1/16" 5M REMOTE CHOKE
2 1/16" 5M GATE VALVE
2 1/16" 5M GATE VALVE
2 1/16" 5M ADJUSTABLE CHOKE
2 1/16" 5M GATE VALVE
CHOKE LINE ALL 3" MIN ID
3 1/8" 5M REMOTELY OPERATED VALVE
3 1/8" 5M GATE VALVE
PIPE RAM
BLIND RAM
ANNULAR
13 5/8" 5,000 psi SHAFFER STYLE
DOUBLE GATE
13 5/8" 5,000 psi SHAFFER LWS STYLE
MUD CROSS
13 5/8" 5,000 psi. 3 1/8" 5M OUTLETS

POWERING PROGRESS™

MTR DATA BOOK

CL2013

CUSTOMER: GATES CANADA INC
DATE: 12/19/2017
Purchase Order: D235455 (PO 45750)
Sales Order #: 509128
Product Description: 5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill Gates Hose Assembly c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached

Hose S/N: H-121917-14
PART NUMBER: FR5K3.517.0CK31/85KFLG S/C

CONTENTS INCLUDED

GMCO FITTINGS

17-309-1	INSERT STEM
15-095-1A	FERRULE

3 1/8 in. 5K FIXED FLANGE X 3 1/8 in. 5K FLOAT FLANGE

V4131	FIXED FLANGE
V5054	FLOAT FLANGE

WELDING SPECIFICATIONS
Certification and Procedure for welding

NDE RESULTS
1622371-03/1622371-01 Ultrasonic Test Results and Imaging

Safey Clamps
34145/34144

TEST CHART
Chart Recording of Hydrostatic Test

TEST CERTIFICATE
Document Product Details & Positive Results of Hydrostatic Testing

CERTIFICATE OF CONFORMANCE
A Declaration of the conformity with the type approval

IMAGES
Images of the product prior to shipping.

PACKING LIST
Details of Shipping Contents, Dimensions and Weights

BLACK GOLD®

GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr. Suite 190
Houston, TX. 77086

PHONE: +1 (281) 602-4100
FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

PRESSURE TEST CERTIFICATE

Customer:	GATES CANADA INC	Test Date:	12/19/2017
Customer Ref.:	D235455 (PO 45750)	Hose Serial No.:	H-121917-14
Invoice No.:	509128	Created By:	Cristian Rivera

Product Description:	5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached

End Fitting 1:	3 1/8 in. 5K FIXED FLG	End Fitting 2:	3 1/8 in. 5K FLOAT FLG
Oracle Star No.:	68903550-9725917	Assembly Code:	15M5019042016H-121917-14
CUSTOMER P/N:	FR5K3.517.0CK31/85KFLG S/C	Test Pressure:	7,500 psi.
		Working Pressure:	5,000 psi.

Gates Engineering & Services North America certifies that:

The following hose assembly has successfully passed all pressure testing requirements set forth in Gates specifications: GTS-04-052 (for 5K assemblies) or GTS-04-053 (10K assemblies) or GTS-04-048 (15K assemblies), which include reference to Specification API 16C (2nd Edition); sections 7.5.4, 7.5.9, and 10.8.7. A test graph will accompany this test certificate to illustrate conformity to test requirements. This hose assembly was pressure tested using equipment and instrumentation that has been calibrated in accordance with the requirements set-forth in the GESNA management system.

Quality:	QUALITY	Production:	PRODUCTION
Date :	8/5/2021	Date :	8/5/2021
Signature :		Signature :	

F-PRD-005B

Revision 6_05032021

BLACK GOLD®

GATES ENGINEERING & SERVICES NORTH AMERICA
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WEB: www.gates.com/oilandgas

CERTIFICATE OF CONFORMANCE

This is to certify that all parts and materials included in this shipment have manufactured and/or processed in accordance with various Gates and API assembly and test specifications. Records of required tests are on-file and subject to examination. Test reports and subsequent test graphs have been made available with this shipment. Additional supporting documentation related to materials, welding, weld inspections, and heat-treatment activities are available upon request.

CUSTOMER:	GATES CANADA INC
CUSTOMER P.O.#:	D235455 (PO 45750)
PART DESCRIPTION:	FR5K3.517.0CK31/85KFLG S/C
PART DESCRIPTION:	5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached
SALES ORDER #:	509128
QUANTITY:	1
SERIAL #:	H-121917-14

SIGNATURE: J Rivera

TITLE: QUALITY ASSURANCE

DATE: 8/5/2021

Released to Imaging: 4/14/2026 10:51:34 AM
Received by OCD: 3/18/2026 12:49:31 PM

Gates E&S

North America

7603 Prairie Oak dr.

Houston,TX

Hydrostatic Test

Customer= GATES CANADA

Date of test= 12/19/17

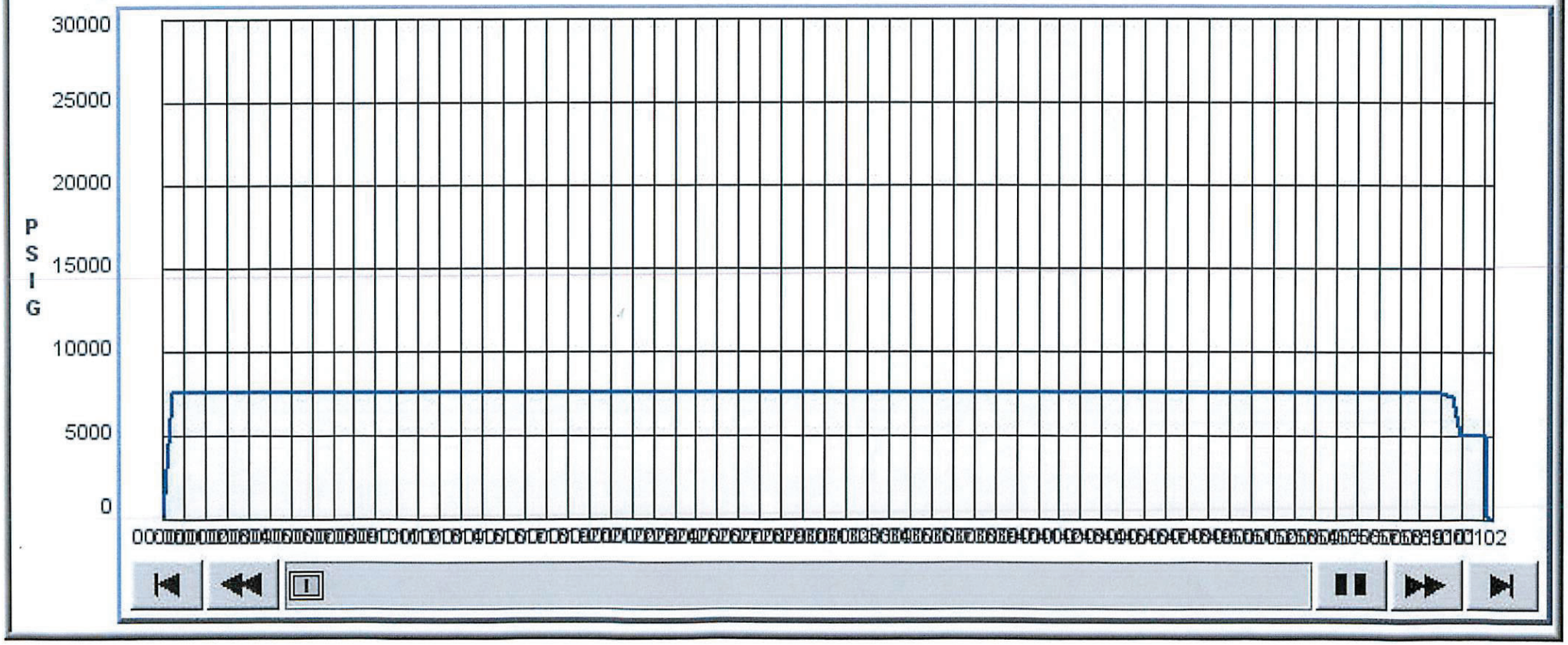
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Technician= CHRIS OLIVO

12/19/2017 16:53:26

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CERTIFICATE OF TEST

Client:
Gates E & S North America
134 44th Street
Corpus Christi, TX 78405

Purchase Order: 1592198/0

Certificate Number				Date of Examination
34145				04/27/17
ID#	**Part Number**	**Description**	**SWL***	**Proofload**
34145	E3.5S	3.5" E Safety Clamp	6016 lbs.	12031 lbs.

The Safety Clamp unit identified on this certificate has been load tested completely assembled; including the clamp body, (2) 3/4" shackles, 5/8" x 48" wire rope sling and anchor tab. Thus, all components are tested at the "Proof" load. Do not disassemble. Do not interchange any part or parts of this tested unit with parts of other Safety Clamp units. DO NOT WELD, CUT, ADD-TO, TAKE AWAY ANY COMPONENTS OR MAKE ANY MODIFICATION TO THIS CLAMP UNIT. Doing so voids this test certificate.

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Corpus Christi, TX 78405

Purchase Order: 1592198/0

Certificate Number				Date of Examination
34144				04/27/17
ID#	**Part Number**	**Description**	**SWL***	**Proofload**
34144	E3.5S	3.5" E Safety Clamp	6014 lbs.	12027 lbs.

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Casing Design Criteria and Load Case Assumptions

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: DF_T=1.4
   a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
13-3/8”	54.5	J-55	BTC	12.615	12.459	1,130	2,740	909	0.1545
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***23,755 lbs (assuming 8.4 ppg fluid and 500’ casing-worst case scenario)***

Intermediate Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8”	36	J-55	BTC	8.921	8.765	2,020	3,520	639	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300’ casing-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
7”	32	L-80	GBCD	6.094	5.969	10,400	9,060	745	0.0361

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***90,662 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
5-1/2”	20	L-80	GBCD	4.778	4.653	10,630	9,190	466	0.0222

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***56,664 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

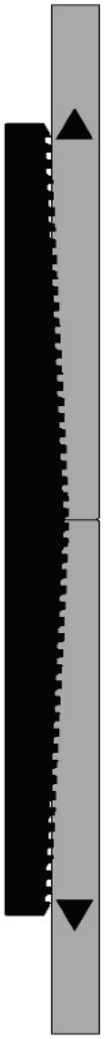
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GB connections
Engineering the Right Connections

GB Connection Performance Properties Sheet

Rev. 1 (08/25/2015)

ENGINEERING THE RIGHT CONNECTIONS™



Casing: 5.5 OD, 20 ppf
Casing Grade: L-80

Connection: GB CD Butt 6.300
Coupling Grade: API L-80

PIPE BODY GEOMETRY					
Nominal OD (in.)	5 1/2	Wall Thickness (in.)	0.361	Drift Diameter (in.)	4.653
Nominal Weight (ppf)	20.00	Nominal ID (in.)	4.778	API Alternate Drift Dia. (in.)	N/A
Plain End Weight (ppf)	19.83	Plain End Area (in.^{2})	5.828		

PIPE BODY PERFORMANCE					
Material Specification	L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Collapse		**Tension**		**Pressure**	
API (psi)	8,830	Pl. End Yield Str. (kips)	466	Min. Int. Yield Press. (psi)	9,190
High Collapse (psi)	10,630	**Torque**		**Bending**	
		Yield Torque (ft-lbs)	54,120	Build Rate to Yield (°/100 ft)	66.7

GB CD Butt 6.300 COUPLING GEOMETRY			
Coupling OD (in.)	6.300	Makeup Loss (in.)	4.2500
Coupling Length (in.)	8.500	Critical Cross-Sect. (in.^{2})	8.527

GB CD Butt 6.300 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Tension		**Efficiency**		**Bending**	
Thread Str. (kips)	503	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	58.2
Min. Tension Yield (kips)	648	External Pressure (%)	100%	**Yield Torque**	
Min. Tension Ult. (kips)	770	Tension (%)	100%	Yield Torque (ft-lbs)	22,680
Joint Str. (kips)	503	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.46		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	8,620	Max. MU Tq. (ft-lbs)	17,240	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	21,540

Units: US Customary (lbm, in., °F, lbf)
1 kip = 1,000 lbs
* See Running Procedure for description and limitations.
See attached: Notes for GB Connection Performance Properties.
GBT Running Procedure (GBT RP): www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf
Blanking Dimensions: www.gbconnections.com/pdf/GB-DWC-Blanking-Dimensions.pdf
Connection yield torque rating based on physical testing or extrapolation therefrom

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GB connections
Engineering the Right Connections

Notes for GB Connections Performance Properties

Rev. 1 (May, 2018)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur with heavy wall casing), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Connections' Running Procedures (www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf.
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Connections, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application. Please visit **www.gbconnections.com** to download.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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GB connections Engineering the Right Connections	Running Procedure for Casing with GB *Drilling with Casing* Connections	October 29, 2007
		Rev. 14 (04/09/2020)

OVERVIEW

This field running procedure applies to makeup of **GB *Drilling with Casing*** (GB DwC) Connections which include GB CD, GB CDE, GB RDB, GB EHTQ, and GB RDB WS Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All GBC Connections are suitable for ***Running*** (standard casing applications), ***Rotating*** (to aid string advancement), ***Drilling*** (Drilling with Casing/Drilling with Liners) and ***Driving***. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, hooked ends, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (type, amount, and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, condition, orientation, location, contact area, and grip distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment.

This procedure has been designed to determine the ***Running Torque*** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled.

LIMITATIONS

This GBC Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run. GB DwC Connections require the proper amount and distribution of thread compound to **all pin and coupling threads** and careful field makeup in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.

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DEFINITIONS

1. Minimum Makeup (MU) Torque: Connections must have at least this amount of torque applied and clearly exhibit shoulder engagement.
2. Shoulder Torque: MU torque required to achieve shoulder engagement.
3. Running Torque: Developed at start of casing run per GBC Running Procedure and once established, used for the rest of the joints in the string, using data established with progression of the casing run. The ***Running Torque*** may be adjusted during the casing run as needed to stay within parameters defined here. The ***Running Torque*** will likely vary with each job due to the factors listed in the Overview section.
4. Delta Torque: Difference between ***Shoulder Torque*** and final makeup (or dump) torque.

5. Maximum Makeup (MU) Torque: Final assembly torque including shoulder engagement shall not exceed the ***Maximum MU Torque*** shown on size, weight, and grade-specific GB Performance Property Sheets at the beginning of a casing run when establishing the ***Running Torque***. In the unlikely event that ***Running Torque*** determined by the procedure meets or exceeds the ***Maximum MU Torque***, call GB Connections for assistance.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). ***Yield Torque*** rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points. ***Yield Torque*** values for the pipe body and connection are based on nominal dimensions and minimum material yield strength.
7. Maximum Operating Torque: The ***Maximum Operating Torque*** shown on the GB Connections Performance Property Sheets includes a 5% safety factor on ***Yield Torque***. As such, it represents the ***limiting torque spike*** that can be applied to the connection during rotating operations. The ***Maximum Operating Torque*** is **NOT** the ***Maximum MU Torque*** and is **NOT** a sustainable rotating torque. Operating at the ***Maximum Operating Torque*** for any length of time may damage connections due to likely random, unexpected torque spikes that occur during rotating operations. USER should carefully consider this value to determine if a higher Safety Factor on ***Yield Torque*** is more suitable for the project-specific application.

   As a general rule of thumb, rotating RPMs and Torque should be *"walked up"* to determine the minimum needed for task accomplishment. Additional information on best practices for rotating casing can be found at http://www.gbconnections.com/pdf/White-Paper-Rotating-Casing.pdf.

KEY INFORMATION

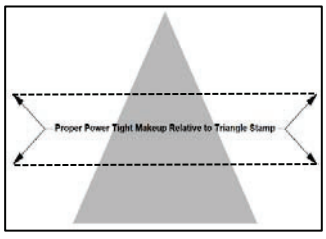
Thread Compound: Best-O-Life 2000, Best-O-Life 2000 Arctic Grade (AG), API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope". User should avoid products that include Metal Free (MF) in the product name. Tool joint compounds are **expressly forbidden** for makeup of any GBC Connections. Thread compound shall be applied to all pin and box threads as described here.

Torque Values: ***Minimum and Maximum MU Torque*** values are provided on individual GB Connections Performance Property Sheets available at the following link: http://www.gbconnectionss.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**.

Pin Nose Engagement: Pin nose engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately the **middle third of the API Triangle Stamp** on the pin (see graphic). The triangle will be stamped on the pin member as indicated by a white locator stripe.

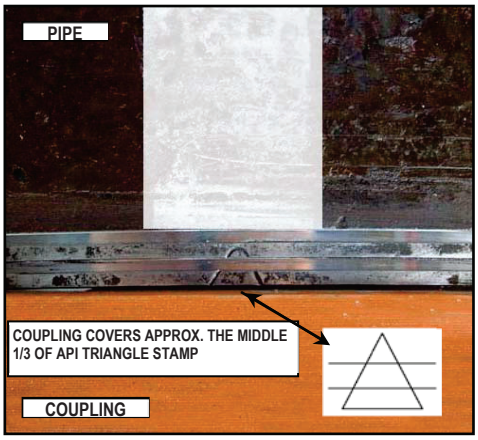


Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a: (1) ***Delta Torque*** ranging between 10% and 50% of majority of the

Shoulder Torque and (2) final torque not exceeding the ***Running Torque*** as established in this procedure. Outlier joints that require additional attention would be an exception to ***Maximum MU Torque*** limit as discussed under Comments, Troubleshooting.

It is imperative that the following procedure be executed carefully at the beginning of every casing run to determine the ***Running Torque*** (torque to be used for the rest of the string). Torque values established on an individual casing run are never transferrable to other runs.

The ***Running Torque*** is determined while running the first 10 joints after joints assembled with threadlocking compounds are made up. Sometimes more than the first 10 joints will be needed to establish the ***Running Torque*** due to erratic results and/or other run-specific conditions. The ***Running Torque*** may have to be re-established or adjusted during the casing run under certain conditions[1] and observations. Use the size-specific GBC Connections Performance Property Sheets (http://www.gbconnections.com/connection_selector.php) for physical properties for the ***Minimum*** and ***Maximum MU Torque*** values.



Connections shall be made up until shoulder engagement with ***Delta Torque*** between 10% and 50% of the ***Shoulder Torque*** (not to exceed the ***Maximum MU Torque***, see procedure below) using the ***Running Torque*** value established in this procedure. The ***Maximum MU Torque*** at the beginning of the casing run for establishing the ***Running Torque*** shall be limited to the value shown on the applicable GBC Connections Performance Property Sheet. The ***Running Torque*** shall be used thereafter and throughout the run as the limiting makeup torque value. The ***Maximum MU Torque*** on the GBC Performance Property Sheet value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Connections if more than the ***Maximum MU Torque*** value is required for shoulder engagement and/or final makeup, or if torque exceeding the ***Maximum Operating Torque*** value is required for the intended service.

PROCEDURE FOR ESTABLISHING ***RUNNING TORQUE***

1. Remove coupling thread protectors only after casing is set in V-Door.
2. ***Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).*** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; ***add fresh compound to pin threads and pin nose***.
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus ***Delta Torque***. Record the ***Shoulder Torque*** observed for the first 10 joints (excluding threadlocked accessory joints). The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheets ***or*** (b) the Maximum ***Shoulder Torque*** recorded from the first 10 makeups + 10%, ***whichever is higher*** (rounded to the next highest 500 ft-lbs.) ***Delta Torque*** should be between 10% and 50% of the ***Shoulder Torque. Running Torque*** shall not exceed the ***Maximum***

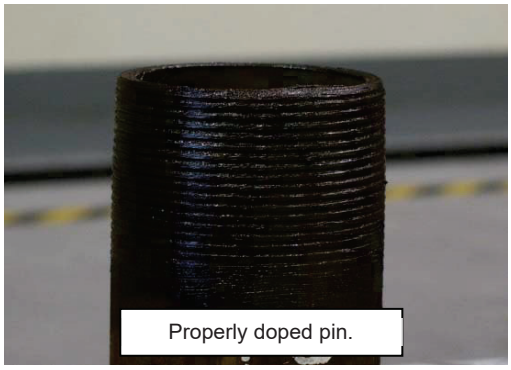
[1] Examples include but are not limited to more than an occasional low or high ***Delta Torque***, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

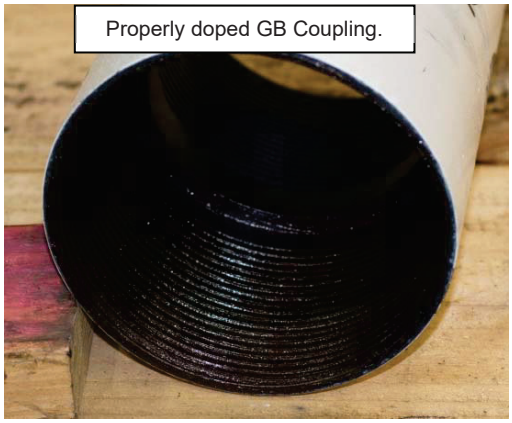
MU Torque. When making up the initial joints for establishing the ***Running Torque*** carefully watch the torque gauge for the ***Shoulder Torque*** and try to manually shut down the tongs before reaching ***Maximum MU Torque*** shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to 80% of the ***Maximum MU Torque*** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the ***"Running Torque"*** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established ***Running Torque*** is achieved.
7. All connections made up with the established ***Running Torque*** should achieve shoulder engagement with the small amount of ***Delta Torque***. Carefully watch for the spike on the torque gauge during each make up to verify shoulder engagement. As a ***secondary*** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers the middle 1/3 of the API Triangle Stamp on the pin (see accompanying photo).
8. All connections should achieve shoulder engagement with at least 10% ***Delta Torque*** before the ***Maximum MU Torque*** is achieved.

COMMENTS, TROUBLESHOOTING

1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND OPPOSING PIN NOSE OR SHOULDER AREA OF EVERY CONNECTION**. Thread compound "transfer" between pin and coupling will not provide proper sealing mechanism for the connection to function properly. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS**. The thread form should be discernible beneath the compound, i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where ***excessive*** amounts are squeezed out during assembly. Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.


Properly doped pin.

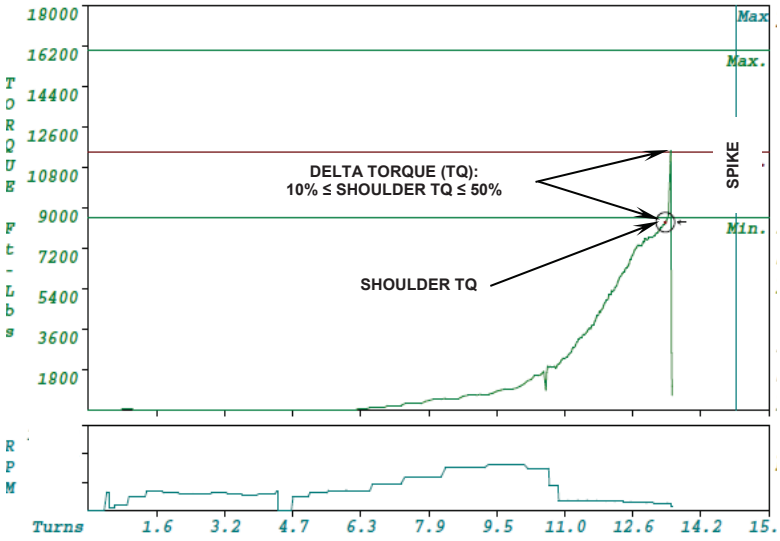

Properly doped GB Coupling.

2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. Clean thread protectors shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the "***Running Torque***" value determined by this procedure. Any connection that does not achieve shoulder engagement at the established "***Running Torque"*** value shall be visually inspected for position relative to the API Triangle Stamp.
   a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.

b) If the coupling covers the API Triangle base but does not land in approximately the middle third of the API Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. Except to initiate additional turning, it is common to see high torque (possibly exceeding the ***Maximum MU Torque***) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).

c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.

4. At the established ***Running Torque***, the connections will generally shoulder with ***Delta Torque*** between 10% and 50%. High interference connections will tend to have a higher ***Shoulder Torque*** and less ***Delta Torque*** (at least 10% of the ***Shoulder Torque*** is required). Low interference connections will tend to have lower ***Shoulder Torque*** and more ***Delta Torque***. In general, GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new ***Running Torque*** should be adjusted as described below.



If a connection appears to have shouldered but doesn't have at least 10% ***Delta Torque***, the position relative to the API Triangle Stamp should be checked. In just about every instance, the position will have covered the triangle base, so additional torque can be added to complete the makeup as discussed in 3.b) above. Expect an instantaneous spike with showing more than 50% ***Delta Torque*** with application of additional torque. Under this condition, this makeup is acceptable.

Similarly, random connections here and there with more than 50% ***Delta Torque*** is generally not cause for concern. However, if overshooting the 50% maximum ***Delta Torque*** target occurs frequently, then the established ***Running Torque*** value should be walked down in 500 ft-lbs. to 1,000 ft-lbs. increments until connection makeup routinely falls in line with the stated acceptance criteria.

5. ***Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.*** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"[2] when compared with most plots from previous good makeups should be checked carefully.

[2] An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft-lbs. or 10% of the minimum makeup torque (whichever is lower) to help normalize the turns-to-power-tight variability in the Tq-Tn graphs. Setting a reference torque reduces field stab variability resulting in more consistency in the Tq-Tn data. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (15 turns will usually be sufficient at the start and can be reduced based on data from the first few joints). **UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA**.

6. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than ½ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than ½ turn, trouble- shooting should be initiated. Pay particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. Counting turns can help to estimate if coupling will need to be stopped to avoid over rotation. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
7. A double wrap of the pick-up sling should be used when raising casing into the derrick when lifting subs, single joint, side-door, or slip elevators are not being used.
8. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
9. Manual and automated dump valves can overshoot the established ***Running Torque*** due to several factors. Slightly overshooting the ***Running Torque*** is not cause for concern as long as the final "dump" torque is not excessive, and the equipment used is generally consistent joint-to-joint. Overshooting the ***Running Torque*** with a final makeup speed greater than 10 RPMs is risky and potentially harmful to the connection as discussed below.
10. Attached is a "Worksheet for determining GB Connections ***Running Torque*** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

MAKEUP SPEED

To reiterate: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) FULL TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**. Be sure that the final 2 turns occur after the tong speed has slowed completely to less than 6 RPMs.

Making up connections at RPM exceeding those listed above may result in unsatisfactory connection performance downhole. Risks associated with excessive makeup RPMs are common for any connection with internal pin nose engagement. High speed makeup can:

1. Impart an unnecessary impulse load at nose contact. Certain materials are more susceptible to cracking under sudden or instantaneously applied loads.
2. Inhibit efficient movement of and trap thread compound under high pressure causing additional and unquantifiable high hoop stresses in the connection.

3. Result in significant overshoot of established dump torque value due to equipment latency between signal and equipment shut down resulting in higher but unknown actual final torque value. Excessive overshoot can result in pin nose yielding.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the ***Maximum MU Torque*** (shown on GB Connections Performance Property Sheets). Carefully watch for and note the ***Shoulder Torque***.
4. Record ***Shoulder Torque*** and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheet or (b) the maximum torque required for shoulder engagement + 10% ***Delta Torque*** determined from the first 10 makeups, ***whichever is higher***. Use the attached Worksheet to record this data and determine the ***Running Torque***.
6. Make up the rest of the string at the ***Running Torque*** determined in the previous step verifying each connection has shouldered with between 10% and 50% ***Delta Torque***. Small incremental adjustments to the established Running Torque (500 to 1,000 ft-lbs) are advised if delta torques routinely fall short of the 10% requirement or routinely exceed the 50% requirement.

NOTES:

- *This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.*
- *Does not apply to threadlock connections.*

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the ***Running Torque*** in accordance with GB Procedures.
4. **DO** make adjustments to ***Running Torque*** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum ***Delta Torque*** ≥ 10% of the ***Shoulder Torque***.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.

10. **DO** make note of anything that occurs with any connection makeup such as backup grips slipped, connection inspected and remade, etc.
11. **Do** check out every connection that appears out of character relative to the population. An example would be a connection that is completed with significantly fewer turns than most others. Check the triangle stamp and record position and take corrective action if needed.
12. **DO** add torque to any connection that appears to achieve pin nose engagement but not 10% delta torque.
13. **DO** adjust the ***Running Torque*** up or down in increments to achieve consistent ***Delta Torque*** between 10% and 50%.
14. **Do** make note of any anomaly during any connection makeup, such as backups slipped, mill side turned, etc.
15. **DO** minimize the weight on the connection, i.e. weight neutral, during break out as much as possible to minimize thread galling.
16. **DO NOT** over dope.
17. **DO NOT** exceed the ***Maximum MU Torque*** as shown on the GB Connections Performance Property Sheets during assembly.
18. **DO NOT** make up any misaligned connection.
19. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear for the final two (2) full turns.
20. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
21. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
22. **DO NOT** hesitate to contact GB Connections with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbconnections.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus Delta Torque. Record the Shoulder Torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum MU Torque shown on the GB Connections Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft-lbs.) Delta Torque should be between 10% and 50% of the Shoulder Torque. Running Torque shall not exceed the Maximum MU Torque. When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the Shoulder Torque and try to manually shut down the tongs before reaching Maximum MU Torque shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to **80% of the Maximum MU Torque** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GBC Performance Property Sheet
Weight (ppf)		See GBC Performance Property Sheet
Grade		See GBC Performance Property Sheet
Min MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch (△)
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)		-	**A** or **B**, whichever is **greater**.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

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Houston TX 77079
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Main: 713-465-3585
Fax: 713-984-1529

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Casing Design Criteria and Load Case Assumptions

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: DF_T=1.4
   a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
13-3/8”	54.5	J-55	BTC	12.615	12.459	1,130	2,740	909	0.1545
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***23,755 lbs (assuming 8.4 ppg fluid and 500’ casing-worst case scenario)***

Intermediate Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8”	36	J-55	BTC	8.921	8.765	2,020	3,520	639	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300’ casing-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
7”	32	L-80	GBCD	6.094	5.969	10,400	9,060	745	0.0361

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***90,662 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
5-1/2”	20	L-80	GBCD	4.778	4.653	10,630	9,190	466	0.0222

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***56,664 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

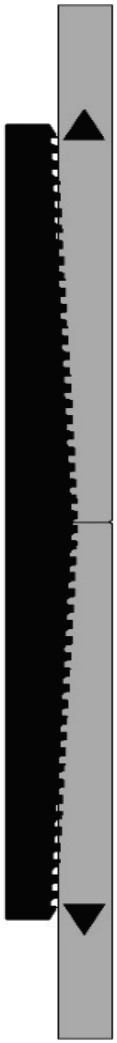
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GB connections
Engineering the Right Connections

GB Connection Performance Properties Sheet

Rev. 2 (07/11/2017)

ENGINEERING THE RIGHT CONNECTIONS



Casing: 7 OD, 32 ppf
Casing Grade: L-80

Connection: GB CD Butt 7.875
Coupling Grade: API L-80

PIPE BODY GEOMETRY					
Nominal OD (in.)	7	Wall Thickness (in.)	0.453	Drift Diameter (in.)	5.969
Nominal Weight (ppf)	32.00	Nominal ID (in.)	6.094	API Alternate Drift Dia. (in.)	6.000
Plain End Weight (ppf)	31.70	Plain End Area (in.^{2})	9.317		

PIPE BODY PERFORMANCE					
Material Specification	L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Collapse		**Tension**		**Pressure**	
API (psi)	8,600	Pl. End Yield Str. (kips)	745	Min. Int. Yield Press. (psi)	9,060
High Collapse (psi)	10,400	**Torque**		**Bending**	
		Yield Torque (ft-lbs)	110,320	Build Rate to Yield (°/100 ft)	52.4

GB CD Butt 7.875 COUPLING GEOMETRY			
Coupling OD (in.)	7.875	Makeup Loss (in.)	4.6250
Coupling Length (in.)	9.250	Critical Cross-Sect. (in.^{2})	11.894

GB CD Butt 7.875 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Tension		**Efficiency**		**Bending**	
Thread Str. (kips)	791	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	46.6
Min. Tension Yield (kips)	904	External Pressure (%)	100%	**Yield Torque**	
Min. Tension Ult. (kips)	1,073	Tension (%)	100%	Yield Torque (ft-lbs)	49,870
Joint Str. (kips)	791	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.28		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	10,000	Max. MU Tq. (ft-lbs)	20,000	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	47,380

Units: US Customary (lbm, in., °F, lbf)
1 kip = 1,000 lbs
* See Running Procedure for description and limitations.
See attached: Notes for GB Connection Performance Properties.
GBC Running Procedure (GBC RP): www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf
Blanking Dimensions: www.gbconnections.com/pdf/GB-DWC-Blanking-Dimensions.pdf
Connection yield torque rating based on physical testing or extrapolation therefrom

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GB connections
Engineering the Right Connections

Notes for GB Connections Performance Properties

Rev. 1 (May, 2018)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur with heavy wall casing), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Connections' Running Procedures (www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf.
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Connections, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application. Please visit **www.gbconnections.com** to download.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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GB connections Engineering the Right Connections	Running Procedure for Casing with GB *Drilling with Casing* Connections	October 29, 2007
		Rev. 14 (04/09/2020)

OVERVIEW

This field running procedure applies to makeup of **GB *Drilling with Casing*** (GB DwC) Connections which include GB CD, GB CDE, GB RDB, GB EHTQ, and GB RDB WS Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All GBC Connections are suitable for ***Running*** (standard casing applications), ***Rotating*** (to aid string advancement), ***Drilling*** (Drilling with Casing/Drilling with Liners) and ***Driving***. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, hooked ends, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (type, amount, and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, condition, orientation, location, contact area, and grip distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment.

This procedure has been designed to determine the ***Running Torque*** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled.

LIMITATIONS

This GBC Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run. GB DwC Connections require the proper amount and distribution of thread compound to **all pin and coupling threads** and careful field makeup in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.

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DEFINITIONS

1. Minimum Makeup (MU) Torque: Connections must have at least this amount of torque applied and clearly exhibit shoulder engagement.
2. Shoulder Torque: MU torque required to achieve shoulder engagement.
3. Running Torque: Developed at start of casing run per GBC Running Procedure and once established, used for the rest of the joints in the string, using data established with progression of the casing run. The ***Running Torque*** may be adjusted during the casing run as needed to stay within parameters defined here. The ***Running Torque*** will likely vary with each job due to the factors listed in the Overview section.
4. Delta Torque: Difference between ***Shoulder Torque*** and final makeup (or dump) torque.

5. Maximum Makeup (MU) Torque: Final assembly torque including shoulder engagement shall not exceed the ***Maximum MU Torque*** shown on size, weight, and grade-specific GB Performance Property Sheets at the beginning of a casing run when establishing the ***Running Torque***. In the unlikely event that ***Running Torque*** determined by the procedure meets or exceeds the ***Maximum MU Torque***, call GB Connections for assistance.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). ***Yield Torque*** rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points. ***Yield Torque*** values for the pipe body and connection are based on nominal dimensions and minimum material yield strength.
7. Maximum Operating Torque: The ***Maximum Operating Torque*** shown on the GB Connections Performance Property Sheets includes a 5% safety factor on ***Yield Torque***. As such, it represents the ***limiting torque spike*** that can be applied to the connection during rotating operations. The ***Maximum Operating Torque*** is **NOT** the ***Maximum MU Torque*** and is **NOT** a sustainable rotating torque. Operating at the ***Maximum Operating Torque*** for any length of time may damage connections due to likely random, unexpected torque spikes that occur during rotating operations. USER should carefully consider this value to determine if a higher Safety Factor on ***Yield Torque*** is more suitable for the project-specific application.

   As a general rule of thumb, rotating RPMs and Torque should be *"walked up"* to determine the minimum needed for task accomplishment. Additional information on best practices for rotating casing can be found at http://www.gbconnections.com/pdf/White-Paper-Rotating-Casing.pdf.

KEY INFORMATION

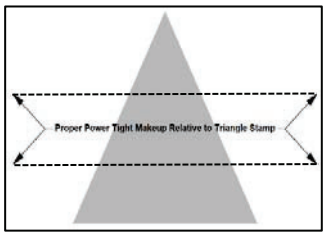
Thread Compound: Best-O-Life 2000, Best-O-Life 2000 Arctic Grade (AG), API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope". User should avoid products that include Metal Free (MF) in the product name. Tool joint compounds are **expressly forbidden** for makeup of any GBC Connections. Thread compound shall be applied to all pin and box threads as described here.

Torque Values: ***Minimum and Maximum MU Torque*** values are provided on individual GB Connections Performance Property Sheets available at the following link: http://www.gbconnectionss.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**.

Pin Nose Engagement: Pin nose engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately the **middle third of the API Triangle Stamp** on the pin (see graphic). The triangle will be stamped on the pin member as indicated by a white locator stripe.

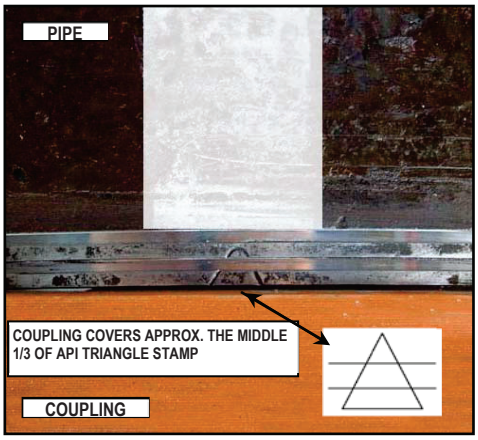


Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a: (1) ***Delta Torque*** ranging between 10% and 50% of majority of the

Shoulder Torque and (2) final torque not exceeding the ***Running Torque*** as established in this procedure. Outlier joints that require additional attention would be an exception to ***Maximum MU Torque*** limit as discussed under Comments, Troubleshooting.

It is imperative that the following procedure be executed carefully at the beginning of every casing run to determine the ***Running Torque*** (torque to be used for the rest of the string). Torque values established on an individual casing run are never transferrable to other runs.

The ***Running Torque*** is determined while running the first 10 joints after joints assembled with threadlocking compounds are made up. Sometimes more than the first 10 joints will be needed to establish the ***Running Torque*** due to erratic results and/or other run-specific conditions. The ***Running Torque*** may have to be re-established or adjusted during the casing run under certain conditions[1] and observations. Use the size-specific GBC Connections Performance Property Sheets (http://www.gbconnections.com/connection_selector.php) for physical properties for the ***Minimum*** and ***Maximum MU Torque*** values.



Connections shall be made up until shoulder engagement with ***Delta Torque*** between 10% and 50% of the ***Shoulder Torque*** (not to exceed the ***Maximum MU Torque***, see procedure below) using the ***Running Torque*** value established in this procedure. The ***Maximum MU Torque*** at the beginning of the casing run for establishing the ***Running Torque*** shall be limited to the value shown on the applicable GBC Connections Performance Property Sheet. The ***Running Torque*** shall be used thereafter and throughout the run as the limiting makeup torque value. The ***Maximum MU Torque*** on the GBC Performance Property Sheet value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Connections if more than the ***Maximum MU Torque*** value is required for shoulder engagement and/or final makeup, or if torque exceeding the ***Maximum Operating Torque*** value is required for the intended service.

PROCEDURE FOR ESTABLISHING ***RUNNING TORQUE***

1. Remove coupling thread protectors only after casing is set in V-Door.
2. ***Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).*** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; ***add fresh compound to pin threads and pin nose***.
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus ***Delta Torque***. Record the ***Shoulder Torque*** observed for the first 10 joints (excluding threadlocked accessory joints). The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheets ***or*** (b) the Maximum ***Shoulder Torque*** recorded from the first 10 makeups + 10%, ***whichever is higher*** (rounded to the next highest 500 ft-lbs.) ***Delta Torque*** should be between 10% and 50% of the ***Shoulder Torque. Running Torque*** shall not exceed the ***Maximum***

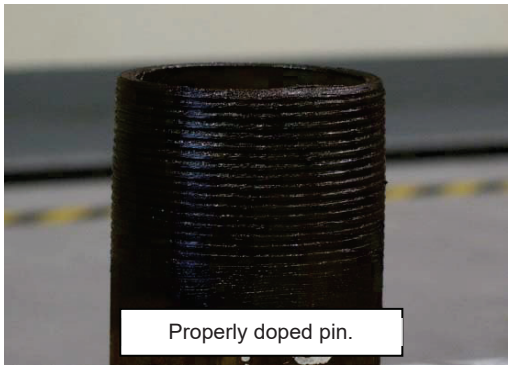
[1] Examples include but are not limited to more than an occasional low or high ***Delta Torque***, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

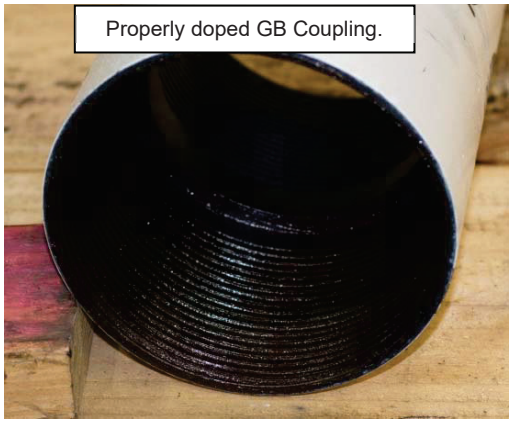
MU Torque. When making up the initial joints for establishing the ***Running Torque*** carefully watch the torque gauge for the ***Shoulder Torque*** and try to manually shut down the tongs before reaching ***Maximum MU Torque*** shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to 80% of the ***Maximum MU Torque*** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the ***"Running Torque"*** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established ***Running Torque*** is achieved.
7. All connections made up with the established ***Running Torque*** should achieve shoulder engagement with the small amount of ***Delta Torque***. Carefully watch for the spike on the torque gauge during each make up to verify shoulder engagement. As a ***secondary*** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers the middle 1/3 of the API Triangle Stamp on the pin (see accompanying photo).
8. All connections should achieve shoulder engagement with at least 10% ***Delta Torque*** before the ***Maximum MU Torque*** is achieved.

COMMENTS, TROUBLESHOOTING

1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND OPPOSING PIN NOSE OR SHOULDER AREA OF EVERY CONNECTION**. Thread compound "transfer" between pin and coupling will not provide proper sealing mechanism for the connection to function properly. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS**. The thread form should be discernible beneath the compound, i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where ***excessive*** amounts are squeezed out during assembly. Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.


Properly doped pin.

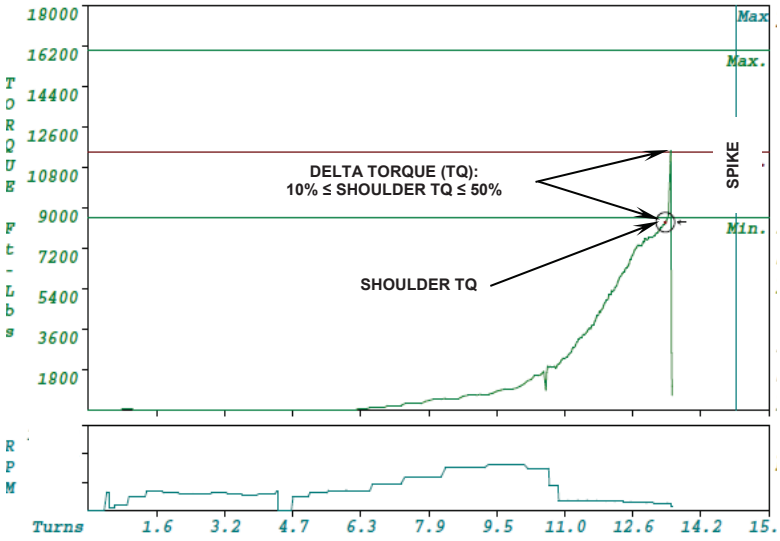

Properly doped GB Coupling.

2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. Clean thread protectors shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the "***Running Torque***" value determined by this procedure. Any connection that does not achieve shoulder engagement at the established "***Running Torque"*** value shall be visually inspected for position relative to the API Triangle Stamp.
   a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.

b) If the coupling covers the API Triangle base but does not land in approximately the middle third of the API Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. Except to initiate additional turning, it is common to see high torque (possibly exceeding the ***Maximum MU Torque***) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).

c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.

4. At the established ***Running Torque***, the connections will generally shoulder with ***Delta Torque*** between 10% and 50%. High interference connections will tend to have a higher ***Shoulder Torque*** and less ***Delta Torque*** (at least 10% of the ***Shoulder Torque*** is required). Low interference connections will tend to have lower ***Shoulder Torque*** and more ***Delta Torque***. In general, GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new ***Running Torque*** should be adjusted as described below.



If a connection appears to have shouldered but doesn't have at least 10% ***Delta Torque***, the position relative to the API Triangle Stamp should be checked. In just about every instance, the position will have covered the triangle base, so additional torque can be added to complete the makeup as discussed in 3.b) above. Expect an instantaneous spike with showing more than 50% ***Delta Torque*** with application of additional torque. Under this condition, this makeup is acceptable.

Similarly, random connections here and there with more than 50% ***Delta Torque*** is generally not cause for concern. However, if overshooting the 50% maximum ***Delta Torque*** target occurs frequently, then the established ***Running Torque*** value should be walked down in 500 ft-lbs. to 1,000 ft-lbs. increments until connection makeup routinely falls in line with the stated acceptance criteria.

5. ***Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.*** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"[2] when compared with most plots from previous good makeups should be checked carefully.

[2] An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft-lbs. or 10% of the minimum makeup torque (whichever is lower) to help normalize the turns-to-power-tight variability in the Tq-Tn graphs. Setting a reference torque reduces field stab variability resulting in more consistency in the Tq-Tn data. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (15 turns will usually be sufficient at the start and can be reduced based on data from the first few joints). **UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA**.

6. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than ½ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than ½ turn, trouble- shooting should be initiated. Pay particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. Counting turns can help to estimate if coupling will need to be stopped to avoid over rotation. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
7. A double wrap of the pick-up sling should be used when raising casing into the derrick when lifting subs, single joint, side-door, or slip elevators are not being used.
8. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
9. Manual and automated dump valves can overshoot the established ***Running Torque*** due to several factors. Slightly overshooting the ***Running Torque*** is not cause for concern as long as the final "dump" torque is not excessive, and the equipment used is generally consistent joint-to-joint. Overshooting the ***Running Torque*** with a final makeup speed greater than 10 RPMs is risky and potentially harmful to the connection as discussed below.
10. Attached is a "Worksheet for determining GB Connections ***Running Torque*** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

MAKEUP SPEED

To reiterate: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) FULL TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**. Be sure that the final 2 turns occur after the tong speed has slowed completely to less than 6 RPMs.

Making up connections at RPM exceeding those listed above may result in unsatisfactory connection performance downhole. Risks associated with excessive makeup RPMs are common for any connection with internal pin nose engagement. High speed makeup can:

1. Impart an unnecessary impulse load at nose contact. Certain materials are more susceptible to cracking under sudden or instantaneously applied loads.
2. Inhibit efficient movement of and trap thread compound under high pressure causing additional and unquantifiable high hoop stresses in the connection.

3. Result in significant overshoot of established dump torque value due to equipment latency between signal and equipment shut down resulting in higher but unknown actual final torque value. Excessive overshoot can result in pin nose yielding.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the ***Maximum MU Torque*** (shown on GB Connections Performance Property Sheets). Carefully watch for and note the ***Shoulder Torque***.
4. Record ***Shoulder Torque*** and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheet or (b) the maximum torque required for shoulder engagement + 10% ***Delta Torque*** determined from the first 10 makeups, ***whichever is higher***. Use the attached Worksheet to record this data and determine the ***Running Torque***.
6. Make up the rest of the string at the ***Running Torque*** determined in the previous step verifying each connection has shouldered with between 10% and 50% ***Delta Torque***. Small incremental adjustments to the established Running Torque (500 to 1,000 ft-lbs) are advised if delta torques routinely fall short of the 10% requirement or routinely exceed the 50% requirement.

NOTES:

- *This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.*
- *Does not apply to threadlock connections.*

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the ***Running Torque*** in accordance with GB Procedures.
4. **DO** make adjustments to ***Running Torque*** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum ***Delta Torque*** ≥ 10% of the ***Shoulder Torque***.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.

10. **DO** make note of anything that occurs with any connection makeup such as backup grips slipped, connection inspected and remade, etc.
11. **Do** check out every connection that appears out of character relative to the population. An example would be a connection that is completed with significantly fewer turns than most others. Check the triangle stamp and record position and take corrective action if needed.
12. **DO** add torque to any connection that appears to achieve pin nose engagement but not 10% delta torque.
13. **DO** adjust the ***Running Torque*** up or down in increments to achieve consistent ***Delta Torque*** between 10% and 50%.
14. **Do** make note of any anomaly during any connection makeup, such as backups slipped, mill side turned, etc.
15. **DO** minimize the weight on the connection, i.e. weight neutral, during break out as much as possible to minimize thread galling.
16. **DO NOT** over dope.
17. **DO NOT** exceed the ***Maximum MU Torque*** as shown on the GB Connections Performance Property Sheets during assembly.
18. **DO NOT** make up any misaligned connection.
19. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear for the final two (2) full turns.
20. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
21. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
22. **DO NOT** hesitate to contact GB Connections with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbconnections.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus Delta Torque. Record the Shoulder Torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum MU Torque shown on the GB Connections Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft-lbs.) Delta Torque should be between 10% and 50% of the Shoulder Torque. Running Torque shall not exceed the Maximum MU Torque. When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the Shoulder Torque and try to manually shut down the tongs before reaching Maximum MU Torque shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to **80% of the Maximum MU Torque** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GBC Performance Property Sheet
Weight (ppf)		See GBC Performance Property Sheet
Grade		See GBC Performance Property Sheet
Min MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch (△)
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)		-	**A** or **B**, whichever is **greater**.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

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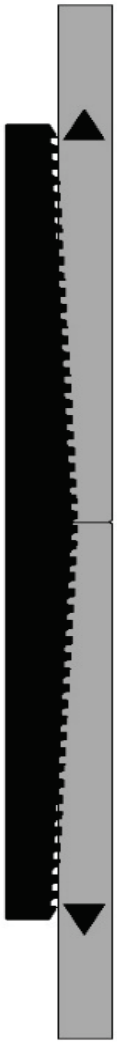
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GB connections
Engineering the Right Connections

GB Connection Performance Properties Sheet

Rev. 2 (07/11/2017)

ENGINEERING THE RIGHT CONNECTIONS



Casing: 7 OD, 32 ppf
Casing Grade: L-80

Connection: GB CD Butt 7.875
Coupling Grade: API L-80

PIPE BODY GEOMETRY					
Nominal OD (in.)	7	Wall Thickness (in.)	0.453	Drift Diameter (in.)	5.969
Nominal Weight (ppf)	32.00	Nominal ID (in.)	6.094	API Alternate Drift Dia. (in.)	6.000
Plain End Weight (ppf)	31.70	Plain End Area (in.^{2})	9.317		

PIPE BODY PERFORMANCE					
Material Specification	L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Collapse		**Tension**		**Pressure**	
API (psi)	8,600	Pl. End Yield Str. (kips)	745	Min. Int. Yield Press. (psi)	9,060
High Collapse (psi)	10,400	**Torque**		**Bending**	
		Yield Torque (ft-lbs)	110,320	Build Rate to Yield (°/100 ft)	52.4

GB CD Butt 7.875 COUPLING GEOMETRY			
Coupling OD (in.)	7.875	Makeup Loss (in.)	4.6250
Coupling Length (in.)	9.250	Critical Cross-Sect. (in.^{2})	11.894

GB CD Butt 7.875 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Tension		**Efficiency**		**Bending**	
Thread Str. (kips)	791	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	46.6
Min. Tension Yield (kips)	904	External Pressure (%)	100%	**Yield Torque**	
Min. Tension Ult. (kips)	1,073	Tension (%)	100%	Yield Torque (ft-lbs)	49,870
Joint Str. (kips)	791	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.28		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	10,000	Max. MU Tq. (ft-lbs)	20,000	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	47,380

Units: US Customary (lbm, in., °F, lbf)
1 kip = 1,000 lbs
* See Running Procedure for description and limitations.
See attached: Notes for GB Connection Performance Properties.
GBC Running Procedure (GBC RP): www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf
Blanking Dimensions: www.gbconnections.com/pdf/GB-DWC-Blanking-Dimensions.pdf
Connection yield torque rating based on physical testing or extrapolation therefrom

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GB connections
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Notes for GB Connections Performance Properties

Rev. 1 (May, 2018)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur with heavy wall casing), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Connections' Running Procedures (www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf.
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Connections, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application. Please visit **www.gbconnections.com** to download.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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GB connections Engineering the Right Connections	Running Procedure for Casing with GB *Drilling with Casing* Connections	October 29, 2007
		Rev. 14 (04/09/2020)

OVERVIEW

This field running procedure applies to makeup of **GB *Drilling with Casing*** (GB DwC) Connections which include GB CD, GB CDE, GB RDB, GB EHTQ, and GB RDB WS Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All GBC Connections are suitable for ***Running*** (standard casing applications), ***Rotating*** (to aid string advancement), ***Drilling*** (Drilling with Casing/Drilling with Liners) and ***Driving***. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, hooked ends, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (type, amount, and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, condition, orientation, location, contact area, and grip distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment.

This procedure has been designed to determine the ***Running Torque*** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled.

LIMITATIONS

This GBC Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run. GB DwC Connections require the proper amount and distribution of thread compound to **all pin and coupling threads** and careful field makeup in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.

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DEFINITIONS

1. Minimum Makeup (MU) Torque: Connections must have at least this amount of torque applied and clearly exhibit shoulder engagement.
2. Shoulder Torque: MU torque required to achieve shoulder engagement.
3. Running Torque: Developed at start of casing run per GBC Running Procedure and once established, used for the rest of the joints in the string, using data established with progression of the casing run. The ***Running Torque*** may be adjusted during the casing run as needed to stay within parameters defined here. The ***Running Torque*** will likely vary with each job due to the factors listed in the Overview section.
4. Delta Torque: Difference between ***Shoulder Torque*** and final makeup (or dump) torque.

5. Maximum Makeup (MU) Torque: Final assembly torque including shoulder engagement shall not exceed the ***Maximum MU Torque*** shown on size, weight, and grade-specific GB Performance Property Sheets at the beginning of a casing run when establishing the ***Running Torque***. In the unlikely event that ***Running Torque*** determined by the procedure meets or exceeds the ***Maximum MU Torque***, call GB Connections for assistance.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). ***Yield Torque*** rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points. ***Yield Torque*** values for the pipe body and connection are based on nominal dimensions and minimum material yield strength.
7. Maximum Operating Torque: The ***Maximum Operating Torque*** shown on the GB Connections Performance Property Sheets includes a 5% safety factor on ***Yield Torque***. As such, it represents the ***limiting torque spike*** that can be applied to the connection during rotating operations. The ***Maximum Operating Torque*** is **NOT** the ***Maximum MU Torque*** and is **NOT** a sustainable rotating torque. Operating at the ***Maximum Operating Torque*** for any length of time may damage connections due to likely random, unexpected torque spikes that occur during rotating operations. USER should carefully consider this value to determine if a higher Safety Factor on ***Yield Torque*** is more suitable for the project-specific application.

   As a general rule of thumb, rotating RPMs and Torque should be *"walked up"* to determine the minimum needed for task accomplishment. Additional information on best practices for rotating casing can be found at http://www.gbconnections.com/pdf/White-Paper-Rotating-Casing.pdf.

KEY INFORMATION

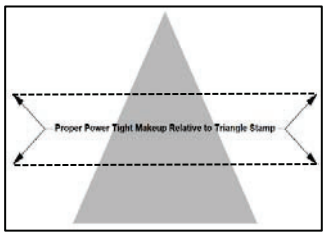
Thread Compound: Best-O-Life 2000, Best-O-Life 2000 Arctic Grade (AG), API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope". User should avoid products that include Metal Free (MF) in the product name. Tool joint compounds are **expressly forbidden** for makeup of any GBC Connections. Thread compound shall be applied to all pin and box threads as described here.

Torque Values: ***Minimum and Maximum MU Torque*** values are provided on individual GB Connections Performance Property Sheets available at the following link: http://www.gbconnectionss.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**.

Pin Nose Engagement: Pin nose engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately the **middle third of the API Triangle Stamp** on the pin (see graphic). The triangle will be stamped on the pin member as indicated by a white locator stripe.

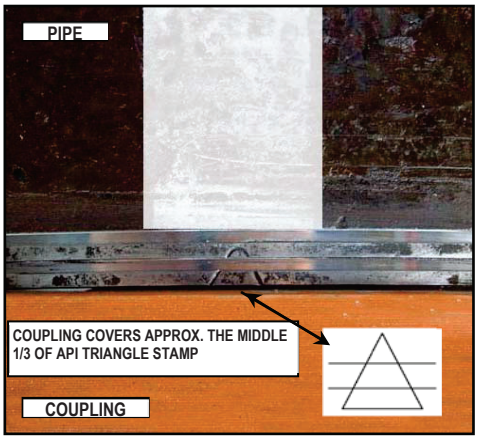


Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a: (1) ***Delta Torque*** ranging between 10% and 50% of majority of the

Shoulder Torque and (2) final torque not exceeding the ***Running Torque*** as established in this procedure. Outlier joints that require additional attention would be an exception to ***Maximum MU Torque*** limit as discussed under Comments, Troubleshooting.

It is imperative that the following procedure be executed carefully at the beginning of every casing run to determine the ***Running Torque*** (torque to be used for the rest of the string). Torque values established on an individual casing run are never transferrable to other runs.

The ***Running Torque*** is determined while running the first 10 joints after joints assembled with threadlocking compounds are made up. Sometimes more than the first 10 joints will be needed to establish the ***Running Torque*** due to erratic results and/or other run-specific conditions. The ***Running Torque*** may have to be re-established or adjusted during the casing run under certain conditions[1] and observations. Use the size-specific GBC Connections Performance Property Sheets (http://www.gbconnections.com/connection_selector.php) for physical properties for the ***Minimum*** and ***Maximum MU Torque*** values.



Connections shall be made up until shoulder engagement with ***Delta Torque*** between 10% and 50% of the ***Shoulder Torque*** (not to exceed the ***Maximum MU Torque***, see procedure below) using the ***Running Torque*** value established in this procedure. The ***Maximum MU Torque*** at the beginning of the casing run for establishing the ***Running Torque*** shall be limited to the value shown on the applicable GBC Connections Performance Property Sheet. The ***Running Torque*** shall be used thereafter and throughout the run as the limiting makeup torque value. The ***Maximum MU Torque*** on the GBC Performance Property Sheet value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Connections if more than the ***Maximum MU Torque*** value is required for shoulder engagement and/or final makeup, or if torque exceeding the ***Maximum Operating Torque*** value is required for the intended service.

PROCEDURE FOR ESTABLISHING ***RUNNING TORQUE***

1. Remove coupling thread protectors only after casing is set in V-Door.
2. ***Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).*** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; ***add fresh compound to pin threads and pin nose***.
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus ***Delta Torque***. Record the ***Shoulder Torque*** observed for the first 10 joints (excluding threadlocked accessory joints). The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheets ***or*** (b) the Maximum ***Shoulder Torque*** recorded from the first 10 makeups + 10%, ***whichever is higher*** (rounded to the next highest 500 ft-lbs.) ***Delta Torque*** should be between 10% and 50% of the ***Shoulder Torque. Running Torque*** shall not exceed the ***Maximum***

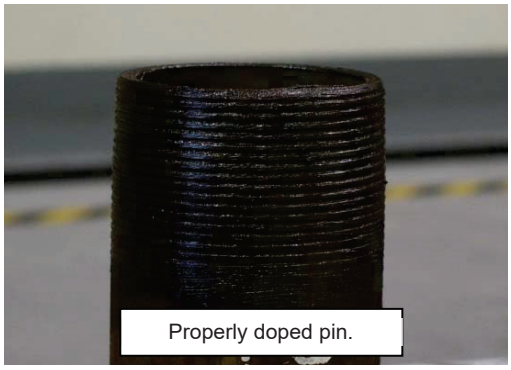
[1] Examples include but are not limited to more than an occasional low or high ***Delta Torque***, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

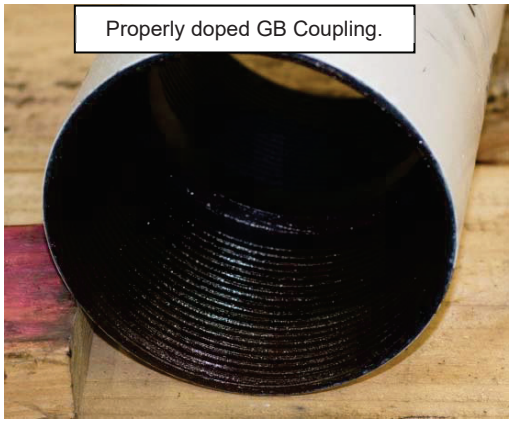
MU Torque. When making up the initial joints for establishing the ***Running Torque*** carefully watch the torque gauge for the ***Shoulder Torque*** and try to manually shut down the tongs before reaching ***Maximum MU Torque*** shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to 80% of the ***Maximum MU Torque*** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the ***"Running Torque"*** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established ***Running Torque*** is achieved.
7. All connections made up with the established ***Running Torque*** should achieve shoulder engagement with the small amount of ***Delta Torque***. Carefully watch for the spike on the torque gauge during each make up to verify shoulder engagement. As a ***secondary*** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers the middle 1/3 of the API Triangle Stamp on the pin (see accompanying photo).
8. All connections should achieve shoulder engagement with at least 10% ***Delta Torque*** before the ***Maximum MU Torque*** is achieved.

COMMENTS, TROUBLESHOOTING

1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND OPPOSING PIN NOSE OR SHOULDER AREA OF EVERY CONNECTION**. Thread compound "transfer" between pin and coupling will not provide proper sealing mechanism for the connection to function properly. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS**. The thread form should be discernible beneath the compound, i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where ***excessive*** amounts are squeezed out during assembly. Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.


Properly doped pin.

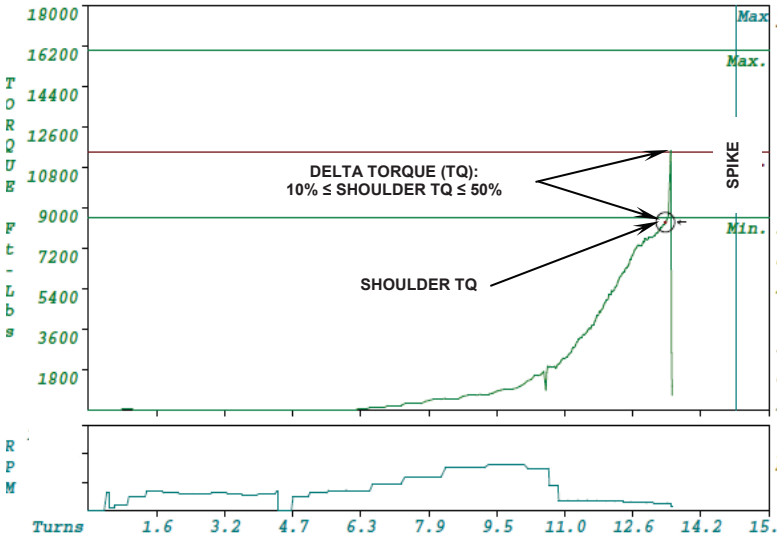

Properly doped GB Coupling.

2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. Clean thread protectors shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the "***Running Torque***" value determined by this procedure. Any connection that does not achieve shoulder engagement at the established "***Running Torque"*** value shall be visually inspected for position relative to the API Triangle Stamp.
   a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.

b) If the coupling covers the API Triangle base but does not land in approximately the middle third of the API Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. Except to initiate additional turning, it is common to see high torque (possibly exceeding the ***Maximum MU Torque***) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).

c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.

4. At the established ***Running Torque***, the connections will generally shoulder with ***Delta Torque*** between 10% and 50%. High interference connections will tend to have a higher ***Shoulder Torque*** and less ***Delta Torque*** (at least 10% of the ***Shoulder Torque*** is required). Low interference connections will tend to have lower ***Shoulder Torque*** and more ***Delta Torque***. In general, GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new ***Running Torque*** should be adjusted as described below.



If a connection appears to have shouldered but doesn't have at least 10% ***Delta Torque***, the position relative to the API Triangle Stamp should be checked. In just about every instance, the position will have covered the triangle base, so additional torque can be added to complete the makeup as discussed in 3.b) above. Expect an instantaneous spike with showing more than 50% ***Delta Torque*** with application of additional torque. Under this condition, this makeup is acceptable.

Similarly, random connections here and there with more than 50% ***Delta Torque*** is generally not cause for concern. However, if overshooting the 50% maximum ***Delta Torque*** target occurs frequently, then the established ***Running Torque*** value should be walked down in 500 ft-lbs. to 1,000 ft-lbs. increments until connection makeup routinely falls in line with the stated acceptance criteria.

5. ***Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.*** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"[2] when compared with most plots from previous good makeups should be checked carefully.

[2] An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft-lbs. or 10% of the minimum makeup torque (whichever is lower) to help normalize the turns-to-power-tight variability in the Tq-Tn graphs. Setting a reference torque reduces field stab variability resulting in more consistency in the Tq-Tn data. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (15 turns will usually be sufficient at the start and can be reduced based on data from the first few joints). **UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA**.

6. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than ½ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than ½ turn, trouble- shooting should be initiated. Pay particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. Counting turns can help to estimate if coupling will need to be stopped to avoid over rotation. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
7. A double wrap of the pick-up sling should be used when raising casing into the derrick when lifting subs, single joint, side-door, or slip elevators are not being used.
8. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
9. Manual and automated dump valves can overshoot the established ***Running Torque*** due to several factors. Slightly overshooting the ***Running Torque*** is not cause for concern as long as the final "dump" torque is not excessive, and the equipment used is generally consistent joint-to-joint. Overshooting the ***Running Torque*** with a final makeup speed greater than 10 RPMs is risky and potentially harmful to the connection as discussed below.
10. Attached is a "Worksheet for determining GB Connections ***Running Torque*** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

MAKEUP SPEED

To reiterate: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) FULL TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**. Be sure that the final 2 turns occur after the tong speed has slowed completely to less than 6 RPMs.

Making up connections at RPM exceeding those listed above may result in unsatisfactory connection performance downhole. Risks associated with excessive makeup RPMs are common for any connection with internal pin nose engagement. High speed makeup can:

1. Impart an unnecessary impulse load at nose contact. Certain materials are more susceptible to cracking under sudden or instantaneously applied loads.
2. Inhibit efficient movement of and trap thread compound under high pressure causing additional and unquantifiable high hoop stresses in the connection.

3. Result in significant overshoot of established dump torque value due to equipment latency between signal and equipment shut down resulting in higher but unknown actual final torque value. Excessive overshoot can result in pin nose yielding.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the ***Maximum MU Torque*** (shown on GB Connections Performance Property Sheets). Carefully watch for and note the ***Shoulder Torque***.
4. Record ***Shoulder Torque*** and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheet or (b) the maximum torque required for shoulder engagement + 10% ***Delta Torque*** determined from the first 10 makeups, ***whichever is higher***. Use the attached Worksheet to record this data and determine the ***Running Torque***.
6. Make up the rest of the string at the ***Running Torque*** determined in the previous step verifying each connection has shouldered with between 10% and 50% ***Delta Torque***. Small incremental adjustments to the established Running Torque (500 to 1,000 ft-lbs) are advised if delta torques routinely fall short of the 10% requirement or routinely exceed the 50% requirement.

NOTES:

- *This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.*
- *Does not apply to threadlock connections.*

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the ***Running Torque*** in accordance with GB Procedures.
4. **DO** make adjustments to ***Running Torque*** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum ***Delta Torque*** ≥ 10% of the ***Shoulder Torque***.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.

10. **DO** make note of anything that occurs with any connection makeup such as backup grips slipped, connection inspected and remade, etc.
11. **Do** check out every connection that appears out of character relative to the population. An example would be a connection that is completed with significantly fewer turns than most others. Check the triangle stamp and record position and take corrective action if needed.
12. **DO** add torque to any connection that appears to achieve pin nose engagement but not 10% delta torque.
13. **DO** adjust the ***Running Torque*** up or down in increments to achieve consistent ***Delta Torque*** between 10% and 50%.
14. **Do** make note of any anomaly during any connection makeup, such as backups slipped, mill side turned, etc.
15. **DO** minimize the weight on the connection, i.e. weight neutral, during break out as much as possible to minimize thread galling.
16. **DO NOT** over dope.
17. **DO NOT** exceed the ***Maximum MU Torque*** as shown on the GB Connections Performance Property Sheets during assembly.
18. **DO NOT** make up any misaligned connection.
19. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear for the final two (2) full turns.
20. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
21. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
22. **DO NOT** hesitate to contact GB Connections with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbconnections.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus Delta Torque. Record the Shoulder Torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum MU Torque shown on the GB Connections Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft-lbs.) Delta Torque should be between 10% and 50% of the Shoulder Torque. Running Torque shall not exceed the Maximum MU Torque. When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the Shoulder Torque and try to manually shut down the tongs before reaching Maximum MU Torque shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to **80% of the Maximum MU Torque** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GBC Performance Property Sheet
Weight (ppf)		See GBC Performance Property Sheet
Grade		See GBC Performance Property Sheet
Min MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch (△)
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)		-	**A** or **B**, whichever is **greater**.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

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Casing Design Criteria and Load Case Assumptions

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: DF_T=1.4
   a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
13-3/8”	54.5	J-55	BTC	12.615	12.459	1,130	2,740	909	0.1545
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***23,755 lbs (assuming 8.4 ppg fluid and 500’ casing-worst case scenario)***

Intermediate Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8”	36	J-55	BTC	8.921	8.765	2,020	3,520	639	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300’ casing-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
7”	32	L-80	GBCD	6.094	5.969	10,400	9,060	745	0.0361

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***90,662 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
5-1/2”	20	L-80	GBCD	4.778	4.653	10,630	9,190	466	0.0222

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***56,664 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Casing Design Criteria and Load Case Assumptions

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: DF_T=1.4
   a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
13-3/8”	54.5	J-55	BTC	12.615	12.459	1,130	2,740	909	0.1545
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***23,755 lbs (assuming 8.4 ppg fluid and 500’ casing-worst case scenario)***

Intermediate Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8”	36	J-55	BTC	8.921	8.765	2,020	3,520	639	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300’ casing-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
7”	32	L-80	GBCD	6.094	5.969	10,400	9,060	745	0.0361

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***90,662 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
5-1/2”	20	L-80	GBCD	4.778	4.653	10,630	9,190	466	0.0222

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***56,664 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

U. S. Steel Tubular Products

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MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	55,000	--	--	--	psi
Maximum Yield Strength	80,000	--	--	--	psi
Minimum Tensile Strength	75,000	--	--	--	psi
DIMENSIONS	**Pipe**	**BTC**	**LTC**	**STC**	
Outside Diameter	9.625	10.625	10.625	10.625	in.
Wall Thickness	0.352	--	--	--	in.
Inside Diameter	8.921	8.921	8.921	8.921	in.
Standard Drift	8.765	8.765	8.765	8.765	in.
Alternate Drift	--	--	--	--	in.
Nominal Linear Weight, T&C	36.00	--	--	--	lbs/ft
Plain End Weight	34.89	--	--	--	lbs/ft
PERFORMANCE	**Pipe**	**BTC**	**LTC**	**STC**	
Minimum Collapse Pressure	2,020	2,020	2,020	2,020	psi
Minimum Internal Yield Pressure	3,520	3,520	3,520	3,520	psi
Minimum Pipe Body Yield Strength	564,000	--	--	--	lbs
Joint Strength	--	639	453	394	lbs
Reference Length	--	11,835	8,389	7,288	ft
MAKE-UP DATA	**Pipe**	**BTC**	**LTC**	**STC**	
Make-Up Loss	--	4.81	4.75	3.38	in.
Minimum Make-Up Torque	--	--	3,400	2,960	ft-lbs
Maximum Make-Up Torque	--	--	5,660	4,930	ft-lbs

Legal Notice

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MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	55,000	--	--	--	psi
Maximum Yield Strength	80,000	--	--	--	psi
Minimum Tensile Strength	75,000	--	--	--	psi
DIMENSIONS	**Pipe**	**BTC**	**LTC**	**STC**	
Outside Diameter	13.375	14.375	--	14.375	in.
Wall Thickness	0.380	--	--	--	in.
Inside Diameter	12.615	12.615	--	12.615	in.
Standard Drift	12.459	12.459	--	12.459	in.
Alternate Drift	--	--	--	--	in.
Nominal Linear Weight, T&C	54.50	--	--	--	lbs/ft
Plain End Weight	52.79	--	--	--	lbs/ft
PERFORMANCE	**Pipe**	**BTC**	**LTC**	**STC**	
Minimum Collapse Pressure	1,130	1,130	--	1,130	psi
Minimum Internal Yield Pressure	2,740	2,740	--	2,740	psi
Minimum Pipe Body Yield Strength	853,000.00	--	--	--	lbs
Joint Strength	--	909	--	514	1000 lbs
Reference Length	--	11,125	--	6,290	ft
MAKE-UP DATA	**Pipe**	**BTC**	**LTC**	**STC**	
Make-Up Loss	--	4.81	--	3.50	in.
Minimum Make-Up Torque	--	--	--	3,860	ft-lbs
Maximum Make-Up Torque	--	--	--	6,430	ft-lbs

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Casing Design Criteria and Load Case Assumptions

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: DF_T=1.4
   a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
13-3/8”	54.5	J-55	BTC	12.615	12.459	1,130	2,740	909	0.1545
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***23,755 lbs (assuming 8.4 ppg fluid and 500’ casing-worst case scenario)***

Intermediate Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8”	36	J-55	BTC	8.921	8.765	2,020	3,520	639	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300’ casing-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
7”	32	L-80	GBCD	6.094	5.969	10,400	9,060	745	0.0361

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***90,662 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
5-1/2”	20	L-80	GBCD	4.778	4.653	10,630	9,190	466	0.0222

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***56,664 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Casing Design Criteria and Load Case Assumptions

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: DF_T=1.4
   a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
13-3/8”	54.5	J-55	BTC	12.615	12.459	1,130	2,740	909	0.1545
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***23,755 lbs (assuming 8.4 ppg fluid and 500’ casing-worst case scenario)***

Intermediate Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8”	36	J-55	BTC	8.921	8.765	2,020	3,520	639	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.4	**2.8**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300’ casing-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
7”	32	L-80	GBCD	6.094	5.969	10,400	9,060	745	0.0361

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***90,662 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
5-1/2”	20	L-80	GBCD	4.778	4.653	10,630	9,190	466	0.0222

Safety Factors					
	API Rec. SF	**ACTUAL SF**	Case	External Fluids	Internal Fluids
Collapse	1.125	**3.75**	Lost Circulation	Mud	*None*
Burst	1.125	**2.47**	Plug Bump	Green Cement + 2ksi surf pressure	Displacement Fluid/Mud
Tension	1.4	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***56,664 lbs (assuming 8.4 ppg fluid and 3,250’ TVD-worst case scenario)***

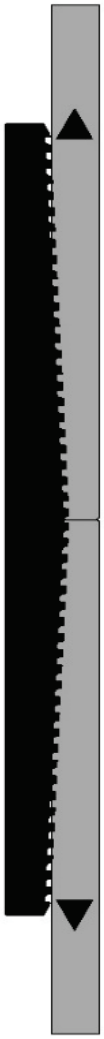
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GB Connection Performance Properties Sheet

Rev. 1 (08/25/2015)

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Casing: 5.5 OD, 20 ppf
Casing Grade: L-80

Connection: GB CD Butt 6.300
Coupling Grade: API L-80

PIPE BODY GEOMETRY					
Nominal OD (in.)	5 1/2	Wall Thickness (in.)	0.361	Drift Diameter (in.)	4.653
Nominal Weight (ppf)	20.00	Nominal ID (in.)	4.778	API Alternate Drift Dia. (in.)	N/A
Plain End Weight (ppf)	19.83	Plain End Area (in.^{2})	5.828		

PIPE BODY PERFORMANCE					
Material Specification	L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Collapse		**Tension**		**Pressure**	
API (psi)	8,830	Pl. End Yield Str. (kips)	466	Min. Int. Yield Press. (psi)	9,190
High Collapse (psi)	10,630	**Torque**		**Bending**	
		Yield Torque (ft-lbs)	54,120	Build Rate to Yield (°/100 ft)	66.7

GB CD Butt 6.300 COUPLING GEOMETRY			
Coupling OD (in.)	6.300	Makeup Loss (in.)	4.2500
Coupling Length (in.)	8.500	Critical Cross-Sect. (in.^{2})	8.527

GB CD Butt 6.300 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API L-80	Min. Yield Str. (psi)	80,000	Min. Ultimate Str. (psi)	95,000
Tension		**Efficiency**		**Bending**	
Thread Str. (kips)	503	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	58.2
Min. Tension Yield (kips)	648	External Pressure (%)	100%	**Yield Torque**	
Min. Tension Ult. (kips)	770	Tension (%)	100%	Yield Torque (ft-lbs)	22,680
Joint Str. (kips)	503	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.46		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	8,620	Max. MU Tq. (ft-lbs)	17,240	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	21,540

Units: US Customary (lbm, in., °F, lbf)
1 kip = 1,000 lbs
* See Running Procedure for description and limitations.
See attached: Notes for GB Connection Performance Properties.
GBT Running Procedure (GBT RP): www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf
Blanking Dimensions: www.gbconnections.com/pdf/GB-DWC-Blanking-Dimensions.pdf
Connection yield torque rating based on physical testing or extrapolation therefrom

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Notes for GB Connections Performance Properties

Rev. 1 (May, 2018)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur with heavy wall casing), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Connections' Running Procedures (www.gbconnections.com/pdf/RP-GB-DWC-Connections.pdf.
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Connections, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application. Please visit **www.gbconnections.com** to download.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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GB connections Engineering the Right Connections	Running Procedure for Casing with GB *Drilling with Casing* Connections	October 29, 2007
		Rev. 14 (04/09/2020)

OVERVIEW

This field running procedure applies to makeup of **GB *Drilling with Casing*** (GB DwC) Connections which include GB CD, GB CDE, GB RDB, GB EHTQ, and GB RDB WS Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All GBC Connections are suitable for ***Running*** (standard casing applications), ***Rotating*** (to aid string advancement), ***Drilling*** (Drilling with Casing/Drilling with Liners) and ***Driving***. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, hooked ends, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (type, amount, and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, condition, orientation, location, contact area, and grip distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment.

This procedure has been designed to determine the ***Running Torque*** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled.

LIMITATIONS

This GBC Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run. GB DwC Connections require the proper amount and distribution of thread compound to **all pin and coupling threads** and careful field makeup in strict accordance with GB Connections' Running Procedures to provide expected levels of performance in service.

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DEFINITIONS

1. Minimum Makeup (MU) Torque: Connections must have at least this amount of torque applied and clearly exhibit shoulder engagement.
2. Shoulder Torque: MU torque required to achieve shoulder engagement.
3. Running Torque: Developed at start of casing run per GBC Running Procedure and once established, used for the rest of the joints in the string, using data established with progression of the casing run. The ***Running Torque*** may be adjusted during the casing run as needed to stay within parameters defined here. The ***Running Torque*** will likely vary with each job due to the factors listed in the Overview section.
4. Delta Torque: Difference between ***Shoulder Torque*** and final makeup (or dump) torque.

5. Maximum Makeup (MU) Torque: Final assembly torque including shoulder engagement shall not exceed the ***Maximum MU Torque*** shown on size, weight, and grade-specific GB Performance Property Sheets at the beginning of a casing run when establishing the ***Running Torque***. In the unlikely event that ***Running Torque*** determined by the procedure meets or exceeds the ***Maximum MU Torque***, call GB Connections for assistance.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). ***Yield Torque*** rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points. ***Yield Torque*** values for the pipe body and connection are based on nominal dimensions and minimum material yield strength.
7. Maximum Operating Torque: The ***Maximum Operating Torque*** shown on the GB Connections Performance Property Sheets includes a 5% safety factor on ***Yield Torque***. As such, it represents the ***limiting torque spike*** that can be applied to the connection during rotating operations. The ***Maximum Operating Torque*** is **NOT** the ***Maximum MU Torque*** and is **NOT** a sustainable rotating torque. Operating at the ***Maximum Operating Torque*** for any length of time may damage connections due to likely random, unexpected torque spikes that occur during rotating operations. USER should carefully consider this value to determine if a higher Safety Factor on ***Yield Torque*** is more suitable for the project-specific application.

   As a general rule of thumb, rotating RPMs and Torque should be *"walked up"* to determine the minimum needed for task accomplishment. Additional information on best practices for rotating casing can be found at http://www.gbconnections.com/pdf/White-Paper-Rotating-Casing.pdf.

KEY INFORMATION

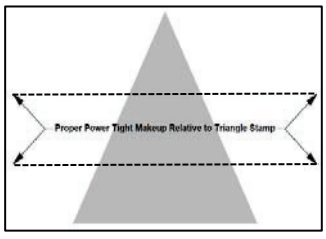
Thread Compound: Best-O-Life 2000, Best-O-Life 2000 Arctic Grade (AG), API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope". User should avoid products that include Metal Free (MF) in the product name. Tool joint compounds are **expressly forbidden** for makeup of any GBC Connections. Thread compound shall be applied to all pin and box threads as described here.

Torque Values: ***Minimum and Maximum MU Torque*** values are provided on individual GB Connections Performance Property Sheets available at the following link: http://www.gbconnectionss.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**.

Pin Nose Engagement: Pin nose engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately the **middle third of the API Triangle Stamp** on the pin (see graphic). The triangle will be stamped on the pin member as indicated by a white locator stripe.

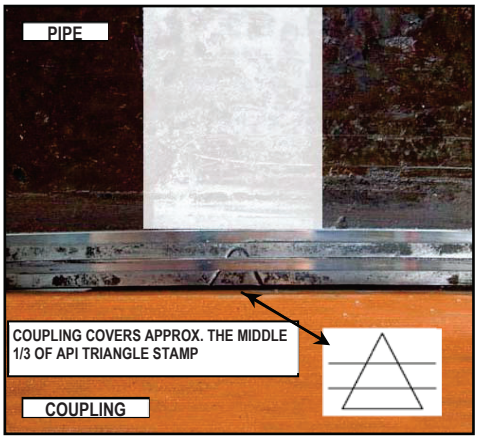


Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a: (1) ***Delta Torque*** ranging between 10% and 50% of majority of the

Shoulder Torque and (2) final torque not exceeding the ***Running Torque*** as established in this procedure. Outlier joints that require additional attention would be an exception to ***Maximum MU Torque*** limit as discussed under Comments, Troubleshooting.

It is imperative that the following procedure be executed carefully at the beginning of every casing run to determine the ***Running Torque*** (torque to be used for the rest of the string). Torque values established on an individual casing run are never transferrable to other runs.

The ***Running Torque*** is determined while running the first 10 joints after joints assembled with threadlocking compounds are made up. Sometimes more than the first 10 joints will be needed to establish the ***Running Torque*** due to erratic results and/or other run-specific conditions. The ***Running Torque*** may have to be re-established or adjusted during the casing run under certain conditions[1] and observations. Use the size-specific GBC Connections Performance Property Sheets (http://www.gbconnections.com/connection_selector.php) for physical properties for the ***Minimum*** and ***Maximum MU Torque*** values.



Connections shall be made up until shoulder engagement with ***Delta Torque*** between 10% and 50% of the ***Shoulder Torque*** (not to exceed the ***Maximum MU Torque***, see procedure below) using the ***Running Torque*** value established in this procedure. The ***Maximum MU Torque*** at the beginning of the casing run for establishing the ***Running Torque*** shall be limited to the value shown on the applicable GBC Connections Performance Property Sheet. The ***Running Torque*** shall be used thereafter and throughout the run as the limiting makeup torque value. The ***Maximum MU Torque*** on the GBC Performance Property Sheet value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Connections if more than the ***Maximum MU Torque*** value is required for shoulder engagement and/or final makeup, or if torque exceeding the ***Maximum Operating Torque*** value is required for the intended service.

PROCEDURE FOR ESTABLISHING ***RUNNING TORQUE***

1. Remove coupling thread protectors only after casing is set in V-Door.
2. ***Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).*** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; ***add fresh compound to pin threads and pin nose***.
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus ***Delta Torque***. Record the ***Shoulder Torque*** observed for the first 10 joints (excluding threadlocked accessory joints). The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheets ***or*** (b) the Maximum ***Shoulder Torque*** recorded from the first 10 makeups + 10%, ***whichever is higher*** (rounded to the next highest 500 ft-lbs.) ***Delta Torque*** should be between 10% and 50% of the ***Shoulder Torque. Running Torque*** shall not exceed the ***Maximum***

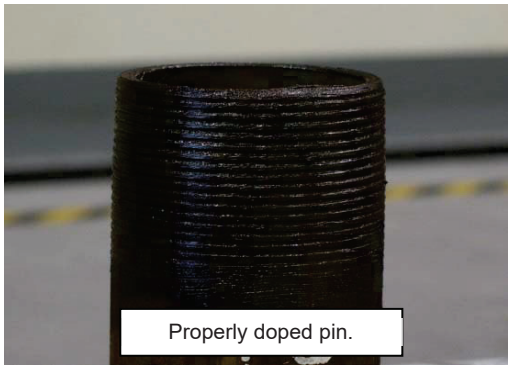
[1] Examples include but are not limited to more than an occasional low or high ***Delta Torque***, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

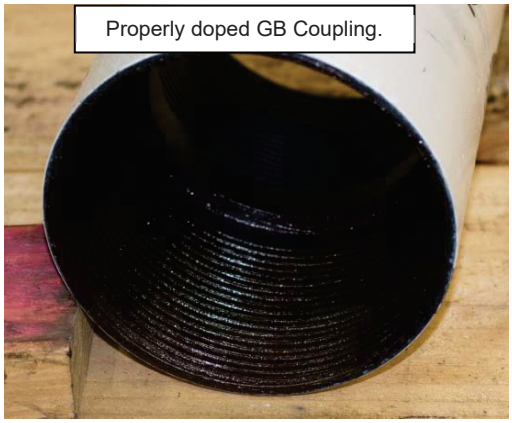
MU Torque. When making up the initial joints for establishing the ***Running Torque*** carefully watch the torque gauge for the ***Shoulder Torque*** and try to manually shut down the tongs before reaching ***Maximum MU Torque*** shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to 80% of the ***Maximum MU Torque*** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the ***"Running Torque"*** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established ***Running Torque*** is achieved.
7. All connections made up with the established ***Running Torque*** should achieve shoulder engagement with the small amount of ***Delta Torque***. Carefully watch for the spike on the torque gauge during each make up to verify shoulder engagement. As a ***secondary*** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers the middle 1/3 of the API Triangle Stamp on the pin (see accompanying photo).
8. All connections should achieve shoulder engagement with at least 10% ***Delta Torque*** before the ***Maximum MU Torque*** is achieved.

COMMENTS, TROUBLESHOOTING

1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND OPPOSING PIN NOSE OR SHOULDER AREA OF EVERY CONNECTION**. Thread compound "transfer" between pin and coupling will not provide proper sealing mechanism for the connection to function properly. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS**. The thread form should be discernible beneath the compound, i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where ***excessive*** amounts are squeezed out during assembly. Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.


Properly doped pin.

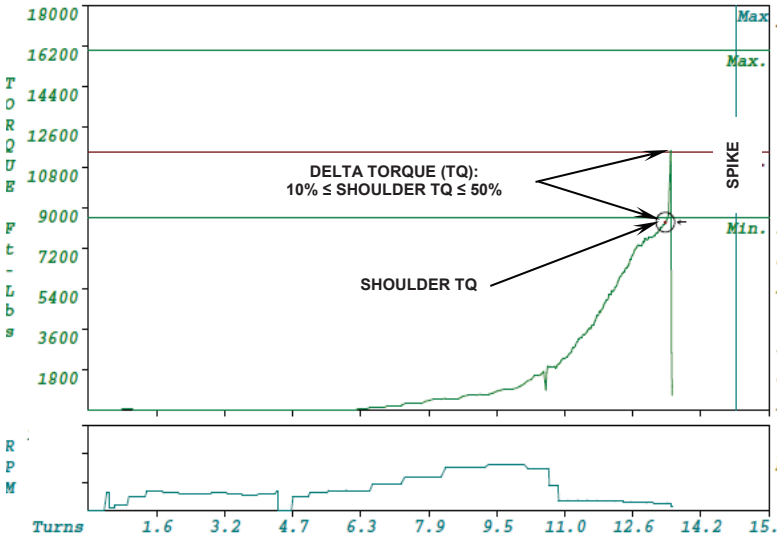

Properly doped GB Coupling.

2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. Clean thread protectors shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the "***Running Torque***" value determined by this procedure. Any connection that does not achieve shoulder engagement at the established "***Running Torque"*** value shall be visually inspected for position relative to the API Triangle Stamp.
   a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.

b) If the coupling covers the API Triangle base but does not land in approximately the middle third of the API Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. Except to initiate additional turning, it is common to see high torque (possibly exceeding the ***Maximum MU Torque***) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).

c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.

4. At the established ***Running Torque***, the connections will generally shoulder with ***Delta Torque*** between 10% and 50%. High interference connections will tend to have a higher ***Shoulder Torque*** and less ***Delta Torque*** (at least 10% of the ***Shoulder Torque*** is required). Low interference connections will tend to have lower ***Shoulder Torque*** and more ***Delta Torque***. In general, GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new ***Running Torque*** should be adjusted as described below.



If a connection appears to have shouldered but doesn't have at least 10% ***Delta Torque***, the position relative to the API Triangle Stamp should be checked. In just about every instance, the position will have covered the triangle base, so additional torque can be added to complete the makeup as discussed in 3.b) above. Expect an instantaneous spike with showing more than 50% ***Delta Torque*** with application of additional torque. Under this condition, this makeup is acceptable.

Similarly, random connections here and there with more than 50% ***Delta Torque*** is generally not cause for concern. However, if overshooting the 50% maximum ***Delta Torque*** target occurs frequently, then the established ***Running Torque*** value should be walked down in 500 ft-lbs. to 1,000 ft-lbs. increments until connection makeup routinely falls in line with the stated acceptance criteria.

5. ***Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.*** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"[2] when compared with most plots from previous good makeups should be checked carefully.

[2] An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft-lbs. or 10% of the minimum makeup torque (whichever is lower) to help normalize the turns-to-power-tight variability in the Tq-Tn graphs. Setting a reference torque reduces field stab variability resulting in more consistency in the Tq-Tn data. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (15 turns will usually be sufficient at the start and can be reduced based on data from the first few joints). **UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA**.

6. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than ½ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than ½ turn, trouble- shooting should be initiated. Pay particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. Counting turns can help to estimate if coupling will need to be stopped to avoid over rotation. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
7. A double wrap of the pick-up sling should be used when raising casing into the derrick when lifting subs, single joint, side-door, or slip elevators are not being used.
8. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
9. Manual and automated dump valves can overshoot the established ***Running Torque*** due to several factors. Slightly overshooting the ***Running Torque*** is not cause for concern as long as the final "dump" torque is not excessive, and the equipment used is generally consistent joint-to-joint. Overshooting the ***Running Torque*** with a final makeup speed greater than 10 RPMs is risky and potentially harmful to the connection as discussed below.
10. Attached is a "Worksheet for determining GB Connections ***Running Torque*** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

MAKEUP SPEED

To reiterate: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) FULL TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**. Be sure that the final 2 turns occur after the tong speed has slowed completely to less than 6 RPMs.

Making up connections at RPM exceeding those listed above may result in unsatisfactory connection performance downhole. Risks associated with excessive makeup RPMs are common for any connection with internal pin nose engagement. High speed makeup can:

1. Impart an unnecessary impulse load at nose contact. Certain materials are more susceptible to cracking under sudden or instantaneously applied loads.
2. Inhibit efficient movement of and trap thread compound under high pressure causing additional and unquantifiable high hoop stresses in the connection.

3. Result in significant overshoot of established dump torque value due to equipment latency between signal and equipment shut down resulting in higher but unknown actual final torque value. Excessive overshoot can result in pin nose yielding.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the ***Maximum MU Torque*** (shown on GB Connections Performance Property Sheets). Carefully watch for and note the ***Shoulder Torque***.
4. Record ***Shoulder Torque*** and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The ***Running Torque*** is (a) the ***Minimum MU Torque*** shown on the GB Connections Performance Property Sheet or (b) the maximum torque required for shoulder engagement + 10% ***Delta Torque*** determined from the first 10 makeups, ***whichever is higher***. Use the attached Worksheet to record this data and determine the ***Running Torque***.
6. Make up the rest of the string at the ***Running Torque*** determined in the previous step verifying each connection has shouldered with between 10% and 50% ***Delta Torque***. Small incremental adjustments to the established Running Torque (500 to 1,000 ft-lbs) are advised if delta torques routinely fall short of the 10% requirement or routinely exceed the 50% requirement.

NOTES:

- *This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.*
- *Does not apply to threadlock connections.*

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the ***Running Torque*** in accordance with GB Procedures.
4. **DO** make adjustments to ***Running Torque*** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum ***Delta Torque*** ≥ 10% of the ***Shoulder Torque***.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.

10. **DO** make note of anything that occurs with any connection makeup such as backup grips slipped, connection inspected and remade, etc.
11. **Do** check out every connection that appears out of character relative to the population. An example would be a connection that is completed with significantly fewer turns than most others. Check the triangle stamp and record position and take corrective action if needed.
12. **DO** add torque to any connection that appears to achieve pin nose engagement but not 10% delta torque.
13. **DO** adjust the ***Running Torque*** up or down in increments to achieve consistent ***Delta Torque*** between 10% and 50%.
14. **Do** make note of any anomaly during any connection makeup, such as backups slipped, mill side turned, etc.
15. **DO** minimize the weight on the connection, i.e. weight neutral, during break out as much as possible to minimize thread galling.
16. **DO NOT** over dope.
17. **DO NOT** exceed the ***Maximum MU Torque*** as shown on the GB Connections Performance Property Sheets during assembly.
18. **DO NOT** make up any misaligned connection.
19. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear for the final two (2) full turns.
20. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
21. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
22. **DO NOT** hesitate to contact GB Connections with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbconnections.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus Delta Torque. Record the Shoulder Torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum MU Torque shown on the GB Connections Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft-lbs.) Delta Torque should be between 10% and 50% of the Shoulder Torque. Running Torque shall not exceed the Maximum MU Torque. When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the Shoulder Torque and try to manually shut down the tongs before reaching Maximum MU Torque shown on the GB Connections Performance Property Sheets. Alternately, the dump valve should be set to **80% of the Maximum MU Torque** during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GBC Performance Property Sheet
Weight (ppf)		See GBC Performance Property Sheet
Grade		See GBC Performance Property Sheet
Min MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max MU Torque (ft-lbs)		See GBC Performance Property Sheet
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch (△)
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)		-	**A** or **B**, whichever is **greater**.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

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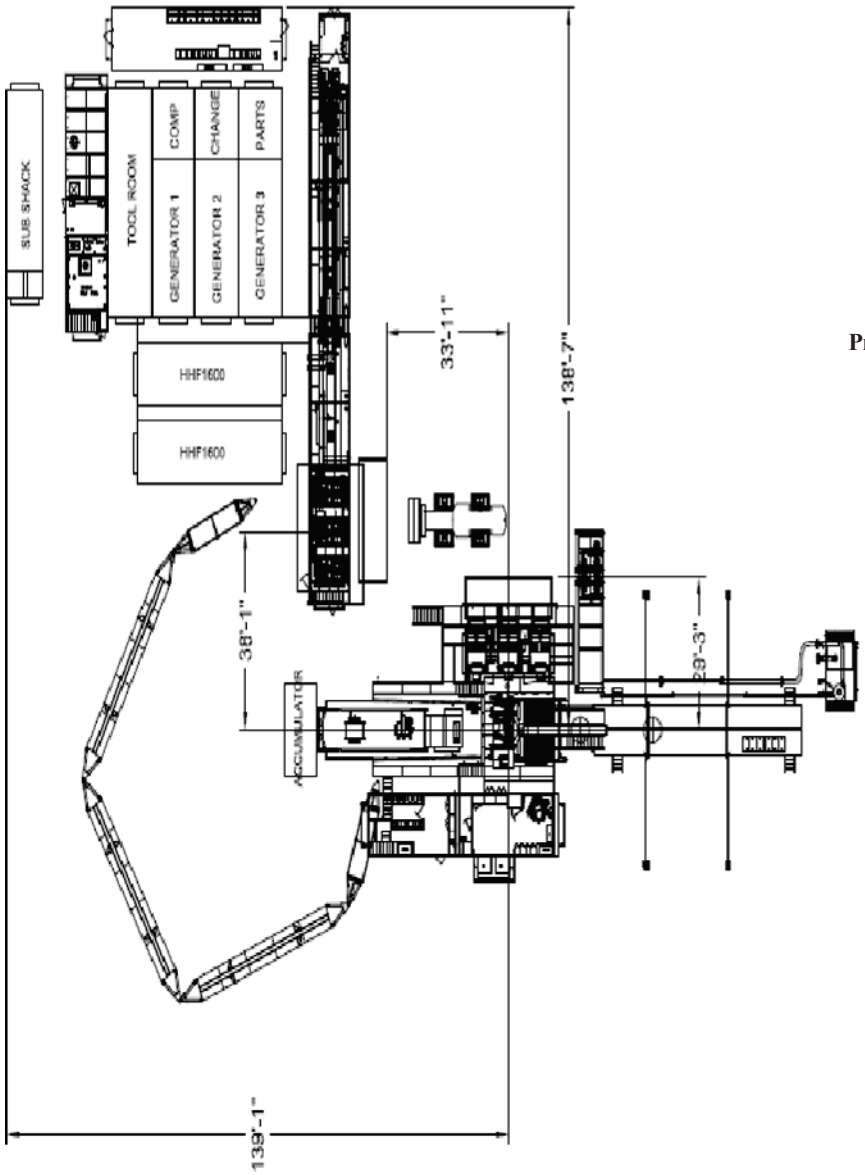
Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
CHESHIRE CAT 2 STATE COM

Open drill site. No homes or buildings are near the proposed location.

1. Escape

   Personnel shall escape upwind of wellbore in the event of an emergency gas release. Escape can take place through the lease road on the Southeast side of the location. Personnel need to move to a safe distance and block the entrance to location. If the primary route is not an option due to the wind direction, then a secondary egress route should be taken.

Secondary Briefing Area



Primary Briefing Area

Exit to road. Caution sign placed here.

N

Secondary Egress

WIND: Prevailing winds are from the Southwest

Spur Energy Partners
New Mexico Operations
Hydrogen Sulfide Operation Plan

A. Introduction:

The Safety of all personnel at Spur Energy Partners Facilities is of utmost importance to the company, and therefor management and employees must take responsibility for their safety and for the safety of all employees and others at a facility. If you have any concerns about the safe operations of the facility, contract personnel, or vendors, please contact the Company's Safety Contact, Superintendent, or Production Foreman immediately.

The objective of this contingency plan is to provide an organized plan of action for alerting, responding to and protecting employees, other workers and the public from H2S exposure in the event of a release of a potentially hazardous volume of H2S to the atmosphere. This plan should be activated immediately if any such release occurs. The Superintendent is responsible for initiating and carrying out the plan.

B. Scope:

Prevent the uncontrolled release of H_2S into the atmosphere. Provide proper procedures and equipment to alert and respond to emergencies.

Provide immediate and adequate medical attention should an injury occur.

To provide Company employees working at actual or potential Hydrogen Sulfide (H2S) facilities with a safe procedure to comply with applicable Federal, State and Company requirements.

This document is intended to provide general policy, procedures and expectations surrounding elevated levels of H2S. The intent is to promote sound and safe operations, while seeking effective communication surrounding operational considerations working around H2S.

This procedure applies to all Company employees and contractors working at facilities that have the potential to release 100 ppm or higher concentrations of H2S.

The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H_2S).

C. Hydrogen Sulfide Gas (H2S) Characteristics:

1. H2S is a toxic, poisonous gas that could cause death or injury. And it is also flammable.
2. H2S is an irritant and extremely toxic gas that is several times deadlier than carbon monoxide (CO).
3. H2S is heavier than air with a specific gravity of 1.1895 @ 600 F. so it will tend to lie in lower areas. Wind movement or air currents can readily disperse H2S since wind currents can easily overcome the heavier weight. On calm days, with no wind, the H2S will tend to accumulate in dangerous concentrations; however, if the H2S is warmer than the surrounding air it may rise.
4. H2S is colorless.
5. In small concentrations, H2S has the characteristic odor of rotten eggs. It may be detected by smell at a concentration in air of about 2 ppm but may NOT be detected

at high concentrations. DO NOT DEPEND ON THE SENSE OF SMELL TO DETECT H2S! H2S will paralyze the olfactory nerve causing a loss of the sense of smell within 2 – 15 minutes of an exposure in concentrations as low as 100-150 ppm.

6. H2S burns with a blue flame and has an auto ignition temperature of 5000 F. H2S forms an explosive mixture in the range of 4.3% to 45% by volume with air. H2S, when ignited, produces Sulfur Dioxide (SO2). SO2 is another toxic gas but less toxic than H2S.
7. Physiological Effects
    - 1,000-2,000+ ppm: Loss of consciousness and possible death.
    - 100-1,000 ppm: Serious respiratory, central nervous, and cardiovascular system effects.
    - 150-200 ppm: Olfactory fatigue (sense of smell is significantly impaired).
    - 100 ppm: Immediately Dangerous to Life and Health (IDLH concentration).
    - 5-30 ppm: Moderate irritation of the eyes.
    - 5-10 ppm: Relatively minor metabolic changes in exercising individuals during short-term exposures.
    - Less than 5 ppm: Metabolic changes observed in exercising individuals, but not clinically significant.
    - 5 ppm: Increase in anxiety symptoms (single exposure).
    - 5 ppm: Start of the dose-response curve (short-term exposure).
    - 0.032-0.02 ppm: Olfactory threshold (begin to smell).

D. H_2S Training

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing work at an effected facility:

1. The hazards and characteristics of hydrogen sulfide (H2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.
5. The procedures for operating process equipment.

In addition, supervisory personnel will be trained in the following areas:

1. Corrective action and shutdown procedures when a release or leak occurs.
2. Notification process

Annual drills will be conducted to utilize the procedures and make improvements as needed. It will also serve as refresher training on the process.

Note: All H_2S safety equipment and systems will be installed, tested, and operational when operation commences.

E. Protective equipment controls:

Any facility that has the potential to emit H2S at 100 ppm or higher will be required to install and utilize the below controls:

1. Where applicable, area air monitors will be installed and function tested and calibrated no less than monthly and set on a quarterly basis PM schedule.
2. Facility operators will use self contained breathing apparatuses (SCBA's) to perform routine operations in areas where H2S may be present.
3. Trigger of 100 PPM or more must be communicated and work proceeding the trigger must use the buddy system.
4. Visible windsocks must be installed at key locations surrounding the facility.
5. H2S warning signs must be placed at the entrance to the facility as well as other key locations.
6. Personal H2S Monitor are required to be worn by all personnel on locations.
7. Stairs and ladders leading to the top of a tank or vessel containing 300 ppm or greater shall be chained or marked to restrict entry.

F. Emergency Procedures

1. Spill or Release of H_2S gas

If a spill or leak releases H_2S the following action must be initiated and completed:

a. Internally – Employee contacts supervisor and HSE Department and performs “d” below.

b. Externally - Someone identifies a possible H_2S emergency and reports it to Company Management, via the listed phone number on posted facility signs.

c. The Company dispatches an employee to investigate possible H_2S emergency and will secure situation or initiate emergency call for backup.

d. If the Radius of Exposure has been breached begin the following:

- Establish safe command center.
- Call for additional personnel and delegate the following:
  - i. Notifying public safety agencies (Sheriff, Fire Department, Department of Public Safety, Hwy. Department).
  - ii. Safeguarding the facility and effected area.
  - iii. Blocking roads as needed.
  - iv. Notifying/evacuating public.
  - v. Notifying regulatory agencies.
  - vi. Gathering additional information about release ie., location, flowrate, quantity, etc.
  - vii. Stopping release if safe to do so (use 2 trained persons)
  - viii. Notifying company management.
  - ix. Cleanup/repair facilities.

e. Facility Standard Operating Procedure

- Evacuate the area, travel crosswind then proceed upwind.
- Gather at muster point. Ensure Primary Muster point is upwind
- Notify managers & appropriate EMS if required.
- Safely shut down (ESD) facility if the facility hasn't already shut in.
- Pick up SCBA (should be a 30 minute - 1 hour pack, located at Muster point.)
- Use buddy system for man down scenario with rescuers assigned.
  - 1 person to mask up to operate facility controls as needed.
  - 1 person for rescue if needed.
  - 1 person for calling EMS and company management
- Investigate area and isolate release of gas if safe to do and ensure closure using 4 gas monitor.
- If venting gas can't be isolated, return to muster point, and re-evaluate path forward.
- Give detailed description where/how gas is being released.
- After isolation verify that area monitors return to 0 and are not in alarm.
- Resume normal operations, once managers agree the ROOT CAUSE has been addressed and corrected.

G. Contacting Authorities

Company personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the NM Emergency Response Commission must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Spur Energy Partners response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER).

H. Call List

Spur Energy Partners Emergency Contact List			
Person	**Location**	**Office Phone**	**Cell Phone**
Drilling and Completions Department			
Drilling Manager - Chris Hollis	Houston	832-930-8629	713-380-7754
Completions Manager - Theresa Voss	Houston	832-930-8614	832-849-8635
VP of Operations - Seth Ireland	Houston	832-930-8527	940-704-6375
Senior VP of Operations - John Nabors	Houston	832-930-8526	281-904-8811
Executive VP of Operations - Todd Mucha	Houston	832-930-8515	281-795-2286
HES/Environmental and Regulatory Department			
EHS Manager - Braidy Moulder	Artesia	575-616-5400	713-264-2517
Superintendent - Jerry Mathews	Artesia	575-616-5400	575-748-5234
Asst. Superintendent - Kenny Kidd	Artesia	575-616-5400	575-703-5851
Regulatory Director - Sarah Chapman	Houston	832-930-8613	281-642-5503
Regulatory Agencies			
Bureau of Land Management	Carlsbad	575-886-6544	
Bureau of Land Management	Hobbs	575-393-3612	
Bureau of Land Management	Roswell	575-622-5335	
Bureau of Land Management	Santa Fe	505-954-2000	
DOT Judicial Pipelines - Incident Reporting NM Public Regulation Commission	Santa Fe	505-827-3549 505-490-2375	
EPA Hotline	Dallas	214-665-6444	
Federal OSHA, Area Office	Lubbock	806-472-7681	
National Response Center	Washington, D.C.	800-424-8803	
National Infrastructure Coordinator Center	Washington, D.C.	202-282-2901	
New Mexico Air Quality Bureau	Santa Fe	505-827-1494	
New Mexico Oil Conservation Division	Artesia	575-748-1283 575-370-7545After	
New Mexico Oil Conservation Division	Hobbs	575-393-6161	
New Mexico Oil Conservation Division	Santa Fe	505-476-3770	
New Mexico OCD Environmental Bureau	Santa Fe	505-827-7152 505-476-3470	
New Mexico Environmental Department	Hobbs	575-827-9329	
NM State Emergency Response Center	Santa Fe	505-476-9600	

Medical Facilities		
Artesia General Hospital	Artesia	575-748-3333
Covenant Medical Center	Lubbock	806-725-1011
Covenant Medical Center Lakeside	Lubbock	806-725-6000
Guadalupe County Hospital	Carlsbad	575-887-6633
Lea Regional Hospital	Hobbs	575-492-5000
Medical Center Hospital	Odessa	432-640-4000
Midland Memorial Hospital	Midland	432-685-1111
Nor-Lea General Hospital	Lovington	575-396-6611
Odessa Regional Hospital	Odessa	432-334-8200
Union County General Hospital	Clayton	575-374-2585
University Medical Center	Lubbock	806-725-8200
Law Enforcement - Sheriff		
Ector County Sheriff's Department	Odessa	432-335-3050
Ector County Sheriff's Department	Artesia	575-746-2704
Ector County Sheriff's Department	Carlsbad	575-887-7551
Lea County Sherrif's Department	Eunice	575-384-2020
Lea County Sherrif's Department	Hobbs	575-393-2515
Lea County Sherrif's Department	Lovington	575-396-3611
Lubbock County Sheriff's Department	Abernathy	806-296-2724
Midland County Sheriff's Department	Midland	432-688-1277
Union County Sheriff's Department	Clayton	575-374-2583
Law Enforcement - Police		
Abernathy Police Department	Abernathy	806-298-2545
Artesia City Police	Artesia	575-746-2704
Carlsbad City Police	Carlsbad	575-885-2111
Clayton City Police	Clayton	575-374-2504
Eunice City Police	Eunice	575-394-2112
Hobbs City Police	Hobbs	575-397-9265 575-393-2677
Jal City Police	Jal	575-395-2501
Lovington City Police	Lovington	575-396-2811

Midland City Police	Midland	432-685-7113
Odessa City Police	Odessa	432-335-3378
Law Enforcement - FBI		
FBI	Albuquerque	505-224-2000
FBI	Midland	432-570-0255
Law Enforcement - DPS (911)		
NM State Police	Artesia	575-746-2704
NM State Police	Carlsbad	575-885-3137
NM State Police	Eunice	575-392-5588
NM State Police	Hobbs	575-392-5588
NM State Police	Clayton	575-374-2473
Firefighting and Rescue (911)		
Abernathy	Abernathy	806-298-2022
Amistad/Rosebud	Amistad/Rosebud	575-633-9113
Artesia	Artesia	575-746-5751
Carlsbad	Carlsbad	575-885-3125
Clayton	Clayton	575-374-2435
Eunice	Eunice	575-394-2111
Hobbs	Hobbs	575-397-9308
Jal	Jal	575-395-2221
Lovington	Lovington	575-396-2359
Maljamar	Maljamar	575-676-4100
Midland	Midland	432-685-7346
Nara Visa	Nara Visa	575-461-3300
Odessa	Odessa	432-335-4659
Tucumcari	Tucumcari	911
West Odessa	Odessa	432-381-3033

Ambulance (911)		
Abernathy Ambulance	Abernathy	806-298-2241
Amistad/Rosebud	Amistad/Rosebud	575-633-9113
Artesia Ambulance	Artesia	575-746-2701
Carlsbad Ambulance	Carlsbad	575-885-2111
Clayton Ambulance	Clayton	575-374-2501
Eunice Ambulance	Eunice	575-394-3258
Hobbs Ambulance	Hobbs	575-397-9308
Jal Ambulance	Jal	575-395-3501
Lovington Ambulance	Lovington	575-396-2811
Midland Ambulance	Midland	432-685-7499
Nara Visa Ambulance	Nara Visa	575-461-3300
Odessa Ambulance	Odessa	432-335-3378
Tucumcari Ambulance	Tucumcari	911
Medical Air Ambulance Service		
AEROCARE - Methodist Hospital	Lubbock	800-627-2376
Southwest MediVac	Hobbs	800-242-6199
Odessa Care Star	Odessa	888-624-3571

I. List of Facilities with the potential for 500ppm or higher H2S exposure.

ATTACHMENT 1: SPUR FACILITIES WITH ROE REVIEW

ALASKA 29 FEE TANK BATTERY
ARABIAN 6 FEE TANK BATTERY
ARCO 26 A STATE OIL BATTERY
ARCO B FEDERAL COM NO. 001
ARKANSAS STATE 23 TANK BATTERY
AVALON FEDERAL #001
B&B/ROSS RANCH OIL TANK BATTERY
BC FEDERAL 10 (9-13) TNK BTY
BC FEDERAL 1-8 &14 TNK BTY
BC FEDERAL 42 TNK BTY
BEE FED OIL BATTERY
BEECH 25 FEDERAL #9H BATTERY
BEECH FEDERAL 1
BEECH FEDERAL 2 BATTERY
BERRY A FEDERAL #005 SWB
BERRY A FEDERAL PADD BATTERY
BIG BOY STATE TB
BLUETAIL 8 FEDERAL 2 TANK BATTERY
BONE YARD 11 FEE TANK BATTERY
BOOT HILL 25 1H SWB
BOSE IKARD 4 ST COM 18H BATTERY
BRANTLEY FEDERAL #001
BR-549 STATE BATTERY
BRADLEY 8 FEE #3H-BATTERY
BRADLEY 8 FEE BATTERY
BRAGG 10 FEE 1 BATTERY
BRIGHAM H 2
BRIGHAM H FED (NORTH) BATTERY
BURCH KEELY 13C TK BTY
BURCH KEELY 18A TK BATT
BURCH KEELY 19A OIL BATT
BURCH KEELY 23A TK BATT
BURCH KEELY EAST 18B TANK BAT
BURCH KEELY SEC 13A NORTH BTTY
BURCH KEELY SEC 13B SOUTH BTTY
BURCH KEELY UNIT CTB BTTY
BURCH KEELY UNIT E BATTERY
BURKETT 16 STATE
CADDO FEDERAL BATTERY
CADILLAC ST 4 BATTERY
CALIFORNIA 29 FEE 1
CARMEN 3 FEDERAL BATTERY
CARRINGTON 12 ST 3,4,7 BATTERY
CHASER 8 STATE 2 TANK BATTERY
CHEYENNE FEDERAL TNK BTY
CLYDESDALE 1 FEE #1H BAT
CLYDESDALE 1 FEE 6H - BATTERY
COAL TRAIN FEDERAL COM #1
COFFIN STATE #1
COLLIER 22 STATE COM #43H
COLLIER STATE OIL BATTERY
CONOCO 8 STATE 4 TB
CONTINENTAL A STATE TNK BTY
CONTINENTAL B YESO TANK BTY
CONTINENTAL STATE 15A TNK BTY
CRYPT 30 STATE #1H
DAGGER DRAW FED/FOSTER FED TANK BATTERY
DARNER 9 STATE 1 TANK BATTERY
DARNER 9 STATE 2
DARTER 9 STATE 8 TANK BATTERY
DARNER 9 STATE CTB
DEXTER FEDERAL PAD TNK BTY
DODD 10A OIL BATTERY
DODD 10B TK BTTY
DODD FED #14C TK BATT
DODD FED 11A BATTERY
DODD FED UNIT 980H BATTERY
DODD FEDERAL 14A-TB
DODD FEDERAL UNIT 15A BTTY
DODD FEDERAL UNIT NORTH BTTY
DODD FEDERAL UNIT SOUTH BTTY
DOGWOOD FEDERAL TNK BTY
DORAMI 33 FEDERAL COM 2H.4H.9H TANK BATTERY
EBONY STATE TB
EDWARD STATE TNK BTY
ELECTRA FEDERAL 33 (NORTH) BATTERY
ELECTRA FEDERAL 5 (SWEET) TNK BTY
ELECTRA FEDERAL SOUR TNK BTY
EMPIRE SOUTH DEEP UNIT 21
FALABELLA 31 FEE #1H TK BATT
FALABELLA 31 FEE 8H TK BTY
FAT TIRE 12 COM FEDERAL CTB
FEDERAL BA COM NO. 001
FEDERAL BB NO. 001
FLAT HEAD FED COM 6H TANK BATTERY
FLAT HEAD FED COM 27H TANK BATTERY

ATTACHMENT 1: SPUR FACILITIES WITH ROE REVIEW

FIR FEDERAL TNK BTY
FIRECRACKER STATE TB
FLEMMING STATE OIL BATTERY
FOLK FEDERAL B TNK BTY
FOLK FEDERAL TNK BTY
FOLK STATE TANK BATTERY
FORAN STATE OIL BATTERY
GC FEDERAL 11 TNK BTY
GC FEDERAL 27 TNK BTY
GC FEDERAL TNK BTY
GILLESPIE STATE OIL BATTERY
GISSLER FEDERAL 13H TANK BATT
GJ WEST COOP SOUTH TB
GJ WEST COOP UNIT 092 BTY
GJ WEST COOP UNIT 191 BTY
GJ WEST COOP UNIT 210 BTY
GJ WEST COOP UNIT CENTRAL
GJ WEST COOP UNIT N TNK BTY
GOLD STAR TNK BTY
GOODMAN 22 TANK BATTERY
GRAVE DIGGER FEDERAL COM TANK BATTERY
GRAVE DIGGER ST COM #3H TANK BATTERY
GRAVE DIGGER STATE COM #8H SWB
HALBERD 27 ST 3H BATTERY
HANOVER STATE #3 (YESO)
HARPER STATE TNK BTY
HARVARD FEDERAL TNK BTY
HATFIELD B TB
HEARSE 36 ST COM TANK BATTERY
HOBGOBLIN 7 FED COM 4H TK BAT
HOLDER CB 11 TNK BTY
HOLDER CB FEDERAL 6&7 TNK BTY
HOLIDAY
HOUMA STATE TNK BTY
HT 18 FED 01.05.04 TANK BATTERY
HT 18 FEDERAL 8
HUBER 10,11,12 FEDERAL OIL TANK BATTERY
HUBER 3 FEDERAL OIL TANK BATTERY
HUBER 5 FEDERAL OIL TANK BATTERY
HYDRUS 10 FED 03.07.08.11 TANK BATTERY
HYDRUS 10 FED 04.05 TANK BATTERY
HYDRUS 10 FED 06.09.10.12 TANK BATTERY
IMPERIAL STATE TNK BTY
IVAR THE BONELESS FED 11H - BATTERY
JC FEDERAL 13 TNK BTY
JC FEDERAL 2 (SOUR) TNK BTY
JC FEDERAL 27 TNK BTY
JENKINS B FEDERAL TNK BTY
JG STATE 16 1 TANK BATTERY
JG STATE 16 7 TANK BATTERY
JON BOB 1
JUNIPER STATE TNK BTY
KIOWA OIL BATTERY
KOOL AID STATE
LAKEWOOD NORTH TANK BATTERY
LAKEWOOD SOUTH TANK BATTERY
LARA MICHELLE STATE OIL BTTY
LEAKER CC STATE TB
LEE 3 FEE 6H - TK BATT
LIVE OAK TANK BATTERY
MALCO 23 FEDERAL COM #13H
MAPLE STATE
MARACAS 22 STATE TANK BATTERY
MARY FEDERAL OIL BATTERY
MAYARO 22 STATE TANK BATTERY
MC FEDERAL 14 TANK BATTERY
MC FEDERAL 6 DEVONIAN
MC FEDERAL PADDOCK TNK BTY
MC SOUTHEAST BATTERY
MC STATE OIL BATTERY
MCCOY STATE TB
MCINTYRE A EAST TANK BATTERY
MCINTYRE B 10
MCINTYRE B 4
MCINTYRE B TNK BTY
MCINTYRE DK 15 TNK BTY
MCINTYRE DK FEDERAL 28H SWB
MEADOWHAWK 5 FEDERAL 3
MELROSE FEDERAL TNK BTY
MERAK 7 FEDERAL 8 TANK BATTERY
MESILLA STATE 3 & 5 TNK BTY
MESILLA STATE TNK BTY
MESQUITE STATE TANK BATTERY
MIMOSA STATE TNK BTY
MIRANDA FEDERAL B TNK BTY
MIRANDA FEDERAL TB

ATTACHMENT 1: SPUR FACILITIES WITH ROE REVIEW

MOE FEDERAL OIL BATTERY
MOHAWK FEDERAL TNK BTY
MONCRIEF 3 OIL BATTERY
MOORE STATE OIL BATTERY
MORRIS BOYD 26 FEE COM 1H
MORRIS BOYD TANK BATTERY
MORRIS E & F TANK BATTERY
MUSKEGON SOUTH STATE OIL BATTERY
NAVAHO FEDERAL TNK BTY
NELSON 13.23. TNK BATT
NEWCASTLE 6 FED COM - TANK BATTERY
NIRVANA TANK BATTERY
NOOSE FED 10 TANK BATTERY
NOOSE FED 5 TANK BATTERY
OKLAHOMA 32 TANK BATTERY
OSAGE BOYD 15 FED 09.12.13.14 TANK BATTERY
OSAGE BOYD YESO TANK BATTERY
PAINT 32 FEE OIL BATTERY
PAN CANADIAN A2-B3 TANK BATTERY
PASSION 1 FED PDK 5H TK BATT
PATTON 5 FEE 2H OIL BATTERY
PATTON 5 FEE 8H OIL BATTERY
PAWNEE STATE TNK BTY
PEACEMAKER 25 FEDERAL TANK BATTERY
PERE MARQUETTE 18 FEDERAL 1 TANK BATTERY
PILUM 15 FEE 2H BATTERY
PINTO 36 STATE COM 1H TNK BTY
PINTO 36 STATE COM 4H TNK BTY
PINTO 36 STATE TB
POLARIS B 5-10 TANK BTTY
POSEIDON 3 FEDERAL 4 TANK BATTERY
POSEIDON 3 FEDERAL 05.07.17.18 TANK BATTERY
PUCKETT 13 FEDERAL COM 35H
PUCKETT 13 FEDERAL TB
RAGNAR FED COM 25H - BATTERY
RANDALL FED 3 BATTERY
RED LAKE 32 TANK BATTERY
REDBUD FEDERAL TNK BTY
RINCON STATE TANK BATTERY
RJ UNIT NORTH TANK BATTERY
RJ UNIT SOUTH TANK BATTERY
RONCO FEDERAL #1
ROSE 02.03.04.05.06 TANK BATTERY
ROSE SOUTH TANK BATTERY
ROSS RANCH 09.13.14 BATTERY
SAM ADAMS 12 FED 4H UBB TK BATT
SANDY CROSSING 32 STATE COM 1
SCHLEY FEDERAL TNK BTY
SHAWNEE FEDERAL TNK BTY
SHELBY 23 BATTERY
SHERMAN 4 FEE 4H BATTERY
SHERMAN 4 FEE 6H BATTERY
SHORTY 2 STATE COM TANK BATTERY
SINCLAIR PARKE (PADDOCK) TNK BTY
SKELLY 605 BATTERY
SKELLY 942 BATTERY
SKELLY 968 BATTERY
SKELLY 973 BATTERY
SKELLY 989 BATTERY
SKELLY UNIT 907 CTB BATTERY
SKELLY UNIT 940 BATTERY
SOUTH BOYD FED COM OIL TANK BATTERY
SOUTH EMPIRE STATE COM 1
SPIKETAIL 5 STATE 2 TANK BATTERY
SPRUCE FEDERAL TNK BTY
STATE B GAS COM NO. 001
STATE S-19 YESO (SOUR) TNK BTY
STONEWALL 9 FEE #1H TBAT
STONEWALL 9 FEE 8H BATTERY
SUBMARINE 10 FED COM 2H OIL BAT
TAYLOR D TANK BATTEY
TENNECO STATE TNK BTY
TEX MACK FED
TEXACO BE TNK BTY
TEXAS 32 FEE TANK BATTERY
TEXMACK 36 STATE COM #1
TH STATE #1
THO STATE OIL BATTRY
THORNTAIL 31 FEDERAL 1
THUNDER ROAD FEDERAL OIL BTTY
TUMAK FED 3 BAT
VEGA 9 FED TANK BATTERY
VT 36 STATE #1H
W D MCINTYRE C 10
WAUKEE 36 STATE COME CTB
WD MCINTYRE C 8-9 TNK BTY

ATTACHMENT 1: SPUR FACILITIES WITH ROE REVIEW

WD MCINTYRE E TNK BTY
WELCH A 28 10.20.50 CTB
WESTERN FEDERAL TNK BTY
WHITE OAK STATE B TB
WHITE OAK STATE TNK BTY
WHITE STAR FEDERAL TNK BTY
WICHITA STATE TNK BTY
WILLOW STATE TNK BTY
YALE B OIL BATTERY
YALE STATE TANK BTY
YUCCA STATE TNK BTY

Released to Imaging: 4/14/2026 10:51:34 AM
Received by OCD: 4/13/2026 12:49:31 PM

SPUR ENERGY PARTNERS

Project: EDDY COUNTY, NM (NAD 83 - NME)
Site: CHESHIRE CAT 2 STATE COM
Well: 21H
Wellbore: OH
Design: PERMIT

PROJECT DETAILS: EDDY COUNTY, NM (NAD 83 - NME)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

WELL DETAILS: 21H

Rig Name: AKITA 57 RKB = 20' @ 3631.00usft (AKITA 57)
Ground Elevation: 3611.00

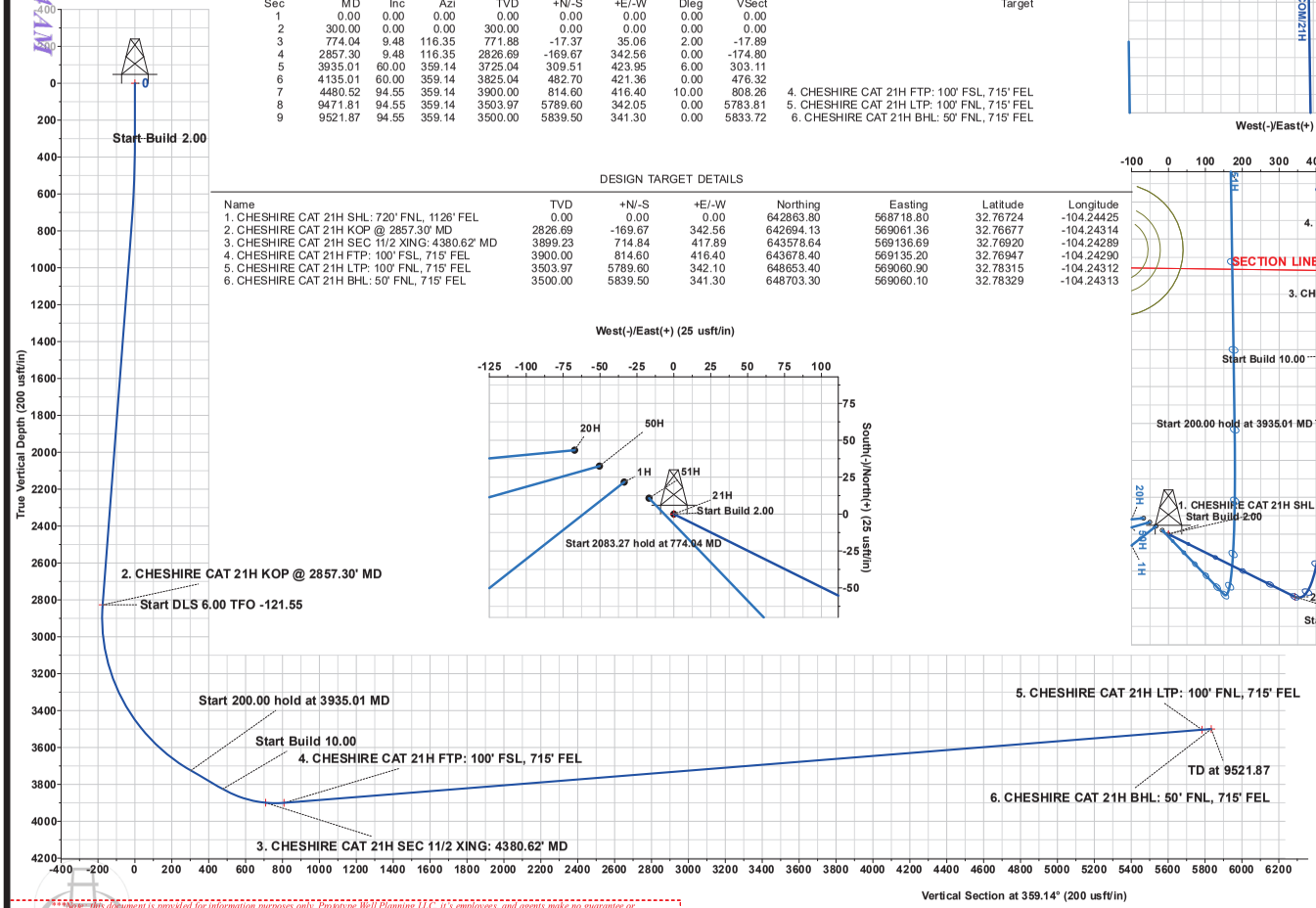
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	642863.80	568718.80	32.76724	-104.24425

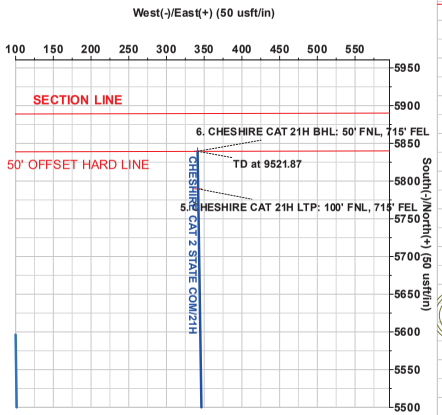
SECTION DETAILS

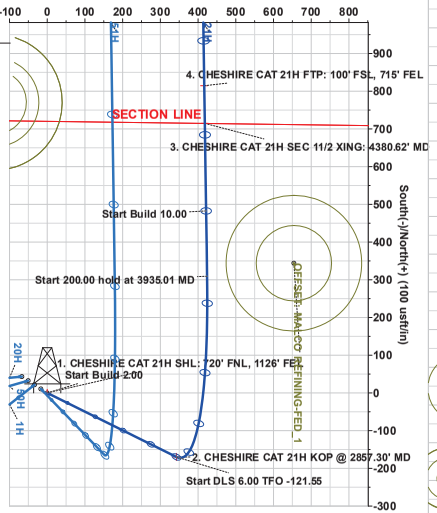
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	
3	774.04	9.48	116.35	771.88	-17.37	35.06	2.00	-17.89	
4	2857.30	9.48	116.35	2826.69	-169.67	342.56	0.00	-174.80	
5	3935.01	60.00	359.14	3725.04	309.51	423.95	6.00	303.11	
6	4135.01	60.00	359.14	3825.04	482.70	421.36	0.00	476.32	
7	4480.52	94.55	359.14	3900.00	814.60	416.40	10.00	808.26	4. CHESHIRE CAT 21H FTP: 100' FSL, 715' FEL
8	9471.81	94.55	359.14	3503.97	5789.60	342.05	0.00	5783.81	5. CHESHIRE CAT 21H LTP: 100' FNL, 715' FEL
9	9521.87	94.55	359.14	3500.00	5839.50	341.30	0.00	5833.72	6. CHESHIRE CAT 21H BHL: 50' FNL, 715' FEL

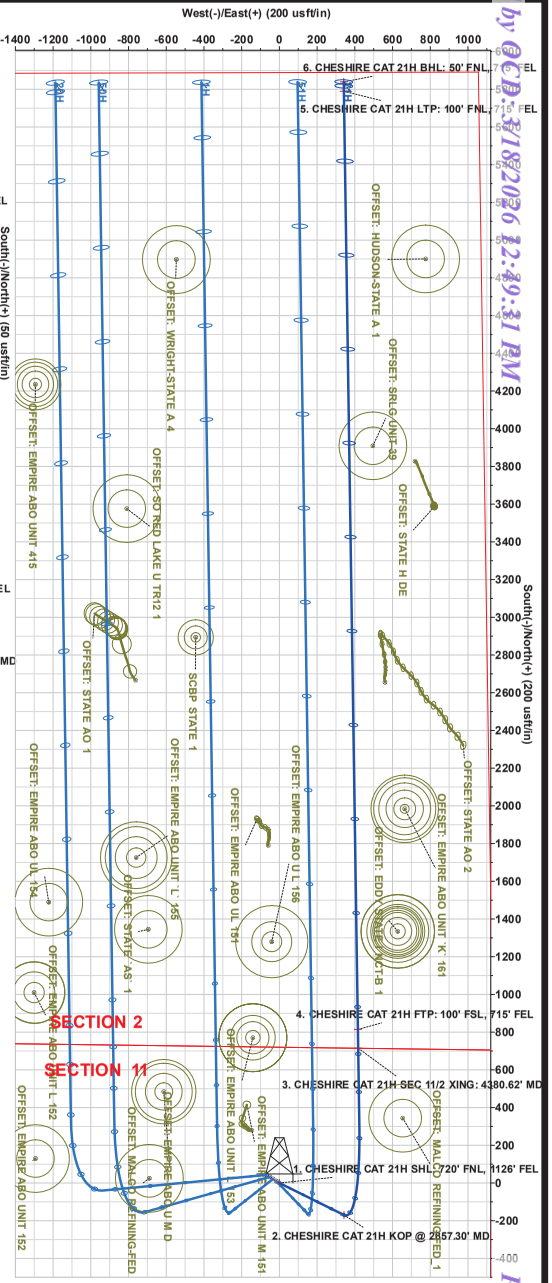
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
1. CHESHIRE CAT 21H SHL: 720' FNL, 1126' FEL	0.00	0.00	0.00	642863.80	568718.80	32.76724	-104.24425
2. CHESHIRE CAT 21H KOP @ 2857.30' MD	2826.69	-169.67	342.56	642694.13	569061.36	32.76677	-104.24314
3. CHESHIRE CAT 21H SEC 11/2 XING: 4380.62' MD	3899.23	714.84	417.89	643578.64	569136.69	32.76920	-104.24289
4. CHESHIRE CAT 21H FTP: 100' FSL, 715' FEL	3900.00	814.60	416.40	643678.40	569135.20	32.76947	-104.24290
5. CHESHIRE CAT 21H LTP: 100' FNL, 715' FEL	3503.97	5789.60	342.10	648653.40	569060.90	32.78315	-104.24312
6. CHESHIRE CAT 21H BHL: 50' FNL, 715' FEL	3500.00	5839.50	341.30	648703.30	569060.10	32.78329	-104.24313









Plan: PERMIT (21H/OH)

Created By: PROTOTYPE WELL PLANNING Date: 9:18, November 2 2025

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SPUR ENERGY PARTNERS, LLC

EDDY COUNTY, NM (NAD 83 - NME)
CHESHIRE CAT 2 STATE COM
21H

OH

Plan: PERMIT

Standard Planning Report

20 November, 2025

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

SPUR ENERGY PARTNERS

PROTOTYPE
Planning Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Database:	EDM 5000.17 Single User Db	**Local Co-ordinate Reference:**	Well 21H
Company:	SPUR ENERGY PARTNERS, LLC	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site:	CHESHIRE CAT 2 STATE COM	**North Reference:**	Grid
Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Project EDDY COUNTY, NM (NAD 83 - NME)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Well 21H

Well Position	**+N/-S**	0.00 usft	**Northing:**	642,863.80 usft	**Latitude:**	32.76724
	+E/-W	0.00 usft	**Easting:**	568,718.80 usft	**Longitude:**	-104.24426
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,611.00 usft
Grid Convergence:		0.05 °				

Design PERMIT

Audit Notes:

Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	359.14

Plan Survey Tool Program **Date** 11/19/2025

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	9,521.87	PERMIT (OH)	MWD+IFR1+MS	
				OWSG MWD + IFR1 + Mult	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
774.04	9.48	116.35	771.88	-17.37	35.06	2.00	2.00	0.00	116.35	
2,857.30	9.48	116.35	2,826.69	-169.67	342.56	0.00	0.00	0.00	0.00	
3,935.01	60.00	359.14	3,725.04	309.51	423.95	6.00	4.69	-10.88	-121.55	
4,135.01	60.00	359.14	3,825.04	482.70	421.36	0.00	0.00	0.00	0.00	
4,480.52	94.55	359.14	3,900.00	814.60	416.40	10.00	10.00	0.00	0.00	4. CHESHIRE CAT
9,471.81	94.55	359.14	3,503.97	5,789.60	342.05	0.00	0.00	0.00	0.00	5. CHESHIRE CAT
9,521.87	94.55	359.14	3,500.00	5,839.50	341.30	0.00	0.00	0.00	0.00	6. CHESHIRE CAT

SPUR ENERGY PARTNERS

PROTOTYPE
Planning Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Database:	EDM 5000.17 Single User Db	**Local Co-ordinate Reference:**	Well 21H
Company:	SPUR ENERGY PARTNERS, LLC	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site:	CHESHIRE CAT 2 STATE COM	**North Reference:**	Grid
Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1. CHESHIRE CAT 21H SHL: 720' FNL, 1126' FEL									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	116.35	399.98	-0.77	1.56	-0.80	2.00	2.00	0.00
500.00	4.00	116.35	499.84	-3.10	6.25	-3.19	2.00	2.00	0.00
600.00	6.00	116.35	599.45	-6.97	14.06	-7.18	2.00	2.00	0.00
700.00	8.00	116.35	698.70	-12.37	24.98	-12.75	2.00	2.00	0.00
774.04	9.48	116.35	771.88	-17.37	35.06	-17.89	2.00	2.00	0.00
800.00	9.48	116.35	797.49	-19.27	38.90	-19.85	0.00	0.00	0.00
900.00	9.48	116.35	896.12	-26.58	53.66	-27.38	0.00	0.00	0.00
1,000.00	9.48	116.35	994.75	-33.89	68.42	-34.91	0.00	0.00	0.00
1,100.00	9.48	116.35	1,093.39	-41.20	83.18	-42.44	0.00	0.00	0.00
1,200.00	9.48	116.35	1,192.02	-48.51	97.94	-49.97	0.00	0.00	0.00
1,300.00	9.48	116.35	1,290.66	-55.82	112.70	-57.51	0.00	0.00	0.00
1,400.00	9.48	116.35	1,389.29	-63.13	127.46	-65.04	0.00	0.00	0.00
1,500.00	9.48	116.35	1,487.92	-70.44	142.22	-72.57	0.00	0.00	0.00
1,600.00	9.48	116.35	1,586.56	-77.75	156.98	-80.10	0.00	0.00	0.00
1,700.00	9.48	116.35	1,685.19	-85.06	171.74	-87.63	0.00	0.00	0.00
1,800.00	9.48	116.35	1,783.83	-92.38	186.50	-95.16	0.00	0.00	0.00
1,900.00	9.48	116.35	1,882.46	-99.69	201.26	-102.70	0.00	0.00	0.00
2,000.00	9.48	116.35	1,981.09	-107.00	216.02	-110.23	0.00	0.00	0.00
2,100.00	9.48	116.35	2,079.73	-114.31	230.78	-117.76	0.00	0.00	0.00
2,200.00	9.48	116.35	2,178.36	-121.62	245.54	-125.29	0.00	0.00	0.00
2,300.00	9.48	116.35	2,277.00	-128.93	260.30	-132.82	0.00	0.00	0.00
2,400.00	9.48	116.35	2,375.63	-136.24	275.06	-140.35	0.00	0.00	0.00
2,500.00	9.48	116.35	2,474.26	-143.55	289.82	-147.89	0.00	0.00	0.00
2,600.00	9.48	116.35	2,572.90	-150.86	304.58	-155.42	0.00	0.00	0.00
2,700.00	9.48	116.35	2,671.53	-158.17	319.34	-162.95	0.00	0.00	0.00
2,800.00	9.48	116.35	2,770.17	-165.49	334.10	-170.48	0.00	0.00	0.00
2,857.30	9.48	116.35	2,826.69	-169.67	342.56	-174.80	0.00	0.00	0.00
2. CHESHIRE CAT 21H KOP @ 2857.30' MD									
2,900.00	8.43	101.28	2,868.87	-171.85	348.78	-177.06	6.00	-2.47	-35.29
2,950.00	8.09	80.41	2,918.36	-171.98	355.84	-177.30	6.00	-0.67	-41.75
3,000.00	8.82	60.50	2,967.83	-169.50	362.65	-174.93	6.00	1.46	-39.82
3,050.00	10.39	45.09	3,017.14	-164.43	369.18	-169.95	6.00	3.15	-30.82
3,100.00	12.49	34.23	3,066.14	-156.78	375.41	-162.39	6.00	4.20	-21.71
3,150.00	14.90	26.64	3,114.72	-146.56	381.34	-152.26	6.00	4.82	-15.18
3,200.00	17.49	21.19	3,162.74	-133.80	386.94	-139.60	6.00	5.18	-10.91
3,250.00	20.19	17.13	3,210.06	-118.55	392.20	-124.42	6.00	5.40	-8.12
3,300.00	22.96	14.00	3,256.55	-100.84	397.10	-106.79	6.00	5.54	-6.26
3,350.00	25.78	11.52	3,302.09	-80.72	401.63	-86.73	6.00	5.64	-4.96
3,400.00	28.64	9.50	3,346.56	-58.24	405.78	-64.32	6.00	5.71	-4.04
3,450.00	31.52	7.82	3,389.82	-33.47	409.53	-39.61	6.00	5.76	-3.36
3,500.00	34.41	6.39	3,431.77	-6.48	412.89	-12.67	6.00	5.80	-2.85
3,550.00	37.33	5.16	3,472.28	22.67	415.82	16.43	6.00	5.83	-2.46
3,600.00	40.25	4.09	3,511.25	53.89	418.34	47.60	6.00	5.85	-2.15
3,650.00	43.18	3.14	3,548.57	87.09	420.43	80.77	6.00	5.86	-1.90
3,700.00	46.12	2.28	3,584.14	122.18	422.08	115.84	6.00	5.88	-1.71
3,750.00	49.07	1.51	3,617.85	159.08	423.30	152.71	6.00	5.89	-1.55
3,800.00	52.02	0.80	3,649.62	197.67	424.08	191.28	6.00	5.90	-1.41
3,850.00	54.97	0.15	3,679.37	237.85	424.41	231.46	6.00	5.91	-1.30
3,900.00	57.93	359.55	3,707.00	279.52	424.29	273.12	6.00	5.91	-1.21

SPUR ENERGY PARTNERS

PROTOTYPE
Planning Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Database:	EDM 5000.17 Single User Db	**Local Co-ordinate Reference:**	Well 21H
Company:	SPUR ENERGY PARTNERS, LLC	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site:	CHESHIRE CAT 2 STATE COM	**North Reference:**	Grid
Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,935.01	60.00	359.14	3,725.04	309.51	423.95	303.11	6.00	5.92	-1.15
4,000.00	60.00	359.14	3,757.54	365.79	423.11	359.40	0.00	0.00	0.00
4,100.00	60.00	359.14	3,807.54	452.38	421.81	446.00	0.00	0.00	0.00
4,135.01	60.00	359.14	3,825.04	482.70	421.36	476.32	0.00	0.00	0.00
4,150.00	61.50	359.14	3,832.37	495.78	421.17	489.40	10.00	10.00	0.00
4,200.00	66.50	359.14	3,854.28	540.70	420.49	534.32	10.00	10.00	0.00
4,250.00	71.50	359.14	3,872.20	587.35	419.80	580.99	10.00	10.00	0.00
4,300.00	76.50	359.14	3,885.97	635.40	419.08	629.04	10.00	10.00	0.00
4,350.00	81.50	359.14	3,895.51	684.46	418.35	678.10	10.00	10.00	0.00
4,380.62	84.56	359.14	3,899.23	714.84	417.89	708.49	10.00	10.00	0.00
3. CHESHIRE CAT 21H SEC 11/2 XING: 4380.62' MD									
4,400.00	86.50	359.14	3,900.74	734.16	417.60	727.81	10.00	10.00	0.00
4,450.00	91.50	359.14	3,901.61	784.13	416.86	777.79	10.00	10.00	0.00
4,480.52	94.55	359.14	3,900.00	814.60	416.40	808.26	10.00	10.00	0.00
4. CHESHIRE CAT 21H FTP: 100' FSL, 715' FEL									
4,500.00	94.55	359.14	3,898.45	834.02	416.11	827.68	0.00	0.00	0.00
4,600.00	94.55	359.14	3,890.52	933.69	414.62	927.37	0.00	0.00	0.00
4,700.00	94.55	359.14	3,882.59	1,033.37	413.13	1,027.05	0.00	0.00	0.00
4,800.00	94.55	359.14	3,874.65	1,133.04	411.64	1,126.73	0.00	0.00	0.00
4,900.00	94.55	359.14	3,866.72	1,232.71	410.15	1,226.42	0.00	0.00	0.00
5,000.00	94.55	359.14	3,858.78	1,332.39	408.66	1,326.10	0.00	0.00	0.00
5,100.00	94.55	359.14	3,850.85	1,432.06	407.17	1,425.79	0.00	0.00	0.00
5,200.00	94.55	359.14	3,842.91	1,531.73	405.68	1,525.47	0.00	0.00	0.00
5,300.00	94.55	359.14	3,834.98	1,631.41	404.19	1,625.16	0.00	0.00	0.00
5,400.00	94.55	359.14	3,827.04	1,731.08	402.70	1,724.84	0.00	0.00	0.00
5,500.00	94.55	359.14	3,819.11	1,830.76	401.21	1,824.53	0.00	0.00	0.00
5,600.00	94.55	359.14	3,811.18	1,930.43	399.72	1,924.21	0.00	0.00	0.00
5,700.00	94.55	359.14	3,803.24	2,030.10	398.23	2,023.90	0.00	0.00	0.00
5,800.00	94.55	359.14	3,795.31	2,129.78	396.74	2,123.58	0.00	0.00	0.00
5,900.00	94.55	359.14	3,787.37	2,229.45	395.25	2,223.27	0.00	0.00	0.00
6,000.00	94.55	359.14	3,779.44	2,329.12	393.76	2,322.95	0.00	0.00	0.00
6,100.00	94.55	359.14	3,771.50	2,428.80	392.27	2,422.64	0.00	0.00	0.00
6,200.00	94.55	359.14	3,763.57	2,528.47	390.79	2,522.32	0.00	0.00	0.00
6,300.00	94.55	359.14	3,755.64	2,628.14	389.30	2,622.01	0.00	0.00	0.00
6,400.00	94.55	359.14	3,747.70	2,727.82	387.81	2,721.69	0.00	0.00	0.00
6,500.00	94.55	359.14	3,739.77	2,827.49	386.32	2,821.37	0.00	0.00	0.00
6,600.00	94.55	359.14	3,731.83	2,927.17	384.83	2,921.06	0.00	0.00	0.00
6,700.00	94.55	359.14	3,723.90	3,026.84	383.34	3,020.74	0.00	0.00	0.00
6,800.00	94.55	359.14	3,715.96	3,126.51	381.85	3,120.43	0.00	0.00	0.00
6,900.00	94.55	359.14	3,708.03	3,226.19	380.36	3,220.11	0.00	0.00	0.00
7,000.00	94.55	359.14	3,700.09	3,325.86	378.87	3,319.80	0.00	0.00	0.00
7,100.00	94.55	359.14	3,692.16	3,425.53	377.38	3,419.48	0.00	0.00	0.00
7,200.00	94.55	359.14	3,684.23	3,525.21	375.89	3,519.17	0.00	0.00	0.00
7,300.00	94.55	359.14	3,676.29	3,624.88	374.40	3,618.85	0.00	0.00	0.00
7,400.00	94.55	359.14	3,668.36	3,724.55	372.91	3,718.54	0.00	0.00	0.00
7,500.00	94.55	359.14	3,660.42	3,824.23	371.42	3,818.22	0.00	0.00	0.00
7,600.00	94.55	359.14	3,652.49	3,923.90	369.93	3,917.91	0.00	0.00	0.00
7,700.00	94.55	359.14	3,644.55	4,023.58	368.44	4,017.59	0.00	0.00	0.00
7,800.00	94.55	359.14	3,636.62	4,123.25	366.95	4,117.28	0.00	0.00	0.00
7,900.00	94.55	359.14	3,628.69	4,222.92	365.46	4,216.96	0.00	0.00	0.00
8,000.00	94.55	359.14	3,620.75	4,322.60	363.97	4,316.65	0.00	0.00	0.00
8,100.00	94.55	359.14	3,612.82	4,422.27	362.48	4,416.33	0.00	0.00	0.00
8,200.00	94.55	359.14	3,604.88	4,521.94	360.99	4,516.02	0.00	0.00	0.00
8,300.00	94.55	359.14	3,596.95	4,621.62	359.50	4,615.70	0.00	0.00	0.00

SPUR ENERGY PARTNERS

PROTOTYPE
Planning Report

PROTOTYPE WELL PLANNING
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Database:	EDM 5000.17 Single User Db	**Local Co-ordinate Reference:**	Well 21H
Company:	SPUR ENERGY PARTNERS, LLC	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site:	CHESHIRE CAT 2 STATE COM	**North Reference:**	Grid
Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,400.00	94.55	359.14	3,589.01	4,721.29	358.01	4,715.38	0.00	0.00	0.00
8,500.00	94.55	359.14	3,581.08	4,820.96	356.52	4,815.07	0.00	0.00	0.00
8,600.00	94.55	359.14	3,573.14	4,920.64	355.03	4,914.75	0.00	0.00	0.00
8,700.00	94.55	359.14	3,565.21	5,020.31	353.54	5,014.44	0.00	0.00	0.00
8,800.00	94.55	359.14	3,557.28	5,119.98	352.05	5,114.12	0.00	0.00	0.00
8,900.00	94.55	359.14	3,549.34	5,219.66	350.56	5,213.81	0.00	0.00	0.00
9,000.00	94.55	359.14	3,541.41	5,319.33	349.07	5,313.49	0.00	0.00	0.00
9,100.00	94.55	359.14	3,533.47	5,419.01	347.58	5,413.18	0.00	0.00	0.00
9,200.00	94.55	359.14	3,525.54	5,518.68	346.09	5,512.86	0.00	0.00	0.00
9,300.00	94.55	359.14	3,517.60	5,618.35	344.61	5,612.55	0.00	0.00	0.00
9,400.00	94.55	359.14	3,509.67	5,718.03	343.12	5,712.23	0.00	0.00	0.00
9,471.81	94.55	359.14	3,503.97	5,789.60	342.05	5,783.81	0.00	0.00	0.00
5. CHESHIRE CAT 21H LTP: 100' FNL, 715' FEL									
9,500.00	94.55	359.14	3,501.74	5,817.70	341.63	5,811.92	0.00	0.00	0.00
9,521.87	94.55	359.14	3,500.00	5,839.50	341.30	5,833.72	0.00	0.00	0.00
6. CHESHIRE CAT 21H BHL: 50' FNL, 715' FEL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
1. CHESHIRE CAT 21 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	642,863.80	568,718.80	32.76724	-104.24426
2. CHESHIRE CAT 21 - plan hits target center - Point	0.00	0.00	2,826.69	-169.67	342.56	642,694.13	569,061.36	32.76677	-104.24314
6. CHESHIRE CAT 21 - plan hits target center - Point	0.00	0.00	3,500.00	5,839.50	341.30	648,703.30	569,060.10	32.78329	-104.24313
5. CHESHIRE CAT 21 - plan misses target center by 0.05usft at 9471.81usft MD (3503.97 TVD, 5789.60 N, 342.05 E) - Point	0.00	0.00	3,503.97	5,789.60	342.10	648,653.40	569,060.90	32.78315	-104.24313
3. CHESHIRE CAT 21 - plan hits target center - Point	0.00	0.00	3,899.23	714.84	417.89	643,578.64	569,136.69	32.76920	-104.24289
4. CHESHIRE CAT 21 - plan hits target center - Point	0.00	0.00	3,900.00	814.60	416.40	643,678.40	569,135.20	32.76947	-104.24290

SPUR ENERGY PARTNERS, LLC

EDDY COUNTY, NM (NAD 83 - NME)
CHESHIRE CAT 2 STATE COM
21H

OH
PERMIT

Anticollision Report

20 November, 2025

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Reference PERMIT

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum centre distance of 1,900.00usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 11/19/2025

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	9,521.87	PERMIT (OH)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
CHESHIRE CAT 2 STATE COM						
1H - OH - PERMIT	300.00	299.00	40.00	36.09	10.246	CC, ES
1H - OH - PERMIT	9,521.87	9,270.00	780.19	686.32	8.311	SF
20H - OH - PERMIT	300.00	298.00	79.94	76.04	20.501	CC, ES
20H - OH - PERMIT	500.00	492.91	92.24	86.41	15.810	SF
50H - OH - PERMIT	300.00	298.00	59.97	56.07	15.379	CC, ES
50H - OH - PERMIT	500.00	494.49	71.59	65.80	12.377	SF
51H - OH - PERMIT	300.00	299.00	19.97	16.07	5.116	CC
51H - OH - PERMIT	550.00	550.63	20.56	14.33	3.300	ES
51H - OH - PERMIT	600.00	600.60	21.43	14.91	3.286	SF
OFFSET: EDDY STATE I NCT-B 1 - OH - OH	4,998.89	3,815.11	219.16	107.97	1.971	CC
OFFSET: EDDY STATE I NCT-B 1 - OH - OH	5,000.00	3,815.00	219.16	107.96	1.971	ES, SF
OFFSET: EMPIRE ABO U L 156 - OH - OH	4,955.35	3,818.10	449.83	345.01	4.292	CC, ES, SF
OFFSET: EMPIRE ABO U M D - OH - OH	300.00	273.00	781.36	774.15	108.331	CC
OFFSET: EMPIRE ABO U M D - OH - OH	350.00	323.00	781.79	773.36	92.711	ES
OFFSET: EMPIRE ABO U M D - OH - OH	4,250.00	3,845.68	1,038.04	944.70	11.122	SF
OFFSET: EMPIRE ABO UL 151 - OH - OH	5,523.85	3,754.23	455.53	427.72	16.383	CC, ES
OFFSET: EMPIRE ABO UL 151 - OH - OH	5,550.00	3,752.83	456.28	428.41	16.371	SF
OFFSET: EMPIRE ABO UL 154 - OH - OH	5,182.14	3,777.33	1,629.17	1,460.38	9.652	CC, ES
OFFSET: EMPIRE ABO UL 154 - OH - OH	5,200.00	3,775.91	1,629.27	1,460.46	9.651	SF
OFFSET: EMPIRE ABO UNIT `K` 161 - OH - OH	5,650.00	3,747.35	265.68	157.45	2.455	CC
OFFSET: EMPIRE ABO UNIT `K` 161 - OH - OH	5,652.25	3,747.17	265.69	157.44	2.454	ES, SF
OFFSET: EMPIRE ABO UNIT `L` 155 - OH - OH	5,413.05	3,759.85	1,162.03	1,052.02	10.564	CC, ES
OFFSET: EMPIRE ABO UNIT `L` 155 - OH - OH	5,450.00	3,756.50	1,162.61	1,052.54	10.563	SF
OFFSET: EMPIRE ABO UNIT 152 - OH - OH	300.00	270.00	1,299.90	1,287.38	103.855	CC
OFFSET: EMPIRE ABO UNIT 152 - OH - OH	450.00	419.93	1,303.57	1,284.43	68.088	ES
OFFSET: EMPIRE ABO UNIT 152 - OH - OH	4,200.00	3,824.28	1,762.46	1,595.98	10.587	SF
OFFSET: EMPIRE ABO UNIT 415 - OH - OH	7,937.32	3,572.21	1,658.69	1,549.76	15.227	CC
OFFSET: EMPIRE ABO UNIT 415 - OH - OH	7,950.00	3,571.21	1,658.74	1,549.76	15.221	ES
OFFSET: EMPIRE ABO UNIT 415 - OH - OH	8,000.00	3,567.24	1,659.87	1,550.70	15.205	SF
OFFSET: EMPIRE ABO UNIT L 152 - OH - OH	300.00	247.00	1,646.80	1,640.38	256.484	CC
OFFSET: EMPIRE ABO UNIT L 152 - OH - OH	4,702.85	3,829.55	1,713.91	1,622.93	18.839	ES
OFFSET: EMPIRE ABO UNIT L 152 - OH - OH	4,750.00	3,825.61	1,714.55	1,623.48	18.826	SF
OFFSET: EMPIRE ABO UNIT L 153 - OH - OH	4,446.54	3,867.35	557.53	461.25	5.791	CC, ES
OFFSET: EMPIRE ABO UNIT L 153 - OH - OH	4,450.00	3,867.24	557.54	461.26	5.791	SF
OFFSET: EMPIRE ABO UNIT M 151 - OH - OH	303.90	288.25	316.50	314.03	127.973	CC, ES
OFFSET: EMPIRE ABO UNIT M 151 - OH - OH	3,950.00	3,701.33	595.90	571.29	24.208	SF
OFFSET: HUDSON-STATE A 1 - OH - OH	8,573.40	3,574.26	420.26	237.04	2.294	CC, ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
CHESHIRE CAT 2 STATE COM						
OFFSET: MALCO REFINING-FED - OH - OH	300.00	280.00	689.89	676.78	52.626	CC
OFFSET: MALCO REFINING-FED - OH - OH	450.00	429.93	693.47	673.64	34.965	ES
OFFSET: MALCO REFINING-FED - OH - OH	3,850.00	3,659.37	1,134.03	974.40	7.104	SF
OFFSET: MALCO REFINING-FED_1 - OH - OH	3,970.90	3,728.99	230.63	67.76	1.416	Level 3, CC, ES, SF
OFFSET: SO RED LAKE U TR12 1 - OH - OH	7,269.05	3,625.75	1,184.12	1,008.24	6.732	CC, ES, SF
OFFSET: SRLG UNIT 39 - OH - OH	7,583.69	3,629.78	125.73	-52.40	0.706	Level 1, CC, ES, SF
OFFSET: STATE `AS` 1 - OH - OH	5,029.45	3,799.45	1,103.17	934.38	6.536	CC, ES, SF
OFFSET: STATE AO 1 - OH - OH	6,469.05	3,647.52	1,197.78	1,129.39	17.515	CC, ES
OFFSET: STATE AO 1 - OH - OH	6,550.00	3,646.59	1,200.51	1,131.78	17.466	SF
OFFSET: STATE AO 2 - OH - OH	6,393.69	3,692.04	175.16	141.88	5.263	CC, ES
OFFSET: STATE AO 2 - OH - OH	6,400.00	3,691.75	175.27	141.94	5.259	SF
OFFSET: STATE H DE - OH - OH	7,253.30	3,674.89	445.44	404.06	10.763	CC, ES
OFFSET: STATE H DE - OH - OH	7,300.00	3,670.72	447.87	405.79	10.644	SF
OFFSET: WRIGHT-STATE A 4 - OH - OH	8,590.06	3,504.93	901.56	720.59	4.982	CC, ES
OFFSET: WRIGHT-STATE A 4 - OH - OH	8,600.00	3,504.14	901.62	720.63	4.982	SF
SCBP STATE 1 - OH - OH	6,579.10	3,683.36	828.86	714.85	7.270	CC, ES, SF

Offset Design: CHESHIRE CAT 2 STATE COM - 1H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	1.00	0.00	0.00	-57.14	21.70	-33.60	40.01				
50.00	50.00	49.00	50.00	0.92	0.45	-57.14	21.70	-33.60	40.00	38.62	1.38	29.046	
100.00	100.00	99.00	100.00	0.92	0.91	-57.14	21.70	-33.60	40.00	38.16	1.84	21.748	
150.00	150.00	149.00	150.00	1.23	1.22	-57.14	21.70	-33.60	40.00	37.55	2.44	16.363	
200.00	200.00	199.00	200.00	1.53	1.52	-57.14	21.70	-33.60	40.00	36.95	3.05	13.129	
250.00	250.00	249.00	250.00	1.74	1.74	-57.14	21.70	-33.60	40.00	36.52	3.48	11.507	
300.00	300.00	299.00	300.00	1.95	1.95	-57.14	21.70	-33.60	40.00	36.09	3.90	10.246	CC, ES
350.00	350.00	348.77	349.77	2.22	2.20	-57.77	21.44	-33.93	40.57	36.20	4.37	9.281	
400.00	399.98	398.47	399.45	2.51	2.50	-59.58	20.65	-34.93	42.32	37.49	4.83	8.755	
450.00	449.93	448.04	448.97	2.75	2.74	-62.28	19.34	-36.61	45.34	40.09	5.25	8.639	
500.00	499.84	497.42	498.26	3.00	2.98	-65.50	17.50	-38.95	49.70	44.03	5.67	8.766	
550.00	549.68	546.54	547.24	3.23	3.21	-68.86	15.15	-41.94	55.49	49.41	6.07	9.134	
600.00	599.45	595.36	595.83	3.46	3.43	-72.09	12.30	-45.56	62.76	56.28	6.48	9.682	
650.00	649.13	643.79	643.97	3.68	3.61	-75.02	8.97	-49.80	71.55	64.70	6.85	10.444	
700.00	698.70	691.95	691.73	3.91	3.77	-77.58	5.17	-54.64	81.83	74.63	7.20	11.368	
750.00	748.15	740.53	739.87	4.07	3.94	-79.57	1.16	-59.74	93.25	85.73	7.52	12.404	
800.00	797.49	788.95	787.86	4.21	4.13	-81.00	-2.84	-64.83	105.46	97.63	7.83	13.474	
850.00	846.80	837.35	835.83	4.39	4.30	-82.12	-6.83	-69.91	117.81	109.65	8.16	14.444	
900.00	896.12	885.76	883.80	4.58	4.47	-83.02	-10.83	-74.99	130.19	121.72	8.48	15.358	
950.00	945.44	934.16	931.77	4.76	4.65	-83.77	-14.82	-80.07	142.61	133.81	8.80	16.202	
1,000.00	994.75	982.56	979.74	4.95	4.82	-84.39	-18.81	-85.16	155.04	145.92	9.13	16.988	
1,050.00	1,044.07	1,030.96	1,027.70	5.14	5.00	-84.93	-22.81	-90.24	167.49	158.03	9.46	17.710	
1,100.00	1,093.39	1,079.36	1,075.67	5.33	5.18	-85.39	-26.80	-95.32	179.95	170.17	9.79	18.384	
1,150.00	1,142.70	1,127.76	1,123.64	5.53	5.37	-85.79	-30.79	-100.41	192.43	182.30	10.13	19.005	
1,200.00	1,192.02	1,176.17	1,171.61	5.73	5.55	-86.14	-34.79	-105.49	204.91	194.45	10.46	19.586	
1,250.00	1,241.34	1,224.57	1,219.58	5.93	5.74	-86.45	-38.78	-110.57	217.40	206.59	10.80	20.125	
1,300.00	1,290.66	1,272.97	1,267.55	6.13	5.93	-86.73	-42.78	-115.65	229.89	218.75	11.14	20.629	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 1H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,350.00	1,339.97	1,321.37	1,315.51	6.33	6.11	-86.98	-46.77	-120.74	242.39	230.90	11.49	21.099	
1,400.00	1,389.29	1,369.77	1,363.48	6.54	6.30	-87.20	-50.76	-125.82	254.89	243.06	11.83	21.540	
1,450.00	1,438.61	1,418.18	1,411.45	6.75	6.50	-87.41	-54.76	-130.90	267.40	255.21	12.18	21.952	
1,500.00	1,487.92	1,466.58	1,459.42	6.95	6.69	-87.59	-58.75	-135.99	279.90	267.38	12.53	22.341	
1,550.00	1,537.24	1,514.98	1,507.39	7.16	6.88	-87.76	-62.75	-141.07	292.42	279.54	12.88	22.704	
1,600.00	1,586.56	1,563.38	1,555.36	7.37	7.08	-87.92	-66.74	-146.15	304.93	291.70	13.23	23.048	
1,650.00	1,635.88	1,611.78	1,603.32	7.58	7.27	-88.06	-70.73	-151.23	317.45	303.86	13.58	23.371	
1,700.00	1,685.19	1,660.19	1,651.29	7.79	7.47	-88.20	-74.73	-156.32	329.96	316.03	13.94	23.678	
1,750.00	1,734.51	1,708.59	1,699.26	8.00	7.66	-88.32	-78.72	-161.40	342.48	328.19	14.29	23.966	
1,800.00	1,783.83	1,756.99	1,747.23	8.22	7.86	-88.43	-82.72	-166.48	355.00	340.36	14.65	24.240	
1,850.00	1,833.14	1,805.39	1,795.20	8.43	8.06	-88.54	-86.71	-171.56	367.53	352.52	15.00	24.499	
1,900.00	1,882.46	1,853.79	1,843.17	8.64	8.25	-88.64	-90.70	-176.65	380.05	364.69	15.36	24.746	
1,950.00	1,931.78	1,902.20	1,891.13	8.86	8.45	-88.73	-94.70	-181.73	392.57	376.86	15.72	24.980	
2,000.00	1,981.09	1,950.60	1,939.10	9.07	8.65	-88.82	-98.69	-186.81	405.10	389.03	16.07	25.202	
2,050.00	2,030.41	1,999.00	1,987.07	9.29	8.85	-88.90	-102.69	-191.90	417.63	401.19	16.43	25.414	
2,100.00	2,079.73	2,047.40	2,035.04	9.50	9.05	-88.98	-106.68	-196.98	430.15	413.36	16.79	25.616	
2,150.00	2,129.05	2,095.80	2,083.01	9.72	9.25	-89.05	-110.67	-202.06	442.68	425.53	17.15	25.809	
2,200.00	2,178.36	2,144.20	2,130.97	9.94	9.45	-89.12	-114.67	-207.14	455.21	437.70	17.51	25.993	
2,250.00	2,227.68	2,192.61	2,178.94	10.16	9.65	-89.19	-118.66	-212.23	467.74	449.86	17.87	26.169	
2,300.00	2,277.00	2,241.01	2,226.91	10.37	9.85	-89.25	-122.66	-217.31	480.27	462.03	18.24	26.337	
2,350.00	2,326.31	2,289.41	2,274.88	10.59	10.05	-89.31	-126.65	-222.39	492.80	474.20	18.60	26.498	
2,400.00	2,375.63	2,337.81	2,322.85	10.81	10.25	-89.36	-130.64	-227.47	505.33	486.37	18.96	26.653	
2,450.00	2,424.95	2,386.21	2,370.82	11.03	10.45	-89.41	-134.64	-232.56	517.86	498.54	19.32	26.801	
2,500.00	2,474.26	2,434.62	2,418.78	11.25	10.66	-89.47	-138.63	-237.64	530.39	510.71	19.69	26.943	
2,550.00	2,523.58	2,483.02	2,466.75	11.46	10.86	-89.51	-142.62	-242.72	542.93	522.88	20.05	27.079	
2,600.00	2,572.90	2,531.42	2,514.72	11.68	11.06	-89.56	-146.62	-247.81	555.46	535.04	20.41	27.211	
2,650.00	2,622.22	2,579.82	2,562.69	11.90	11.26	-89.60	-150.61	-252.89	567.99	547.21	20.78	27.337	
2,700.00	2,671.53	2,628.22	2,610.66	12.12	11.45	-89.65	-154.61	-257.97	580.52	559.40	21.13	27.477	
2,750.00	2,720.85	2,677.51	2,659.56	12.34	11.64	-89.62	-157.93	-263.12	593.03	571.54	21.49	27.594	
2,800.00	2,770.17	2,726.96	2,708.73	12.56	11.81	-89.36	-158.78	-268.19	605.45	583.59	21.86	27.695	
2,850.00	2,819.48	2,776.03	2,757.52	12.77	11.94	-88.88	-157.10	-273.10	617.82	595.61	22.20	27.825	
2,900.00	2,868.87	2,824.67	2,805.74	12.97	12.02	-88.27	-152.95	-277.85	630.09	607.56	22.53	27.965	
2,950.00	2,918.36	2,873.08	2,853.48	13.16	12.05	-87.70	-146.38	-282.45	642.09	619.25	22.84	28.117	
3,000.00	2,967.83	2,921.29	2,900.64	13.32	12.04	-87.17	-137.43	-286.88	653.78	630.67	23.11	28.288	
3,050.00	3,017.14	2,969.31	2,947.12	13.44	12.02	-86.68	-126.15	-291.13	665.12	641.77	23.35	28.484	
3,100.00	3,066.14	3,017.14	2,992.81	13.52	11.99	-86.23	-112.61	-295.21	676.07	652.52	23.55	28.713	
3,150.00	3,114.72	3,064.81	3,037.62	13.57	11.95	-85.82	-96.84	-299.10	686.60	662.90	23.70	28.968	
3,200.00	3,162.74	3,112.31	3,081.45	13.60	11.91	-85.45	-78.92	-302.79	696.67	672.85	23.83	29.239	
3,250.00	3,210.06	3,159.66	3,124.21	13.61	11.87	-85.12	-58.90	-306.29	706.26	682.34	23.93	29.518	
3,300.00	3,256.55	3,206.86	3,165.81	13.62	11.82	-84.83	-36.86	-309.57	715.34	691.33	24.01	29.796	
3,350.00	3,302.09	3,253.91	3,206.16	13.61	11.78	-84.57	-12.86	-312.64	723.87	699.80	24.07	30.067	
3,400.00	3,346.56	3,300.00	3,244.51	13.61	11.75	-84.39	12.55	-315.44	731.84	707.71	24.13	30.331	
3,450.00	3,389.82	3,347.59	3,282.78	13.60	11.72	-84.18	40.70	-318.12	739.21	715.03	24.18	30.569	
3,500.00	3,431.77	3,394.22	3,318.89	13.60	11.69	-84.04	70.09	-320.52	745.98	721.75	24.23	30.789	
3,550.00	3,472.28	3,440.71	3,353.44	13.59	11.68	-83.94	101.13	-322.68	752.11	727.84	24.27	30.983	
3,600.00	3,511.25	3,487.06	3,386.35	13.59	11.67	-83.87	133.70	-324.61	757.60	733.27	24.32	31.148	
3,650.00	3,548.57	3,533.27	3,417.56	13.60	11.67	-83.84	167.73	-326.31	762.42	738.04	24.37	31.279	
3,700.00	3,584.14	3,579.34	3,447.02	13.61	11.69	-83.84	203.11	-327.76	766.56	742.13	24.43	31.374	
3,750.00	3,617.85	3,625.26	3,474.66	13.63	11.71	-83.88	239.75	-328.97	770.02	745.52	24.50	31.430	
3,800.00	3,649.62	3,671.04	3,500.44	13.66	11.75	-83.95	277.56	-329.95	772.78	748.20	24.58	31.443	
3,850.00	3,679.37	3,716.66	3,524.32	13.70	11.79	-84.06	316.42	-330.68	774.83	750.17	24.66	31.416	
3,900.00	3,707.00	3,766.23	3,549.12	13.74	11.86	-83.97	359.35	-331.32	776.05	751.25	24.79	31.300	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 1H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,950.00	3,732.54	3,816.23	3,574.11	13.80	11.94	-83.95	402.64	-331.97	776.30	751.35	24.95	31.111	
4,000.00	3,757.54	3,866.23	3,599.11	13.87	12.04	-83.95	445.93	-332.62	776.30	751.17	25.14	30.884	
4,050.00	3,782.54	3,916.23	3,624.11	13.95	12.13	-83.95	489.23	-333.27	776.31	750.97	25.34	30.636	
4,100.00	3,807.54	3,950.00	3,640.32	14.04	12.20	-84.97	518.85	-333.71	776.66	751.19	25.47	30.490	
4,150.00	3,832.37	3,992.59	3,658.23	14.13	12.30	-85.33	557.48	-334.29	777.72	752.09	25.63	30.339	
4,200.00	3,854.28	4,029.93	3,671.54	14.23	12.40	-86.09	592.36	-334.82	778.82	753.02	25.80	30.185	
4,250.00	3,872.20	4,067.15	3,682.52	14.35	12.50	-86.93	627.91	-335.35	779.66	753.66	25.99	29.995	
4,300.00	3,885.97	4,100.00	3,690.27	14.48	12.60	-88.15	659.82	-335.83	780.24	754.05	26.19	29.789	
4,350.00	3,895.51	4,141.35	3,697.41	14.62	12.74	-88.78	700.54	-336.44	780.51	754.06	26.46	29.501	
4,400.00	3,900.74	4,178.41	3,701.30	14.77	12.87	-89.76	737.38	-336.99	780.51	753.78	26.73	29.201	
4,450.00	3,901.61	4,215.49	3,702.80	14.93	13.00	-90.74	774.42	-337.55	780.22	753.20	27.02	28.871	
4,500.00	3,898.45	4,252.63	3,701.89	15.09	13.14	-91.71	811.54	-338.10	779.73	752.40	27.33	28.528	
4,517.50	3,897.07	4,265.72	3,701.00	15.16	13.20	-92.04	824.60	-338.30	779.68	752.24	27.45	28.409	
4,550.00	3,894.49	4,298.13	3,698.42	15.28	13.33	-92.05	856.90	-338.78	779.69	751.99	27.69	28.156	
4,600.00	3,890.52	4,348.13	3,694.45	15.47	13.54	-92.05	906.74	-339.53	779.69	751.60	28.09	27.758	
4,650.00	3,886.55	4,398.13	3,690.47	15.67	13.76	-92.05	956.57	-340.28	779.70	751.19	28.51	27.352	
4,700.00	3,882.59	4,448.13	3,686.49	15.88	14.00	-92.05	1,006.41	-341.03	779.70	750.77	28.93	26.949	
4,750.00	3,878.62	4,498.13	3,682.52	16.09	14.23	-92.05	1,056.24	-341.77	779.71	750.33	29.38	26.541	
4,800.00	3,874.65	4,548.13	3,678.54	16.31	14.48	-92.05	1,106.08	-342.52	779.71	749.88	29.83	26.137	
4,850.00	3,870.68	4,598.13	3,674.56	16.54	14.73	-92.05	1,155.92	-343.27	779.72	749.41	30.30	25.732	
4,900.00	3,866.72	4,648.13	3,670.59	16.77	14.98	-92.05	1,205.75	-344.02	779.72	748.94	30.78	25.331	
4,950.00	3,862.75	4,698.13	3,666.61	17.01	15.24	-92.05	1,255.59	-344.77	779.73	748.45	31.28	24.931	
5,000.00	3,858.78	4,748.13	3,662.63	17.25	15.51	-92.05	1,305.42	-345.51	779.73	747.95	31.78	24.538	
5,050.00	3,854.82	4,798.13	3,658.66	17.50	15.78	-92.05	1,355.26	-346.26	779.74	747.44	32.29	24.146	
5,100.00	3,850.85	4,848.13	3,654.68	17.75	16.05	-92.05	1,405.10	-347.01	779.74	746.93	32.82	23.761	
5,150.00	3,846.88	4,898.13	3,650.70	18.01	16.33	-92.05	1,454.93	-347.76	779.75	746.39	33.35	23.380	
5,200.00	3,842.91	4,948.13	3,646.73	18.27	16.62	-92.05	1,504.77	-348.50	779.75	745.86	33.89	23.007	
5,250.00	3,838.95	4,998.13	3,642.75	18.54	16.90	-92.05	1,554.60	-349.25	779.76	745.31	34.45	22.637	
5,300.00	3,834.98	5,048.13	3,638.77	18.81	17.20	-92.05	1,604.44	-350.00	779.76	744.76	35.00	22.276	
5,350.00	3,831.01	5,098.13	3,634.80	19.08	17.49	-92.05	1,654.28	-350.75	779.77	744.19	35.57	21.919	
5,400.00	3,827.04	5,148.13	3,630.82	19.36	17.79	-92.05	1,704.11	-351.49	779.77	743.62	36.15	21.571	
5,450.00	3,823.08	5,198.13	3,626.85	19.64	18.09	-92.05	1,753.95	-352.24	779.78	743.04	36.73	21.228	
5,500.00	3,819.11	5,248.13	3,622.87	19.93	18.39	-92.05	1,803.78	-352.99	779.78	742.46	37.32	20.894	
5,550.00	3,815.14	5,298.13	3,618.89	20.22	18.70	-92.05	1,853.62	-353.74	779.79	741.87	37.92	20.564	
5,600.00	3,811.18	5,348.13	3,614.92	20.51	19.01	-92.05	1,903.46	-354.48	779.79	741.27	38.52	20.243	
5,650.00	3,807.21	5,398.13	3,610.94	20.80	19.32	-92.05	1,953.29	-355.23	779.80	740.67	39.13	19.928	
5,700.00	3,803.24	5,448.13	3,606.96	21.10	19.64	-92.05	2,003.13	-355.98	779.80	740.06	39.74	19.621	
5,750.00	3,799.27	5,498.13	3,602.99	21.40	19.96	-92.05	2,052.96	-356.73	779.81	739.44	40.36	19.319	
5,800.00	3,795.31	5,548.13	3,599.01	21.70	20.28	-92.05	2,102.80	-357.47	779.81	738.82	40.99	19.025	
5,850.00	3,791.34	5,598.13	3,595.03	22.01	20.60	-92.05	2,152.64	-358.22	779.82	738.20	41.62	18.737	
5,900.00	3,787.37	5,648.13	3,591.06	22.31	20.93	-92.05	2,202.47	-358.97	779.82	737.57	42.25	18.456	
5,950.00	3,783.41	5,698.13	3,587.08	22.63	21.25	-92.05	2,252.31	-359.72	779.83	736.93	42.89	18.180	
6,000.00	3,779.44	5,748.13	3,583.10	22.94	21.58	-92.05	2,302.14	-360.46	779.83	736.29	43.54	17.912	
6,050.00	3,775.47	5,798.13	3,579.13	23.25	21.91	-92.05	2,351.98	-361.21	779.84	735.65	44.19	17.649	
6,100.00	3,771.50	5,848.13	3,575.15	23.57	22.24	-92.05	2,401.82	-361.96	779.84	735.00	44.84	17.393	
6,150.00	3,767.54	5,898.13	3,571.17	23.89	22.58	-92.05	2,451.65	-362.71	779.85	734.35	45.49	17.142	
6,200.00	3,763.57	5,948.13	3,567.20	24.21	22.91	-92.05	2,501.49	-363.45	779.85	733.70	46.15	16.898	
6,250.00	3,759.60	5,998.13	3,563.22	24.53	23.25	-92.05	2,551.32	-364.20	779.86	733.04	46.82	16.658	
6,300.00	3,755.64	6,048.13	3,559.24	24.85	23.59	-92.05	2,601.16	-364.95	779.86	732.38	47.48	16.425	
6,350.00	3,751.67	6,098.13	3,555.27	25.18	23.93	-92.05	2,651.00	-365.70	779.87	731.72	48.15	16.197	
6,400.00	3,747.70	6,148.13	3,551.29	25.51	24.27	-92.05	2,700.83	-366.45	779.87	731.05	48.82	15.974	
6,450.00	3,743.73	6,198.13	3,547.31	25.84	24.61	-92.05	2,750.67	-367.19	779.88	730.38	49.50	15.756	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 1H - OH - PERMIT

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+IFR1+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,500.00	3,739.77	6,248.13	3,543.34	26.17	24.95	-92.05	2,800.50	-367.94	779.88	729.71	50.17	15.543	
6,550.00	3,735.80	6,298.13	3,539.36	26.50	25.30	-92.05	2,850.34	-368.69	779.89	729.03	50.86	15.335	
6,600.00	3,731.83	6,348.13	3,535.38	26.83	25.64	-92.05	2,900.18	-369.44	779.89	728.35	51.54	15.132	
6,650.00	3,727.87	6,398.13	3,531.41	27.17	25.99	-92.05	2,950.01	-370.18	779.90	727.67	52.23	14.933	
6,700.00	3,723.90	6,448.13	3,527.43	27.50	26.34	-92.05	2,999.85	-370.93	779.90	726.99	52.91	14.739	
6,750.00	3,719.93	6,498.13	3,523.46	27.84	26.69	-92.05	3,049.68	-371.68	779.91	726.30	53.60	14.550	
6,800.00	3,715.96	6,548.13	3,519.48	28.18	27.04	-92.05	3,099.52	-372.43	779.91	725.62	54.30	14.364	
6,850.00	3,712.00	6,598.13	3,515.50	28.52	27.39	-92.05	3,149.36	-373.17	779.92	724.93	54.99	14.183	
6,900.00	3,708.03	6,648.13	3,511.53	28.86	27.74	-92.05	3,199.19	-373.92	779.92	724.23	55.69	14.005	
6,950.00	3,704.06	6,698.13	3,507.55	29.20	28.09	-92.05	3,249.03	-374.67	779.93	723.54	56.39	13.832	
7,000.00	3,700.09	6,748.13	3,503.57	29.54	28.45	-92.05	3,298.86	-375.42	779.93	722.85	57.09	13.662	
7,050.00	3,696.13	6,798.13	3,499.60	29.89	28.80	-92.05	3,348.70	-376.16	779.94	722.15	57.79	13.496	
7,100.00	3,692.16	6,848.13	3,495.62	30.23	29.16	-92.05	3,398.54	-376.91	779.94	721.45	58.49	13.334	
7,150.00	3,688.19	6,898.13	3,491.64	30.58	29.51	-92.05	3,448.37	-377.66	779.95	720.75	59.20	13.175	
7,200.00	3,684.23	6,948.13	3,487.67	30.92	29.87	-92.05	3,498.21	-378.41	779.95	720.05	59.91	13.019	
7,250.00	3,680.26	6,998.13	3,483.69	31.27	30.23	-92.05	3,548.04	-379.15	779.96	719.34	60.62	12.867	
7,300.00	3,676.29	7,048.13	3,479.71	31.62	30.58	-92.05	3,597.88	-379.90	779.96	718.64	61.33	12.718	
7,350.00	3,672.32	7,098.13	3,475.74	31.97	30.94	-92.05	3,647.72	-380.65	779.97	717.93	62.04	12.572	
7,400.00	3,668.36	7,148.13	3,471.76	32.32	31.30	-92.05	3,697.55	-381.40	779.97	717.22	62.75	12.429	
7,450.00	3,664.39	7,198.13	3,467.78	32.67	31.66	-92.05	3,747.39	-382.14	779.98	716.51	63.47	12.289	
7,500.00	3,660.42	7,248.13	3,463.81	33.02	32.02	-92.05	3,797.22	-382.89	779.98	715.80	64.18	12.152	
7,550.00	3,656.46	7,298.13	3,459.83	33.37	32.38	-92.05	3,847.06	-383.64	779.99	715.09	64.90	12.018	
7,600.00	3,652.49	7,348.13	3,455.85	33.73	32.75	-92.05	3,896.90	-384.39	779.99	714.37	65.62	11.887	
7,650.00	3,648.52	7,398.13	3,451.88	34.08	33.11	-92.05	3,946.73	-385.14	780.00	713.66	66.34	11.758	
7,700.00	3,644.55	7,448.13	3,447.90	34.44	33.47	-92.05	3,996.57	-385.88	780.00	712.94	67.06	11.631	
7,750.00	3,640.59	7,498.13	3,443.92	34.79	33.83	-92.05	4,046.40	-386.63	780.01	712.23	67.78	11.508	
7,800.00	3,636.62	7,548.13	3,439.95	35.15	34.20	-92.05	4,096.24	-387.38	780.01	711.51	68.51	11.386	
7,850.00	3,632.65	7,598.13	3,435.97	35.50	34.56	-92.05	4,146.08	-388.13	780.02	710.79	69.23	11.267	
7,900.00	3,628.69	7,648.13	3,431.99	35.86	34.93	-92.05	4,195.91	-388.87	780.02	710.07	69.95	11.150	
7,950.00	3,624.72	7,698.13	3,428.02	36.22	35.29	-92.05	4,245.75	-389.62	780.03	709.35	70.68	11.036	
8,000.00	3,620.75	7,748.13	3,424.04	36.57	35.66	-92.05	4,295.58	-390.37	780.03	708.63	71.41	10.924	
8,050.00	3,616.78	7,798.13	3,420.06	36.93	36.02	-92.05	4,345.42	-391.12	780.04	707.90	72.14	10.813	
8,100.00	3,612.82	7,848.13	3,416.09	37.29	36.39	-92.05	4,395.26	-391.86	780.04	707.18	72.87	10.705	
8,150.00	3,608.85	7,898.13	3,412.11	37.65	36.75	-92.05	4,445.09	-392.61	780.05	706.45	73.60	10.599	
8,200.00	3,604.88	7,948.13	3,408.14	38.01	37.12	-92.05	4,494.93	-393.36	780.05	705.73	74.33	10.495	
8,250.00	3,600.92	7,998.13	3,404.16	38.37	37.49	-92.05	4,544.76	-394.11	780.06	705.00	75.06	10.393	
8,300.00	3,596.95	8,048.13	3,400.18	38.73	37.86	-92.05	4,594.60	-394.85	780.06	704.27	75.79	10.292	
8,350.00	3,592.98	8,098.13	3,396.21	39.10	38.22	-92.05	4,644.44	-395.60	780.07	703.55	76.52	10.194	
8,400.00	3,589.01	8,148.13	3,392.23	39.46	38.59	-92.05	4,694.27	-396.35	780.07	702.82	77.26	10.097	
8,450.00	3,585.05	8,198.13	3,388.25	39.82	38.96	-92.05	4,744.11	-397.10	780.08	702.09	77.99	10.002	
8,500.00	3,581.08	8,248.13	3,384.28	40.18	39.33	-92.05	4,793.94	-397.84	780.08	701.36	78.73	9.909	
8,550.00	3,577.11	8,298.13	3,380.30	40.55	39.70	-92.05	4,843.78	-398.59	780.09	700.63	79.46	9.817	
8,600.00	3,573.14	8,348.13	3,376.32	40.91	40.07	-92.05	4,893.62	-399.34	780.09	699.90	80.20	9.727	
8,650.00	3,569.18	8,398.13	3,372.35	41.27	40.44	-92.05	4,943.45	-400.09	780.10	699.16	80.94	9.638	
8,700.00	3,565.21	8,448.13	3,368.37	41.64	40.81	-92.05	4,993.29	-400.83	780.10	698.43	81.67	9.551	
8,750.00	3,561.24	8,498.13	3,364.39	42.00	41.18	-92.05	5,043.12	-401.58	780.11	697.70	82.41	9.466	
8,800.00	3,557.28	8,548.13	3,360.42	42.37	41.55	-92.05	5,092.96	-402.33	780.11	696.96	83.15	9.382	
8,850.00	3,553.31	8,598.13	3,356.44	42.73	41.92	-92.05	5,142.80	-403.08	780.12	696.23	83.89	9.299	
8,900.00	3,549.34	8,648.13	3,352.46	43.10	42.29	-92.05	5,192.63	-403.82	780.12	695.49	84.63	9.218	
8,950.00	3,545.37	8,698.13	3,348.49	43.46	42.66	-92.05	5,242.47	-404.57	780.13	694.76	85.37	9.138	
9,000.00	3,541.41	8,748.13	3,344.51	43.83	43.04	-92.05	5,292.30	-405.32	780.13	694.02	86.11	9.059	
9,050.00	3,537.44	8,798.13	3,340.53	44.20	43.41	-92.05	5,342.14	-406.07	780.14	693.28	86.86	8.982	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 1H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,100.00	3,533.47	8,848.13	3,336.56	44.56	43.78	-92.05	5,391.98	-406.82	780.14	692.55	87.60	8.906	
9,150.00	3,529.51	8,898.13	3,332.58	44.93	44.15	-92.05	5,441.81	-407.56	780.15	691.81	88.34	8.831	
9,200.00	3,525.54	8,948.13	3,328.60	45.30	44.53	-92.05	5,491.65	-408.31	780.15	691.07	89.08	8.758	
9,250.00	3,521.57	8,998.13	3,324.63	45.67	44.90	-92.05	5,541.48	-409.06	780.16	690.33	89.83	8.685	
9,300.00	3,517.60	9,048.13	3,320.65	46.04	45.27	-92.05	5,591.32	-409.81	780.16	689.59	90.57	8.614	
9,350.00	3,513.64	9,098.13	3,316.67	46.40	45.64	-92.05	5,641.16	-410.55	780.17	688.85	91.32	8.544	
9,400.00	3,509.67	9,148.13	3,312.70	46.77	46.02	-92.05	5,690.99	-411.30	780.17	688.11	92.06	8.474	
9,450.00	3,505.70	9,198.13	3,308.72	47.14	46.39	-92.05	5,740.83	-412.05	780.18	687.37	92.81	8.407	
9,500.00	3,501.74	9,248.13	3,304.75	47.51	46.76	-92.05	5,790.66	-412.80	780.18	686.64	93.55	8.340	
9,521.87	3,500.00	9,270.00	3,303.01	47.67	46.93	-92.05	5,812.46	-413.12	780.19	686.32	93.87	8.311 SF	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 20H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	2.00	0.00	0.00	-57.20	43.30	-67.20	79.97				
50.00	50.00	48.00	50.00	0.92	0.44	-57.20	43.30	-67.20	79.94	78.57	1.37	58.445	
100.00	100.00	98.00	100.00	0.92	0.91	-57.20	43.30	-67.20	79.94	78.11	1.83	43.686	
150.00	150.00	148.00	150.00	1.23	1.21	-57.20	43.30	-67.20	79.94	77.50	2.44	32.784	
200.00	200.00	198.00	200.00	1.53	1.51	-57.20	43.30	-67.20	79.94	76.90	3.04	26.292	
250.00	250.00	248.00	250.00	1.74	1.73	-57.20	43.30	-67.20	79.94	76.47	3.47	23.027	
300.00	300.00	298.00	300.00	1.95	1.95	-57.20	43.30	-67.20	79.94	76.04	3.90	20.501	CC, ES
350.00	350.00	346.96	348.96	2.22	2.22	-57.41	43.26	-67.58	80.69	76.29	4.40	18.343	
400.00	399.98	395.79	397.78	2.51	2.49	-58.02	43.15	-68.79	82.97	78.04	4.93	16.840	
450.00	449.93	444.47	446.41	2.75	2.73	-58.99	42.95	-70.83	86.82	81.44	5.38	16.139	
500.00	499.84	492.91	494.77	3.00	2.96	-60.19	42.68	-73.66	92.24	86.41	5.83	15.810	SF
550.00	549.68	541.04	542.75	3.23	3.19	-61.55	42.33	-77.29	99.26	92.99	6.27	15.837	
600.00	599.45	588.77	590.28	3.46	3.41	-62.95	41.91	-81.68	107.89	101.18	6.70	16.102	
650.00	649.13	636.05	637.28	3.68	3.63	-64.34	41.42	-86.80	118.12	111.00	7.12	16.583	
700.00	698.70	682.79	683.65	3.91	3.84	-65.64	40.87	-92.62	129.97	122.42	7.54	17.231	
750.00	748.15	728.93	729.33	4.07	4.05	-66.85	40.25	-99.10	143.40	135.50	7.90	18.156	
800.00	797.49	774.44	774.28	4.21	4.25	-67.93	39.56	-106.22	158.30	150.07	8.22	19.247	
850.00	846.80	819.48	818.64	4.39	4.46	-68.93	38.82	-113.96	174.01	165.42	8.59	20.263	
900.00	896.12	864.05	862.41	4.58	4.66	-69.84	38.02	-122.30	190.44	181.50	8.95	21.288	
950.00	945.44	908.13	905.58	4.76	4.87	-70.68	37.17	-131.21	207.59	198.28	9.30	22.312	
1,000.00	994.75	951.72	948.12	4.95	5.07	-71.45	36.26	-140.68	225.43	215.77	9.66	23.341	
1,050.00	1,044.07	994.81	990.02	5.14	5.27	-72.17	35.31	-150.66	243.95	233.94	10.01	24.363	
1,100.00	1,093.39	1,037.38	1,031.26	5.33	5.47	-72.83	34.30	-161.15	263.16	252.80	10.37	25.388	
1,150.00	1,142.70	1,079.42	1,071.84	5.53	5.67	-73.44	33.26	-172.10	283.04	272.32	10.72	26.409	
1,200.00	1,192.02	1,120.93	1,111.74	5.73	5.86	-74.00	32.17	-183.49	303.57	292.50	11.07	27.435	
1,250.00	1,241.34	1,161.90	1,150.95	5.93	6.06	-74.53	31.03	-195.29	324.74	313.33	11.41	28.455	
1,300.00	1,290.66	1,200.00	1,187.27	6.13	6.24	-74.97	29.94	-206.77	346.56	334.84	11.72	29.560	
1,350.00	1,339.97	1,242.19	1,227.29	6.33	6.45	-75.47	28.66	-220.04	368.98	356.89	12.10	30.505	
1,400.00	1,389.29	1,281.50	1,264.41	6.54	6.64	-75.89	27.43	-232.94	392.02	379.59	12.43	31.536	
1,450.00	1,438.61	1,320.25	1,300.82	6.75	6.82	-76.29	26.17	-246.14	415.66	402.89	12.76	32.565	
1,500.00	1,487.92	1,358.45	1,336.53	6.95	7.01	-76.66	24.87	-259.64	439.88	426.79	13.09	33.600	
1,550.00	1,537.24	1,399.00	1,374.24	7.16	7.21	-77.05	23.45	-274.48	464.68	451.23	13.45	34.539	
1,600.00	1,586.56	1,438.74	1,411.09	7.37	7.38	-77.40	22.03	-289.29	489.79	476.01	13.79	35.527	
1,650.00	1,635.88	1,481.86	1,451.07	7.58	7.57	-77.76	20.50	-305.35	514.94	500.77	14.16	36.354	
1,700.00	1,685.19	1,524.97	1,491.05	7.79	7.76	-78.09	18.96	-321.41	540.10	525.56	14.54	37.134	
1,750.00	1,734.51	1,568.08	1,531.03	8.00	7.95	-78.39	17.42	-337.48	565.28	550.35	14.93	37.866	
1,800.00	1,783.83	1,611.19	1,571.01	8.22	8.14	-78.66	15.88	-353.54	590.47	575.15	15.31	38.561	
1,850.00	1,833.14	1,654.31	1,610.99	8.43	8.33	-78.92	14.34	-369.60	615.67	599.97	15.70	39.211	
1,900.00	1,882.46	1,697.42	1,650.97	8.64	8.53	-79.15	12.81	-385.67	640.88	624.79	16.09	39.831	
1,950.00	1,931.78	1,740.53	1,690.95	8.86	8.73	-79.37	11.27	-401.73	666.09	649.61	16.48	40.411	
2,000.00	1,981.09	1,783.65	1,730.93	9.07	8.92	-79.56	9.73	-417.79	691.32	674.44	16.88	40.965	
2,050.00	2,030.41	1,826.76	1,770.91	9.29	9.12	-79.75	8.19	-433.86	716.55	699.28	17.27	41.487	
2,100.00	2,079.73	1,869.87	1,810.89	9.50	9.33	-79.92	6.65	-449.92	741.79	724.12	17.67	41.983	
2,150.00	2,129.05	1,912.99	1,850.87	9.72	9.53	-80.09	5.12	-465.98	767.04	748.97	18.07	42.454	
2,200.00	2,178.36	1,956.10	1,890.85	9.94	9.73	-80.24	3.58	-482.04	792.29	773.82	18.47	42.901	
2,250.00	2,227.68	1,999.21	1,930.83	10.16	9.94	-80.38	2.04	-498.11	817.54	798.67	18.87	43.328	
2,300.00	2,277.00	2,042.33	1,970.81	10.37	10.14	-80.51	0.50	-514.17	842.80	823.53	19.27	43.732	
2,350.00	2,326.31	2,085.44	2,010.79	10.59	10.35	-80.64	-1.04	-530.23	868.06	848.38	19.68	44.119	
2,400.00	2,375.63	2,128.55	2,050.77	10.81	10.56	-80.76	-2.57	-546.30	893.33	873.25	20.08	44.487	
2,450.00	2,424.95	2,171.67	2,090.75	11.03	10.77	-80.87	-4.11	-562.36	918.59	898.11	20.49	44.838	
2,500.00	2,474.26	2,214.78	2,130.72	11.25	10.98	-80.98	-5.65	-578.42	943.87	922.97	20.89	45.175	
2,550.00	2,523.58	2,257.89	2,170.70	11.46	11.19	-81.08	-7.19	-594.49	969.14	947.84	21.30	45.495	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 20H - OH - PERMIT

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+IFR1+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,301.00	2,210.68	11.68	11.40	-81.17	-8.73	-610.55	994.42	972.71	21.71	45.803	
2,650.00	2,622.22	2,344.12	2,250.66	11.90	11.61	-81.26	-10.26	-626.61	1,019.70	997.57	22.12	46.096	
2,700.00	2,671.53	2,387.23	2,290.64	12.12	11.82	-81.35	-11.80	-642.67	1,044.98	1,022.45	22.53	46.379	
2,750.00	2,720.85	2,430.34	2,330.62	12.34	12.03	-81.43	-13.34	-658.74	1,070.26	1,047.32	22.94	46.649	
2,800.00	2,770.17	2,473.46	2,370.60	12.56	12.25	-81.51	-14.88	-674.80	1,095.54	1,072.19	23.35	46.909	
2,850.00	2,819.48	2,516.57	2,410.58	12.77	12.46	-81.58	-16.42	-690.86	1,120.83	1,097.08	23.75	47.183	
2,900.00	2,868.87	2,559.74	2,450.62	12.97	12.68	-81.71	-17.96	-706.95	1,145.94	1,121.79	24.16	47.441	
2,950.00	2,918.36	2,603.01	2,490.74	13.16	12.89	-81.96	-19.50	-723.07	1,170.54	1,145.99	24.55	47.679	
3,000.00	2,967.83	2,646.26	2,530.84	13.32	13.11	-82.33	-21.04	-739.18	1,194.58	1,169.65	24.93	47.910	
3,050.00	3,017.14	2,689.37	2,570.82	13.44	13.32	-82.81	-22.58	-755.24	1,218.05	1,192.76	25.29	48.161	
3,100.00	3,066.14	2,732.22	2,610.55	13.52	13.54	-83.40	-24.11	-771.21	1,240.93	1,215.32	25.61	48.447	
3,150.00	3,114.72	2,774.69	2,649.94	13.57	13.75	-84.09	-25.63	-787.04	1,263.23	1,237.32	25.90	48.765	
3,200.00	3,162.74	2,816.68	2,688.87	13.60	13.96	-84.88	-27.12	-802.68	1,284.96	1,258.79	26.17	49.106	
3,250.00	3,210.06	2,858.05	2,727.24	13.61	14.17	-85.75	-28.60	-818.09	1,306.14	1,279.73	26.41	49.462	
3,300.00	3,256.55	2,898.71	2,764.94	13.62	14.38	-86.71	-30.05	-833.24	1,326.81	1,300.18	26.63	49.829	
3,350.00	3,302.09	2,938.53	2,801.87	13.61	14.58	-87.74	-31.47	-848.08	1,347.00	1,320.17	26.83	50.205	
3,400.00	3,346.56	2,977.42	2,837.93	13.61	14.78	-88.85	-32.86	-862.57	1,366.76	1,339.75	27.02	50.590	
3,450.00	3,389.82	3,015.26	2,873.02	13.60	14.97	-90.03	-34.21	-876.66	1,386.14	1,358.95	27.19	50.984	
3,500.00	3,431.77	3,051.94	2,907.04	13.60	15.16	-91.28	-35.52	-890.33	1,405.19	1,377.85	27.34	51.388	
3,550.00	3,472.28	3,087.38	2,939.90	13.59	15.34	-92.58	-36.78	-903.53	1,423.96	1,396.48	27.49	51.804	
3,600.00	3,511.25	3,121.46	2,971.51	13.59	15.51	-93.94	-38.00	-916.23	1,442.52	1,414.90	27.61	52.241	
3,650.00	3,548.57	3,154.11	3,001.78	13.60	15.67	-95.35	-39.16	-928.40	1,460.91	1,433.19	27.72	52.699	
3,700.00	3,584.14	3,217.14	3,060.38	13.61	15.97	-96.72	-39.59	-951.55	1,478.98	1,450.83	28.15	52.538	
3,750.00	3,617.85	3,288.24	3,126.69	13.63	16.30	-97.83	-33.36	-976.33	1,495.74	1,467.09	28.65	52.202	
3,800.00	3,649.62	3,440.29	3,266.41	13.66	16.93	-97.70	1.86	-1,023.86	1,510.53	1,480.72	29.81	50.676	
3,850.00	3,679.37	3,600.85	3,405.10	13.70	17.38	-96.38	71.53	-1,063.66	1,522.24	1,491.54	30.70	49.582	
3,900.00	3,707.00	3,798.67	3,553.43	13.74	17.71	-93.09	197.54	-1,095.31	1,529.54	1,498.12	31.42	48.688	
3,950.00	3,732.54	3,978.14	3,657.79	13.80	17.92	-89.25	342.63	-1,105.59	1,531.30	1,499.50	31.80	48.154	
4,000.00	3,757.54	4,028.14	3,682.79	13.87	17.98	-89.25	385.93	-1,106.24	1,531.31	1,499.38	31.93	47.957	
4,050.00	3,782.54	4,078.14	3,707.79	13.95	18.05	-89.25	429.22	-1,106.89	1,531.31	1,499.22	32.09	47.721	
4,100.00	3,807.54	4,128.14	3,732.79	14.04	18.11	-89.25	472.52	-1,107.55	1,531.32	1,499.07	32.25	47.485	
4,150.00	3,832.37	4,176.58	3,756.93	14.13	18.18	-89.30	514.51	-1,108.18	1,531.32	1,498.91	32.41	47.254	
4,200.00	3,854.28	4,220.06	3,776.52	14.23	18.25	-89.53	553.31	-1,108.76	1,531.28	1,498.71	32.57	47.009	
4,250.00	3,872.20	4,263.59	3,793.13	14.35	18.32	-89.77	593.53	-1,109.37	1,531.22	1,498.46	32.76	46.742	
4,300.00	3,885.97	4,307.20	3,806.67	14.48	18.40	-90.02	634.97	-1,109.99	1,531.12	1,498.16	32.96	46.453	
4,350.00	3,895.51	4,350.00	3,816.85	14.62	18.48	-90.30	676.53	-1,110.62	1,531.00	1,497.83	33.18	46.147	
4,400.00	3,900.74	4,394.83	3,824.16	14.77	18.56	-90.50	720.74	-1,111.28	1,530.86	1,497.44	33.42	45.812	
4,450.00	3,901.61	4,438.90	3,827.95	14.93	18.66	-90.73	764.63	-1,111.94	1,530.70	1,497.03	33.67	45.465	
4,500.00	3,898.45	4,483.21	3,828.35	15.09	18.75	-90.94	808.93	-1,112.61	1,530.53	1,496.60	33.93	45.107	
4,550.00	3,894.49	4,530.05	3,825.44	15.28	18.87	-91.06	855.66	-1,113.31	1,530.50	1,496.26	34.24	44.702	
4,600.00	3,890.52	4,580.05	3,821.70	15.47	19.00	-91.06	905.51	-1,114.06	1,530.49	1,495.93	34.56	44.279	
4,650.00	3,886.55	4,630.05	3,817.96	15.67	19.14	-91.06	955.37	-1,114.82	1,530.49	1,495.57	34.92	43.833	
4,700.00	3,882.59	4,680.05	3,814.22	15.88	19.29	-91.05	1,005.22	-1,115.57	1,530.48	1,495.21	35.27	43.392	
4,750.00	3,878.62	4,730.05	3,810.48	16.09	19.45	-91.05	1,055.08	-1,116.32	1,530.48	1,494.83	35.65	42.934	
4,800.00	3,874.65	4,780.05	3,806.74	16.31	19.61	-91.05	1,104.93	-1,117.07	1,530.47	1,494.45	36.03	42.479	
4,850.00	3,870.68	4,830.05	3,803.01	16.54	19.79	-91.05	1,154.78	-1,117.82	1,530.47	1,494.04	36.43	42.011	
4,900.00	3,866.72	4,880.05	3,799.27	16.77	19.97	-91.05	1,204.64	-1,118.57	1,530.46	1,493.63	36.84	41.548	
4,950.00	3,862.75	4,930.05	3,795.53	17.01	20.15	-91.05	1,254.49	-1,119.32	1,530.46	1,493.20	37.26	41.074	
5,000.00	3,858.78	4,980.05	3,791.79	17.25	20.35	-91.05	1,304.35	-1,120.07	1,530.46	1,492.77	37.69	40.607	
5,050.00	3,854.82	5,030.05	3,788.05	17.50	20.55	-91.05	1,354.20	-1,120.82	1,530.45	1,492.32	38.14	40.132	
5,100.00	3,850.85	5,080.04	3,784.31	17.75	20.75	-91.05	1,404.05	-1,121.57	1,530.45	1,491.86	38.59	39.664	
5,150.00	3,846.88	5,130.04	3,780.58	18.01	20.97	-91.05	1,453.91	-1,122.32	1,530.44	1,491.39	39.05	39.191	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 20H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	3,842.91	5,180.04	3,776.84	18.27	21.18	-91.05	1,503.76	-1,123.07	1,530.44	1,490.92	39.52	38.725	
5,250.00	3,838.95	5,230.04	3,773.10	18.54	21.41	-91.05	1,553.62	-1,123.82	1,530.43	1,490.43	40.00	38.256	
5,300.00	3,834.98	5,280.04	3,769.36	18.81	21.64	-91.05	1,603.47	-1,124.57	1,530.43	1,489.94	40.49	37.795	
5,350.00	3,831.01	5,330.04	3,765.62	19.08	21.87	-91.05	1,653.32	-1,125.32	1,530.42	1,489.43	40.99	37.333	
5,400.00	3,827.04	5,380.04	3,761.88	19.36	22.11	-91.05	1,703.18	-1,126.08	1,530.42	1,488.92	41.50	36.879	
5,450.00	3,823.08	5,430.04	3,758.15	19.64	22.35	-91.05	1,753.03	-1,126.83	1,530.42	1,488.40	42.02	36.425	
5,500.00	3,819.11	5,480.04	3,754.41	19.93	22.59	-91.04	1,802.88	-1,127.58	1,530.41	1,487.88	42.54	35.979	
5,550.00	3,815.14	5,530.04	3,750.67	20.22	22.84	-91.04	1,852.74	-1,128.33	1,530.41	1,487.34	43.07	35.534	
5,600.00	3,811.18	5,580.04	3,746.93	20.51	23.10	-91.04	1,902.59	-1,129.08	1,530.40	1,486.80	43.60	35.098	
5,650.00	3,807.21	5,630.04	3,743.19	20.80	23.36	-91.04	1,952.45	-1,129.83	1,530.40	1,486.25	44.15	34.664	
5,700.00	3,803.24	5,680.04	3,739.45	21.10	23.62	-91.04	2,002.30	-1,130.58	1,530.40	1,485.70	44.70	34.238	
5,750.00	3,799.27	5,730.04	3,735.71	21.40	23.88	-91.04	2,052.15	-1,131.33	1,530.39	1,485.13	45.26	33.815	
5,800.00	3,795.31	5,780.04	3,731.98	21.70	24.15	-91.04	2,102.01	-1,132.08	1,530.39	1,484.57	45.82	33.401	
5,850.00	3,791.34	5,830.04	3,728.24	22.01	24.42	-91.04	2,151.86	-1,132.83	1,530.38	1,483.99	46.39	32.990	
5,900.00	3,787.37	5,880.04	3,724.50	22.31	24.70	-91.04	2,201.72	-1,133.58	1,530.38	1,483.42	46.96	32.588	
5,950.00	3,783.41	5,930.04	3,720.76	22.63	24.97	-91.04	2,251.57	-1,134.33	1,530.38	1,482.83	47.54	32.189	
6,000.00	3,779.44	5,980.04	3,717.02	22.94	25.25	-91.04	2,301.42	-1,135.08	1,530.37	1,482.24	48.13	31.798	
6,050.00	3,775.47	6,030.03	3,713.28	23.25	25.54	-91.04	2,351.28	-1,135.83	1,530.37	1,481.65	48.72	31.412	
6,100.00	3,771.50	6,080.03	3,709.55	23.57	25.82	-91.04	2,401.13	-1,136.58	1,530.36	1,481.05	49.31	31.034	
6,150.00	3,767.54	6,130.03	3,705.81	23.89	26.11	-91.04	2,450.98	-1,137.34	1,530.36	1,480.45	49.91	30.660	
6,200.00	3,763.57	6,180.03	3,702.07	24.21	26.40	-91.04	2,500.84	-1,138.09	1,530.36	1,479.84	50.52	30.293	
6,250.00	3,759.60	6,230.03	3,698.33	24.53	26.69	-91.03	2,550.69	-1,138.84	1,530.35	1,479.23	51.13	29.932	
6,300.00	3,755.64	6,280.03	3,694.59	24.85	26.99	-91.03	2,600.55	-1,139.59	1,530.35	1,478.61	51.74	29.578	
6,350.00	3,751.67	6,330.03	3,690.85	25.18	27.28	-91.03	2,650.40	-1,140.34	1,530.35	1,477.99	52.36	29.228	
6,400.00	3,747.70	6,380.03	3,687.12	25.51	27.58	-91.03	2,700.25	-1,141.09	1,530.34	1,477.36	52.98	28.886	
6,450.00	3,743.73	6,430.03	3,683.38	25.84	27.88	-91.03	2,750.11	-1,141.84	1,530.34	1,476.73	53.60	28.549	
6,500.00	3,739.77	6,480.03	3,679.64	26.17	28.18	-91.03	2,799.96	-1,142.59	1,530.34	1,476.10	54.23	28.218	
6,550.00	3,735.80	6,530.03	3,675.90	26.50	28.49	-91.03	2,849.82	-1,143.34	1,530.33	1,475.47	54.87	27.893	
6,600.00	3,731.83	6,580.03	3,672.16	26.83	28.80	-91.03	2,899.67	-1,144.09	1,530.33	1,474.83	55.50	27.574	
6,650.00	3,727.87	6,630.03	3,668.42	27.17	29.10	-91.03	2,949.52	-1,144.84	1,530.33	1,474.19	56.14	27.259	
6,700.00	3,723.90	6,680.03	3,664.69	27.50	29.41	-91.03	2,999.38	-1,145.59	1,530.32	1,473.54	56.78	26.951	
6,750.00	3,719.93	6,730.03	3,660.95	27.84	29.73	-91.03	3,049.23	-1,146.34	1,530.32	1,472.89	57.43	26.648	
6,800.00	3,715.96	6,780.03	3,657.21	28.18	30.04	-91.03	3,099.09	-1,147.09	1,530.32	1,472.24	58.07	26.351	
6,850.00	3,712.00	6,830.03	3,653.47	28.52	30.36	-91.03	3,148.94	-1,147.84	1,530.31	1,471.59	58.73	26.058	
6,900.00	3,708.03	6,880.03	3,649.73	28.86	30.67	-91.03	3,198.79	-1,148.60	1,530.31	1,470.93	59.38	25.771	
6,950.00	3,704.06	6,930.03	3,645.99	29.20	30.99	-91.03	3,248.65	-1,149.35	1,530.31	1,470.27	60.04	25.489	
7,000.00	3,700.09	6,980.02	3,642.26	29.54	31.31	-91.03	3,298.50	-1,150.10	1,530.30	1,469.61	60.70	25.213	
7,050.00	3,696.13	7,030.02	3,638.52	29.89	31.63	-91.02	3,348.35	-1,150.85	1,530.30	1,468.94	61.36	24.940	
7,100.00	3,692.16	7,080.02	3,634.78	30.23	31.95	-91.02	3,398.21	-1,151.60	1,530.30	1,468.27	62.02	24.673	
7,150.00	3,688.19	7,130.02	3,631.04	30.58	32.28	-91.02	3,448.06	-1,152.35	1,530.29	1,467.60	62.69	24.411	
7,200.00	3,684.23	7,180.02	3,627.30	30.92	32.60	-91.02	3,497.92	-1,153.10	1,530.29	1,466.93	63.36	24.153	
7,250.00	3,680.26	7,230.02	3,623.56	31.27	32.93	-91.02	3,547.77	-1,153.85	1,530.29	1,466.26	64.03	23.900	
7,300.00	3,676.29	7,280.02	3,619.83	31.62	33.25	-91.02	3,597.62	-1,154.60	1,530.28	1,465.58	64.70	23.651	
7,350.00	3,672.32	7,330.02	3,616.09	31.97	33.58	-91.02	3,647.48	-1,155.35	1,530.28	1,464.90	65.38	23.406	
7,400.00	3,668.36	7,380.02	3,612.35	32.32	33.91	-91.02	3,697.33	-1,156.10	1,530.28	1,464.22	66.06	23.166	
7,450.00	3,664.39	7,430.02	3,608.61	32.67	34.24	-91.02	3,747.19	-1,156.85	1,530.28	1,463.54	66.74	22.930	
7,500.00	3,660.42	7,480.02	3,604.87	33.02	34.57	-91.02	3,797.04	-1,157.60	1,530.27	1,462.86	67.42	22.699	
7,550.00	3,656.46	7,530.02	3,601.13	33.37	34.90	-91.02	3,846.89	-1,158.35	1,530.27	1,462.17	68.10	22.471	
7,600.00	3,652.49	7,580.02	3,597.40	33.73	35.24	-91.02	3,896.75	-1,159.10	1,530.27	1,461.48	68.79	22.247	
7,650.00	3,648.52	7,630.02	3,593.66	34.08	35.57	-91.02	3,946.60	-1,159.86	1,530.26	1,460.79	69.47	22.027	
7,700.00	3,644.55	7,680.02	3,589.92	34.44	35.91	-91.02	3,996.45	-1,160.61	1,530.26	1,460.10	70.16	21.811	
7,750.00	3,640.59	7,730.02	3,586.18	34.79	36.24	-91.02	4,046.31	-1,161.36	1,530.26	1,459.41	70.85	21.598	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 20H - OH - PERMIT

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+IFR1+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,800.00	3,636.62	7,780.02	3,582.44	35.15	36.58	-91.01	4,096.16	-1,162.11	1,530.26	1,458.71	71.54	21.389	
7,850.00	3,632.65	7,830.02	3,578.70	35.50	36.92	-91.01	4,146.02	-1,162.86	1,530.25	1,458.02	72.24	21.184	
7,900.00	3,628.69	7,880.02	3,574.97	35.86	37.26	-91.01	4,195.87	-1,163.61	1,530.25	1,457.32	72.93	20.982	
7,950.00	3,624.72	7,930.01	3,571.23	36.22	37.60	-91.01	4,245.72	-1,164.36	1,530.25	1,456.62	73.63	20.784	
8,000.00	3,620.75	7,980.01	3,567.49	36.57	37.94	-91.01	4,295.58	-1,165.11	1,530.25	1,455.92	74.33	20.588	
8,050.00	3,616.78	8,030.01	3,563.75	36.93	38.28	-91.01	4,345.43	-1,165.86	1,530.24	1,455.22	75.03	20.396	
8,100.00	3,612.82	8,080.01	3,560.01	37.29	38.62	-91.01	4,395.29	-1,166.61	1,530.24	1,454.52	75.73	20.208	
8,150.00	3,608.85	8,130.01	3,556.27	37.65	38.97	-91.01	4,445.14	-1,167.36	1,530.24	1,453.81	76.43	20.022	
8,200.00	3,604.88	8,180.01	3,552.53	38.01	39.31	-91.01	4,494.99	-1,168.11	1,530.24	1,453.11	77.13	19.840	
8,250.00	3,600.92	8,230.01	3,548.80	38.37	39.65	-91.01	4,544.85	-1,168.86	1,530.24	1,452.40	77.84	19.660	
8,300.00	3,596.95	8,280.01	3,545.06	38.73	40.00	-91.01	4,594.70	-1,169.61	1,530.23	1,451.69	78.54	19.483	
8,350.00	3,592.98	8,330.01	3,541.32	39.10	40.35	-91.01	4,644.56	-1,170.36	1,530.23	1,450.98	79.25	19.309	
8,400.00	3,589.01	8,380.01	3,537.58	39.46	40.69	-91.01	4,694.41	-1,171.12	1,530.23	1,450.27	79.96	19.139	
8,450.00	3,585.05	8,430.01	3,533.84	39.82	41.04	-91.01	4,744.26	-1,171.87	1,530.23	1,449.56	80.66	18.970	
8,500.00	3,581.08	8,480.01	3,530.10	40.18	41.39	-91.01	4,794.12	-1,172.62	1,530.22	1,448.85	81.37	18.805	
8,550.00	3,577.11	8,530.01	3,526.37	40.55	41.74	-91.01	4,843.97	-1,173.37	1,530.22	1,448.14	82.09	18.642	
8,600.00	3,573.14	8,580.01	3,522.63	40.91	42.08	-91.00	4,893.82	-1,174.12	1,530.22	1,447.42	82.80	18.481	
8,650.00	3,569.18	8,630.01	3,518.89	41.27	42.43	-91.00	4,943.68	-1,174.87	1,530.22	1,446.71	83.51	18.323	
8,700.00	3,565.21	8,680.01	3,515.15	41.64	42.78	-91.00	4,993.53	-1,175.62	1,530.22	1,445.99	84.23	18.168	
8,750.00	3,561.24	8,730.01	3,511.41	42.00	43.13	-91.00	5,043.39	-1,176.37	1,530.21	1,445.27	84.94	18.015	
8,800.00	3,557.28	8,780.01	3,507.67	42.37	43.49	-91.00	5,093.24	-1,177.12	1,530.21	1,444.55	85.66	17.864	
8,850.00	3,553.31	8,830.01	3,503.94	42.73	43.84	-91.00	5,143.09	-1,177.87	1,530.21	1,443.84	86.37	17.716	
8,900.00	3,549.34	8,880.00	3,500.20	43.10	44.19	-91.00	5,192.95	-1,178.62	1,530.21	1,443.12	87.09	17.570	
8,950.00	3,545.37	8,930.00	3,496.46	43.46	44.54	-91.00	5,242.80	-1,179.37	1,530.21	1,442.39	87.81	17.426	
9,000.00	3,541.41	8,980.00	3,492.72	43.83	44.90	-91.00	5,292.66	-1,180.12	1,530.20	1,441.67	88.53	17.284	
9,050.00	3,537.44	9,030.00	3,488.98	44.20	45.25	-91.00	5,342.51	-1,180.87	1,530.20	1,440.95	89.25	17.145	
9,100.00	3,533.47	9,080.00	3,485.24	44.56	45.60	-91.00	5,392.36	-1,181.62	1,530.20	1,440.23	89.97	17.007	
9,150.00	3,529.51	9,130.00	3,481.51	44.93	45.96	-91.00	5,442.22	-1,182.38	1,530.20	1,439.50	90.70	16.872	
9,200.00	3,525.54	9,180.00	3,477.77	45.30	46.31	-91.00	5,492.07	-1,183.13	1,530.20	1,438.78	91.42	16.738	
9,250.00	3,521.57	9,230.00	3,474.03	45.67	46.67	-91.00	5,541.92	-1,183.88	1,530.20	1,438.05	92.14	16.607	
9,300.00	3,517.60	9,280.00	3,470.29	46.04	47.03	-91.00	5,591.78	-1,184.63	1,530.19	1,437.33	92.87	16.477	
9,350.00	3,513.64	9,330.00	3,466.55	46.40	47.38	-90.99	5,641.63	-1,185.38	1,530.19	1,436.60	93.59	16.350	
9,400.00	3,509.67	9,380.00	3,462.81	46.77	47.74	-90.99	5,691.49	-1,186.13	1,530.19	1,435.87	94.32	16.224	
9,450.00	3,505.70	9,430.00	3,459.08	47.14	48.10	-90.99	5,741.34	-1,186.88	1,530.19	1,435.15	95.04	16.100	
9,500.00	3,501.74	9,480.00	3,455.34	47.51	48.45	-90.99	5,791.19	-1,187.63	1,530.19	1,434.42	95.76	15.979	
9,521.87	3,500.00	9,501.87	3,453.70	47.67	48.61	-90.99	5,813.00	-1,187.96	1,530.19	1,434.11	96.08	15.926	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 50H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	2.00	0.00	0.00	-57.18	32.50	-50.40	60.00				
50.00	50.00	48.00	50.00	0.92	0.44	-57.18	32.50	-50.40	59.97	58.60	1.37	43.844	
100.00	100.00	98.00	100.00	0.92	0.91	-57.18	32.50	-50.40	59.97	58.14	1.83	32.772	
150.00	150.00	148.00	150.00	1.23	1.21	-57.18	32.50	-50.40	59.97	57.53	2.44	24.594	
200.00	200.00	198.00	200.00	1.53	1.51	-57.18	32.50	-50.40	59.97	56.93	3.04	19.724	
250.00	250.00	248.00	250.00	1.74	1.73	-57.18	32.50	-50.40	59.97	56.50	3.47	17.274	
300.00	300.00	298.00	300.00	1.95	1.95	-57.18	32.50	-50.40	59.97	56.07	3.90	15.379	CC, ES
350.00	350.00	347.33	349.33	2.22	2.21	-57.51	32.39	-50.78	60.67	56.28	4.39	13.820	
400.00	399.98	396.56	398.54	2.51	2.49	-58.48	32.06	-51.97	62.81	57.92	4.90	12.828	
450.00	449.93	445.64	447.58	2.75	2.73	-59.96	31.49	-53.96	66.44	61.10	5.34	12.448	
500.00	499.84	494.49	496.34	3.00	2.97	-61.78	30.71	-56.75	71.59	65.80	5.78	12.377	SF
550.00	549.68	543.04	544.74	3.23	3.20	-63.76	29.70	-60.32	78.29	72.08	6.21	12.604	
600.00	599.45	591.21	592.71	3.46	3.42	-65.75	28.48	-64.63	86.57	79.93	6.64	13.039	
650.00	649.13	638.94	640.15	3.68	3.64	-67.64	27.06	-69.67	96.45	89.39	7.06	13.663	
700.00	698.70	686.16	686.99	3.91	3.85	-69.36	25.44	-75.41	107.92	100.44	7.48	14.437	
750.00	748.15	732.80	733.16	4.07	4.06	-70.89	23.64	-81.81	120.96	113.13	7.83	15.454	
800.00	797.49	778.85	778.62	4.21	4.27	-72.23	21.66	-88.83	135.44	127.29	8.15	16.620	
850.00	846.80	824.43	823.50	4.39	4.48	-73.45	19.50	-96.47	150.73	142.22	8.51	17.713	
900.00	896.12	869.55	867.81	4.58	4.68	-74.56	17.18	-104.71	166.72	157.86	8.86	18.807	
950.00	945.44	914.21	911.51	4.76	4.89	-75.57	14.69	-113.53	183.41	174.20	9.22	19.894	
1,000.00	994.75	958.38	954.60	4.95	5.10	-76.50	12.05	-122.89	200.80	191.23	9.57	20.979	
1,050.00	1,044.07	1,000.00	995.06	5.14	5.29	-77.29	9.39	-132.30	218.88	208.98	9.90	22.110	
1,100.00	1,093.39	1,045.22	1,038.84	5.33	5.47	-78.14	6.33	-143.16	237.62	227.38	10.24	23.199	
1,150.00	1,142.70	1,088.43	1,080.51	5.53	5.64	-78.88	3.23	-154.15	257.02	246.46	10.56	24.339	
1,200.00	1,192.02	1,134.28	1,124.67	5.73	5.82	-79.61	-0.13	-166.03	276.69	265.77	10.92	25.347	
1,250.00	1,241.34	1,180.13	1,168.83	5.93	6.01	-80.25	-3.48	-177.91	296.39	285.10	11.29	26.249	
1,300.00	1,290.66	1,225.98	1,212.99	6.13	6.20	-80.80	-6.83	-189.79	316.12	304.46	11.66	27.106	
1,350.00	1,339.97	1,271.83	1,257.15	6.33	6.39	-81.29	-10.18	-201.67	335.88	323.84	12.03	27.912	
1,400.00	1,389.29	1,317.68	1,301.30	6.54	6.58	-81.72	-13.53	-213.55	355.66	343.25	12.41	28.669	
1,450.00	1,438.61	1,363.53	1,345.46	6.75	6.78	-82.11	-16.89	-225.44	375.45	362.67	12.78	29.372	
1,500.00	1,487.92	1,409.38	1,389.62	6.95	6.97	-82.46	-20.24	-237.32	395.26	382.10	13.16	30.033	
1,550.00	1,537.24	1,455.23	1,433.78	7.16	7.17	-82.78	-23.59	-249.20	415.08	401.54	13.54	30.649	
1,600.00	1,586.56	1,501.09	1,477.93	7.37	7.37	-83.07	-26.94	-261.08	434.92	420.99	13.93	31.231	
1,650.00	1,635.88	1,546.94	1,522.09	7.58	7.57	-83.33	-30.30	-272.96	454.76	440.45	14.31	31.772	
1,700.00	1,685.19	1,592.79	1,566.25	7.79	7.78	-83.57	-33.65	-284.84	474.61	459.91	14.70	32.286	
1,750.00	1,734.51	1,638.64	1,610.41	8.00	7.98	-83.80	-37.00	-296.72	494.47	479.38	15.09	32.766	
1,800.00	1,783.83	1,684.49	1,654.57	8.22	8.19	-84.00	-40.35	-308.60	514.33	498.85	15.48	33.221	
1,850.00	1,833.14	1,730.34	1,698.72	8.43	8.40	-84.19	-43.70	-320.48	534.20	518.33	15.88	33.649	
1,900.00	1,882.46	1,776.19	1,742.88	8.64	8.60	-84.37	-47.06	-332.36	554.08	537.81	16.27	34.054	
1,950.00	1,931.78	1,822.04	1,787.04	8.86	8.81	-84.53	-50.41	-344.24	573.96	557.29	16.67	34.437	
2,000.00	1,981.09	1,867.89	1,831.20	9.07	9.02	-84.68	-53.76	-356.13	593.85	576.78	17.06	34.801	
2,050.00	2,030.41	1,913.74	1,875.35	9.29	9.24	-84.83	-57.11	-368.01	613.73	596.27	17.46	35.145	
2,100.00	2,079.73	1,959.59	1,919.51	9.50	9.45	-84.96	-60.47	-379.89	633.63	615.76	17.86	35.472	
2,150.00	2,129.05	2,005.44	1,963.67	9.72	9.66	-85.09	-63.82	-391.77	653.52	635.26	18.26	35.782	
2,200.00	2,178.36	2,051.30	2,007.83	9.94	9.88	-85.21	-67.17	-403.65	673.42	654.75	18.67	36.078	
2,250.00	2,227.68	2,097.15	2,051.99	10.16	10.09	-85.32	-70.52	-415.53	693.32	674.25	19.07	36.359	
2,300.00	2,277.00	2,143.00	2,096.14	10.37	10.31	-85.42	-73.87	-427.41	713.22	693.75	19.47	36.627	
2,350.00	2,326.31	2,188.85	2,140.30	10.59	10.52	-85.52	-77.23	-439.29	733.13	713.25	19.88	36.883	
2,400.00	2,375.63	2,234.70	2,184.46	10.81	10.74	-85.62	-80.58	-451.17	753.03	732.75	20.28	37.128	
2,450.00	2,424.95	2,280.55	2,228.62	11.03	10.95	-85.71	-83.93	-463.05	772.94	752.25	20.69	37.361	
2,500.00	2,474.26	2,326.40	2,272.77	11.25	11.17	-85.79	-87.28	-474.93	792.85	771.76	21.10	37.585	
2,550.00	2,523.58	2,372.25	2,316.93	11.46	11.39	-85.87	-90.64	-486.82	812.76	791.26	21.50	37.798	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 50H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,418.10	2,361.09	11.68	11.61	-85.95	-93.99	-498.70	832.68	810.77	21.91	38.003	
2,650.00	2,622.22	2,463.95	2,405.25	11.90	11.83	-86.02	-97.34	-510.58	852.59	830.27	22.32	38.199	
2,700.00	2,671.53	2,509.80	2,449.41	12.12	12.05	-86.09	-100.69	-522.46	872.51	849.78	22.73	38.388	
2,750.00	2,720.85	2,555.66	2,493.56	12.34	12.27	-86.16	-104.05	-534.34	892.43	869.29	23.14	38.569	
2,800.00	2,770.17	2,601.51	2,537.72	12.56	12.49	-86.22	-107.40	-546.22	912.34	888.79	23.55	38.743	
2,850.00	2,819.48	2,647.36	2,581.88	12.77	12.71	-86.29	-110.75	-558.10	932.26	908.32	23.95	38.933	
2,900.00	2,868.87	2,693.23	2,626.05	12.97	12.93	-86.40	-114.10	-569.99	952.06	927.72	24.34	39.109	
2,950.00	2,918.36	2,739.07	2,670.21	13.16	13.15	-86.67	-117.45	-581.87	971.52	946.78	24.74	39.269	
3,000.00	2,967.83	2,784.77	2,714.21	13.32	13.37	-87.08	-120.80	-593.71	990.61	965.48	25.13	39.423	
3,050.00	3,017.14	2,830.19	2,757.96	13.44	13.59	-87.63	-124.12	-605.48	1,009.33	983.84	25.49	39.592	
3,100.00	3,066.14	2,875.21	2,801.32	13.52	13.81	-88.31	-127.41	-617.14	1,027.70	1,001.87	25.83	39.791	
3,150.00	3,114.72	2,919.71	2,844.18	13.57	14.02	-89.10	-130.66	-628.67	1,045.74	1,019.61	26.13	40.019	
3,200.00	3,162.74	2,963.57	2,886.42	13.60	14.24	-90.00	-133.87	-640.04	1,063.50	1,037.09	26.41	40.270	
3,250.00	3,210.06	3,006.67	2,927.92	13.61	14.44	-91.01	-137.02	-651.21	1,081.03	1,054.37	26.66	40.542	
3,300.00	3,256.55	3,048.88	2,968.57	13.62	14.65	-92.12	-140.11	-662.14	1,098.39	1,071.49	26.90	40.830	
3,350.00	3,302.09	3,090.09	3,008.27	13.61	14.85	-93.32	-143.12	-672.82	1,115.65	1,088.53	27.12	41.137	
3,400.00	3,346.56	3,130.20	3,046.89	13.61	15.05	-94.61	-146.05	-683.21	1,132.88	1,105.56	27.32	41.462	
3,450.00	3,389.82	3,169.08	3,084.34	13.60	15.24	-95.97	-148.89	-693.29	1,150.16	1,122.65	27.51	41.808	
3,500.00	3,431.77	3,206.64	3,120.50	13.60	15.42	-97.41	-151.64	-703.02	1,167.56	1,139.88	27.68	42.181	
3,550.00	3,472.28	3,247.98	3,160.34	13.59	15.60	-98.92	-154.54	-713.72	1,185.15	1,157.28	27.87	42.518	
3,600.00	3,511.25	3,304.54	3,215.01	13.59	15.86	-100.38	-156.13	-728.09	1,202.56	1,174.35	28.22	42.617	
3,650.00	3,548.57	3,365.31	3,273.86	13.60	16.12	-101.71	-154.13	-743.05	1,219.56	1,190.98	28.58	42.668	
3,700.00	3,584.14	3,431.00	3,337.34	13.61	16.38	-102.87	-147.66	-758.61	1,236.03	1,207.07	28.96	42.680	
3,750.00	3,617.85	3,502.44	3,405.87	13.63	16.61	-103.82	-135.60	-774.73	1,251.82	1,222.48	29.34	42.672	
3,800.00	3,649.62	3,580.59	3,479.79	13.66	16.82	-104.49	-116.46	-791.29	1,266.75	1,237.06	29.68	42.676	
3,850.00	3,679.37	3,666.49	3,559.20	13.70	16.99	-104.83	-88.43	-808.08	1,280.60	1,250.60	30.00	42.693	
3,900.00	3,707.00	3,740.52	3,625.54	13.74	17.10	-105.18	-58.38	-821.21	1,293.10	1,262.90	30.19	42.826	
3,950.00	3,732.54	3,865.93	3,732.71	13.80	17.24	-104.16	3.57	-840.63	1,303.98	1,273.49	30.49	42.772	
4,000.00	3,757.54	3,982.87	3,825.03	13.87	17.34	-102.87	73.75	-855.09	1,312.87	1,282.20	30.67	42.809	
4,050.00	3,782.54	4,088.29	3,900.69	13.95	17.42	-101.53	146.42	-864.90	1,319.19	1,288.38	30.81	42.815	
4,100.00	3,807.54	4,247.54	3,999.96	14.04	17.55	-98.00	270.36	-873.94	1,322.54	1,291.61	30.94	42.749	
4,150.00	3,832.37	4,342.16	4,049.34	14.13	17.65	-96.37	351.01	-875.88	1,323.01	1,291.95	31.06	42.599	
4,200.00	3,854.28	4,392.02	4,074.27	14.23	17.71	-96.44	394.18	-876.52	1,323.67	1,292.46	31.21	42.410	
4,250.00	3,872.20	4,441.39	4,098.95	14.35	17.79	-96.62	436.93	-877.17	1,325.20	1,293.83	31.37	42.245	
4,300.00	3,885.97	4,489.89	4,123.20	14.48	17.86	-96.88	478.93	-877.80	1,327.65	1,296.14	31.51	42.134	
4,350.00	3,895.51	4,557.59	4,155.80	14.62	17.96	-96.43	538.24	-878.69	1,330.95	1,299.31	31.64	42.063	
4,400.00	3,900.74	4,657.61	4,191.53	14.77	18.15	-94.52	631.51	-880.09	1,333.83	1,301.99	31.84	41.897	
4,450.00	3,901.61	4,763.78	4,211.12	14.93	18.38	-92.14	735.70	-881.66	1,335.77	1,303.65	32.12	41.592	
4,500.00	3,898.45	4,866.19	4,211.54	15.09	18.64	-89.83	837.96	-883.19	1,336.50	1,304.03	32.47	41.162	
4,550.00	3,894.49	4,916.19	4,207.80	15.28	18.78	-89.83	887.81	-883.94	1,336.56	1,303.77	32.79	40.766	
4,600.00	3,890.52	4,966.19	4,204.07	15.47	18.93	-89.82	937.66	-884.69	1,336.61	1,303.50	33.12	40.360	
4,650.00	3,886.55	5,016.19	4,200.33	15.67	19.09	-89.82	987.52	-885.44	1,336.67	1,303.21	33.46	39.943	
4,700.00	3,882.59	5,066.19	4,196.60	15.88	19.25	-89.82	1,037.37	-886.19	1,336.73	1,302.91	33.82	39.521	
4,750.00	3,878.62	5,116.19	4,192.86	16.09	19.43	-89.82	1,087.23	-886.94	1,336.79	1,302.59	34.20	39.091	
4,800.00	3,874.65	5,166.18	4,189.12	16.31	19.61	-89.82	1,137.08	-887.69	1,336.85	1,302.27	34.58	38.657	
4,850.00	3,870.68	5,216.18	4,185.39	16.54	19.79	-89.82	1,186.93	-888.44	1,336.91	1,301.93	34.98	38.218	
4,900.00	3,866.72	5,266.18	4,181.65	16.77	19.99	-89.82	1,236.79	-889.19	1,336.97	1,301.58	35.39	37.778	
4,950.00	3,862.75	5,316.18	4,177.92	17.01	20.18	-89.82	1,286.64	-889.93	1,337.02	1,301.21	35.81	37.334	
5,000.00	3,858.78	5,366.18	4,174.18	17.25	20.39	-89.82	1,336.50	-890.68	1,337.08	1,300.84	36.25	36.890	
5,050.00	3,854.82	5,416.18	4,170.45	17.50	20.60	-89.82	1,386.35	-891.43	1,337.14	1,300.45	36.69	36.444	
5,100.00	3,850.85	5,466.18	4,166.71	17.75	20.81	-89.82	1,436.21	-892.18	1,337.20	1,300.06	37.14	36.001	
5,150.00	3,846.88	5,516.18	4,162.97	18.01	21.03	-89.82	1,486.06	-892.93	1,337.26	1,299.65	37.61	35.557	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 50H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	3,842.91	5,566.18	4,159.24	18.27	21.26	-89.82	1,535.91	-893.68	1,337.32	1,299.24	38.08	35.116	
5,250.00	3,838.95	5,616.18	4,155.50	18.54	21.49	-89.82	1,585.77	-894.43	1,337.38	1,298.81	38.57	34.676	
5,300.00	3,834.98	5,666.18	4,151.77	18.81	21.73	-89.81	1,635.62	-895.18	1,337.44	1,298.38	39.06	34.240	
5,350.00	3,831.01	5,716.18	4,148.03	19.08	21.96	-89.81	1,685.48	-895.93	1,337.50	1,297.93	39.56	33.807	
5,400.00	3,827.04	5,766.18	4,144.30	19.36	22.21	-89.81	1,735.33	-896.68	1,337.56	1,297.48	40.07	33.378	
5,450.00	3,823.08	5,816.18	4,140.56	19.64	22.45	-89.81	1,785.18	-897.43	1,337.61	1,297.02	40.59	32.952	
5,500.00	3,819.11	5,866.18	4,136.82	19.93	22.71	-89.81	1,835.04	-898.18	1,337.67	1,296.55	41.12	32.532	
5,550.00	3,815.14	5,916.18	4,133.09	20.22	22.96	-89.81	1,884.89	-898.92	1,337.73	1,296.08	41.65	32.116	
5,600.00	3,811.18	5,966.18	4,129.35	20.51	23.22	-89.81	1,934.75	-899.67	1,337.79	1,295.60	42.19	31.705	
5,650.00	3,807.21	6,016.18	4,125.62	20.80	23.48	-89.81	1,984.60	-900.42	1,337.85	1,295.11	42.74	31.299	
5,700.00	3,803.24	6,066.17	4,121.88	21.10	23.75	-89.81	2,034.45	-901.17	1,337.91	1,294.61	43.30	30.899	
5,750.00	3,799.27	6,116.17	4,118.15	21.40	24.02	-89.81	2,084.31	-901.92	1,337.97	1,294.11	43.86	30.504	
5,800.00	3,795.31	6,166.17	4,114.41	21.70	24.29	-89.81	2,134.16	-902.67	1,338.03	1,293.60	44.43	30.116	
5,850.00	3,791.34	6,216.17	4,110.68	22.01	24.56	-89.81	2,184.02	-903.42	1,338.09	1,293.08	45.00	29.732	
5,900.00	3,787.37	6,266.17	4,106.94	22.31	24.84	-89.81	2,233.87	-904.17	1,338.15	1,292.56	45.58	29.355	
5,950.00	3,783.41	6,316.17	4,103.20	22.63	25.12	-89.80	2,283.72	-904.92	1,338.21	1,292.04	46.17	28.984	
6,000.00	3,779.44	6,366.17	4,099.47	22.94	25.41	-89.80	2,333.58	-905.67	1,338.27	1,291.51	46.76	28.618	
6,050.00	3,775.47	6,416.17	4,095.73	23.25	25.69	-89.80	2,383.43	-906.42	1,338.33	1,290.97	47.36	28.259	
6,100.00	3,771.50	6,466.17	4,092.00	23.57	25.98	-89.80	2,433.29	-907.16	1,338.39	1,290.43	47.96	27.906	
6,150.00	3,767.54	6,516.17	4,088.26	23.89	26.27	-89.80	2,483.14	-907.91	1,338.45	1,289.88	48.57	27.558	
6,200.00	3,763.57	6,566.17	4,084.53	24.21	26.56	-89.80	2,532.99	-908.66	1,338.51	1,289.33	49.18	27.217	
6,250.00	3,759.60	6,616.17	4,080.79	24.53	26.86	-89.80	2,582.85	-909.41	1,338.57	1,288.77	49.79	26.882	
6,300.00	3,755.64	6,666.17	4,077.05	24.85	27.16	-89.80	2,632.70	-910.16	1,338.63	1,288.21	50.41	26.552	
6,350.00	3,751.67	6,716.17	4,073.32	25.18	27.46	-89.80	2,682.56	-910.91	1,338.69	1,287.65	51.04	26.229	
6,400.00	3,747.70	6,766.17	4,069.58	25.51	27.76	-89.80	2,732.41	-911.66	1,338.75	1,287.08	51.67	25.911	
6,450.00	3,743.73	6,816.17	4,065.85	25.84	28.06	-89.80	2,782.27	-912.41	1,338.81	1,286.51	52.30	25.599	
6,500.00	3,739.77	6,866.17	4,062.11	26.17	28.37	-89.80	2,832.12	-913.16	1,338.87	1,285.93	52.94	25.292	
6,550.00	3,735.80	6,916.17	4,058.38	26.50	28.68	-89.80	2,881.97	-913.91	1,338.93	1,285.35	53.58	24.991	
6,600.00	3,731.83	6,966.17	4,054.64	26.83	28.99	-89.79	2,931.83	-914.66	1,338.99	1,284.77	54.22	24.696	
6,650.00	3,727.87	7,016.16	4,050.90	27.17	29.30	-89.79	2,981.68	-915.41	1,339.05	1,284.18	54.87	24.406	
6,700.00	3,723.90	7,066.16	4,047.17	27.50	29.61	-89.79	3,031.54	-916.15	1,339.11	1,283.59	55.52	24.121	
6,750.00	3,719.93	7,116.16	4,043.43	27.84	29.92	-89.79	3,081.39	-916.90	1,339.17	1,283.00	56.17	23.842	
6,800.00	3,715.96	7,166.16	4,039.70	28.18	30.24	-89.79	3,131.24	-917.65	1,339.23	1,282.40	56.82	23.568	
6,850.00	3,712.00	7,216.16	4,035.96	28.52	30.56	-89.79	3,181.10	-918.40	1,339.29	1,281.80	57.48	23.299	
6,900.00	3,708.03	7,266.16	4,032.23	28.86	30.88	-89.79	3,230.95	-919.15	1,339.35	1,281.20	58.14	23.035	
6,950.00	3,704.06	7,316.16	4,028.49	29.20	31.20	-89.79	3,280.81	-919.90	1,339.41	1,280.60	58.81	22.776	
7,000.00	3,700.09	7,366.16	4,024.75	29.54	31.52	-89.79	3,330.66	-920.65	1,339.47	1,279.99	59.48	22.521	
7,050.00	3,696.13	7,416.16	4,021.02	29.89	31.84	-89.79	3,380.51	-921.40	1,339.53	1,279.38	60.15	22.271	
7,100.00	3,692.16	7,466.16	4,017.28	30.23	32.17	-89.79	3,430.37	-922.15	1,339.59	1,278.77	60.82	22.026	
7,150.00	3,688.19	7,516.16	4,013.55	30.58	32.49	-89.79	3,480.22	-922.90	1,339.65	1,278.16	61.49	21.786	
7,200.00	3,684.23	7,566.16	4,009.81	30.92	32.82	-89.79	3,530.08	-923.65	1,339.71	1,277.54	62.17	21.549	
7,250.00	3,680.26	7,616.16	4,006.08	31.27	33.15	-89.78	3,579.93	-924.39	1,339.77	1,276.92	62.85	21.318	
7,300.00	3,676.29	7,666.16	4,002.34	31.62	33.48	-89.78	3,629.78	-925.14	1,339.83	1,276.30	63.53	21.090	
7,350.00	3,672.32	7,716.16	3,998.60	31.97	33.81	-89.78	3,679.64	-925.89	1,339.89	1,275.68	64.21	20.867	
7,400.00	3,668.36	7,766.16	3,994.87	32.32	34.14	-89.78	3,729.49	-926.64	1,339.95	1,275.05	64.90	20.647	
7,450.00	3,664.39	7,816.16	3,991.13	32.67	34.47	-89.78	3,779.35	-927.39	1,340.01	1,274.43	65.58	20.432	
7,500.00	3,660.42	7,866.16	3,987.40	33.02	34.81	-89.78	3,829.20	-928.14	1,340.07	1,273.80	66.27	20.220	
7,550.00	3,656.46	7,916.15	3,983.66	33.37	35.14	-89.78	3,879.06	-928.89	1,340.13	1,273.17	66.96	20.012	
7,600.00	3,652.49	7,966.15	3,979.93	33.73	35.48	-89.78	3,928.91	-929.64	1,340.19	1,272.54	67.66	19.808	
7,650.00	3,648.52	8,016.15	3,976.19	34.08	35.81	-89.78	3,978.76	-930.39	1,340.25	1,271.90	68.35	19.608	
7,700.00	3,644.55	8,066.15	3,972.45	34.44	36.15	-89.78	4,028.62	-931.14	1,340.31	1,271.27	69.05	19.411	
7,750.00	3,640.59	8,116.15	3,968.72	34.79	36.49	-89.78	4,078.47	-931.89	1,340.38	1,270.63	69.75	19.218	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 50H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,800.00	3,636.62	8,166.15	3,964.98	35.15	36.83	-89.78	4,128.33	-932.64	1,340.44	1,269.99	70.45	19.028	
7,850.00	3,632.65	8,216.15	3,961.25	35.50	37.17	-89.78	4,178.18	-933.38	1,340.50	1,269.35	71.15	18.841	
7,900.00	3,628.69	8,266.15	3,957.51	35.86	37.51	-89.77	4,228.03	-934.13	1,340.56	1,268.71	71.85	18.658	
7,950.00	3,624.72	8,316.15	3,953.78	36.22	37.85	-89.77	4,277.89	-934.88	1,340.62	1,268.07	72.55	18.478	
8,000.00	3,620.75	8,366.15	3,950.04	36.57	38.20	-89.77	4,327.74	-935.63	1,340.68	1,267.42	73.26	18.301	
8,050.00	3,616.78	8,416.15	3,946.30	36.93	38.54	-89.77	4,377.60	-936.38	1,340.74	1,266.78	73.96	18.127	
8,100.00	3,612.82	8,466.15	3,942.57	37.29	38.88	-89.77	4,427.45	-937.13	1,340.80	1,266.13	74.67	17.956	
8,150.00	3,608.85	8,516.15	3,938.83	37.65	39.23	-89.77	4,477.30	-937.88	1,340.86	1,265.48	75.38	17.788	
8,200.00	3,604.88	8,566.15	3,935.10	38.01	39.58	-89.77	4,527.16	-938.63	1,340.93	1,264.83	76.09	17.623	
8,250.00	3,600.92	8,616.15	3,931.36	38.37	39.92	-89.77	4,577.01	-939.38	1,340.99	1,264.18	76.80	17.460	
8,300.00	3,596.95	8,666.15	3,927.63	38.73	40.27	-89.77	4,626.87	-940.13	1,341.05	1,263.53	77.52	17.300	
8,350.00	3,592.98	8,716.15	3,923.89	39.10	40.62	-89.77	4,676.72	-940.88	1,341.11	1,262.88	78.23	17.143	
8,400.00	3,589.01	8,766.15	3,920.15	39.46	40.96	-89.77	4,726.57	-941.62	1,341.17	1,262.23	78.94	16.989	
8,450.00	3,585.05	8,816.15	3,916.42	39.82	41.31	-89.77	4,776.43	-942.37	1,341.23	1,261.57	79.66	16.837	
8,500.00	3,581.08	8,866.14	3,912.68	40.18	41.66	-89.77	4,826.28	-943.12	1,341.29	1,260.92	80.38	16.687	
8,550.00	3,577.11	8,916.14	3,908.95	40.55	42.01	-89.76	4,876.14	-943.87	1,341.36	1,260.26	81.10	16.540	
8,600.00	3,573.14	8,966.14	3,905.21	40.91	42.36	-89.76	4,925.99	-944.62	1,341.42	1,259.60	81.82	16.396	
8,650.00	3,569.18	9,016.14	3,901.48	41.27	42.72	-89.76	4,975.84	-945.37	1,341.48	1,258.94	82.54	16.253	
8,700.00	3,565.21	9,066.14	3,897.74	41.64	43.07	-89.76	5,025.70	-946.12	1,341.54	1,258.28	83.26	16.113	
8,750.00	3,561.24	9,116.14	3,894.00	42.00	43.42	-89.76	5,075.55	-946.87	1,341.60	1,257.62	83.98	15.976	
8,800.00	3,557.28	9,166.14	3,890.27	42.37	43.77	-89.76	5,125.41	-947.62	1,341.66	1,256.96	84.70	15.840	
8,850.00	3,553.31	9,216.14	3,886.53	42.73	44.13	-89.76	5,175.26	-948.37	1,341.72	1,256.30	85.43	15.706	
8,900.00	3,549.34	9,266.14	3,882.80	43.10	44.48	-89.76	5,225.12	-949.12	1,341.79	1,255.64	86.15	15.575	
8,950.00	3,545.37	9,316.14	3,879.06	43.46	44.84	-89.76	5,274.97	-949.87	1,341.85	1,254.97	86.88	15.446	
9,000.00	3,541.41	9,366.14	3,875.33	43.83	45.19	-89.76	5,324.82	-950.61	1,341.91	1,254.31	87.60	15.318	
9,050.00	3,537.44	9,416.14	3,871.59	44.20	45.55	-89.76	5,374.68	-951.36	1,341.97	1,253.64	88.33	15.193	
9,100.00	3,533.47	9,466.14	3,867.85	44.56	45.90	-89.76	5,424.53	-952.11	1,342.03	1,252.98	89.06	15.069	
9,150.00	3,529.51	9,516.14	3,864.12	44.93	46.26	-89.76	5,474.39	-952.86	1,342.10	1,252.31	89.79	14.948	
9,200.00	3,525.54	9,566.14	3,860.38	45.30	46.62	-89.75	5,524.24	-953.61	1,342.16	1,251.64	90.51	14.828	
9,250.00	3,521.57	9,616.14	3,856.65	45.67	46.97	-89.75	5,574.09	-954.36	1,342.22	1,250.98	91.24	14.710	
9,300.00	3,517.60	9,666.14	3,852.91	46.04	47.33	-89.75	5,623.95	-955.11	1,342.28	1,250.31	91.98	14.594	
9,350.00	3,513.64	9,716.14	3,849.18	46.40	47.69	-89.75	5,673.80	-955.86	1,342.34	1,249.64	92.71	14.479	
9,400.00	3,509.67	9,766.13	3,845.44	46.77	48.05	-89.75	5,723.66	-956.61	1,342.41	1,248.97	93.44	14.367	
9,450.00	3,505.70	9,816.13	3,841.71	47.14	48.41	-89.75	5,773.51	-957.36	1,342.47	1,248.30	94.17	14.256	
9,500.00	3,501.74	9,866.13	3,837.97	47.51	48.76	-89.75	5,823.36	-958.11	1,342.53	1,247.63	94.90	14.147	
9,521.87	3,500.00	9,879.11	3,837.00	47.67	48.86	-90.14	5,836.30	-958.30	1,342.59	1,247.42	95.17	14.108	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 51H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	1.00	0.00	0.00	-57.26	10.80	-16.80	20.00				
50.00	50.00	49.00	50.00	0.92	0.45	-57.26	10.80	-16.80	19.97	18.59	1.38	14.503	
100.00	100.00	99.00	100.00	0.92	0.91	-57.26	10.80	-16.80	19.97	18.13	1.84	10.859	
150.00	150.00	149.00	150.00	1.23	1.22	-57.26	10.80	-16.80	19.97	17.53	2.44	8.170	
200.00	200.00	199.00	200.00	1.53	1.52	-57.26	10.80	-16.80	19.97	16.93	3.05	6.556	
250.00	250.00	249.00	250.00	1.74	1.74	-57.26	10.80	-16.80	19.97	16.50	3.48	5.746	
300.00	300.00	299.00	300.00	1.95	1.95	-57.26	10.80	-16.80	19.97	16.07	3.90	5.116	CC
350.00	350.00	349.33	350.33	2.22	2.21	-57.69	10.49	-16.51	20.00	15.58	4.42	4.526	
400.00	399.98	399.67	400.65	2.51	2.51	-58.97	9.55	-15.60	20.04	15.04	5.00	4.005	
450.00	449.93	450.01	450.94	2.75	2.75	-61.10	7.97	-14.08	20.12	14.65	5.47	3.677	
500.00	499.84	500.33	501.17	3.00	2.99	-64.06	5.75	-11.95	20.28	14.34	5.94	3.416	
550.00	549.68	550.63	551.31	3.23	3.09	-67.80	2.91	-9.20	20.56	14.33	6.23	3.300	ES
600.00	599.45	600.60	601.10	3.46	3.18	-71.57	-0.21	-6.21	21.43	14.91	6.52	3.286	SF
650.00	649.13	650.56	650.86	3.68	3.35	-74.61	-3.33	-3.21	23.24	16.36	6.88	3.380	
700.00	698.70	700.47	700.59	3.91	3.52	-76.75	-6.44	-0.21	25.95	18.72	7.23	3.589	
750.00	748.15	750.34	750.27	4.07	3.69	-78.04	-9.55	2.78	29.54	22.01	7.53	3.922	
800.00	797.49	800.15	799.89	4.21	3.86	-78.72	-12.66	5.77	33.87	26.05	7.81	4.335	
850.00	846.80	849.95	849.51	4.39	4.04	-79.20	-15.76	8.76	38.29	30.15	8.15	4.701	
900.00	896.12	899.76	899.13	4.58	4.21	-79.58	-18.87	11.74	42.72	34.24	8.48	5.039	
950.00	945.44	949.56	948.74	4.76	4.39	-79.89	-21.97	14.73	47.15	38.34	8.81	5.349	
1,000.00	994.75	999.36	998.36	4.95	4.57	-80.14	-25.08	17.72	51.58	42.43	9.15	5.637	
1,050.00	1,044.07	1,049.16	1,047.97	5.14	4.75	-80.36	-28.19	20.71	56.01	46.52	9.49	5.901	
1,100.00	1,093.39	1,098.97	1,097.59	5.33	4.93	-80.54	-31.29	23.70	60.45	50.61	9.83	6.146	
1,150.00	1,142.70	1,148.77	1,147.21	5.53	5.11	-80.70	-34.40	26.69	64.88	54.70	10.18	6.372	
1,200.00	1,192.02	1,198.57	1,196.82	5.73	5.29	-80.84	-37.50	29.67	69.31	58.78	10.53	6.583	
1,250.00	1,241.34	1,248.38	1,246.44	5.93	5.47	-80.96	-40.61	32.66	73.74	62.87	10.88	6.779	
1,300.00	1,290.66	1,298.18	1,296.05	6.13	5.66	-81.07	-43.72	35.65	78.18	66.95	11.23	6.962	
1,350.00	1,339.97	1,347.98	1,345.67	6.33	5.84	-81.17	-46.82	38.64	82.61	71.03	11.58	7.133	
1,400.00	1,389.29	1,397.78	1,395.29	6.54	6.03	-81.25	-49.93	41.63	87.05	75.11	11.94	7.293	
1,450.00	1,438.61	1,447.59	1,444.90	6.75	6.21	-81.33	-53.03	44.62	91.48	79.19	12.29	7.443	
1,500.00	1,487.92	1,497.39	1,494.52	6.95	6.40	-81.40	-56.14	47.60	95.92	83.27	12.65	7.584	
1,550.00	1,537.24	1,547.19	1,544.13	7.16	6.59	-81.47	-59.25	50.59	100.35	87.35	13.00	7.717	
1,600.00	1,586.56	1,597.00	1,593.75	7.37	6.77	-81.53	-62.35	53.58	104.78	91.42	13.36	7.842	
1,650.00	1,635.88	1,646.80	1,643.37	7.58	6.96	-81.58	-65.46	56.57	109.22	95.50	13.72	7.960	
1,700.00	1,685.19	1,696.60	1,692.98	7.79	7.15	-81.63	-68.56	59.56	113.65	99.57	14.08	8.072	
1,750.00	1,734.51	1,746.40	1,742.60	8.00	7.33	-81.68	-71.67	62.55	118.09	103.65	14.44	8.178	
1,800.00	1,783.83	1,796.21	1,792.21	8.22	7.52	-81.72	-74.78	65.53	122.52	107.72	14.80	8.278	
1,850.00	1,833.14	1,846.01	1,841.83	8.43	7.71	-81.76	-77.88	68.52	126.96	111.80	15.16	8.373	
1,900.00	1,882.46	1,895.81	1,891.45	8.64	7.90	-81.80	-80.99	71.51	131.40	115.87	15.52	8.464	
1,950.00	1,931.78	1,945.61	1,941.06	8.86	8.09	-81.83	-84.09	74.50	135.83	119.94	15.89	8.549	
2,000.00	1,981.09	1,995.42	1,990.68	9.07	8.28	-81.87	-87.20	77.49	140.27	124.02	16.25	8.632	
2,050.00	2,030.41	2,045.22	2,040.29	9.29	8.46	-81.90	-90.31	80.48	144.70	128.09	16.61	8.710	
2,100.00	2,079.73	2,095.02	2,089.91	9.50	8.65	-81.93	-93.41	83.47	149.14	132.16	16.98	8.784	
2,150.00	2,129.05	2,144.83	2,139.53	9.72	8.84	-81.95	-96.52	86.45	153.57	136.23	17.34	8.855	
2,200.00	2,178.36	2,194.63	2,189.14	9.94	9.03	-81.98	-99.62	89.44	158.01	140.30	17.71	8.924	
2,250.00	2,227.68	2,244.43	2,238.76	10.16	9.22	-82.00	-102.73	92.43	162.44	144.37	18.07	8.989	
2,300.00	2,277.00	2,294.23	2,288.37	10.37	9.41	-82.03	-105.84	95.42	166.88	148.44	18.44	9.052	
2,350.00	2,326.31	2,344.04	2,337.99	10.59	9.60	-82.05	-108.94	98.41	171.31	152.51	18.80	9.111	
2,400.00	2,375.63	2,393.84	2,387.61	10.81	9.79	-82.07	-112.05	101.40	175.75	156.58	19.17	9.169	
2,450.00	2,424.95	2,443.64	2,437.22	11.03	9.98	-82.09	-115.15	104.38	180.19	160.65	19.53	9.224	
2,500.00	2,474.26	2,493.45	2,486.84	11.25	10.17	-82.11	-118.26	107.37	184.62	164.72	19.90	9.277	
2,550.00	2,523.58	2,543.25	2,536.45	11.46	10.36	-82.13	-121.37	110.36	189.06	168.79	20.27	9.328	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 51H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,593.05	2,586.07	11.68	10.55	-82.14	-124.47	113.35	193.49	172.86	20.63	9.378	
2,650.00	2,622.22	2,642.85	2,635.68	11.90	10.74	-82.16	-127.58	116.34	197.93	176.93	21.00	9.425	
2,700.00	2,671.53	2,692.66	2,685.30	12.12	10.93	-82.17	-130.68	119.33	202.36	181.00	21.37	9.471	
2,750.00	2,720.85	2,742.46	2,734.92	12.34	11.12	-82.19	-133.79	122.31	206.80	185.07	21.73	9.515	
2,800.00	2,770.17	2,792.26	2,784.53	12.56	11.31	-82.20	-136.90	125.30	211.24	189.13	22.10	9.557	
2,850.00	2,819.48	2,842.07	2,834.15	12.77	11.51	-82.22	-140.00	128.29	215.67	193.22	22.45	9.605	
2,900.00	2,868.87	2,891.87	2,883.77	12.97	11.70	-82.47	-143.11	131.28	219.90	197.12	22.78	9.654	
2,950.00	2,918.36	2,941.61	2,933.32	13.16	11.89	-83.37	-146.21	134.26	223.57	200.56	23.02	9.714	
3,000.00	2,967.83	2,991.15	2,982.67	13.32	12.08	-84.88	-149.30	137.24	226.80	203.65	23.15	9.795	
3,050.00	3,017.14	3,040.34	3,031.68	13.44	12.27	-86.98	-152.37	140.19	229.77	206.59	23.18	9.914	
3,100.00	3,066.14	3,089.07	3,080.22	13.52	12.45	-89.66	-155.41	143.11	232.73	209.67	23.07	10.089	
3,150.00	3,114.72	3,137.18	3,128.16	13.57	12.64	-92.88	-158.41	146.00	236.02	213.20	22.83	10.340	
3,200.00	3,162.74	3,184.56	3,175.35	13.60	12.82	-96.60	-161.36	148.84	240.02	217.57	22.45	10.689	
3,250.00	3,210.06	3,231.36	3,221.98	13.61	12.98	-100.76	-164.25	151.65	245.14	223.19	21.95	11.169	
3,300.00	3,256.55	3,279.75	3,270.27	13.62	13.13	-104.95	-165.62	154.48	251.50	230.06	21.44	11.730	
3,350.00	3,302.09	3,329.16	3,319.58	13.61	13.22	-108.92	-164.50	157.25	258.94	237.95	20.99	12.336	
3,400.00	3,346.56	3,379.66	3,369.86	13.61	13.24	-112.63	-160.72	159.94	267.36	246.76	20.60	12.976	
3,450.00	3,389.82	3,431.32	3,421.02	13.60	13.20	-116.03	-154.10	162.55	276.63	256.36	20.28	13.642	
3,500.00	3,431.77	3,484.20	3,472.95	13.60	13.12	-119.11	-144.47	165.06	286.63	266.61	20.02	14.316	
3,550.00	3,472.28	3,538.39	3,525.54	13.59	13.03	-121.85	-131.64	167.45	297.22	277.38	19.84	14.984	
3,600.00	3,511.25	3,593.97	3,578.64	13.59	12.93	-124.25	-115.41	169.71	308.25	288.53	19.72	15.634	
3,650.00	3,548.57	3,651.01	3,632.06	13.60	12.83	-126.30	-95.57	171.82	319.60	299.93	19.66	16.256	
3,700.00	3,584.14	3,709.58	3,685.60	13.61	12.71	-128.01	-71.91	173.75	331.12	311.45	19.67	16.838	
3,750.00	3,617.85	3,769.76	3,739.00	13.63	12.60	-129.37	-44.24	175.47	342.68	322.96	19.73	17.370	
3,800.00	3,649.62	3,831.60	3,791.96	13.66	12.49	-130.36	-12.36	176.97	354.16	334.31	19.85	17.839	
3,850.00	3,679.37	3,895.17	3,844.13	13.70	12.39	-130.99	23.91	178.22	365.42	345.38	20.04	18.233	
3,900.00	3,707.00	3,960.50	3,895.14	13.74	12.30	-131.23	64.71	179.18	376.33	356.02	20.30	18.535	
3,950.00	3,732.54	4,027.67	3,944.55	13.80	12.23	-131.04	110.18	179.82	386.69	366.05	20.64	18.738	
4,000.00	3,757.54	4,097.23	3,992.23	13.87	12.17	-130.15	160.81	180.12	395.14	374.05	21.09	18.736	
4,050.00	3,782.54	4,168.87	4,037.36	13.95	12.14	-128.48	216.42	180.04	401.03	379.32	21.72	18.467	
4,100.00	3,807.54	4,241.83	4,078.93	14.04	12.14	-126.00	276.36	179.54	404.14	381.70	22.45	18.005	
4,150.00	3,832.37	4,305.43	4,111.54	14.13	12.17	-124.22	330.95	178.78	404.79	381.66	23.13	17.503	
4,200.00	3,854.28	4,355.30	4,136.47	14.23	12.21	-124.50	374.13	178.14	407.57	383.92	23.65	17.233	
4,250.00	3,872.20	4,404.66	4,161.16	14.35	12.26	-125.13	416.88	177.50	413.85	389.74	24.11	17.164	
4,300.00	3,885.97	4,453.16	4,185.41	14.48	12.33	-126.08	458.88	176.87	423.66	399.14	24.52	17.281	
4,350.00	3,895.51	4,527.77	4,221.27	14.62	12.44	-123.45	524.27	175.89	436.54	411.19	25.34	17.224	
4,400.00	3,900.74	4,638.51	4,258.95	14.77	12.69	-113.54	628.17	174.34	445.79	418.90	26.89	16.576	
4,450.00	3,901.61	4,807.91	4,277.33	14.93	13.24	-87.26	795.87	171.83	448.71	419.62	29.09	15.423	
4,500.00	3,898.45	4,872.39	4,272.63	15.09	13.49	-83.92	860.16	170.87	448.15	418.28	29.87	15.004	
4,550.00	3,894.49	4,922.39	4,268.66	15.28	13.70	-83.92	910.00	170.12	448.15	417.62	30.52	14.683	
4,600.00	3,890.52	4,972.39	4,264.69	15.47	13.92	-83.92	959.83	169.38	448.14	416.96	31.18	14.372	
4,650.00	3,886.55	5,022.39	4,260.72	15.67	14.15	-83.92	1,009.67	168.63	448.14	416.29	31.85	14.071	
4,700.00	3,882.59	5,072.39	4,256.75	15.88	14.38	-83.92	1,059.51	167.89	448.14	415.62	32.52	13.781	
4,750.00	3,878.62	5,122.39	4,252.78	16.09	14.62	-83.92	1,109.34	167.14	448.14	414.94	33.20	13.500	
4,800.00	3,874.65	5,172.39	4,248.81	16.31	14.87	-83.92	1,159.18	166.40	448.13	414.26	33.88	13.228	
4,850.00	3,870.68	5,222.39	4,244.84	16.54	15.12	-83.92	1,209.02	165.65	448.13	413.57	34.56	12.966	
4,900.00	3,866.72	5,272.39	4,240.87	16.77	15.38	-83.92	1,258.85	164.90	448.13	412.88	35.25	12.713	
4,950.00	3,862.75	5,322.39	4,236.90	17.01	15.64	-83.92	1,308.69	164.16	448.13	412.18	35.94	12.467	
5,000.00	3,858.78	5,372.39	4,232.93	17.25	15.91	-83.92	1,358.53	163.41	448.13	411.49	36.64	12.231	
5,050.00	3,854.82	5,422.39	4,228.96	17.50	16.18	-83.92	1,408.36	162.67	448.12	410.78	37.34	12.001	
5,100.00	3,850.85	5,472.39	4,224.99	17.75	16.46	-83.92	1,458.20	161.92	448.12	410.08	38.04	11.779	
5,150.00	3,846.88	5,522.39	4,221.02	18.01	16.74	-83.92	1,508.04	161.18	448.12	409.37	38.75	11.565	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 51H - OH - PERMIT

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+IFR1+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	3,842.91	5,572.39	4,217.05	18.27	17.03	-83.92	1,557.87	160.43	448.12	408.66	39.46	11.357	
5,250.00	3,838.95	5,622.39	4,213.08	18.54	17.32	-83.92	1,607.71	159.69	448.11	407.95	40.17	11.156	
5,300.00	3,834.98	5,672.39	4,209.11	18.81	17.61	-83.92	1,657.55	158.94	448.11	407.23	40.88	10.961	
5,350.00	3,831.01	5,722.39	4,205.14	19.08	17.91	-83.92	1,707.38	158.20	448.11	406.51	41.60	10.772	
5,400.00	3,827.04	5,772.39	4,201.17	19.36	18.21	-83.92	1,757.22	157.45	448.11	405.79	42.32	10.589	
5,450.00	3,823.08	5,822.39	4,197.20	19.64	18.51	-83.92	1,807.06	156.71	448.11	405.07	43.04	10.412	
5,500.00	3,819.11	5,872.39	4,193.23	19.93	18.82	-83.92	1,856.89	155.96	448.10	404.34	43.76	10.240	
5,550.00	3,815.14	5,922.39	4,189.26	20.22	19.12	-83.92	1,906.73	155.21	448.10	403.61	44.49	10.073	
5,600.00	3,811.18	5,972.39	4,185.29	20.51	19.44	-83.92	1,956.56	154.47	448.10	402.89	45.21	9.911	
5,650.00	3,807.21	6,022.39	4,181.32	20.80	19.75	-83.92	2,006.40	153.72	448.10	402.16	45.94	9.754	
5,700.00	3,803.24	6,072.39	4,177.35	21.10	20.07	-83.92	2,056.24	152.98	448.09	401.42	46.67	9.601	
5,750.00	3,799.27	6,122.39	4,173.38	21.40	20.39	-83.92	2,106.07	152.23	448.09	400.69	47.40	9.453	
5,800.00	3,795.31	6,172.39	4,169.41	21.70	20.71	-83.92	2,155.91	151.49	448.09	399.95	48.14	9.309	
5,850.00	3,791.34	6,222.39	4,165.44	22.01	21.03	-83.92	2,205.75	150.74	448.09	399.22	48.87	9.169	
5,900.00	3,787.37	6,272.39	4,161.47	22.31	21.36	-83.92	2,255.58	150.00	448.09	398.48	49.61	9.032	
5,950.00	3,783.41	6,322.39	4,157.50	22.63	21.69	-83.92	2,305.42	149.25	448.08	397.74	50.35	8.900	
6,000.00	3,779.44	6,372.39	4,153.53	22.94	22.02	-83.92	2,355.26	148.51	448.08	397.00	51.08	8.771	
6,050.00	3,775.47	6,422.39	4,149.56	23.25	22.35	-83.92	2,405.09	147.76	448.08	396.25	51.82	8.646	
6,100.00	3,771.50	6,472.39	4,145.59	23.57	22.68	-83.92	2,454.93	147.01	448.08	395.51	52.57	8.524	
6,150.00	3,767.54	6,522.39	4,141.62	23.89	23.02	-83.92	2,504.77	146.27	448.07	394.77	53.31	8.405	
6,200.00	3,763.57	6,572.39	4,137.64	24.21	23.35	-83.92	2,554.60	145.52	448.07	394.02	54.05	8.290	
6,250.00	3,759.60	6,622.39	4,133.67	24.53	23.69	-83.92	2,604.44	144.78	448.07	393.27	54.80	8.177	
6,300.00	3,755.64	6,672.39	4,129.70	24.85	24.03	-83.92	2,654.28	144.03	448.07	392.53	55.54	8.067	
6,350.00	3,751.67	6,722.39	4,125.73	25.18	24.37	-83.92	2,704.11	143.29	448.06	391.78	56.29	7.960	
6,400.00	3,747.70	6,772.39	4,121.76	25.51	24.71	-83.92	2,753.95	142.54	448.06	391.03	57.04	7.856	
6,450.00	3,743.73	6,822.39	4,117.79	25.84	25.06	-83.92	2,803.79	141.80	448.06	390.28	57.78	7.754	
6,500.00	3,739.77	6,872.39	4,113.82	26.17	25.40	-83.92	2,853.62	141.05	448.06	389.52	58.53	7.655	
6,550.00	3,735.80	6,922.39	4,109.85	26.50	25.75	-83.92	2,903.46	140.31	448.06	388.77	59.28	7.558	
6,600.00	3,731.83	6,972.39	4,105.88	26.83	26.10	-83.92	2,953.30	139.56	448.05	388.02	60.03	7.463	
6,650.00	3,727.87	7,022.39	4,101.91	27.17	26.44	-83.92	3,003.13	138.82	448.05	387.27	60.79	7.371	
6,700.00	3,723.90	7,072.39	4,097.94	27.50	26.79	-83.92	3,052.97	138.07	448.05	386.51	61.54	7.281	
6,750.00	3,719.93	7,122.39	4,093.97	27.84	27.14	-83.92	3,102.81	137.32	448.05	385.76	62.29	7.193	
6,800.00	3,715.96	7,172.39	4,090.00	28.18	27.49	-83.92	3,152.64	136.58	448.04	385.00	63.04	7.107	
6,850.00	3,712.00	7,222.39	4,086.03	28.52	27.85	-83.92	3,202.48	135.83	448.04	384.24	63.80	7.023	
6,900.00	3,708.03	7,272.39	4,082.06	28.86	28.20	-83.92	3,252.32	135.09	448.04	383.49	64.55	6.941	
6,950.00	3,704.06	7,322.39	4,078.09	29.20	28.55	-83.92	3,302.15	134.34	448.04	382.73	65.31	6.860	
7,000.00	3,700.09	7,372.39	4,074.12	29.54	28.91	-83.92	3,351.99	133.60	448.04	381.97	66.07	6.782	
7,050.00	3,696.13	7,422.39	4,070.15	29.89	29.26	-83.92	3,401.82	132.85	448.03	381.21	66.82	6.705	
7,100.00	3,692.16	7,472.39	4,066.18	30.23	29.62	-83.92	3,451.66	132.11	448.03	380.45	67.58	6.630	
7,150.00	3,688.19	7,522.39	4,062.21	30.58	29.97	-83.92	3,501.50	131.36	448.03	379.69	68.34	6.556	
7,200.00	3,684.23	7,572.39	4,058.24	30.92	30.33	-83.92	3,551.33	130.62	448.03	378.93	69.10	6.484	
7,250.00	3,680.26	7,622.39	4,054.27	31.27	30.69	-83.92	3,601.17	129.87	448.02	378.17	69.85	6.414	
7,300.00	3,676.29	7,672.39	4,050.30	31.62	31.05	-83.92	3,651.01	129.12	448.02	377.41	70.61	6.345	
7,350.00	3,672.32	7,722.39	4,046.33	31.97	31.41	-83.92	3,700.84	128.38	448.02	376.65	71.37	6.277	
7,400.00	3,668.36	7,772.39	4,042.36	32.32	31.77	-83.92	3,750.68	127.63	448.02	375.88	72.13	6.211	
7,450.00	3,664.39	7,822.39	4,038.39	32.67	32.13	-83.92	3,800.52	126.89	448.02	375.12	72.89	6.146	
7,500.00	3,660.42	7,872.39	4,034.42	33.02	32.49	-83.92	3,850.35	126.14	448.01	374.36	73.66	6.083	
7,550.00	3,656.46	7,922.39	4,030.45	33.37	32.85	-83.92	3,900.19	125.40	448.01	373.59	74.42	6.020	
7,600.00	3,652.49	7,972.39	4,026.48	33.73	33.21	-83.92	3,950.03	124.65	448.01	372.83	75.18	5.959	
7,650.00	3,648.52	8,022.39	4,022.51	34.08	33.58	-83.92	3,999.86	123.91	448.01	372.07	75.94	5.899	
7,700.00	3,644.55	8,072.39	4,018.54	34.44	33.94	-83.92	4,049.70	123.16	448.00	371.30	76.70	5.841	
7,750.00	3,640.59	8,122.39	4,014.57	34.79	34.30	-83.92	4,099.54	122.42	448.00	370.54	77.47	5.783	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - 51H - OH - PERMIT — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IFR1+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,800.00	3,636.62	8,172.39	4,010.60	35.15	34.67	-83.92	4,149.37	121.67	448.00	369.77	78.23	5.727	
7,850.00	3,632.65	8,222.39	4,006.63	35.50	35.03	-83.92	4,199.21	120.93	448.00	369.00	78.99	5.671	
7,900.00	3,628.69	8,272.39	4,002.66	35.86	35.40	-83.92	4,249.05	120.18	447.99	368.24	79.76	5.617	
7,950.00	3,624.72	8,322.39	3,998.69	36.22	35.76	-83.92	4,298.88	119.43	447.99	367.47	80.52	5.564	
8,000.00	3,620.75	8,372.39	3,994.72	36.57	36.13	-83.92	4,348.72	118.69	447.99	366.70	81.29	5.511	
8,050.00	3,616.78	8,422.39	3,990.75	36.93	36.50	-83.92	4,398.56	117.94	447.99	365.94	82.05	5.460	
8,100.00	3,612.82	8,472.39	3,986.78	37.29	36.86	-83.92	4,448.39	117.20	447.99	365.17	82.82	5.409	
8,150.00	3,608.85	8,522.39	3,982.81	37.65	37.23	-83.92	4,498.23	116.45	447.98	364.40	83.58	5.360	
8,200.00	3,604.88	8,572.39	3,978.83	38.01	37.60	-83.92	4,548.07	115.71	447.98	363.63	84.35	5.311	
8,250.00	3,600.92	8,622.39	3,974.86	38.37	37.97	-83.92	4,597.90	114.96	447.98	362.87	85.11	5.263	
8,300.00	3,596.95	8,672.39	3,970.89	38.73	38.33	-83.92	4,647.74	114.22	447.98	362.10	85.88	5.216	
8,350.00	3,592.98	8,722.39	3,966.92	39.10	38.70	-83.92	4,697.57	113.47	447.97	361.33	86.65	5.170	
8,400.00	3,589.01	8,772.39	3,962.95	39.46	39.07	-83.92	4,747.41	112.73	447.97	360.56	87.41	5.125	
8,450.00	3,585.05	8,822.39	3,958.98	39.82	39.44	-83.92	4,797.25	111.98	447.97	359.79	88.18	5.080	
8,500.00	3,581.08	8,872.39	3,955.01	40.18	39.81	-83.92	4,847.08	111.23	447.97	359.02	88.95	5.036	
8,550.00	3,577.11	8,922.39	3,951.04	40.55	40.18	-83.92	4,896.92	110.49	447.97	358.25	89.72	4.993	
8,600.00	3,573.14	8,972.39	3,947.07	40.91	40.55	-83.92	4,946.76	109.74	447.96	357.48	90.48	4.951	
8,650.00	3,569.18	9,022.39	3,943.10	41.27	40.92	-83.92	4,996.59	109.00	447.96	356.71	91.25	4.909	
8,700.00	3,565.21	9,072.39	3,939.13	41.64	41.29	-83.92	5,046.43	108.25	447.96	355.94	92.02	4.868	
8,750.00	3,561.24	9,122.39	3,935.16	42.00	41.66	-83.92	5,096.27	107.51	447.96	355.17	92.79	4.828	
8,800.00	3,557.28	9,172.39	3,931.19	42.37	42.03	-83.92	5,146.10	106.76	447.95	354.40	93.56	4.788	
8,850.00	3,553.31	9,222.39	3,927.22	42.73	42.40	-83.92	5,195.94	106.02	447.95	353.63	94.33	4.749	
8,900.00	3,549.34	9,272.39	3,923.25	43.10	42.78	-83.92	5,245.78	105.27	447.95	352.86	95.09	4.711	
8,950.00	3,545.37	9,322.39	3,919.28	43.46	43.15	-83.92	5,295.61	104.53	447.95	352.08	95.86	4.673	
9,000.00	3,541.41	9,372.39	3,915.31	43.83	43.52	-83.92	5,345.45	103.78	447.95	351.31	96.63	4.636	
9,050.00	3,537.44	9,422.39	3,911.34	44.20	43.89	-83.92	5,395.29	103.04	447.94	350.54	97.40	4.599	
9,100.00	3,533.47	9,472.39	3,907.37	44.56	44.27	-83.92	5,445.12	102.29	447.94	349.77	98.17	4.563	
9,150.00	3,529.51	9,522.39	3,903.40	44.93	44.64	-83.92	5,494.96	101.54	447.94	349.00	98.94	4.527	
9,200.00	3,525.54	9,572.39	3,899.43	45.30	45.01	-83.92	5,544.80	100.80	447.94	348.22	99.71	4.492	
9,250.00	3,521.57	9,622.39	3,895.46	45.67	45.38	-83.92	5,594.63	100.05	447.93	347.45	100.48	4.458	
9,300.00	3,517.60	9,672.39	3,891.49	46.04	45.76	-83.92	5,644.47	99.31	447.93	346.68	101.25	4.424	
9,350.00	3,513.64	9,722.39	3,887.52	46.40	46.13	-83.92	5,694.31	98.56	447.93	345.91	102.02	4.390	
9,400.00	3,509.67	9,772.39	3,883.55	46.77	46.51	-83.92	5,744.14	97.82	447.93	345.13	102.79	4.357	
9,450.00	3,505.70	9,822.39	3,879.58	47.14	46.88	-83.92	5,793.98	97.07	447.93	344.36	103.56	4.325	
9,493.63	3,502.24	9,866.02	3,876.11	47.46	47.20	-83.92	5,837.47	96.42	447.92	343.69	104.23	4.297	
9,500.00	3,501.74	9,867.46	3,876.00	47.51	47.21	-85.06	5,838.90	96.40	447.95	343.68	104.27	4.296	
9,521.87	3,500.00	9,867.46	3,876.00	47.67	47.21	-90.14	5,838.90	96.40	448.72	344.55	104.17	4.308	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EDDY STATE I NCT-B 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 760-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	45.00	0.00	0.00	25.19	1,334.49	627.81	1,475.48				
50.00	50.00	5.00	50.00	0.92	0.10	25.19	1,334.49	627.81	1,474.79	1,473.76	1.03	1,433.316	
100.00	100.00	55.00	100.00	0.92	1.15	25.19	1,334.49	627.81	1,474.79	1,472.71	2.08	710.299	
150.00	150.00	105.00	150.00	1.23	2.20	25.19	1,334.49	627.81	1,474.79	1,471.37	3.42	430.635	
200.00	200.00	155.00	200.00	1.53	3.25	25.19	1,334.49	627.81	1,474.79	1,470.02	4.77	308.980	
250.00	250.00	205.00	250.00	1.74	4.29	25.19	1,334.49	627.81	1,474.79	1,468.76	6.03	244.400	
300.00	300.00	255.00	300.00	1.95	5.34	25.19	1,334.49	627.81	1,474.79	1,467.50	7.30	202.149	
350.00	350.00	305.00	350.00	2.22	6.39	25.18	1,334.49	627.81	1,474.80	1,466.27	8.53	172.875	
400.00	399.98	354.98	399.98	2.51	7.44	25.13	1,334.49	627.81	1,474.83	1,465.09	9.74	151.486	
450.00	449.93	404.93	449.93	2.75	8.48	25.04	1,334.49	627.81	1,474.88	1,463.94	10.93	134.910	
500.00	499.84	454.84	499.84	3.00	9.53	24.92	1,334.49	627.81	1,474.95	1,462.82	12.12	121.646	
550.00	549.68	504.68	549.68	3.23	10.57	24.77	1,334.49	627.81	1,475.05	1,461.75	13.31	110.863	
600.00	599.45	554.45	599.45	3.46	11.61	24.59	1,334.49	627.81	1,475.19	1,460.71	14.48	101.863	
650.00	649.13	604.13	649.13	3.68	12.65	24.37	1,334.49	627.81	1,475.38	1,459.73	15.65	94.276	
700.00	698.70	653.70	698.70	3.91	13.69	24.11	1,334.49	627.81	1,475.62	1,458.80	16.81	87.763	
750.00	748.15	703.15	748.15	4.07	14.73	23.83	1,334.49	627.81	1,475.92	1,457.99	17.93	82.303	
800.00	797.49	752.49	797.49	4.21	15.76	23.51	1,334.49	627.81	1,476.30	1,457.28	19.02	77.602	
850.00	846.80	801.84	846.80	4.39	16.74	23.19	1,334.49	627.81	1,476.74	1,456.61	20.13	73.376	
900.00	896.12	851.16	896.12	4.58	17.70	22.87	1,334.49	627.81	1,477.21	1,456.00	21.22	69.626	
950.00	945.44	902.11	947.06	4.76	18.70	22.55	1,335.03	627.81	1,478.23	1,455.90	22.33	66.202	
1,000.00	994.75	956.65	1,001.61	4.95	19.77	22.23	1,334.86	627.81	1,478.66	1,455.15	23.51	62.890	
1,050.00	1,044.07	1,011.23	1,056.18	5.14	20.84	21.92	1,334.48	627.81	1,478.96	1,454.26	24.69	59.897	
1,100.00	1,093.39	1,048.45	1,093.39	5.33	21.57	21.60	1,334.49	627.81	1,479.58	1,454.04	25.53	57.944	
1,150.00	1,142.70	1,097.77	1,142.70	5.53	22.54	21.28	1,334.49	627.81	1,480.28	1,453.67	26.61	55.624	
1,200.00	1,192.02	1,147.08	1,192.02	5.73	23.51	20.96	1,334.49	627.81	1,481.03	1,453.34	27.69	53.486	
1,250.00	1,241.34	1,196.40	1,241.34	5.93	24.47	20.65	1,334.49	627.81	1,481.83	1,453.06	28.77	51.513	
1,300.00	1,290.66	1,247.29	1,292.23	6.13	25.47	20.32	1,334.87	627.81	1,483.03	1,453.16	29.87	49.645	
1,350.00	1,339.97	1,298.26	1,343.19	6.33	26.47	20.01	1,334.79	627.81	1,483.84	1,452.86	30.98	47.897	
1,400.00	1,389.29	1,349.24	1,394.17	6.54	27.47	19.70	1,334.64	627.81	1,484.63	1,452.55	32.09	46.269	
1,450.00	1,438.61	1,393.70	1,438.61	6.75	28.36	19.38	1,334.49	627.81	1,485.46	1,452.39	33.08	44.911	
1,500.00	1,487.92	1,443.02	1,487.92	6.95	29.41	19.07	1,334.49	627.81	1,486.48	1,452.25	34.23	43.426	
1,550.00	1,537.24	1,492.34	1,537.24	7.16	30.45	18.75	1,334.49	627.81	1,487.55	1,452.17	35.38	42.041	
1,600.00	1,586.56	1,541.65	1,586.56	7.37	31.50	18.44	1,334.49	627.81	1,488.66	1,452.13	36.54	40.745	
1,650.00	1,635.88	1,595.22	1,640.12	7.58	32.64	18.12	1,335.09	627.81	1,490.39	1,452.61	37.78	39.449	
1,700.00	1,685.19	1,648.85	1,693.75	7.79	33.78	17.81	1,334.84	627.81	1,491.38	1,452.36	39.02	38.216	
1,750.00	1,734.51	1,702.51	1,747.40	8.00	34.92	17.50	1,334.44	627.81	1,492.27	1,452.00	40.27	37.057	
1,800.00	1,783.83	1,738.97	1,783.83	8.22	35.73	17.19	1,334.49	627.81	1,493.55	1,452.37	41.18	36.265	
1,850.00	1,833.14	1,788.28	1,833.14	8.43	36.82	16.87	1,334.49	627.81	1,494.89	1,452.51	42.38	35.274	
1,900.00	1,882.46	1,840.15	1,885.00	8.64	37.97	16.56	1,334.99	627.81	1,496.74	1,453.11	43.63	34.305	
1,950.00	1,931.78	1,895.30	1,940.15	8.86	39.19	16.25	1,334.78	627.81	1,497.99	1,453.03	44.95	33.322	
2,000.00	1,981.09	1,936.28	1,981.09	9.07	40.09	15.94	1,334.49	627.81	1,499.15	1,453.18	45.97	32.613	
2,050.00	2,030.41	1,985.60	2,030.41	9.29	41.31	15.63	1,334.49	627.81	1,500.66	1,453.37	47.29	31.733	
2,100.00	2,079.73	2,044.36	2,089.17	9.50	42.76	15.32	1,334.73	627.81	1,502.48	1,453.63	48.85	30.759	
2,150.00	2,129.05	2,084.28	2,129.05	9.72	43.75	15.02	1,334.49	627.81	1,503.81	1,453.86	49.95	30.107	
2,200.00	2,178.36	2,133.60	2,178.36	9.94	45.02	14.71	1,334.49	627.81	1,505.45	1,454.13	51.32	29.335	
2,250.00	2,227.68	2,194.91	2,239.66	10.16	46.59	14.40	1,334.92	627.81	1,507.60	1,454.60	53.00	28.445	
2,300.00	2,277.00	2,232.30	2,277.00	10.37	47.55	14.10	1,334.49	627.81	1,508.86	1,454.80	54.07	27.908	
2,350.00	2,326.31	2,281.61	2,326.31	10.59	48.77	13.79	1,334.49	627.81	1,510.63	1,455.23	55.40	27.266	
2,400.00	2,375.63	2,330.93	2,375.63	10.81	50.00	13.49	1,334.49	627.81	1,512.44	1,455.70	56.74	26.656	
2,450.00	2,424.95	2,382.29	2,426.97	11.03	51.28	13.18	1,335.37	627.81	1,515.16	1,457.03	58.13	26.066	
2,500.00	2,474.26	2,439.82	2,484.50	11.25	52.71	12.88	1,335.13	627.81	1,516.85	1,457.18	59.67	25.419	
2,550.00	2,523.58	2,497.42	2,542.09	11.46	54.14	12.58	1,334.57	627.81	1,518.33	1,457.11	61.22	24.802	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EDDY STATE I NCT-B 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 760-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,528.29	2,572.90	11.68	54.96	12.28	1,334.49	627.81	1,520.12	1,457.97	62.15	24.460	
2,650.00	2,622.22	2,577.61	2,622.22	11.90	56.28	11.98	1,334.49	627.81	1,522.14	1,458.55	63.59	23.938	
2,700.00	2,671.53	2,626.93	2,671.53	12.12	57.61	11.68	1,334.49	627.81	1,524.20	1,459.18	65.03	23.439	
2,750.00	2,720.85	2,676.24	2,720.85	12.34	58.93	11.38	1,334.49	627.81	1,526.31	1,459.84	66.47	22.963	
2,800.00	2,770.17	2,727.81	2,772.39	12.56	60.32	11.07	1,335.79	627.81	1,529.74	1,461.76	67.97	22.505	
2,850.00	2,819.48	2,782.51	2,827.09	12.77	61.79	10.77	1,335.61	627.81	1,531.77	1,462.23	69.54	22.027	
2,900.00	2,868.87	2,837.32	2,881.89	12.97	63.26	10.49	1,335.23	627.81	1,532.75	1,461.64	71.11	21.554	
2,950.00	2,918.36	2,892.24	2,936.80	13.16	64.74	10.23	1,334.66	627.81	1,531.10	1,458.42	72.68	21.066	
3,000.00	2,967.83	2,923.41	2,967.83	13.32	65.65	10.00	1,334.49	627.81	1,527.19	1,453.55	73.64	20.739	
3,050.00	3,017.14	2,972.72	3,017.14	13.44	67.18	9.79	1,334.49	627.81	1,521.07	1,445.88	75.19	20.231	
3,100.00	3,066.14	3,021.73	3,066.14	13.52	68.70	9.61	1,334.49	627.81	1,512.47	1,435.76	76.71	19.716	
3,150.00	3,114.72	3,073.44	3,117.83	13.57	70.30	9.44	1,335.77	627.81	1,502.69	1,424.36	78.32	19.186	
3,200.00	3,162.74	3,131.42	3,175.80	13.60	72.10	9.31	1,335.46	627.81	1,488.93	1,408.80	80.13	18.582	
3,250.00	3,210.06	3,188.32	3,232.68	13.61	73.87	9.21	1,334.76	627.81	1,472.46	1,390.56	81.90	17.979	
3,300.00	3,256.55	3,212.36	3,256.55	13.62	74.62	9.13	1,334.49	627.81	1,453.75	1,371.10	82.65	17.589	
3,350.00	3,302.09	3,257.90	3,302.09	13.61	76.05	9.08	1,334.49	627.81	1,433.17	1,349.07	84.09	17.043	
3,400.00	3,346.56	3,302.37	3,346.56	13.61	77.44	9.06	1,334.49	627.81	1,410.32	1,324.81	85.50	16.495	
3,450.00	3,389.82	3,350.78	3,394.93	13.60	78.96	9.06	1,335.81	627.81	1,386.57	1,299.53	87.04	15.930	
3,500.00	3,431.77	3,405.58	3,449.71	13.60	80.67	9.10	1,335.34	627.81	1,359.04	1,270.25	88.78	15.307	
3,550.00	3,472.28	3,457.80	3,501.91	13.59	82.31	9.18	1,334.40	627.81	1,329.08	1,238.64	90.44	14.695	
3,600.00	3,511.25	3,467.26	3,511.25	13.59	82.62	9.29	1,334.49	627.81	1,297.62	1,206.82	90.81	14.290	
3,650.00	3,548.57	3,504.57	3,548.57	13.60	83.84	9.44	1,334.49	627.81	1,264.52	1,172.45	92.07	13.735	
3,700.00	3,584.14	3,540.14	3,584.14	13.61	85.01	9.63	1,334.49	627.81	1,229.64	1,136.36	93.28	13.182	
3,750.00	3,617.85	3,573.86	3,617.85	13.63	86.11	9.87	1,334.49	627.81	1,193.07	1,098.64	94.43	12.634	
3,800.00	3,649.62	3,605.63	3,649.62	13.66	87.14	10.16	1,334.49	627.81	1,154.93	1,059.40	95.53	12.090	
3,850.00	3,679.37	3,635.37	3,679.37	13.70	88.12	10.51	1,334.49	627.81	1,115.34	1,018.78	96.56	11.551	
3,900.00	3,707.00	3,665.95	3,709.91	13.74	89.11	10.90	1,336.04	627.81	1,075.95	978.33	97.62	11.022	
3,950.00	3,732.54	3,694.12	3,738.08	13.80	90.03	11.38	1,335.93	627.81	1,033.79	935.19	98.59	10.485	
4,000.00	3,757.54	3,721.43	3,765.38	13.87	90.93	11.92	1,335.74	627.81	991.35	891.81	99.54	9.959	
4,050.00	3,782.54	3,748.50	3,792.45	13.95	91.81	12.50	1,335.49	627.81	948.94	848.45	100.49	9.443	
4,100.00	3,807.54	3,775.33	3,819.26	14.04	92.69	13.13	1,335.17	627.81	906.58	805.15	101.43	8.938	
4,150.00	3,832.37	3,801.73	3,845.66	14.13	93.55	13.84	1,334.79	627.81	864.19	761.81	102.38	8.441	
4,200.00	3,854.28	3,824.70	3,868.62	14.23	94.30	14.64	1,334.40	627.81	820.46	717.22	103.24	7.947	
4,250.00	3,872.20	3,828.52	3,872.20	14.35	94.46	15.56	1,334.49	627.81	775.55	671.95	103.60	7.486	
4,300.00	3,885.97	3,842.30	3,885.97	14.48	94.97	16.62	1,334.49	627.81	729.59	625.35	104.24	6.999	
4,350.00	3,895.51	3,851.83	3,895.51	14.62	95.33	17.86	1,334.49	627.81	682.95	578.22	104.73	6.521	
4,400.00	3,900.74	3,857.06	3,900.74	14.77	95.52	19.30	1,334.49	627.81	636.07	531.00	105.07	6.054	
4,450.00	3,901.61	3,857.93	3,901.61	14.93	95.55	20.97	1,334.49	627.81	589.40	484.15	105.26	5.600	
4,500.00	3,898.45	3,854.78	3,898.45	15.09	95.44	22.93	1,334.49	627.81	543.40	438.08	105.32	5.160	
4,550.00	3,894.49	3,850.81	3,894.49	15.28	95.29	25.24	1,334.49	627.81	498.20	392.79	105.41	4.726	
4,600.00	3,890.52	3,846.84	3,890.52	15.47	95.14	28.01	1,334.49	627.81	453.97	348.40	105.57	4.300	
4,650.00	3,886.55	3,842.88	3,886.55	15.67	95.00	31.37	1,334.49	627.81	411.02	305.18	105.84	3.883	
4,700.00	3,882.59	3,838.91	3,882.59	15.88	94.85	35.49	1,334.49	627.81	369.81	263.58	106.24	3.481	
4,750.00	3,878.62	3,834.94	3,878.62	16.09	94.70	40.61	1,334.49	627.81	330.99	224.18	106.81	3.099	
4,800.00	3,874.65	3,830.97	3,874.65	16.31	94.55	47.02	1,334.49	627.81	295.48	187.91	107.58	2.747	
4,850.00	3,870.68	3,827.01	3,870.68	16.54	94.41	55.05	1,334.49	627.81	264.65	156.10	108.55	2.438	
4,900.00	3,866.72	3,823.04	3,866.72	16.77	94.26	64.94	1,334.49	627.81	240.28	130.65	109.63	2.192	
4,950.00	3,862.75	3,820.00	3,863.68	17.01	94.14	76.62	1,334.49	627.81	224.50	113.89	110.61	2.030	
4,998.89	3,858.87	3,815.11	3,859.03	17.24	93.99	89.14	1,334.57	627.81	219.16	107.97	111.19	1.971	CC
5,000.00	3,858.78	3,815.00	3,858.93	17.25	93.98	89.43	1,334.57	627.81	219.16	107.96	111.20	1.971	ES, SF
5,050.00	3,854.82	3,810.20	3,854.13	17.50	93.82	102.21	1,334.65	627.81	224.98	113.79	111.19	2.023	
5,100.00	3,850.85	3,805.45	3,849.38	17.75	93.67	113.80	1,334.73	627.81	241.16	130.52	110.63	2.180	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EDDY STATE I NCT-B 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 760-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,150.00	3,846.88	3,800.74	3,844.67	18.01	93.52	123.60	1,334.80	627.81	265.80	156.04	109.77	2.421	
5,200.00	3,842.91	3,796.08	3,840.01	18.27	93.36	131.55	1,334.88	627.81	296.82	188.00	108.82	2.728	
5,250.00	3,838.95	3,791.46	3,835.39	18.54	93.21	137.90	1,334.95	627.81	332.43	224.51	107.92	3.080	
5,300.00	3,834.98	3,786.88	3,830.81	18.81	93.06	142.97	1,335.01	627.81	371.31	264.21	107.11	3.467	
5,350.00	3,831.01	3,782.34	3,826.28	19.08	92.92	147.05	1,335.08	627.81	412.55	306.14	106.41	3.877	
5,400.00	3,827.04	3,777.85	3,821.78	19.36	92.77	150.38	1,335.14	627.81	455.49	349.69	105.80	4.305	
5,450.00	3,823.08	3,773.40	3,817.33	19.64	92.62	153.13	1,335.20	627.81	499.71	394.44	105.27	4.747	
5,500.00	3,819.11	3,768.98	3,812.92	19.93	92.48	155.43	1,335.25	627.81	544.89	440.08	104.81	5.199	
5,550.00	3,815.14	3,764.61	3,808.55	20.22	92.34	157.37	1,335.31	627.81	590.82	486.41	104.41	5.659	
5,600.00	3,811.18	3,760.28	3,804.22	20.51	92.19	159.03	1,335.36	627.81	637.32	533.27	104.05	6.125	
5,650.00	3,807.21	3,755.98	3,799.92	20.80	92.05	160.46	1,335.41	627.81	684.29	580.57	103.72	6.597	
5,700.00	3,803.24	3,751.73	3,795.67	21.10	91.92	161.71	1,335.46	627.81	731.64	628.21	103.43	7.074	
5,750.00	3,799.27	3,747.51	3,791.45	21.40	91.78	162.81	1,335.50	627.81	779.29	676.13	103.16	7.554	
5,800.00	3,795.31	3,743.33	3,787.27	21.70	91.64	163.78	1,335.54	627.81	827.20	724.29	102.91	8.038	
5,850.00	3,791.34	3,739.18	3,783.13	22.01	91.51	164.64	1,335.59	627.81	875.32	772.64	102.68	8.524	
5,900.00	3,787.37	3,735.08	3,779.02	22.31	91.37	165.42	1,335.63	627.81	923.62	821.15	102.47	9.014	
5,950.00	3,783.41	3,731.00	3,774.95	22.63	91.24	166.11	1,335.66	627.81	972.07	869.81	102.27	9.505	
6,000.00	3,779.44	3,726.97	3,770.92	22.94	91.11	166.74	1,335.70	627.81	1,020.66	918.58	102.07	9.999	
6,050.00	3,775.47	3,722.97	3,766.92	23.25	90.98	167.32	1,335.73	627.81	1,069.36	967.47	101.89	10.495	
6,100.00	3,771.50	3,719.00	3,762.95	23.57	90.85	167.84	1,335.76	627.81	1,118.16	1,016.44	101.72	10.993	
6,150.00	3,767.54	3,715.07	3,759.02	23.89	90.72	168.32	1,335.79	627.81	1,167.04	1,065.49	101.55	11.492	
6,200.00	3,763.57	3,711.17	3,755.12	24.21	90.59	168.76	1,335.82	627.81	1,216.00	1,114.61	101.39	11.993	
6,250.00	3,759.60	3,707.30	3,751.26	24.53	90.46	169.17	1,335.85	627.81	1,265.03	1,163.79	101.24	12.495	
6,300.00	3,755.64	3,703.47	3,747.42	24.85	90.34	169.54	1,335.87	627.81	1,314.12	1,213.03	101.09	12.999	
6,350.00	3,751.67	3,699.67	3,743.62	25.18	90.22	169.89	1,335.90	627.81	1,363.27	1,262.32	100.95	13.504	
6,400.00	3,747.70	3,695.90	3,739.86	25.51	90.09	170.22	1,335.92	627.81	1,412.46	1,311.65	100.81	14.011	
6,450.00	3,743.73	3,692.16	3,736.12	25.84	89.97	170.52	1,335.94	627.81	1,461.70	1,361.02	100.68	14.518	
6,500.00	3,739.77	3,688.46	3,732.42	26.17	89.85	170.80	1,335.96	627.81	1,510.97	1,410.42	100.55	15.027	
6,550.00	3,735.80	3,684.78	3,728.74	26.50	89.73	171.07	1,335.98	627.81	1,560.29	1,459.86	100.42	15.537	
6,600.00	3,731.83	3,681.14	3,725.10	26.83	89.61	171.32	1,335.99	627.81	1,609.63	1,509.33	100.30	16.048	
6,650.00	3,727.87	3,677.52	3,721.48	27.17	89.49	171.55	1,336.01	627.81	1,659.01	1,558.83	100.18	16.560	
6,700.00	3,723.90	3,673.94	3,717.90	27.50	89.37	171.77	1,336.02	627.81	1,708.41	1,608.35	100.07	17.073	
6,750.00	3,719.93	3,670.38	3,714.35	27.84	89.26	171.98	1,336.03	627.81	1,757.84	1,657.89	99.95	17.587	
6,800.00	3,715.96	3,666.86	3,710.82	28.18	89.14	172.18	1,336.04	627.81	1,807.29	1,707.45	99.84	18.102	
6,850.00	3,712.00	3,663.36	3,707.32	28.52	89.03	172.36	1,336.05	627.81	1,856.77	1,757.03	99.73	18.618	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO U L 156 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 493-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	45.00	0.00	0.00	-1.81	1,279.91	-40.45	1,281.34				
50.00	50.00	5.00	50.00	0.92	0.10	-1.81	1,279.91	-40.45	1,280.55	1,279.53	1.02	1,254.824	
100.00	100.00	55.00	100.00	0.92	1.06	-1.81	1,279.91	-40.45	1,280.55	1,278.57	1.98	645.600	
150.00	150.00	105.00	150.00	1.23	2.02	-1.81	1,279.91	-40.45	1,280.55	1,277.30	3.25	394.313	
200.00	200.00	155.00	200.00	1.53	2.99	-1.81	1,279.91	-40.45	1,280.55	1,276.04	4.51	283.836	
250.00	250.00	205.00	250.00	1.74	3.95	-1.81	1,279.91	-40.45	1,280.55	1,274.86	5.69	225.114	
300.00	300.00	255.00	300.00	1.95	4.91	-1.81	1,279.91	-40.45	1,280.55	1,273.68	6.87	186.524	
350.00	350.00	305.00	350.00	2.22	5.87	-1.83	1,279.91	-40.45	1,280.76	1,272.73	8.02	159.607	
400.00	399.98	354.98	399.98	2.51	6.84	-1.88	1,279.91	-40.45	1,281.37	1,272.19	9.19	139.494	
450.00	449.93	404.93	449.93	2.75	7.80	-1.96	1,279.91	-40.45	1,282.41	1,272.09	10.32	124.271	
500.00	499.84	454.84	499.84	3.00	8.76	-2.08	1,279.91	-40.45	1,283.86	1,272.40	11.45	112.099	
550.00	549.68	504.70	549.68	3.23	9.73	-2.24	1,279.91	-40.45	1,285.73	1,273.14	12.59	102.147	
600.00	599.45	554.47	599.45	3.46	10.75	-2.43	1,279.91	-40.45	1,288.03	1,274.26	13.76	93.574	
650.00	649.13	604.14	649.13	3.68	11.77	-2.65	1,279.91	-40.45	1,290.76	1,275.83	14.93	86.430	
700.00	698.70	653.72	698.70	3.91	12.78	-2.90	1,279.91	-40.45	1,293.94	1,277.84	16.10	80.355	
750.00	748.15	703.17	748.15	4.07	13.79	-3.18	1,279.91	-40.45	1,297.57	1,280.35	17.22	75.345	
800.00	797.49	752.91	797.89	4.21	14.80	-3.49	1,280.72	-40.45	1,302.41	1,284.08	18.32	71.083	
850.00	846.80	803.99	848.97	4.39	15.85	-3.81	1,280.67	-40.45	1,306.47	1,286.96	19.51	66.959	
900.00	896.12	855.08	900.06	4.58	16.89	-4.12	1,280.55	-40.45	1,310.52	1,289.81	20.70	63.306	
950.00	945.44	906.18	951.16	4.76	17.94	-4.43	1,280.36	-40.45	1,314.53	1,292.64	21.89	60.063	
1,000.00	994.75	957.30	1,002.27	4.95	18.98	-4.74	1,280.10	-40.45	1,318.52	1,295.44	23.07	57.149	
1,050.00	1,044.07	999.14	1,044.07	5.14	19.85	-5.04	1,279.91	-40.45	1,322.57	1,298.49	24.08	54.916	
1,100.00	1,093.39	1,048.46	1,093.39	5.33	20.94	-5.35	1,279.91	-40.45	1,326.88	1,301.57	25.31	52.420	
1,150.00	1,142.70	1,097.78	1,142.70	5.53	22.02	-5.65	1,279.91	-40.45	1,331.23	1,304.68	26.54	50.156	
1,200.00	1,192.02	1,147.09	1,192.02	5.73	23.11	-5.95	1,279.91	-40.45	1,335.61	1,307.84	27.77	48.091	
1,250.00	1,241.34	1,196.41	1,241.34	5.93	24.20	-6.24	1,279.91	-40.45	1,340.03	1,311.02	29.00	46.202	
1,300.00	1,290.66	1,245.79	1,290.71	6.13	25.29	-6.54	1,281.02	-40.45	1,345.59	1,315.35	30.24	44.502	
1,350.00	1,339.97	1,297.48	1,342.40	6.33	26.42	-6.83	1,280.98	-40.45	1,350.03	1,318.51	31.52	42.827	
1,400.00	1,389.29	1,349.19	1,394.10	6.54	27.56	-7.12	1,280.84	-40.45	1,354.43	1,321.62	32.81	41.281	
1,450.00	1,438.61	1,400.91	1,445.82	6.75	28.70	-7.41	1,280.61	-40.45	1,358.77	1,324.67	34.10	39.848	
1,500.00	1,487.92	1,452.65	1,497.55	6.95	29.84	-7.70	1,280.28	-40.45	1,363.06	1,327.67	35.39	38.516	
1,550.00	1,537.24	1,504.40	1,549.30	7.16	30.98	-7.99	1,279.87	-40.45	1,367.30	1,330.61	36.68	37.276	
1,600.00	1,586.56	1,541.73	1,586.56	7.37	31.85	-8.27	1,279.91	-40.45	1,371.94	1,334.25	37.69	36.400	
1,650.00	1,635.88	1,591.05	1,635.88	7.58	32.98	-8.56	1,279.91	-40.45	1,376.64	1,337.66	38.98	35.320	
1,700.00	1,685.19	1,640.36	1,685.19	7.79	34.11	-8.84	1,279.91	-40.45	1,381.37	1,341.11	40.26	34.308	
1,750.00	1,734.51	1,689.68	1,734.51	8.00	35.24	-9.11	1,279.91	-40.45	1,386.13	1,344.58	41.55	33.359	
1,800.00	1,783.83	1,739.24	1,784.05	8.22	36.38	-9.38	1,281.19	-40.45	1,392.19	1,349.35	42.85	32.493	
1,850.00	1,833.14	1,791.93	1,836.74	8.43	37.59	-9.66	1,281.12	-40.45	1,396.95	1,352.73	44.22	31.594	
1,900.00	1,882.46	1,844.64	1,889.45	8.64	38.81	-9.93	1,280.92	-40.45	1,401.62	1,356.03	45.59	30.747	
1,950.00	1,931.78	1,897.38	1,942.18	8.86	40.02	-10.20	1,280.59	-40.45	1,406.21	1,359.25	46.96	29.946	
2,000.00	1,981.09	1,950.14	1,994.93	9.07	41.23	-10.48	1,280.13	-40.45	1,410.70	1,362.37	48.33	29.187	
2,050.00	2,030.41	1,985.69	2,030.41	9.29	42.06	-10.74	1,279.91	-40.45	1,415.37	1,366.05	49.32	28.698	
2,100.00	2,079.73	2,035.01	2,079.73	9.50	43.24	-11.01	1,279.91	-40.45	1,420.36	1,369.69	50.66	28.035	
2,150.00	2,129.05	2,084.33	2,129.05	9.72	44.42	-11.27	1,279.91	-40.45	1,425.37	1,373.36	52.01	27.406	
2,200.00	2,178.36	2,133.65	2,178.36	9.94	45.61	-11.53	1,279.91	-40.45	1,430.41	1,377.06	53.36	26.809	
2,250.00	2,227.68	2,182.96	2,227.68	10.16	46.79	-11.79	1,279.91	-40.45	1,435.48	1,380.78	54.70	26.241	
2,300.00	2,277.00	2,234.09	2,278.79	10.37	48.01	-12.04	1,281.18	-40.45	1,441.82	1,385.73	56.10	25.703	
2,350.00	2,326.31	2,286.89	2,331.58	10.59	49.28	-12.30	1,281.04	-40.45	1,446.83	1,389.30	57.53	25.149	
2,400.00	2,375.63	2,339.70	2,384.39	10.81	50.54	-12.55	1,280.78	-40.45	1,451.75	1,392.78	58.97	24.620	
2,450.00	2,424.95	2,392.54	2,437.23	11.03	51.81	-12.81	1,280.39	-40.45	1,456.58	1,396.18	60.41	24.113	
2,500.00	2,474.26	2,445.40	2,490.08	11.25	53.07	-13.06	1,279.87	-40.45	1,461.32	1,399.48	61.85	23.629	
2,550.00	2,523.58	2,479.00	2,523.58	11.46	53.92	-13.31	1,279.91	-40.45	1,466.52	1,403.67	62.85	23.333	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO U L 156 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 493-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,528.32	2,572.90	11.68	55.15	-13.56	1,279.91	-40.45	1,471.79	1,407.53	64.26	22.905	
2,650.00	2,622.22	2,577.64	2,622.22	11.90	56.38	-13.80	1,279.91	-40.45	1,477.08	1,411.42	65.66	22.495	
2,700.00	2,671.53	2,626.95	2,671.53	12.12	57.61	-14.05	1,279.91	-40.45	1,482.41	1,415.34	67.07	22.102	
2,750.00	2,720.85	2,676.27	2,720.85	12.34	58.85	-14.29	1,279.91	-40.45	1,487.76	1,419.28	68.48	21.726	
2,800.00	2,770.17	2,728.31	2,772.87	12.56	60.15	-14.51	1,281.52	-40.45	1,494.69	1,424.74	69.96	21.366	
2,850.00	2,819.48	2,781.70	2,826.25	12.77	61.48	-14.75	1,281.34	-40.45	1,499.94	1,428.48	71.45	20.991	
2,900.00	2,868.87	2,835.19	2,879.73	12.97	62.82	-15.00	1,281.02	-40.45	1,504.14	1,431.19	72.95	20.619	
2,950.00	2,918.36	2,888.78	2,933.32	13.16	64.16	-15.26	1,280.54	-40.45	1,505.68	1,431.26	74.42	20.232	
3,000.00	2,967.83	2,942.32	2,986.84	13.32	65.49	-15.54	1,279.92	-40.45	1,504.55	1,428.71	75.85	19.837	
3,050.00	3,017.14	2,972.73	3,017.14	13.44	66.26	-15.83	1,279.91	-40.45	1,501.31	1,424.68	76.62	19.594	
3,100.00	3,066.14	3,021.74	3,066.14	13.52	67.49	-16.14	1,279.91	-40.45	1,495.66	1,417.82	77.84	19.214	
3,150.00	3,114.72	3,070.31	3,114.72	13.57	68.70	-16.47	1,279.91	-40.45	1,487.52	1,408.49	79.03	18.823	
3,200.00	3,162.74	3,118.33	3,162.74	13.60	69.91	-16.82	1,279.91	-40.45	1,476.90	1,396.72	80.19	18.418	
3,250.00	3,210.06	3,165.65	3,210.06	13.61	71.09	-17.19	1,279.91	-40.45	1,463.86	1,382.53	81.33	18.000	
3,300.00	3,256.55	3,212.23	3,256.62	13.62	72.26	-17.56	1,281.66	-40.45	1,450.09	1,367.65	82.44	17.589	
3,350.00	3,302.09	3,261.03	3,305.42	13.61	73.49	-17.98	1,281.60	-40.45	1,432.26	1,348.63	83.62	17.128	
3,400.00	3,346.56	3,308.57	3,352.95	13.61	74.68	-18.42	1,281.43	-40.45	1,412.05	1,327.28	84.77	16.657	
3,450.00	3,389.82	3,354.70	3,399.08	13.60	75.84	-18.90	1,281.16	-40.45	1,389.54	1,303.65	85.89	16.178	
3,500.00	3,431.77	3,399.29	3,443.65	13.60	76.95	-19.40	1,280.80	-40.45	1,364.82	1,277.84	86.97	15.692	
3,550.00	3,472.28	3,442.20	3,486.56	13.59	78.03	-19.94	1,280.36	-40.45	1,337.97	1,249.95	88.02	15.200	
3,600.00	3,511.25	3,483.31	3,527.66	13.59	79.06	-20.52	1,279.85	-40.45	1,309.10	1,220.07	89.03	14.703	
3,650.00	3,548.57	3,504.34	3,548.57	13.60	79.62	-21.13	1,279.91	-40.45	1,278.76	1,189.21	89.56	14.279	
3,700.00	3,584.14	3,539.91	3,584.14	13.61	80.54	-21.78	1,279.91	-40.45	1,246.70	1,156.22	90.48	13.779	
3,750.00	3,617.85	3,573.63	3,617.85	13.63	81.43	-22.48	1,279.91	-40.45	1,212.98	1,121.61	91.37	13.276	
3,800.00	3,649.62	3,605.40	3,649.62	13.66	82.26	-23.23	1,279.91	-40.45	1,177.72	1,085.50	92.22	12.771	
3,850.00	3,679.37	3,635.14	3,679.37	13.70	83.03	-24.04	1,279.91	-40.45	1,141.04	1,048.01	93.03	12.265	
3,900.00	3,707.00	3,662.77	3,707.00	13.74	83.75	-24.92	1,279.91	-40.45	1,103.07	1,009.27	93.80	11.760	
3,950.00	3,732.54	3,688.32	3,732.54	13.80	84.42	-25.87	1,279.91	-40.45	1,064.02	969.50	94.52	11.257	
4,000.00	3,757.54	3,713.32	3,757.54	13.87	85.08	-26.89	1,279.91	-40.45	1,024.94	929.70	95.24	10.762	
4,050.00	3,782.54	3,739.48	3,783.69	13.95	85.76	-27.95	1,281.44	-40.45	987.57	891.57	96.00	10.288	
4,100.00	3,807.54	3,765.64	3,809.84	14.04	86.44	-29.14	1,281.39	-40.45	949.18	852.40	96.78	9.808	
4,150.00	3,832.37	3,791.48	3,835.68	14.13	87.12	-30.44	1,281.30	-40.45	911.12	813.56	97.56	9.339	
4,200.00	3,854.28	3,814.14	3,858.34	14.23	87.71	-31.90	1,281.19	-40.45	872.25	773.93	98.32	8.871	
4,250.00	3,872.20	3,832.51	3,876.71	14.35	88.19	-33.56	1,281.08	-40.45	832.53	733.52	99.00	8.409	
4,300.00	3,885.97	3,846.49	3,890.68	14.48	88.55	-35.44	1,280.98	-40.45	792.44	692.83	99.62	7.955	
4,350.00	3,895.51	3,855.99	3,900.18	14.62	88.80	-37.57	1,280.91	-40.45	752.51	652.35	100.16	7.513	
4,400.00	3,900.74	3,860.98	3,905.17	14.77	88.93	-39.96	1,280.87	-40.45	713.25	612.62	100.63	7.088	
4,450.00	3,901.61	3,861.47	3,905.65	14.93	88.95	-42.63	1,280.87	-40.45	675.20	574.16	101.04	6.682	
4,500.00	3,898.45	3,857.81	3,902.00	15.09	88.85	-45.61	1,280.90	-40.45	638.87	537.48	101.39	6.301	
4,550.00	3,894.49	3,853.35	3,897.54	15.28	88.73	-48.94	1,280.93	-40.45	604.52	502.74	101.78	5.939	
4,600.00	3,890.52	3,848.92	3,893.11	15.47	88.62	-52.65	1,280.96	-40.45	572.44	470.23	102.21	5.601	
4,650.00	3,886.55	3,844.51	3,888.70	15.67	88.50	-56.79	1,281.00	-40.45	543.05	440.38	102.67	5.289	
4,700.00	3,882.59	3,840.12	3,884.31	15.88	88.39	-61.36	1,281.03	-40.45	516.79	413.64	103.15	5.010	
4,750.00	3,878.62	3,835.76	3,879.95	16.09	88.27	-66.40	1,281.06	-40.45	494.17	390.55	103.63	4.769	
4,800.00	3,874.65	3,831.42	3,875.62	16.31	88.16	-71.87	1,281.08	-40.45	475.71	371.65	104.06	4.571	
4,850.00	3,870.68	3,827.11	3,871.30	16.54	88.05	-77.72	1,281.11	-40.45	461.91	357.48	104.43	4.423	
4,900.00	3,866.72	3,822.82	3,867.02	16.77	87.94	-83.87	1,281.14	-40.45	453.20	348.50	104.69	4.329	
4,950.00	3,862.75	3,818.56	3,862.75	17.01	87.83	-90.18	1,281.16	-40.45	449.86	345.04	104.81	4.292	
4,955.35	3,862.33	3,818.10	3,862.30	17.03	87.81	-90.86	1,281.17	-40.45	449.83	345.01	104.82	4.292	CC, ES, SF
5,000.00	3,858.78	3,814.31	3,858.51	17.25	87.71	-96.50	1,281.19	-40.45	452.02	347.24	104.78	4.314	
5,050.00	3,854.82	3,810.10	3,854.29	17.50	87.60	-102.70	1,281.21	-40.45	459.61	355.01	104.59	4.394	
5,100.00	3,850.85	3,805.90	3,850.10	17.75	87.49	-108.62	1,281.23	-40.45	472.35	368.09	104.26	4.530	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO U L 156 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 493-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,150.00	3,846.88	3,801.73	3,845.92	18.01	87.39	-114.18	1,281.25	-40.45	489.86	386.02	103.84	4.718	
5,200.00	3,842.91	3,797.58	3,841.78	18.27	87.28	-119.31	1,281.27	-40.45	511.63	408.30	103.33	4.951	
5,250.00	3,838.95	3,793.45	3,837.65	18.54	87.17	-123.99	1,281.29	-40.45	537.16	434.37	102.79	5.226	
5,300.00	3,834.98	3,789.35	3,833.54	18.81	87.06	-128.22	1,281.31	-40.45	565.93	463.71	102.23	5.536	
5,350.00	3,831.01	3,785.26	3,829.46	19.08	86.96	-132.02	1,281.32	-40.45	597.48	495.81	101.68	5.876	
5,400.00	3,827.04	3,781.20	3,825.40	19.36	86.85	-135.42	1,281.34	-40.45	631.39	530.25	101.14	6.243	
5,450.00	3,823.08	3,777.16	3,821.36	19.64	86.74	-138.47	1,281.35	-40.45	667.30	566.67	100.63	6.631	
5,500.00	3,819.11	3,773.15	3,817.35	19.93	86.64	-141.20	1,281.36	-40.45	704.91	604.76	100.15	7.039	
5,550.00	3,815.14	3,769.15	3,813.35	20.22	86.53	-143.65	1,281.38	-40.45	743.96	644.25	99.70	7.462	
5,600.00	3,811.18	3,765.18	3,809.38	20.51	86.43	-145.86	1,281.39	-40.45	784.23	684.94	99.29	7.899	
5,650.00	3,807.21	3,761.23	3,805.43	20.80	86.33	-147.84	1,281.40	-40.45	825.54	726.64	98.90	8.347	
5,700.00	3,803.24	3,757.29	3,801.49	21.10	86.22	-149.63	1,281.41	-40.45	867.75	769.21	98.54	8.806	
5,750.00	3,799.27	3,753.38	3,797.58	21.40	86.12	-151.26	1,281.42	-40.45	910.73	812.52	98.21	9.273	
5,800.00	3,795.31	3,749.49	3,793.69	21.70	86.02	-152.74	1,281.43	-40.45	954.38	856.48	97.90	9.749	
5,850.00	3,791.34	3,745.62	3,789.82	22.01	85.92	-154.08	1,281.43	-40.45	998.61	901.00	97.61	10.230	
5,900.00	3,787.37	3,741.77	3,785.97	22.31	85.82	-155.32	1,281.44	-40.45	1,043.34	946.00	97.34	10.718	
5,950.00	3,783.41	3,737.94	3,782.15	22.63	85.72	-156.45	1,281.44	-40.45	1,088.52	991.43	97.09	11.211	
6,000.00	3,779.44	3,734.13	3,778.34	22.94	85.62	-157.49	1,281.45	-40.45	1,134.09	1,037.23	96.86	11.709	
6,050.00	3,775.47	3,730.34	3,774.55	23.25	85.52	-158.45	1,281.45	-40.45	1,180.01	1,083.37	96.64	12.210	
6,100.00	3,771.50	3,726.57	3,770.78	23.57	85.42	-159.34	1,281.45	-40.45	1,226.23	1,129.80	96.43	12.716	
6,150.00	3,767.54	3,722.82	3,767.03	23.89	85.32	-160.16	1,281.46	-40.45	1,272.73	1,176.49	96.24	13.225	
6,200.00	3,763.57	3,719.09	3,763.30	24.21	85.23	-160.92	1,281.46	-40.45	1,319.47	1,223.42	96.05	13.737	
6,250.00	3,759.60	3,715.38	3,759.60	24.53	85.13	-161.66	1,279.91	-40.45	1,367.90	1,272.03	95.87	14.268	
6,300.00	3,755.64	3,711.41	3,755.64	24.85	85.03	-162.32	1,279.91	-40.45	1,415.07	1,319.37	95.70	14.787	
6,350.00	3,751.67	3,707.44	3,751.67	25.18	84.92	-162.94	1,279.91	-40.45	1,462.41	1,366.88	95.53	15.308	
6,400.00	3,747.70	3,703.48	3,747.70	25.51	84.82	-163.52	1,279.91	-40.45	1,509.91	1,414.54	95.37	15.832	
6,450.00	3,743.73	3,699.51	3,743.73	25.84	84.71	-164.07	1,279.91	-40.45	1,557.56	1,462.34	95.22	16.357	
6,500.00	3,739.77	3,695.54	3,739.77	26.17	84.61	-164.58	1,279.91	-40.45	1,605.35	1,510.27	95.07	16.886	
6,550.00	3,735.80	3,691.57	3,735.80	26.50	84.51	-165.07	1,279.91	-40.45	1,653.25	1,558.32	94.93	17.415	
6,600.00	3,731.83	3,687.61	3,731.83	26.83	84.40	-165.52	1,279.91	-40.45	1,701.27	1,606.48	94.79	17.947	
6,650.00	3,727.87	3,683.64	3,727.87	27.17	84.30	-165.96	1,279.91	-40.45	1,749.39	1,654.73	94.66	18.481	
6,700.00	3,723.90	3,679.67	3,723.90	27.50	84.20	-166.36	1,279.91	-40.45	1,797.60	1,703.07	94.53	19.016	
6,750.00	3,719.93	3,675.71	3,719.93	27.84	84.09	-166.75	1,279.91	-40.45	1,845.90	1,751.49	94.40	19.553	
6,800.00	3,715.96	3,671.74	3,715.96	28.18	83.99	-167.12	1,279.91	-40.45	1,894.27	1,799.99	94.28	20.092	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO U M D - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 496-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	27.00	0.00	0.00	-51.69	484.37	-613.12	781.83				
50.00	50.00	23.00	50.00	0.92	0.44	-51.69	484.37	-613.12	781.36	780.00	1.37	571.489	
100.00	100.00	73.00	100.00	0.92	1.41	-51.69	484.37	-613.12	781.36	779.03	2.33	335.295	
150.00	150.00	123.00	150.00	1.23	2.37	-51.69	484.37	-613.12	781.36	777.77	3.59	217.375	
200.00	200.00	173.00	200.00	1.53	3.33	-51.69	484.37	-613.12	781.36	776.51	4.86	160.817	
250.00	250.00	223.00	250.00	1.74	4.30	-51.69	484.37	-613.12	781.36	775.33	6.04	129.457	
300.00	300.00	273.00	300.00	1.95	5.26	-51.69	484.37	-613.12	781.36	774.15	7.21	108.331	CC
350.00	350.00	323.00	350.00	2.22	6.22	-51.70	484.37	-613.12	781.79	773.36	8.43	92.711	ES
400.00	399.98	372.98	399.98	2.51	7.18	-51.72	484.37	-613.12	783.07	773.38	9.69	80.831	
450.00	449.93	422.93	449.93	2.75	8.15	-51.75	484.37	-613.12	785.21	774.32	10.89	72.124	
500.00	499.84	472.84	499.84	3.00	9.11	-51.80	484.37	-613.12	788.19	776.10	12.09	65.204	
550.00	549.68	522.70	549.68	3.23	10.06	-51.85	484.37	-613.12	792.03	778.76	13.27	59.695	
600.00	599.45	572.47	599.45	3.46	11.01	-51.92	484.37	-613.12	796.72	782.28	14.44	55.167	
650.00	649.13	622.14	649.13	3.68	11.95	-52.01	484.37	-613.12	802.27	786.66	15.61	51.396	
700.00	698.70	671.72	698.70	3.91	12.90	-52.10	484.37	-613.12	808.66	791.88	16.78	48.203	
750.00	748.15	721.17	748.15	4.07	13.84	-52.20	484.37	-613.12	815.90	798.02	17.88	45.636	
800.00	797.49	770.84	797.82	4.21	14.78	-52.27	485.18	-613.12	824.37	805.41	18.96	43.484	
850.00	846.80	820.83	847.81	4.39	15.73	-52.39	485.11	-613.12	832.41	812.32	20.09	41.432	
900.00	896.12	870.83	897.81	4.58	16.68	-52.50	484.98	-613.12	840.41	819.18	21.22	39.597	
950.00	945.44	920.84	947.82	4.76	17.63	-52.62	484.78	-613.12	848.37	826.01	22.36	37.942	
1,000.00	994.75	970.86	997.84	4.95	18.58	-52.74	484.52	-613.12	856.30	832.80	23.50	36.445	
1,050.00	1,044.07	1,017.11	1,044.07	5.14	19.45	-52.85	484.37	-613.12	864.29	839.74	24.55	35.203	
1,100.00	1,093.39	1,066.43	1,093.39	5.33	20.36	-52.95	484.37	-613.12	872.38	846.73	25.65	34.011	
1,150.00	1,142.70	1,115.75	1,142.70	5.53	21.27	-53.05	484.37	-613.12	880.48	853.72	26.75	32.912	
1,200.00	1,192.02	1,165.07	1,192.02	5.73	22.17	-53.15	484.37	-613.12	888.57	860.72	27.86	31.899	
1,250.00	1,241.34	1,214.38	1,241.34	5.93	23.08	-53.25	484.37	-613.12	896.67	867.71	28.96	30.960	
1,300.00	1,290.66	1,263.97	1,290.92	6.13	24.00	-53.32	484.89	-613.12	905.09	875.01	30.07	30.095	
1,350.00	1,339.97	1,313.78	1,340.73	6.33	24.91	-53.41	484.84	-613.12	913.16	881.97	31.19	29.274	
1,400.00	1,389.29	1,363.60	1,390.55	6.54	25.83	-53.51	484.75	-613.12	921.21	888.90	32.31	28.509	
1,450.00	1,438.61	1,413.42	1,440.37	6.75	26.75	-53.60	484.61	-613.12	929.24	895.80	33.44	27.792	
1,500.00	1,487.92	1,463.26	1,490.21	6.95	27.66	-53.70	484.43	-613.12	937.24	902.69	34.56	27.121	
1,550.00	1,537.24	1,510.30	1,537.24	7.16	28.55	-53.79	484.37	-613.12	945.32	909.67	35.65	26.516	
1,600.00	1,586.56	1,559.62	1,586.56	7.37	29.49	-53.87	484.37	-613.12	953.43	916.64	36.80	25.911	
1,650.00	1,635.88	1,608.94	1,635.88	7.58	30.43	-53.96	484.37	-613.12	961.55	923.61	37.94	25.341	
1,700.00	1,685.19	1,658.25	1,685.19	7.79	31.37	-54.04	484.37	-613.12	969.67	930.58	39.09	24.804	
1,750.00	1,734.51	1,707.57	1,734.51	8.00	32.31	-54.12	484.37	-613.12	977.79	937.55	40.24	24.298	
1,800.00	1,783.83	1,757.21	1,784.14	8.22	33.25	-54.17	484.90	-613.12	986.23	944.83	41.40	23.823	
1,850.00	1,833.14	1,807.04	1,833.97	8.43	34.20	-54.25	484.85	-613.12	994.32	951.76	42.56	23.363	
1,900.00	1,882.46	1,856.87	1,883.81	8.64	35.15	-54.33	484.76	-613.12	1,002.39	958.67	43.72	22.927	
1,950.00	1,931.78	1,906.72	1,933.65	8.86	36.10	-54.42	484.62	-613.12	1,010.44	965.56	44.88	22.512	
2,000.00	1,981.09	1,956.57	1,983.50	9.07	37.05	-54.50	484.44	-613.12	1,018.47	972.42	46.05	22.118	
2,050.00	2,030.41	2,003.50	2,030.41	9.29	37.98	-54.58	484.37	-613.12	1,026.56	979.37	47.19	21.754	
2,100.00	2,079.73	2,052.82	2,079.73	9.50	38.98	-54.65	484.37	-613.12	1,034.69	986.28	48.41	21.376	
2,150.00	2,129.05	2,102.14	2,129.05	9.72	39.98	-54.72	484.37	-613.12	1,042.82	993.20	49.62	21.016	
2,200.00	2,178.36	2,151.46	2,178.36	9.94	40.98	-54.79	484.37	-613.12	1,050.96	1,000.12	50.84	20.673	
2,250.00	2,227.68	2,200.77	2,227.68	10.16	41.98	-54.86	484.37	-613.12	1,059.10	1,007.04	52.05	20.346	
2,300.00	2,277.00	2,250.60	2,277.50	10.37	42.99	-54.89	485.16	-613.12	1,067.69	1,014.41	53.28	20.038	
2,350.00	2,326.31	2,300.75	2,327.65	10.59	44.01	-54.96	485.09	-613.12	1,075.79	1,021.27	54.52	19.733	
2,400.00	2,375.63	2,350.91	2,377.81	10.81	45.03	-55.03	484.94	-613.12	1,083.85	1,028.10	55.75	19.440	
2,450.00	2,424.95	2,401.09	2,427.98	11.03	46.05	-55.11	484.73	-613.12	1,091.88	1,034.89	56.99	19.159	
2,500.00	2,474.26	2,451.27	2,478.16	11.25	47.07	-55.18	484.46	-613.12	1,099.87	1,041.64	58.23	18.889	
2,550.00	2,523.58	2,496.73	2,523.58	11.46	48.04	-55.25	484.37	-613.12	1,107.96	1,048.55	59.41	18.649	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO U M D - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 496-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,546.05	2,572.90	11.68	49.11	-55.31	484.37	-613.12	1,116.11	1,055.41	60.70	18.387	
2,650.00	2,622.22	2,595.37	2,622.22	11.90	50.18	-55.37	484.37	-613.12	1,124.26	1,062.27	61.99	18.136	
2,700.00	2,671.53	2,644.68	2,671.53	12.12	51.25	-55.43	484.37	-613.12	1,132.41	1,069.13	63.28	17.895	
2,750.00	2,720.85	2,694.00	2,720.85	12.34	52.32	-55.49	484.37	-613.12	1,140.56	1,075.99	64.57	17.663	
2,800.00	2,770.17	2,744.06	2,770.90	12.56	53.41	-55.50	485.43	-613.12	1,149.31	1,083.43	65.88	17.446	
2,850.00	2,819.48	2,794.56	2,821.39	12.77	54.51	-55.57	485.33	-613.12	1,157.41	1,090.23	67.18	17.228	
2,900.00	2,868.87	2,845.14	2,871.97	12.97	55.61	-55.67	485.13	-613.12	1,164.85	1,096.37	68.48	17.009	
2,950.00	2,918.36	2,895.82	2,922.65	13.16	56.71	-55.87	484.85	-613.12	1,170.61	1,100.84	69.77	16.779	
3,000.00	2,967.83	2,946.46	2,973.28	13.32	57.81	-56.17	484.48	-613.12	1,174.67	1,103.64	71.02	16.539	
3,050.00	3,017.14	2,990.38	3,017.14	13.44	58.84	-56.56	484.37	-613.12	1,177.22	1,105.07	72.15	16.315	
3,100.00	3,066.14	3,039.39	3,066.14	13.52	60.03	-57.03	484.37	-613.12	1,178.25	1,104.84	73.40	16.052	
3,150.00	3,114.72	3,087.97	3,114.72	13.57	61.20	-57.61	484.37	-613.12	1,177.72	1,103.11	74.61	15.785	
3,200.00	3,162.74	3,135.98	3,162.74	13.60	62.36	-58.28	484.37	-613.12	1,175.69	1,099.91	75.79	15.514	
3,250.00	3,210.06	3,183.30	3,210.06	13.61	63.50	-59.05	484.37	-613.12	1,172.25	1,095.32	76.93	15.238	
3,300.00	3,256.55	3,230.45	3,257.19	13.62	64.64	-59.86	485.70	-613.12	1,168.15	1,090.09	78.06	14.964	
3,350.00	3,302.09	3,277.15	3,303.89	13.61	65.77	-60.83	485.60	-613.12	1,162.08	1,082.90	79.18	14.676	
3,400.00	3,346.56	3,322.66	3,349.39	13.61	66.87	-61.92	485.41	-613.12	1,154.87	1,074.59	80.28	14.386	
3,450.00	3,389.82	3,366.82	3,393.55	13.60	67.94	-63.11	485.14	-613.12	1,146.64	1,065.30	81.34	14.097	
3,500.00	3,431.77	3,409.52	3,436.24	13.60	68.97	-64.41	484.79	-613.12	1,137.56	1,055.19	82.37	13.810	
3,550.00	3,472.28	3,450.63	3,477.35	13.59	69.96	-65.83	484.38	-613.12	1,127.80	1,044.42	83.38	13.526	
3,600.00	3,511.25	3,484.67	3,511.25	13.59	70.77	-67.35	484.37	-613.12	1,117.69	1,033.50	84.18	13.277	
3,650.00	3,548.57	3,521.99	3,548.57	13.60	71.65	-68.97	484.37	-613.12	1,107.28	1,022.19	85.09	13.013	
3,700.00	3,584.14	3,557.55	3,584.14	13.61	72.49	-70.72	484.37	-613.12	1,096.73	1,010.77	85.96	12.758	
3,750.00	3,617.85	3,592.35	3,618.92	13.63	73.31	-72.53	485.21	-613.12	1,086.52	999.69	86.83	12.513	
3,800.00	3,649.62	3,625.27	3,651.83	13.66	74.09	-74.51	485.03	-613.12	1,076.27	988.61	87.66	12.277	
3,850.00	3,679.37	3,655.72	3,682.28	13.70	74.81	-76.62	484.74	-613.12	1,066.50	978.05	88.45	12.058	
3,900.00	3,707.00	3,683.65	3,710.20	13.74	75.47	-78.83	484.36	-613.12	1,057.45	968.27	89.18	11.858	
3,950.00	3,732.54	3,706.02	3,732.54	13.80	75.96	-81.13	484.37	-613.12	1,049.43	959.70	89.74	11.695	
4,000.00	3,757.54	3,731.02	3,757.54	13.87	76.51	-83.47	484.37	-613.12	1,042.99	952.62	90.37	11.541	
4,050.00	3,782.54	3,756.02	3,782.54	13.95	77.06	-85.84	484.37	-613.12	1,038.31	947.30	91.02	11.408	
4,100.00	3,807.54	3,781.02	3,807.54	14.04	77.62	-88.23	484.37	-613.12	1,035.43	943.77	91.66	11.296	
4,150.00	3,832.37	3,805.85	3,832.37	14.13	78.16	-90.63	484.37	-613.12	1,034.35	942.06	92.29	11.208	
4,154.60	3,834.55	3,808.03	3,834.55	14.14	78.21	-90.86	484.37	-613.12	1,034.34	942.00	92.34	11.201	
4,200.00	3,854.28	3,827.77	3,854.28	14.23	78.65	-93.12	484.37	-613.12	1,035.15	942.29	92.86	11.148	
4,250.00	3,872.20	3,845.68	3,872.20	14.35	79.04	-95.69	484.37	-613.12	1,038.04	944.70	93.34	11.122 SF	
4,300.00	3,885.97	3,859.46	3,885.97	14.48	79.35	-98.32	484.37	-613.12	1,043.19	949.47	93.71	11.132	
4,350.00	3,895.51	3,869.00	3,895.51	14.62	79.56	-100.98	484.37	-613.12	1,050.69	956.70	93.99	11.179	
4,400.00	3,900.74	3,874.22	3,900.74	14.77	79.67	-103.62	484.37	-613.12	1,060.56	966.41	94.15	11.265	
4,450.00	3,901.61	3,875.09	3,901.61	14.93	79.69	-106.23	484.37	-613.12	1,072.71	978.51	94.20	11.388	
4,500.00	3,898.45	3,871.94	3,898.45	15.09	79.62	-108.76	484.37	-613.12	1,087.00	992.87	94.13	11.548	
4,550.00	3,894.49	3,867.97	3,894.49	15.28	79.54	-111.23	484.37	-613.12	1,103.35	1,009.30	94.04	11.733	
4,600.00	3,890.52	3,864.00	3,890.52	15.47	79.45	-113.61	484.37	-613.12	1,121.67	1,027.74	93.93	11.942	
4,650.00	3,886.55	3,860.04	3,886.55	15.67	79.36	-115.92	484.37	-613.12	1,141.88	1,048.06	93.81	12.172	
4,700.00	3,882.59	3,856.07	3,882.59	15.88	79.27	-118.14	484.37	-613.12	1,163.87	1,070.19	93.68	12.424	
4,750.00	3,878.62	3,852.10	3,878.62	16.09	79.19	-120.28	484.37	-613.12	1,187.55	1,094.01	93.54	12.696	
4,800.00	3,874.65	3,848.14	3,874.65	16.31	79.10	-122.33	484.37	-613.12	1,212.81	1,119.43	93.38	12.987	
4,850.00	3,870.68	3,844.17	3,870.68	16.54	79.01	-124.30	484.37	-613.12	1,239.56	1,146.33	93.23	13.296	
4,900.00	3,866.72	3,840.20	3,866.72	16.77	78.92	-126.18	484.37	-613.12	1,267.72	1,174.65	93.06	13.622	
4,950.00	3,862.75	3,836.23	3,862.75	17.01	78.84	-127.98	484.37	-613.12	1,297.17	1,204.27	92.90	13.963	
5,000.00	3,858.78	3,832.27	3,858.78	17.25	78.75	-129.69	484.37	-613.12	1,327.84	1,235.11	92.73	14.319	
5,050.00	3,854.82	3,828.30	3,854.82	17.50	78.66	-131.33	484.37	-613.12	1,359.65	1,267.09	92.56	14.689	
5,100.00	3,850.85	3,824.33	3,850.85	17.75	78.57	-132.89	484.37	-613.12	1,392.52	1,300.13	92.39	15.072	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO U M D - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 496-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,150.00	3,846.88	3,820.37	3,846.88	18.01	78.48	-134.37	484.37	-613.12	1,426.37	1,334.15	92.22	15.467	
5,200.00	3,842.91	3,816.40	3,842.91	18.27	78.40	-135.79	484.37	-613.12	1,461.14	1,369.09	92.05	15.874	
5,250.00	3,838.95	3,812.43	3,838.95	18.54	78.31	-137.14	484.37	-613.12	1,496.76	1,404.88	91.88	16.291	
5,300.00	3,834.98	3,808.46	3,834.98	18.81	78.22	-138.43	484.37	-613.12	1,533.17	1,441.46	91.71	16.718	
5,350.00	3,831.01	3,804.50	3,831.01	19.08	78.13	-139.66	484.37	-613.12	1,570.32	1,478.78	91.54	17.154	
5,400.00	3,827.04	3,800.53	3,827.04	19.36	78.05	-140.83	484.37	-613.12	1,608.16	1,516.78	91.38	17.599	
5,450.00	3,823.08	3,796.56	3,823.08	19.64	77.96	-141.94	484.37	-613.12	1,646.64	1,555.42	91.22	18.052	
5,500.00	3,819.11	3,792.59	3,819.11	19.93	77.87	-143.01	484.37	-613.12	1,685.71	1,594.66	91.06	18.513	
5,550.00	3,815.14	3,788.63	3,815.14	20.22	77.78	-144.02	484.37	-613.12	1,725.34	1,634.44	90.90	18.980	
5,600.00	3,811.18	3,784.66	3,811.18	20.51	77.70	-144.99	484.37	-613.12	1,765.49	1,674.74	90.75	19.455	
5,650.00	3,807.21	3,780.69	3,807.21	20.80	77.61	-145.92	484.37	-613.12	1,806.11	1,715.52	90.60	19.936	
5,700.00	3,803.24	3,776.73	3,803.24	21.10	77.52	-146.80	484.37	-613.12	1,847.19	1,756.75	90.45	20.423	
5,750.00	3,799.27	3,772.76	3,799.27	21.40	77.43	-147.65	484.37	-613.12	1,888.70	1,798.40	90.30	20.916	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UL 151 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	64.00	0.00	0.00	-1.87	1,790.19	-58.58	1,792.29				
50.00	50.00	0.00	64.00	0.92	0.00	-1.87	1,790.19	-58.58	1,791.20	1,790.28	0.92	1,937.803	
74.28	74.28	10.65	74.65	0.92	0.07	-1.87	1,790.19	-58.58	1,791.15	1,790.15	0.99	1,801.775	
100.00	100.00	37.28	101.28	0.92	0.25	-1.88	1,790.17	-58.63	1,791.14	1,789.97	1.17	1,532.309	
150.00	150.00	89.06	153.06	1.23	0.59	-1.88	1,790.10	-58.88	1,791.07	1,789.27	1.81	989.645	
200.00	200.00	139.11	203.10	1.53	0.95	-1.90	1,790.00	-59.23	1,790.98	1,788.52	2.47	726.275	
250.00	250.00	188.70	252.69	1.74	1.32	-1.90	1,789.91	-59.53	1,790.90	1,787.86	3.04	589.294	
300.00	300.00	237.04	301.04	1.95	1.59	-1.91	1,789.85	-59.76	1,790.85	1,787.34	3.51	510.892	
303.10	303.10	240.02	304.01	1.97	1.60	-1.91	1,789.85	-59.77	1,790.85	1,787.31	3.53	507.163	
350.00	350.00	285.02	349.02	2.22	1.82	-1.93	1,789.84	-59.95	1,791.05	1,787.13	3.92	456.620	
400.00	399.98	334.37	398.36	2.51	2.03	-1.97	1,789.88	-60.13	1,791.72	1,787.40	4.32	415.054	
450.00	449.93	384.30	448.30	2.75	2.23	-2.04	1,789.92	-60.35	1,792.80	1,788.12	4.67	383.723	
500.00	499.84	434.18	498.17	3.00	2.42	-2.14	1,789.95	-60.59	1,794.30	1,789.29	5.01	358.090	
550.00	549.68	483.99	547.98	3.23	2.59	-2.25	1,789.99	-60.77	1,796.22	1,790.89	5.33	337.061	
600.00	599.45	530.60	594.60	3.46	2.74	-2.39	1,790.06	-60.89	1,798.59	1,792.97	5.63	319.611	
650.00	649.13	575.64	639.63	3.68	2.88	-2.55	1,790.23	-61.00	1,801.52	1,795.61	5.91	304.861	
700.00	698.70	623.34	687.33	3.91	3.02	-2.73	1,790.52	-61.13	1,804.99	1,798.79	6.20	291.298	
750.00	748.15	674.17	738.16	4.07	3.17	-2.95	1,790.81	-61.37	1,808.89	1,802.45	6.44	280.861	
800.00	797.49	723.82	787.81	4.21	3.31	-3.18	1,791.06	-61.70	1,813.14	1,806.49	6.65	272.484	
850.00	846.80	772.40	836.39	4.39	3.44	-3.41	1,791.31	-61.93	1,817.49	1,810.57	6.92	262.541	
900.00	896.12	820.33	884.31	4.58	3.57	-3.64	1,791.60	-62.04	1,821.89	1,814.70	7.19	253.422	
950.00	945.44	867.34	931.32	4.76	3.69	-3.87	1,791.92	-62.13	1,826.37	1,818.92	7.45	245.278	
1,000.00	994.75	915.25	979.23	4.95	3.81	-4.09	1,792.32	-62.23	1,830.94	1,823.23	7.71	237.608	
1,050.00	1,044.07	965.24	1,029.22	5.14	3.93	-4.32	1,792.72	-62.32	1,835.53	1,827.56	7.97	230.309	
1,100.00	1,093.39	1,015.05	1,079.03	5.33	4.05	-4.54	1,793.11	-62.39	1,840.14	1,831.90	8.23	223.491	
1,150.00	1,142.70	1,064.42	1,128.40	5.53	4.17	-4.76	1,793.50	-62.41	1,844.76	1,836.27	8.49	217.169	
1,200.00	1,192.02	1,113.73	1,177.71	5.73	4.28	-4.97	1,793.88	-62.38	1,849.41	1,840.65	8.76	211.223	
1,250.00	1,241.34	1,162.82	1,226.80	5.93	4.39	-5.19	1,794.27	-62.35	1,854.09	1,845.07	9.02	205.659	
1,300.00	1,290.66	1,210.25	1,274.22	6.13	4.49	-5.40	1,794.65	-62.32	1,858.80	1,849.53	9.27	200.475	
1,350.00	1,339.97	1,252.47	1,316.45	6.33	4.59	-5.62	1,795.11	-62.27	1,863.68	1,854.16	9.52	195.829	
1,400.00	1,389.29	1,300.00	1,363.97	6.54	4.70	-5.82	1,795.83	-62.16	1,868.78	1,859.00	9.78	191.149	
1,450.00	1,438.61	1,343.20	1,407.16	6.75	4.80	-6.03	1,796.57	-62.04	1,873.99	1,863.97	10.03	186.889	
1,500.00	1,487.92	1,392.62	1,456.58	6.95	4.91	-6.24	1,797.42	-61.88	1,879.24	1,868.95	10.30	182.519	
1,550.00	1,537.24	1,439.96	1,503.91	7.16	5.02	-6.44	1,798.25	-61.72	1,884.53	1,873.97	10.56	178.452	
1,600.00	1,586.56	1,486.92	1,550.86	7.37	5.13	-6.64	1,799.13	-61.56	1,889.91	1,879.08	10.82	174.595	
1,650.00	1,635.88	1,535.47	1,599.40	7.58	5.25	-6.84	1,800.09	-61.40	1,895.35	1,884.25	11.09	170.832	
3,550.00	3,472.28	3,366.98	3,430.48	13.59	9.97	-14.53	1,838.20	-54.66	1,875.97	1,856.67	19.30	97.203	
3,600.00	3,511.25	3,406.36	3,469.86	13.59	10.08	-14.84	1,839.10	-54.72	1,847.29	1,827.93	19.36	95.396	
3,650.00	3,548.57	3,443.14	3,506.63	13.60	10.18	-15.17	1,839.95	-54.76	1,816.62	1,797.19	19.43	93.509	
3,700.00	3,584.14	3,478.34	3,541.82	13.61	10.28	-15.51	1,840.81	-54.76	1,784.05	1,764.56	19.49	91.526	
3,750.00	3,617.85	3,512.12	3,575.58	13.63	10.37	-15.86	1,841.65	-54.74	1,749.68	1,730.12	19.56	89.447	
3,800.00	3,649.62	3,544.53	3,607.98	13.66	10.46	-16.23	1,842.47	-54.73	1,713.58	1,693.95	19.63	87.276	
3,850.00	3,679.37	3,574.96	3,638.41	13.70	10.55	-16.62	1,843.24	-54.75	1,675.87	1,656.16	19.71	85.032	
3,900.00	3,707.00	3,603.45	3,666.89	13.74	10.63	-17.03	1,843.96	-54.78	1,636.64	1,616.86	19.79	82.721	
3,950.00	3,732.54	3,630.63	3,694.06	13.80	10.70	-17.45	1,844.65	-54.79	1,596.07	1,576.21	19.86	80.376	
4,000.00	3,757.54	3,657.26	3,720.68	13.87	10.78	-17.90	1,845.32	-54.78	1,555.23	1,535.31	19.92	78.059	
4,050.00	3,782.54	3,683.89	3,747.30	13.95	10.85	-18.37	1,845.99	-54.74	1,514.48	1,494.49	20.00	75.737	
4,100.00	3,807.54	3,710.09	3,773.50	14.04	10.93	-18.87	1,846.65	-54.68	1,473.83	1,453.76	20.07	73.434	
4,150.00	3,832.37	3,735.49	3,798.89	14.13	11.00	-19.39	1,847.29	-54.64	1,433.21	1,413.07	20.15	71.142	
4,200.00	3,854.28	3,758.07	3,821.46	14.23	11.06	-19.97	1,847.86	-54.62	1,391.22	1,370.96	20.26	68.684	
4,250.00	3,872.20	3,776.78	3,840.16	14.35	11.12	-20.62	1,848.33	-54.62	1,347.65	1,327.28	20.37	66.163	
4,300.00	3,885.97	3,791.47	3,854.85	14.48	11.16	-21.33	1,848.70	-54.63	1,302.87	1,282.39	20.48	63.616	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UL 151 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,350.00	3,895.51	3,802.07	3,865.44	14.62	11.19	-22.11	1,848.97	-54.64	1,257.26	1,236.67	20.59	61.054	
4,400.00	3,900.74	3,808.51	3,871.88	14.77	11.21	-22.96	1,849.13	-54.65	1,211.21	1,190.50	20.71	58.488	
4,450.00	3,901.61	3,810.64	3,874.01	14.93	11.21	-23.88	1,849.19	-54.65	1,165.09	1,144.26	20.83	55.935	
4,500.00	3,898.45	3,808.75	3,872.13	15.09	11.21	-24.88	1,849.14	-54.65	1,119.28	1,098.32	20.96	53.406	
4,550.00	3,894.49	3,806.06	3,869.43	15.28	11.20	-25.96	1,849.07	-54.65	1,073.86	1,052.76	21.10	50.888	
4,600.00	3,890.52	3,803.37	3,866.74	15.47	11.19	-27.14	1,849.00	-54.64	1,028.87	1,007.60	21.27	48.380	
4,650.00	3,886.55	3,800.68	3,864.05	15.67	11.18	-28.43	1,848.94	-54.64	984.35	962.90	21.45	45.893	
4,700.00	3,882.59	3,798.02	3,861.39	15.88	11.18	-29.84	1,848.87	-54.64	940.37	918.72	21.65	43.428	
4,750.00	3,878.62	3,795.36	3,858.74	16.09	11.17	-31.38	1,848.80	-54.63	897.02	875.14	21.88	40.993	
4,800.00	3,874.65	3,792.71	3,856.08	16.31	11.16	-33.08	1,848.73	-54.63	854.38	832.25	22.14	38.595	
4,850.00	3,870.68	3,790.05	3,853.43	16.54	11.15	-34.96	1,848.67	-54.63	812.58	790.16	22.42	36.241	
4,900.00	3,866.72	3,787.40	3,850.77	16.77	11.15	-37.04	1,848.60	-54.63	771.74	749.01	22.74	33.944	
4,950.00	3,862.75	3,784.74	3,848.12	17.01	11.14	-39.35	1,848.53	-54.62	732.03	708.95	23.08	31.711	
5,000.00	3,858.78	3,782.08	3,845.46	17.25	11.13	-41.91	1,848.47	-54.62	693.65	670.18	23.47	29.560	
5,050.00	3,854.82	3,779.43	3,842.81	17.50	11.12	-44.78	1,848.40	-54.62	656.81	632.93	23.88	27.502	
5,100.00	3,850.85	3,776.77	3,840.15	17.75	11.12	-47.97	1,848.33	-54.62	621.81	597.48	24.33	25.559	
5,150.00	3,846.88	3,774.11	3,837.49	18.01	11.11	-51.53	1,848.26	-54.62	588.96	564.16	24.80	23.745	
5,200.00	3,842.91	3,771.45	3,834.84	18.27	11.10	-55.49	1,848.20	-54.62	558.65	533.36	25.29	22.086	
5,250.00	3,838.95	3,768.79	3,832.18	18.54	11.09	-59.88	1,848.13	-54.62	531.31	505.52	25.79	20.598	
5,300.00	3,834.98	3,766.14	3,829.52	18.81	11.09	-64.72	1,848.06	-54.62	507.42	481.14	26.28	19.309	
5,350.00	3,831.01	3,763.48	3,826.86	19.08	11.08	-70.00	1,848.00	-54.62	487.49	460.75	26.74	18.232	
5,400.00	3,827.04	3,760.82	3,824.20	19.36	11.07	-75.67	1,847.93	-54.62	472.02	444.88	27.14	17.392	
5,450.00	3,823.08	3,758.16	3,821.54	19.64	11.06	-81.66	1,847.86	-54.62	461.46	433.98	27.48	16.795	
5,500.00	3,819.11	3,755.49	3,818.88	19.93	11.06	-87.86	1,847.80	-54.62	456.15	428.43	27.72	16.456	
5,523.85	3,817.22	3,754.23	3,817.61	20.06	11.05	-90.85	1,847.76	-54.62	455.53	427.72	27.80	16.383	CC, ES
5,550.00	3,815.14	3,752.83	3,816.22	20.22	11.05	-94.13	1,847.73	-54.62	456.28	428.41	27.87	16.371	SF
5,600.00	3,811.18	3,750.17	3,813.56	20.51	11.04	-100.32	1,847.66	-54.62	461.83	433.92	27.91	16.544	
5,650.00	3,807.21	3,747.51	3,810.90	20.80	11.03	-106.30	1,847.59	-54.62	472.62	444.76	27.86	16.965	
5,700.00	3,803.24	3,744.85	3,808.24	21.10	11.03	-111.96	1,847.53	-54.63	488.30	460.60	27.71	17.624	
5,750.00	3,799.27	3,742.18	3,805.58	21.40	11.02	-117.21	1,847.46	-54.63	508.43	480.95	27.48	18.504	
5,800.00	3,795.31	3,739.52	3,802.91	21.70	11.01	-122.03	1,847.39	-54.63	532.48	505.30	27.18	19.590	
5,850.00	3,791.34	3,736.86	3,800.25	22.01	11.00	-126.40	1,847.33	-54.63	559.97	533.12	26.85	20.857	
5,900.00	3,787.37	3,734.19	3,797.59	22.31	11.00	-130.35	1,847.26	-54.64	590.41	563.92	26.49	22.289	
5,950.00	3,783.41	3,731.53	3,794.92	22.63	10.99	-133.89	1,847.19	-54.64	623.36	597.24	26.12	23.862	
6,000.00	3,779.44	3,728.86	3,792.26	22.94	10.98	-137.07	1,847.12	-54.65	658.45	632.69	25.76	25.560	
6,050.00	3,775.47	3,726.20	3,789.59	23.25	10.97	-139.91	1,847.06	-54.65	695.36	669.95	25.41	27.364	
6,100.00	3,771.50	3,723.53	3,786.93	23.57	10.97	-142.47	1,846.99	-54.65	733.81	708.74	25.08	29.262	
6,150.00	3,767.54	3,720.87	3,784.26	23.89	10.96	-144.77	1,846.92	-54.66	773.58	748.81	24.77	31.237	
6,200.00	3,763.57	3,718.20	3,781.60	24.21	10.95	-146.83	1,846.86	-54.66	814.46	789.99	24.47	33.280	
6,250.00	3,759.60	3,715.53	3,778.93	24.53	10.94	-148.70	1,846.79	-54.67	856.31	832.10	24.20	35.379	
6,300.00	3,755.64	3,712.86	3,776.27	24.85	10.94	-150.40	1,846.72	-54.67	898.98	875.02	23.95	37.529	
6,350.00	3,751.67	3,710.20	3,773.60	25.18	10.93	-151.94	1,846.65	-54.68	942.36	918.63	23.73	39.717	
6,400.00	3,747.70	3,707.53	3,770.93	25.51	10.92	-153.34	1,846.59	-54.69	986.36	962.84	23.52	41.943	
6,450.00	3,743.73	3,704.86	3,768.26	25.84	10.91	-154.62	1,846.52	-54.69	1,030.90	1,007.58	23.33	44.196	
6,500.00	3,739.77	3,702.19	3,765.59	26.17	10.91	-155.79	1,846.45	-54.70	1,075.92	1,052.77	23.15	46.476	
6,550.00	3,735.80	3,699.50	3,762.91	26.50	10.90	-156.87	1,846.38	-54.71	1,121.35	1,098.36	22.99	48.774	
6,600.00	3,731.83	3,696.75	3,760.15	26.83	10.89	-157.87	1,846.32	-54.71	1,167.15	1,144.30	22.84	51.094	
6,650.00	3,727.87	3,693.99	3,757.39	27.17	10.88	-158.79	1,846.25	-54.72	1,213.27	1,190.56	22.71	53.425	
6,700.00	3,723.90	3,691.23	3,754.64	27.50	10.88	-159.64	1,846.18	-54.73	1,259.69	1,237.10	22.59	55.770	
6,750.00	3,719.93	3,688.47	3,751.88	27.84	10.87	-160.44	1,846.11	-54.73	1,306.36	1,283.88	22.48	58.123	
6,800.00	3,715.96	3,685.72	3,749.12	28.18	10.86	-161.17	1,846.04	-54.74	1,353.26	1,330.89	22.37	60.485	
6,850.00	3,712.00	3,682.96	3,746.37	28.52	10.85	-161.86	1,845.97	-54.74	1,400.38	1,378.10	22.28	62.850	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UL 151 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-MWD

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,900.00	3,708.03	3,680.20	3,743.61	28.86	10.84	-162.50	1,845.90	-54.75	1,447.68	1,425.48	22.20	65.223	
6,950.00	3,704.06	3,677.45	3,740.86	29.20	10.84	-163.11	1,845.83	-54.75	1,495.15	1,473.03	22.12	67.595	
7,000.00	3,700.09	3,674.69	3,738.11	29.54	10.83	-163.67	1,845.76	-54.76	1,542.78	1,520.73	22.05	69.972	
7,050.00	3,696.13	3,671.94	3,735.35	29.89	10.82	-164.20	1,845.69	-54.76	1,590.55	1,568.57	21.98	72.348	
7,100.00	3,692.16	3,669.18	3,732.60	30.23	10.81	-164.70	1,845.62	-54.77	1,638.45	1,616.52	21.93	74.726	
7,150.00	3,688.19	3,666.43	3,729.85	30.58	10.81	-165.17	1,845.55	-54.77	1,686.46	1,664.59	21.87	77.100	
7,200.00	3,684.23	3,663.68	3,727.09	30.92	10.80	-165.62	1,845.48	-54.78	1,734.58	1,712.76	21.83	79.476	
7,250.00	3,680.26	3,660.92	3,724.34	31.27	10.79	-166.04	1,845.41	-54.78	1,782.81	1,761.02	21.78	81.847	
7,300.00	3,676.29	3,658.17	3,721.59	31.62	10.78	-166.44	1,845.34	-54.78	1,831.12	1,809.38	21.74	84.218	
7,350.00	3,672.32	3,655.42	3,718.84	31.97	10.77	-166.82	1,845.27	-54.78	1,879.52	1,857.81	21.71	86.583	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UL 154 - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 500-UNKNOWN — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,200.00	3,854.28	3,787.28	3,854.28	14.23	151.05	-60.00	1,489.59	-1,223.04	1,897.79	1,733.60	164.19	11.558	
4,250.00	3,872.20	3,805.20	3,872.20	14.35	151.77	-61.22	1,489.59	-1,223.04	1,874.28	1,709.21	165.07	11.354	
4,300.00	3,885.97	3,818.97	3,885.97	14.48	152.32	-62.52	1,489.59	-1,223.04	1,851.00	1,685.19	165.81	11.163	
4,350.00	3,895.51	3,828.51	3,895.51	14.62	152.70	-63.87	1,489.59	-1,223.04	1,828.22	1,661.81	166.41	10.987	
4,400.00	3,900.74	3,833.74	3,900.74	14.77	152.91	-65.28	1,489.59	-1,223.04	1,806.21	1,639.36	166.85	10.826	
4,450.00	3,901.61	3,834.61	3,901.61	14.93	152.94	-66.72	1,489.59	-1,223.04	1,785.20	1,618.06	167.13	10.681	
4,500.00	3,898.45	3,831.45	3,898.45	15.09	152.82	-68.20	1,489.59	-1,223.04	1,765.39	1,598.12	167.27	10.554	
4,550.00	3,894.49	3,827.49	3,894.49	15.28	152.66	-69.71	1,489.59	-1,223.04	1,746.79	1,579.40	167.39	10.435	
4,600.00	3,890.52	3,823.52	3,890.52	15.47	152.50	-71.25	1,489.59	-1,223.04	1,729.44	1,561.93	167.51	10.324	
4,650.00	3,886.55	3,819.55	3,886.55	15.67	152.34	-72.82	1,489.59	-1,223.04	1,713.36	1,545.72	167.64	10.221	
4,700.00	3,882.59	3,815.59	3,882.59	15.88	152.18	-74.42	1,489.59	-1,223.04	1,698.59	1,530.83	167.76	10.125	
4,750.00	3,878.62	3,811.62	3,878.62	16.09	152.02	-76.05	1,489.59	-1,223.04	1,685.16	1,517.27	167.89	10.037	
4,800.00	3,874.65	3,807.65	3,874.65	16.31	151.87	-77.70	1,489.59	-1,223.04	1,673.11	1,505.10	168.01	9.958	
4,850.00	3,870.68	3,803.68	3,870.68	16.54	151.71	-79.37	1,489.59	-1,223.04	1,662.47	1,494.34	168.13	9.888	
4,900.00	3,866.72	3,799.72	3,866.72	16.77	151.55	-81.06	1,489.59	-1,223.04	1,653.27	1,485.02	168.25	9.826	
4,950.00	3,862.75	3,795.75	3,862.75	17.01	151.39	-82.77	1,489.59	-1,223.04	1,645.52	1,477.16	168.37	9.774	
5,000.00	3,858.78	3,791.78	3,858.78	17.25	151.23	-84.50	1,489.59	-1,223.04	1,639.26	1,470.79	168.47	9.730	
5,050.00	3,854.82	3,787.82	3,854.82	17.50	151.07	-86.23	1,489.59	-1,223.04	1,634.49	1,465.92	168.57	9.696	
5,100.00	3,850.85	3,783.85	3,850.85	17.75	150.91	-87.98	1,489.59	-1,223.04	1,631.23	1,462.57	168.66	9.672	
5,150.00	3,846.88	3,779.88	3,846.88	18.01	150.76	-89.73	1,489.59	-1,223.04	1,629.49	1,460.74	168.74	9.657	
5,182.14	3,844.33	3,777.33	3,844.33	18.18	150.65	-90.86	1,489.59	-1,223.04	1,629.17	1,460.38	168.79	9.652	CC, ES
5,200.00	3,842.91	3,775.91	3,842.91	18.27	150.60	-91.48	1,489.59	-1,223.04	1,629.27	1,460.46	168.81	9.651	SF
5,250.00	3,838.95	3,771.95	3,838.95	18.54	150.44	-93.23	1,489.59	-1,223.04	1,630.57	1,461.70	168.87	9.656	
5,300.00	3,834.98	3,767.98	3,834.98	18.81	150.28	-94.98	1,489.59	-1,223.04	1,633.40	1,464.48	168.92	9.670	
5,350.00	3,831.01	3,764.01	3,831.01	19.08	150.12	-96.72	1,489.59	-1,223.04	1,637.74	1,468.78	168.96	9.693	
5,400.00	3,827.04	3,760.04	3,827.04	19.36	149.96	-98.45	1,489.59	-1,223.04	1,643.58	1,474.61	168.98	9.727	
5,450.00	3,823.08	3,756.08	3,823.08	19.64	149.80	-100.16	1,489.59	-1,223.04	1,650.91	1,481.92	168.99	9.770	
5,500.00	3,819.11	3,752.11	3,819.11	19.93	149.64	-101.86	1,489.59	-1,223.04	1,659.70	1,490.72	168.98	9.822	
5,550.00	3,815.14	3,748.14	3,815.14	20.22	149.49	-103.54	1,489.59	-1,223.04	1,669.93	1,500.97	168.96	9.884	
5,600.00	3,811.18	3,744.18	3,811.18	20.51	149.33	-105.20	1,489.59	-1,223.04	1,681.58	1,512.65	168.93	9.955	
5,650.00	3,807.21	3,740.21	3,807.21	20.80	149.17	-106.83	1,489.59	-1,223.04	1,694.61	1,525.73	168.88	10.034	
5,700.00	3,803.24	3,736.24	3,803.24	21.10	149.01	-108.44	1,489.59	-1,223.04	1,709.00	1,540.18	168.82	10.123	
5,750.00	3,799.27	3,732.27	3,799.27	21.40	148.85	-110.02	1,489.59	-1,223.04	1,724.71	1,555.96	168.75	10.221	
5,800.00	3,795.31	3,728.31	3,795.31	21.70	148.69	-111.57	1,489.59	-1,223.04	1,741.71	1,573.04	168.66	10.327	
5,850.00	3,791.34	3,724.34	3,791.34	22.01	148.53	-113.08	1,489.59	-1,223.04	1,759.95	1,591.38	168.57	10.441	
5,900.00	3,787.37	3,720.37	3,787.37	22.31	148.37	-114.57	1,489.59	-1,223.04	1,779.40	1,610.95	168.46	10.563	
5,950.00	3,783.41	3,716.41	3,783.41	22.63	148.22	-116.02	1,489.59	-1,223.04	1,800.02	1,631.69	168.34	10.693	
6,000.00	3,779.44	3,712.44	3,779.44	22.94	148.06	-117.44	1,489.59	-1,223.04	1,821.78	1,653.57	168.21	10.830	
6,050.00	3,775.47	3,708.47	3,775.47	23.25	147.90	-118.83	1,489.59	-1,223.04	1,844.62	1,676.55	168.07	10.975	
6,100.00	3,771.50	3,704.50	3,771.50	23.57	147.74	-120.18	1,489.59	-1,223.04	1,868.52	1,700.59	167.92	11.127	
6,150.00	3,767.54	3,700.54	3,767.54	23.89	147.58	-121.49	1,489.59	-1,223.04	1,893.42	1,725.65	167.77	11.286	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT `K` 161 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 250-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,700.00	3,584.14	3,553.18	3,613.27	13.61	81.82	7.42	1,984.31	664.63	1,878.08	1,788.00	90.08	20.848	
3,750.00	3,617.85	3,557.88	3,617.85	13.63	81.96	7.53	1,984.36	664.63	1,841.17	1,750.89	90.27	20.395	
3,800.00	3,649.62	3,589.65	3,649.62	13.66	82.88	7.67	1,984.36	664.63	1,802.81	1,711.57	91.25	19.758	
3,850.00	3,679.37	3,619.39	3,679.37	13.70	83.75	7.83	1,984.36	664.63	1,762.95	1,670.79	92.16	19.129	
3,900.00	3,707.00	3,650.53	3,710.49	13.74	84.66	8.02	1,985.13	664.63	1,722.47	1,629.35	93.12	18.498	
3,950.00	3,732.54	3,688.14	3,748.09	13.80	85.76	8.24	1,984.92	664.63	1,679.86	1,585.61	94.25	17.824	
4,000.00	3,757.54	3,724.05	3,783.98	13.87	86.81	8.49	1,984.46	664.63	1,636.80	1,541.49	95.31	17.173	
4,050.00	3,782.54	3,759.09	3,819.01	13.95	87.83	8.74	1,983.77	664.63	1,593.61	1,497.25	96.36	16.538	
4,100.00	3,807.54	3,747.68	3,807.54	14.04	87.50	9.01	1,984.36	664.63	1,551.10	1,454.98	96.12	16.136	
4,150.00	3,832.37	3,772.51	3,832.37	14.13	88.23	9.29	1,984.36	664.63	1,508.36	1,411.46	96.91	15.565	
4,200.00	3,854.28	3,794.42	3,854.28	14.23	88.87	9.60	1,984.36	664.63	1,464.16	1,366.53	97.64	14.996	
4,250.00	3,872.20	3,812.33	3,872.20	14.35	89.40	9.94	1,984.36	664.63	1,418.30	1,320.05	98.24	14.437	
4,300.00	3,885.97	3,826.11	3,885.97	14.48	89.80	10.32	1,984.36	664.63	1,371.13	1,272.41	98.72	13.890	
4,350.00	3,895.51	3,835.65	3,895.51	14.62	90.08	10.73	1,984.36	664.63	1,323.03	1,223.98	99.05	13.357	
4,400.00	3,900.74	3,840.87	3,900.74	14.77	90.23	11.18	1,984.36	664.63	1,274.37	1,175.12	99.25	12.840	
4,450.00	3,901.61	3,841.75	3,901.61	14.93	90.26	11.66	1,984.36	664.63	1,225.54	1,126.23	99.31	12.341	
4,500.00	3,898.45	3,838.59	3,898.45	15.09	90.17	12.19	1,984.36	664.63	1,176.88	1,077.64	99.24	11.859	
4,550.00	3,894.49	3,834.62	3,894.49	15.28	90.05	12.76	1,984.36	664.63	1,128.38	1,029.23	99.15	11.380	
4,600.00	3,890.52	3,830.66	3,890.52	15.47	89.93	13.38	1,984.36	664.63	1,080.00	980.93	99.07	10.902	
4,650.00	3,886.55	3,826.69	3,886.55	15.67	89.82	14.07	1,984.36	664.63	1,031.76	932.77	99.00	10.422	
4,700.00	3,882.59	3,822.72	3,882.59	15.88	89.70	14.81	1,984.36	664.63	983.69	884.76	98.93	9.943	
4,750.00	3,878.62	3,818.76	3,878.62	16.09	89.58	15.64	1,984.36	664.63	935.79	836.91	98.88	9.464	
4,800.00	3,874.65	3,814.79	3,874.65	16.31	89.47	16.55	1,984.36	664.63	888.12	789.27	98.84	8.985	
4,850.00	3,870.68	3,810.82	3,870.68	16.54	89.35	17.57	1,984.36	664.63	840.69	741.86	98.83	8.506	
4,900.00	3,866.72	3,806.85	3,866.72	16.77	89.24	18.70	1,984.36	664.63	793.56	694.72	98.83	8.029	
4,950.00	3,862.75	3,802.89	3,862.75	17.01	89.12	19.98	1,984.36	664.63	746.78	647.91	98.87	7.553	
5,000.00	3,858.78	3,798.92	3,858.78	17.25	89.00	21.44	1,984.36	664.63	700.42	601.48	98.94	7.079	
5,050.00	3,854.82	3,794.95	3,854.82	17.50	88.89	23.09	1,984.36	664.63	654.58	555.51	99.06	6.608	
5,100.00	3,850.85	3,790.99	3,850.85	17.75	88.77	24.99	1,984.36	664.63	609.36	510.12	99.24	6.140	
5,150.00	3,846.88	3,787.02	3,846.88	18.01	88.65	27.20	1,984.36	664.63	564.92	465.43	99.49	5.678	
5,200.00	3,842.91	3,783.05	3,842.91	18.27	88.54	29.77	1,984.36	664.63	521.46	421.63	99.83	5.223	
5,250.00	3,838.95	3,779.08	3,838.95	18.54	88.42	32.81	1,984.36	664.63	479.25	378.95	100.29	4.778	
5,300.00	3,834.98	3,775.12	3,834.98	18.81	88.30	36.42	1,984.36	664.63	438.64	337.74	100.90	4.347	
5,350.00	3,831.01	3,771.15	3,831.01	19.08	88.19	40.75	1,984.36	664.63	400.12	298.45	101.67	3.935	
5,400.00	3,827.04	3,767.18	3,827.04	19.36	88.07	45.96	1,984.36	664.63	364.36	261.73	102.63	3.550	
5,450.00	3,823.08	3,763.22	3,823.08	19.64	87.96	52.24	1,984.36	664.63	332.24	228.46	103.78	3.201	
5,500.00	3,819.11	3,759.25	3,819.11	19.93	87.84	59.75	1,984.36	664.63	304.93	199.86	105.07	2.902	
5,550.00	3,815.14	3,755.28	3,815.14	20.22	87.72	68.55	1,984.36	664.63	283.81	177.42	106.39	2.668	
5,600.00	3,811.18	3,751.31	3,811.18	20.51	87.61	78.49	1,984.36	664.63	270.34	162.82	107.52	2.514	
5,650.00	3,807.21	3,747.35	3,807.21	20.80	87.49	89.12	1,984.36	664.63	265.68	157.45	108.23	2.455	CC
5,652.25	3,807.03	3,747.17	3,807.03	20.82	87.48	89.60	1,984.36	664.63	265.69	157.44	108.25	2.454	ES, SF
5,700.00	3,803.24	3,743.38	3,803.24	21.10	87.37	99.74	1,984.36	664.63	270.30	161.91	108.38	2.494	
5,750.00	3,799.27	3,739.41	3,799.27	21.40	87.26	109.69	1,984.36	664.63	283.73	175.73	107.99	2.627	
5,800.00	3,795.31	3,735.44	3,795.31	21.70	87.14	118.49	1,984.36	664.63	304.81	197.59	107.22	2.843	
5,850.00	3,791.34	3,731.48	3,791.34	22.01	87.02	126.01	1,984.36	664.63	332.09	225.84	106.26	3.125	
5,900.00	3,787.37	3,723.51	3,783.45	22.31	86.79	132.28	1,984.47	664.63	364.14	258.90	105.23	3.460	
5,950.00	3,783.41	3,718.99	3,778.93	22.63	86.66	137.50	1,984.54	664.63	399.83	295.57	104.26	3.835	
6,000.00	3,779.44	3,714.55	3,774.49	22.94	86.53	141.83	1,984.61	664.63	438.28	334.91	103.37	4.240	
6,050.00	3,775.47	3,710.19	3,770.13	23.25	86.40	145.44	1,984.67	664.63	478.82	376.25	102.57	4.668	
6,100.00	3,771.50	3,705.91	3,765.85	23.57	86.28	148.48	1,984.72	664.63	520.97	419.11	101.86	5.115	
6,150.00	3,767.54	3,701.70	3,761.65	23.89	86.16	151.06	1,984.78	664.63	564.37	463.14	101.23	5.575	
6,200.00	3,763.57	3,697.57	3,757.52	24.21	86.03	153.26	1,984.82	664.63	608.75	508.08	100.67	6.047	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT `K` 161 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 250-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,250.00	3,759.60	3,693.51	3,753.46	24.53	85.92	155.17	1,984.87	664.63	653.92	553.74	100.18	6.528	
6,300.00	3,755.64	3,689.52	3,749.47	24.85	85.80	156.83	1,984.91	664.63	699.72	599.98	99.74	7.016	
6,350.00	3,751.67	3,685.59	3,745.54	25.18	85.68	158.28	1,984.94	664.63	746.03	646.69	99.34	7.510	
6,400.00	3,747.70	3,681.74	3,741.69	25.51	85.57	159.56	1,984.98	664.63	792.77	693.79	98.98	8.009	
6,450.00	3,743.73	3,677.95	3,737.90	25.84	85.46	160.70	1,985.00	664.63	839.86	741.21	98.66	8.513	
6,500.00	3,739.77	3,674.22	3,734.17	26.17	85.35	161.72	1,985.03	664.63	887.26	788.90	98.36	9.021	
6,550.00	3,735.80	3,670.55	3,730.50	26.50	85.25	162.63	1,985.05	664.63	934.91	836.82	98.09	9.531	
6,600.00	3,731.83	3,666.94	3,726.90	26.83	85.14	163.46	1,985.07	664.63	982.78	884.94	97.84	10.045	
6,650.00	3,727.87	3,663.40	3,723.35	27.17	85.04	164.21	1,985.09	664.63	1,030.83	933.22	97.61	10.561	
6,700.00	3,723.90	3,659.90	3,719.86	27.50	84.93	164.89	1,985.11	664.63	1,079.05	981.66	97.39	11.079	
6,750.00	3,719.93	3,656.47	3,716.43	27.84	84.83	165.51	1,985.12	664.63	1,127.41	1,030.22	97.19	11.600	
6,800.00	3,715.96	3,653.09	3,713.05	28.18	84.74	166.08	1,985.13	664.63	1,175.90	1,078.89	97.00	12.122	
6,850.00	3,712.00	3,649.76	3,709.72	28.52	84.64	166.61	1,985.14	664.63	1,224.49	1,127.66	96.83	12.646	
6,900.00	3,708.03	3,646.49	3,706.44	28.86	84.54	167.10	1,985.14	664.63	1,273.19	1,176.52	96.66	13.171	
6,950.00	3,704.06	3,643.26	3,703.22	29.20	84.45	167.55	1,985.14	664.63	1,321.97	1,225.46	96.51	13.698	
7,000.00	3,700.09	3,640.09	3,700.04	29.54	84.36	167.97	1,985.14	664.63	1,370.83	1,274.47	96.36	14.226	
7,050.00	3,696.13	3,636.16	3,696.13	29.89	84.24	168.36	1,984.36	664.63	1,420.53	1,324.33	96.20	14.767	
7,100.00	3,692.16	3,632.19	3,692.16	30.23	84.13	168.73	1,984.36	664.63	1,469.52	1,373.48	96.04	15.301	
7,150.00	3,688.19	3,628.22	3,688.19	30.58	84.01	169.07	1,984.36	664.63	1,518.57	1,422.67	95.90	15.836	
7,200.00	3,684.23	3,624.25	3,684.23	30.92	83.89	169.39	1,984.36	664.63	1,567.67	1,471.92	95.75	16.372	
7,250.00	3,680.26	3,620.29	3,680.26	31.27	83.78	169.69	1,984.36	664.63	1,616.81	1,521.20	95.61	16.910	
7,300.00	3,676.29	3,616.32	3,676.29	31.62	83.66	169.97	1,984.36	664.63	1,666.00	1,570.52	95.47	17.450	
7,350.00	3,672.32	3,612.35	3,672.32	31.97	83.55	170.23	1,984.36	664.63	1,715.22	1,619.88	95.34	17.990	
7,400.00	3,668.36	3,608.39	3,668.36	32.32	83.43	170.48	1,984.36	664.63	1,764.48	1,669.26	95.21	18.532	
7,450.00	3,664.39	3,604.42	3,664.39	32.67	83.32	170.72	1,984.36	664.63	1,813.77	1,718.68	95.09	19.075	
7,500.00	3,660.42	3,600.45	3,660.42	33.02	83.20	170.95	1,984.36	664.63	1,863.09	1,768.12	94.96	19.619	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT `L` 155 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 488-INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	67.00	0.00	0.00	-23.75	1,725.88	-759.39	1,886.75				
50.00	50.00	0.00	67.00	0.92	0.00	-23.75	1,725.88	-759.39	1,885.64	1,884.71	0.92	2,039.858	
75.25	75.25	8.25	75.25	0.92	0.16	-23.75	1,725.88	-759.39	1,885.56	1,884.48	1.08	1,740.877	
100.00	100.00	33.00	100.00	0.92	0.64	-23.75	1,725.88	-759.39	1,885.56	1,884.00	1.56	1,208.976	
150.00	150.00	83.00	150.00	1.23	1.60	-23.75	1,725.88	-759.39	1,885.56	1,882.74	2.82	667.822	
200.00	200.00	133.00	200.00	1.53	2.56	-23.75	1,725.88	-759.39	1,885.56	1,881.47	4.09	461.326	
250.00	250.00	183.00	250.00	1.74	3.52	-23.75	1,725.88	-759.39	1,885.56	1,880.30	5.26	358.205	
300.00	300.00	233.00	300.00	1.95	4.49	-23.75	1,725.88	-759.39	1,885.56	1,879.12	6.44	292.763	
350.00	350.00	283.00	350.00	2.22	5.45	-23.76	1,725.88	-759.39	1,885.89	1,878.27	7.63	247.309	
400.00	399.98	332.98	399.98	2.51	6.41	-23.78	1,725.88	-759.39	1,886.90	1,878.06	8.84	213.481	
450.00	449.93	382.93	449.93	2.75	7.37	-23.83	1,725.88	-759.39	1,888.57	1,878.57	10.01	188.756	
500.00	499.84	432.84	499.84	3.00	8.33	-23.89	1,725.88	-759.39	1,890.92	1,879.74	11.17	169.225	
550.00	549.68	482.68	549.68	3.23	9.29	-23.96	1,725.88	-759.39	1,893.94	1,881.61	12.33	153.628	
600.00	599.45	532.47	599.45	3.46	10.31	-24.05	1,725.88	-759.39	1,897.63	1,884.09	13.53	140.203	
3,900.00	3,707.00	3,647.45	3,713.50	13.74	87.43	-39.26	1,727.61	-759.39	1,870.33	1,771.52	98.80	18.930	
3,950.00	3,732.54	3,675.21	3,741.26	13.80	88.22	-40.10	1,727.46	-759.39	1,836.80	1,737.16	99.65	18.433	
4,000.00	3,757.54	3,702.22	3,768.26	13.87	88.99	-40.98	1,727.27	-759.39	1,803.35	1,702.87	100.48	17.947	
4,050.00	3,782.54	3,729.08	3,795.11	13.95	89.75	-41.88	1,727.04	-759.39	1,770.29	1,668.97	101.32	17.472	
4,100.00	3,807.54	3,755.78	3,821.81	14.04	90.51	-42.83	1,726.77	-759.39	1,737.67	1,635.50	102.17	17.008	
4,150.00	3,832.37	3,782.14	3,848.16	14.13	91.25	-43.81	1,726.45	-759.39	1,705.44	1,602.42	103.01	16.556	
4,200.00	3,854.28	3,805.18	3,871.20	14.23	91.91	-44.87	1,726.14	-759.39	1,672.63	1,568.83	103.80	16.114	
4,250.00	3,872.20	3,823.75	3,889.76	14.35	92.43	-46.01	1,725.87	-759.39	1,639.21	1,534.71	104.50	15.687	
4,300.00	3,885.97	3,837.74	3,903.75	14.48	92.83	-47.23	1,725.65	-759.39	1,605.54	1,500.45	105.09	15.278	
4,350.00	3,895.51	3,829.69	3,895.51	14.62	92.61	-48.51	1,725.88	-759.39	1,572.14	1,467.10	105.03	14.968	
4,400.00	3,900.74	3,834.92	3,900.74	14.77	92.76	-49.88	1,725.88	-759.39	1,539.10	1,433.66	105.43	14.598	
4,450.00	3,901.61	3,835.79	3,901.61	14.93	92.79	-51.32	1,725.88	-759.39	1,506.80	1,401.06	105.73	14.251	
4,500.00	3,898.45	3,832.63	3,898.45	15.09	92.70	-52.81	1,725.88	-759.39	1,475.54	1,369.60	105.93	13.929	
4,550.00	3,894.49	3,828.67	3,894.49	15.28	92.58	-54.37	1,725.88	-759.39	1,445.36	1,339.22	106.14	13.618	
4,600.00	3,890.52	3,824.70	3,890.52	15.47	92.46	-55.99	1,725.88	-759.39	1,416.28	1,309.94	106.35	13.318	
4,650.00	3,886.55	3,832.44	3,898.45	15.67	92.68	-57.68	1,725.73	-759.39	1,388.36	1,281.41	106.96	12.980	
4,700.00	3,882.59	3,827.47	3,893.48	15.88	92.54	-59.44	1,725.81	-759.39	1,361.76	1,254.60	107.16	12.707	
4,750.00	3,878.62	3,822.52	3,888.53	16.09	92.40	-61.26	1,725.88	-759.39	1,336.49	1,229.10	107.38	12.446	
4,800.00	3,874.65	3,817.61	3,883.63	16.31	92.26	-63.15	1,725.96	-759.39	1,312.61	1,205.01	107.60	12.198	
4,850.00	3,870.68	3,812.73	3,878.75	16.54	92.12	-65.10	1,726.03	-759.39	1,290.21	1,182.38	107.84	11.965	
4,900.00	3,866.72	3,807.88	3,873.90	16.77	91.98	-67.13	1,726.10	-759.39	1,269.37	1,161.31	108.07	11.746	
4,950.00	3,862.75	3,803.07	3,869.08	17.01	91.85	-69.22	1,726.17	-759.39	1,250.17	1,141.86	108.30	11.543	
5,000.00	3,858.78	3,798.28	3,864.30	17.25	91.71	-71.37	1,726.24	-759.39	1,232.68	1,124.14	108.54	11.357	
5,050.00	3,854.82	3,793.52	3,859.54	17.50	91.58	-73.58	1,726.30	-759.39	1,216.97	1,108.20	108.77	11.189	
5,100.00	3,850.85	3,788.79	3,854.81	17.75	91.44	-75.84	1,726.36	-759.39	1,203.12	1,094.14	108.98	11.039	
5,150.00	3,846.88	3,784.09	3,850.11	18.01	91.31	-78.15	1,726.42	-759.39	1,191.19	1,081.99	109.20	10.909	
5,200.00	3,842.91	3,779.42	3,845.45	18.27	91.18	-80.51	1,726.48	-759.39	1,181.24	1,071.85	109.39	10.798	
5,250.00	3,838.95	3,774.78	3,840.81	18.54	91.04	-82.90	1,726.54	-759.39	1,173.32	1,063.75	109.57	10.708	
5,300.00	3,834.98	3,770.17	3,836.20	18.81	90.91	-85.32	1,726.60	-759.39	1,167.47	1,057.74	109.73	10.640	
5,350.00	3,831.01	3,765.59	3,831.61	19.08	90.78	-87.76	1,726.65	-759.39	1,163.72	1,053.86	109.87	10.592	
5,400.00	3,827.04	3,761.03	3,827.06	19.36	90.65	-90.22	1,726.71	-759.39	1,162.10	1,052.12	109.98	10.567	
5,413.05	3,826.01	3,759.85	3,825.87	19.43	90.62	-90.86	1,726.72	-759.39	1,162.03	1,052.02	110.00	10.564	CC, ES
5,450.00	3,823.08	3,756.50	3,822.53	19.64	90.53	-92.67	1,726.76	-759.39	1,162.61	1,052.54	110.07	10.563	SF
5,500.00	3,819.11	3,752.00	3,818.03	19.93	90.40	-95.12	1,726.81	-759.39	1,165.25	1,055.13	110.12	10.581	
5,550.00	3,815.14	3,747.53	3,813.56	20.22	90.27	-97.55	1,726.86	-759.39	1,170.00	1,059.85	110.15	10.621	
5,600.00	3,811.18	3,743.08	3,809.12	20.51	90.15	-99.96	1,726.90	-759.39	1,176.85	1,066.69	110.15	10.684	
5,650.00	3,807.21	3,738.67	3,804.70	20.80	90.02	-102.34	1,726.95	-759.39	1,185.75	1,075.62	110.13	10.767	
5,700.00	3,803.24	3,734.27	3,800.31	21.10	89.90	-104.67	1,726.99	-759.39	1,196.65	1,086.58	110.07	10.871	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT `L` 155 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 488-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,750.00	3,799.27	3,729.91	3,795.94	21.40	89.77	-106.96	1,727.03	-759.39	1,209.51	1,099.52	110.00	10.996	
5,800.00	3,795.31	3,725.57	3,791.60	21.70	89.65	-109.20	1,727.07	-759.39	1,224.27	1,114.38	109.89	11.141	
5,850.00	3,791.34	3,721.25	3,787.29	22.01	89.53	-111.39	1,727.11	-759.39	1,240.85	1,131.08	109.76	11.305	
5,900.00	3,787.37	3,716.97	3,783.00	22.31	89.41	-113.51	1,727.15	-759.39	1,259.18	1,149.57	109.61	11.488	
5,950.00	3,783.41	3,712.70	3,778.74	22.63	89.28	-115.57	1,727.19	-759.39	1,279.19	1,169.74	109.44	11.688	
6,000.00	3,779.44	3,708.47	3,774.51	22.94	89.16	-117.56	1,727.22	-759.39	1,300.80	1,191.54	109.26	11.906	
6,050.00	3,775.47	3,704.25	3,770.29	23.25	89.05	-119.49	1,727.26	-759.39	1,323.93	1,214.87	109.06	12.140	
6,100.00	3,771.50	3,700.07	3,766.11	23.57	88.93	-121.35	1,727.29	-759.39	1,348.51	1,239.66	108.84	12.389	
6,150.00	3,767.54	3,695.90	3,761.95	23.89	88.81	-123.14	1,727.32	-759.39	1,374.45	1,265.83	108.62	12.654	
6,200.00	3,763.57	3,691.77	3,757.81	24.21	88.69	-124.86	1,727.35	-759.39	1,401.69	1,293.30	108.39	12.932	
6,250.00	3,759.60	3,687.65	3,753.69	24.53	88.57	-126.51	1,727.38	-759.39	1,430.14	1,321.99	108.15	13.224	
6,300.00	3,755.64	3,683.56	3,749.60	24.85	88.46	-128.10	1,727.41	-759.39	1,459.74	1,351.83	107.91	13.528	
6,350.00	3,751.67	3,679.49	3,745.54	25.18	88.34	-129.63	1,727.44	-759.39	1,490.42	1,382.76	107.66	13.844	
6,400.00	3,747.70	3,675.45	3,741.50	25.51	88.23	-131.09	1,727.46	-759.39	1,522.11	1,414.70	107.41	14.171	
6,450.00	3,743.73	3,671.43	3,737.48	25.84	88.11	-132.49	1,727.49	-759.39	1,554.75	1,447.59	107.16	14.509	
6,500.00	3,739.77	3,667.43	3,733.48	26.17	88.00	-133.83	1,727.51	-759.39	1,588.28	1,481.38	106.90	14.857	
6,550.00	3,735.80	3,663.46	3,729.51	26.50	87.89	-135.12	1,727.53	-759.39	1,622.65	1,516.00	106.65	15.214	
6,600.00	3,731.83	3,659.51	3,725.56	26.83	87.78	-136.35	1,727.55	-759.39	1,657.81	1,551.41	106.40	15.581	
6,650.00	3,727.87	3,655.58	3,721.63	27.17	87.66	-137.54	1,727.57	-759.39	1,693.71	1,587.55	106.15	15.955	
6,700.00	3,723.90	3,651.67	3,717.72	27.50	87.55	-138.67	1,727.59	-759.39	1,730.29	1,624.38	105.91	16.338	
6,750.00	3,719.93	3,647.79	3,713.84	27.84	87.44	-139.75	1,727.61	-759.39	1,767.52	1,661.86	105.66	16.728	
6,800.00	3,715.96	3,643.93	3,709.98	28.18	87.33	-140.79	1,727.63	-759.39	1,805.36	1,699.94	105.42	17.125	
6,850.00	3,712.00	3,640.09	3,706.14	28.52	87.23	-141.79	1,727.64	-759.39	1,843.77	1,738.59	105.19	17.529	
6,900.00	3,708.03	3,636.27	3,702.32	28.86	87.12	-142.74	1,727.66	-759.39	1,882.72	1,777.77	104.95	17.939	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT 152 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	30.00	0.00	0.00	-84.27	129.81	-1,293.40	1,300.24				
50.00	50.00	20.00	50.00	0.92	0.78	-84.27	129.81	-1,293.40	1,299.90	1,298.19	1.71	761.688	
100.00	100.00	70.00	100.00	0.92	2.74	-84.27	129.81	-1,293.40	1,299.90	1,296.24	3.66	354.911	
150.00	150.00	120.00	150.00	1.23	4.69	-84.27	129.81	-1,293.40	1,299.90	1,293.98	5.92	219.591	
200.00	200.00	170.00	200.00	1.53	6.65	-84.27	129.81	-1,293.40	1,299.90	1,291.72	8.18	158.976	
250.00	250.00	220.00	250.00	1.74	8.61	-84.27	129.81	-1,293.40	1,299.90	1,289.55	10.35	125.636	
300.00	300.00	270.00	300.00	1.95	10.56	-84.27	129.81	-1,293.40	1,299.90	1,287.38	12.52	103.855 CC	
350.00	350.00	320.00	350.00	2.22	12.52	-84.26	129.81	-1,293.40	1,300.31	1,285.57	14.73	88.246	
400.00	399.98	369.98	399.98	2.51	14.47	-84.24	129.81	-1,293.40	1,301.53	1,284.57	16.96	76.741	
450.00	449.93	419.93	449.93	2.75	16.43	-84.21	129.81	-1,293.40	1,303.57	1,284.43	19.15	68.088 ES	
500.00	499.84	469.84	499.84	3.00	18.38	-84.16	129.81	-1,293.40	1,306.43	1,285.10	21.33	61.250	
550.00	549.68	519.68	549.68	3.23	20.35	-84.10	129.81	-1,293.40	1,310.11	1,286.59	23.52	55.709	
600.00	599.45	569.45	599.45	3.46	22.34	-84.03	129.81	-1,293.40	1,314.60	1,288.87	25.73	51.096	
650.00	649.13	619.13	649.13	3.68	24.33	-83.94	129.81	-1,293.40	1,319.91	1,291.97	27.93	47.255	
700.00	698.70	668.70	698.70	3.91	26.31	-83.84	129.81	-1,293.40	1,326.03	1,295.90	30.13	44.008	
750.00	748.15	718.15	748.15	4.07	28.29	-83.73	129.81	-1,293.40	1,332.97	1,300.70	32.27	41.311	
800.00	797.49	767.49	797.49	4.21	30.26	-83.62	129.81	-1,293.40	1,340.61	1,306.24	34.37	39.004	
850.00	846.80	816.80	846.80	4.39	32.23	-83.50	129.81	-1,293.40	1,348.35	1,311.83	36.52	36.918	
900.00	896.12	866.12	896.12	4.58	34.20	-83.38	129.81	-1,293.40	1,356.10	1,317.43	38.67	35.065	
950.00	945.44	915.44	945.44	4.76	36.18	-83.26	129.81	-1,293.40	1,363.86	1,323.03	40.83	33.405	
1,000.00	994.75	964.75	994.75	4.95	38.15	-83.15	129.81	-1,293.40	1,371.62	1,328.64	42.98	31.911	
1,050.00	1,044.07	1,014.07	1,044.07	5.14	40.12	-83.03	129.81	-1,293.40	1,379.39	1,334.25	45.14	30.557	
1,100.00	1,093.39	1,063.39	1,093.39	5.33	42.10	-82.92	129.81	-1,293.40	1,387.16	1,339.86	47.30	29.326	
1,150.00	1,142.70	1,112.70	1,142.70	5.53	44.07	-82.81	129.81	-1,293.40	1,394.94	1,345.47	49.46	28.201	
1,200.00	1,192.02	1,162.02	1,192.02	5.73	46.04	-82.70	129.81	-1,293.40	1,402.72	1,351.09	51.63	27.170	
1,250.00	1,241.34	1,211.34	1,241.34	5.93	48.01	-82.59	129.81	-1,293.40	1,410.51	1,356.71	53.80	26.220	
1,300.00	1,290.66	1,260.66	1,290.66	6.13	49.99	-82.48	129.81	-1,293.40	1,418.30	1,362.33	55.96	25.343	
1,350.00	1,339.97	1,309.97	1,339.97	6.33	51.96	-82.37	129.81	-1,293.40	1,426.10	1,367.96	58.13	24.531	
1,400.00	1,389.29	1,359.29	1,389.29	6.54	53.93	-82.27	129.81	-1,293.40	1,433.90	1,373.59	60.30	23.777	
1,450.00	1,438.61	1,408.61	1,438.61	6.75	55.90	-82.16	129.81	-1,293.40	1,441.71	1,379.23	62.48	23.075	
1,500.00	1,487.92	1,457.92	1,487.92	6.95	57.88	-82.06	129.81	-1,293.40	1,449.52	1,384.87	64.65	22.420	
1,550.00	1,537.24	1,507.24	1,537.24	7.16	59.85	-81.96	129.81	-1,293.40	1,457.33	1,390.51	66.83	21.808	
1,600.00	1,586.56	1,556.56	1,586.56	7.37	61.82	-81.86	129.81	-1,293.40	1,465.16	1,396.15	69.00	21.233	
1,650.00	1,635.88	1,605.88	1,635.88	7.58	63.80	-81.76	129.81	-1,293.40	1,472.98	1,401.80	71.18	20.694	
1,700.00	1,685.19	1,655.19	1,685.19	7.79	65.77	-81.66	129.81	-1,293.40	1,480.81	1,407.45	73.36	20.186	
1,750.00	1,734.51	1,704.51	1,734.51	8.00	67.74	-81.56	129.81	-1,293.40	1,488.65	1,413.11	75.54	19.707	
1,800.00	1,783.83	1,753.83	1,783.83	8.22	69.71	-81.46	129.81	-1,293.40	1,496.48	1,418.77	77.72	19.256	
1,850.00	1,833.14	1,803.14	1,833.14	8.43	71.69	-81.37	129.81	-1,293.40	1,504.33	1,424.43	79.90	18.828	
1,900.00	1,882.46	1,852.46	1,882.46	8.64	73.66	-81.27	129.81	-1,293.40	1,512.18	1,430.10	82.08	18.424	
1,950.00	1,931.78	1,901.78	1,931.78	8.86	75.63	-81.18	129.81	-1,293.40	1,520.03	1,435.77	84.26	18.040	
2,000.00	1,981.09	1,951.09	1,981.09	9.07	77.60	-81.08	129.81	-1,293.40	1,527.88	1,441.44	86.44	17.675	
2,050.00	2,030.41	2,000.41	2,030.41	9.29	79.58	-80.99	129.81	-1,293.40	1,535.74	1,447.12	88.63	17.329	
2,100.00	2,079.73	2,049.73	2,079.73	9.50	81.55	-80.90	129.81	-1,293.40	1,543.61	1,452.80	90.81	16.998	
2,150.00	2,129.05	2,099.05	2,129.05	9.72	83.52	-80.81	129.81	-1,293.40	1,551.47	1,458.48	92.99	16.684	
2,200.00	2,178.36	2,148.36	2,178.36	9.94	85.49	-80.72	129.81	-1,293.40	1,559.34	1,464.17	95.18	16.384	
2,250.00	2,227.68	2,197.68	2,227.68	10.16	87.47	-80.63	129.81	-1,293.40	1,567.22	1,469.86	97.36	16.097	
2,300.00	2,277.00	2,247.00	2,277.00	10.37	89.44	-80.55	129.81	-1,293.40	1,575.10	1,475.55	99.55	15.823	
2,350.00	2,326.31	2,296.31	2,326.31	10.59	91.41	-80.46	129.81	-1,293.40	1,582.98	1,481.25	101.73	15.560	
2,400.00	2,375.63	2,345.63	2,375.63	10.81	93.39	-80.37	129.81	-1,293.40	1,590.86	1,486.95	103.92	15.309	
2,450.00	2,424.95	2,394.95	2,424.95	11.03	95.36	-80.29	129.81	-1,293.40	1,598.75	1,492.65	106.11	15.067	
2,500.00	2,474.26	2,444.26	2,474.26	11.25	97.33	-80.20	129.81	-1,293.40	1,606.65	1,498.35	108.29	14.836	
2,550.00	2,523.58	2,493.58	2,523.58	11.46	99.30	-80.12	129.81	-1,293.40	1,614.54	1,504.06	110.48	14.614	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT 152 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,542.90	2,572.90	11.68	101.28	-80.04	129.81	-1,293.40	1,622.44	1,509.77	112.67	14.400	
2,650.00	2,622.22	2,592.22	2,622.22	11.90	103.25	-79.96	129.81	-1,293.40	1,630.35	1,515.49	114.86	14.195	
2,700.00	2,671.53	2,641.53	2,671.53	12.12	105.22	-79.88	129.81	-1,293.40	1,638.25	1,521.21	117.04	13.997	
2,750.00	2,720.85	2,690.85	2,720.85	12.34	107.19	-79.80	129.81	-1,293.40	1,646.16	1,526.93	119.23	13.806	
2,800.00	2,770.17	2,740.17	2,770.17	12.56	109.17	-79.72	129.81	-1,293.40	1,654.07	1,532.65	121.42	13.623	
2,850.00	2,819.48	2,789.48	2,819.48	12.77	111.14	-79.64	129.81	-1,293.40	1,661.99	1,538.39	123.60	13.447	
2,900.00	2,868.87	2,838.87	2,868.87	12.97	113.11	-79.59	129.81	-1,293.40	1,669.66	1,543.88	125.77	13.275	
2,950.00	2,918.36	2,888.36	2,918.36	13.16	115.09	-79.63	129.81	-1,293.40	1,676.63	1,548.68	127.94	13.104	
3,000.00	2,967.83	2,937.83	2,967.83	13.32	117.07	-79.75	129.81	-1,293.40	1,682.88	1,552.78	130.10	12.935	
3,050.00	3,017.14	2,987.14	3,017.14	13.44	119.05	-79.96	129.81	-1,293.40	1,688.41	1,556.20	132.22	12.770	
3,100.00	3,066.14	3,036.14	3,066.14	13.52	121.01	-80.26	129.81	-1,293.40	1,693.24	1,558.96	134.29	12.609	
3,150.00	3,114.72	3,084.72	3,114.72	13.57	122.95	-80.63	129.81	-1,293.40	1,697.39	1,561.08	136.31	12.453	
3,200.00	3,162.74	3,132.74	3,162.74	13.60	124.87	-81.08	129.81	-1,293.40	1,700.89	1,562.61	138.28	12.300	
3,250.00	3,210.06	3,180.06	3,210.06	13.61	126.76	-81.62	129.81	-1,293.40	1,703.80	1,563.59	140.21	12.152	
3,300.00	3,256.55	3,226.55	3,256.55	13.62	128.62	-82.23	129.81	-1,293.40	1,706.16	1,564.07	142.09	12.007	
3,350.00	3,302.09	3,272.09	3,302.09	13.61	130.44	-82.92	129.81	-1,293.40	1,708.05	1,564.13	143.93	11.867	
3,400.00	3,346.56	3,316.56	3,346.56	13.61	132.22	-83.68	129.81	-1,293.40	1,709.55	1,563.84	145.71	11.732	
3,450.00	3,389.82	3,359.82	3,389.82	13.60	133.95	-84.52	129.81	-1,293.40	1,710.74	1,563.30	147.45	11.603	
3,500.00	3,431.77	3,401.77	3,431.77	13.60	135.63	-85.43	129.81	-1,293.40	1,711.72	1,562.59	149.13	11.478	
3,550.00	3,472.28	3,442.28	3,472.28	13.59	137.25	-86.41	129.81	-1,293.40	1,712.58	1,561.83	150.75	11.361	
3,600.00	3,511.25	3,481.25	3,511.25	13.59	138.81	-87.46	129.81	-1,293.40	1,713.42	1,561.11	152.31	11.250	
3,650.00	3,548.57	3,518.57	3,548.57	13.60	140.30	-88.57	129.81	-1,293.40	1,714.36	1,560.55	153.81	11.146	
3,700.00	3,584.14	3,554.14	3,584.14	13.61	141.73	-89.75	129.81	-1,293.40	1,715.50	1,560.26	155.24	11.050	
3,750.00	3,617.85	3,587.85	3,617.85	13.63	143.07	-90.98	129.81	-1,293.40	1,716.95	1,560.34	156.61	10.963	
3,800.00	3,649.62	3,619.62	3,649.62	13.66	144.34	-92.26	129.81	-1,293.40	1,718.82	1,560.92	157.90	10.886	
3,850.00	3,679.37	3,649.37	3,679.37	13.70	145.53	-93.60	129.81	-1,293.40	1,721.20	1,562.09	159.11	10.817	
3,900.00	3,707.00	3,677.00	3,707.00	13.74	146.64	-94.98	129.81	-1,293.40	1,724.20	1,563.96	160.25	10.759	
3,950.00	3,732.54	3,702.54	3,732.54	13.80	147.66	-96.40	129.81	-1,293.40	1,727.93	1,566.62	161.31	10.712	
4,000.00	3,757.54	3,727.54	3,757.54	13.87	148.66	-97.83	129.81	-1,293.40	1,732.65	1,570.30	162.35	10.672	
4,050.00	3,782.54	3,752.54	3,782.54	13.95	149.66	-99.24	129.81	-1,293.40	1,738.44	1,575.02	163.42	10.638	
4,100.00	3,807.54	3,777.54	3,807.54	14.04	150.66	-100.65	129.81	-1,293.40	1,745.28	1,580.80	164.48	10.611	
4,150.00	3,832.37	3,802.37	3,832.37	14.13	151.65	-102.05	129.81	-1,293.40	1,753.19	1,587.65	165.53	10.591	
4,200.00	3,854.28	3,824.28	3,854.28	14.23	152.53	-103.48	129.81	-1,293.40	1,762.46	1,595.98	166.48	10.587	SF
4,250.00	3,872.20	3,842.20	3,872.20	14.35	153.25	-104.95	129.81	-1,293.40	1,773.24	1,605.98	167.26	10.602	
4,300.00	3,885.97	3,855.97	3,885.97	14.48	153.80	-106.45	129.81	-1,293.40	1,785.55	1,617.68	167.88	10.636	
4,350.00	3,895.51	3,865.51	3,895.51	14.62	154.18	-107.95	129.81	-1,293.40	1,799.36	1,631.04	168.32	10.690	
4,400.00	3,900.74	3,870.74	3,900.74	14.77	154.39	-109.45	129.81	-1,293.40	1,814.60	1,646.01	168.58	10.764	
4,450.00	3,901.61	3,871.61	3,901.61	14.93	154.42	-110.94	129.81	-1,293.40	1,831.15	1,662.48	168.67	10.857	
4,500.00	3,898.45	3,868.45	3,898.45	15.09	154.30	-112.39	129.81	-1,293.40	1,848.87	1,680.30	168.58	10.968	
4,550.00	3,894.49	3,864.49	3,894.49	15.28	154.14	-113.81	129.81	-1,293.40	1,867.74	1,699.28	168.46	11.087	
4,600.00	3,890.52	3,860.52	3,890.52	15.47	153.98	-115.20	129.81	-1,293.40	1,887.74	1,719.40	168.34	11.214	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT 415 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 462-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,050.00	3,696.13	3,645.48	3,698.98	29.89	74.50	-62.77	4,235.80	-1,293.60	1,880.01	1,777.91	102.10	18.413	
7,100.00	3,692.16	3,641.10	3,694.60	30.23	74.40	-64.13	4,235.81	-1,293.60	1,857.07	1,754.51	102.56	18.107	
7,150.00	3,688.19	3,636.75	3,690.25	30.58	74.30	-65.52	4,235.82	-1,293.60	1,835.20	1,732.18	103.03	17.813	
7,200.00	3,684.23	3,632.43	3,685.93	30.92	74.21	-66.94	4,235.83	-1,293.60	1,814.44	1,710.95	103.49	17.533	
7,250.00	3,680.26	3,628.14	3,681.65	31.27	74.11	-68.40	4,235.84	-1,293.60	1,794.82	1,690.87	103.95	17.267	
7,300.00	3,676.29	3,623.89	3,677.39	31.62	74.02	-69.88	4,235.85	-1,293.60	1,776.37	1,671.97	104.40	17.015	
7,350.00	3,672.32	3,619.67	3,673.17	31.97	73.92	-71.40	4,235.86	-1,293.60	1,759.15	1,654.30	104.85	16.778	
7,400.00	3,668.36	3,615.47	3,668.98	32.32	73.83	-72.94	4,235.86	-1,293.60	1,743.18	1,637.90	105.29	16.556	
7,450.00	3,664.39	3,611.31	3,664.82	32.67	73.74	-74.52	4,235.87	-1,293.60	1,728.51	1,622.79	105.72	16.350	
7,500.00	3,660.42	3,607.18	3,660.68	33.02	73.65	-76.11	4,235.87	-1,293.60	1,715.15	1,609.02	106.13	16.160	
7,550.00	3,656.46	3,603.07	3,656.58	33.37	73.56	-77.73	4,235.87	-1,293.60	1,703.15	1,596.61	106.53	15.987	
7,600.00	3,652.49	3,599.00	3,652.51	33.73	73.47	-79.38	4,235.88	-1,293.60	1,692.53	1,585.61	106.92	15.830	
7,650.00	3,648.52	3,595.01	3,648.52	34.08	73.38	-81.06	4,235.33	-1,293.60	1,683.24	1,575.95	107.29	15.689	
7,700.00	3,644.55	3,591.04	3,644.55	34.44	73.29	-82.74	4,235.33	-1,293.60	1,675.48	1,567.84	107.63	15.566	
7,750.00	3,640.59	3,587.08	3,640.59	34.79	73.20	-84.43	4,235.33	-1,293.60	1,669.17	1,561.21	107.96	15.461	
7,800.00	3,636.62	3,583.11	3,636.62	35.15	73.11	-86.14	4,235.33	-1,293.60	1,664.33	1,556.07	108.25	15.374	
7,850.00	3,632.65	3,579.14	3,632.65	35.50	73.02	-87.85	4,235.33	-1,293.60	1,660.97	1,552.45	108.52	15.305	
7,900.00	3,628.69	3,575.17	3,628.69	35.86	72.94	-89.57	4,235.33	-1,293.60	1,659.11	1,550.34	108.77	15.254	
7,937.32	3,625.72	3,572.21	3,625.72	36.13	72.87	-90.86	4,235.33	-1,293.60	1,658.69	1,549.76	108.93	15.227	CC
7,950.00	3,624.72	3,571.21	3,624.72	36.22	72.85	-91.29	4,235.33	-1,293.60	1,658.74	1,549.76	108.98	15.221	ES
8,000.00	3,620.75	3,567.24	3,620.75	36.57	72.76	-93.01	4,235.33	-1,293.60	1,659.87	1,550.70	109.16	15.205	SF
8,050.00	3,616.78	3,563.27	3,616.78	36.93	72.67	-94.73	4,235.33	-1,293.60	1,662.49	1,553.17	109.31	15.208	
8,100.00	3,612.82	3,559.31	3,612.82	37.29	72.58	-96.44	4,235.33	-1,293.60	1,666.60	1,557.16	109.44	15.229	
8,150.00	3,608.85	3,555.34	3,608.85	37.65	72.50	-98.14	4,235.33	-1,293.60	1,672.18	1,562.66	109.53	15.267	
8,200.00	3,604.88	3,551.37	3,604.88	38.01	72.41	-99.83	4,235.33	-1,293.60	1,679.23	1,569.65	109.58	15.324	
8,250.00	3,600.92	3,547.40	3,600.92	38.37	72.32	-101.50	4,235.33	-1,293.60	1,687.72	1,578.11	109.61	15.397	
8,300.00	3,596.95	3,543.44	3,596.95	38.73	72.23	-103.15	4,235.33	-1,293.60	1,697.63	1,588.02	109.61	15.488	
8,350.00	3,592.98	3,539.47	3,592.98	39.10	72.14	-104.79	4,235.33	-1,293.60	1,708.94	1,599.36	109.58	15.595	
8,400.00	3,589.01	3,535.50	3,589.01	39.46	72.06	-106.40	4,235.33	-1,293.60	1,721.62	1,612.10	109.52	15.719	
8,450.00	3,585.05	3,531.53	3,585.05	39.82	71.97	-107.98	4,235.33	-1,293.60	1,735.64	1,626.20	109.44	15.860	
8,500.00	3,581.08	3,527.57	3,581.08	40.18	71.88	-109.54	4,235.33	-1,293.60	1,750.96	1,641.64	109.32	16.016	
8,550.00	3,577.11	3,523.60	3,577.11	40.55	71.79	-111.07	4,235.33	-1,293.60	1,767.56	1,658.37	109.19	16.188	
8,600.00	3,573.14	3,519.63	3,573.14	40.91	71.70	-112.57	4,235.33	-1,293.60	1,785.40	1,676.36	109.03	16.375	
8,650.00	3,569.18	3,515.67	3,569.18	41.27	71.61	-114.04	4,235.33	-1,293.60	1,804.43	1,695.58	108.85	16.577	
8,700.00	3,565.21	3,511.70	3,565.21	41.64	71.53	-115.48	4,235.33	-1,293.60	1,824.63	1,715.98	108.65	16.793	
8,750.00	3,561.24	3,507.73	3,561.24	42.00	71.44	-116.89	4,235.33	-1,293.60	1,845.95	1,737.52	108.44	17.023	
8,800.00	3,557.28	3,503.76	3,557.28	42.37	71.35	-118.26	4,235.33	-1,293.60	1,868.37	1,760.16	108.20	17.267	
8,850.00	3,553.31	3,499.80	3,553.31	42.73	71.26	-119.60	4,235.33	-1,293.60	1,891.82	1,783.87	107.96	17.524	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT L 152 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 460-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	53.00	0.00	0.00	-52.17	1,010.10	-1,300.63	1,647.65				
50.00	50.00	0.00	53.00	0.92	0.00	-52.17	1,010.10	-1,300.63	1,646.80	1,645.88	0.92	1,781.848	
67.73	67.73	14.73	67.73	0.92	0.27	-52.17	1,010.10	-1,300.63	1,646.80	1,645.61	1.19	1,383.188	
100.00	100.00	47.00	100.00	0.92	0.85	-52.17	1,010.10	-1,300.63	1,646.80	1,645.02	1.77	928.229	
150.00	150.00	97.00	150.00	1.23	1.75	-52.17	1,010.10	-1,300.63	1,646.80	1,643.82	2.98	552.738	
200.00	200.00	147.00	200.00	1.53	2.66	-52.17	1,010.10	-1,300.63	1,646.80	1,642.61	4.18	393.542	
250.00	250.00	197.00	250.00	1.74	3.56	-52.17	1,010.10	-1,300.63	1,646.80	1,641.49	5.30	310.564	
300.00	300.00	247.00	300.00	1.95	4.47	-52.17	1,010.10	-1,300.63	1,646.80	1,640.38	6.42	256.484	CC
350.00	350.00	297.00	350.00	2.22	5.37	-52.17	1,010.10	-1,300.63	1,647.22	1,639.64	7.58	217.256	
400.00	399.98	346.98	399.98	2.51	6.27	-52.18	1,010.10	-1,300.63	1,648.51	1,639.73	8.78	187.790	
450.00	449.93	396.93	449.93	2.75	7.18	-52.19	1,010.10	-1,300.63	1,650.64	1,640.73	9.92	166.414	
500.00	499.84	446.84	499.84	3.00	8.08	-52.21	1,010.10	-1,300.63	1,653.64	1,642.57	11.06	149.496	
550.00	549.68	496.69	549.68	3.23	9.00	-52.24	1,010.10	-1,300.63	1,657.48	1,645.28	12.20	135.816	
600.00	599.45	546.46	599.45	3.46	9.92	-52.27	1,010.10	-1,300.63	1,662.18	1,648.83	13.35	124.494	
650.00	649.13	596.14	649.13	3.68	10.83	-52.31	1,010.10	-1,300.63	1,667.73	1,653.24	14.49	115.074	
700.00	698.70	645.71	698.70	3.91	11.75	-52.36	1,010.10	-1,300.63	1,674.13	1,658.50	15.63	107.091	
750.00	748.15	695.88	748.88	4.07	12.68	-52.39	1,010.53	-1,300.63	1,681.64	1,664.92	16.72	100.565	
800.00	797.49	746.34	799.33	4.21	13.61	-52.45	1,010.47	-1,300.63	1,689.58	1,671.79	17.79	94.975	
850.00	846.80	796.79	849.78	4.39	14.54	-52.51	1,010.35	-1,300.63	1,697.59	1,678.69	18.90	89.801	
900.00	896.12	847.24	900.23	4.58	15.48	-52.56	1,010.18	-1,300.63	1,705.57	1,685.55	20.02	85.200	
950.00	945.44	892.46	945.44	4.76	16.34	-52.62	1,010.10	-1,300.63	1,713.60	1,692.53	21.07	81.338	
1,000.00	994.75	941.77	994.75	4.95	17.31	-52.67	1,010.10	-1,300.63	1,721.69	1,699.47	22.22	77.488	
1,050.00	1,044.07	991.09	1,044.07	5.14	18.28	-52.72	1,010.10	-1,300.63	1,729.77	1,706.40	23.38	74.000	
1,100.00	1,093.39	1,040.41	1,093.39	5.33	19.24	-52.78	1,010.10	-1,300.63	1,737.86	1,713.33	24.53	70.840	
1,150.00	1,142.70	1,089.73	1,142.70	5.53	20.21	-52.83	1,010.10	-1,300.63	1,745.95	1,720.25	25.69	67.952	
1,200.00	1,192.02	1,139.04	1,192.02	5.73	21.18	-52.88	1,010.10	-1,300.63	1,754.04	1,727.18	26.86	65.314	
1,250.00	1,241.34	1,188.36	1,241.34	5.93	22.14	-52.93	1,010.10	-1,300.63	1,762.13	1,734.11	28.02	62.887	
1,300.00	1,290.66	1,237.68	1,290.66	6.13	23.11	-52.98	1,010.10	-1,300.63	1,770.22	1,741.04	29.19	60.654	
1,350.00	1,339.97	1,286.99	1,339.97	6.33	24.08	-53.03	1,010.10	-1,300.63	1,778.32	1,747.96	30.35	58.586	
1,400.00	1,389.29	1,336.31	1,389.29	6.54	25.04	-53.07	1,010.10	-1,300.63	1,786.41	1,754.89	31.52	56.671	
1,450.00	1,438.61	1,385.91	1,438.89	6.75	26.02	-53.10	1,011.17	-1,300.63	1,795.15	1,762.45	32.70	54.899	
1,500.00	1,487.92	1,435.71	1,488.68	6.95	26.99	-53.14	1,011.14	-1,300.63	1,803.23	1,769.35	33.88	53.225	
1,550.00	1,537.24	1,485.51	1,538.49	7.16	27.97	-53.19	1,011.10	-1,300.63	1,811.30	1,776.24	35.06	51.659	
1,600.00	1,586.56	1,535.32	1,588.29	7.37	28.94	-53.24	1,011.03	-1,300.63	1,819.36	1,783.11	36.25	50.195	
1,650.00	1,635.88	1,585.13	1,638.10	7.58	29.92	-53.29	1,010.94	-1,300.63	1,827.41	1,789.98	37.43	48.822	
1,700.00	1,685.19	1,634.94	1,687.91	7.79	30.90	-53.34	1,010.83	-1,300.63	1,835.44	1,796.83	38.62	47.531	
1,750.00	1,734.51	1,684.76	1,737.73	8.00	31.87	-53.39	1,010.69	-1,300.63	1,843.47	1,803.66	39.80	46.316	
1,800.00	1,783.83	1,734.58	1,787.55	8.22	32.85	-53.44	1,010.53	-1,300.63	1,851.48	1,810.49	40.99	45.170	
1,850.00	1,833.14	1,784.40	1,837.37	8.43	33.83	-53.49	1,010.36	-1,300.63	1,859.48	1,817.30	42.18	44.087	
1,900.00	1,882.46	1,834.23	1,887.20	8.64	34.80	-53.54	1,010.15	-1,300.63	1,867.47	1,824.10	43.37	43.063	
1,950.00	1,931.78	1,878.89	1,931.78	8.86	35.70	-53.58	1,010.10	-1,300.63	1,875.54	1,831.07	44.47	42.172	
2,000.00	1,981.09	1,928.20	1,981.09	9.07	36.70	-53.63	1,010.10	-1,300.63	1,883.65	1,837.96	45.69	41.229	
2,050.00	2,030.41	1,977.52	2,030.41	9.29	37.71	-53.67	1,010.10	-1,300.63	1,891.76	1,844.86	46.90	40.334	
2,100.00	2,079.73	2,026.84	2,079.73	9.50	38.71	-53.71	1,010.10	-1,300.63	1,899.87	1,851.75	48.12	39.484	
3,850.00	3,679.37	3,626.64	3,679.37	13.70	70.96	-65.88	1,010.10	-1,300.63	1,890.00	1,805.76	84.24	22.435	
3,900.00	3,707.00	3,654.27	3,707.00	13.74	71.53	-67.05	1,010.10	-1,300.63	1,873.26	1,788.39	84.87	22.072	
3,950.00	3,732.54	3,680.07	3,732.79	13.80	72.05	-68.24	1,010.92	-1,300.63	1,856.73	1,771.25	85.47	21.724	
4,000.00	3,757.54	3,705.49	3,758.20	13.87	72.57	-69.48	1,010.90	-1,300.63	1,840.50	1,754.42	86.08	21.382	
4,050.00	3,782.54	3,730.85	3,783.56	13.95	73.09	-70.75	1,010.86	-1,300.63	1,825.15	1,738.45	86.70	21.052	
4,100.00	3,807.54	3,756.14	3,808.86	14.04	73.61	-72.04	1,010.81	-1,300.63	1,810.71	1,723.38	87.33	20.735	
4,150.00	3,832.37	3,781.21	3,833.93	14.13	74.12	-73.35	1,010.74	-1,300.63	1,797.16	1,709.21	87.95	20.434	
4,200.00	3,854.28	3,803.26	3,855.98	14.23	74.57	-74.73	1,010.67	-1,300.63	1,784.14	1,695.60	88.53	20.152	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT L 152 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 460-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,250.00	3,872.20	3,821.21	3,873.92	14.35	74.93	-76.18	1,010.60	-1,300.63	1,771.72	1,682.67	89.05	19.895	
4,300.00	3,885.97	3,834.93	3,887.64	14.48	75.21	-77.69	1,010.54	-1,300.63	1,760.15	1,670.65	89.50	19.666	
4,350.00	3,895.51	3,844.33	3,897.04	14.62	75.40	-79.26	1,010.50	-1,300.63	1,749.62	1,659.75	89.87	19.467	
4,400.00	3,900.74	3,849.36	3,902.08	14.77	75.51	-80.86	1,010.48	-1,300.63	1,740.31	1,650.14	90.17	19.300	
4,450.00	3,901.61	3,850.00	3,902.71	14.93	75.52	-82.49	1,010.47	-1,300.63	1,732.34	1,641.95	90.38	19.167	
4,500.00	3,898.45	3,846.59	3,899.30	15.09	75.45	-84.13	1,010.49	-1,300.63	1,725.79	1,635.28	90.51	19.067	
4,550.00	3,894.49	3,842.37	3,895.08	15.28	75.36	-85.78	1,010.51	-1,300.63	1,720.66	1,630.03	90.63	18.985	
4,600.00	3,890.52	3,838.16	3,890.88	15.47	75.28	-87.44	1,010.53	-1,300.63	1,716.97	1,626.22	90.75	18.920	
4,650.00	3,886.55	3,833.97	3,886.68	15.67	75.19	-89.10	1,010.55	-1,300.63	1,714.72	1,623.85	90.86	18.871	
4,700.00	3,882.59	3,829.78	3,882.50	15.88	75.11	-90.76	1,010.57	-1,300.63	1,713.91	1,622.94	90.97	18.841	
4,702.85	3,882.36	3,829.55	3,882.26	15.89	75.10	-90.86	1,010.57	-1,300.63	1,713.91	1,622.93	90.98	18.839	ES
4,750.00	3,878.62	3,825.61	3,878.32	16.09	75.02	-92.43	1,010.58	-1,300.63	1,714.55	1,623.48	91.07	18.826	SF
4,800.00	3,874.65	3,821.45	3,874.16	16.31	74.94	-94.09	1,010.60	-1,300.63	1,716.64	1,625.48	91.17	18.830	
4,850.00	3,870.68	3,817.30	3,870.01	16.54	74.85	-95.75	1,010.62	-1,300.63	1,720.17	1,628.91	91.26	18.849	
4,900.00	3,866.72	3,813.15	3,865.87	16.77	74.77	-97.40	1,010.63	-1,300.63	1,725.14	1,633.80	91.34	18.888	
4,950.00	3,862.75	3,809.02	3,861.74	17.01	74.68	-99.03	1,010.65	-1,300.63	1,731.52	1,640.11	91.41	18.942	
5,000.00	3,858.78	3,804.90	3,857.62	17.25	74.60	-100.66	1,010.67	-1,300.63	1,739.31	1,647.83	91.47	19.014	
5,050.00	3,854.82	3,800.80	3,853.51	17.50	74.52	-102.27	1,010.68	-1,300.63	1,748.48	1,656.95	91.53	19.102	
5,100.00	3,850.85	3,796.70	3,849.41	17.75	74.43	-103.86	1,010.69	-1,300.63	1,759.02	1,667.44	91.58	19.208	
5,150.00	3,846.88	3,792.61	3,845.32	18.01	74.35	-105.43	1,010.71	-1,300.63	1,770.89	1,679.28	91.62	19.329	
5,200.00	3,842.91	3,788.53	3,841.25	18.27	74.27	-106.98	1,010.72	-1,300.63	1,784.08	1,692.44	91.64	19.468	
5,250.00	3,838.95	3,784.47	3,837.18	18.54	74.18	-108.50	1,010.73	-1,300.63	1,798.56	1,706.89	91.67	19.621	
5,300.00	3,834.98	3,780.41	3,833.12	18.81	74.10	-110.00	1,010.75	-1,300.63	1,814.29	1,722.61	91.67	19.791	
5,350.00	3,831.01	3,776.36	3,829.08	19.08	74.02	-111.48	1,010.76	-1,300.63	1,831.24	1,739.56	91.68	19.974	
5,400.00	3,827.04	3,772.33	3,825.04	19.36	73.94	-112.92	1,010.77	-1,300.63	1,849.38	1,757.71	91.67	20.174	
5,450.00	3,823.08	3,768.30	3,821.02	19.64	73.85	-114.34	1,010.78	-1,300.63	1,868.67	1,777.01	91.66	20.387	
5,500.00	3,819.11	3,764.29	3,817.00	19.93	73.77	-115.73	1,010.79	-1,300.63	1,889.08	1,797.44	91.64	20.615	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT L 153 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 461-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	35.00	0.00	0.00	-10.34	770.60	-140.56	784.10				
50.00	50.00	15.00	50.00	0.92	0.26	-10.34	770.60	-140.56	783.31	782.13	1.18	661.799	
100.00	100.00	65.00	100.00	0.92	1.12	-10.34	770.60	-140.56	783.31	781.27	2.05	382.417	
150.00	150.00	115.00	150.00	1.23	1.99	-10.34	770.60	-140.56	783.31	780.10	3.21	243.714	
200.00	200.00	165.00	200.00	1.53	2.85	-10.34	770.60	-140.56	783.31	778.93	4.38	178.846	
250.00	250.00	215.00	250.00	1.74	3.72	-10.34	770.60	-140.56	783.31	777.86	5.46	143.506	
300.00	300.00	265.00	300.00	1.95	4.58	-10.34	770.60	-140.56	783.31	776.78	6.54	119.828	
350.00	350.00	315.00	350.00	2.22	5.45	-10.36	770.60	-140.56	783.58	775.97	7.61	103.012	
400.00	399.98	364.98	399.98	2.51	6.31	-10.44	770.60	-140.56	784.36	775.67	8.69	90.258	
450.00	449.93	414.93	449.93	2.75	7.18	-10.57	770.60	-140.56	785.67	775.93	9.74	80.678	
500.00	499.84	464.84	499.84	3.00	8.04	-10.74	770.60	-140.56	787.50	776.71	10.79	72.988	
550.00	549.68	514.68	549.68	3.23	8.92	-10.97	770.60	-140.56	789.88	778.03	11.85	66.673	
600.00	599.45	564.45	599.45	3.46	9.81	-11.25	770.60	-140.56	792.79	779.89	12.91	61.433	
650.00	649.13	614.13	649.13	3.68	10.69	-11.57	770.60	-140.56	796.26	782.30	13.96	57.055	
700.00	698.70	663.70	698.70	3.91	11.56	-11.94	770.60	-140.56	800.28	785.28	15.01	53.326	
750.00	748.15	713.15	748.15	4.07	12.44	-12.35	770.60	-140.56	804.88	788.88	16.01	50.283	
800.00	797.49	762.50	797.50	4.21	13.31	-12.80	770.93	-140.56	810.31	793.33	16.98	47.719	
850.00	846.80	812.10	847.10	4.39	14.19	-13.24	770.92	-140.56	815.53	797.51	18.02	45.263	
900.00	896.12	861.71	896.71	4.58	15.07	-13.69	770.89	-140.56	820.78	801.72	19.05	43.074	
950.00	945.44	911.32	946.32	4.76	15.95	-14.13	770.84	-140.56	826.05	805.97	20.09	41.119	
1,000.00	994.75	960.93	995.93	4.95	16.83	-14.56	770.78	-140.56	831.36	810.24	21.12	39.355	
1,050.00	1,044.07	1,010.55	1,045.54	5.14	17.71	-14.99	770.70	-140.56	836.70	814.54	22.16	37.753	
1,100.00	1,093.39	1,060.17	1,095.16	5.33	18.59	-15.41	770.60	-140.56	842.07	818.87	23.20	36.294	
1,150.00	1,142.70	1,107.71	1,142.70	5.53	19.44	-15.82	770.60	-140.56	847.57	823.36	24.22	34.997	
1,200.00	1,192.02	1,157.03	1,192.02	5.73	20.33	-16.23	770.60	-140.56	853.12	827.86	25.27	33.762	
1,250.00	1,241.34	1,206.35	1,241.34	5.93	21.22	-16.64	770.60	-140.56	858.72	832.40	26.32	32.624	
1,300.00	1,290.66	1,255.66	1,290.66	6.13	22.11	-17.04	770.60	-140.56	864.36	836.98	27.38	31.574	
1,350.00	1,339.97	1,305.34	1,340.33	6.33	23.00	-17.43	770.81	-140.56	870.24	841.80	28.44	30.601	
1,400.00	1,389.29	1,355.10	1,390.10	6.54	23.90	-17.82	770.78	-140.56	875.92	846.42	29.50	29.689	
1,450.00	1,438.61	1,404.87	1,439.86	6.75	24.79	-18.20	770.72	-140.56	881.62	851.05	30.57	28.838	
1,500.00	1,487.92	1,454.64	1,489.63	6.95	25.69	-18.58	770.63	-140.56	887.34	855.70	31.64	28.045	
1,550.00	1,537.24	1,502.26	1,537.24	7.16	26.57	-18.96	770.60	-140.56	893.14	860.45	32.70	27.317	
1,600.00	1,586.56	1,551.57	1,586.56	7.37	27.49	-19.33	770.60	-140.56	899.02	865.22	33.79	26.603	
1,650.00	1,635.88	1,600.89	1,635.88	7.58	28.41	-19.69	770.60	-140.56	904.93	870.03	34.90	25.933	
1,700.00	1,685.19	1,650.21	1,685.19	7.79	29.34	-20.05	770.60	-140.56	910.87	874.88	36.00	25.304	
1,750.00	1,734.51	1,699.53	1,734.51	8.00	30.26	-20.41	770.60	-140.56	916.86	879.76	37.10	24.712	
1,800.00	1,783.83	1,749.31	1,784.29	8.22	31.19	-20.74	771.14	-140.56	923.37	885.16	38.21	24.163	
1,850.00	1,833.14	1,799.39	1,834.37	8.43	32.13	-21.09	771.09	-140.56	929.38	890.04	39.34	23.626	
1,900.00	1,882.46	1,849.48	1,884.46	8.64	33.07	-21.43	770.99	-140.56	935.38	894.92	40.46	23.119	
1,950.00	1,931.78	1,899.57	1,934.55	8.86	34.01	-21.77	770.86	-140.56	941.37	899.78	41.58	22.638	
2,000.00	1,981.09	1,949.67	1,984.65	9.07	34.94	-22.11	770.68	-140.56	947.35	904.64	42.71	22.181	
2,050.00	2,030.41	1,995.46	2,030.41	9.29	35.84	-22.44	770.60	-140.56	953.45	909.66	43.79	21.774	
2,100.00	2,079.73	2,044.77	2,079.73	9.50	36.83	-22.76	770.60	-140.56	959.66	914.70	44.97	21.341	
2,150.00	2,129.05	2,097.65	2,132.60	9.72	37.89	-23.08	770.77	-140.56	966.06	919.84	46.22	20.900	
2,200.00	2,178.36	2,143.43	2,178.36	9.94	38.82	-23.40	770.60	-140.56	972.18	924.83	47.34	20.535	
2,250.00	2,227.68	2,192.75	2,227.68	10.16	39.85	-23.71	770.60	-140.56	978.48	929.91	48.57	20.146	
2,300.00	2,277.00	2,242.07	2,277.00	10.37	40.88	-24.02	770.60	-140.56	984.81	935.01	49.79	19.777	
2,350.00	2,326.31	2,291.39	2,326.31	10.59	41.92	-24.32	770.60	-140.56	991.16	940.14	51.02	19.426	
2,400.00	2,375.63	2,340.70	2,375.63	10.81	42.95	-24.62	770.60	-140.56	997.55	945.30	52.25	19.092	
2,450.00	2,424.95	2,391.30	2,426.22	11.03	44.01	-24.89	771.85	-140.56	1,005.09	951.59	53.51	18.785	
2,500.00	2,474.26	2,442.85	2,477.76	11.25	45.09	-25.18	771.71	-140.56	1,011.41	956.62	54.79	18.461	
2,550.00	2,523.58	2,494.42	2,529.33	11.46	46.16	-25.48	771.45	-140.56	1,017.65	961.58	56.07	18.151	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT L 153 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 461-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,546.02	2,580.92	11.68	47.24	-25.77	771.07	-140.56	1,023.80	966.45	57.35	17.852	
2,650.00	2,622.22	2,597.63	2,632.52	11.90	48.32	-26.07	770.56	-140.56	1,029.88	971.25	58.63	17.565	
2,700.00	2,671.53	2,636.69	2,671.53	12.12	49.21	-26.34	770.60	-140.56	1,036.40	976.70	59.71	17.358	
2,750.00	2,720.85	2,686.01	2,720.85	12.34	50.32	-26.62	770.60	-140.56	1,042.97	981.95	61.02	17.093	
2,800.00	2,770.17	2,737.80	2,772.63	12.56	51.48	-26.88	771.04	-140.56	1,049.95	987.56	62.39	16.830	
2,850.00	2,819.48	2,791.10	2,825.93	12.77	52.68	-27.15	770.79	-140.56	1,056.35	992.57	63.78	16.564	
2,900.00	2,868.87	2,834.10	2,868.87	12.97	53.70	-27.44	770.60	-140.56	1,061.91	996.94	64.97	16.345	
2,950.00	2,918.36	2,883.59	2,918.36	13.16	54.95	-27.77	770.60	-140.56	1,065.30	998.92	66.39	16.047	
3,000.00	2,967.83	2,933.58	2,968.34	13.32	56.22	-28.14	771.47	-140.56	1,067.08	999.31	67.77	15.745	
3,050.00	3,017.14	2,989.95	3,024.70	13.44	57.66	-28.58	771.23	-140.56	1,065.53	996.25	69.28	15.381	
3,100.00	3,066.14	3,045.86	3,080.60	13.52	59.08	-29.09	770.57	-140.56	1,061.32	990.60	70.73	15.006	
3,150.00	3,114.72	3,080.07	3,114.72	13.57	60.01	-29.64	770.60	-140.56	1,055.25	983.62	71.63	14.731	
3,200.00	3,162.74	3,128.09	3,162.74	13.60	61.31	-30.25	770.60	-140.56	1,047.00	974.08	72.92	14.358	
3,250.00	3,210.06	3,175.41	3,210.06	13.61	62.59	-30.93	770.60	-140.56	1,036.54	962.36	74.18	13.973	
3,300.00	3,256.55	3,221.90	3,256.55	13.62	63.85	-31.67	770.60	-140.56	1,023.95	948.54	75.42	13.577	
3,350.00	3,302.09	3,267.44	3,302.09	13.61	65.09	-32.49	770.60	-140.56	1,009.31	932.68	76.63	13.171	
3,400.00	3,346.56	3,313.09	3,347.70	13.61	66.33	-33.32	772.76	-140.56	994.51	916.66	77.85	12.775	
3,450.00	3,389.82	3,358.94	3,393.55	13.60	67.57	-34.31	772.62	-140.56	975.91	896.82	79.09	12.339	
3,500.00	3,431.77	3,403.22	3,437.81	13.60	68.77	-35.40	772.34	-140.56	955.46	875.16	80.30	11.898	
3,550.00	3,472.28	3,445.78	3,480.36	13.59	69.92	-36.60	771.95	-140.56	933.30	851.82	81.48	11.455	
3,600.00	3,511.25	3,486.51	3,521.08	13.59	71.03	-37.91	771.46	-140.56	909.60	826.98	82.62	11.009	
3,650.00	3,548.57	3,525.28	3,559.84	13.60	72.08	-39.37	770.88	-140.56	884.54	800.81	83.73	10.565	
3,700.00	3,584.14	3,549.79	3,584.14	13.61	72.74	-40.95	770.60	-140.56	858.49	774.06	84.43	10.168	
3,750.00	3,617.85	3,583.50	3,617.85	13.63	73.66	-42.68	770.60	-140.56	831.80	746.37	85.43	9.736	
3,800.00	3,649.62	3,615.28	3,649.62	13.66	74.52	-44.58	770.60	-140.56	804.40	717.99	86.41	9.309	
3,850.00	3,679.37	3,645.02	3,679.37	13.70	75.33	-46.68	770.60	-140.56	776.53	689.18	87.36	8.889	
3,900.00	3,707.00	3,672.65	3,707.00	13.74	76.08	-49.00	770.60	-140.56	748.48	660.21	88.27	8.479	
3,950.00	3,732.54	3,698.19	3,732.54	13.80	76.77	-51.55	770.60	-140.56	720.59	631.43	89.16	8.082	
4,000.00	3,757.54	3,723.19	3,757.54	13.87	77.45	-54.32	770.60	-140.56	693.97	603.92	90.05	7.707	
4,050.00	3,782.54	3,748.19	3,782.54	13.95	78.13	-57.30	770.60	-140.56	669.09	578.13	90.96	7.356	
4,100.00	3,807.54	3,773.19	3,807.54	14.04	78.81	-60.50	770.60	-140.56	646.16	554.27	91.90	7.031	
4,150.00	3,832.37	3,798.49	3,832.80	14.13	79.50	-63.76	772.63	-140.56	626.24	533.41	92.83	6.746	
4,200.00	3,854.28	3,820.72	3,855.03	14.23	80.10	-67.55	772.57	-140.56	607.08	513.35	93.73	6.477	
4,250.00	3,872.20	3,838.74	3,873.05	14.35	80.59	-71.72	772.50	-140.56	590.15	495.62	94.53	6.243	
4,300.00	3,885.97	3,852.45	3,886.75	14.48	80.96	-76.24	772.43	-140.56	576.17	480.97	95.20	6.052	
4,350.00	3,895.51	3,861.78	3,896.08	14.62	81.22	-81.06	772.37	-140.56	565.78	470.04	95.73	5.910	
4,400.00	3,900.74	3,866.71	3,901.00	14.77	81.35	-86.09	772.34	-140.56	559.47	463.37	96.10	5.822	
4,446.54	3,901.69	3,867.35	3,901.64	14.91	81.37	-90.86	772.34	-140.56	557.53	461.25	96.28	5.791	CC, ES
4,450.00	3,901.61	3,867.24	3,901.54	14.93	81.36	-91.21	772.34	-140.56	557.54	461.26	96.28	5.791	SF
4,500.00	3,898.45	3,863.76	3,898.06	15.09	81.27	-96.32	772.36	-140.56	560.07	463.80	96.27	5.817	
4,550.00	3,894.49	3,859.50	3,893.80	15.28	81.15	-101.34	772.39	-140.56	566.99	470.81	96.18	5.895	
4,600.00	3,890.52	3,855.28	3,889.57	15.47	81.04	-106.20	772.41	-140.56	578.13	482.14	95.99	6.023	
4,650.00	3,886.55	3,851.08	3,885.38	15.67	80.92	-110.84	772.44	-140.56	593.26	497.51	95.76	6.196	
4,700.00	3,882.59	3,846.91	3,881.21	15.88	80.81	-115.23	772.46	-140.56	612.08	516.63	95.46	6.412	
4,750.00	3,878.62	3,842.78	3,877.08	16.09	80.70	-119.33	772.48	-140.56	634.27	539.14	95.13	6.668	
4,800.00	3,874.65	3,838.67	3,872.97	16.31	80.59	-123.14	772.50	-140.56	659.48	564.72	94.77	6.959	
4,850.00	3,870.68	3,834.59	3,868.89	16.54	80.48	-126.65	772.52	-140.56	687.39	592.99	94.40	7.282	
4,900.00	3,866.72	3,830.55	3,864.85	16.77	80.37	-129.88	772.54	-140.56	717.67	623.65	94.02	7.633	
4,950.00	3,862.75	3,826.53	3,860.83	17.01	80.26	-132.84	772.55	-140.56	750.04	656.39	93.65	8.009	
5,000.00	3,858.78	3,822.54	3,856.84	17.25	80.15	-135.55	772.57	-140.56	784.25	690.97	93.28	8.407	
5,050.00	3,854.82	3,818.58	3,852.88	17.50	80.04	-138.02	772.58	-140.56	820.06	727.12	92.94	8.824	
5,100.00	3,850.85	3,814.64	3,848.95	17.75	79.94	-140.29	772.59	-140.56	857.27	764.68	92.60	9.258	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT L 153 - OH - OH

Offset Site Error: 0.00 usft
Offset Well Error: 0.00 usft

Survey Program: 461-INC-ONLY

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,150.00	3,846.88	3,810.74	3,845.04	18.01	79.83	-142.36	772.60	-140.56	895.71	803.44	92.28	9.707	
5,200.00	3,842.91	3,806.86	3,841.17	18.27	79.72	-144.26	772.61	-140.56	935.23	843.26	91.97	10.169	
5,250.00	3,838.95	3,803.01	3,837.32	18.54	79.62	-146.01	772.62	-140.56	975.69	884.01	91.68	10.643	
5,300.00	3,834.98	3,799.19	3,833.49	18.81	79.52	-147.61	772.63	-140.56	1,016.99	925.59	91.40	11.127	
5,350.00	3,831.01	3,795.39	3,829.70	19.08	79.41	-149.09	772.63	-140.56	1,059.02	967.88	91.14	11.620	
5,400.00	3,827.04	3,791.62	3,825.93	19.36	79.31	-150.45	772.64	-140.56	1,101.70	1,010.82	90.89	12.121	
5,450.00	3,823.08	3,787.87	3,822.18	19.64	79.21	-151.72	772.64	-140.56	1,144.97	1,054.31	90.65	12.630	
5,500.00	3,819.11	3,784.15	3,818.46	19.93	79.11	-152.89	772.64	-140.56	1,188.75	1,098.32	90.43	13.146	
5,550.00	3,815.14	3,780.46	3,814.77	20.22	79.01	-153.97	772.64	-140.56	1,232.99	1,142.77	90.22	13.667	
5,600.00	3,811.18	3,776.79	3,811.10	20.51	78.91	-154.98	772.65	-140.56	1,277.64	1,187.63	90.01	14.194	
5,650.00	3,807.21	3,772.86	3,807.21	20.80	78.80	-155.96	770.60	-140.56	1,324.54	1,234.73	89.81	14.749	
5,700.00	3,803.24	3,768.89	3,803.24	21.10	78.69	-156.84	770.60	-140.56	1,369.91	1,280.30	89.61	15.287	
5,750.00	3,799.27	3,764.93	3,799.27	21.40	78.59	-157.66	770.60	-140.56	1,415.58	1,326.16	89.42	15.830	
5,800.00	3,795.31	3,760.96	3,795.31	21.70	78.48	-158.43	770.60	-140.56	1,461.53	1,372.28	89.24	16.377	
5,850.00	3,791.34	3,756.99	3,791.34	22.01	78.37	-159.15	770.60	-140.56	1,507.72	1,418.65	89.07	16.927	
5,900.00	3,787.37	3,753.03	3,787.37	22.31	78.26	-159.83	770.60	-140.56	1,554.14	1,465.23	88.90	17.481	
5,950.00	3,783.41	3,749.06	3,783.41	22.63	78.15	-160.47	770.60	-140.56	1,600.76	1,512.02	88.74	18.039	
6,000.00	3,779.44	3,745.09	3,779.44	22.94	78.05	-161.08	770.60	-140.56	1,647.57	1,558.99	88.58	18.599	
6,050.00	3,775.47	3,741.12	3,775.47	23.25	77.94	-161.65	770.60	-140.56	1,694.56	1,606.13	88.43	19.162	
6,100.00	3,771.50	3,737.16	3,771.50	23.57	77.83	-162.19	770.60	-140.56	1,741.70	1,653.42	88.28	19.729	
6,150.00	3,767.54	3,733.19	3,767.54	23.89	77.72	-162.70	770.60	-140.56	1,788.99	1,700.85	88.14	20.297	
6,200.00	3,763.57	3,729.22	3,763.57	24.21	77.62	-163.18	770.60	-140.56	1,836.42	1,748.42	88.00	20.869	
6,250.00	3,759.60	3,725.26	3,759.60	24.53	77.51	-163.64	770.60	-140.56	1,883.97	1,796.11	87.86	21.442	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT M 151 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 1100-GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	16.00	0.00	0.00	-27.64	280.52	-146.91	317.06				
50.00	50.00	34.04	50.04	0.92	0.06	-27.64	280.52	-146.91	316.66	315.67	0.98	321.945	
100.00	100.00	84.10	100.10	0.92	0.15	-27.65	280.50	-146.92	316.65	315.58	1.07	295.682	
150.00	150.00	134.16	150.16	1.23	0.23	-27.65	280.46	-146.94	316.63	315.17	1.46	216.977	
200.00	200.00	184.22	200.22	1.53	0.32	-27.66	280.42	-146.97	316.60	314.75	1.85	171.353	
250.00	250.00	234.28	250.28	1.74	0.41	-27.67	280.35	-147.01	316.56	314.41	2.15	147.316	
300.00	300.00	284.34	300.34	1.95	0.50	-27.69	280.27	-147.05	316.51	314.06	2.45	129.186	
303.90	303.90	288.25	304.25	1.97	0.50	-27.69	280.26	-147.06	316.50	314.03	2.47	127.973	CC, ES
350.00	350.00	334.40	350.40	2.22	0.58	-27.75	280.17	-147.11	316.80	314.04	2.77	114.566	
400.00	399.98	384.44	400.44	2.51	0.67	-27.91	280.06	-147.17	317.79	314.68	3.11	102.111	
450.00	449.93	434.46	450.45	2.75	0.76	-28.16	279.94	-147.25	319.49	316.08	3.41	93.651	
500.00	499.84	484.42	500.42	3.00	0.85	-28.50	279.79	-147.33	321.89	318.18	3.71	86.651	
550.00	549.68	534.32	550.32	3.23	0.93	-28.92	279.64	-147.42	325.02	321.01	4.01	81.134	
600.00	599.45	584.15	600.15	3.46	1.02	-29.43	279.47	-147.52	328.86	324.56	4.30	76.474	
650.00	649.13	633.89	649.88	3.68	1.11	-30.01	279.28	-147.63	333.45	328.86	4.59	72.634	
700.00	698.70	683.51	699.51	3.91	1.19	-30.65	279.08	-147.74	338.79	333.91	4.88	69.356	
750.00	748.15	733.02	749.02	4.07	1.28	-31.36	278.86	-147.87	344.89	339.77	5.12	67.319	
800.00	797.49	782.41	798.40	4.21	1.37	-32.10	278.63	-148.00	351.67	346.33	5.34	65.888	
850.00	846.80	831.78	847.77	4.39	1.45	-32.83	278.38	-148.14	358.59	352.98	5.60	63.999	
900.00	896.12	881.15	897.14	4.58	1.54	-33.54	278.12	-148.30	365.55	359.68	5.87	62.281	
950.00	945.44	930.52	946.51	4.76	1.63	-34.22	277.84	-148.46	372.56	366.42	6.14	60.712	
1,000.00	994.75	979.89	995.88	4.95	1.71	-34.87	277.55	-148.62	379.61	373.20	6.40	59.272	
1,050.00	1,044.07	1,029.26	1,045.25	5.14	1.80	-35.51	277.24	-148.80	386.70	380.02	6.68	57.912	
1,100.00	1,093.39	1,078.63	1,094.62	5.33	1.89	-36.12	276.92	-148.99	393.83	386.88	6.95	56.656	
1,150.00	1,142.70	1,127.90	1,143.89	5.53	2.02	-36.71	276.60	-149.17	401.00	393.73	7.28	55.105	
1,200.00	1,192.02	1,177.11	1,193.10	5.73	2.19	-37.28	276.31	-149.32	408.23	400.59	7.64	53.432	
1,250.00	1,241.34	1,226.11	1,242.10	5.93	2.36	-37.81	276.09	-149.42	415.51	407.50	8.01	51.902	
1,300.00	1,290.66	1,274.93	1,290.91	6.13	2.53	-38.31	275.98	-149.47	422.87	414.50	8.37	50.518	
1,350.00	1,339.97	1,323.72	1,339.71	6.33	2.70	-38.79	275.97	-149.48	430.33	421.59	8.74	49.247	
1,400.00	1,389.29	1,372.49	1,388.47	6.54	2.87	-39.24	276.02	-149.51	437.88	428.77	9.11	48.086	
1,450.00	1,438.61	1,421.47	1,437.46	6.75	3.04	-39.67	276.12	-149.57	445.51	436.03	9.48	47.008	
1,500.00	1,487.92	1,470.77	1,486.75	6.95	3.21	-40.09	276.24	-149.64	453.17	443.32	9.85	46.005	
1,550.00	1,537.24	1,519.63	1,535.62	7.16	3.38	-40.50	276.35	-149.71	460.87	450.65	10.22	45.078	
1,600.00	1,586.56	1,567.85	1,583.83	7.37	3.55	-40.89	276.57	-149.80	468.68	458.09	10.59	44.238	
1,650.00	1,635.88	1,616.57	1,632.56	7.58	3.72	-41.26	276.90	-149.93	476.62	465.65	10.97	43.450	
1,700.00	1,685.19	1,666.36	1,682.35	7.79	3.89	-41.62	277.18	-150.09	484.56	473.21	11.35	42.690	
1,750.00	1,734.51	1,715.78	1,731.76	8.00	4.06	-41.98	277.36	-150.29	492.48	480.74	11.73	41.977	
1,800.00	1,783.83	1,764.41	1,780.39	8.22	4.23	-42.33	277.56	-150.52	500.45	488.34	12.11	41.326	
1,850.00	1,833.14	1,812.60	1,828.58	8.43	4.40	-42.68	277.80	-150.80	508.50	496.02	12.49	40.724	
1,900.00	1,882.46	1,859.63	1,875.61	8.64	4.56	-43.01	278.12	-151.22	516.75	503.89	12.86	40.192	
1,950.00	1,931.78	1,906.91	1,922.88	8.86	4.73	-43.35	278.54	-151.84	525.22	511.99	13.23	39.698	
2,000.00	1,981.09	1,956.16	1,972.13	9.07	4.90	-43.68	278.99	-152.57	533.79	520.17	13.62	39.205	
2,050.00	2,030.41	2,005.41	2,021.37	9.29	5.07	-44.00	279.42	-153.32	542.36	528.36	14.00	38.735	
2,100.00	2,079.73	2,054.66	2,070.60	9.50	5.25	-44.32	279.82	-154.08	550.94	536.55	14.39	38.291	
2,150.00	2,129.05	2,103.91	2,119.85	9.72	5.42	-44.63	280.21	-154.85	559.53	544.76	14.78	37.868	
2,200.00	2,178.36	2,153.35	2,169.28	9.94	5.59	-44.93	280.55	-155.63	568.12	552.96	15.17	37.462	
2,250.00	2,227.68	2,202.91	2,218.83	10.16	5.77	-45.23	280.84	-156.45	576.71	561.15	15.56	37.072	
2,300.00	2,277.00	2,254.56	2,270.48	10.37	5.95	-45.52	281.09	-157.16	585.18	569.22	15.96	36.666	
2,350.00	2,326.31	2,305.67	2,321.59	10.59	6.13	-45.78	281.28	-157.63	593.46	577.10	16.36	36.274	
2,400.00	2,375.63	2,352.23	2,368.14	10.81	6.29	-46.04	281.45	-158.13	601.81	585.07	16.73	35.962	
2,450.00	2,424.95	2,400.00	2,415.91	11.03	6.46	-46.32	281.64	-158.92	610.39	593.27	17.12	35.660	
2,500.00	2,474.26	2,451.19	2,467.09	11.25	6.63	-46.59	281.81	-159.77	618.97	601.45	17.52	35.329	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT M 151 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 1100-GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,550.00	2,523.58	2,503.71	2,519.61	11.46	6.82	-46.84	281.90	-160.32	627.28	609.34	17.93	34.982	
2,600.00	2,572.90	2,553.02	2,568.91	11.68	6.99	-47.07	281.94	-160.71	635.48	617.15	18.32	34.681	
2,650.00	2,622.22	2,602.36	2,618.25	11.90	7.16	-47.30	281.98	-161.09	643.68	624.96	18.72	34.392	
2,700.00	2,671.53	2,652.35	2,668.24	12.12	7.34	-47.52	282.01	-161.45	651.87	632.75	19.11	34.106	
2,750.00	2,720.85	2,702.31	2,718.20	12.34	7.51	-47.74	282.02	-161.74	660.00	640.49	19.51	33.830	
2,800.00	2,770.17	2,751.27	2,767.16	12.56	7.69	-47.95	282.06	-161.99	668.14	648.24	19.90	33.574	
2,850.00	2,819.48	2,800.22	2,816.11	12.77	7.86	-48.14	282.14	-162.23	676.30	656.03	20.28	33.354	
2,900.00	2,868.87	2,849.57	2,865.45	12.97	8.03	-48.39	282.27	-162.44	683.80	663.15	20.65	33.116	
2,950.00	2,918.36	2,899.04	2,914.92	13.16	8.20	-48.76	282.46	-162.60	689.43	668.42	21.01	32.821	
3,000.00	2,967.83	2,947.57	2,963.45	13.32	8.37	-49.28	282.70	-162.76	693.22	671.90	21.33	32.506	
3,050.00	3,017.14	2,995.92	3,011.81	13.44	8.54	-49.95	282.96	-162.98	695.25	673.65	21.60	32.186	
3,100.00	3,066.14	3,045.97	3,061.85	13.52	8.72	-50.75	283.24	-163.20	695.52	673.67	21.85	31.835	
3,150.00	3,114.72	3,095.79	3,111.67	13.57	8.89	-51.71	283.51	-163.33	693.99	671.93	22.07	31.450	
3,200.00	3,162.74	3,140.45	3,156.33	13.60	9.05	-52.82	283.74	-163.51	690.93	668.69	22.24	31.068	
3,250.00	3,210.06	3,184.00	3,199.88	13.61	9.20	-54.10	283.99	-163.98	686.64	664.24	22.40	30.657	
3,300.00	3,256.55	3,231.18	3,247.05	13.62	9.36	-55.57	284.29	-164.67	681.17	658.59	22.58	30.165	
3,350.00	3,302.09	3,280.06	3,295.93	13.61	9.53	-57.20	284.60	-165.14	674.33	651.55	22.78	29.600	
3,400.00	3,346.56	3,324.68	3,340.55	13.61	9.69	-59.00	284.92	-165.37	666.34	643.38	22.96	29.022	
3,450.00	3,389.82	3,366.05	3,381.91	13.60	9.84	-61.00	285.36	-165.62	657.66	634.54	23.12	28.442	
3,500.00	3,431.77	3,406.40	3,422.26	13.60	9.98	-63.20	285.93	-165.93	648.55	625.26	23.29	27.848	
3,550.00	3,472.28	3,445.80	3,461.66	13.59	10.12	-65.61	286.57	-166.31	639.24	615.78	23.46	27.248	
3,600.00	3,511.25	3,483.81	3,499.65	13.59	10.25	-68.26	287.22	-166.75	630.01	606.38	23.63	26.658	
3,650.00	3,548.57	3,520.37	3,536.20	13.60	10.38	-71.14	287.87	-167.26	621.16	597.36	23.81	26.093	
3,700.00	3,584.14	3,555.26	3,571.09	13.61	10.50	-74.26	288.46	-167.83	613.04	589.06	23.97	25.570	
3,750.00	3,617.85	3,588.31	3,604.13	13.63	10.61	-77.62	288.97	-168.45	605.99	581.86	24.14	25.107	
3,800.00	3,649.62	3,619.32	3,635.13	13.66	10.72	-81.21	289.44	-169.10	600.40	576.12	24.28	24.724	
3,850.00	3,679.37	3,648.46	3,664.26	13.70	10.83	-84.99	289.93	-169.76	596.64	572.22	24.42	24.436	
3,900.00	3,707.00	3,675.78	3,691.56	13.74	10.92	-88.95	290.46	-170.44	595.03	570.51	24.53	24.260	
3,908.10	3,711.28	3,680.03	3,695.81	13.75	10.94	-89.60	290.54	-170.55	595.00	570.45	24.54	24.242	
3,950.00	3,732.54	3,701.33	3,717.09	13.80	11.01	-93.03	290.99	-171.11	595.90	571.29	24.62	24.208	SF
4,000.00	3,757.54	3,727.35	3,743.10	13.87	11.10	-97.11	291.57	-171.82	599.71	575.02	24.69	24.285	
4,050.00	3,782.54	3,753.38	3,769.12	13.95	11.19	-101.12	292.14	-172.52	606.51	581.74	24.77	24.487	
4,100.00	3,807.54	3,779.42	3,795.14	14.04	11.28	-105.02	292.72	-173.22	616.20	591.39	24.82	24.829	
4,150.00	3,832.37	3,805.44	3,821.14	14.13	11.38	-108.79	293.31	-173.91	628.68	603.83	24.85	25.302	
4,200.00	3,854.28	3,828.90	3,844.59	14.23	11.46	-112.54	293.80	-174.51	644.27	619.42	24.85	25.922	
4,250.00	3,872.20	3,848.16	3,863.85	14.35	11.53	-116.24	294.19	-174.98	663.16	638.33	24.82	26.718	
4,300.00	3,885.97	3,863.13	3,878.80	14.48	11.58	-119.84	294.46	-175.32	685.27	660.52	24.75	27.690	
4,350.00	3,895.51	3,873.71	3,889.38	14.62	11.61	-123.28	294.65	-175.56	710.42	685.79	24.64	28.837	
4,400.00	3,900.74	3,879.88	3,895.55	14.77	11.64	-126.52	294.76	-175.69	738.31	713.82	24.49	30.150	
4,450.00	3,901.61	3,881.63	3,897.29	14.93	11.64	-129.55	294.79	-175.73	768.52	744.22	24.31	31.617	
4,500.00	3,898.45	3,879.32	3,894.99	15.09	11.63	-132.34	294.75	-175.68	800.65	776.55	24.10	33.224	
4,550.00	3,894.49	3,876.22	3,891.89	15.28	11.62	-134.91	294.70	-175.61	834.49	810.58	23.90	34.913	
4,600.00	3,890.52	3,873.14	3,888.81	15.47	11.61	-137.28	294.64	-175.54	869.87	846.17	23.70	36.700	
4,650.00	3,886.55	3,870.08	3,885.75	15.67	11.60	-139.45	294.59	-175.48	906.63	883.11	23.52	38.546	
4,700.00	3,882.59	3,867.04	3,882.71	15.88	11.59	-141.46	294.54	-175.41	944.59	921.25	23.34	40.469	
4,750.00	3,878.62	3,864.02	3,879.70	16.09	11.58	-143.31	294.48	-175.34	983.62	960.44	23.18	42.436	
4,800.00	3,874.65	3,861.02	3,876.70	16.31	11.57	-145.01	294.43	-175.27	1,023.60	1,000.57	23.02	44.464	
4,850.00	3,870.68	3,858.05	3,873.72	16.54	11.56	-146.59	294.37	-175.21	1,064.41	1,041.53	22.88	46.525	
4,900.00	3,866.72	3,855.09	3,870.77	16.77	11.55	-148.05	294.32	-175.14	1,105.97	1,083.23	22.74	48.633	
4,950.00	3,862.75	3,852.16	3,867.83	17.01	11.54	-149.40	294.26	-175.07	1,148.20	1,125.58	22.62	50.765	
5,000.00	3,858.78	3,849.24	3,864.92	17.25	11.53	-150.66	294.21	-175.00	1,191.02	1,168.52	22.50	52.936	
5,050.00	3,854.82	3,846.34	3,862.02	17.50	11.52	-151.82	294.15	-174.94	1,234.37	1,211.98	22.39	55.123	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: EMPIRE ABO UNIT M 151 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 1100-GYRO-NS

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	3,850.85	3,843.46	3,859.15	17.75	11.51	-152.91	294.10	-174.87	1,278.20	1,255.91	22.29	57.342	
5,150.00	3,846.88	3,840.61	3,856.29	18.01	11.50	-153.93	294.04	-174.80	1,322.47	1,300.27	22.20	59.571	
5,200.00	3,842.91	3,837.77	3,853.45	18.27	11.49	-154.88	293.98	-174.73	1,367.12	1,345.01	22.11	61.826	
5,250.00	3,838.95	3,834.95	3,850.63	18.54	11.48	-155.77	293.93	-174.66	1,412.13	1,390.09	22.03	64.089	
5,300.00	3,834.98	3,832.15	3,847.83	18.81	11.47	-156.60	293.87	-174.59	1,457.45	1,435.49	21.96	66.371	
5,350.00	3,831.01	3,829.36	3,845.05	19.08	11.46	-157.38	293.81	-174.53	1,503.07	1,481.18	21.89	68.658	
5,400.00	3,827.04	3,826.60	3,842.29	19.36	11.45	-158.12	293.76	-174.46	1,548.95	1,527.12	21.83	70.962	
5,450.00	3,823.08	3,823.85	3,839.54	19.64	11.44	-158.82	293.70	-174.39	1,595.07	1,573.30	21.77	73.268	
5,500.00	3,819.11	3,821.12	3,836.82	19.93	11.43	-159.47	293.64	-174.32	1,641.42	1,619.71	21.72	75.587	
5,550.00	3,815.14	3,818.41	3,834.11	20.22	11.42	-160.09	293.59	-174.25	1,687.97	1,666.31	21.67	77.907	
5,600.00	3,811.18	3,815.72	3,831.41	20.51	11.41	-160.68	293.53	-174.18	1,734.71	1,713.09	21.62	80.236	
5,650.00	3,807.21	3,813.04	3,828.74	20.80	11.40	-161.23	293.47	-174.11	1,781.62	1,760.04	21.58	82.564	
5,700.00	3,803.24	3,810.38	3,826.08	21.10	11.39	-161.76	293.41	-174.04	1,828.69	1,807.15	21.54	84.903	
5,750.00	3,799.27	3,807.74	3,823.44	21.40	11.38	-162.26	293.36	-173.97	1,875.91	1,854.41	21.50	87.238	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: HUDSON-STATE A 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,750.00	3,719.93	3,718.93	3,719.93	27.84	148.36	12.16	4,900.41	775.64	1,865.61	1,707.14	158.47	11.773	
6,800.00	3,715.96	3,714.96	3,715.96	28.18	148.20	12.52	4,900.41	775.64	1,817.08	1,658.66	158.42	11.470	
6,850.00	3,712.00	3,711.00	3,712.00	28.52	148.04	12.89	4,900.41	775.64	1,768.63	1,610.24	158.39	11.166	
6,900.00	3,708.03	3,707.03	3,708.03	28.86	147.88	13.28	4,900.41	775.64	1,720.25	1,561.89	158.36	10.863	
6,950.00	3,704.06	3,703.06	3,704.06	29.20	147.72	13.70	4,900.41	775.64	1,671.97	1,513.61	158.35	10.558	
7,000.00	3,700.09	3,699.09	3,700.09	29.54	147.56	14.14	4,900.41	775.64	1,623.77	1,465.42	158.36	10.254	
7,050.00	3,696.13	3,695.13	3,696.13	29.89	147.41	14.61	4,900.41	775.64	1,575.68	1,417.31	158.37	9.949	
7,100.00	3,692.16	3,691.16	3,692.16	30.23	147.25	15.11	4,900.41	775.64	1,527.70	1,369.29	158.41	9.644	
7,150.00	3,688.19	3,687.19	3,688.19	30.58	147.09	15.64	4,900.41	775.64	1,479.85	1,321.38	158.46	9.339	
7,200.00	3,684.23	3,683.23	3,684.23	30.92	146.93	16.21	4,900.41	775.64	1,432.13	1,273.59	158.54	9.033	
7,250.00	3,680.26	3,679.26	3,680.26	31.27	146.77	16.81	4,900.41	775.64	1,384.56	1,225.92	158.64	8.728	
7,300.00	3,676.29	3,675.29	3,676.29	31.62	146.61	17.46	4,900.41	775.64	1,337.15	1,178.39	158.76	8.423	
7,350.00	3,672.32	3,671.32	3,672.32	31.97	146.45	18.16	4,900.41	775.64	1,289.93	1,131.02	158.91	8.117	
7,400.00	3,668.36	3,667.36	3,668.36	32.32	146.29	18.91	4,900.41	775.64	1,242.91	1,083.82	159.10	7.812	
7,450.00	3,664.39	3,663.39	3,664.39	32.67	146.14	19.71	4,900.41	775.64	1,196.12	1,036.81	159.32	7.508	
7,500.00	3,660.42	3,659.42	3,660.42	33.02	145.98	20.59	4,900.41	775.64	1,149.59	990.02	159.58	7.204	
7,550.00	3,656.46	3,655.46	3,656.46	33.37	145.82	21.53	4,900.41	775.64	1,103.35	943.47	159.88	6.901	
7,600.00	3,652.49	3,651.49	3,652.49	33.73	145.66	22.56	4,900.41	775.64	1,057.44	897.19	160.24	6.599	
7,650.00	3,648.52	3,647.52	3,648.52	34.08	145.50	23.68	4,900.41	775.64	1,011.89	851.23	160.66	6.298	
7,700.00	3,644.55	3,643.55	3,644.55	34.44	145.34	24.91	4,900.41	775.64	966.77	805.64	161.14	6.000	
7,750.00	3,640.59	3,639.59	3,640.59	34.79	145.18	26.26	4,900.41	775.64	922.14	760.45	161.69	5.703	
7,800.00	3,636.62	3,635.62	3,636.62	35.15	145.02	27.74	4,900.41	775.64	878.07	715.75	162.32	5.409	
7,850.00	3,632.65	3,631.65	3,632.65	35.50	144.87	29.38	4,900.41	775.64	834.65	671.60	163.05	5.119	
7,900.00	3,628.69	3,627.69	3,628.69	35.86	144.71	31.19	4,900.41	775.64	791.98	628.11	163.88	4.833	
7,950.00	3,624.72	3,623.72	3,624.72	36.22	144.55	33.21	4,900.41	775.64	750.20	585.39	164.82	4.552	
8,000.00	3,620.75	3,619.75	3,620.75	36.57	144.39	35.47	4,900.41	775.64	709.47	543.58	165.88	4.277	
8,050.00	3,616.78	3,615.78	3,616.78	36.93	144.23	37.99	4,900.41	775.64	669.96	502.88	167.08	4.010	
8,100.00	3,612.82	3,611.82	3,612.82	37.29	144.07	40.83	4,900.41	775.64	631.92	463.49	168.43	3.752	
8,150.00	3,608.85	3,607.85	3,608.85	37.65	143.91	44.02	4,900.41	775.64	595.62	425.70	169.92	3.505	
8,200.00	3,604.88	3,603.88	3,604.88	38.01	143.76	47.61	4,900.41	775.64	561.40	389.84	171.56	3.272	
8,250.00	3,600.92	3,599.92	3,600.92	38.37	143.60	51.65	4,900.41	775.64	529.67	356.34	173.33	3.056	
8,300.00	3,596.95	3,595.95	3,596.95	38.73	143.44	56.18	4,900.41	775.64	500.90	325.71	175.19	2.859	
8,350.00	3,592.98	3,591.98	3,592.98	39.10	143.28	61.22	4,900.41	775.64	475.62	298.53	177.09	2.686	
8,400.00	3,589.01	3,588.01	3,589.01	39.46	143.12	66.79	4,900.41	775.64	454.42	275.49	178.93	2.540	
8,450.00	3,585.05	3,584.05	3,585.05	39.82	142.96	72.83	4,900.41	775.64	437.89	257.28	180.61	2.425	
8,500.00	3,581.08	3,580.08	3,581.08	40.18	142.80	79.27	4,900.41	775.64	426.58	244.59	181.99	2.344	
8,550.00	3,577.11	3,576.11	3,577.11	40.55	142.64	85.97	4,900.41	775.64	420.91	237.96	182.94	2.301	
8,573.40	3,575.26	3,574.26	3,575.26	40.72	142.57	89.14	4,900.41	775.64	420.26	237.04	183.22	2.294	CC, ES, SF
8,600.00	3,573.14	3,572.14	3,573.14	40.91	142.49	92.75	4,900.41	775.64	421.09	237.70	183.39	2.296	
8,650.00	3,569.18	3,568.18	3,569.18	41.27	142.33	99.44	4,900.41	775.64	427.14	243.82	183.31	2.330	
8,700.00	3,565.21	3,564.21	3,565.21	41.64	142.17	105.86	4,900.41	775.64	438.80	256.05	182.74	2.401	
8,750.00	3,561.24	3,560.24	3,561.24	42.00	142.01	111.87	4,900.41	775.64	455.64	273.87	181.77	2.507	
8,800.00	3,557.28	3,556.28	3,557.28	42.37	141.85	117.40	4,900.41	775.64	477.11	296.61	180.51	2.643	
8,850.00	3,553.31	3,552.31	3,553.31	42.73	141.69	122.41	4,900.41	775.64	502.63	323.56	179.07	2.807	
8,900.00	3,549.34	3,548.34	3,549.34	43.10	141.53	126.91	4,900.41	775.64	531.61	354.07	177.54	2.994	
8,950.00	3,545.37	3,544.37	3,545.37	43.46	141.37	130.92	4,900.41	775.64	563.51	387.51	176.00	3.202	
9,000.00	3,541.41	3,540.41	3,541.41	43.83	141.22	134.48	4,900.41	775.64	597.87	423.38	174.50	3.426	
9,050.00	3,537.44	3,536.44	3,537.44	44.20	141.06	137.65	4,900.41	775.64	634.29	461.24	173.05	3.665	
9,100.00	3,533.47	3,532.47	3,533.47	44.56	140.90	140.46	4,900.41	775.64	672.44	500.75	171.69	3.917	
9,150.00	3,529.51	3,528.51	3,529.51	44.93	140.74	142.97	4,900.41	775.64	712.03	541.61	170.41	4.178	
9,200.00	3,525.54	3,524.54	3,525.54	45.30	140.58	145.21	4,900.41	775.64	752.84	583.61	169.22	4.449	
9,250.00	3,521.57	3,520.57	3,521.57	45.67	140.42	147.22	4,900.41	775.64	794.68	626.56	168.12	4.727	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: HUDSON-STATE A 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,300.00	3,517.60	3,516.60	3,517.60	46.04	140.26	149.02	4,900.41	775.64	837.40	670.30	167.09	5.012	
9,350.00	3,513.64	3,512.64	3,513.64	46.40	140.11	150.65	4,900.41	775.64	880.86	714.72	166.14	5.302	
9,400.00	3,509.67	3,508.67	3,509.67	46.77	139.95	152.12	4,900.41	775.64	924.97	759.71	165.26	5.597	
9,450.00	3,505.70	3,504.70	3,505.70	47.14	139.79	153.46	4,900.41	775.64	969.64	805.20	164.44	5.897	
9,500.00	3,501.74	3,500.74	3,501.74	47.51	139.63	154.68	4,900.41	775.64	1,014.79	851.11	163.68	6.200	
9,521.87	3,500.00	3,499.00	3,500.00	47.67	139.56	155.18	4,900.41	775.64	1,034.67	871.31	163.36	6.334	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: MALCO REFINING-FED - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 500-UNKNOWN — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	20.00	0.00	0.00	-87.93	24.87	-689.44	690.18				
50.00	50.00	30.00	50.00	0.92	1.20	-87.93	24.87	-689.44	689.89	687.77	2.12	325.511	
100.00	100.00	80.00	100.00	0.92	3.19	-87.93	24.87	-689.44	689.89	685.78	4.11	167.799	
150.00	150.00	130.00	150.00	1.23	5.18	-87.93	24.87	-689.44	689.89	683.48	6.40	107.720	
200.00	200.00	180.00	200.00	1.53	7.17	-87.93	24.87	-689.44	689.89	681.19	8.70	79.321	
250.00	250.00	230.00	250.00	1.74	9.16	-87.93	24.87	-689.44	689.89	678.99	10.90	63.273	
300.00	300.00	280.00	300.00	1.95	11.16	-87.93	24.87	-689.44	689.89	676.78	13.11	52.626	CC
350.00	350.00	330.00	350.00	2.22	13.15	-87.92	24.87	-689.44	690.29	674.92	15.36	44.936	
400.00	399.98	379.98	399.98	2.51	15.14	-87.87	24.87	-689.44	691.48	673.86	17.62	39.253	
450.00	449.93	429.93	449.93	2.75	17.13	-87.80	24.87	-689.44	693.47	673.64	19.83	34.965	ES
500.00	499.84	479.84	499.84	3.00	19.12	-87.70	24.87	-689.44	696.26	674.21	22.05	31.576	
550.00	549.68	529.68	549.68	3.23	21.11	-87.57	24.87	-689.44	699.84	675.58	24.26	28.851	
600.00	599.45	579.45	599.45	3.46	23.10	-87.41	24.87	-689.44	704.22	677.76	26.47	26.609	
650.00	649.13	629.13	649.13	3.68	25.09	-87.22	24.87	-689.44	709.41	680.74	28.67	24.747	
700.00	698.70	678.70	698.70	3.91	27.07	-87.02	24.87	-689.44	715.39	684.53	30.86	23.179	
750.00	748.15	728.15	748.15	4.07	29.05	-86.78	24.87	-689.44	722.18	689.19	33.00	21.886	
800.00	797.49	777.49	797.49	4.21	31.02	-86.53	24.87	-689.44	729.67	694.57	35.10	20.788	
850.00	846.80	826.80	846.80	4.39	32.99	-86.28	24.87	-689.44	737.27	700.01	37.25	19.791	
900.00	896.12	876.12	896.12	4.58	34.96	-86.04	24.87	-689.44	744.88	705.47	39.40	18.903	
950.00	945.44	925.44	945.44	4.76	36.94	-85.80	24.87	-689.44	752.50	710.94	41.56	18.107	
1,000.00	994.75	974.75	994.75	4.95	38.91	-85.57	24.87	-689.44	760.13	716.42	43.71	17.390	
1,050.00	1,044.07	1,024.07	1,044.07	5.14	40.88	-85.34	24.87	-689.44	767.78	721.91	45.87	16.738	
1,100.00	1,093.39	1,073.39	1,093.39	5.33	42.86	-85.11	24.87	-689.44	775.44	727.41	48.03	16.145	
1,150.00	1,142.70	1,122.70	1,142.70	5.53	44.83	-84.89	24.87	-689.44	783.11	732.91	50.19	15.602	
1,200.00	1,192.02	1,172.02	1,192.02	5.73	46.80	-84.68	24.87	-689.44	790.79	738.43	52.36	15.104	
1,250.00	1,241.34	1,221.34	1,241.34	5.93	48.77	-84.46	24.87	-689.44	798.48	743.96	54.53	14.644	
1,300.00	1,290.66	1,270.66	1,290.66	6.13	50.75	-84.26	24.87	-689.44	806.19	749.49	56.69	14.220	
1,350.00	1,339.97	1,319.97	1,339.97	6.33	52.72	-84.05	24.87	-689.44	813.90	755.04	58.86	13.827	
1,400.00	1,389.29	1,369.29	1,389.29	6.54	54.69	-83.85	24.87	-689.44	821.62	760.59	61.04	13.461	
1,450.00	1,438.61	1,418.61	1,438.61	6.75	56.66	-83.65	24.87	-689.44	829.36	766.15	63.21	13.121	
1,500.00	1,487.92	1,467.92	1,487.92	6.95	58.64	-83.46	24.87	-689.44	837.10	771.72	65.38	12.803	
1,550.00	1,537.24	1,517.24	1,537.24	7.16	60.61	-83.27	24.87	-689.44	844.85	777.30	67.56	12.505	
1,600.00	1,586.56	1,566.56	1,586.56	7.37	62.58	-83.09	24.87	-689.44	852.62	782.88	69.74	12.226	
1,650.00	1,635.88	1,615.88	1,635.88	7.58	64.56	-82.90	24.87	-689.44	860.39	788.47	71.91	11.964	
1,700.00	1,685.19	1,665.19	1,685.19	7.79	66.53	-82.73	24.87	-689.44	868.17	794.07	74.09	11.717	
1,750.00	1,734.51	1,714.51	1,734.51	8.00	68.50	-82.55	24.87	-689.44	875.95	799.68	76.27	11.484	
1,800.00	1,783.83	1,763.83	1,783.83	8.22	70.47	-82.38	24.87	-689.44	883.75	805.30	78.45	11.265	
1,850.00	1,833.14	1,813.14	1,833.14	8.43	72.45	-82.21	24.87	-689.44	891.55	810.92	80.64	11.057	
1,900.00	1,882.46	1,862.46	1,882.46	8.64	74.42	-82.04	24.87	-689.44	899.37	816.55	82.82	10.860	
1,950.00	1,931.78	1,911.78	1,931.78	8.86	76.39	-81.88	24.87	-689.44	907.18	822.18	85.00	10.673	
2,000.00	1,981.09	1,961.09	1,981.09	9.07	78.36	-81.71	24.87	-689.44	915.01	827.83	87.18	10.495	
2,050.00	2,030.41	2,010.41	2,030.41	9.29	80.34	-81.56	24.87	-689.44	922.84	833.48	89.37	10.326	
2,100.00	2,079.73	2,059.73	2,079.73	9.50	82.31	-81.40	24.87	-689.44	930.68	839.13	91.55	10.165	
2,150.00	2,129.05	2,109.05	2,129.05	9.72	84.28	-81.25	24.87	-689.44	938.53	844.79	93.74	10.012	
2,200.00	2,178.36	2,158.36	2,178.36	9.94	86.25	-81.10	24.87	-689.44	946.39	850.46	95.93	9.866	
2,250.00	2,227.68	2,207.68	2,227.68	10.16	88.23	-80.95	24.87	-689.44	954.25	856.13	98.11	9.726	
2,300.00	2,277.00	2,257.00	2,277.00	10.37	90.20	-80.80	24.87	-689.44	962.11	861.81	100.30	9.592	
2,350.00	2,326.31	2,306.31	2,326.31	10.59	92.17	-80.66	24.87	-689.44	969.99	867.50	102.49	9.464	
2,400.00	2,375.63	2,355.63	2,375.63	10.81	94.15	-80.52	24.87	-689.44	977.86	873.19	104.67	9.342	
2,450.00	2,424.95	2,404.95	2,424.95	11.03	96.12	-80.38	24.87	-689.44	985.75	878.89	106.86	9.224	
2,500.00	2,474.26	2,454.26	2,474.26	11.25	98.09	-80.24	24.87	-689.44	993.64	884.59	109.05	9.112	
2,550.00	2,523.58	2,503.58	2,523.58	11.46	100.06	-80.11	24.87	-689.44	1,001.53	890.29	111.24	9.003	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: MALCO REFINING-FED - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,552.90	2,572.90	11.68	102.04	-79.97	24.87	-689.44	1,009.44	896.00	113.43	8.899	
2,650.00	2,622.22	2,602.22	2,622.22	11.90	104.01	-79.84	24.87	-689.44	1,017.34	901.72	115.62	8.799	
2,700.00	2,671.53	2,651.53	2,671.53	12.12	105.98	-79.72	24.87	-689.44	1,025.25	907.44	117.81	8.703	
2,750.00	2,720.85	2,700.85	2,720.85	12.34	107.95	-79.59	24.87	-689.44	1,033.17	913.17	120.00	8.610	
2,800.00	2,770.17	2,750.17	2,770.17	12.56	109.93	-79.46	24.87	-689.44	1,041.09	918.90	122.19	8.520	
2,850.00	2,819.48	2,799.48	2,819.48	12.77	111.90	-79.34	24.87	-689.44	1,049.02	924.65	124.37	8.435	
2,900.00	2,868.87	2,848.87	2,868.87	12.97	113.87	-79.27	24.87	-689.44	1,056.69	930.15	126.54	8.350	
2,950.00	2,918.36	2,898.36	2,918.36	13.16	115.85	-79.33	24.87	-689.44	1,063.66	934.94	128.72	8.264	
3,000.00	2,967.83	2,947.83	2,967.83	13.32	117.83	-79.53	24.87	-689.44	1,069.89	939.02	130.87	8.175	
3,050.00	3,017.14	2,997.14	3,017.14	13.44	119.81	-79.86	24.87	-689.44	1,075.41	942.43	132.98	8.087	
3,100.00	3,066.14	3,046.14	3,066.14	13.52	121.77	-80.32	24.87	-689.44	1,080.24	945.19	135.05	7.999	
3,150.00	3,114.72	3,094.72	3,114.72	13.57	123.71	-80.90	24.87	-689.44	1,084.42	947.36	137.06	7.912	
3,200.00	3,162.74	3,142.74	3,162.74	13.60	125.63	-81.61	24.87	-689.44	1,088.01	948.99	139.03	7.826	
3,250.00	3,210.06	3,190.06	3,210.06	13.61	127.52	-82.45	24.87	-689.44	1,091.10	950.16	140.95	7.741	
3,300.00	3,256.55	3,236.55	3,256.55	13.62	129.38	-83.40	24.87	-689.44	1,093.79	950.97	142.82	7.659	
3,350.00	3,302.09	3,282.09	3,302.09	13.61	131.20	-84.47	24.87	-689.44	1,096.17	951.52	144.64	7.578	
3,400.00	3,346.56	3,326.56	3,346.56	13.61	132.98	-85.66	24.87	-689.44	1,098.37	951.95	146.42	7.502	
3,450.00	3,389.82	3,369.82	3,389.82	13.60	134.71	-86.96	24.87	-689.44	1,100.52	952.38	148.14	7.429	
3,500.00	3,431.77	3,411.77	3,431.77	13.60	136.39	-88.37	24.87	-689.44	1,102.77	952.97	149.81	7.361	
3,550.00	3,472.28	3,452.28	3,472.28	13.59	138.01	-89.89	24.87	-689.44	1,105.27	953.85	151.41	7.300	
3,600.00	3,511.25	3,491.25	3,511.25	13.59	139.57	-91.50	24.87	-689.44	1,108.16	955.20	152.96	7.245	
3,650.00	3,548.57	3,528.57	3,548.57	13.60	141.06	-93.21	24.87	-689.44	1,111.61	957.17	154.44	7.198	
3,700.00	3,584.14	3,564.14	3,584.14	13.61	142.49	-95.00	24.87	-689.44	1,115.78	959.93	155.85	7.159	
3,750.00	3,617.85	3,597.85	3,617.85	13.63	143.83	-96.88	24.87	-689.44	1,120.81	963.62	157.19	7.130	
3,800.00	3,649.62	3,629.62	3,649.62	13.66	145.10	-98.82	24.87	-689.44	1,126.84	968.39	158.45	7.112	
3,850.00	3,679.37	3,659.37	3,679.37	13.70	146.29	-100.83	24.87	-689.44	1,134.03	974.40	159.63	7.104	SF
3,900.00	3,707.00	3,687.00	3,707.00	13.74	147.40	-102.88	24.87	-689.44	1,142.47	981.75	160.73	7.108	
3,950.00	3,732.54	3,712.54	3,732.54	13.80	148.42	-104.97	24.87	-689.44	1,152.29	990.56	161.74	7.124	
4,000.00	3,757.54	3,737.54	3,757.54	13.87	149.42	-107.04	24.87	-689.44	1,163.61	1,000.88	162.73	7.151	
4,050.00	3,782.54	3,762.54	3,782.54	13.95	150.42	-109.06	24.87	-689.44	1,176.41	1,012.67	163.74	7.184	
4,100.00	3,807.54	3,787.54	3,807.54	14.04	151.42	-111.04	24.87	-689.44	1,190.65	1,025.90	164.75	7.227	
4,150.00	3,832.37	3,812.37	3,832.37	14.13	152.41	-112.98	24.87	-689.44	1,206.32	1,040.57	165.74	7.278	
4,200.00	3,854.28	3,834.28	3,854.28	14.23	153.29	-114.93	24.87	-689.44	1,223.94	1,057.31	166.63	7.345	
4,250.00	3,872.20	3,852.20	3,872.20	14.35	154.01	-116.89	24.87	-689.44	1,243.70	1,076.36	167.34	7.432	
4,300.00	3,885.97	3,865.97	3,885.97	14.48	154.56	-118.84	24.87	-689.44	1,265.53	1,097.65	167.88	7.538	
4,350.00	3,895.51	3,875.51	3,895.51	14.62	154.94	-120.77	24.87	-689.44	1,289.28	1,121.05	168.23	7.664	
4,400.00	3,900.74	3,880.74	3,900.74	14.77	155.15	-122.65	24.87	-689.44	1,314.78	1,146.37	168.40	7.807	
4,450.00	3,901.61	3,881.61	3,901.61	14.93	155.18	-124.46	24.87	-689.44	1,341.78	1,173.40	168.38	7.969	
4,500.00	3,898.45	3,878.45	3,898.45	15.09	155.06	-126.20	24.87	-689.44	1,370.02	1,201.84	168.19	8.146	
4,550.00	3,894.49	3,874.49	3,894.49	15.28	154.90	-127.87	24.87	-689.44	1,399.45	1,231.48	167.97	8.332	
4,600.00	3,890.52	3,870.52	3,890.52	15.47	154.74	-129.46	24.87	-689.44	1,430.00	1,262.26	167.74	8.525	
4,650.00	3,886.55	3,866.55	3,886.55	15.67	154.58	-130.99	24.87	-689.44	1,461.62	1,294.10	167.52	8.725	
4,700.00	3,882.59	3,862.59	3,882.59	15.88	154.42	-132.45	24.87	-689.44	1,494.23	1,326.94	167.29	8.932	
4,750.00	3,878.62	3,858.62	3,878.62	16.09	154.26	-133.85	24.87	-689.44	1,527.77	1,360.70	167.07	9.144	
4,800.00	3,874.65	3,854.65	3,874.65	16.31	154.11	-135.18	24.87	-689.44	1,562.18	1,395.34	166.85	9.363	
4,850.00	3,870.68	3,850.68	3,870.68	16.54	153.95	-136.46	24.87	-689.44	1,597.41	1,430.78	166.63	9.587	
4,900.00	3,866.72	3,846.72	3,866.72	16.77	153.79	-137.69	24.87	-689.44	1,633.40	1,466.99	166.41	9.816	
4,950.00	3,862.75	3,842.75	3,862.75	17.01	153.63	-138.86	24.87	-689.44	1,670.10	1,503.90	166.19	10.049	
5,000.00	3,858.78	3,838.78	3,858.78	17.25	153.47	-139.98	24.87	-689.44	1,707.46	1,541.49	165.98	10.287	
5,050.00	3,854.82	3,834.82	3,854.82	17.50	153.31	-141.05	24.87	-689.44	1,745.45	1,579.69	165.77	10.530	
5,100.00	3,850.85	3,830.85	3,850.85	17.75	153.15	-142.07	24.87	-689.44	1,784.02	1,618.47	165.55	10.776	
5,150.00	3,846.88	3,826.88	3,846.88	18.01	153.00	-143.05	24.87	-689.44	1,823.14	1,657.80	165.35	11.026	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: MALCO REFINING-FED - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	3,842.91	3,822.91	3,842.91	18.27	152.84	-143.99	24.87	-689.44	1,862.78	1,697.64	165.14	11.280	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: MALCO REFINING-FED_1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	14.00	0.00	0.00	62.26	344.02	654.09	739.17				
50.00	50.00	36.00	50.00	0.92	1.43	62.26	344.02	654.09	739.04	736.68	2.36	313.360	
100.00	100.00	86.00	100.00	0.92	3.43	62.26	344.02	654.09	739.04	734.69	4.35	169.878	
150.00	150.00	136.00	150.00	1.23	5.42	62.26	344.02	654.09	739.04	732.40	6.64	111.243	
200.00	200.00	186.00	200.00	1.53	7.41	62.26	344.02	654.09	739.04	730.11	8.94	82.699	
250.00	250.00	236.00	250.00	1.74	9.40	62.26	344.02	654.09	739.04	727.90	11.14	66.327	
300.00	300.00	286.00	300.00	1.95	11.39	62.26	344.02	654.09	739.04	725.69	13.35	55.366	
350.00	350.00	336.00	350.00	2.22	13.39	62.23	344.02	654.09	738.79	723.22	15.57	47.462	
400.00	399.98	385.98	399.98	2.51	15.38	62.15	344.02	654.09	738.02	720.27	17.75	41.574	
450.00	449.93	435.93	449.93	2.75	17.37	62.01	344.02	654.09	736.75	716.82	19.93	36.976	
500.00	499.84	485.84	499.84	3.00	19.36	61.82	344.02	654.09	734.97	712.88	22.09	33.267	
550.00	549.68	535.68	549.68	3.23	21.35	61.57	344.02	654.09	732.70	708.45	24.25	30.210	
600.00	599.45	585.45	599.45	3.46	23.34	61.26	344.02	654.09	729.95	703.54	26.41	27.638	
650.00	649.13	635.13	649.13	3.68	25.33	60.89	344.02	654.09	726.72	698.17	28.56	25.448	
700.00	698.70	684.70	698.70	3.91	27.31	60.47	344.02	654.09	723.04	692.35	30.70	23.555	
750.00	748.15	734.15	748.15	4.07	29.29	59.98	344.02	654.09	718.92	686.15	32.78	21.932	
800.00	797.49	783.49	797.49	4.21	31.26	59.44	344.02	654.09	714.45	679.62	34.83	20.513	
850.00	846.80	832.80	846.80	4.39	33.23	58.88	344.02	654.09	709.99	673.05	36.94	19.221	
900.00	896.12	882.12	896.12	4.58	35.20	58.32	344.02	654.09	705.59	666.55	39.04	18.071	
950.00	945.44	931.44	945.44	4.76	37.18	57.75	344.02	654.09	701.27	660.12	41.14	17.044	
1,000.00	994.75	980.75	994.75	4.95	39.15	57.17	344.02	654.09	697.01	653.77	43.24	16.119	
1,050.00	1,044.07	1,030.07	1,044.07	5.14	41.12	56.58	344.02	654.09	692.83	647.49	45.34	15.281	
1,100.00	1,093.39	1,079.39	1,093.39	5.33	43.10	55.99	344.02	654.09	688.72	641.29	47.43	14.519	
1,150.00	1,142.70	1,128.70	1,142.70	5.53	45.07	55.39	344.02	654.09	684.68	635.16	49.53	13.824	
1,200.00	1,192.02	1,178.02	1,192.02	5.73	47.04	54.79	344.02	654.09	680.72	629.11	51.62	13.188	
1,250.00	1,241.34	1,227.34	1,241.34	5.93	49.01	54.17	344.02	654.09	676.84	623.13	53.71	12.603	
1,300.00	1,290.66	1,276.66	1,290.66	6.13	50.99	53.55	344.02	654.09	673.04	617.24	55.79	12.063	
1,350.00	1,339.97	1,325.97	1,339.97	6.33	52.96	52.93	344.02	654.09	669.31	611.43	57.88	11.564	
1,400.00	1,389.29	1,375.29	1,389.29	6.54	54.93	52.29	344.02	654.09	665.67	605.71	59.96	11.102	
1,450.00	1,438.61	1,424.61	1,438.61	6.75	56.90	51.65	344.02	654.09	662.11	600.07	62.04	10.672	
1,500.00	1,487.92	1,473.92	1,487.92	6.95	58.88	51.00	344.02	654.09	658.63	594.51	64.12	10.272	
1,550.00	1,537.24	1,523.24	1,537.24	7.16	60.85	50.35	344.02	654.09	655.24	589.05	66.19	9.899	
1,600.00	1,586.56	1,572.56	1,586.56	7.37	62.82	49.69	344.02	654.09	651.93	583.67	68.26	9.550	
1,650.00	1,635.88	1,621.88	1,635.88	7.58	64.80	49.02	344.02	654.09	648.71	578.38	70.33	9.223	
1,700.00	1,685.19	1,671.19	1,685.19	7.79	66.77	48.34	344.02	654.09	645.58	573.18	72.40	8.917	
1,750.00	1,734.51	1,720.51	1,734.51	8.00	68.74	47.66	344.02	654.09	642.54	568.08	74.47	8.629	
1,800.00	1,783.83	1,769.83	1,783.83	8.22	70.71	46.98	344.02	654.09	639.60	563.07	76.53	8.358	
1,850.00	1,833.14	1,819.14	1,833.14	8.43	72.69	46.28	344.02	654.09	636.74	558.15	78.59	8.102	
1,900.00	1,882.46	1,868.46	1,882.46	8.64	74.66	45.58	344.02	654.09	633.98	553.33	80.65	7.861	
1,950.00	1,931.78	1,917.78	1,931.78	8.86	76.63	44.88	344.02	654.09	631.32	548.61	82.70	7.633	
2,000.00	1,981.09	1,967.09	1,981.09	9.07	78.60	44.17	344.02	654.09	628.75	543.99	84.76	7.418	
2,050.00	2,030.41	2,016.41	2,030.41	9.29	80.58	43.45	344.02	654.09	626.28	539.47	86.81	7.214	
2,100.00	2,079.73	2,065.73	2,079.73	9.50	82.55	42.73	344.02	654.09	623.90	535.04	88.86	7.021	
2,150.00	2,129.05	2,115.05	2,129.05	9.72	84.52	42.00	344.02	654.09	621.63	530.72	90.91	6.838	
2,200.00	2,178.36	2,164.36	2,178.36	9.94	86.49	41.26	344.02	654.09	619.46	526.51	92.95	6.664	
2,250.00	2,227.68	2,213.68	2,227.68	10.16	88.47	40.53	344.02	654.09	617.39	522.39	95.00	6.499	
2,300.00	2,277.00	2,263.00	2,277.00	10.37	90.44	39.78	344.02	654.09	615.43	518.39	97.04	6.342	
2,350.00	2,326.31	2,312.31	2,326.31	10.59	92.41	39.03	344.02	654.09	613.57	514.48	99.09	6.192	
2,400.00	2,375.63	2,361.63	2,375.63	10.81	94.39	38.28	344.02	654.09	611.81	510.69	101.13	6.050	
2,450.00	2,424.95	2,410.95	2,424.95	11.03	96.36	37.52	344.02	654.09	610.16	507.00	103.17	5.914	
2,500.00	2,474.26	2,460.26	2,474.26	11.25	98.33	36.76	344.02	654.09	608.62	503.41	105.21	5.785	
2,550.00	2,523.58	2,509.58	2,523.58	11.46	100.30	36.00	344.02	654.09	607.19	499.94	107.25	5.662	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: MALCO REFINING-FED_1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,600.00	2,572.90	2,558.90	2,572.90	11.68	102.28	35.23	344.02	654.09	605.86	496.57	109.29	5.544	
2,650.00	2,622.22	2,608.22	2,622.22	11.90	104.25	34.46	344.02	654.09	604.64	493.32	111.32	5.431	
2,700.00	2,671.53	2,657.53	2,671.53	12.12	106.22	33.69	344.02	654.09	603.54	490.17	113.36	5.324	
2,750.00	2,720.85	2,706.85	2,720.85	12.34	108.19	32.91	344.02	654.09	602.54	487.14	115.40	5.221	
2,800.00	2,770.17	2,756.17	2,770.17	12.56	110.17	32.13	344.02	654.09	601.65	484.21	117.45	5.123	
2,850.00	2,819.48	2,805.48	2,819.48	12.77	112.14	31.35	344.02	654.09	600.88	481.42	119.46	5.030	
2,900.00	2,868.87	2,854.87	2,868.87	12.97	114.11	30.62	344.02	654.09	599.45	477.95	121.50	4.934	
2,950.00	2,918.36	2,904.36	2,918.36	13.16	116.09	30.03	344.02	654.09	595.99	472.44	123.56	4.824	
3,000.00	2,967.83	2,953.83	2,967.83	13.32	118.07	29.58	344.02	654.09	590.46	464.86	125.60	4.701	
3,050.00	3,017.14	3,003.14	3,017.14	13.44	120.05	29.26	344.02	654.09	582.84	455.19	127.65	4.566	
3,100.00	3,066.14	3,052.14	3,066.14	13.52	122.01	29.09	344.02	654.09	573.11	443.42	129.70	4.419	
3,150.00	3,114.72	3,100.72	3,114.72	13.57	123.95	29.07	344.02	654.09	561.30	429.56	131.74	4.261	
3,200.00	3,162.74	3,148.74	3,162.74	13.60	125.87	29.21	344.02	654.09	547.43	413.66	133.77	4.092	
3,250.00	3,210.06	3,196.06	3,210.06	13.61	127.76	29.52	344.02	654.09	531.56	395.77	135.79	3.915	
3,300.00	3,256.55	3,242.55	3,256.55	13.62	129.62	30.01	344.02	654.09	513.75	375.96	137.80	3.728	
3,350.00	3,302.09	3,288.09	3,302.09	13.61	131.44	30.73	344.02	654.09	494.10	354.32	139.78	3.535	
3,400.00	3,346.56	3,332.56	3,346.56	13.61	133.22	31.69	344.02	654.09	472.73	330.98	141.75	3.335	
3,450.00	3,389.82	3,375.82	3,389.82	13.60	134.95	32.94	344.02	654.09	449.78	306.09	143.69	3.130	
3,500.00	3,431.77	3,417.77	3,431.77	13.60	136.63	34.53	344.02	654.09	425.47	279.85	145.62	2.922	
3,550.00	3,472.28	3,458.28	3,472.28	13.59	138.25	36.56	344.02	654.09	400.05	252.50	147.54	2.711	
3,600.00	3,511.25	3,497.25	3,511.25	13.59	139.81	39.10	344.02	654.09	373.84	224.38	149.46	2.501	
3,650.00	3,548.57	3,534.57	3,548.57	13.60	141.30	42.28	344.02	654.09	347.29	195.92	151.37	2.294	
3,700.00	3,584.14	3,570.14	3,584.14	13.61	142.73	46.28	344.02	654.09	321.00	167.70	153.29	2.094	
3,750.00	3,617.85	3,603.85	3,617.85	13.63	144.07	51.29	344.02	654.09	295.75	140.52	155.23	1.905	
3,800.00	3,649.62	3,635.62	3,649.62	13.66	145.34	57.53	344.02	654.09	272.63	115.46	157.16	1.735	
3,850.00	3,679.37	3,665.37	3,679.37	13.70	146.53	65.19	344.02	654.09	253.03	93.97	159.06	1.591	
3,900.00	3,707.00	3,693.00	3,707.00	13.74	147.64	74.32	344.02	654.09	238.68	77.85	160.83	1.484	Level 3
3,950.00	3,732.54	3,718.54	3,732.54	13.80	148.66	84.66	344.02	654.09	231.34	69.00	162.34	1.425	Level 3
3,970.90	3,742.99	3,728.99	3,742.99	13.83	149.08	89.15	344.02	654.09	230.63	67.76	162.88	1.416	Level 3, CC, ES, SF
4,000.00	3,757.54	3,743.54	3,757.54	13.87	149.66	95.38	344.02	654.09	232.01	68.48	163.53	1.419	Level 3
4,050.00	3,782.54	3,768.54	3,782.54	13.95	150.66	105.69	344.02	654.09	240.59	76.19	164.40	1.463	Level 3
4,100.00	3,807.54	3,793.54	3,807.54	14.04	151.66	115.01	344.02	654.09	256.31	91.28	165.03	1.553	
4,150.00	3,832.37	3,818.37	3,832.37	14.13	152.65	123.09	344.02	654.09	278.00	112.49	165.51	1.680	
4,200.00	3,854.28	3,840.28	3,854.28	14.23	153.53	130.10	344.02	654.09	305.37	139.52	165.85	1.841	
4,250.00	3,872.20	3,858.20	3,872.20	14.35	154.25	136.08	344.02	654.09	337.79	171.73	166.06	2.034	
4,300.00	3,885.97	3,871.97	3,885.97	14.48	154.80	141.11	344.02	654.09	374.34	208.16	166.18	2.253	
4,350.00	3,895.51	3,881.51	3,895.51	14.62	155.18	145.30	344.02	654.09	414.09	247.88	166.21	2.491	
4,400.00	3,900.74	3,886.74	3,900.74	14.77	155.39	148.78	344.02	654.09	456.22	290.08	166.15	2.746	
4,450.00	3,901.61	3,887.61	3,901.61	14.93	155.42	151.67	344.02	654.09	499.98	334.01	165.97	3.013	
4,500.00	3,898.45	3,884.45	3,898.45	15.09	155.30	154.10	344.02	654.09	544.73	379.05	165.68	3.288	
4,550.00	3,894.49	3,880.49	3,894.49	15.28	155.14	156.14	344.02	654.09	590.27	424.87	165.39	3.569	
4,600.00	3,890.52	3,876.52	3,890.52	15.47	154.98	157.90	344.02	654.09	636.44	471.31	165.14	3.854	
4,650.00	3,886.55	3,872.55	3,886.55	15.67	154.82	159.41	344.02	654.09	683.14	518.24	164.90	4.143	
4,700.00	3,882.59	3,868.59	3,882.59	15.88	154.66	160.73	344.02	654.09	730.25	565.57	164.67	4.435	
4,750.00	3,878.62	3,864.62	3,878.62	16.09	154.50	161.89	344.02	654.09	777.70	613.24	164.46	4.729	
4,800.00	3,874.65	3,860.65	3,874.65	16.31	154.35	162.92	344.02	654.09	825.43	661.17	164.26	5.025	
4,850.00	3,870.68	3,856.68	3,870.68	16.54	154.19	163.83	344.02	654.09	873.40	709.33	164.07	5.323	
4,900.00	3,866.72	3,852.72	3,866.72	16.77	154.03	164.65	344.02	654.09	921.57	757.69	163.88	5.623	
4,950.00	3,862.75	3,848.75	3,862.75	17.01	153.87	165.39	344.02	654.09	969.90	806.20	163.70	5.925	
5,000.00	3,858.78	3,844.78	3,858.78	17.25	153.71	166.05	344.02	654.09	1,018.38	854.86	163.52	6.228	
5,050.00	3,854.82	3,840.82	3,854.82	17.50	153.55	166.66	344.02	654.09	1,066.99	903.64	163.35	6.532	
5,100.00	3,850.85	3,836.85	3,850.85	17.75	153.39	167.21	344.02	654.09	1,115.71	952.53	163.18	6.837	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: MALCO REFINING-FED_1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,150.00	3,846.88	3,832.88	3,846.88	18.01	153.24	167.72	344.02	654.09	1,164.52	1,001.50	163.01	7.144	
5,200.00	3,842.91	3,828.91	3,842.91	18.27	153.08	168.19	344.02	654.09	1,213.41	1,050.56	162.85	7.451	
5,250.00	3,838.95	3,824.95	3,838.95	18.54	152.92	168.62	344.02	654.09	1,262.38	1,099.69	162.69	7.759	
5,300.00	3,834.98	3,820.98	3,834.98	18.81	152.76	169.01	344.02	654.09	1,311.42	1,148.89	162.53	8.069	
5,350.00	3,831.01	3,817.01	3,831.01	19.08	152.60	169.38	344.02	654.09	1,360.51	1,198.14	162.37	8.379	
5,400.00	3,827.04	3,813.04	3,827.04	19.36	152.44	169.73	344.02	654.09	1,409.66	1,247.44	162.22	8.690	
5,450.00	3,823.08	3,809.08	3,823.08	19.64	152.28	170.05	344.02	654.09	1,458.85	1,296.79	162.06	9.002	
5,500.00	3,819.11	3,805.11	3,819.11	19.93	152.12	170.35	344.02	654.09	1,508.09	1,346.18	161.91	9.314	
5,550.00	3,815.14	3,801.14	3,815.14	20.22	151.97	170.63	344.02	654.09	1,557.36	1,395.60	161.76	9.628	
5,600.00	3,811.18	3,797.18	3,811.18	20.51	151.81	170.89	344.02	654.09	1,606.67	1,445.06	161.61	9.942	
5,650.00	3,807.21	3,793.21	3,807.21	20.80	151.65	171.14	344.02	654.09	1,656.01	1,494.56	161.46	10.257	
5,700.00	3,803.24	3,789.24	3,803.24	21.10	151.49	171.37	344.02	654.09	1,705.39	1,544.08	161.31	10.572	
5,750.00	3,799.27	3,785.27	3,799.27	21.40	151.33	171.59	344.02	654.09	1,754.78	1,593.62	161.16	10.888	
5,800.00	3,795.31	3,781.31	3,795.31	21.70	151.17	171.80	344.02	654.09	1,804.20	1,643.19	161.02	11.205	
5,850.00	3,791.34	3,777.34	3,791.34	22.01	151.01	172.00	344.02	654.09	1,853.65	1,692.78	160.87	11.523	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: SO RED LAKE U TR12 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,800.00	3,795.31	3,742.31	3,795.31	21.70	149.21	-39.82	3,576.33	-809.13	1,883.25	1,717.72	165.53	11.377	
5,850.00	3,791.34	3,738.34	3,791.34	22.01	149.05	-40.79	3,576.33	-809.13	1,844.76	1,678.98	165.78	11.128	
5,900.00	3,787.37	3,734.37	3,787.37	22.31	148.89	-41.80	3,576.33	-809.13	1,806.83	1,640.79	166.04	10.882	
5,950.00	3,783.41	3,730.41	3,783.41	22.63	148.74	-42.86	3,576.33	-809.13	1,769.48	1,603.16	166.32	10.639	
6,000.00	3,779.44	3,726.44	3,779.44	22.94	148.58	-43.96	3,576.33	-809.13	1,732.77	1,566.15	166.61	10.400	
6,050.00	3,775.47	3,722.47	3,775.47	23.25	148.42	-45.11	3,576.33	-809.13	1,696.72	1,529.80	166.92	10.165	
6,100.00	3,771.50	3,718.50	3,771.50	23.57	148.26	-46.31	3,576.33	-809.13	1,661.39	1,494.14	167.25	9.934	
6,150.00	3,767.54	3,714.54	3,767.54	23.89	148.10	-47.57	3,576.33	-809.13	1,626.81	1,459.22	167.59	9.707	
6,200.00	3,763.57	3,710.57	3,763.57	24.21	147.94	-48.87	3,576.33	-809.13	1,593.05	1,425.09	167.95	9.485	
6,250.00	3,759.60	3,706.60	3,759.60	24.53	147.78	-50.23	3,576.33	-809.13	1,560.15	1,391.82	168.33	9.268	
6,300.00	3,755.64	3,702.64	3,755.64	24.85	147.63	-51.65	3,576.33	-809.13	1,528.16	1,359.44	168.72	9.057	
6,350.00	3,751.67	3,698.67	3,751.67	25.18	147.47	-53.13	3,576.33	-809.13	1,497.15	1,328.03	169.13	8.852	
6,400.00	3,747.70	3,694.70	3,747.70	25.51	147.31	-54.67	3,576.33	-809.13	1,467.18	1,297.64	169.54	8.654	
6,450.00	3,743.73	3,690.73	3,743.73	25.84	147.15	-56.27	3,576.33	-809.13	1,438.32	1,268.34	169.97	8.462	
6,500.00	3,739.77	3,686.77	3,739.77	26.17	146.99	-57.94	3,576.33	-809.13	1,410.62	1,240.21	170.41	8.278	
6,550.00	3,735.80	3,682.80	3,735.80	26.50	146.83	-59.67	3,576.33	-809.13	1,384.17	1,213.31	170.86	8.101	
6,600.00	3,731.83	3,678.83	3,731.83	26.83	146.67	-61.47	3,576.33	-809.13	1,359.02	1,187.72	171.31	7.933	
6,650.00	3,727.87	3,674.87	3,727.87	27.17	146.51	-63.33	3,576.33	-809.13	1,335.27	1,163.51	171.76	7.774	
6,700.00	3,723.90	3,670.90	3,723.90	27.50	146.36	-65.26	3,576.33	-809.13	1,312.98	1,140.77	172.21	7.624	
6,750.00	3,719.93	3,666.93	3,719.93	27.84	146.20	-67.25	3,576.33	-809.13	1,292.23	1,119.57	172.66	7.484	
6,800.00	3,715.96	3,662.96	3,715.96	28.18	146.04	-69.31	3,576.33	-809.13	1,273.09	1,100.00	173.09	7.355	
6,850.00	3,712.00	3,659.00	3,712.00	28.52	145.88	-71.42	3,576.33	-809.13	1,255.64	1,082.13	173.52	7.236	
6,900.00	3,708.03	3,655.03	3,708.03	28.86	145.72	-73.60	3,576.33	-809.13	1,239.95	1,066.03	173.92	7.130	
6,950.00	3,704.06	3,651.06	3,704.06	29.20	145.56	-75.82	3,576.33	-809.13	1,226.09	1,051.79	174.30	7.034	
7,000.00	3,700.09	3,647.09	3,700.09	29.54	145.40	-78.09	3,576.33	-809.13	1,214.11	1,039.46	174.65	6.952	
7,050.00	3,696.13	3,643.13	3,696.13	29.89	145.25	-80.41	3,576.33	-809.13	1,204.09	1,029.12	174.97	6.882	
7,100.00	3,692.16	3,639.16	3,692.16	30.23	145.09	-82.76	3,576.33	-809.13	1,196.05	1,020.80	175.25	6.825	
7,150.00	3,688.19	3,635.19	3,688.19	30.58	144.93	-85.13	3,576.33	-809.13	1,190.05	1,014.56	175.49	6.781	
7,200.00	3,684.23	3,631.23	3,684.23	30.92	144.77	-87.53	3,576.33	-809.13	1,186.12	1,010.43	175.69	6.751	
7,250.00	3,680.26	3,627.26	3,680.26	31.27	144.61	-89.94	3,576.33	-809.13	1,184.27	1,008.43	175.84	6.735	
7,269.05	3,678.75	3,625.75	3,678.75	31.40	144.55	-90.86	3,576.33	-809.13	1,184.12	1,008.24	175.88	6.732	CC, ES, SF
7,300.00	3,676.29	3,623.29	3,676.29	31.62	144.45	-92.35	3,576.33	-809.13	1,184.52	1,008.59	175.94	6.733	
7,350.00	3,672.32	3,619.32	3,672.32	31.97	144.29	-94.76	3,576.33	-809.13	1,186.87	1,010.88	175.99	6.744	
7,400.00	3,668.36	3,615.36	3,668.36	32.32	144.13	-97.15	3,576.33	-809.13	1,191.30	1,015.31	175.98	6.769	
7,450.00	3,664.39	3,611.39	3,664.39	32.67	143.98	-99.52	3,576.33	-809.13	1,197.78	1,021.85	175.93	6.808	
7,500.00	3,660.42	3,607.42	3,660.42	33.02	143.82	-101.86	3,576.33	-809.13	1,206.30	1,030.47	175.82	6.861	
7,550.00	3,656.46	3,603.46	3,656.46	33.37	143.66	-104.16	3,576.33	-809.13	1,216.79	1,041.12	175.67	6.926	
7,600.00	3,652.49	3,599.49	3,652.49	33.73	143.50	-106.42	3,576.33	-809.13	1,229.22	1,053.75	175.47	7.005	
7,650.00	3,648.52	3,595.52	3,648.52	34.08	143.34	-108.64	3,576.33	-809.13	1,243.53	1,068.29	175.23	7.096	
7,700.00	3,644.55	3,591.55	3,644.55	34.44	143.18	-110.80	3,576.33	-809.13	1,259.64	1,084.69	174.95	7.200	
7,750.00	3,640.59	3,587.59	3,640.59	34.79	143.02	-112.90	3,576.33	-809.13	1,277.50	1,102.86	174.64	7.315	
7,800.00	3,636.62	3,583.62	3,636.62	35.15	142.86	-114.94	3,576.33	-809.13	1,297.03	1,122.74	174.29	7.442	
7,850.00	3,632.65	3,579.65	3,632.65	35.50	142.71	-116.92	3,576.33	-809.13	1,318.15	1,144.24	173.92	7.579	
7,900.00	3,628.69	3,575.69	3,628.69	35.86	142.55	-118.83	3,576.33	-809.13	1,340.80	1,167.28	173.52	7.727	
7,950.00	3,624.72	3,571.72	3,624.72	36.22	142.39	-120.68	3,576.33	-809.13	1,364.89	1,191.79	173.10	7.885	
8,000.00	3,620.75	3,567.75	3,620.75	36.57	142.23	-122.46	3,576.33	-809.13	1,390.35	1,217.69	172.66	8.052	
8,050.00	3,616.78	3,563.78	3,616.78	36.93	142.07	-124.18	3,576.33	-809.13	1,417.11	1,244.90	172.21	8.229	
8,100.00	3,612.82	3,559.82	3,612.82	37.29	141.91	-125.83	3,576.33	-809.13	1,445.09	1,273.34	171.75	8.414	
8,150.00	3,608.85	3,555.85	3,608.85	37.65	141.75	-127.42	3,576.33	-809.13	1,474.23	1,302.94	171.28	8.607	
8,200.00	3,604.88	3,551.88	3,604.88	38.01	141.60	-128.94	3,576.33	-809.13	1,504.45	1,333.64	170.81	8.808	
8,250.00	3,600.92	3,547.92	3,600.92	38.37	141.44	-130.41	3,576.33	-809.13	1,535.70	1,365.36	170.33	9.016	
8,300.00	3,596.95	3,543.95	3,596.95	38.73	141.28	-131.81	3,576.33	-809.13	1,567.90	1,398.05	169.86	9.231	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: SO RED LAKE U TR12 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,350.00	3,592.98	3,539.98	3,592.98	39.10	141.12	-133.16	3,576.33	-809.13	1,601.02	1,431.64	169.38	9.452	
8,400.00	3,589.01	3,536.01	3,589.01	39.46	140.96	-134.45	3,576.33	-809.13	1,634.98	1,466.07	168.90	9.680	
8,450.00	3,585.05	3,532.05	3,585.05	39.82	140.80	-135.69	3,576.33	-809.13	1,669.74	1,501.31	168.43	9.913	
8,500.00	3,581.08	3,528.08	3,581.08	40.18	140.64	-136.88	3,576.33	-809.13	1,705.24	1,537.28	167.96	10.152	
8,550.00	3,577.11	3,524.11	3,577.11	40.55	140.48	-138.02	3,576.33	-809.13	1,741.45	1,573.95	167.50	10.397	
8,600.00	3,573.14	3,520.14	3,573.14	40.91	140.33	-139.11	3,576.33	-809.13	1,778.32	1,611.28	167.04	10.646	
8,650.00	3,569.18	3,516.18	3,569.18	41.27	140.17	-140.15	3,576.33	-809.13	1,815.81	1,649.22	166.59	10.900	
8,700.00	3,565.21	3,512.21	3,565.21	41.64	140.01	-141.16	3,576.33	-809.13	1,853.89	1,687.74	166.15	11.158	
8,750.00	3,561.24	3,508.24	3,561.24	42.00	139.85	-142.12	3,576.33	-809.13	1,892.50	1,726.79	165.71	11.420	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: SRLG UNIT 39 - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 500-UNKNOWN — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,700.00	3,803.24	3,779.24	3,803.24	21.10	150.57	2.97	3,909.51	495.89	1,881.94	1,722.46	159.48	11.801	
5,750.00	3,799.27	3,775.27	3,799.27	21.40	150.41	3.08	3,909.51	495.89	1,832.21	1,672.88	159.33	11.499	
5,800.00	3,795.31	3,771.31	3,795.31	21.70	150.25	3.19	3,909.51	495.89	1,782.49	1,623.31	159.19	11.197	
5,850.00	3,791.34	3,767.34	3,791.34	22.01	150.09	3.30	3,909.51	495.89	1,732.78	1,573.74	159.04	10.895	
5,900.00	3,787.37	3,763.37	3,787.37	22.31	149.93	3.43	3,909.51	495.89	1,683.07	1,524.17	158.90	10.592	
5,950.00	3,783.41	3,759.41	3,783.41	22.63	149.78	3.56	3,909.51	495.89	1,633.37	1,474.62	158.75	10.289	
6,000.00	3,779.44	3,755.44	3,779.44	22.94	149.62	3.70	3,909.51	495.89	1,583.68	1,425.07	158.61	9.985	
6,050.00	3,775.47	3,751.47	3,775.47	23.25	149.46	3.85	3,909.51	495.89	1,534.00	1,375.53	158.47	9.680	
6,100.00	3,771.50	3,747.50	3,771.50	23.57	149.30	4.00	3,909.51	495.89	1,484.33	1,326.01	158.33	9.375	
6,150.00	3,767.54	3,743.54	3,767.54	23.89	149.14	4.17	3,909.51	495.89	1,434.68	1,276.49	158.19	9.069	
6,200.00	3,763.57	3,739.57	3,763.57	24.21	148.98	4.35	3,909.51	495.89	1,385.03	1,226.98	158.05	8.763	
6,250.00	3,759.60	3,735.60	3,759.60	24.53	148.82	4.55	3,909.51	495.89	1,335.40	1,177.49	157.91	8.457	
6,300.00	3,755.64	3,731.64	3,755.64	24.85	148.67	4.76	3,909.51	495.89	1,285.79	1,128.01	157.78	8.149	
6,350.00	3,751.67	3,727.67	3,751.67	25.18	148.51	4.98	3,909.51	495.89	1,236.20	1,078.55	157.64	7.842	
6,400.00	3,747.70	3,723.70	3,747.70	25.51	148.35	5.23	3,909.51	495.89	1,186.62	1,029.11	157.51	7.533	
6,450.00	3,743.73	3,719.73	3,743.73	25.84	148.19	5.49	3,909.51	495.89	1,137.08	979.69	157.39	7.225	
6,500.00	3,739.77	3,715.77	3,739.77	26.17	148.03	5.78	3,909.51	495.89	1,087.55	930.29	157.26	6.916	
6,550.00	3,735.80	3,711.80	3,735.80	26.50	147.87	6.10	3,909.51	495.89	1,038.06	880.92	157.14	6.606	
6,600.00	3,731.83	3,707.83	3,731.83	26.83	147.71	6.45	3,909.51	495.89	988.60	831.57	157.03	6.296	
6,650.00	3,727.87	3,703.87	3,727.87	27.17	147.55	6.84	3,909.51	495.89	939.19	782.26	156.92	5.985	
6,700.00	3,723.90	3,699.90	3,723.90	27.50	147.40	7.27	3,909.51	495.89	889.82	732.99	156.83	5.674	
6,750.00	3,719.93	3,695.93	3,719.93	27.84	147.24	7.75	3,909.51	495.89	840.51	683.76	156.74	5.362	
6,800.00	3,715.96	3,691.96	3,715.96	28.18	147.08	8.29	3,909.51	495.89	791.26	634.59	156.67	5.050	
6,850.00	3,712.00	3,688.00	3,712.00	28.52	146.92	8.90	3,909.51	495.89	742.09	585.47	156.62	4.738	
6,900.00	3,708.03	3,684.03	3,708.03	28.86	146.76	9.60	3,909.51	495.89	693.02	536.43	156.59	4.426	
6,950.00	3,704.06	3,680.06	3,704.06	29.20	146.60	10.40	3,909.51	495.89	644.07	487.47	156.60	4.113	
7,000.00	3,700.09	3,676.09	3,700.09	29.54	146.44	11.34	3,909.51	495.89	595.27	438.62	156.65	3.800	
7,050.00	3,696.13	3,672.13	3,696.13	29.89	146.29	12.44	3,909.51	495.89	546.65	389.89	156.76	3.487	
7,100.00	3,692.16	3,668.16	3,692.16	30.23	146.13	13.76	3,909.51	495.89	498.28	341.32	156.95	3.175	
7,150.00	3,688.19	3,664.19	3,688.19	30.58	145.97	15.36	3,909.51	495.89	450.22	292.95	157.27	2.863	
7,200.00	3,684.23	3,660.23	3,684.23	30.92	145.81	17.34	3,909.51	495.89	402.60	244.85	157.75	2.552	
7,250.00	3,680.26	3,656.26	3,680.26	31.27	145.65	19.85	3,909.51	495.89	355.59	197.12	158.47	2.244	
7,300.00	3,676.29	3,652.29	3,676.29	31.62	145.49	23.11	3,909.51	495.89	309.47	149.92	159.56	1.940	
7,350.00	3,672.32	3,648.32	3,672.32	31.97	145.33	27.50	3,909.51	495.89	264.71	103.53	161.17	1.642	
7,400.00	3,668.36	3,644.36	3,668.36	32.32	145.17	33.62	3,909.51	495.89	222.11	58.54	163.57	1.358	Level 3
7,450.00	3,664.39	3,640.39	3,664.39	32.67	145.02	42.48	3,909.51	495.89	183.21	16.14	167.06	1.097	Level 2
7,500.00	3,660.42	3,636.42	3,660.42	33.02	144.86	55.58	3,909.51	495.89	150.88	-20.84	171.73	0.879	Level 1
7,550.00	3,656.46	3,632.46	3,656.46	33.37	144.70	74.19	3,909.51	495.89	130.14	-46.31	176.44	0.738	Level 1
7,583.69	3,653.78	3,629.78	3,653.78	33.61	144.59	89.15	3,909.51	495.89	125.73	-52.40	178.13	0.706	Level 1, CC, ES, SF
7,600.00	3,652.49	3,628.49	3,652.49	33.73	144.54	96.52	3,909.51	495.89	126.78	-51.43	178.21	0.711	Level 1
7,650.00	3,648.52	3,624.52	3,648.52	34.08	144.38	116.88	3,909.51	495.89	142.05	-33.73	175.79	0.808	Level 1
7,700.00	3,644.55	3,620.55	3,644.55	34.44	144.22	131.83	3,909.51	495.89	171.04	-0.69	171.73	0.996	Level 1
7,750.00	3,640.59	3,616.59	3,640.59	34.79	144.06	141.97	3,909.51	495.89	208.08	40.03	168.05	1.238	Level 2
7,800.00	3,636.62	3,612.62	3,636.62	35.15	143.90	148.90	3,909.51	495.89	249.62	84.42	165.20	1.511	
7,850.00	3,632.65	3,608.65	3,632.65	35.50	143.75	153.80	3,909.51	495.89	293.75	130.69	163.06	1.802	
7,900.00	3,628.69	3,604.69	3,628.69	35.86	143.59	157.40	3,909.51	495.89	339.47	178.04	161.43	2.103	
7,950.00	3,624.72	3,600.72	3,624.72	36.22	143.43	160.14	3,909.51	495.89	386.21	226.04	160.17	2.411	
8,000.00	3,620.75	3,596.75	3,620.75	36.57	143.27	162.29	3,909.51	495.89	433.64	274.48	159.16	2.724	
8,050.00	3,616.78	3,592.78	3,616.78	36.93	143.11	164.01	3,909.51	495.89	481.56	323.21	158.35	3.041	
8,100.00	3,612.82	3,588.82	3,612.82	37.29	142.95	165.42	3,909.51	495.89	529.83	372.16	157.67	3.360	
8,150.00	3,608.85	3,584.85	3,608.85	37.65	142.79	166.59	3,909.51	495.89	578.37	421.28	157.09	3.682	
8,200.00	3,604.88	3,580.88	3,604.88	38.01	142.64	167.58	3,909.51	495.89	627.11	470.52	156.60	4.005	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: SRLG UNIT 39 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,250.00	3,600.92	3,576.92	3,600.92	38.37	142.48	168.43	3,909.51	495.89	676.02	519.85	156.16	4.329	
8,300.00	3,596.95	3,572.95	3,596.95	38.73	142.32	169.16	3,909.51	495.89	725.05	569.27	155.78	4.654	
8,350.00	3,592.98	3,568.98	3,592.98	39.10	142.16	169.80	3,909.51	495.89	774.19	618.76	155.43	4.981	
8,400.00	3,589.01	3,565.01	3,589.01	39.46	142.00	170.36	3,909.51	495.89	823.41	668.29	155.11	5.308	
8,450.00	3,585.05	3,561.05	3,585.05	39.82	141.84	170.86	3,909.51	495.89	872.70	717.87	154.82	5.637	
8,500.00	3,581.08	3,557.08	3,581.08	40.18	141.68	171.31	3,909.51	495.89	922.05	767.49	154.55	5.966	
8,550.00	3,577.11	3,553.11	3,577.11	40.55	141.52	171.71	3,909.51	495.89	971.45	817.15	154.30	6.296	
8,600.00	3,573.14	3,549.14	3,573.14	40.91	141.37	172.07	3,909.51	495.89	1,020.89	866.83	154.07	6.626	
8,650.00	3,569.18	3,545.18	3,569.18	41.27	141.21	172.40	3,909.51	495.89	1,070.37	916.53	153.84	6.958	
8,700.00	3,565.21	3,541.21	3,565.21	41.64	141.05	172.70	3,909.51	495.89	1,119.88	966.26	153.63	7.290	
8,750.00	3,561.24	3,537.24	3,561.24	42.00	140.89	172.97	3,909.51	495.89	1,169.43	1,016.00	153.43	7.622	
8,800.00	3,557.28	3,533.28	3,557.28	42.37	140.73	173.22	3,909.51	495.89	1,218.99	1,065.76	153.23	7.955	
8,850.00	3,553.31	3,529.31	3,553.31	42.73	140.57	173.46	3,909.51	495.89	1,268.58	1,115.53	153.04	8.289	
8,900.00	3,549.34	3,525.34	3,549.34	43.10	140.41	173.67	3,909.51	495.89	1,318.18	1,165.32	152.86	8.623	
8,950.00	3,545.37	3,521.37	3,545.37	43.46	140.25	173.87	3,909.51	495.89	1,367.81	1,215.12	152.69	8.958	
9,000.00	3,541.41	3,517.41	3,541.41	43.83	140.10	174.05	3,909.51	495.89	1,417.45	1,264.93	152.51	9.294	
9,050.00	3,537.44	3,513.44	3,537.44	44.20	139.94	174.23	3,909.51	495.89	1,467.10	1,314.75	152.35	9.630	
9,100.00	3,533.47	3,509.47	3,533.47	44.56	139.78	174.39	3,909.51	495.89	1,516.76	1,364.58	152.18	9.967	
9,150.00	3,529.51	3,505.51	3,529.51	44.93	139.62	174.54	3,909.51	495.89	1,566.44	1,414.41	152.03	10.304	
9,200.00	3,525.54	3,501.54	3,525.54	45.30	139.46	174.68	3,909.51	495.89	1,616.13	1,464.26	151.87	10.642	
9,250.00	3,521.57	3,497.57	3,521.57	45.67	139.30	174.82	3,909.51	495.89	1,665.82	1,514.11	151.72	10.980	
9,300.00	3,517.60	3,493.60	3,517.60	46.04	139.14	174.94	3,909.51	495.89	1,715.53	1,563.96	151.57	11.319	
9,350.00	3,513.64	3,489.64	3,513.64	46.40	138.99	175.06	3,909.51	495.89	1,765.24	1,613.82	151.42	11.658	
9,400.00	3,509.67	3,485.67	3,509.67	46.77	138.83	175.17	3,909.51	495.89	1,814.96	1,663.69	151.27	11.998	
9,450.00	3,505.70	3,481.70	3,505.70	47.14	138.67	175.28	3,909.51	495.89	1,864.68	1,713.56	151.13	12.338	

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE `AS` 1 - OH - OH

Offset Site Error: 0.00 usft
Offset Well Error: 0.00 usft

Survey Program: 500-UNKNOWN

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	57.00	0.00	0.00	-27.32	1,345.26	-694.82	1,515.17				
50.00	50.00	0.00	57.00	0.92	0.00	-27.32	1,345.26	-694.82	1,514.12	1,513.19	0.92	1,638.207	
69.38	69.38	12.38	69.38	0.92	0.48	-27.32	1,345.26	-694.82	1,514.10	1,512.69	1.41	1,077.245	
100.00	100.00	43.00	100.00	0.92	1.67	-27.32	1,345.26	-694.82	1,514.10	1,511.50	2.60	583.234	
150.00	150.00	93.00	150.00	1.23	3.62	-27.32	1,345.26	-694.82	1,514.10	1,509.26	4.84	312.761	
200.00	200.00	143.00	200.00	1.53	5.56	-27.32	1,345.26	-694.82	1,514.10	1,507.01	7.09	213.671	
250.00	250.00	193.00	250.00	1.74	7.50	-27.32	1,345.26	-694.82	1,514.10	1,504.86	9.24	163.793	
300.00	300.00	243.00	300.00	1.95	9.45	-27.32	1,345.26	-694.82	1,514.10	1,502.70	11.40	132.794	
350.00	350.00	293.00	350.00	2.22	11.39	-27.33	1,345.26	-694.82	1,514.45	1,500.88	13.57	111.578	
400.00	399.98	342.98	399.98	2.51	13.34	-27.36	1,345.26	-694.82	1,515.51	1,499.73	15.77	96.072	
450.00	449.93	392.93	449.93	2.75	15.28	-27.40	1,345.26	-694.82	1,517.26	1,499.34	17.93	84.635	
500.00	499.84	442.84	499.84	3.00	17.22	-27.47	1,345.26	-694.82	1,519.73	1,499.65	20.08	75.681	
550.00	549.68	492.68	549.68	3.23	19.16	-27.56	1,345.26	-694.82	1,522.90	1,500.68	22.22	68.542	
600.00	599.45	542.45	599.45	3.46	21.14	-27.67	1,345.26	-694.82	1,526.77	1,502.37	24.40	62.565	
650.00	649.13	592.13	649.13	3.68	23.13	-27.79	1,345.26	-694.82	1,531.35	1,504.77	26.59	57.600	
700.00	698.70	641.70	698.70	3.91	25.11	-27.93	1,345.26	-694.82	1,536.65	1,507.88	28.77	53.418	
750.00	748.15	691.15	748.15	4.07	27.09	-28.09	1,345.26	-694.82	1,542.65	1,511.77	30.89	49.946	
800.00	797.49	740.49	797.49	4.21	29.06	-28.27	1,345.26	-694.82	1,549.28	1,516.31	32.98	46.983	
850.00	846.80	789.80	846.80	4.39	31.03	-28.44	1,345.26	-694.82	1,556.00	1,520.89	35.12	44.310	
900.00	896.12	839.12	896.12	4.58	33.00	-28.62	1,345.26	-694.82	1,562.74	1,525.48	37.26	41.945	
950.00	945.44	888.44	945.44	4.76	34.98	-28.79	1,345.26	-694.82	1,569.49	1,530.09	39.40	39.837	
1,000.00	994.75	937.75	994.75	4.95	36.95	-28.96	1,345.26	-694.82	1,576.26	1,534.72	41.54	37.947	
1,050.00	1,044.07	987.07	1,044.07	5.14	38.92	-29.13	1,345.26	-694.82	1,583.03	1,539.35	43.68	36.239	
1,100.00	1,093.39	1,036.39	1,093.39	5.33	40.90	-29.30	1,345.26	-694.82	1,589.83	1,544.00	45.83	34.691	
1,150.00	1,142.70	1,085.70	1,142.70	5.53	42.87	-29.47	1,345.26	-694.82	1,596.63	1,548.66	47.98	33.280	
1,200.00	1,192.02	1,135.02	1,192.02	5.73	44.84	-29.63	1,345.26	-694.82	1,603.45	1,553.33	50.12	31.989	
1,250.00	1,241.34	1,184.34	1,241.34	5.93	46.81	-29.79	1,345.26	-694.82	1,610.29	1,558.01	52.28	30.804	
1,300.00	1,290.66	1,233.66	1,290.66	6.13	48.79	-29.96	1,345.26	-694.82	1,617.13	1,562.70	54.43	29.711	
1,350.00	1,339.97	1,282.97	1,339.97	6.33	50.76	-30.12	1,345.26	-694.82	1,623.99	1,567.41	56.58	28.702	
1,400.00	1,389.29	1,332.29	1,389.29	6.54	52.73	-30.28	1,345.26	-694.82	1,630.86	1,572.12	58.74	27.766	
1,450.00	1,438.61	1,381.61	1,438.61	6.75	54.70	-30.44	1,345.26	-694.82	1,637.75	1,576.85	60.89	26.895	
1,500.00	1,487.92	1,430.92	1,487.92	6.95	56.68	-30.59	1,345.26	-694.82	1,644.64	1,581.59	63.05	26.085	
1,550.00	1,537.24	1,480.24	1,537.24	7.16	58.65	-30.75	1,345.26	-694.82	1,651.55	1,586.34	65.21	25.327	
1,600.00	1,586.56	1,529.56	1,586.56	7.37	60.62	-30.90	1,345.26	-694.82	1,658.47	1,591.10	67.37	24.618	
1,650.00	1,635.88	1,578.88	1,635.88	7.58	62.60	-31.06	1,345.26	-694.82	1,665.40	1,595.88	69.53	23.953	
1,700.00	1,685.19	1,628.19	1,685.19	7.79	64.57	-31.21	1,345.26	-694.82	1,672.35	1,600.66	71.69	23.327	
1,750.00	1,734.51	1,677.51	1,734.51	8.00	66.54	-31.36	1,345.26	-694.82	1,679.31	1,605.45	73.85	22.738	
1,800.00	1,783.83	1,726.83	1,783.83	8.22	68.51	-31.51	1,345.26	-694.82	1,686.27	1,610.26	76.02	22.183	
1,850.00	1,833.14	1,776.14	1,833.14	8.43	70.49	-31.66	1,345.26	-694.82	1,693.25	1,615.07	78.18	21.658	
1,900.00	1,882.46	1,825.46	1,882.46	8.64	72.46	-31.80	1,345.26	-694.82	1,700.24	1,619.90	80.35	21.161	
1,950.00	1,931.78	1,874.78	1,931.78	8.86	74.43	-31.95	1,345.26	-694.82	1,707.25	1,624.73	82.51	20.691	
2,000.00	1,981.09	1,924.09	1,981.09	9.07	76.40	-32.10	1,345.26	-694.82	1,714.26	1,629.58	84.68	20.244	
2,050.00	2,030.41	1,973.41	2,030.41	9.29	78.38	-32.24	1,345.26	-694.82	1,721.28	1,634.43	86.85	19.820	
2,100.00	2,079.73	2,022.73	2,079.73	9.50	80.35	-32.38	1,345.26	-694.82	1,728.32	1,639.30	89.01	19.416	
2,150.00	2,129.05	2,072.05	2,129.05	9.72	82.32	-32.52	1,345.26	-694.82	1,735.36	1,644.18	91.18	19.031	
2,200.00	2,178.36	2,121.36	2,178.36	9.94	84.29	-32.66	1,345.26	-694.82	1,742.42	1,649.06	93.35	18.665	
2,250.00	2,227.68	2,170.68	2,227.68	10.16	86.27	-32.80	1,345.26	-694.82	1,749.48	1,653.96	95.52	18.315	
2,300.00	2,277.00	2,220.00	2,277.00	10.37	88.24	-32.94	1,345.26	-694.82	1,756.56	1,658.86	97.69	17.980	
2,350.00	2,326.31	2,269.31	2,326.31	10.59	90.21	-33.08	1,345.26	-694.82	1,763.64	1,663.78	99.87	17.660	
2,400.00	2,375.63	2,318.63	2,375.63	10.81	92.19	-33.21	1,345.26	-694.82	1,770.74	1,668.70	102.04	17.354	
2,450.00	2,424.95	2,367.95	2,424.95	11.03	94.16	-33.35	1,345.26	-694.82	1,777.84	1,673.63	104.21	17.060	
2,500.00	2,474.26	2,417.26	2,474.26	11.25	96.13	-33.48	1,345.26	-694.82	1,784.96	1,678.58	106.38	16.779	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE `AS` 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,550.00	2,523.58	2,466.58	2,523.58	11.46	98.10	-33.61	1,345.26	-694.82	1,792.08	1,683.53	108.56	16.508	
2,600.00	2,572.90	2,515.90	2,572.90	11.68	100.08	-33.74	1,345.26	-694.82	1,799.22	1,688.49	110.73	16.249	
2,650.00	2,622.22	2,565.22	2,622.22	11.90	102.05	-33.87	1,345.26	-694.82	1,806.36	1,693.46	112.91	15.999	
2,700.00	2,671.53	2,614.53	2,671.53	12.12	104.02	-34.00	1,345.26	-694.82	1,813.52	1,698.43	115.08	15.759	
2,750.00	2,720.85	2,663.85	2,720.85	12.34	105.99	-34.13	1,345.26	-694.82	1,820.68	1,703.42	117.26	15.527	
2,800.00	2,770.17	2,713.17	2,770.17	12.56	107.97	-34.26	1,345.26	-694.82	1,827.85	1,708.42	119.43	15.304	
2,850.00	2,819.48	2,762.48	2,819.48	12.77	109.94	-34.38	1,345.26	-694.82	1,835.03	1,713.44	121.59	15.092	
2,900.00	2,868.87	2,811.87	2,868.87	12.97	111.91	-34.52	1,345.26	-694.82	1,841.39	1,717.64	123.75	14.880	
2,950.00	2,918.36	2,861.36	2,918.36	13.16	113.89	-34.70	1,345.26	-694.82	1,845.51	1,719.62	125.89	14.660	
3,000.00	2,967.83	2,910.83	2,967.83	13.32	115.87	-34.92	1,345.26	-694.82	1,847.36	1,719.38	127.98	14.435	
3,050.00	3,017.14	2,960.14	3,017.14	13.44	117.85	-35.18	1,345.26	-694.82	1,846.96	1,716.95	130.01	14.206	
3,100.00	3,066.14	3,009.14	3,066.14	13.52	119.81	-35.47	1,345.26	-694.82	1,844.32	1,712.33	131.98	13.974	
3,150.00	3,114.72	3,057.72	3,114.72	13.57	121.75	-35.81	1,345.26	-694.82	1,839.47	1,705.55	133.91	13.736	
3,200.00	3,162.74	3,105.74	3,162.74	13.60	123.67	-36.18	1,345.26	-694.82	1,832.44	1,696.64	135.80	13.494	
3,250.00	3,210.06	3,153.06	3,210.06	13.61	125.56	-36.60	1,345.26	-694.82	1,823.28	1,685.63	137.65	13.246	
3,300.00	3,256.55	3,199.55	3,256.55	13.62	127.42	-37.06	1,345.26	-694.82	1,812.04	1,672.58	139.46	12.993	
3,350.00	3,302.09	3,245.09	3,302.09	13.61	129.24	-37.56	1,345.26	-694.82	1,798.78	1,657.54	141.24	12.736	
3,400.00	3,346.56	3,289.56	3,346.56	13.61	131.02	-38.10	1,345.26	-694.82	1,783.57	1,640.61	142.97	12.475	
3,450.00	3,389.82	3,332.82	3,389.82	13.60	132.75	-38.69	1,345.26	-694.82	1,766.49	1,621.84	144.65	12.212	
3,500.00	3,431.77	3,374.77	3,431.77	13.60	134.43	-39.33	1,345.26	-694.82	1,747.63	1,601.33	146.29	11.946	
3,550.00	3,472.28	3,415.28	3,472.28	13.59	136.05	-40.02	1,345.26	-694.82	1,727.07	1,579.19	147.89	11.678	
3,600.00	3,511.25	3,454.25	3,511.25	13.59	137.61	-40.76	1,345.26	-694.82	1,704.93	1,555.50	149.43	11.410	
3,650.00	3,548.57	3,491.57	3,548.57	13.60	139.10	-41.55	1,345.26	-694.82	1,681.30	1,530.39	150.91	11.141	
3,700.00	3,584.14	3,527.14	3,584.14	13.61	140.53	-42.40	1,345.26	-694.82	1,656.32	1,503.98	152.34	10.873	
3,750.00	3,617.85	3,560.85	3,617.85	13.63	141.87	-43.31	1,345.26	-694.82	1,630.10	1,476.40	153.70	10.605	
3,800.00	3,649.62	3,592.62	3,649.62	13.66	143.14	-44.27	1,345.26	-694.82	1,602.78	1,447.77	155.01	10.340	
3,850.00	3,679.37	3,622.37	3,679.37	13.70	144.33	-45.30	1,345.26	-694.82	1,574.49	1,418.24	156.25	10.077	
3,900.00	3,707.00	3,650.00	3,707.00	13.74	145.44	-46.40	1,345.26	-694.82	1,545.39	1,387.97	157.42	9.817	
3,950.00	3,732.54	3,675.54	3,732.54	13.80	146.46	-47.56	1,345.26	-694.82	1,515.67	1,357.15	158.53	9.561	
4,000.00	3,757.54	3,700.54	3,757.54	13.87	147.46	-48.78	1,345.26	-694.82	1,486.31	1,326.69	159.62	9.312	
4,050.00	3,782.54	3,725.54	3,782.54	13.95	148.46	-50.04	1,345.26	-694.82	1,457.65	1,296.92	160.73	9.069	
4,100.00	3,807.54	3,750.54	3,807.54	14.04	149.46	-51.35	1,345.26	-694.82	1,429.72	1,267.87	161.85	8.833	
4,150.00	3,832.37	3,775.37	3,832.37	14.13	150.45	-52.72	1,345.26	-694.82	1,402.51	1,239.54	162.98	8.606	
4,200.00	3,854.28	3,797.28	3,854.28	14.23	151.33	-54.19	1,345.26	-694.82	1,375.23	1,211.21	164.02	8.385	
4,250.00	3,872.20	3,815.20	3,872.20	14.35	152.05	-55.79	1,345.26	-694.82	1,347.88	1,182.95	164.93	8.172	
4,300.00	3,885.97	3,828.97	3,885.97	14.48	152.60	-57.49	1,345.26	-694.82	1,320.86	1,155.15	165.71	7.971	
4,350.00	3,895.51	3,838.51	3,895.51	14.62	152.98	-59.31	1,345.26	-694.82	1,294.53	1,128.18	166.35	7.782	
4,400.00	3,900.74	3,843.74	3,900.74	14.77	153.19	-61.22	1,345.26	-694.82	1,269.22	1,102.38	166.84	7.607	
4,450.00	3,901.61	3,844.61	3,901.61	14.93	153.22	-63.22	1,345.26	-694.82	1,245.27	1,078.09	167.17	7.449	
4,500.00	3,898.45	3,841.45	3,898.45	15.09	153.10	-65.29	1,345.26	-694.82	1,222.92	1,055.56	167.36	7.307	
4,550.00	3,894.49	3,837.49	3,894.49	15.28	152.94	-67.43	1,345.26	-694.82	1,202.25	1,034.72	167.53	7.176	
4,600.00	3,890.52	3,833.52	3,890.52	15.47	152.78	-69.65	1,345.26	-694.82	1,183.32	1,015.62	167.70	7.056	
4,650.00	3,886.55	3,829.55	3,886.55	15.67	152.62	-71.93	1,345.26	-694.82	1,166.21	998.34	167.87	6.947	
4,700.00	3,882.59	3,825.59	3,882.59	15.88	152.46	-74.28	1,345.26	-694.82	1,151.01	982.98	168.03	6.850	
4,750.00	3,878.62	3,821.62	3,878.62	16.09	152.30	-76.68	1,345.26	-694.82	1,137.80	969.60	168.19	6.765	
4,800.00	3,874.65	3,817.65	3,874.65	16.31	152.15	-79.14	1,345.26	-694.82	1,126.63	958.29	168.34	6.693	
4,850.00	3,870.68	3,813.68	3,870.68	16.54	151.99	-81.65	1,345.26	-694.82	1,117.58	949.11	168.47	6.634	
4,900.00	3,866.72	3,809.72	3,866.72	16.77	151.83	-84.18	1,345.26	-694.82	1,110.69	942.11	168.58	6.588	
4,950.00	3,862.75	3,805.75	3,862.75	17.01	151.67	-86.75	1,345.26	-694.82	1,106.01	937.33	168.68	6.557	
5,000.00	3,858.78	3,801.78	3,858.78	17.25	151.51	-89.33	1,345.26	-694.82	1,103.56	934.81	168.75	6.540	
5,029.45	3,856.45	3,799.45	3,856.45	17.40	151.42	-90.86	1,345.26	-694.82	1,103.17	934.38	168.78	6.536	CC, ES, SF
5,050.00	3,854.82	3,797.82	3,854.82	17.50	151.35	-91.92	1,345.26	-694.82	1,103.36	934.56	168.80	6.537	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE `AS` 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	3,850.85	3,793.85	3,850.85	17.75	151.19	-94.50	1,345.26	-694.82	1,105.40	936.59	168.82	6.548	
5,150.00	3,846.88	3,789.88	3,846.88	18.01	151.04	-97.07	1,345.26	-694.82	1,109.69	940.88	168.81	6.573	
5,200.00	3,842.91	3,785.91	3,842.91	18.27	150.88	-99.62	1,345.26	-694.82	1,116.19	947.41	168.78	6.613	
5,250.00	3,838.95	3,781.95	3,838.95	18.54	150.72	-102.13	1,345.26	-694.82	1,124.86	956.14	168.72	6.667	
5,300.00	3,834.98	3,777.98	3,834.98	18.81	150.56	-104.59	1,345.26	-694.82	1,135.65	967.02	168.63	6.735	
5,350.00	3,831.01	3,774.01	3,831.01	19.08	150.40	-107.01	1,345.26	-694.82	1,148.51	979.99	168.52	6.815	
5,400.00	3,827.04	3,770.04	3,827.04	19.36	150.24	-109.37	1,345.26	-694.82	1,163.36	994.98	168.38	6.909	
5,450.00	3,823.08	3,766.08	3,823.08	19.64	150.08	-111.66	1,345.26	-694.82	1,180.14	1,011.91	168.22	7.015	
5,500.00	3,819.11	3,762.11	3,819.11	19.93	149.92	-113.89	1,345.26	-694.82	1,198.75	1,030.71	168.04	7.134	
5,550.00	3,815.14	3,758.14	3,815.14	20.22	149.77	-116.05	1,345.26	-694.82	1,219.11	1,051.27	167.84	7.263	
5,600.00	3,811.18	3,754.18	3,811.18	20.51	149.61	-118.13	1,345.26	-694.82	1,241.15	1,073.52	167.62	7.404	
5,650.00	3,807.21	3,750.21	3,807.21	20.80	149.45	-120.14	1,345.26	-694.82	1,264.76	1,097.37	167.40	7.556	
5,700.00	3,803.24	3,746.24	3,803.24	21.10	149.29	-122.07	1,345.26	-694.82	1,289.87	1,122.72	167.15	7.717	
5,750.00	3,799.27	3,742.27	3,799.27	21.40	149.13	-123.92	1,345.26	-694.82	1,316.39	1,149.49	166.90	7.887	
5,800.00	3,795.31	3,738.31	3,795.31	21.70	148.97	-125.71	1,345.26	-694.82	1,344.24	1,177.60	166.64	8.067	
5,850.00	3,791.34	3,734.34	3,791.34	22.01	148.81	-127.41	1,345.26	-694.82	1,373.33	1,206.95	166.37	8.254	
5,900.00	3,787.37	3,730.37	3,787.37	22.31	148.65	-129.05	1,345.26	-694.82	1,403.59	1,237.49	166.10	8.450	
5,950.00	3,783.41	3,726.41	3,783.41	22.63	148.50	-130.61	1,345.26	-694.82	1,434.94	1,269.11	165.83	8.653	
6,000.00	3,779.44	3,722.44	3,779.44	22.94	148.34	-132.11	1,345.26	-694.82	1,467.31	1,301.77	165.55	8.863	
6,050.00	3,775.47	3,718.47	3,775.47	23.25	148.18	-133.54	1,345.26	-694.82	1,500.64	1,335.38	165.27	9.080	
6,100.00	3,771.50	3,714.50	3,771.50	23.57	148.02	-134.91	1,345.26	-694.82	1,534.87	1,369.89	164.99	9.303	
6,150.00	3,767.54	3,710.54	3,767.54	23.89	147.86	-136.21	1,345.26	-694.82	1,569.93	1,405.23	164.71	9.532	
6,200.00	3,763.57	3,706.57	3,763.57	24.21	147.70	-137.46	1,345.26	-694.82	1,605.78	1,441.35	164.43	9.766	
6,250.00	3,759.60	3,702.60	3,759.60	24.53	147.54	-138.66	1,345.26	-694.82	1,642.35	1,478.21	164.15	10.005	
6,300.00	3,755.64	3,698.64	3,755.64	24.85	147.39	-139.80	1,345.26	-694.82	1,679.61	1,515.74	163.87	10.249	
6,350.00	3,751.67	3,694.67	3,751.67	25.18	147.23	-140.89	1,345.26	-694.82	1,717.51	1,553.91	163.60	10.498	
6,400.00	3,747.70	3,690.70	3,747.70	25.51	147.07	-141.94	1,345.26	-694.82	1,756.00	1,592.67	163.33	10.751	
6,450.00	3,743.73	3,686.73	3,743.73	25.84	146.91	-142.94	1,345.26	-694.82	1,795.05	1,631.99	163.06	11.008	
6,500.00	3,739.77	3,682.77	3,739.77	26.17	146.75	-143.89	1,345.26	-694.82	1,834.63	1,671.83	162.80	11.269	
6,550.00	3,735.80	3,678.80	3,735.80	26.50	146.59	-144.81	1,345.26	-694.82	1,874.69	1,712.16	162.54	11.534	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE AO 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	3,858.78	3,664.23	3,730.41	17.25	43.70	-40.16	2,777.61	-810.91	1,895.39	1,838.74	56.65	33.459	
5,050.00	3,854.82	3,663.66	3,729.85	17.50	43.69	-41.14	2,777.57	-810.89	1,856.91	1,799.97	56.94	32.614	
5,100.00	3,850.85	3,663.10	3,729.28	17.75	43.69	-42.15	2,777.53	-810.88	1,818.99	1,761.75	57.24	31.781	
5,150.00	3,846.88	3,662.53	3,728.72	18.01	43.69	-43.22	2,777.49	-810.87	1,781.66	1,724.11	57.55	30.958	
5,200.00	3,842.91	3,661.96	3,728.15	18.27	43.68	-44.32	2,777.45	-810.85	1,744.98	1,687.10	57.88	30.148	
5,250.00	3,838.95	3,661.40	3,727.59	18.54	43.68	-45.47	2,777.41	-810.84	1,708.96	1,650.74	58.23	29.351	
5,300.00	3,834.98	3,660.83	3,727.02	18.81	43.68	-46.68	2,777.38	-810.82	1,673.67	1,615.08	58.58	28.569	
5,350.00	3,831.01	3,660.26	3,726.45	19.08	43.67	-47.93	2,777.34	-810.81	1,639.14	1,580.18	58.96	27.801	
5,400.00	3,827.04	3,659.69	3,725.89	19.36	43.67	-49.23	2,777.30	-810.80	1,605.42	1,546.08	59.35	27.052	
5,450.00	3,823.08	3,659.12	3,725.32	19.64	43.66	-50.59	2,777.26	-810.78	1,572.57	1,512.82	59.75	26.319	
5,500.00	3,819.11	3,658.56	3,724.75	19.93	43.66	-52.01	2,777.22	-810.77	1,540.65	1,480.48	60.17	25.607	
5,550.00	3,815.14	3,657.99	3,724.19	20.22	43.66	-53.49	2,777.18	-810.75	1,509.70	1,449.11	60.60	24.915	
5,600.00	3,811.18	3,657.42	3,723.62	20.51	43.65	-55.03	2,777.15	-810.74	1,479.80	1,418.77	61.04	24.244	
5,650.00	3,807.21	3,656.85	3,723.05	20.80	43.65	-56.63	2,777.11	-810.73	1,451.01	1,389.52	61.49	23.597	
5,700.00	3,803.24	3,656.28	3,722.49	21.10	43.65	-58.29	2,777.07	-810.71	1,423.39	1,361.43	61.95	22.976	
5,750.00	3,799.27	3,655.71	3,721.92	21.40	43.64	-60.02	2,777.03	-810.70	1,397.01	1,334.59	62.42	22.380	
5,800.00	3,795.31	3,655.15	3,721.35	21.70	43.64	-61.81	2,776.99	-810.68	1,371.95	1,309.05	62.90	21.813	
5,850.00	3,791.34	3,654.58	3,720.78	22.01	43.63	-63.66	2,776.95	-810.67	1,348.27	1,284.90	63.38	21.274	
5,900.00	3,787.37	3,654.01	3,720.22	22.31	43.63	-65.58	2,776.91	-810.65	1,326.06	1,262.21	63.86	20.766	
5,950.00	3,783.41	3,653.44	3,719.65	22.63	43.63	-67.56	2,776.88	-810.64	1,305.39	1,241.06	64.34	20.290	
6,000.00	3,779.44	3,652.87	3,719.08	22.94	43.62	-69.61	2,776.84	-810.63	1,286.33	1,221.52	64.81	19.848	
6,050.00	3,775.47	3,652.30	3,718.51	23.25	43.62	-71.71	2,776.80	-810.61	1,268.96	1,203.68	65.28	19.440	
6,100.00	3,771.50	3,651.73	3,717.94	23.57	43.62	-73.87	2,776.76	-810.60	1,253.34	1,187.61	65.73	19.068	
6,150.00	3,767.54	3,651.16	3,717.37	23.89	43.61	-76.07	2,776.72	-810.58	1,239.54	1,173.37	66.17	18.733	
6,200.00	3,763.57	3,650.59	3,716.81	24.21	43.61	-78.33	2,776.68	-810.57	1,227.62	1,161.03	66.59	18.436	
6,250.00	3,759.60	3,650.02	3,716.24	24.53	43.60	-80.62	2,776.64	-810.56	1,217.64	1,150.66	66.99	18.178	
6,300.00	3,755.64	3,649.45	3,715.67	24.85	43.60	-82.95	2,776.61	-810.54	1,209.65	1,142.29	67.36	17.959	
6,350.00	3,751.67	3,648.88	3,715.10	25.18	43.60	-85.30	2,776.57	-810.53	1,203.68	1,135.98	67.70	17.780	
6,400.00	3,747.70	3,648.31	3,714.53	25.51	43.59	-87.67	2,776.53	-810.51	1,199.77	1,131.76	68.01	17.641	
6,450.00	3,743.73	3,647.74	3,713.96	25.84	43.59	-90.06	2,776.49	-810.50	1,197.93	1,129.64	68.29	17.542	
6,469.05	3,742.22	3,647.52	3,713.74	25.96	43.59	-90.97	2,776.48	-810.49	1,197.78	1,129.39	68.39	17.515	CC, ES
6,500.00	3,739.77	3,647.16	3,713.39	26.17	43.59	-92.44	2,776.45	-810.48	1,198.18	1,129.65	68.53	17.484	
6,550.00	3,735.80	3,646.59	3,712.82	26.50	43.58	-94.82	2,776.41	-810.47	1,200.51	1,131.78	68.74	17.466	SF
6,600.00	3,731.83	3,646.02	3,712.25	26.83	43.58	-97.19	2,776.37	-810.46	1,204.92	1,136.01	68.90	17.487	
6,650.00	3,727.87	3,645.45	3,711.68	27.17	43.57	-99.54	2,776.34	-810.44	1,211.37	1,142.34	69.03	17.548	
6,700.00	3,723.90	3,644.88	3,711.11	27.50	43.57	-101.85	2,776.30	-810.43	1,219.84	1,150.71	69.13	17.647	
6,750.00	3,719.93	3,644.31	3,710.54	27.84	43.57	-104.13	2,776.26	-810.41	1,230.29	1,161.10	69.18	17.783	
6,800.00	3,715.96	3,643.73	3,709.97	28.18	43.56	-106.37	2,776.22	-810.40	1,242.66	1,173.45	69.21	17.956	
6,850.00	3,712.00	3,643.16	3,709.40	28.52	43.56	-108.56	2,776.18	-810.39	1,256.89	1,187.70	69.20	18.163	
6,900.00	3,708.03	3,642.59	3,708.83	28.86	43.56	-110.70	2,776.14	-810.37	1,272.94	1,203.78	69.16	18.406	
6,950.00	3,704.06	3,642.02	3,708.26	29.20	43.55	-112.79	2,776.10	-810.36	1,290.72	1,221.63	69.10	18.680	
7,000.00	3,700.09	3,641.44	3,707.69	29.54	43.55	-114.81	2,776.06	-810.34	1,310.17	1,241.17	69.00	18.987	
7,050.00	3,696.13	3,640.87	3,707.12	29.89	43.54	-116.77	2,776.03	-810.33	1,331.22	1,262.33	68.89	19.323	
7,100.00	3,692.16	3,640.30	3,706.54	30.23	43.54	-118.67	2,775.99	-810.31	1,353.78	1,285.02	68.76	19.688	
7,150.00	3,688.19	3,639.73	3,705.97	30.58	43.54	-120.51	2,775.95	-810.30	1,377.79	1,309.18	68.61	20.081	
7,200.00	3,684.23	3,639.15	3,705.40	30.92	43.53	-122.28	2,775.91	-810.29	1,403.18	1,334.73	68.45	20.499	
7,250.00	3,680.26	3,638.58	3,704.83	31.27	43.53	-123.99	2,775.87	-810.27	1,429.86	1,361.58	68.28	20.943	
7,300.00	3,676.29	3,638.01	3,704.26	31.62	43.53	-125.63	2,775.83	-810.26	1,457.76	1,389.67	68.09	21.409	
7,350.00	3,672.32	3,637.43	3,703.68	31.97	43.52	-127.21	2,775.79	-810.24	1,486.83	1,418.93	67.90	21.898	
7,400.00	3,668.36	3,636.86	3,703.11	32.32	43.52	-128.73	2,775.75	-810.23	1,516.99	1,449.29	67.70	22.407	
7,450.00	3,664.39	3,636.28	3,702.54	32.67	43.51	-130.19	2,775.71	-810.21	1,548.17	1,480.67	67.50	22.936	
7,500.00	3,660.42	3,635.71	3,701.97	33.02	43.51	-131.59	2,775.68	-810.20	1,580.32	1,513.03	67.29	23.484	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE AO 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,550.00	3,656.46	3,635.14	3,701.39	33.37	43.51	-132.93	2,775.64	-810.19	1,613.38	1,546.29	67.09	24.049	
7,600.00	3,652.49	3,634.56	3,700.82	33.73	43.50	-134.22	2,775.60	-810.17	1,647.29	1,580.41	66.88	24.631	
7,650.00	3,648.52	3,633.99	3,700.25	34.08	43.50	-135.45	2,775.56	-810.16	1,682.01	1,615.34	66.67	25.228	
7,700.00	3,644.55	3,633.41	3,699.67	34.44	43.50	-136.64	2,775.52	-810.14	1,717.48	1,651.01	66.47	25.839	
7,750.00	3,640.59	3,632.84	3,699.10	34.79	43.49	-137.78	2,775.48	-810.13	1,753.66	1,687.39	66.26	26.464	
7,800.00	3,636.62	3,632.26	3,698.53	35.15	43.49	-138.87	2,775.44	-810.11	1,790.50	1,724.44	66.06	27.103	
7,850.00	3,632.65	3,631.69	3,697.95	35.50	43.48	-139.92	2,775.40	-810.10	1,827.97	1,762.10	65.87	27.752	
7,900.00	3,628.69	3,631.11	3,697.38	35.86	43.48	-140.92	2,775.36	-810.08	1,866.02	1,800.35	65.67	28.414	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE AO 2 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,500.00	3,898.45	3,774.85	3,831.01	15.09	12.11	4.44	2,727.08	562.96	1,899.95	1,878.97	20.97	90.583	
4,550.00	3,894.49	3,772.70	3,828.87	15.28	12.11	4.58	2,727.00	562.96	1,850.21	1,829.24	20.97	88.230	
4,600.00	3,890.52	3,770.56	3,826.73	15.47	12.10	4.73	2,726.93	562.96	1,800.49	1,779.53	20.97	85.880	
4,650.00	3,886.55	3,768.41	3,824.58	15.67	12.09	4.89	2,726.85	562.96	1,750.78	1,729.82	20.96	83.522	
4,700.00	3,882.59	3,766.26	3,822.43	15.88	12.09	5.06	2,726.78	562.96	1,701.09	1,680.13	20.96	81.165	
4,750.00	3,878.62	3,764.10	3,820.28	16.09	12.08	5.23	2,726.70	562.97	1,651.41	1,630.45	20.96	78.801	
4,800.00	3,874.65	3,761.95	3,818.13	16.31	12.07	5.42	2,726.62	562.97	1,601.75	1,580.79	20.95	76.438	
4,850.00	3,870.68	3,759.79	3,815.97	16.54	12.07	5.63	2,726.55	562.97	1,552.11	1,531.15	20.96	74.068	
4,900.00	3,866.72	3,757.63	3,813.81	16.77	12.06	5.84	2,726.47	562.97	1,502.48	1,481.53	20.96	71.698	
4,950.00	3,862.75	3,755.47	3,811.65	17.01	12.05	6.07	2,726.39	562.97	1,452.88	1,431.93	20.96	69.323	
5,000.00	3,858.78	3,753.31	3,809.49	17.25	12.05	6.32	2,726.32	562.98	1,403.31	1,382.35	20.96	66.947	
5,050.00	3,854.82	3,751.14	3,807.32	17.50	12.04	6.58	2,726.24	562.98	1,353.76	1,332.80	20.97	64.565	
5,100.00	3,850.85	3,748.97	3,805.16	17.75	12.03	6.87	2,726.16	562.98	1,304.25	1,283.27	20.97	62.184	
5,150.00	3,846.88	3,746.80	3,802.99	18.01	12.03	7.17	2,726.08	562.98	1,254.77	1,233.78	20.98	59.796	
5,200.00	3,842.91	3,744.63	3,800.82	18.27	12.02	7.50	2,726.01	562.98	1,205.32	1,184.33	21.00	57.407	
5,250.00	3,838.95	3,742.45	3,798.64	18.54	12.01	7.86	2,725.93	562.99	1,155.93	1,134.91	21.01	55.013	
5,300.00	3,834.98	3,740.28	3,796.47	18.81	12.01	8.26	2,725.85	562.99	1,106.58	1,085.55	21.03	52.617	
5,350.00	3,831.01	3,738.10	3,794.29	19.08	12.00	8.68	2,725.78	562.99	1,057.28	1,036.23	21.06	50.215	
5,400.00	3,827.04	3,735.91	3,792.11	19.36	11.99	9.15	2,725.70	562.99	1,008.06	986.97	21.08	47.810	
5,450.00	3,823.08	3,733.73	3,789.92	19.64	11.99	9.67	2,725.62	562.99	958.90	937.78	21.12	45.400	
5,500.00	3,819.11	3,731.54	3,787.74	19.93	11.98	10.25	2,725.55	563.00	909.84	888.67	21.17	42.985	
5,550.00	3,815.14	3,729.35	3,785.55	20.22	11.97	10.89	2,725.47	563.00	860.88	839.66	21.22	40.566	
5,600.00	3,811.18	3,727.16	3,783.36	20.51	11.97	11.61	2,725.39	563.00	812.03	790.74	21.29	38.138	
5,650.00	3,807.21	3,724.97	3,781.17	20.80	11.96	12.42	2,725.32	563.00	763.33	741.96	21.38	35.703	
5,700.00	3,803.24	3,722.77	3,778.97	21.10	11.95	13.34	2,725.24	563.01	714.81	693.32	21.49	33.266	
5,750.00	3,799.27	3,720.58	3,776.78	21.40	11.95	14.39	2,725.16	563.01	666.49	644.87	21.63	30.820	
5,800.00	3,795.31	3,718.38	3,774.58	21.70	11.94	15.60	2,725.08	563.01	618.44	596.64	21.80	28.370	
5,850.00	3,791.34	3,716.17	3,772.38	22.01	11.93	17.03	2,725.01	563.01	570.71	548.68	22.02	25.914	
5,900.00	3,787.37	3,713.97	3,770.17	22.31	11.93	18.71	2,724.93	563.01	523.39	501.08	22.31	23.459	
5,950.00	3,783.41	3,711.76	3,767.97	22.63	11.92	20.72	2,724.85	563.02	476.61	453.93	22.69	21.008	
6,000.00	3,779.44	3,709.55	3,765.76	22.94	11.91	23.16	2,724.77	563.02	430.55	407.37	23.18	18.575	
6,050.00	3,775.47	3,707.34	3,763.55	23.25	11.91	26.18	2,724.70	563.02	385.46	361.63	23.83	16.176	
6,100.00	3,771.50	3,705.13	3,761.34	23.57	11.90	29.99	2,724.62	563.02	341.72	317.03	24.68	13.844	
6,150.00	3,767.54	3,702.91	3,759.12	23.89	11.89	34.89	2,724.54	563.03	299.92	274.12	25.81	11.622	
6,200.00	3,763.57	3,700.69	3,756.91	24.21	11.88	41.31	2,724.46	563.03	261.01	233.77	27.24	9.581	
6,250.00	3,759.60	3,698.47	3,754.69	24.53	11.88	49.82	2,724.39	563.03	226.47	197.48	28.99	7.812	
6,300.00	3,755.64	3,696.25	3,752.46	24.85	11.87	61.03	2,724.31	563.03	198.60	167.72	30.88	6.431	
6,350.00	3,751.67	3,694.00	3,750.22	25.18	11.86	75.15	2,724.23	563.03	180.52	148.02	32.49	5.555	
6,393.69	3,748.20	3,692.04	3,748.25	25.47	11.86	89.14	2,724.16	563.04	175.16	141.88	33.28	5.263	CC, ES
6,400.00	3,747.70	3,691.75	3,747.97	25.51	11.86	91.20	2,724.15	563.04	175.27	141.94	33.33	5.259	SF
6,450.00	3,743.73	3,689.48	3,745.70	25.84	11.85	106.93	2,724.08	563.04	183.96	150.75	33.21	5.539	
6,500.00	3,739.77	3,687.20	3,743.42	26.17	11.84	120.35	2,724.00	563.04	204.83	172.51	32.32	6.337	
6,550.00	3,735.80	3,684.90	3,741.13	26.50	11.84	130.84	2,723.92	563.04	234.64	203.59	31.06	7.555	
6,600.00	3,731.83	3,682.59	3,738.82	26.83	11.83	138.76	2,723.84	563.04	270.46	240.69	29.77	9.085	
6,650.00	3,727.87	3,680.27	3,736.49	27.17	11.82	144.75	2,723.76	563.04	310.21	281.59	28.63	10.837	
6,700.00	3,723.90	3,677.93	3,734.16	27.50	11.82	149.34	2,723.69	563.04	352.57	324.90	27.67	12.743	
6,750.00	3,719.93	3,675.58	3,731.80	27.84	11.81	152.93	2,723.61	563.05	396.69	369.81	26.88	14.757	
6,800.00	3,715.96	3,673.21	3,729.44	28.18	11.80	155.79	2,723.53	563.05	442.05	415.81	26.24	16.847	
6,850.00	3,712.00	3,670.83	3,727.06	28.52	11.79	158.11	2,723.45	563.05	488.31	462.60	25.72	18.988	
6,900.00	3,708.03	3,668.43	3,724.66	28.86	11.79	160.03	2,723.37	563.05	535.24	509.95	25.29	21.166	
6,950.00	3,704.06	3,666.02	3,722.25	29.20	11.78	161.64	2,723.29	563.05	582.66	557.73	24.93	23.370	
7,000.00	3,700.09	3,663.59	3,719.82	29.54	11.77	163.01	2,723.21	563.05	630.47	605.84	24.64	25.592	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE AO 2 - OH - OH

Offset Site Error: 0.00 usft
Offset Well Error: 0.00 usft

Survey Program: 100-MWD

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,050.00	3,696.13	3,661.15	3,717.38	29.89	11.77	164.18	2,723.13	563.05	678.60	654.21	24.39	27.825	
7,100.00	3,692.16	3,658.69	3,714.93	30.23	11.76	165.19	2,723.05	563.05	726.96	702.78	24.18	30.067	
7,150.00	3,688.19	3,656.22	3,712.45	30.58	11.75	166.08	2,722.97	563.05	775.53	751.53	24.00	32.314	
7,200.00	3,684.23	3,653.73	3,709.97	30.92	11.74	166.87	2,722.89	563.05	824.26	800.41	23.85	34.564	
7,250.00	3,680.26	3,651.22	3,707.46	31.27	11.73	167.57	2,722.81	563.05	873.13	849.41	23.72	36.814	
7,300.00	3,676.29	3,648.70	3,704.94	31.62	11.73	168.19	2,722.73	563.05	922.11	898.50	23.60	39.065	
7,350.00	3,672.32	3,646.16	3,702.41	31.97	11.72	168.75	2,722.65	563.04	971.19	947.68	23.51	41.314	
7,400.00	3,668.36	3,643.61	3,699.86	32.32	11.71	169.26	2,722.57	563.04	1,020.35	996.93	23.42	43.561	
7,450.00	3,664.39	3,641.04	3,697.29	32.67	11.70	169.72	2,722.49	563.04	1,069.59	1,046.24	23.35	45.805	
7,500.00	3,660.42	3,638.45	3,694.70	33.02	11.70	170.13	2,722.41	563.04	1,118.88	1,095.60	23.29	48.047	
7,550.00	3,656.46	3,635.85	3,692.10	33.37	11.69	170.52	2,722.33	563.04	1,168.24	1,145.00	23.23	50.284	
7,600.00	3,652.49	3,633.23	3,689.48	33.73	11.68	170.87	2,722.24	563.04	1,217.64	1,194.45	23.19	52.518	
7,650.00	3,648.52	3,630.59	3,686.85	34.08	11.67	171.20	2,722.16	563.03	1,267.08	1,243.93	23.14	54.748	
7,700.00	3,644.55	3,627.94	3,684.19	34.44	11.66	171.50	2,722.08	563.03	1,316.56	1,293.45	23.11	56.973	
7,750.00	3,640.59	3,625.27	3,681.52	34.79	11.66	171.78	2,722.00	563.03	1,366.07	1,342.99	23.08	59.194	
7,800.00	3,636.62	3,622.58	3,678.83	35.15	11.65	172.03	2,721.92	563.03	1,415.61	1,392.56	23.05	61.410	
7,850.00	3,632.65	3,619.87	3,676.13	35.50	11.64	172.28	2,721.84	563.02	1,465.18	1,442.15	23.03	63.620	
7,900.00	3,628.69	3,617.15	3,673.40	35.86	11.63	172.50	2,721.76	563.02	1,514.77	1,491.76	23.01	65.827	
7,950.00	3,624.72	3,614.40	3,670.66	36.22	11.62	172.71	2,721.67	563.02	1,564.39	1,541.39	23.00	68.027	
8,000.00	3,620.75	3,611.64	3,667.90	36.57	11.62	172.91	2,721.59	563.01	1,614.02	1,591.03	22.98	70.223	
8,050.00	3,616.78	3,608.86	3,665.12	36.93	11.61	173.10	2,721.51	563.01	1,663.67	1,640.70	22.97	72.413	
8,100.00	3,612.82	3,606.06	3,662.32	37.29	11.60	173.28	2,721.43	563.00	1,713.34	1,690.37	22.97	74.599	
8,150.00	3,608.85	3,603.24	3,659.51	37.65	11.59	173.44	2,721.34	563.00	1,763.02	1,740.06	22.96	76.778	
8,200.00	3,604.88	3,600.41	3,656.67	38.01	11.58	173.60	2,721.26	562.99	1,812.72	1,789.76	22.96	78.952	
8,250.00	3,600.92	3,597.79	3,654.06	38.37	11.57	173.75	2,721.19	562.99	1,862.42	1,839.47	22.96	81.120	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE H DE - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,400.00	3,827.04	3,838.21	3,842.42	19.36	13.22	12.73	3,583.19	821.14	1,898.85	1,877.62	21.23	89.441	
5,450.00	3,823.08	3,833.90	3,838.11	19.64	13.21	13.09	3,583.23	821.12	1,850.48	1,829.22	21.25	87.064	
5,500.00	3,819.11	3,829.58	3,833.79	19.93	13.20	13.47	3,583.27	821.10	1,802.18	1,780.90	21.28	84.681	
5,550.00	3,815.14	3,825.25	3,829.47	20.22	13.19	13.88	3,583.32	821.08	1,753.96	1,732.65	21.32	82.279	
5,600.00	3,811.18	3,820.92	3,825.14	20.51	13.18	14.30	3,583.36	821.06	1,705.84	1,684.48	21.36	79.873	
5,650.00	3,807.21	3,816.58	3,820.80	20.80	13.17	14.75	3,583.40	821.04	1,657.82	1,636.41	21.41	77.448	
5,700.00	3,803.24	3,812.24	3,816.45	21.10	13.16	15.23	3,583.44	821.02	1,609.90	1,588.44	21.46	75.014	
5,750.00	3,799.27	3,807.89	3,812.10	21.40	13.15	15.73	3,583.48	821.00	1,562.11	1,540.58	21.53	72.563	
5,800.00	3,795.31	3,803.53	3,807.74	21.70	13.14	16.27	3,583.53	820.99	1,514.44	1,492.84	21.60	70.104	
5,850.00	3,791.34	3,799.16	3,803.38	22.01	13.13	16.84	3,583.57	820.97	1,466.91	1,445.22	21.69	67.627	
5,900.00	3,787.37	3,794.79	3,799.00	22.31	13.12	17.45	3,583.61	820.95	1,419.54	1,397.75	21.79	65.141	
5,950.00	3,783.41	3,790.41	3,794.62	22.63	13.11	18.10	3,583.66	820.93	1,372.35	1,350.44	21.91	62.640	
6,000.00	3,779.44	3,786.02	3,790.24	22.94	13.10	18.80	3,583.70	820.91	1,325.34	1,303.30	22.04	60.131	
6,050.00	3,775.47	3,781.63	3,785.85	23.25	13.09	19.55	3,583.75	820.89	1,278.55	1,256.35	22.19	57.608	
6,100.00	3,771.50	3,777.23	3,781.45	23.57	13.08	20.36	3,583.79	820.87	1,231.99	1,209.62	22.37	55.080	
6,150.00	3,767.54	3,772.83	3,777.04	23.89	13.07	21.23	3,583.84	820.85	1,185.70	1,163.13	22.57	52.542	
6,200.00	3,763.57	3,768.41	3,772.63	24.21	13.06	22.17	3,583.88	820.83	1,139.70	1,116.91	22.79	50.003	
6,250.00	3,759.60	3,763.99	3,768.21	24.53	13.05	23.19	3,583.93	820.81	1,094.03	1,070.98	23.05	47.460	
6,300.00	3,755.64	3,759.56	3,763.78	24.85	13.04	24.30	3,583.98	820.79	1,048.74	1,025.40	23.35	44.924	
6,350.00	3,751.67	3,755.13	3,759.35	25.18	13.03	25.50	3,584.02	820.77	1,003.88	980.20	23.68	42.393	
6,400.00	3,747.70	3,750.69	3,754.91	25.51	13.02	26.82	3,584.07	820.75	959.51	935.45	24.06	39.880	
6,450.00	3,743.73	3,746.00	3,750.22	25.84	13.01	28.27	3,584.12	820.73	915.69	891.20	24.49	37.385	
6,500.00	3,739.77	3,741.81	3,746.03	26.17	13.00	29.86	3,584.17	820.71	872.52	847.54	24.98	34.927	
6,550.00	3,735.80	3,737.39	3,741.60	26.50	12.99	31.61	3,584.21	820.69	830.09	804.55	25.54	32.505	
6,600.00	3,731.83	3,732.96	3,737.17	26.83	12.98	33.56	3,584.26	820.67	788.52	762.35	26.16	30.137	
6,650.00	3,727.87	3,728.52	3,732.74	27.17	12.97	35.71	3,584.31	820.65	747.96	721.08	26.88	27.831	
6,700.00	3,723.90	3,724.09	3,728.31	27.50	12.96	38.11	3,584.36	820.63	708.57	680.90	27.67	25.604	
6,750.00	3,719.93	3,719.65	3,723.87	27.84	12.95	40.78	3,584.41	820.62	670.58	642.00	28.57	23.469	
6,800.00	3,715.96	3,715.21	3,719.43	28.18	12.94	43.77	3,584.45	820.60	634.21	604.64	29.58	21.443	
6,850.00	3,712.00	3,710.77	3,714.99	28.52	12.93	47.12	3,584.50	820.59	599.79	569.10	30.69	19.543	
6,900.00	3,708.03	3,706.33	3,710.55	28.86	12.92	50.85	3,584.55	820.57	567.65	535.73	31.91	17.787	
6,950.00	3,704.06	3,701.89	3,706.11	29.20	12.91	55.02	3,584.60	820.56	538.20	504.96	33.24	16.190	
7,000.00	3,700.09	3,697.44	3,701.66	29.54	12.90	59.63	3,584.65	820.54	511.91	477.26	34.66	14.771	
7,050.00	3,696.13	3,692.99	3,697.21	29.89	12.89	64.71	3,584.70	820.53	489.29	453.17	36.13	13.544	
7,100.00	3,692.16	3,688.54	3,692.76	30.23	12.88	70.24	3,584.75	820.52	470.88	433.28	37.60	12.523	
7,150.00	3,688.19	3,684.09	3,688.31	30.58	12.87	76.15	3,584.80	820.51	457.16	418.15	39.01	11.718	
7,200.00	3,684.23	3,679.64	3,683.86	30.92	12.86	82.36	3,584.85	820.50	448.59	408.31	40.28	11.136	
7,250.00	3,680.26	3,675.18	3,679.40	31.27	12.85	88.73	3,584.90	820.49	445.45	404.13	41.33	10.779	
7,253.30	3,680.00	3,674.89	3,679.11	31.29	12.85	89.16	3,584.90	820.49	445.44	404.06	41.39	10.763	CC, ES
7,300.00	3,676.29	3,670.72	3,674.94	31.62	12.84	95.12	3,584.95	820.48	447.87	405.79	42.08	10.644	SF
7,350.00	3,672.32	3,666.26	3,670.48	31.97	12.83	101.35	3,585.00	820.47	455.74	413.24	42.50	10.723	
7,400.00	3,668.36	3,661.80	3,666.02	32.32	12.82	107.31	3,585.05	820.46	468.80	426.20	42.60	11.004	
7,450.00	3,664.39	3,657.34	3,661.56	32.67	12.81	112.89	3,585.10	820.45	486.63	444.21	42.42	11.472	
7,500.00	3,660.42	3,652.87	3,657.09	33.02	12.80	118.03	3,585.15	820.45	508.72	466.72	42.00	12.112	
7,550.00	3,656.46	3,648.40	3,652.63	33.37	12.79	122.71	3,585.20	820.44	534.56	493.14	41.42	12.906	
7,600.00	3,652.49	3,643.95	3,648.17	33.73	12.78	126.93	3,585.25	820.44	563.62	522.88	40.73	13.837	
7,650.00	3,648.52	3,639.50	3,643.73	34.08	12.77	130.72	3,585.30	820.43	595.43	555.44	39.98	14.891	
7,700.00	3,644.55	3,635.07	3,639.29	34.44	12.76	134.11	3,585.34	820.43	629.58	590.36	39.22	16.054	
7,750.00	3,640.59	3,630.64	3,634.87	34.79	12.75	137.15	3,585.39	820.42	665.70	627.25	38.45	17.313	
7,800.00	3,636.62	3,626.23	3,630.46	35.15	12.74	139.86	3,585.44	820.42	703.50	665.79	37.71	18.656	
7,850.00	3,632.65	3,621.83	3,626.05	35.50	12.73	142.30	3,585.49	820.41	742.71	705.71	37.00	20.073	
7,900.00	3,628.69	3,617.44	3,621.66	35.86	12.72	144.48	3,585.53	820.41	783.13	746.80	36.33	21.556	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: STATE H DE - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,950.00	3,624.72	3,613.06	3,617.28	36.22	12.71	146.45	3,585.58	820.41	824.58	788.87	35.70	23.096	
8,000.00	3,620.75	3,608.69	3,612.91	36.57	12.70	148.23	3,585.62	820.40	866.90	831.79	35.12	24.686	
8,050.00	3,616.78	3,604.33	3,608.55	36.93	12.69	149.84	3,585.67	820.40	909.99	875.42	34.57	26.321	
8,100.00	3,612.82	3,599.98	3,604.21	37.29	12.68	151.30	3,585.71	820.40	953.73	919.66	34.07	27.995	
8,150.00	3,608.85	3,595.64	3,599.87	37.65	12.67	152.64	3,585.75	820.39	998.03	964.43	33.60	29.704	
8,200.00	3,604.88	3,591.31	3,595.54	38.01	12.67	153.86	3,585.80	820.39	1,042.84	1,009.67	33.17	31.442	
8,250.00	3,600.92	3,587.00	3,591.22	38.37	12.66	154.98	3,585.84	820.39	1,088.08	1,055.31	32.77	33.207	
8,300.00	3,596.95	3,582.69	3,586.92	38.73	12.65	156.01	3,585.88	820.39	1,133.70	1,101.30	32.40	34.996	
8,350.00	3,592.98	3,578.39	3,582.62	39.10	12.64	156.96	3,585.92	820.39	1,179.66	1,147.61	32.05	36.804	
8,400.00	3,589.01	3,574.11	3,578.34	39.46	12.63	157.84	3,585.96	820.39	1,225.92	1,194.19	31.73	38.631	
8,450.00	3,585.05	3,569.83	3,574.06	39.82	12.62	158.66	3,586.00	820.39	1,272.45	1,241.01	31.44	40.473	
8,500.00	3,581.08	3,565.57	3,569.80	40.18	12.61	159.41	3,586.04	820.39	1,319.22	1,288.05	31.17	42.329	
8,550.00	3,577.11	3,561.31	3,565.54	40.55	12.60	160.12	3,586.08	820.39	1,366.20	1,335.29	30.91	44.196	
8,600.00	3,573.14	3,556.00	3,560.23	40.91	12.59	160.78	3,586.13	820.39	1,413.38	1,382.70	30.69	46.060	
8,650.00	3,569.18	3,552.71	3,556.94	41.27	12.58	161.39	3,586.15	820.39	1,460.73	1,430.27	30.46	47.958	
8,700.00	3,565.21	3,548.32	3,552.55	41.64	12.58	161.97	3,586.19	820.39	1,508.24	1,477.99	30.26	49.849	
8,750.00	3,561.24	3,543.94	3,548.17	42.00	12.57	162.51	3,586.23	820.39	1,555.90	1,525.83	30.07	51.746	
8,800.00	3,557.28	3,539.55	3,543.78	42.37	12.56	163.02	3,586.27	820.39	1,603.68	1,573.79	29.89	53.649	
8,850.00	3,553.31	3,535.17	3,539.40	42.73	12.55	163.50	3,586.31	820.39	1,651.59	1,621.86	29.73	55.555	
8,900.00	3,549.34	3,530.79	3,535.02	43.10	12.54	163.95	3,586.35	820.39	1,699.60	1,670.03	29.58	57.465	
8,950.00	3,545.37	3,526.41	3,530.64	43.46	12.53	164.38	3,586.39	820.39	1,747.72	1,718.28	29.43	59.377	
9,000.00	3,541.41	3,522.04	3,526.27	43.83	12.52	164.78	3,586.42	820.39	1,795.92	1,766.62	29.30	61.291	
9,050.00	3,537.44	3,517.66	3,521.89	44.20	12.51	165.17	3,586.46	820.39	1,844.21	1,815.04	29.18	63.207	
9,100.00	3,533.47	3,513.29	3,517.52	44.56	12.50	165.53	3,586.50	820.39	1,892.58	1,863.52	29.06	65.123	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: WRIGHT-STATE A 4 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,950.00	3,704.06	3,635.06	3,704.06	29.20	145.40	-29.73	4,897.26	-546.28	1,867.00	1,703.81	163.19	11.441	
7,000.00	3,700.09	3,631.09	3,700.09	29.54	145.24	-30.49	4,897.26	-546.28	1,823.51	1,660.05	163.46	11.156	
7,050.00	3,696.13	3,627.13	3,696.13	29.89	145.09	-31.28	4,897.26	-546.28	1,780.36	1,616.60	163.75	10.872	
7,100.00	3,692.16	3,623.16	3,692.16	30.23	144.93	-32.11	4,897.26	-546.28	1,737.56	1,573.49	164.07	10.590	
7,150.00	3,688.19	3,619.19	3,688.19	30.58	144.77	-32.99	4,897.26	-546.28	1,695.15	1,530.75	164.41	10.311	
7,200.00	3,684.23	3,615.23	3,684.23	30.92	144.61	-33.91	4,897.26	-546.28	1,653.16	1,488.39	164.77	10.033	
7,250.00	3,680.26	3,611.26	3,680.26	31.27	144.45	-34.87	4,897.26	-546.28	1,611.61	1,446.45	165.15	9.758	
7,300.00	3,676.29	3,607.29	3,676.29	31.62	144.29	-35.89	4,897.26	-546.28	1,570.54	1,404.98	165.56	9.486	
7,350.00	3,672.32	3,603.32	3,672.32	31.97	144.13	-36.96	4,897.26	-546.28	1,530.00	1,363.99	166.00	9.217	
7,400.00	3,668.36	3,599.36	3,668.36	32.32	143.97	-38.09	4,897.26	-546.28	1,490.02	1,323.55	166.47	8.951	
7,450.00	3,664.39	3,595.39	3,664.39	32.67	143.82	-39.28	4,897.26	-546.28	1,450.65	1,283.68	166.96	8.688	
7,500.00	3,660.42	3,591.42	3,660.42	33.02	143.66	-40.54	4,897.26	-546.28	1,411.94	1,244.45	167.49	8.430	
7,550.00	3,656.46	3,587.46	3,656.46	33.37	143.50	-41.87	4,897.26	-546.28	1,373.95	1,205.90	168.04	8.176	
7,600.00	3,652.49	3,583.49	3,652.49	33.73	143.34	-43.27	4,897.26	-546.28	1,336.74	1,168.11	168.63	7.927	
7,650.00	3,648.52	3,579.52	3,648.52	34.08	143.18	-44.75	4,897.26	-546.28	1,300.37	1,131.13	169.25	7.683	
7,700.00	3,644.55	3,575.55	3,644.55	34.44	143.02	-46.31	4,897.26	-546.28	1,264.93	1,095.04	169.89	7.446	
7,750.00	3,640.59	3,571.59	3,640.59	34.79	142.86	-47.97	4,897.26	-546.28	1,230.48	1,059.91	170.57	7.214	
7,800.00	3,636.62	3,567.62	3,636.62	35.15	142.70	-49.72	4,897.26	-546.28	1,197.11	1,025.85	171.27	6.990	
7,850.00	3,632.65	3,563.65	3,632.65	35.50	142.55	-51.56	4,897.26	-546.28	1,164.93	992.93	172.00	6.773	
7,900.00	3,628.69	3,559.69	3,628.69	35.86	142.39	-53.51	4,897.26	-546.28	1,134.02	961.28	172.74	6.565	
7,950.00	3,624.72	3,555.72	3,624.72	36.22	142.23	-55.57	4,897.26	-546.28	1,104.50	930.99	173.51	6.366	
8,000.00	3,620.75	3,551.75	3,620.75	36.57	142.07	-57.73	4,897.26	-546.28	1,076.47	902.19	174.29	6.176	
8,050.00	3,616.78	3,547.78	3,616.78	36.93	141.91	-60.01	4,897.26	-546.28	1,050.07	875.00	175.07	5.998	
8,100.00	3,612.82	3,543.82	3,612.82	37.29	141.75	-62.40	4,897.26	-546.28	1,025.41	849.56	175.85	5.831	
8,150.00	3,608.85	3,539.85	3,608.85	37.65	141.59	-64.91	4,897.26	-546.28	1,002.62	826.00	176.62	5.677	
8,200.00	3,604.88	3,535.88	3,604.88	38.01	141.44	-67.53	4,897.26	-546.28	981.84	804.47	177.37	5.536	
8,250.00	3,600.92	3,531.92	3,600.92	38.37	141.28	-70.25	4,897.26	-546.28	963.19	785.11	178.08	5.409	
8,300.00	3,596.95	3,527.95	3,596.95	38.73	141.12	-73.07	4,897.26	-546.28	946.79	768.06	178.74	5.297	
8,350.00	3,592.98	3,523.98	3,592.98	39.10	140.96	-75.99	4,897.26	-546.28	932.78	753.45	179.34	5.201	
8,400.00	3,589.01	3,520.01	3,589.01	39.46	140.80	-78.99	4,897.26	-546.28	921.25	741.39	179.86	5.122	
8,450.00	3,585.05	3,516.05	3,585.05	39.82	140.64	-82.05	4,897.26	-546.28	912.31	732.01	180.30	5.060	
8,500.00	3,581.08	3,512.08	3,581.08	40.18	140.48	-85.17	4,897.26	-546.28	906.02	725.39	180.64	5.016	
8,550.00	3,577.11	3,508.11	3,577.11	40.55	140.32	-88.32	4,897.26	-546.28	902.45	721.58	180.87	4.990	
8,590.06	3,573.93	3,504.93	3,573.93	40.84	140.20	-90.86	4,897.26	-546.28	901.56	720.59	180.97	4.982	CC, ES
8,600.00	3,573.14	3,504.14	3,573.14	40.91	140.17	-91.49	4,897.26	-546.28	901.62	720.63	180.98	4.982	SF
8,650.00	3,569.18	3,500.18	3,569.18	41.27	140.01	-94.65	4,897.26	-546.28	903.54	722.55	180.98	4.992	
8,700.00	3,565.21	3,496.21	3,565.21	41.64	139.85	-97.79	4,897.26	-546.28	908.20	727.33	180.87	5.021	
8,750.00	3,561.24	3,492.24	3,561.24	42.00	139.69	-100.88	4,897.26	-546.28	915.55	734.91	180.64	5.068	
8,800.00	3,557.28	3,488.28	3,557.28	42.37	139.53	-103.92	4,897.26	-546.28	925.53	745.23	180.30	5.133	
8,850.00	3,553.31	3,484.31	3,553.31	42.73	139.37	-106.89	4,897.26	-546.28	938.06	758.19	179.87	5.215	
8,900.00	3,549.34	3,480.34	3,549.34	43.10	139.21	-109.77	4,897.26	-546.28	953.03	773.69	179.35	5.314	
8,950.00	3,545.37	3,476.37	3,545.37	43.46	139.05	-112.56	4,897.26	-546.28	970.34	791.59	178.75	5.429	
9,000.00	3,541.41	3,472.41	3,541.41	43.83	138.90	-115.24	4,897.26	-546.28	989.85	811.77	178.08	5.558	
9,050.00	3,537.44	3,468.44	3,537.44	44.20	138.74	-117.81	4,897.26	-546.28	1,011.45	834.08	177.37	5.703	
9,100.00	3,533.47	3,464.47	3,533.47	44.56	138.58	-120.27	4,897.26	-546.28	1,034.99	858.39	176.61	5.860	
9,150.00	3,529.51	3,460.51	3,529.51	44.93	138.42	-122.62	4,897.26	-546.28	1,060.36	884.54	175.82	6.031	
9,200.00	3,525.54	3,456.54	3,525.54	45.30	138.26	-124.85	4,897.26	-546.28	1,087.43	912.42	175.01	6.214	
9,250.00	3,521.57	3,452.57	3,521.57	45.67	138.10	-126.97	4,897.26	-546.28	1,116.06	941.87	174.19	6.407	
9,300.00	3,517.60	3,448.60	3,517.60	46.04	137.94	-128.99	4,897.26	-546.28	1,146.15	972.79	173.36	6.611	
9,350.00	3,513.64	3,444.64	3,513.64	46.40	137.79	-130.90	4,897.26	-546.28	1,177.57	1,005.04	172.54	6.825	
9,400.00	3,509.67	3,440.67	3,509.67	46.77	137.63	-132.70	4,897.26	-546.28	1,210.24	1,038.52	171.72	7.048	
9,450.00	3,505.70	3,436.70	3,505.70	47.14	137.47	-134.41	4,897.26	-546.28	1,244.05	1,073.14	170.90	7.279	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - OFFSET: WRIGHT-STATE A 4 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-UNKNOWN

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,500.00	3,501.74	3,432.74	3,501.74	47.51	137.31	-136.03	4,897.26	-546.28	1,278.90	1,108.79	170.11	7.518	
9,521.87	3,500.00	3,431.00	3,500.00	47.67	137.24	-136.71	4,897.26	-546.28	1,294.46	1,124.69	169.76	7.625	

SPUR ENERGY PARTNERS

PROTOTYPE

Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - SCBP STATE 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 271-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	3,866.72	3,816.82	3,866.72	16.77	91.35	-27.21	2,893.62	-443.63	1,867.50	1,764.82	102.68	18.187	
4,950.00	3,862.75	3,812.85	3,862.75	17.01	91.23	-27.90	2,893.62	-443.63	1,822.97	1,720.20	102.77	17.738	
5,000.00	3,858.78	3,808.88	3,858.78	17.25	91.12	-28.63	2,893.62	-443.63	1,778.72	1,675.84	102.88	17.289	
5,050.00	3,854.82	3,804.92	3,854.82	17.50	91.00	-29.40	2,893.62	-443.63	1,734.78	1,631.78	103.00	16.843	
5,100.00	3,850.85	3,800.95	3,850.85	17.75	90.88	-30.20	2,893.62	-443.63	1,691.16	1,588.02	103.13	16.398	
5,150.00	3,846.88	3,796.98	3,846.88	18.01	90.77	-31.05	2,893.62	-443.63	1,647.89	1,544.61	103.29	15.955	
5,200.00	3,842.91	3,793.01	3,842.91	18.27	90.65	-31.95	2,893.62	-443.63	1,605.01	1,501.56	103.45	15.514	
5,250.00	3,838.95	3,789.05	3,838.95	18.54	90.53	-32.89	2,893.62	-443.63	1,562.54	1,458.90	103.64	15.077	
5,300.00	3,834.98	3,785.08	3,834.98	18.81	90.42	-33.89	2,893.62	-443.63	1,520.52	1,416.67	103.84	14.642	
5,350.00	3,831.01	3,781.11	3,831.01	19.08	90.30	-34.94	2,893.62	-443.63	1,478.98	1,374.91	104.07	14.211	
5,400.00	3,827.04	3,777.14	3,827.04	19.36	90.18	-36.05	2,893.62	-443.63	1,437.98	1,333.66	104.32	13.785	
5,450.00	3,823.08	3,773.18	3,823.08	19.64	90.07	-37.23	2,893.62	-443.63	1,397.54	1,292.96	104.58	13.363	
5,500.00	3,819.11	3,769.21	3,819.11	19.93	89.95	-38.48	2,893.62	-443.63	1,357.73	1,252.86	104.87	12.946	
5,550.00	3,815.14	3,765.24	3,815.14	20.22	89.83	-39.80	2,893.62	-443.63	1,318.61	1,213.42	105.19	12.535	
5,600.00	3,811.18	3,761.28	3,811.18	20.51	89.72	-41.20	2,893.62	-443.63	1,280.23	1,174.70	105.53	12.132	
5,650.00	3,807.21	3,757.31	3,807.21	20.80	89.60	-42.69	2,893.62	-443.63	1,242.66	1,136.77	105.89	11.735	
5,700.00	3,803.24	3,753.34	3,803.24	21.10	89.48	-44.27	2,893.62	-443.63	1,205.98	1,099.70	106.28	11.347	
5,750.00	3,799.27	3,749.37	3,799.27	21.40	89.37	-45.95	2,893.62	-443.63	1,170.28	1,063.58	106.70	10.968	
5,800.00	3,795.31	3,745.41	3,795.31	21.70	89.25	-47.73	2,893.62	-443.63	1,135.64	1,028.50	107.14	10.600	
5,850.00	3,791.34	3,741.44	3,791.34	22.01	89.13	-49.62	2,893.62	-443.63	1,102.17	994.57	107.61	10.243	
5,900.00	3,787.37	3,737.47	3,787.37	22.31	89.02	-51.63	2,893.62	-443.63	1,069.98	961.88	108.09	9.899	
5,950.00	3,783.41	3,733.51	3,783.41	22.63	88.90	-53.76	2,893.62	-443.63	1,039.17	930.57	108.60	9.569	
6,000.00	3,779.44	3,729.54	3,779.44	22.94	88.78	-56.02	2,893.62	-443.63	1,009.89	900.77	109.13	9.254	
6,050.00	3,775.47	3,725.57	3,775.47	23.25	88.67	-58.40	2,893.62	-443.63	982.27	872.61	109.66	8.957	
6,100.00	3,771.50	3,721.60	3,771.50	23.57	88.55	-60.92	2,893.62	-443.63	956.45	846.24	110.21	8.679	
6,150.00	3,767.54	3,717.64	3,767.54	23.89	88.43	-63.58	2,893.62	-443.63	932.58	821.83	110.75	8.420	
6,200.00	3,763.57	3,713.67	3,763.57	24.21	88.32	-66.37	2,893.62	-443.63	910.81	799.52	111.29	8.184	
6,250.00	3,759.60	3,709.70	3,759.60	24.53	88.20	-69.28	2,893.62	-443.63	891.31	779.50	111.81	7.972	
6,300.00	3,755.64	3,705.74	3,755.64	24.85	88.08	-72.32	2,893.62	-443.63	874.21	761.91	112.30	7.784	
6,350.00	3,751.67	3,701.77	3,751.67	25.18	87.97	-75.47	2,893.62	-443.63	859.67	746.91	112.76	7.624	
6,400.00	3,747.70	3,701.51	3,751.47	25.51	87.96	-78.72	2,893.59	-443.63	847.81	734.49	113.32	7.482	
6,450.00	3,743.73	3,696.20	3,746.16	25.84	87.79	-82.05	2,893.70	-443.63	838.76	725.16	113.60	7.384	
6,500.00	3,739.77	3,691.09	3,741.05	26.17	87.63	-85.43	2,893.80	-443.63	832.59	718.78	113.81	7.315	
6,550.00	3,735.80	3,686.15	3,736.11	26.50	87.48	-88.86	2,893.89	-443.63	829.37	715.41	113.96	7.278	
6,579.10	3,733.49	3,683.36	3,733.32	26.69	87.39	-90.86	2,893.93	-443.63	828.86	714.85	114.01	7.270	CC, ES, SF
6,600.00	3,731.83	3,681.39	3,731.35	26.83	87.33	-92.30	2,893.96	-443.63	829.12	715.09	114.03	7.271	
6,650.00	3,727.87	3,676.79	3,726.76	27.17	87.19	-95.72	2,894.03	-443.63	831.86	717.84	114.02	7.295	
6,700.00	3,723.90	3,672.35	3,722.32	27.50	87.05	-99.12	2,894.09	-443.63	837.56	723.62	113.94	7.351	
6,750.00	3,719.93	3,668.05	3,718.02	27.84	86.91	-102.46	2,894.13	-443.63	846.15	732.37	113.78	7.437	
6,800.00	3,715.96	3,663.90	3,713.87	28.18	86.78	-105.72	2,894.18	-443.63	857.55	744.01	113.54	7.553	
6,850.00	3,712.00	3,659.88	3,709.85	28.52	86.65	-108.89	2,894.21	-443.63	871.66	758.41	113.25	7.697	
6,900.00	3,708.03	3,655.99	3,705.96	28.86	86.53	-111.94	2,894.24	-443.63	888.34	775.45	112.90	7.869	
6,950.00	3,704.06	3,652.22	3,702.19	29.20	86.41	-114.88	2,894.26	-443.63	907.46	794.96	112.50	8.066	
7,000.00	3,700.09	3,648.56	3,698.54	29.54	86.30	-117.69	2,894.27	-443.63	928.86	816.80	112.06	8.289	
7,050.00	3,696.13	3,645.02	3,695.00	29.89	86.19	-120.36	2,894.28	-443.63	952.39	840.79	111.59	8.534	
7,100.00	3,692.16	3,641.58	3,691.56	30.23	86.08	-122.91	2,894.29	-443.63	977.89	866.79	111.11	8.801	
7,150.00	3,688.19	3,638.20	3,688.19	30.58	85.97	-125.35	2,893.62	-443.63	1,005.62	895.02	110.60	9.093	
7,200.00	3,684.23	3,634.23	3,684.23	30.92	85.85	-127.62	2,893.62	-443.63	1,034.66	924.59	110.06	9.401	
7,250.00	3,680.26	3,630.26	3,680.26	31.27	85.72	-129.77	2,893.62	-443.63	1,065.24	955.72	109.52	9.726	
7,300.00	3,676.29	3,626.30	3,676.29	31.62	85.60	-131.79	2,893.62	-443.63	1,097.23	988.25	108.98	10.068	
7,350.00	3,672.32	3,622.33	3,672.32	31.97	85.48	-133.70	2,893.62	-443.63	1,130.52	1,022.07	108.45	10.425	
7,400.00	3,668.36	3,618.36	3,668.36	32.32	85.35	-135.50	2,893.62	-443.63	1,164.98	1,057.07	107.92	10.795	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
WELL PLANNED. WELL EXECUTED.

Company:	SPUR ENERGY PARTNERS, LLC	**Local Co-ordinate Reference:**	Well 21H
Project:	EDDY COUNTY, NM (NAD 83 - NME)	**TVD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Reference Site:	CHESHIRE CAT 2 STATE COM	**MD Reference:**	RKB = 20' @ 3631.00usft (AKITA 57)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	21H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Offset Design: CHESHIRE CAT 2 STATE COM - SCBP STATE 1 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 271-INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,450.00	3,664.39	3,614.39	3,664.39	32.67	85.23	-137.19	2,893.62	-443.63	1,200.53	1,093.13	107.40	11.178	
7,500.00	3,660.42	3,610.43	3,660.42	33.02	85.10	-138.79	2,893.62	-443.63	1,237.07	1,130.18	106.89	11.573	
7,550.00	3,656.46	3,606.46	3,656.46	33.37	84.98	-140.29	2,893.62	-443.63	1,274.51	1,168.11	106.40	11.979	
7,600.00	3,652.49	3,602.49	3,652.49	33.73	84.85	-141.70	2,893.62	-443.63	1,312.77	1,206.85	105.92	12.394	
7,650.00	3,648.52	3,598.53	3,648.52	34.08	84.73	-143.04	2,893.62	-443.63	1,351.79	1,246.33	105.45	12.819	
7,700.00	3,644.55	3,594.56	3,644.55	34.44	84.60	-144.30	2,893.62	-443.63	1,391.49	1,286.49	105.00	13.252	
7,750.00	3,640.59	3,590.59	3,640.59	34.79	84.48	-145.48	2,893.62	-443.63	1,431.84	1,327.27	104.56	13.694	
7,800.00	3,636.62	3,586.62	3,636.62	35.15	84.36	-146.61	2,893.62	-443.63	1,472.76	1,368.62	104.14	14.142	
7,850.00	3,632.65	3,582.66	3,632.65	35.50	84.23	-147.67	2,893.62	-443.63	1,514.22	1,410.49	103.73	14.598	
7,900.00	3,628.69	3,578.69	3,628.69	35.86	84.11	-148.67	2,893.62	-443.63	1,556.17	1,452.84	103.34	15.059	
7,950.00	3,624.72	3,557.84	3,607.91	36.22	83.45	-149.62	2,893.90	-443.63	1,598.42	1,496.08	102.35	15.618	
8,000.00	3,620.75	3,554.55	3,604.63	36.57	83.35	-150.52	2,893.94	-443.63	1,641.20	1,539.19	102.01	16.089	
8,050.00	3,616.78	3,551.33	3,601.40	36.93	83.25	-151.38	2,893.98	-443.63	1,684.37	1,582.68	101.68	16.565	
8,100.00	3,612.82	3,548.16	3,598.24	37.29	83.15	-152.19	2,894.01	-443.63	1,727.89	1,626.52	101.37	17.046	
8,150.00	3,608.85	3,545.06	3,595.14	37.65	83.05	-152.96	2,894.04	-443.63	1,771.75	1,670.68	101.07	17.530	
8,200.00	3,604.88	3,542.02	3,592.10	38.01	82.96	-153.70	2,894.06	-443.63	1,815.92	1,715.14	100.78	18.018	
8,250.00	3,600.92	3,539.04	3,589.12	38.37	82.87	-154.40	2,894.08	-443.63	1,860.38	1,759.87	100.51	18.509	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SPUR ENERGY PARTNERS

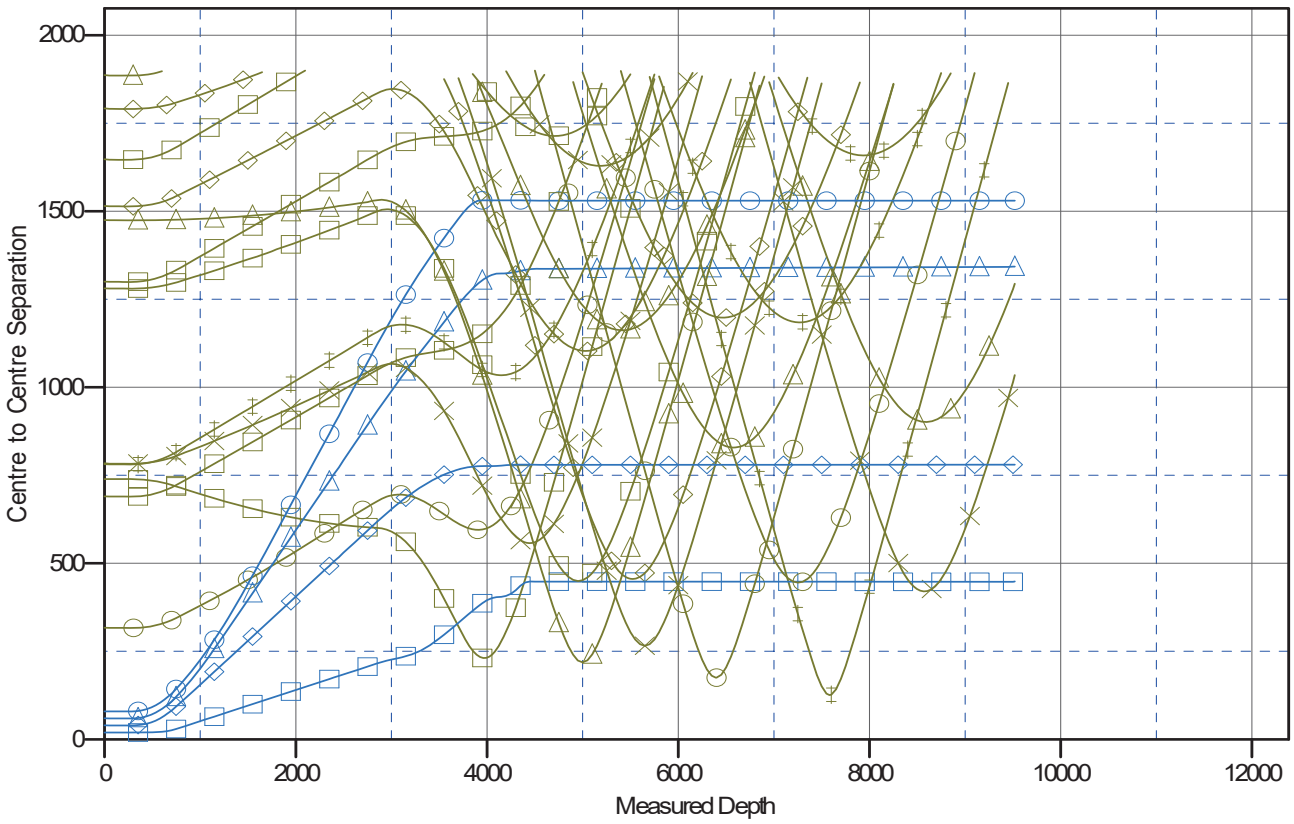
PROTOTYPE
Anticollision Report

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Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.17 Single User Db
Reference Design:	PERMIT	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to RKB = 20' @ 3631.00usft (AKITA 57)
Offset Depths are relative to Offset Datum
Central Meridian is -104.33334
Coordinates are relative to: 21H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.05°

Ladder Plot



LEGEND

OFFSET: WRIGHT-STATE A 4, OH, OH V0
OFFSET: SO RED LAKE U TR12 1, OH, OH V0
OFFSET: MALCO REFINING-FED_1, OH,OH V0
OFFSET: EMPIRE ABO UNIT M 151, OH, OH V0
OFFSET: STATE AO 1, OH, OH V0
50H, OH, PERMIT V0
OFFSET: EMPIRE ABO UNIT L 153, OH, OH V0
OFFSET: SRLG UNIT 39, OH, OH V0
OFFSET: EMPIRE ABO UNIT 152, OH, OH V0
51H, OH, PERMIT V0
OFFSET: EMPIRE ABO U L 156, OH, OH V0
OFFSET: STATE AO 2, OH, OH V0
OFFSET: STATE 'AS' 1, OH, OH V0
OFFSET: EMPIRE ABO UNIT 'K' 161, OH, OH V0
SCBP STATE 1, OH, OH V0
OFFSET: EMPIRE ABO UL 151, OH, OH V0
OFFSET: HUDSON-STATE A 1, OH, OH V0
20H, OH, PERMIT V0
OFFSET: EMPIRE ABO UNIT 'L' 155, OH, OH V0
OFFSET: EMPIRE ABO U M D, OH, OH V0
1H, OH, PERMIT V0
OFFSET: EMPIRE ABO UL 154, OH, OH V0
OFFSET: MALCO REFINING-FED, OH, OH V0
OFFSET: EDDY STATE I NCT-B 1, OH, OH V0
OFFSET: STATE H DE, OH, OH V0
OFFSET: EMPIRE ABO UNIT 415, OH, OH V0
OFFSET: EMPIRE ABO UNIT L 152, OH, OH V0

SPUR ENERGY PARTNERS

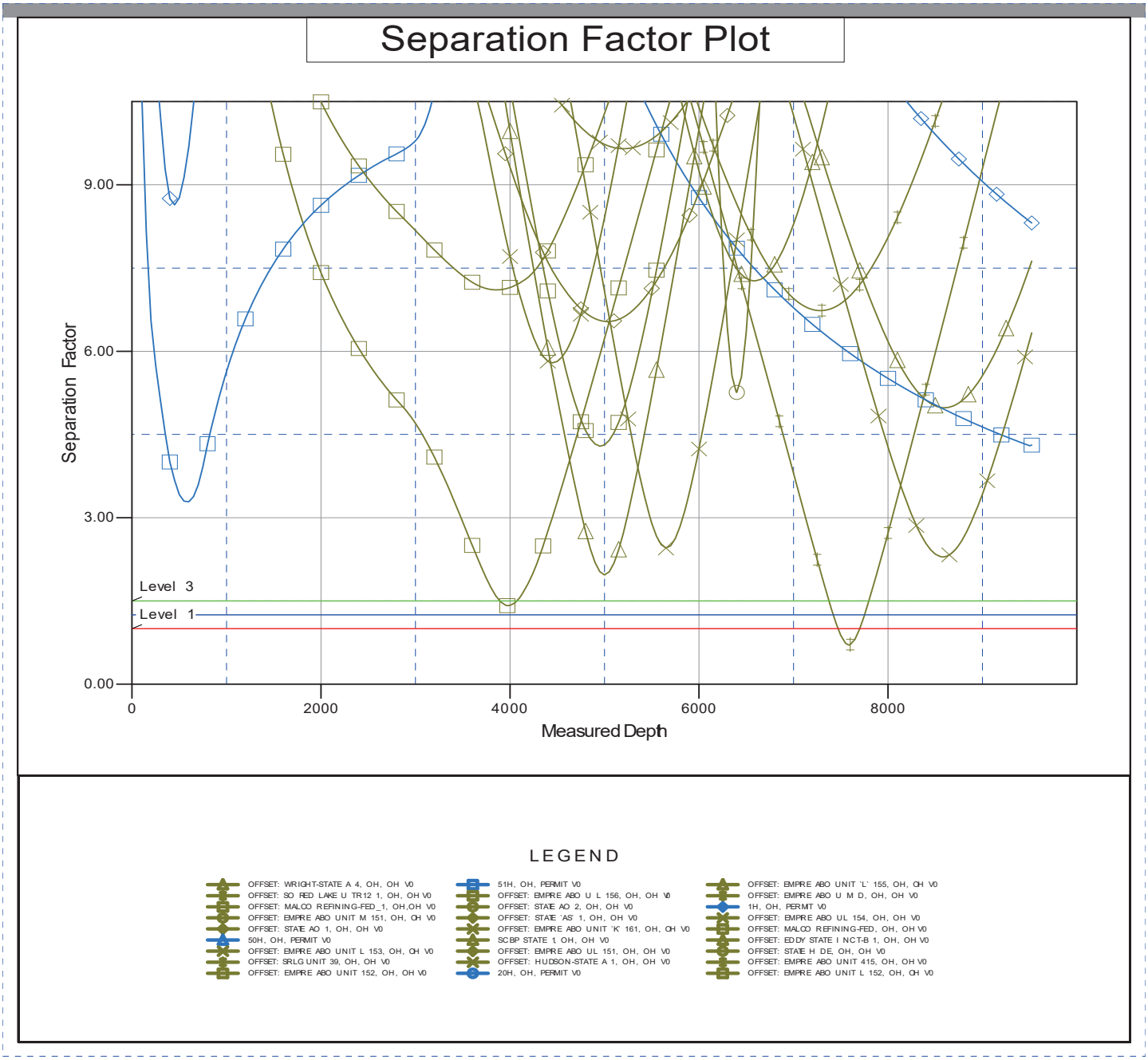
PROTOTYPE
Anticollision Report

PROTOTYPE WELL PLANNING
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Coordinates are relative to: 21H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.05°



Spur Energy Partners LLC – Cheshire Cat 2 State Com 21H

1. Geologic Formations

TVD of Target	3,500'
MD at TD	9,522'

Formation	Depth	Lithology	Expected Fluids
Quaternary	0'	Dolomite, other: Caliche	Useable Water
Rustler	Not Present		
Top Salt	Not Present		
Base Salt	Not Present		
Yates	250'	Dolomite, Limestone, Shale, Siltstone	None
Seven Rivers	525'	Dolomite, Limestone	Natural Gas, Oil
Queen	1075'	Anhydrite, Dolomite, Sandstone	Natural Gas, Oil
Grayburg	1535'	Anhydrite	Natural Gas, Oil
San Andres	1960'	Dolomite	Natural Gas, Oil
Glorieta	3425'	Dolomite, Siltstone	Natural Gas, Oil
Paddock	3615'	Dolomite, Limestone	Natural Gas, Oil
Blinebry	4200'	Dolomite, Limestone	Natural Gas, Oil
Abo	5225'	Dolomite, Limestone	Natural Gas, Oil

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Casing Formation Set Interval	Hole Size (in)	Casing Interval		Csg. Size (in)	Weight	Grade	Conn.	SF	SF Burst	Body SF	Joint SF
		From (ft)	To (ft)		(lbs)			Collapse		Tension	Tension
Seven Rivers	17.5	0	625	13.375	54.5	J-55	BTC	1.125	1.2	1.4	1.4
San Andres	12.25	0	2325	9.625	36	J-55	BTC	1.125	1.2	1.4	1.4
N/A	8.75	0	4200	7	32	L-80	GBCD	1.125	1.2	1.4	1.4
Yeso	8.75	4200	9522	5.5	20	L-80	GBCD	1.125	1.2	1.4	1.4
								SF Values will meet or Exceed			

Spur Energy Partners LLC – Cheshire Cat 2 State Com 21H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	Y
If yes, are there two strings cemented to surface?	Y
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing String	Top (ft)	Bottom (ft)	% Excess
Surface Tail	0	625	100%
Intermediate (Lead)	0	625	50%
Intermediate (Tail)	625	2325	100%
Production (Lead)	0	3200	0%
Production (Tail)	3200	9522	50%

Casing String	# Sks	Wt. (lb/gal)	Yld (ft3/sack)	H20 (gal/sk)	500# Comp. Strength (hours)	Slurry Description
Surface Tail	383	13.2	2.32	9.92	6:59	Clas C Premium Plus Cement
Intermediate (Lead)	124	12.2	1.84	13.48	8:12	Clas C Premium Plus Cement
Intermediate (Tail)	467	13.2	2.32	9.92	6:59	Clas C Premium Plus Cement
Production (Lead)	602	11.8	2.54	15.29	N/A	Clas C Premium Plus Cement
Production (Tail)	1244	13.2	1.81	9.81	N/A	Clas C Premium Plus Cement

Spur Energy Partners LLC – Cheshire Cat 2 State Com 21H

4. Pressure Control Equipment

Spur Energy Partners LLC variance for flex hose

Spur requests a variance to use a flex line from the BOP to the choke manifold. Documentation will be attached in the APD and be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no bends).

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12.25" Hole	13-5/8"	5M	Annular	✓	70% of working pressure
		5M	Blind Ram	✓	250 psi / 3000 psi
			Pipe Ram	✓	
			Double Ram		
			Other*		
8.75" Hole	13-5/8"	5M	Annular	✓	70% of working pressure
		5M	Blind Ram	✓	250 psi / 3000 psi
			Pipe Ram	✓	
			Double Ram		
			Other*		

Spur Energy Partners LLC will be utilizing a 5M BOP

Condition	Specify what type and where?
BH Pressure at deepest TVD	1805 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	112°F

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

	Formation integrity test will be performed per Onshore Order #2.

	On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
	Y Are anchors required by manufacturer?
	A conventional wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. See attached schematics.

5. BOP Break Testing Request

Spur Energy Partners LLC requests permission to adjust the BOP break testing requirements as follows:

BOP break test under the following conditions:

- After a full BOP test is conducted
- When skidding to drill the production section, where the surface casing point is shallower than the 3 Bone Spring or 10,000 TVD.
- When skidding to drill a production section that does not penetrate the 3rd Bone Spring or deeper.

If the kill line is broken prior to skid, four tests will be performed.

1) The void between the wellhead and the spool (this consists of two tests)
2) The spool between the kill lines and the choke manifold (this consists of two tests)

If the kill line is not broken prior to skid, two tests will be performed.

1) The void between the wellhead and the pipe rams

6. Mud Program

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Spur will use a closed mud system.

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	625	Water-Based Mud	8.6-8.9	32-36	N/C
625	2325	Brine	9.0-10.0	32-36	N/C
2325	9522	Brine	9.0-10.0	32-36	N/C

What will be used to monitor the loss or gain of fluid?	PVT/PASON/Visual Monitoring

7. Logging and Testing Procedures

Logging, Coring and Testing.	
Yes	Will run GR from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
No	Logs are planned based on well control or offset log information.
No	Drill stem test? If yes, explain
No	Coring? If yes, explain

Additional logs planned		Interval
No	Resistivity	
No	Density	
No	CBL	
Yes	Mud log	ICP - TD
No	PEX	

8. Drilling Conditions

Pump high viscosity sweeps as needed for hole cleaning. The mud system will be monitored visually/manually as well as with an electronic PVT. The necessary mud products for additional weight and fluid loss control will be on location at all times. Appropriately weighted mud will be used to isolate potential gas, oil, and water zones until such time as casing can be cemented into place for zonal isolation.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

Total estimated cuttings volume: 883.1 bbls**.**

Spur Energy Partners LLC – Cheshire Cat 2 State Com 21H

9. Other facets of operation

	Yes/No
Will more than one drilling rig be used for drilling operations? If yes, describe. Spur Energy Partners LLC. requests the option to contract a Surface Rig to drill, set surface/intermediate casing, and cement for this well. If the timing between rigs is such that Spur Energy Partners LLC. would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.	Yes

Attachments
_x__ Directional Plan
_x__ H2S Contingency Plan
_x__ Akita 57 Attachments
_x__ BOP Schematics
_x__ Transcend Spudder Rig Attachments

10. Company Personnel

Name	Title	Office Phone	Mobile Phone
Christopher Hollis	Drilling Manager	832-930-8629	713-380-7754
Johnny Nabors	Senior Vice President Operations	832-930-8502	281-904-8811

RIG # 57 1,150 HP Double Mast Drilling Rig

SUBSTRUCTURE
One Piece Step Down
Floor Height: 18' 9" (on 4' pony sub moving system)
Clear Height (beneath rotary beams): 15' 5"
Rotary Capacity: 400,000 lbf
Max Pipe Setback: 400,000 lbf
Note: All floor heights above are based on the substructure sitting on 6" mats & 4' pony sub moving system

MAST
106' telescoping, Drill Line: 1-1/8"
Static Hook Load: 440,000 lbf
Racking Capacity: 18,000' of 4" DP, 12,500' of 5" DP

DRAWWORKS
TSM 850 425,000lbs w/ 10 Lines
Input Power: 1,150 hp AC traction motor
Main Brake: 1,150 hp AC traction motor (Dynamic)
Aux Parking Brake: Eaton brake & drum / band brake system

TOP DRIVE
Tesco EXI 600 AC 350 Ton: Max speed 220 rpm,
Continuous Drill Torque: 30,000 ft-lbs
Max Torque (Make / Break): 45,000 ft-lbs
600 hp AC induction motor & drive system with PLC
250 Ton 5 x 36" Becket Block Assembly

IRON ROUGHNECK
NOV ST-80C Conn Range: 4 ½" to 8 ½"
Spin Speed: 75 rpm nominal on 5" drill pipe
Spin Torque: 1,750 ft-lbs
Maximum Make-up torque: 60,000 ft-lbs
Maximum Break-out torque: 80,000 ft-lbs

ROTARY TABLE
National 27 ½" 500 Ton with hydraulic drive to position tools only
27 ½" Diameter opening

POWER SYSTEM
VFD, MCC, Eaton Drives, Current Power Systems Controls, three Caterpillar C32 gen sets, 1220 BHP.

MUD PUMP #1
HHF1600 Triplex Rated Power: 1600 hp
Stroke: 12"
Input Power: 1500 hp AC traction motor
Pressure Rating: 5000 psi

MUD PUMP #2
HHF1600 Triplex Rated Power: 1600 hp
Stroke: 12"
Input Power: 1500 hp AC traction motor
Pressure Rating: 5000 psi

MUD TANKS
Two Tank system w/ 1200 bbls total capacity
Shakers: Three MI Swaco Mongoose 4 panel dual motion
Mud Gas Separator: MI Swaco 4' OD x 12' tall
Pill Tank: 54 bbls

MUD SYSTEM
5000 psi Max Pressure
5" Main plumbing and standpipe

SCALPING TANK
Main Tank: 186 bbls capacity
Trip Tank: 24 bbls capacity
Shakers: Three NOV Venom shakers dual motion

BOP (NACE)
11" x 5000 psi WP Spherical Annular
11" x 5000 psi WP Double Ram
11" x 5000 psi WP Single Ram (Optional)

MANIFOLD
3-1/8" 5,000 psi c/w two 3 1/8" manual chokes

ACCUMULATOR
CTI: 160 gal 6 station 3000 psi, c/w N2 Backup & electric triplex pump

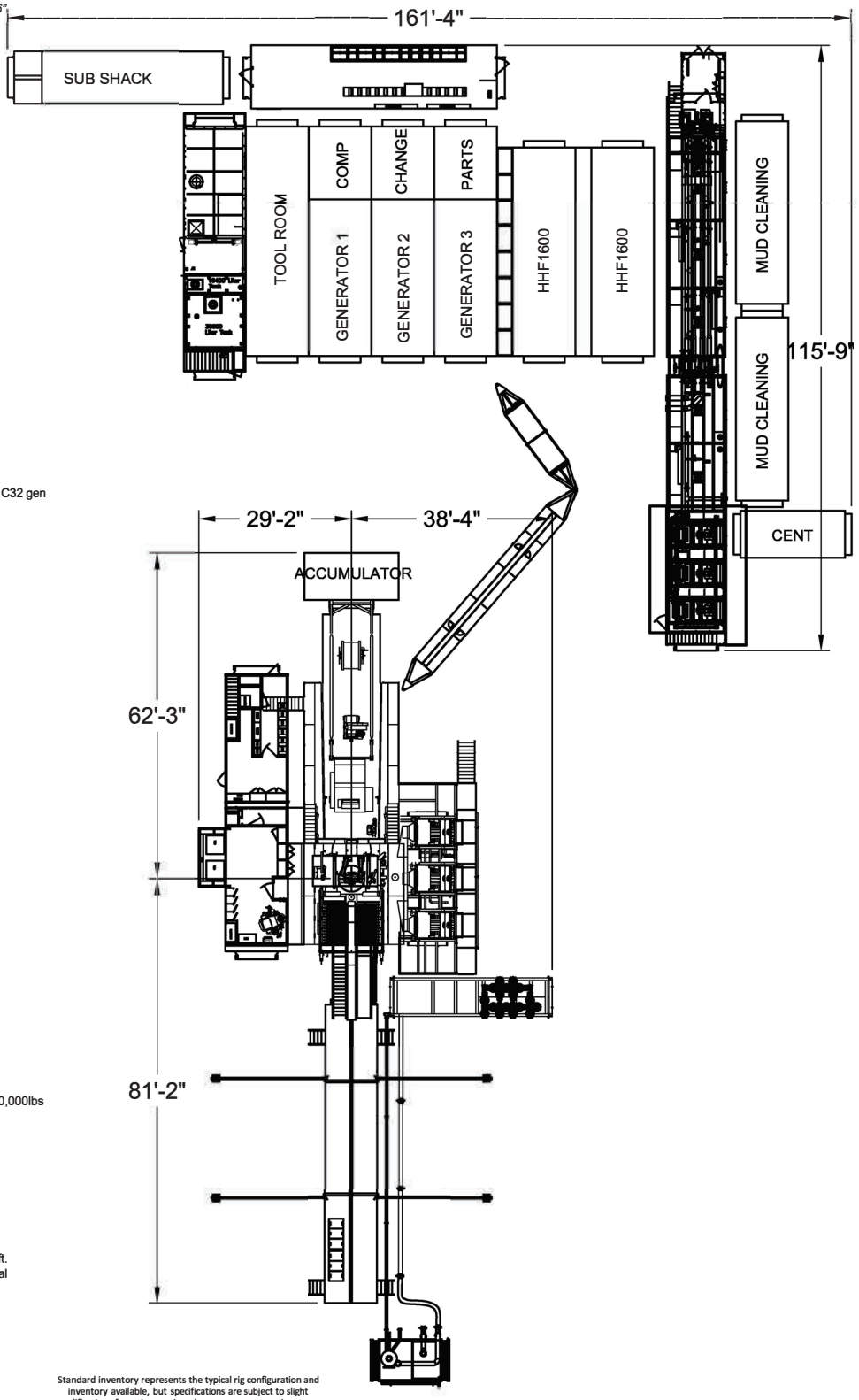
CATWALK
Ja-co Power Catwalk, tubular max length 47' 6", max OD 13 ⅝", max weight 10,000lbs

TUBULARS
Drill Pipe: Supplied as needed, per availability
Drill Collars & heaviwate: Supplied as needed, per availability

MISC.
Water Tank: 409 bbls; Fuel Tank 189 bbls; Screw Compressor
Boiler: 125 hp with Full Winterization

MOVING SYSTEM:
Walking beam hydraulic pony sub moving system for linear motion & side shift. 350' of Utility Suitcase style [50' lengths] connection for hydraulic and electrical supply.

TOOL/ STORAGE/ CAMP
Parts Storage Room and Tool House Room
Rig Manage Trailer: 14' x 44' skid mounted



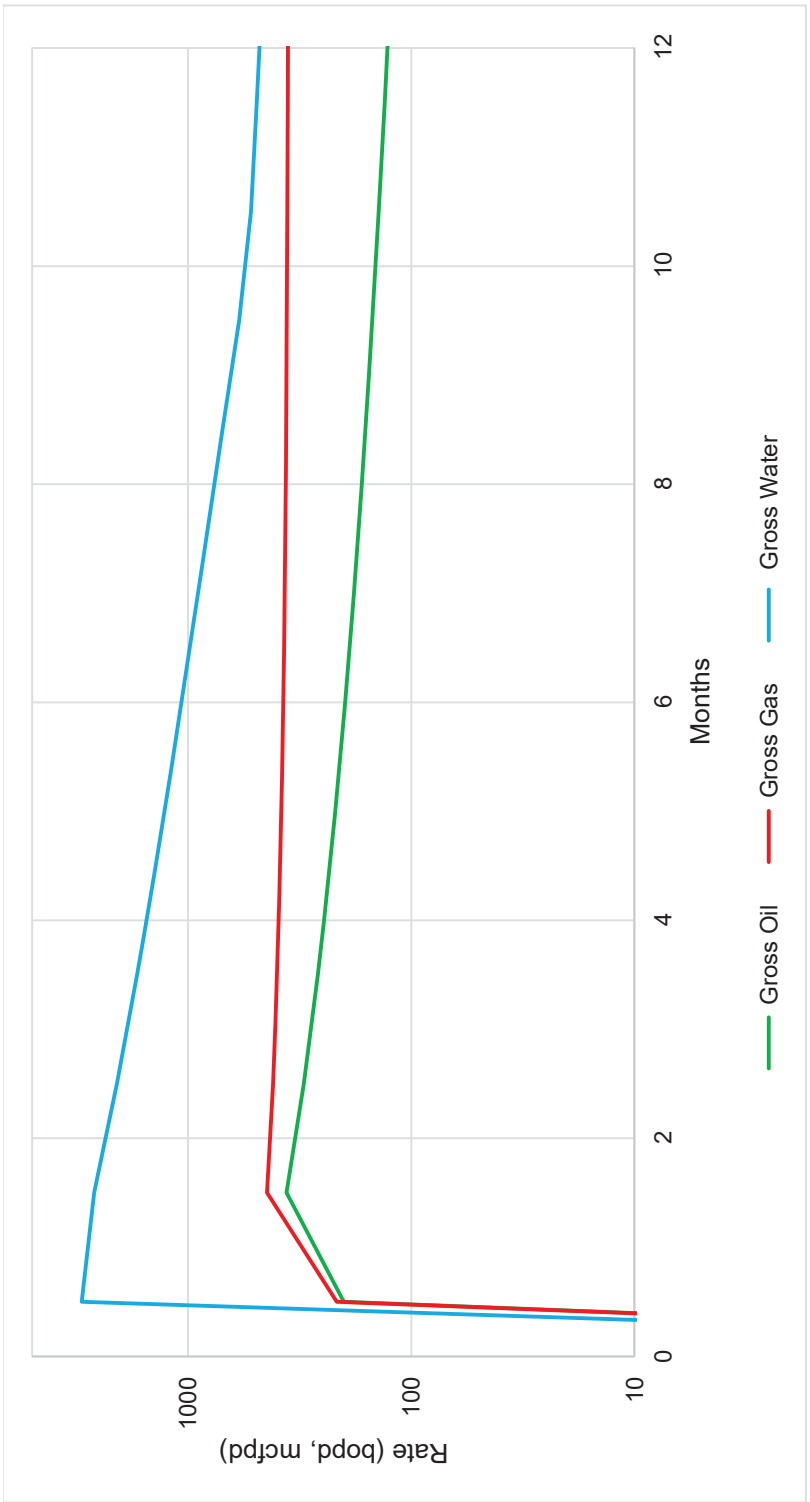
Standard inventory represents the typical rig configuration and inventory available, but specifications are subject to slight modifications from time to time due to customer requirements.

All ratings quoted herin are manufacturer specifications. AKITA's normal operating parameters are 90% of manufacturer mast ratings and 80% of mud pump manufacturer pressure rating. Operation of rig equipment beyond these parameters requires approval from AKITA field office management.

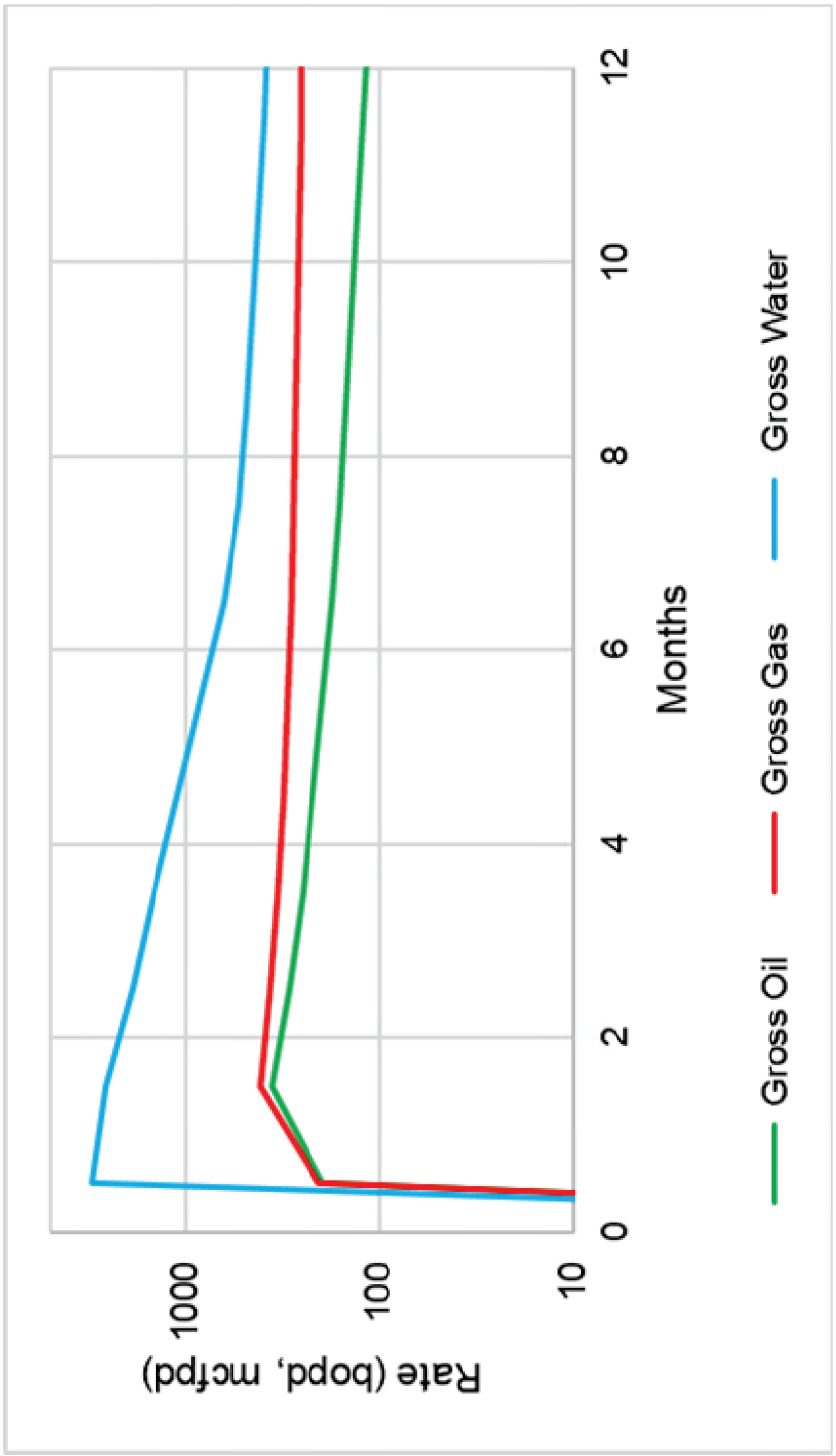
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TRANSCEND RIG 4	Contractor Specification
Make	Schram
Model	TXD 130
Year of Manufacture	2006
Truck Mounted	YES
Rated Drilling Depth	130,000# hook load
Rated Depth with Tubing	
Derrick Height	69’ 9’’
Derrick Type	Telescoping Hydraulic
Derrick Capacity	130,000#
Elevators	N/A
Drawworks	760 HP Detroit
Wire Diameter	Hydraulic
Workfloor Max Height	8’
Tongs	Hydraulic Iron Roughneck
Slips	Manual Slips
Included Tubing Handling Tools	• 13 3/8’’ handling tools
Included Rod Handling Tools	85jts of 4.5’’ drill pipe
BOP Class Compatibility	
Weight Indicator	Hydraulic
Rig Safety Equipment	Eye wash station, fire extengushers, wind sock
Pad Size Requirements/Limitations	60’ x 60’
Guy Line Spacing	N/A
Other Supplied Rig Equipment 1- F800 pump 1- Pill pit 80bbl 1- 400 bbl mud mix 1- Shaker 150mesh 1- 500 bbl fresh water frac tank	Standard Rig Hand Tools: • (2) 36” pipe wrenches • (2) 24” pipe wrenches • (2) 18” pipe wrenches • (1) 24” crescent wrench • (2) 12” crescent wrenches • (1) 4 lb shop hammer • (1) 12 lb sledge hammer • (1) 4 foot pry bar • Vehicles for Contractor personnel • Air Impact Wrench with Sockets • Mud Scales (as needed)

Loco Hills Paddock Type Curve



Loco Hills Blinebry Type Curve



State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: SPUR ENERGY PARTNERS LLC **OGRID:** 328947 **Date:** 11 / 19 / 25

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

CHESHIRE CAT 2 STATE COM 1H 30-015-

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
CHESHIRE CAT 2 STATE COM 1H	30-015-	A-11-18S-27E	699' FNL 1160' FEL	338 BBL/D	657 MCF/D	2299 BBL/D
CHESHIRE CAT 2 STATE COM 20H	30-015-	A-11-18S-27E	678' FNL 1194' FEL	413 BBL/D	650 MCF/D	2965 BBL/D
CHESHIRE CAT 2 STATE COM 21H	30-015-	A-11-18S-27E	720' FNL 1126' FEL	413 BBL/D	650 MCF/D	2965 BBL/D
CHESHIRE CAT 2 STATE COM 50H	30-015-	A-11-18S-27E	688' FNL 1177' FEL	424 BBL/D	481 MCF/D	2140 BBL/D
CHESHIRE CAT 2 STATE COM 51H	30-015-	A-11-18S-27E	710' FNL 1143' FEL	424 BBL/D	481 MCF/D	2140 BBL/D

IV. Central Delivery Point Name: RED SKIES 10 FEDERAL COM TANK BATTERY [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
CHESHIRE CAT 2 STATE COM 1H	30-015-	04/12/2026	04/17/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 20H	30-015-	04/17/2026	04/23/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 21H	30-015-	04/23/2026	04/29/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 50H	30-015-	04/29/2026	05/05/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 51H	30-015-	05/05/2026	05/11/2026	05/23/2026	06/22/2026	06/26/2026

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan
EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	Sarah Chapman
Printed Name:	SARAH CHAPMAN
Title:	REGULATORY DIRECTOR
E-mail Address:	SCHAPMAN@SPURENERGY.COM
Date:	11/19/2025
Phone:	832-930-8613

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

Natural Gas Management Plan – Attachment

VI. Separation equipment will be sized by construction engineering staff based on anticipated daily production to ensure adequate capacity.

VII. Spur Energy Partners LLC ("Spur") will take the following actions to comply with the regulations listed in 19.15.27.8:

A. Spur will maximize the recovery of natural gas by minimizing waste, as defined by 19.15.2 NMAC, of natural gas through venting and flaring. Spur will ensure that our wells will be connected to a natural gas gathering system with sufficient capacity to transport natural gas.

B. All drilling operations will be equipped with a rig flare at least 100 feet from the nearest surface hole location. Rig flare will be utilized to combust any natural gas that is brought to surface during normal operations. In the case of emergency, flaring volumes will be reported appropriately.

C. During completion operations any natural gas brought to surface will be flared. Immediately following completion operations, wells will flow to permanent separation equipment. Produced natural gas from separation equipment will be sent to sales. If natural gas does not meet gathering pipeline specifications, Spur will flare for 60 days or until natural gas meets the pipeline specifications. Spur will ensure flare is properly sized and is equipped with an automatic igniter or continuous pilot. Gas samples will be taken twice per week and natural gas will be routed into a gathering system as soon as the pipeline specifications are met.

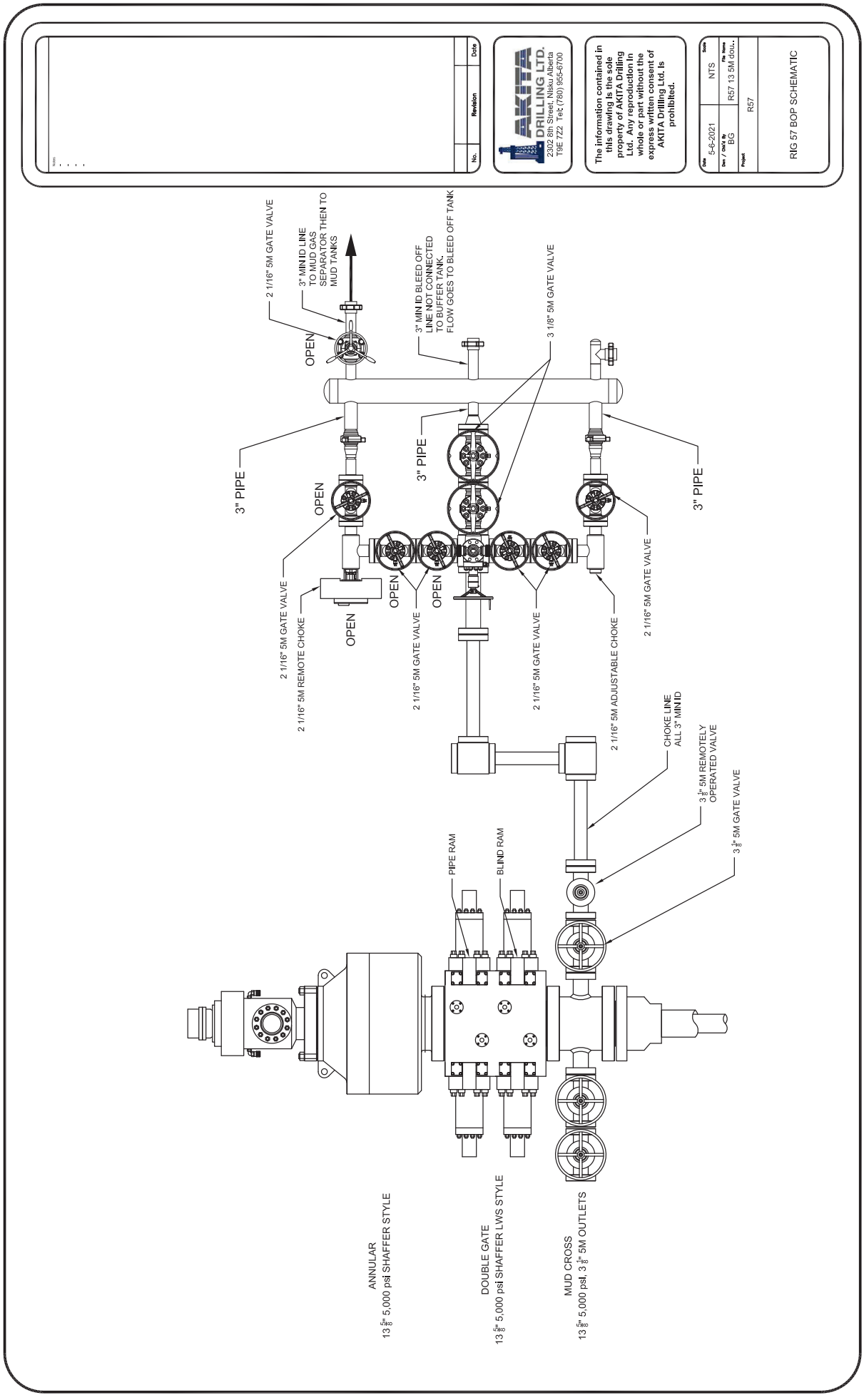
D. Natural gas will not be flared with the exception of 19.15.27.8(D)(1-4). If there is no adequate takeaway for the separator gas, wells will be shut-in until that natural gas gathering system is available with exception of emergency or malfunction situations. Volumes will be reported appropriately.

E. Spur will comply with performance standards pursuant to 19.15.27.8(E)(1-8). All equipment will be designed and sized to handle maximum pressures to minimize waste. Storage tanks constructed after May 25, 2021 will be equipped with an automatic gauging system that reduces venting of natural gas. Flare stacks installed or replaced after May 25, 2021 will be equipped with an automatic ignitor or continuous pilot. Spur will conduct AVO inspections as described in 19.15.27.8(E)(5)(a) with frequencies specified in 19.15.27.8(E)(5)(b) and (c). All emergencies or malfunctions will be resolved as quickly and safely as possible to minimize waste.

F. The volume of natural gas that is vented or flared as the result of an emergency or malfunction during drilling and/or completion operations will be estimated and reported accordingly. The volume of natural gas that is vented, flared or beneficially used during production operations, will be measured and reported accordingly. Spur will install equipment to measure the volume of natural gas flared from existing piping or a flowline piped from equipment such as high-pressure separators, heater treaters, or VRUs associated with a well or facility associated with a well authorized by an APD after May 25, 2021 that has an average daily production of less than 60,000 cubic feet of natural gas. If metering is not practicable due to circumstances such as low flow rate or low pressure venting or flaring, Spur will estimate the volume of flared or vented natural gas. Measuring equipment will conform to industry standards and will not be equipped with a manifold

that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing equipment.

VIII. For maintenance activities involving production equipment and compression, venting be limited to the depressurization of the subject equipment to ensure safe working conditions. For maintenance of production equipment, the associated producing wells will be shut-in to eliminate venting. For maintenance of VRUs, all natural gas normally routed to the VRU will be routed to flare.


Notes:
No.
Revision
Date
AKITA DRILLING LTD.
2302 8th Street, Nisku Alberta
T9E 7Z2 Tel: (780) 955-8700
The information contained in this drawing is the sole property of AKITA Drilling Ltd. Any reproduction in whole or part without the express written consent of AKITA Drilling Ltd. is prohibited.
Date
5-6-2021
Des. / Dft'd. By
BG
Project
RS7
Scale
NTS
File Name
RS7 13 5M dou..
RIG 57 BOP SCHEMATIC
2 1/16" 5M GATE VALVE
3" MIN ID LINE TO MUD GAS SEPARATOR THEN TO MUD TANKS
OPEN
3" MIN ID BLEED OFF LINE NOT CONNECTED TO BUFFER TANK. FLOW GOES TO BLEED OFF TANK
3 1/8" 5M GATE VALVE
3" PIPE
OPEN
3" PIPE
3" PIPE
2 1/16" 5M GATE VALVE
2 1/16" 5M REMOTE CHOKE
OPEN
OPEN
2 1/16" 5M GATE VALVE
OPEN
2 1/16" 5M GATE VALVE
2 1/16" 5M GATE VALVE
2 1/16" 5M ADJUSTABLE CHOKE
CHOKE LINE ALL 3" MIN ID
3 1/8" 5M REMOTELY OPERATED VALVE
3 1/8" 5M GATE VALVE
PIPE RAM
BLIND RAM
ANNULAR
13 5/8" 5,000 psi SHAFFER STYLE
DOUBLE GATE
13 5/8" 5,000 psi SHAFFER LWS STYLE
MUD CROSS
13 5/8" 5,000 psi. 3 1/8" 5M OUTLETS

POWERING PROGRESS™

MTR DATA BOOK

CL2013

CUSTOMER: GATES CANADA INC
DATE: 12/19/2017
Purchase Order: D235455 (PO 45750)
Sales Order #: 509128
Product Description: 5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill Gates Hose Assembly c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached

Hose S/N: H-121917-14
PART NUMBER: FR5K3.517.0CK31/85KFLG S/C

CONTENTS INCLUDED

GMCO FITTINGS

17-309-1	INSERT STEM
15-095-1A	FERRULE

3 1/8 in. 5K FIXED FLANGE X 3 1/8 in. 5K FLOAT FLANGE

V4131	FIXED FLANGE
V5054	FLOAT FLANGE

WELDING SPECIFICATIONS
Certification and Procedure for welding

NDE RESULTS
1622371-03/1622371-01 Ultrasonic Test Results and Imaging

Safey Clamps
34145/34144

TEST CHART
Chart Recording of Hydrostatic Test

TEST CERTIFICATE
Document Product Details & Positive Results of Hydrostatic Testing

CERTIFICATE OF CONFORMANCE
A Declaration of the conformity with the type approval

IMAGES
Images of the product prior to shipping.

PACKING LIST
Details of Shipping Contents, Dimensions and Weights

BLACK GOLD®

GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr. Suite 190
Houston, TX. 77086

PHONE: +1 (281) 602-4100
FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

PRESSURE TEST CERTIFICATE

Customer:	GATES CANADA INC	Test Date:	12/19/2017
Customer Ref.:	D235455 (PO 45750)	Hose Serial No.:	H-121917-14
Invoice No.:	509128	Created By:	Cristian Rivera

Product Description:	5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached

End Fitting 1:	3 1/8 in. 5K FIXED FLG	End Fitting 2:	3 1/8 in. 5K FLOAT FLG
Oracle Star No.:	68903550-9725917	Assembly Code:	15M5019042016H-121917-14
CUSTOMER P/N:	FR5K3.517.0CK31/85KFLG S/C	Test Pressure:	7,500 psi.
		Working Pressure:	5,000 psi.

Gates Engineering & Services North America certifies that:

The following hose assembly has successfully passed all pressure testing requirements set forth in Gates specifications: GTS-04-052 (for 5K assemblies) or GTS-04-053 (10K assemblies) or GTS-04-048 (15K assemblies), which include reference to Specification API 16C (2nd Edition); sections 7.5.4, 7.5.9, and 10.8.7. A test graph will accompany this test certificate to illustrate conformity to test requirements. This hose assembly was pressure tested using equipment and instrumentation that has been calibrated in accordance with the requirements set-forth in the GESNA management system.

Quality:	QUALITY	Production:	PRODUCTION
Date :	8/5/2021	Date :	8/5/2021
Signature :		Signature :	

F-PRD-005B

Revision 6_05032021

BLACK GOLD®

GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr.
Houston, TX. 77086

PHONE: +1 (281) 602-4100
FAX: +1 (281) 602-4147
EMAIL: gesna.quality@gates.com
WEB: www.gates.com/oilandgas

CERTIFICATE OF CONFORMANCE

This is to certify that all parts and materials included in this shipment have manufactured and/or processed in accordance with various Gates and API assembly and test specifications. Records of required tests are on-file and subject to examination. Test reports and subsequent test graphs have been made available with this shipment. Additional supporting documentation related to materials, welding, weld inspections, and heat-treatment activities are available upon request.

CUSTOMER:	GATES CANADA INC
CUSTOMER P.O.#:	D235455 (PO 45750)
PART DESCRIPTION:	FR5K3.517.0CK31/85KFLG S/C
PART DESCRIPTION:	5K 3 1/2 in. 17 FT. Fire Rated Choke & Kill c/w 3 1/8 5K Flange with Safety Clamps & Slings Attached
SALES ORDER #:	509128
QUANTITY:	1
SERIAL #:	H-121917-14

SIGNATURE: J Rivera

TITLE: QUALITY ASSURANCE

DATE: 8/5/2021

Released to Imaging: 4/14/2026 10:51:34 AM
Received by OCD: 3/18/2026 12:49:31 PM

Gates E&S

North America

7603 Prairie Oak dr.

Houston,TX

Hydrostatic Test

Customer= GATES CANADA

Date of test= 12/19/17

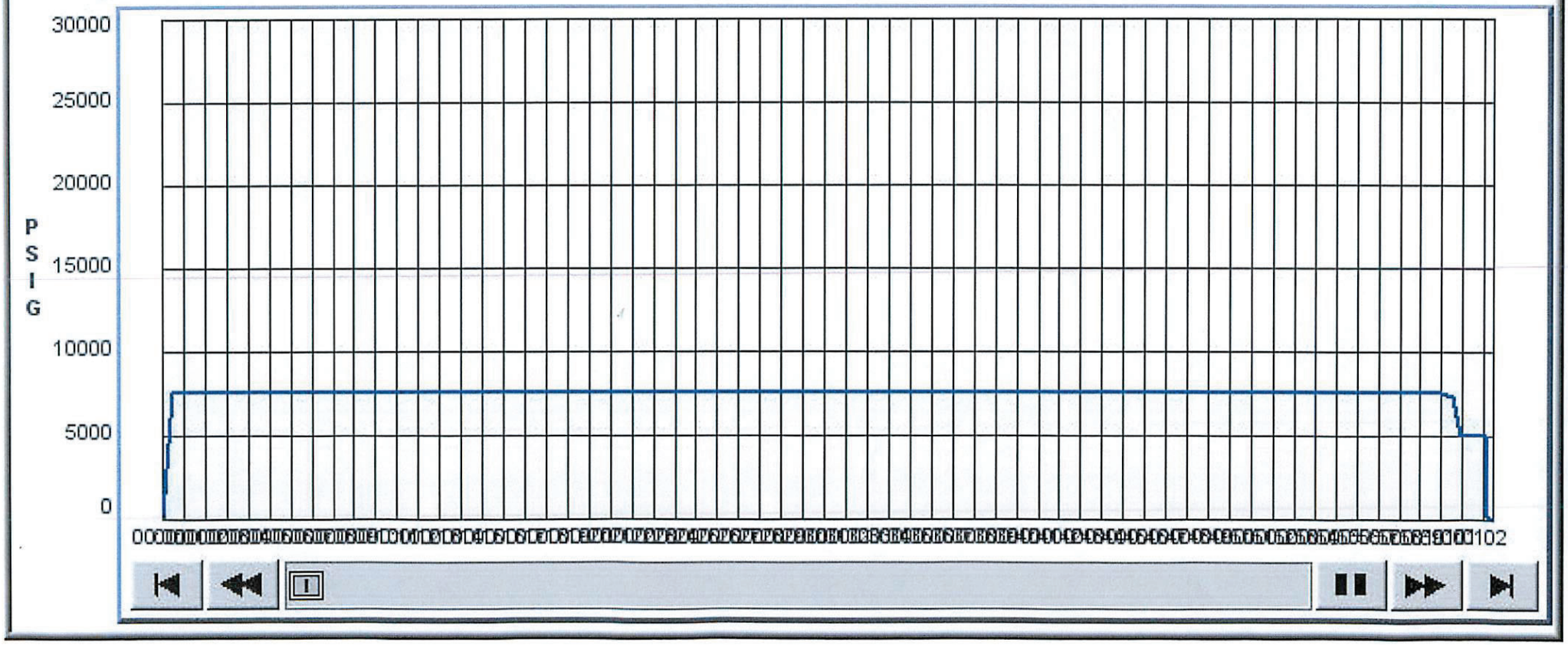
Serial # = H-121917-13,-14

Description = 3.5 5K 3 1/8 FLG 5K

Technician= CHRIS OLIVO

12/19/2017 16:53:26

17:55:52



Edwards Fabrication LLC

1385 Hwy. 35 Bypass S.
P.O. Box 2350
Rockport, TX 78381

O: (361) 790-7910
F: (361) 790-7927

tedwards@edwardsfabrication.com
www.edwardsfabrication.com

CERTIFICATE OF TEST

Client:
Gates E & S North America
134 44th Street
Corpus Christi, TX 78405

Purchase Order: 1592198/0

Certificate Number				Date of Examination
34145				04/27/17
ID#	**Part Number**	**Description**	**SWL***	**Proofload**
34145	E3.5S	3.5" E Safety Clamp	6016 lbs.	12031 lbs.

The Safety Clamp unit identified on this certificate has been load tested completely assembled; including the clamp body, (2) 3/4" shackles, 5/8" x 48" wire rope sling and anchor tab. Thus, all components are tested at the "Proof" load. Do not disassemble. Do not interchange any part or parts of this tested unit with parts of other Safety Clamp units. DO NOT WELD, CUT, ADD-TO, TAKE AWAY ANY COMPONENTS OR MAKE ANY MODIFICATION TO THIS CLAMP UNIT. Doing so voids this test certificate.

Cutting/Removing either one or both stainless steel Tamper-proof hardware cables renders this Test Certificate VOID.

** Safe Work Load*

THIS PRODUCT IS MANUFACTURED IN THE U.S.A.

We hereby verify that the above information is correct
as contained in the records of Edwards Fabrication L.L.C.

ISO 9001:2008
BUREAU VERITAS
Certification

Edwards Fabrication L.L.C. is certified as having a Quality Management System.

Thomas F. Edwards
President
Edwards Fabrication L.L.C.

Edwards Fabrication LLC

1385 Hwy. 35 Bypass S.
P.O. Box 2350
Rockport, TX 78381

O: (361) 790-7910
F: (361) 790-7927

tedwards@edwardsfabrication.com
www.edwardsfabrication.com

CERTIFICATE OF TEST

Client:
Gates E & S North America
134 44th Street
Corpus Christi, TX 78405

Purchase Order: 1592198/0

Certificate Number				Date of Examination
34144				04/27/17
ID#	**Part Number**	**Description**	**SWL***	**Proofload**
34144	E3.5S	3.5" E Safety Clamp	6014 lbs.	12027 lbs.

The Safety Clamp unit identified on this certificate has been load tested completely assembled; including the clamp body, (2) 3/4" shackles, 5/8" x 48" wire rope sling and anchor tab. Thus, all components are tested at the "Proof" load. Do not disassemble. Do not interchange any part or parts of this tested unit with parts of other Safety Clamp units. DO NOT WELD, CUT, ADD-TO, TAKE AWAY ANY COMPONENTS OR MAKE ANY MODIFICATION TO THIS CLAMP UNIT. Doing so voids this test certificate.

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as contained in the records of Edwards Fabrication L.L.C.

ISO 9001:2008
BUREAU VERITAS
Certification

Edwards Fabrication L.L.C. is certified as having a Quality Management System.

Thomas F. Edwards
President
Edwards Fabrication L.L.C.

AFMSS
U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

SUPO Data Report
03/18/2026

APD ID: 10400108984
Submission Date: 12/02/2025
Operator Name: SPUR ENERGY PARTNERS LLC
Well Name: CHESHIRE CAT 2 STATE COM
Well Number: 21H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes
Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Cheshire_Cat_2_State_Com_21H_Exist_Roads_20251202122203.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Cheshire_Cat_2_State_Com_21H_New_Roads_20251202122219.pdf

New road type: LOCAL

Length: 220.76 Feet

Width (ft.): 30

Max slope (%): 0

Max grade (%): 3

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 24

New road access erosion control: Crowned and ditched

New road access plan or profile prepared? N

New road access plan

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Access road engineering design? N

Access road engineering design

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Grader

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: OTHER

Other Description: No new road drainage crossing is needed.

Drainage Control comments: Crowned and ditched

Road Drainage Control Structures (DCS) description: None.

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Existing Well map Attachment:

Cheshire_Cat_2_State_Com_21H_Exist_Wells_20251202122232.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: The Cheshire Cat 2 State Com wells will have the ability to be routed to the Red Skies 10 Federal Com multi-well pad lying in Section 11, Township 18 South, Range 27 East. Each well will have two (2) 4 buried flowlines operating at less than 125 psi.; the wells will produce into this battery at any given time. The flowlines will follow a route approved by the B.L.M. Survey a strip of land 30 feet wide, being 4,005.88 feet in length, lying in Section 11, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across B.L.M. lands.

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

The overhead electric line will follow a route approved by the B.L.M. Survey a strip of land 30 feet wide, being 34.75 feet in length, lying in Section 2, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across State of Nex Mexico lands. Survey a strip of land 30 feet wide, being 650.16 feet in length, lying in Section 11, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across B.L.M. lands. If we are unable to energize the CVE meter, we will install natural gas generators on location to run the wells fueled with residue gas from the Kinetik plant by one (1) 4 surface flowline operating at less than 125 psi. See attached for additional information on the Cheshire Cat 2 State Com development.

Production Facilities map:

Cheshire_Cat_2_State_Com_21H_FacilityPLEL_20251202122245.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Water Recycling Facility

Water source use type: DUST CONTROL
SURFACE CASING
INTERMEDIATE/PRODUCTION CASING
STIMULATION

Source latitude: 32.795556 **Source longitude:** -104.123056

Source datum:

City:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 12000 **Source volume (acre-feet):** 1.54671716

Source volume (gal): 504000

Water source and transportation

Cheshire_Cat_2_State_Com___Recycle_Frac_Pond_20251202113808.pdf

Water source comments: Water for the Cheshire Cat 2 State Com wells will be trucked from the Spur Hub Produced Water/Recycling Facility located in NWNW quarter, Section 36, Township 17 South, Range 28 East, Eddy County, New Mexico. Private Surface (32.795556, -104.123056). Permit Number 2RF-111.
New water well? N

New Water Well Info

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: NM One Call (811) will be notified before construction starts. Top ~6 of soil and brush will be stockpiled on the southeast side of the pad. Closed loop drilling system will be used. Caliche will be hauled from the existing caliche pit on private land in the NE/4 Section 18, Township 18 South, Range 28 East.

Construction Materials source location

Cheshire_Cat_2_State_Com___Caliche_Aerial_20251202113822.pdf

Section 7 - Methods for Handling

Waste type: SEWAGE

Waste content description: Black and grey matter

Amount of waste: 5 barrels

Waste disposal frequency : Daily

Safe containment description: Plastic holding tanks and chemical toilets

Safe containmant attachment:

Waste disposal type: OTHER **Disposal location ownership:** OTHER

Disposal type description: Public

Disposal location description: Carlsbad wastewater treatment plant

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Waste type: GARBAGE

Waste content description: Trash

Amount of waste: 10 barrels

Waste disposal frequency : Daily

Safe containment description: Portable trash cans

Safe containmant attachment:

Waste disposal type: OTHER **Disposal location ownership:** OTHER

Disposal type description: Public

Disposal location description: Eddy County Landfill

Waste type: DRILLING

Waste content description: Drill cuttings, mud, salts, and other chemicals.

Amount of waste: 883.1 barrels

Waste disposal frequency : Daily

Safe containment description: Steel mud tanks

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Mud tanks will be hauled to R360's state approved (NM-01-0006) disposal site at Halfway, New Mexico.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? N

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

Cuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities

Comments:

Section 9 - Well Site

Well Site Layout Diagram:

Cheshire_Cat_2_State_Com_Well_Site_Layout_20251202113957.pdf

Comments:

Section 10 - Plans for Surface

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** CHESHIRE CAT 2 STATE COM

Multiple Well Pad Number: 1H 20H 21H 50H 51H

Recontouring

Cheshire_Cat_2_State_Com_21H_Site_Plan_20251202122344.pdf

Drainage/Erosion control construction: Crowned and ditched

Drainage/Erosion control reclamation: Harrowed on the contour

Well pad proposed disturbance (acres): 3.42286	**Well pad interim reclamation (acres):** 2.05693	**Well pad long term disturbance (acres):** 1.36593
Road proposed disturbance (acres): 0.152	**Road interim reclamation (acres):** 0	**Road long term disturbance (acres):** 0.152
Powerline proposed disturbance (acres): 0.472	**Powerline interim reclamation (acres):** 0.472	**Powerline long term disturbance (acres):** 0
Pipeline proposed disturbance (acres): 2.759	**Pipeline interim reclamation (acres):** 2.7	**Pipeline long term disturbance (acres):** 0.059
Other proposed disturbance (acres): 3.068	**Other interim reclamation (acres):** 3.068	**Other long term disturbance (acres):** 0

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Total proposed disturbance: 9.87386 **Total interim reclamation:** 8.29693 **Total long term disturbance:** 1.57693

Disturbance Comments:

Reconstruction method: Interim reclamation will be completed within 6-months of completing the last well on the pad. Interim reclamation will consist of reclaiming the topsoil pile along the edges of the proposed pad. Areas will be seeded in accordance with B.L.M. requirements. Final reclamation will occur within 6-months of plugging the last well on the pad. Final reclamation will consist of using any remaining stockpiled topsoil to cover the remainder of the pad and associated roads. Disturbed areas will be contoured to match pre-construction grades.

Topsoil redistribution: Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with B.L.M. requirements. Noxious weeds will be controlled.

Soil treatment: None.

Existing Vegetation at the well pad: Mesquite and/or Creosote Bush

Existing Vegetation at the well pad

Existing Vegetation Community at the road: Mesquite and/or Creosote Bush

Existing Vegetation Community at the road

Existing Vegetation Community at the pipeline: Mesquite and/or Creosote Bush

Existing Vegetation Community at the pipeline

Existing Vegetation Community at other disturbances: Mesquite and/or Creosote Bush

Existing Vegetation Community at other disturbances

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation?

Seed harvest description:

Seed harvest description attachment:

Seed

Seed Table

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation

Operator Contact/Responsible Official

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment

Weed treatment plan description: To B.L.M. standards

Weed treatment plan

Monitoring plan description: To B.L.M. standards

Monitoring plan

Success standards: To B.L.M. standards

Pit closure description: No pit.

Pit closure attachment:

Section 11 - Surface

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: OTHER

Describe: FLOWLINES

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: OTHER

Describe: ELECTRIC LINE

Surface Owner: BUREAU OF LAND MANAGEMENT,STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: NEW MEXICO STATE LAND OFFICE

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other

Right of Way needed? Y **Use APD as ROW?** Y

ROW Type(s): 281001 ROW - ROADS,285003 ROW – POWER TRANS,288100 ROW – O&G Pipeline,288103 ROW – Salt Water Disposal Pipeline/Facility,289001 ROW- O&G Well Pad

ROW

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

SUPO Additional Information: Onsite conducted on October 28, 2025. Lessee of record of back build will be notified prior to spud.
Use a previously conducted onsite? N

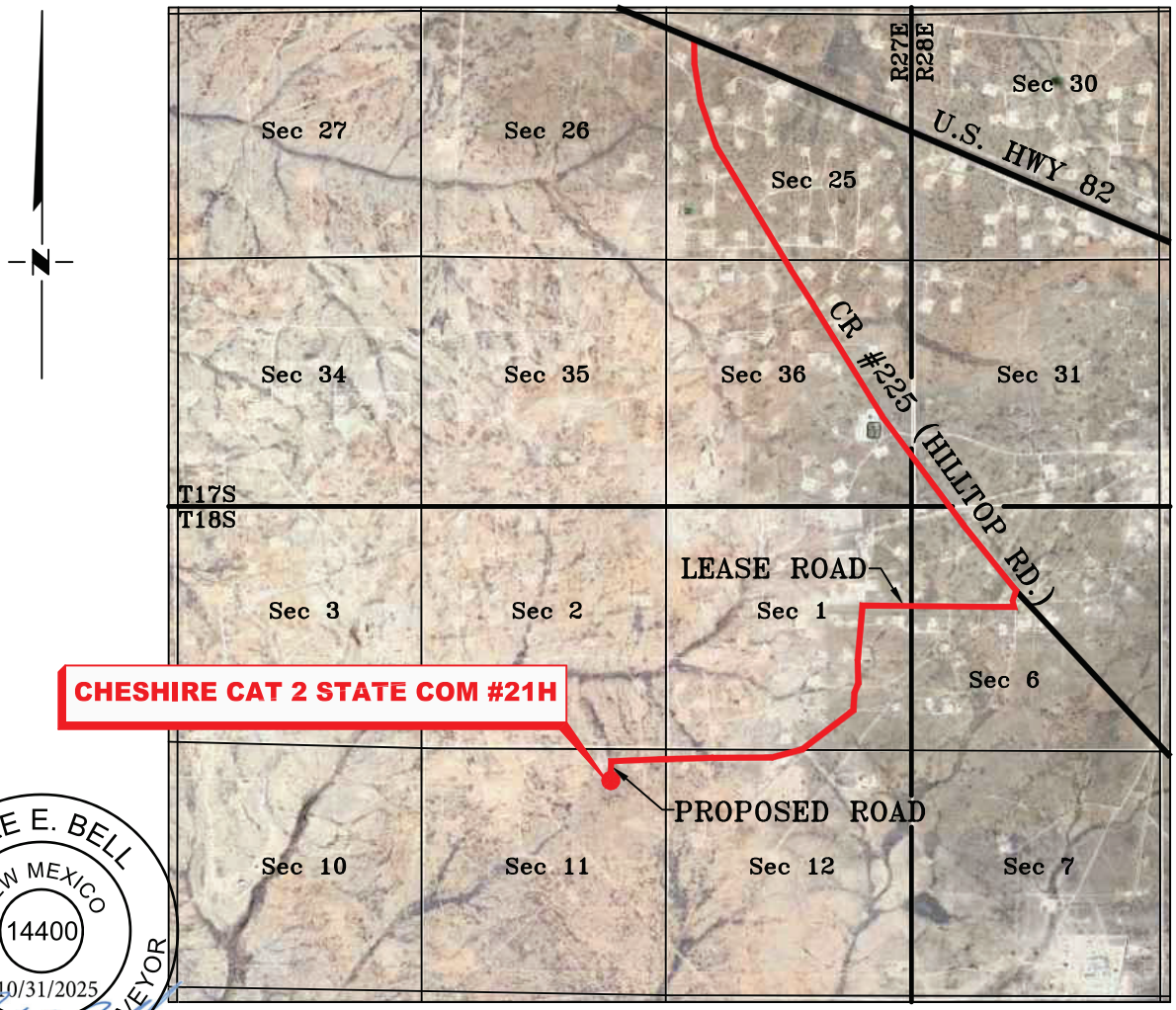
Previous Onsite information:

Other SUPO

Cheshire_Cat_2_State_Com_21H_LVM_20251202122415.pdf
Cheshire_Cat_2_State_Com_Cut_and_Fill_20251201145646.pdf
Cheshire_Cat_2_State_Com_SUPO_20251202114021.pdf
Cheshire_Cat_2_State_Com_WMP_20251201145656.pdf

VICINITY MAP

NOT TO SCALE



DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

SECTION 11, TWP. 18 SOUTH, RGE. 27 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: Spur Energy Partners LLC.
LEASE: Cheshire Cat 2 State Com
WELL NO.: 21H

LOCATION: 720' FNL & 1126' FEL
ELEVATION: 3611'

NO.	REVISION	DATE

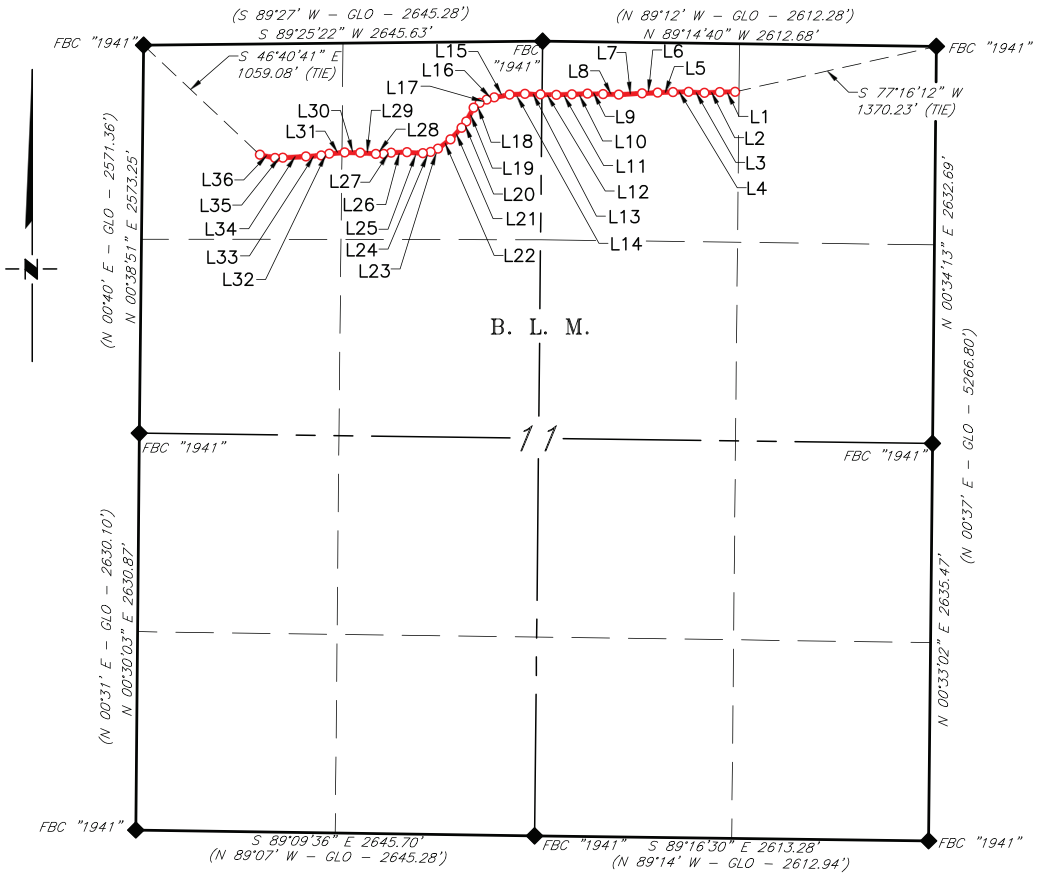
JOB NO.: LS25100861
DWG. NO.: 25100861-4

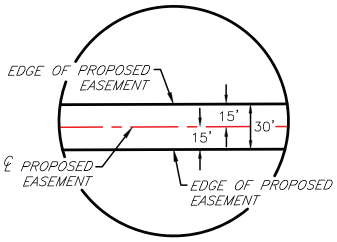
RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: N. T. S.
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

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SPUR ENERGY PARTNERS LLC.
SURVEY OF AN EXISTING LEASE ROAD FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS
SECTION 11, T18S, R27E
N. M. P. M., EDDY COUNTY, NEW MEXICO





DETAIL "A"
N. T. S.

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 83 NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA – GLO
FOUND MONUMENT AS NOTED
EXISTING LEASE ROAD

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100870
DWG. NO.: 25100870–1

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 3

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SURVEY OF AN EXISTING LEASE ROAD FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTION 11, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO

LINE TABLE		
LINE	BEARING	LENGTH
L1	S 89°03'33" W	100.69'
L2	S 87°00'06" W	102.33'
L3	N 86°36'41" W	105.46'
L4	S 89°40'16" W	102.48'
L5	S 87°46'07" W	102.68'
L6	S 87°38'57" W	102.69'
L7	S 86°34'11" W	156.35'
L8	N 87°42'09" W	103.84'
L9	N 88°47'45" W	102.80'
L10	S 87°50'42" W	103.61'
L11	S 88°06'56" W	103.91'
L12	N 88°45'16" W	103.72'
L13	N 87°22'32" W	103.89'
L14	S 86°18'06" W	102.79'
L15	S 79°46'02" W	102.13'
L16	S 73°54'37" W	53.00'
L17	S 64°50'33" W	50.84'
L18	S 51°43'27" W	51.56'
L19	S 27°43'45" W	103.55'
L20	S 37°47'01" W	52.28'
L21	S 43°31'31" W	105.18'
L22	S 53°19'37" W	103.75'
L23	S 65°30'19" W	53.26'
L24	S 81°24'47" W	53.41'
L25	N 86°08'21" W	105.67'
L26	S 87°52'12" W	103.72'
L27	S 80°48'23" W	50.79'
L28	N 89°15'46" W	52.09'
L29	N 85°56'44" W	103.15'
L30	N 88°31'29" W	103.23'
L31	S 84°38'03" W	103.45'
L32	S 78°24'48" W	53.45'
L33	S 85°47'16" W	101.91'
L34	S 87°16'04" W	153.67'
L35	S 88°02'46" W	52.28'
L36	N 77°50'16" W	102.13'



NO.	REVISION	DATE

JOB NO.: LS25100870

DWG. NO.: 25100870-2

RRC ENERGY SERVICES, LLC.

701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'

DATE: 10/15/2025

SURVEYED BY: JH/IW

DRAWN BY: RQ

APPROVED BY: DEB

SHEET: 2 OF 3

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SPUR ENERGY PARTNERS LLC.
SURVEY OF AN EXISTING LEASE ROAD FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS
SECTION 11, T18S, R27E
N. M. P. M., EDDY COUNTY, NEW MEXICO

DESCRIPTION

A strip of land 30 feet wide, being 3,311.74 feet or 200.712 rods in length, lying in Section 11, Township 18 South, Range 27 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. land:

BEGINNING at a point in the Northeast quarter of Section 11, which bears, S 77°16'12" W, 1,370.23 feet, from a brass cap, stamped "1941", found for the Northeast corner of Section 11;

Thence S 89°03'33" W, 100.69 feet, to a point;
Thence S 87°00'06" W, 102.33 feet, to a point;
Thence N 86°36'41" W, 105.46 feet, to a point;
Thence S 89°40'16" W, 102.48 feet, to a point;
Thence S 87°46'07" W, 102.68 feet, to a point;
Thence S 87°38'57" W, 102.69 feet, to a point;
Thence S 86°34'11" W, 156.35 feet, to a point;
Thence N 87°42'09" W, 103.84 feet, to a point;
Thence N 88°47'45" W, 102.80 feet, to a point;
Thence S 87°50'42" W, 103.61 feet, to a point;
Thence S 88°06'56" W, 103.91 feet, to a point;
Thence N 88°45'16" W, 103.72 feet, to a point;
Thence N 87°22'32" W, 103.89 feet, to a point;
Thence S 86°18'06" W, 102.79 feet, to a point;
Thence S 79°46'02" W, 102.13 feet, to a point;
Thence S 73°54'37" W, 53.00 feet, to a point;
Thence S 64°50'33" W, 50.84 feet, to a point;
Thence S 51°43'27" W, 51.56 feet, to a point;
Thence S 27°43'45" W, 103.55 feet, to a point;
Thence S 37°47'01" W, 52.28 feet, to a point;
Thence S 43°31'31" W, 105.18 feet, to a point;
Thence S 53°19'37" W, 103.75 feet, to a point;
Thence S 65°30'19" W, 53.26 feet, to a point;
Thence S 81°24'47" W, 53.41 feet, to a point;
Thence N 86°08'21" W, 105.67 feet, to a point;
Thence S 87°52'12" W, 103.72 feet, to a point;
Thence S 80°48'23" W, 50.79 feet, to a point;
Thence N 89°15'46" W, 52.09 feet, to a point;
Thence N 85°56'44" W, 103.15 feet, to a point;
Thence N 88°31'29" W, 103.23 feet, to a point;
Thence S 84°38'03" W, 103.45 feet, to a point;
Thence S 78°24'48" W, 53.45 feet, to a point;
Thence S 85°47'16" W, 101.91 feet, to a point;
Thence S 87°16'04" W, 153.67 feet, to a point;
Thence S 88°02'46" W, 52.28 feet, to a point;

Thence N 77°50'16" W, 102.13 feet, the End of Survey, a point in the Northwest quarter of Section 11, which bears, S 46°40'41" E, 1,059.08 feet, from a brass cap, stamped "1941",found for the Northwest corner of Section 11.

Said strip of land contains 2.281 acres, more or less, and is allocated by forties as follows:

NW 1/4 NE 1/4	77.602 Rods	0.882 Acres
NE 1/4 NW 1/4	89.849 Rods	1.021 Acres
NW 1/4 NW 1/4	33.261 Rods	0.378 Acres



NO.	REVISION	DATE

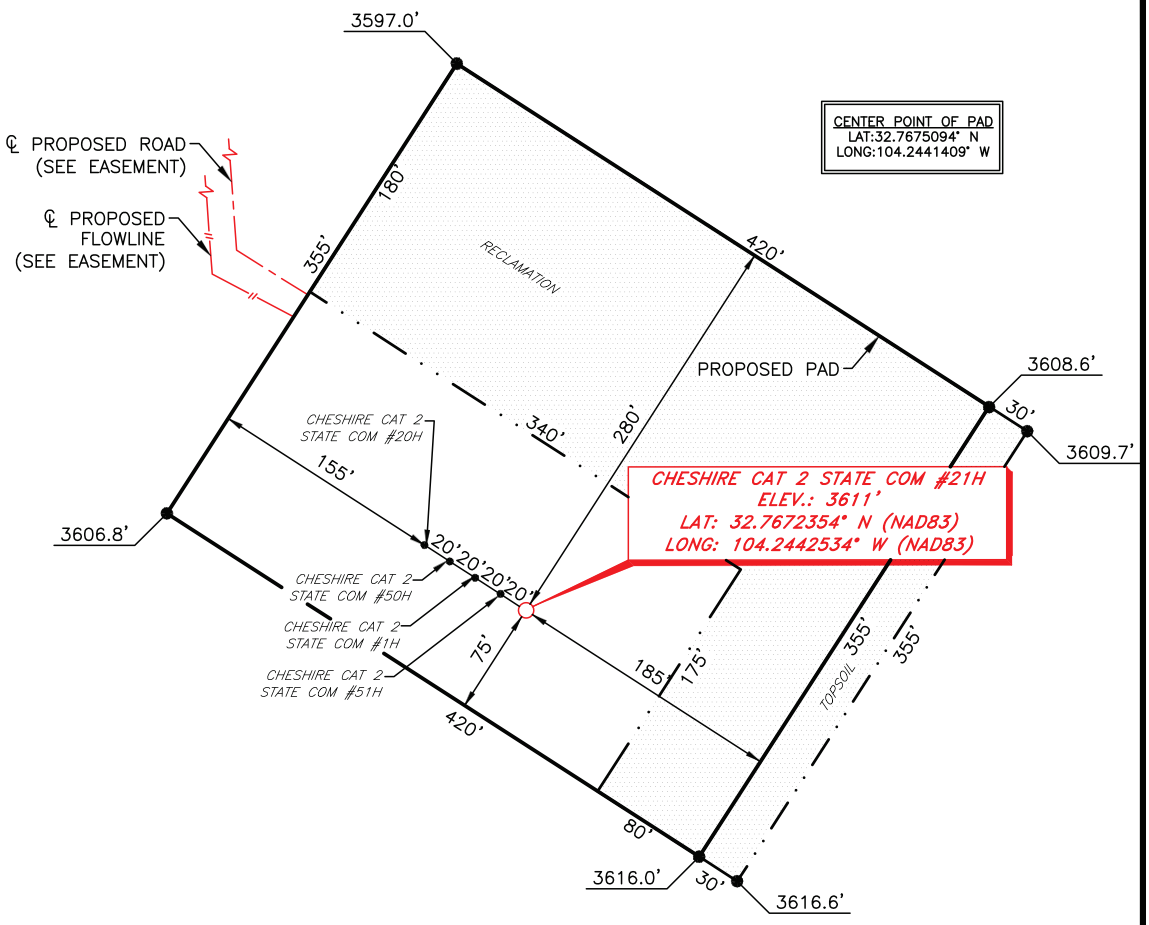
JOB NO.: LS25100870
DWG. NO.: 25100870-3

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 3 OF 3

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SPUR ENERGY PARTNERS LLC.
CHESHIRE CAT 2 STATE COM #21H
(710' FNL & 1126' FEL)
SECTION 11, T18S, R27E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. HWY 62 and CR #225 (Hilltop Rd.);

Go Southeast on CR #225 approx. 2.5 miles to a lease road on the right;

Turn right and go West approx. 0.6 miles to a lease road on the left;

Turn left at and go Southwest approx. 0.6 miles to a "Y";

Turn right and continue West approx. 0.7 miles to a proposed road on the left;

Turn left and go South approx. 0.1 miles to location on the right.

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 83 GRID – NM EAST DISTANCES ARE GROUND.

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100861
DWG. NO.: 25100861-5

RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

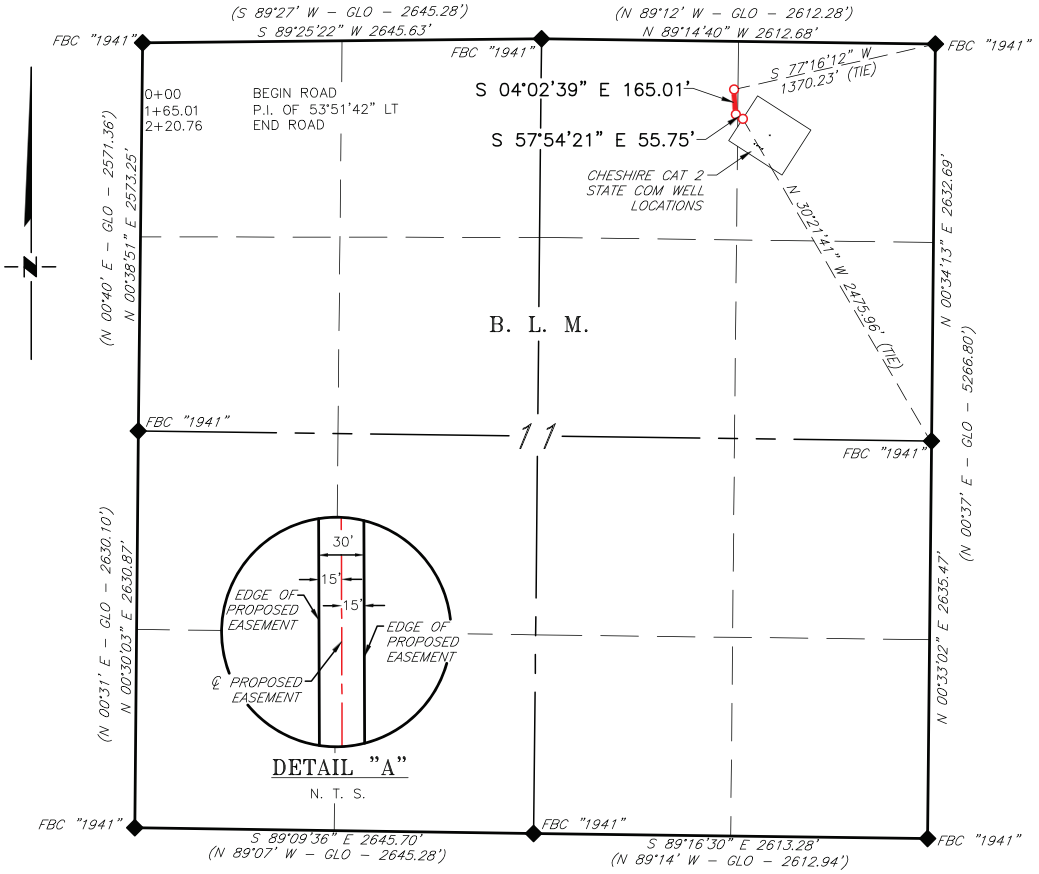
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SPUR ENERGY PARTNERS LLC.

ACCESS ROAD FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTION 11, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO



DESCRIPTION

A strip of land 30 feet wide, being 220.76 feet or 13.379 rods in length, lying in Section 11, Township 18 South, Range 27 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. land:

BEGINNING at Engr. Sta. 0+00, a point in the Northeast quarter of Section 11, which bears, S 77°16'12" W, 1,370.23 feet, from a brass cap, stamped "1941", found for the Northeast corner of Section 11;

Thence S 04°02'39" E, 165.01, to Engr. Sta. 1+65.01, a P. I. of 53°51'42" left;

Thence S 57°54'21" E, 55.75 feet, to Engr. Sta. 2+20.76, the End of Survey, a point in the Northeast quarter of Section 11, which bears, N 30°21'41" W, 2,475.96 feet, from a brass cap, stamped "1941" found for the East quarter corner of Section 11.

Said strip of land contains 0.152 acres, more or less, and is allocated by forties as follows:

NW 1/4 NE 1/4	10.988 Rods	0.125 Acres
NE 1/4 NE 1/4	2.391 Rods	0.027 Acres

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 83 NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA – GLO
◆ FOUND MONUMENT AS NOTED
PROPOSED ACCESS ROAD

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

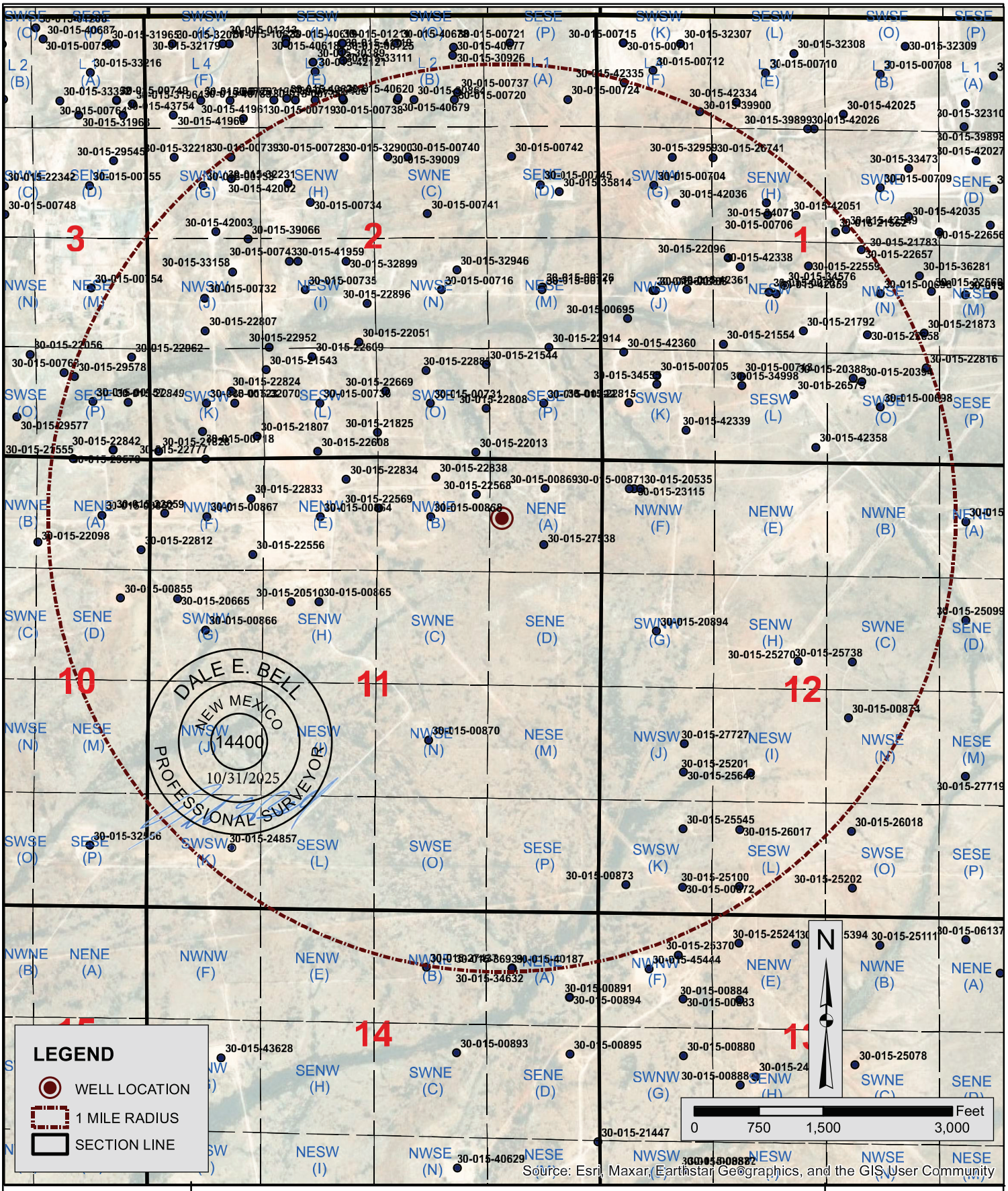
NO.	REVISION	DATE

JOB NO.: LS25100864
DWG. NO.: 25100864–1

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

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RRC ENERGY SERVICES, LLC.
701 S. Cecil, Hobbs, NM 88240
(575) 964-8200

CHESHIRE CAT 2 STATE COM #21H
(720' FNL & 1126' FEL)
Section 11, Township 18 South, Range 27 East,
N. M. P. M., Eddy County, New Mexico

SPUR ENERGY PARTNERS

Date: 10/15/2025	**ONE MILE RADIUS MAP**		Approved By: DEB
Surveyed By: JH/IW	Job No. LS25100861	Dwg. No. 1-MILE (5,280 Ft.) - RADIUS	Drawn By: RQ

Cheshire Cat 2 State Com Facility Development

CTB Site:

All Cheshire Cat 2 State Com wells will have the ability to be routed to the Red Skies 10 Federal Com multi-well pad lying in Section 11, Township 18 South, Range 27 East.

Production Flowlines:

Each well will have two (2) 4" buried flowlines operating at less than 125 psi. The flowlines for the Cheshire Cat 2 State Com wells will be routed to the Red Skies 10 Federal Com Tank Battery. The wells will produce into this battery at any given time.

Frac Water System:

Water for the Cheshire Cat 2 State Com wells will be trucked from Spur's Hub Produced/Recycling Pit located in NE4 Section 36, Township 17 South, Range 28 East, Eddy County, New Mexico. Private surface (32.795556, -104.123056). Permit No. 2RF-211.

Gas Sales:

Once gas arrives at the Red Skies 10 Federal Com Tank Battery, it will be sold through an existing Kinetik gas meter.

Oil Sales:

Once oil arrives at the Red Skies 10 Federal Com Tank Battery, it will be trucked or pumped into a pipeline and sold through a LACT.

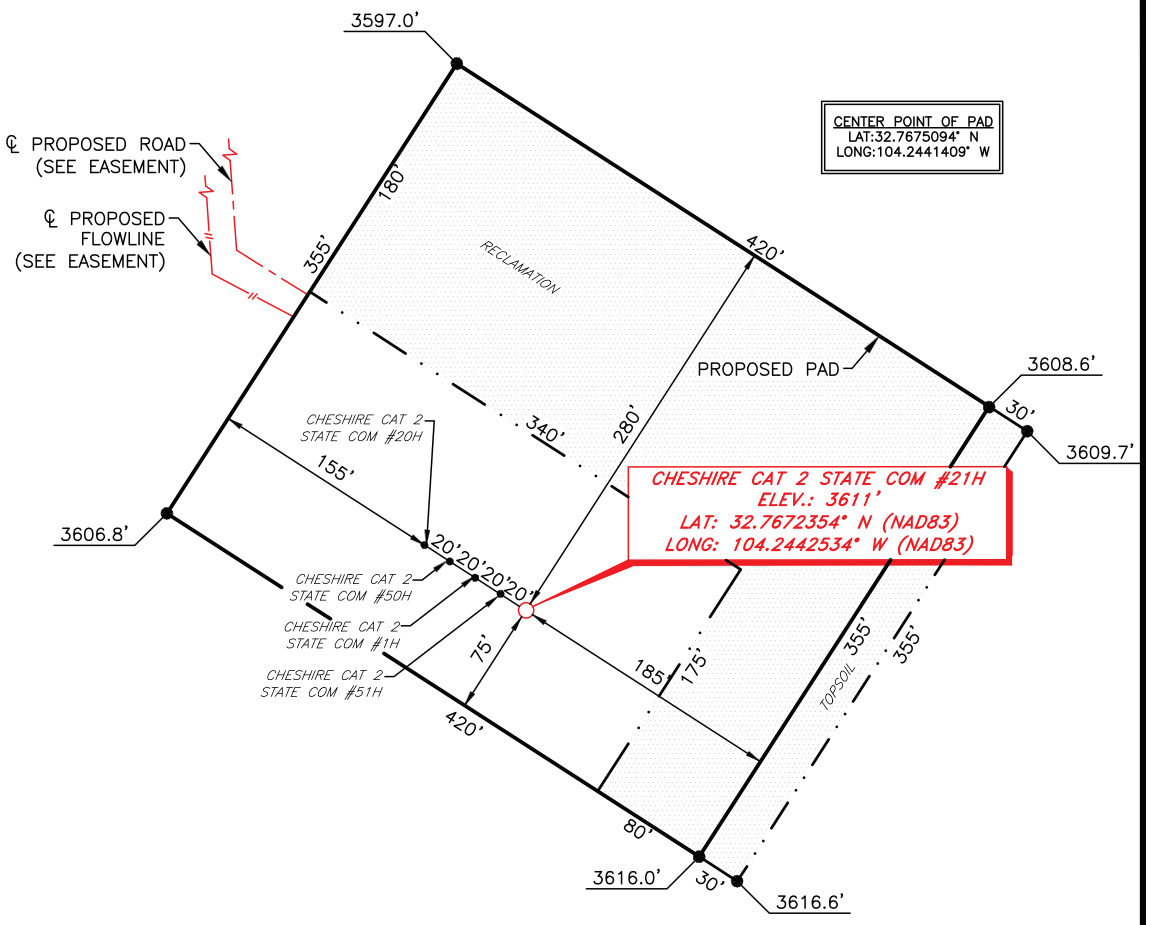
Salt Water Disposal:

Once water arrives at the Red Skies 10 Federal Com Tank Battery, it will connect into the existing water line that connects to Spur's SWD system to be disposed of into a Spur operated SWD.

Electrical System:

3-phase electric lines will be constructed from existing Eddy Co. lines per the survey plats to the Cheshire Cat 2 State Com well pad. If we are unable to energize the CVE meter, we will install natural gas generators on location to run the wells, fueled with residue gas from the Kinetik plant by one (1) 4" surface flowline operating at less than 125 psi.

SPUR ENERGY PARTNERS LLC.
CHESHIRE CAT 2 STATE COM #21H
(710' FNL & 1126' FEL)
SECTION 11, T18S, R27E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. HWY 62 and CR #225 (Hilltop Rd.);

Go Southeast on CR #225 approx. 2.5 miles to a lease road on the right;

Turn right and go West approx. 0.6 miles to a lease road on the left;

Turn left at and go Southwest approx. 0.6 miles to a "Y";

Turn right and continue West approx. 0.7 miles to a proposed road on the left;

Turn left and go South approx. 0.1 miles to location on the right.

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 83 GRID – NM EAST DISTANCES ARE GROUND.

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

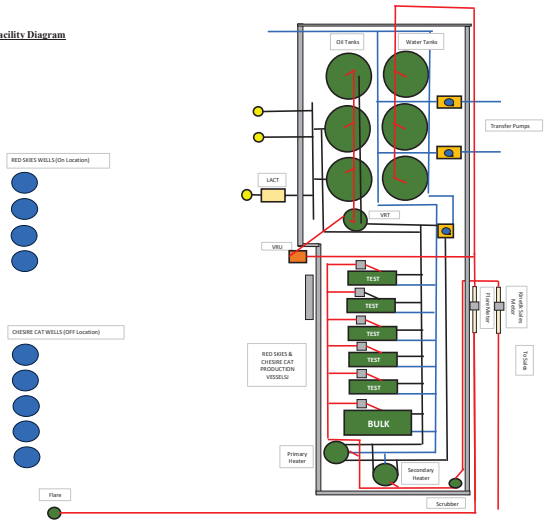
JOB NO.: LS25100861
DWG. NO.: 25100861-5

RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

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Red Skies 10 Federal Com Facility Diagram



10 Well Facility General Inventory List		
Type	Count	Location
OIL TANK	3	LEFT SET OF TANKS
WATER TANK	3	RIGHT SET OF TANKS
VAPOR RECOVERY TOWER	1	BELOW THE OIL TANKS
CENTRIFUGAL PRODUCED WATER TRANSFER PUMPS	2	TO THE RIGHT OF THE WATER TANKS
CENTRIFUGAL CIRCULATION PUMP	1	BOTTOM RIGHT CORNER OF TANKS
VAPOR RECOVERY UNIT	1	BELOW THE VRT UNIT, OUTSIDE OF CONTAINMENT
LACT	1	TO THE LEFT OF OIL TANKS, OUTSIDE CONTAINMENT
TEST SEPERATOR	5	BELOW TANKS
BULK SEPARATOR	1	BELOW TANKS AND SEPARATOR
HEATER TREATER	2	BOTTOM LEFT CORNER OF CONTAINMENT, PRIMARY AND SECONDARY
SCRUBBER	1	TO THE RIGHT OF THE HEATER TREATER
GAS SALES METER RUN	1	RIGHT SIDE OF BATTERY, TO RIGHT OF TEST SEPERATOR, OUTSIDE CONTAINMENT
GAS FLARE METER RUN	1	RIGHT SIDE OF BATTERY ADJACENT TO SALES METER RUN, OUTSIDE CONTAINMENT
FLARE	1	ON SEPERATOR SIDE OF FACILITY, APPROXIMATELY 150 FT AWAY

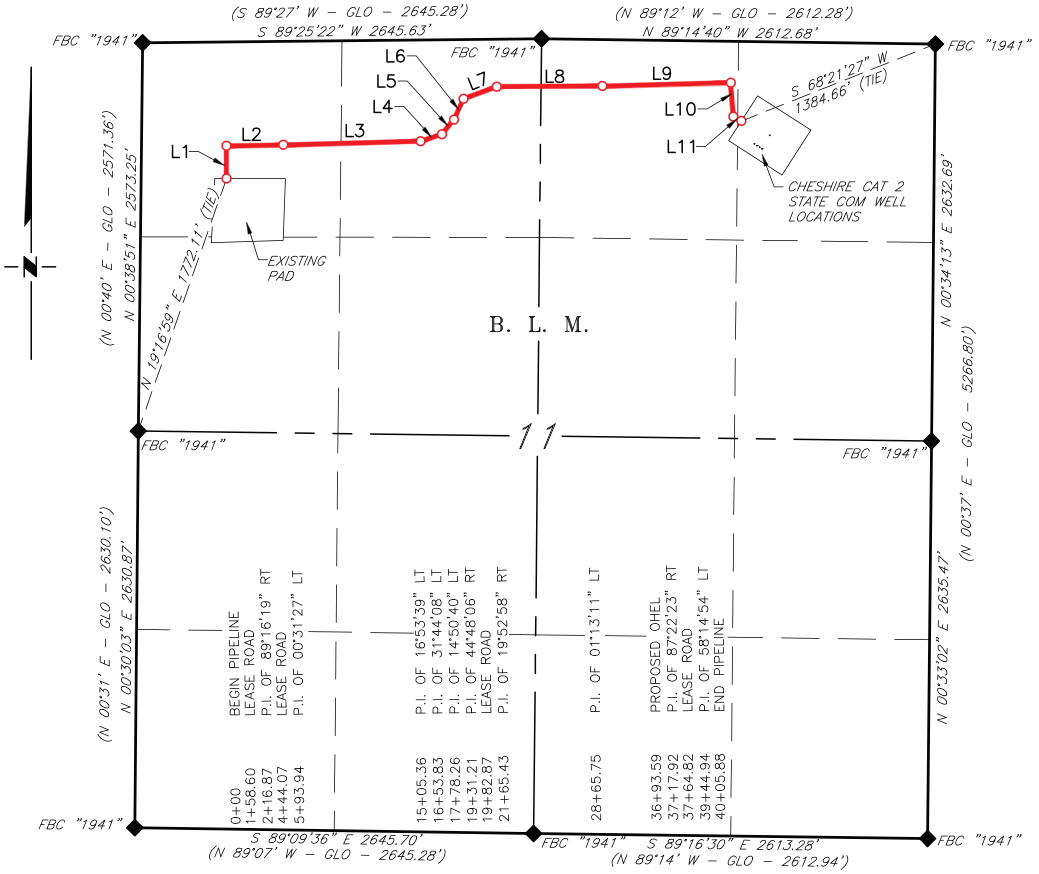
ALL ONE CONTAINMENT, 4 RED SKIES WELLS ACROSS PAD FROM THE BATTERY AND 5 CHESIRE CAT WELLS ON THEIR OWN PAD

SPUR ENERGY PARTNERS LLC.

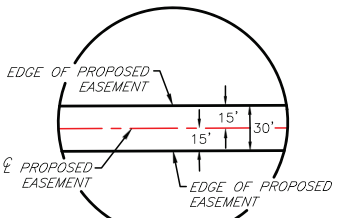
FLOWLINE FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTION 11, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO



LINE TABLE		
LINE	BEARING	LENGTH
L1	N 00°16'37" W	216.87'
L2	N 88°59'42" E	377.07'
L3	N 88°28'15" E	911.42'
L4	N 71°34'36" E	148.47'
L5	N 39°50'28" E	124.43'
L6	N 24°59'48" E	152.95'
L7	N 69°47'53" E	234.22'
L8	N 89°40'51" E	700.32'
L9	N 88°27'40" E	852.17'
L10	S 04°09'57" E	227.02'
L11	S 62°24'51" E	60.94'



DETAIL "A"

N. T. S.

SCALE: 1" = 1000'

0 500' 1000'

BEARINGS ARE GRID NAD 83
NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND

( ) RECORD DATA – GLO

FOUND MONUMENT AS NOTED

PROPOSED FLOWLINE

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100862

DWG. NO.: 25100862–1

RRC ENERGY SERVICES, LLC.

701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

SCALE: 1" = 1000'

DATE: 10/15/2025

SURVEYED BY: JH/IW

DRAWN BY: RQ

APPROVED BY: DEB

SHEET: 1 OF 2

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SPUR ENERGY PARTNERS LLC.

FLOWLINE FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTION 11, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO

DESCRIPTION

A strip of land 30 feet wide, being 4,005.88 feet or 242.781 rods in length, lying in Section 11, Township 18 South, Range 27 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. land:

BEGINNING at Engr. Sta. 0+00, a point in the Northwest quarter of Section 11, which bears, N 19°16'59" E, 1,772.11 feet, from a brass cap, stamped "1941", found for the West quarter corner of Section 11;

Thence N 00°16'37" W, 216.87 feet, to Engr. Sta. 2+16.87, a P. I. of 89°16'19" right;

Thence N 88°59'42" E, 377.07 feet, to Engr. Sta. 5+93.94, a P. I. of 00°31'27" left;

Thence N 88°28'15" E, 911.42 feet, to Engr. Sta. 15+05.36, a P. I. of 16°53'39" left;

Thence N 71°34'36" E, 148.47 feet, to Engr. Sta. 16+53.83, a P. I. of 31°44'08" left;

Thence N 39°50'28" E, 124.43 feet, to Engr. Sta. 17+78.26, a P. I. of 14°50'40" left;

Thence N 24°59'48" E, 152.95 feet, to Engr. Sta. 19+31.21, a P. I. of 44°48'06" right;

Thence N 69°47'53" E, 234.22 feet, to Engr. Sta. 21+65.43, a P. I. of 19°52'58" right;

Thence N 89°40'51" E, 700.32 feet, to Engr. Sta. 28+65.75, a P. I. of 01°13'11" left;

Thence N 88°27'40" E, 852.17 feet, to Engr. Sta. 37+17.92, a P. I. of 87°22'23" right;

Thence S 04°09'57" E, 227.02 feet, to Engr. Sta. 39+44.94, a P. I. of 58°14'54" left;

Thence S 62°24'51" E, 60.94 feet, to Engr. Sta. 40+05.88, the End of Survey, a point in the Northeast quarter of Section 11, which bears, S 68°21'27" W, 1,384.66 feet, from a brass cap, stamped "1941" found for the Northeast corner of Section 11.

Said strip of land contains 2.759 acres, more or less, and is allocated by forties as follows:

NW 1/4 NW 1/4	59.244 Rods	0.673 Acres
NE 1/4 NW 1/4	89.823 Rods	1.021 Acres
NW 1/4 NE 1/4	92.053 Rods	1.046 Acres
NE 1/4 NE 1/4	1.661 Rods	0.019 Acres



NO.	REVISION	DATE

JOB NO.: LS25100862

DWG. NO.: 25100862-2

RRC ENERGY SERVICES, LLC.

701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'

DATE: 10/15/2025

SURVEYED BY: JH/IW

DRAWN BY: RQ

APPROVED BY: DEB

SHEET: 2 OF 2

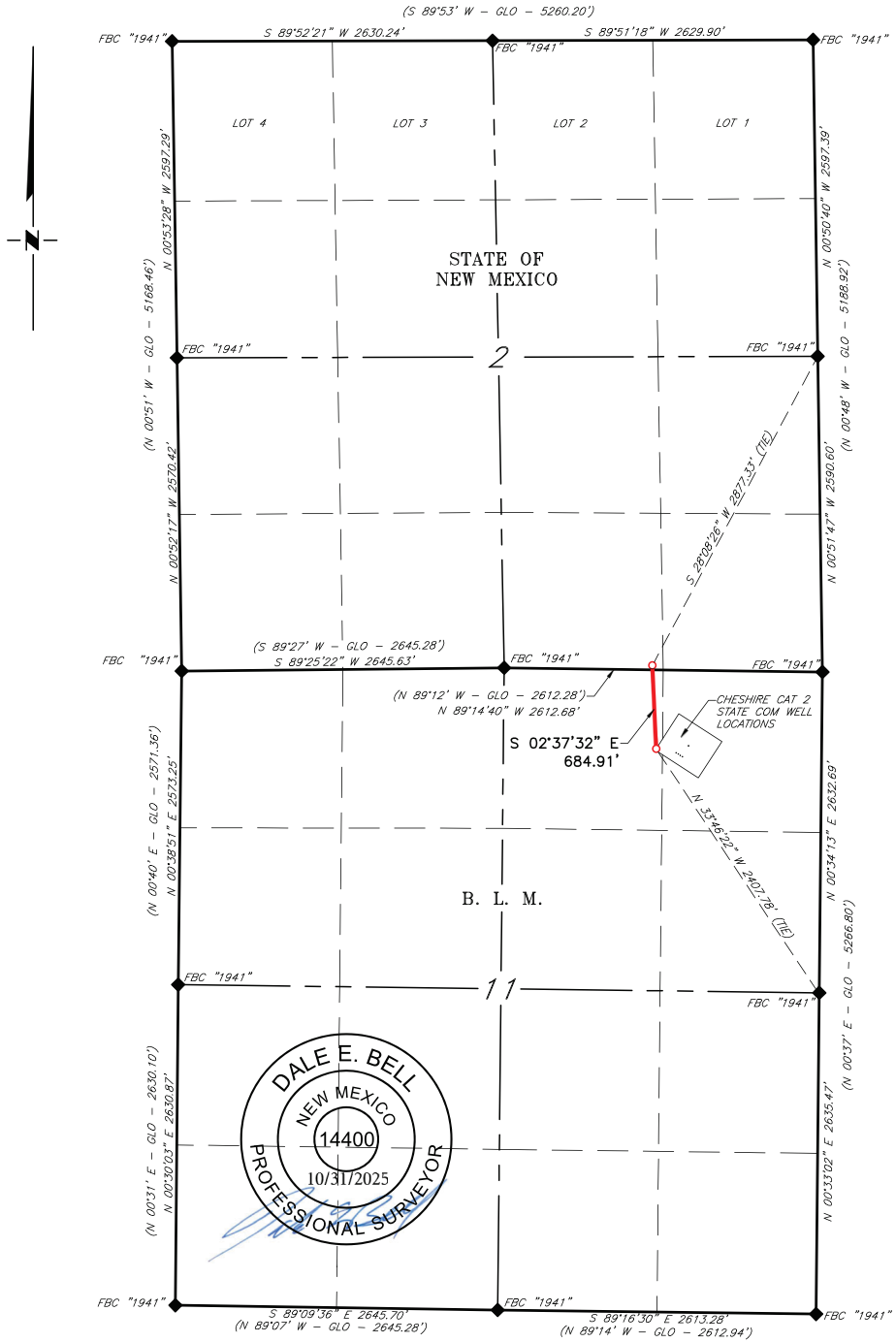
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SPUR ENERGY PARTNERS LLC.

OHEL FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTIONS 2 & 11, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO



LEGEND

( ) RECORD DATA – GLO

FOUND MONUMENT AS NOTED

PROPOSED OHEL

SCALE: 1" = 1200'

0 600' 1200'

BEARINGS ARE GRID NAD 83 NM EAST

DISTANCES ARE HORIZ. GROUND.

NO.	REVISION	DATE

JOB NO.: LS25100863

DWG. NO.: 25100863–1

RRC ENERGY SERVICES, LLC.

701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

SCALE: 1" = 1000'

DATE: 10/15/2025

SURVEYED BY: JH/IW

DRAWN BY: RQ

APPROVED BY: DEB

SHEET: 1 OF 3

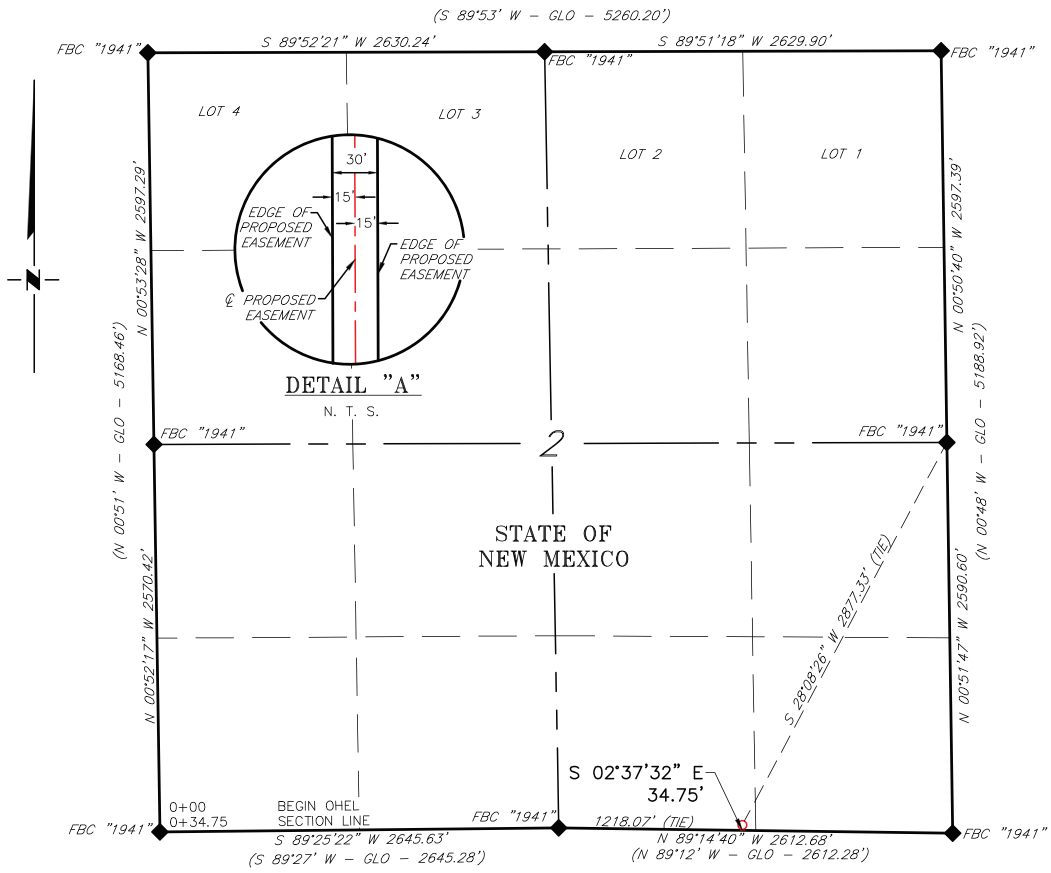
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SPUR ENERGY PARTNERS LLC.

OHEL FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTION 2, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO



DESCRIPTION

A strip of land 30 feet wide, being 34.75 feet or 2.106 rods in length, lying in Section 2, Township 18 South, Range 27 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across State of New Mexico land:

BEGINNING at Engr. Sta. 0+00, a point in the Southeast quarter of Section 2, which bears, S 28°08'26" W, 2,877.33 feet, from a brass cap, stamped "1941", found for the East quarter corner of Section 2;

Thence S 02°37'32" E, 34.75 feet, to Engr. Sta. 0+34.75, the End of Survey, a point on the South line of Section 2, which bears, S 89°14'40" E, 1,218.07 feet, from a brass cap, stamped "1941" found for the South quarter corner of Section 2.

Said strip of land contains 0.024 acres, more or less, and is allocated by forties as follows:

SW 1/4 SE 1/4	2.106 Rods	0.024 Acres

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 83 NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA – GLO
◆ FOUND MONUMENT AS NOTED
PROPOSED OHEL

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL NEW MEXICO 14400 10/31/2025 PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS2510863
DWG. NO.: 2510863–2

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 2 OF 3

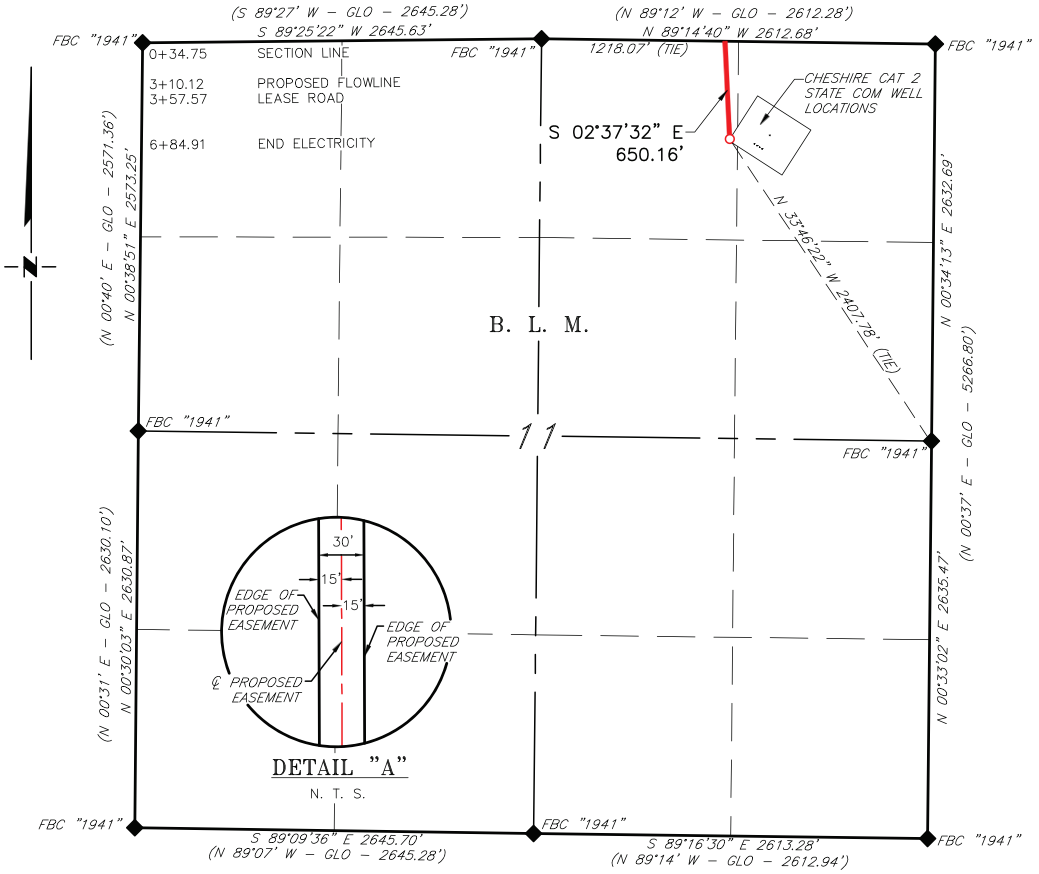
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SPUR ENERGY PARTNERS LLC.

OHEL FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS

SECTION 11, T18S, R27E

N. M. P. M., EDDY COUNTY, NEW MEXICO



DESCRIPTION

A strip of land 30 feet wide, being 650.16 feet or 39.404 rods in length, lying in Section 11, Township 18 South, Range 27 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. land:

BEGINNING at Engr. Sta. 0+34.75, a point on the North line of Section 11, which bears, S 89°14'40" E, 1,218.07 feet, from a brass cap, stamped "1941", found for the North quarter corner of Section 11;

Thence S 02°37'32" E, 650.16 feet, to Engr. Sta. 6+84.91, the End of Survey, a point in the Northeast quarter of Section 11, which bears, N 33°46'22" W, 2,407.78 feet, from a brass cap, stamped "1941" found for the East quarter corner of Section 11.

Said strip of land contains 0.448 acres, more or less, and is allocated by forties as follows:

NW 1/4 NE 1/4	39.404 Rods	0.448 Acres

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 83 NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA – GLO
◆ FOUND MONUMENT AS NOTED
PROPOSED OHEL

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL NEW MEXICO 14400 10/31/2025 PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

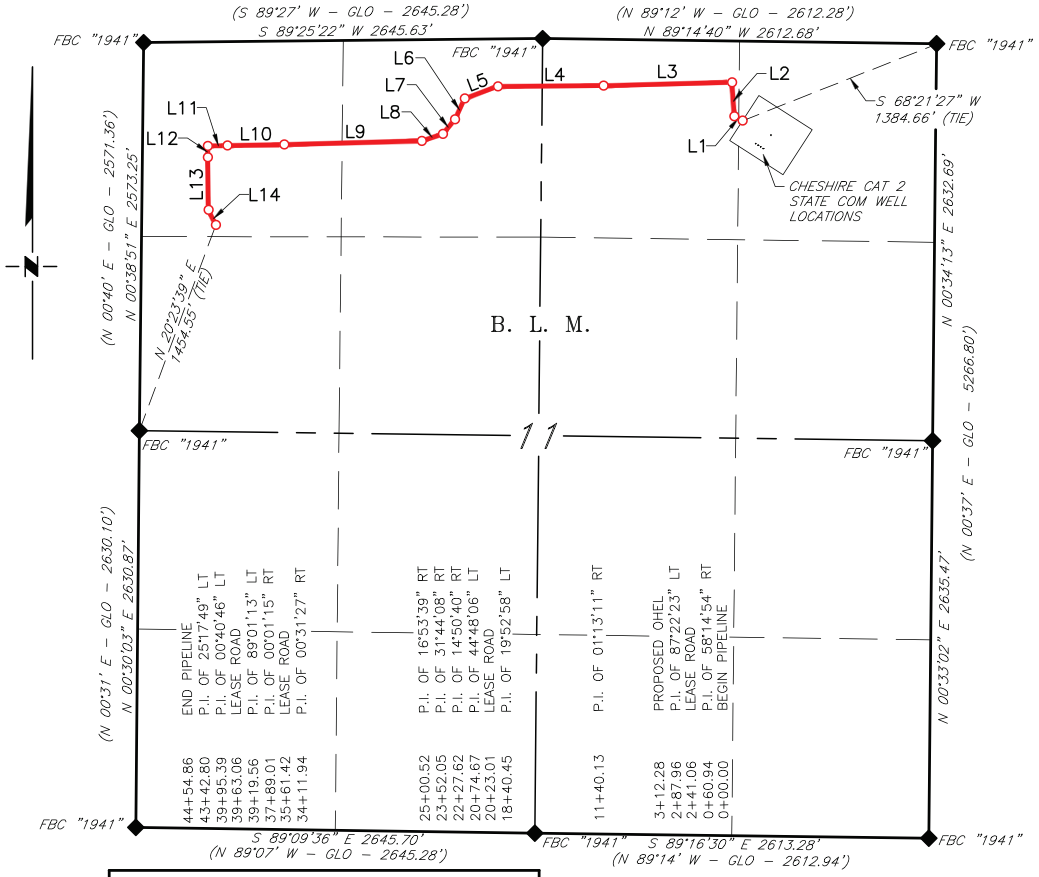
JOB NO.: LS2510863
DWG. NO.: 2510863–3

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

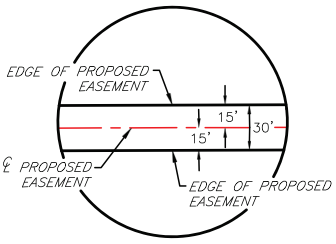
SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 3 OF 3

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SPUR ENERGY PARTNERS LLC.
RESIDUE GAS LINE FOR THE
CHESHIRE CAT 2 STATE COM WELL LOCATIONS
SECTION 11, T18S, R27E
N. M. P. M., EDDY COUNTY, NEW MEXICO



LINE TABLE		
LINE	BEARING	LENGTH
L1	N 62°24'51" W	60.94'
L2	N 04°09'57" W	227.02'
L3	S 88°27'40" W	852.17'
L4	S 89°40'51" W	700.32'
L5	S 69°47'53" W	234.22'
L6	S 24°59'48" W	152.95'
L7	S 39°50'28" W	124.43'
L8	S 71°34'36" W	148.47'
L9	S 88°28'15" W	911.42'
L10	S 88°59'42" W	377.07'
L11	S 89°00'57" W	130.55'
L12	S 00°00'16" E	75.83'
L13	S 00°41'02" E	347.41'
L14	S 25°58'51" E	112.06'



DETAIL "A"
N. T. S.

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 83
NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA – GLO
FOUND MONUMENT
AS NOTED
PROPOSED GAS LINE

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
11/06/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100869
DWG. NO.: 25100869–1

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964–8200

SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 2

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SPUR ENERGY PARTNERS LLC.
RESIDUE GAS LINE FOR THE
CHESHIRE CAT 2 STATE COM WELL LOCATIONS
SECTION 11, T18S, R27E
N. M. P. M., EDDY COUNTY, NEW MEXICO

DESCRIPTION

A strip of land 30 feet wide, being 4,454.86 feet or 269.992 rods in length, lying in Section 11, Township 18 South, Range 27 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. land:

BEGINNING at Engr. Sta. 0+00, a point in the Northeast quarter of Section 11, which bears, S 68°21'27" W, 1,384.66 feet, from a brass cap, stamped "1941", found for the Northeast corner of Section 11;

Thence N 62°24'51" W, 60.94 feet, to Engr. Sta. 0+60.94, a P. I. of 58°14'54" right;

Thence N 04°09'57" W, 227.02 feet, to Engr. Sta. 2+87.96, a P. I. of 87°22'23" left;

Thence S 88°27'40" W, 852.17 feet, to Engr. Sta. 11+40.13, a P. I. of 01°13'11" right;

Thence S 89°40'51" W, 700.32 feet, to Engr. Sta. 18+40.45, a P. I. of 19°52'58" left;

Thence S 69°47'53" W, 234.22 feet, to Engr. Sta. 20+74.67, a P. I. of 44°48'06" left;

Thence S 24°59'48" W, 152.95 feet, to Engr. Sta. 22+27.62, a P. I. of 14°50'40" right;

Thence S 39°50'28" W, 124.43 feet, to Engr. Sta. 23+52.05, a P. I. of 31°44'08" right;

Thence S 71°34'36" W, 148.47 feet, to Engr. Sta. 25+00.52, a P. I. of 16°53'39" right;

Thence S 88°28'15" W, 911.42 feet, to Engr. Sta. 34+11.94, a P. I. of 00°31'27" right;

Thence S 88°59'42" W, 377.07 feet, to Engr. Sta. 37+89.01, a P. I. of 00°01'15" right;

Thence S 89°00'57" W, 130.55 feet, to Engr. Sta. 39+19.56, a P. I. of 89°01'13" left;

Thence S 00°00'16" E, 75.83 feet, to Engr. Sta. 39+95.39, a P. I. of 00°40'46" left;

Thence S 00°41'02" E, 347.41 feet, to Engr. Sta. 43+42.80, a P. I. of 25°17'49" left;

Thence S 25°58'51" E, 112.06 feet, to Engr. Sta. 44+54.86, the End of Survey, a point in the Northwest quarter of Section 11, which bears, N 20°23'39" E, 1,454.55 feet, from a brass cap, stamped "1941", found for the West quarter corner of Section 11.

Said strip of land contains 3.068 acres, more or less, and is allocated by forties as follows:

NE 1/4 NE 1/4	1.661 Rods	0.019 Acres
NW 1/4 NE 1/4	92.053 Rods	1.046 Acres
NE 1/4 NW 1/4	89.823 Rods	1.021 Acres
NW 1/4 NW 1/4	86.455 Rods	0.982 Acres



NO.	REVISION	DATE

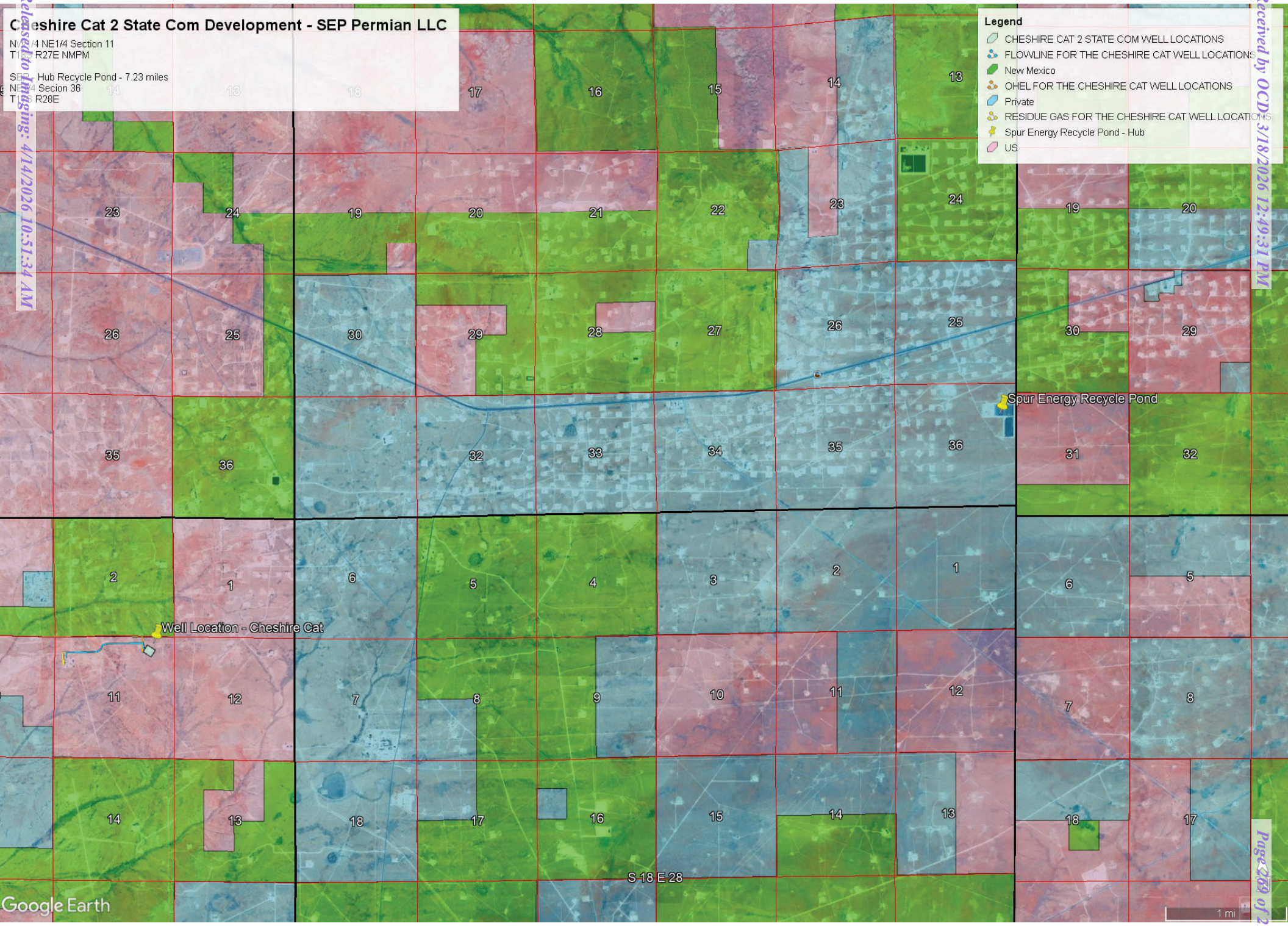
JOB NO.: LS25100869
DWG. NO.: 25100869-2

RRC ENERGY SERVICES, LLC.
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

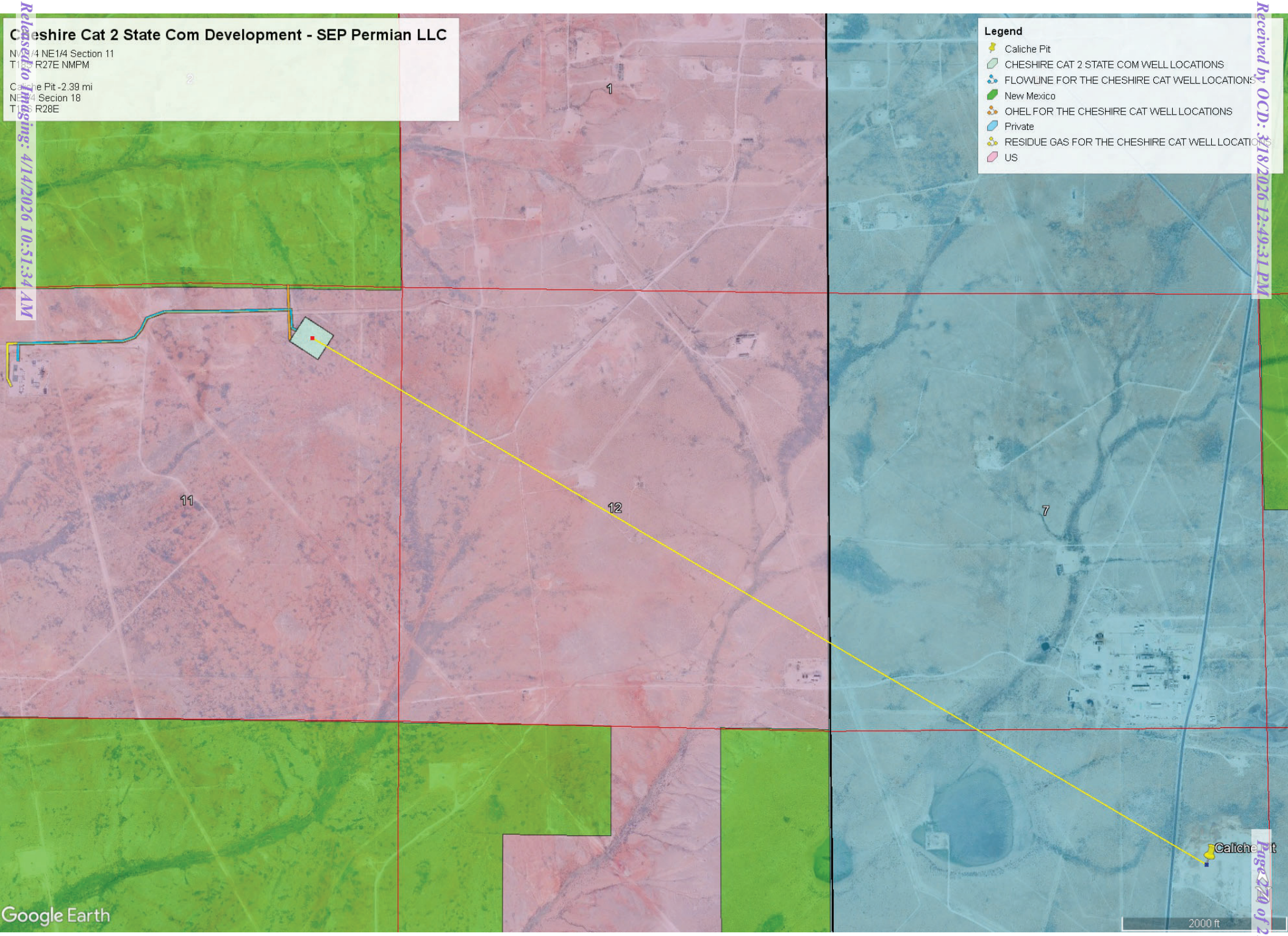
SCALE: 1" = 1000'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 2 OF 2

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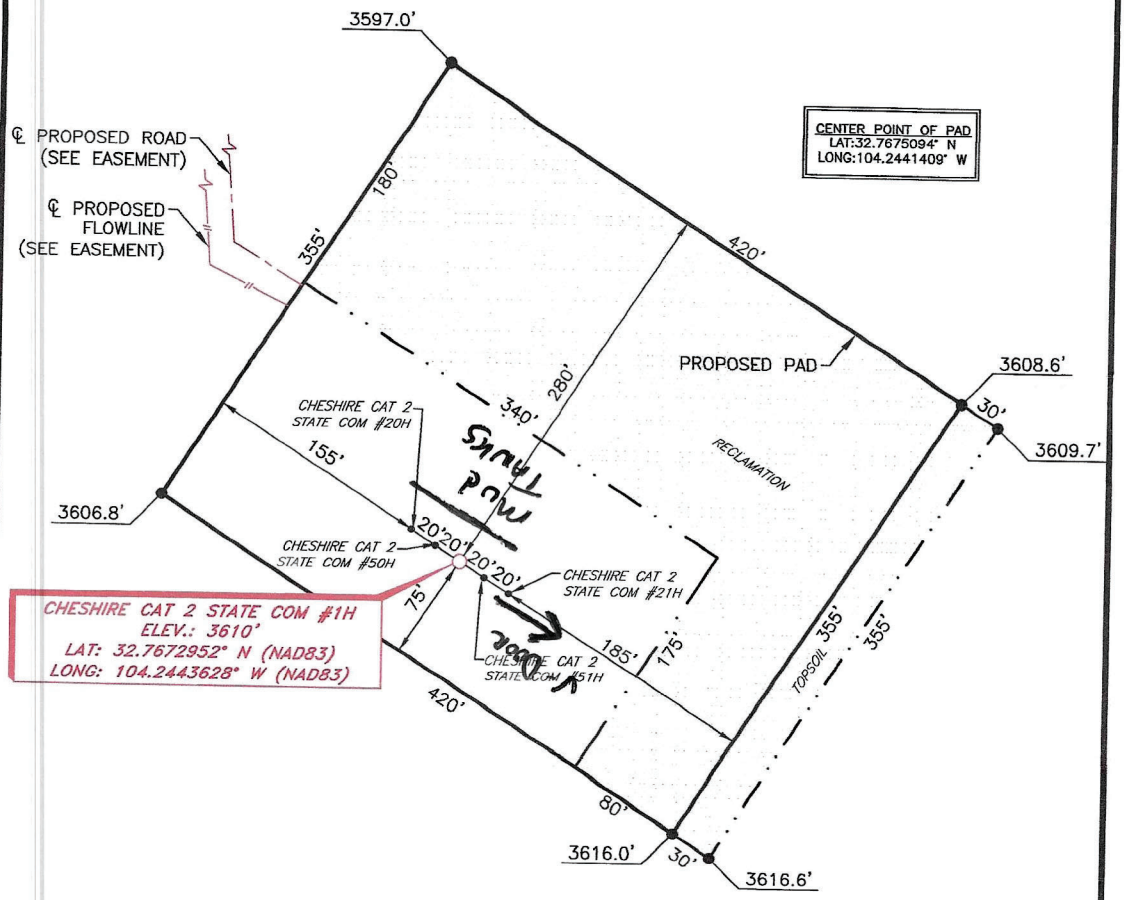
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SPUR ENERGY PARTNERS LLC.
CHESHIRE CAT 2 STATE COM #1H
(699' FNL & 1160' FEL)
SECTION 11, T18S, R27E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. HWY 62 and CR #225 (Hilltop Rd.);

Go Southeast on CR #225 approx. 2.5 miles to a lease road on the right;

Turn right and go West approx. 0.6 miles to a lease road on the left;

Turn left at and go Southwest approx. 0.6 miles to a "Y";

Turn right and continue West approx. 0.7 miles to a proposed road on the left;

Turn left and go South approx. 0.1 miles to location on the right.

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 83 GRID – NM EAST DISTANCES ARE GROUND.

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100859
DWG. NO.: 25100859-5

RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

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RIG # 57 1,150 HP Double Mast Drilling Rig

SUBSTRUCTURE
One Piece Step Down
Floor Height: 18' 9" (on 4' pony sub moving system)
Clear Height (beneath rotary beams): 15' 5"
Rotary Capacity: 400,000 lbf
Max Pipe Setback: 400,000 lbf
Note: All floor heights above are based on the substructure sitting on 6" mats & 4' pony sub moving system

MAST
106' telescoping, Drill Line: 1-1/8"
Static Hook Load: 440,000 lbf
Racking Capacity: 18,000' of 4" DP, 12,500' of 5" DP

DRAWWORKS
TSM 850 425,000lbs w/ 10 Lines
Input Power: 1,150 hp AC traction motor
Main Brake: 1,150 hp AC traction motor (Dynamic)
Aux Parking Brake: Eaton brake & drum / band brake system

TOP DRIVE
Tesco EXI 600 AC 350 Ton: Max speed 220 rpm,
Continuous Drill Torque: 30,000 ft-lbs
Max Torque (Make / Break): 45,000 ft-lbs
600 hp AC induction motor & drive system with PLC
250 Ton 5 x 36" Becket Block Assembly

IRON ROUGHNECK
NOV ST-80C Conn Range: 4 ½" to 8 ½"
Spin Speed: 75 rpm nominal on 5" drill pipe
Spin Torque: 1,750 ft-lbs
Maximum Make-up torque: 60,000 ft-lbs
Maximum Break-out torque: 80,000 ft-lbs

ROTARY TABLE
National 27 ½" 500 Ton with hydraulic drive to position tools only
27 ½" Diameter opening

POWER SYSTEM
VFD, MCC, Eaton Drives, Current Power Systems Controls, three Caterpillar C32 gen sets, 1220 BHP.

MUD PUMP #1
HHF1600 Triplex Rated Power: 1600 hp
Stroke: 12"
Input Power: 1500 hp AC traction motor
Pressure Rating: 5000 psi

MUD PUMP #2
HHF1600 Triplex Rated Power: 1600 hp
Stroke: 12"
Input Power: 1500 hp AC traction motor
Pressure Rating: 5000 psi

MUD TANKS
Two Tank system w/ 1200 bbls total capacity
Shakers: Three MI Swaco Mongoose 4 panel dual motion
Mud Gas Separator: MI Swaco 4' OD x 12' tall
Pill Tank: 54 bbls

MUD SYSTEM
5000 psi Max Pressure
5" Main plumbing and standpipe

SCALPING TANK
Main Tank: 186 bbls capacity
Trip Tank: 24 bbls capacity
Shakers: Three NOV Venom shakers dual motion

BOP (NACE)
11" x 5000 psi WP Spherical Annular
11" x 5000 psi WP Double Ram
11" x 5000 psi WP Single Ram (Optional)

MANIFOLD
3-1/8" 5,000 psi c/w two 3 1/8" manual chokes

ACCUMULATOR
CTI: 160 gal 6 station 3000 psi, c/w N2 Backup & electric triplex pump

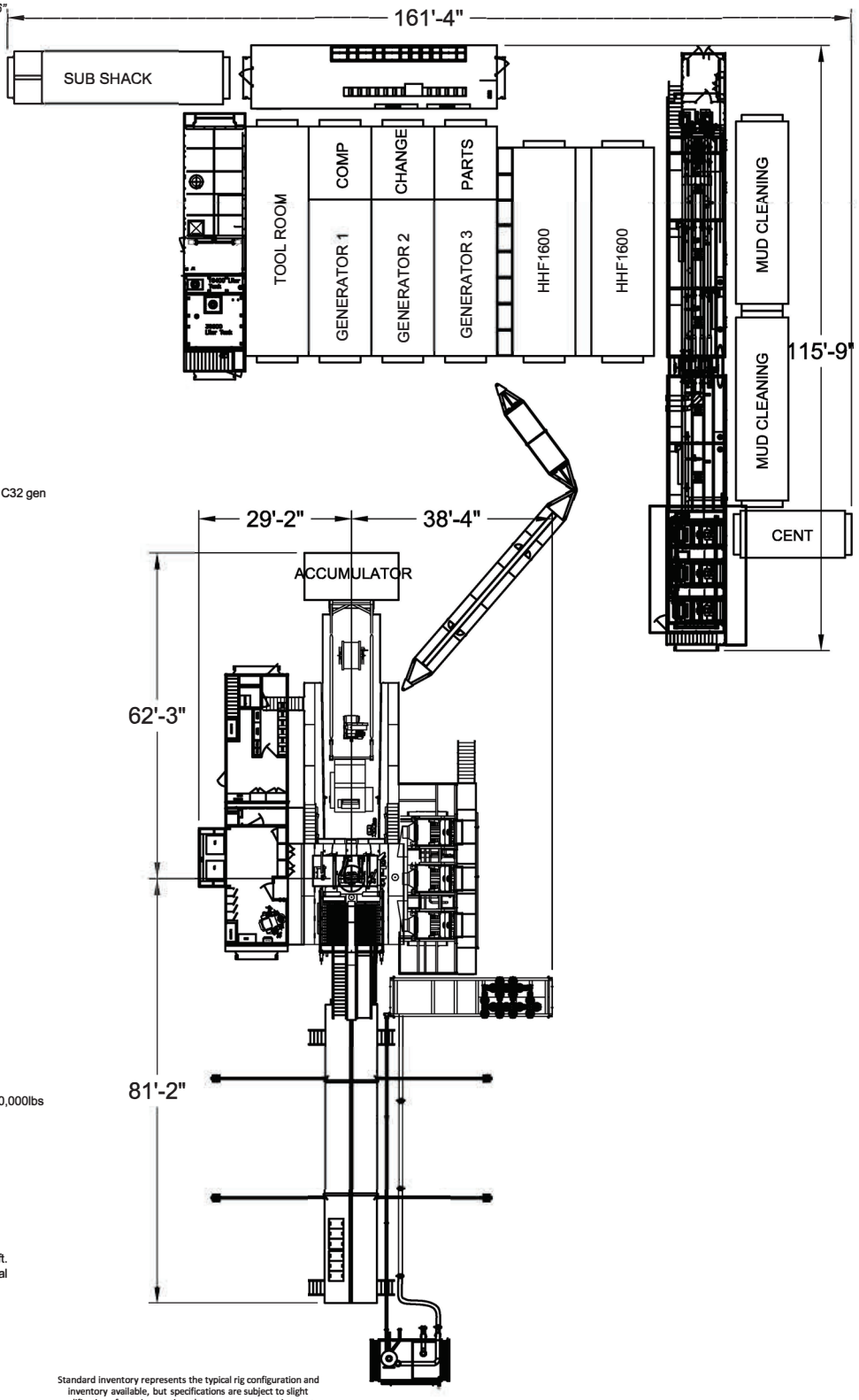
CATWALK
Ja-co Power Catwalk, tubular max length 47' 6", max OD 13 ⅝", max weight 10,000lbs

TUBULARS
Drill Pipe: Supplied as needed, per availability
Drill Collars & heaviwate: Supplied as needed, per availability

MISC.
Water Tank: 409 bbls; Fuel Tank 189 bbls; Screw Compressor
Boiler: 125 hp with Full Winterization

MOVING SYSTEM:
Walking beam hydraulic pony sub moving system for linear motion & side shift. 350' of Utility Suitcase style [50' lengths] connection for hydraulic and electrical supply.

TOOL/ STORAGE/ CAMP
Parts Storage Room and Tool House Room
Rig Manage Trailer: 14' x 44' skid mounted



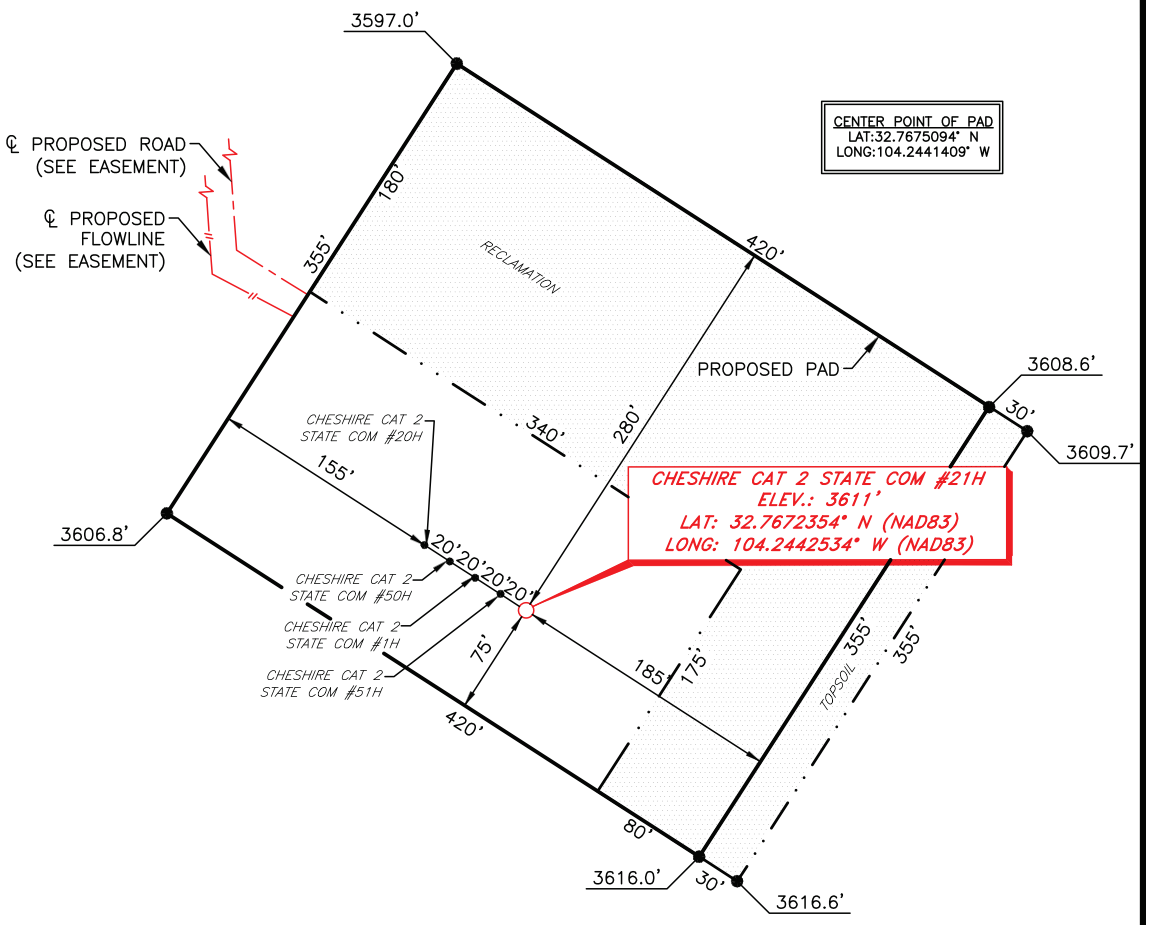
Standard inventory represents the typical rig configuration and inventory available, but specifications are subject to slight modifications from time to time due to customer requirements.

All ratings quoted herin are manufacturer specifications. AKITA's normal operating parameters are 90% of manufacturer mast ratings and 80% of mud pump manufacturer pressure rating. Operation of rig equipment beyond these parameters requires approval from AKITA field office management.

© AKITA DRILLING August, 2020

TRANSCEND RIG 4	Contractor Specification
Make	Schram
Model	TXD 130
Year of Manufacture	2006
Truck Mounted	YES
Rated Drilling Depth	130,000# hook load
Rated Depth with Tubing	
Derrick Height	69’ 9’’
Derrick Type	Telescoping Hydraulic
Derrick Capacity	130,000#
Elevators	N/A
Drawworks	760 HP Detroit
Wire Diameter	Hydraulic
Workfloor Max Height	8’
Tongs	Hydraulic Iron Roughneck
Slips	Manual Slips
Included Tubing Handling Tools	• 13 3/8’’ handling tools
Included Rod Handling Tools	85jts of 4.5’’ drill pipe
BOP Class Compatibility	
Weight Indicator	Hydraulic
Rig Safety Equipment	Eye wash station, fire extengushers, wind sock
Pad Size Requirements/Limitations	60’ x 60’
Guy Line Spacing	N/A
Other Supplied Rig Equipment 1- F800 pump 1- Pill pit 80bbl 1- 400 bbl mud mix 1- Shaker 150mesh 1- 500 bbl fresh water frac tank	Standard Rig Hand Tools: • (2) 36” pipe wrenches • (2) 24” pipe wrenches • (2) 18” pipe wrenches • (1) 24” crescent wrench • (2) 12” crescent wrenches • (1) 4 lb shop hammer • (1) 12 lb sledge hammer • (1) 4 foot pry bar • Vehicles for Contractor personnel • Air Impact Wrench with Sockets • Mud Scales (as needed)

SPUR ENERGY PARTNERS LLC.
CHESHIRE CAT 2 STATE COM #21H
(710' FNL & 1126' FEL)
SECTION 11, T18S, R27E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. HWY 62 and CR #225 (Hilltop Rd.);

Go Southeast on CR #225 approx. 2.5 miles to a lease road on the right;

Turn right and go West approx. 0.6 miles to a lease road on the left;

Turn left at and go Southwest approx. 0.6 miles to a "Y";

Turn right and continue West approx. 0.7 miles to a proposed road on the left;

Turn left and go South approx. 0.1 miles to location on the right.

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 83 GRID – NM EAST DISTANCES ARE GROUND.

I, Dale E. Bell, New Mexico Professional Surveyor No. 14400, do hereby certify that this Plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey, said survey and plat meets the Minimum Standards for Land Surveying in the State of New Mexico and that it is true and correct to the best of my knowledge and belief.

Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

NO.	REVISION	DATE

JOB NO.: LS25100861
DWG. NO.: 25100861-5

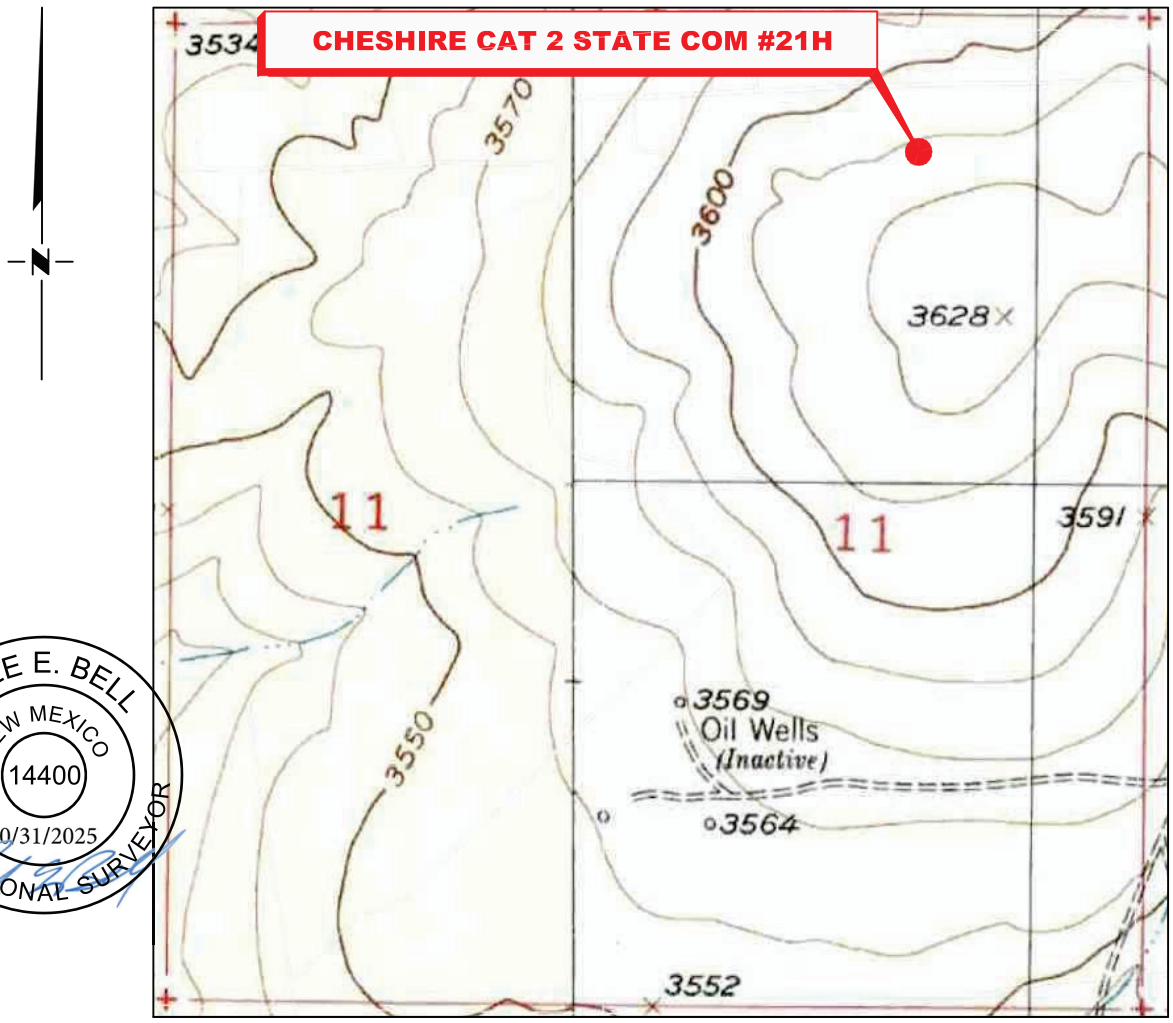
RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

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LOCATION VERIFICATION MAP

NOT TO SCALE



DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

SECTION 11, TWP. 18 SOUTH, RGE. 27 EAST, N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: Spur Energy Partners LLC.
LEASE: Cheshire Cat 2 State Com
WELL NO.: 21H
ELEVATION: 3611'

LOCATION: 720' FNL & 1126' FEL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Red Lake, NM (1955)

NO.	REVISION	DATE

JOB NO.: LS25100861
DWG. NO.: 25100861-3

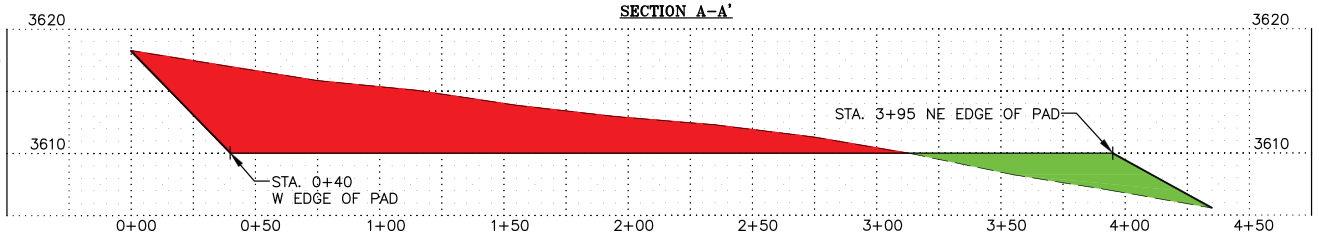
RRC ENERGY SERVICES, LLC
701 S. CECIL ST., HOBBS, NM 88240 (575) 964-8200

SCALE: N. T. S.
DATE: 10/15/2025
SURVEYED BY: JH/IW
DRAWN BY: RQ
APPROVED BY: DEB
SHEET: 1 OF 1

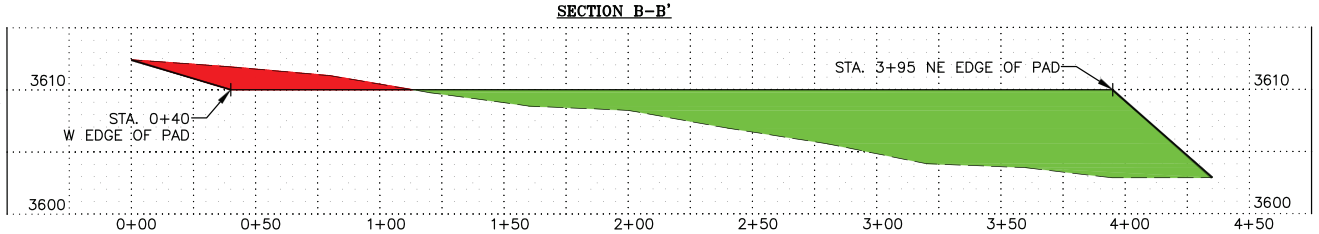
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Received by OCD: 3/18/2026 12:49:31 PM

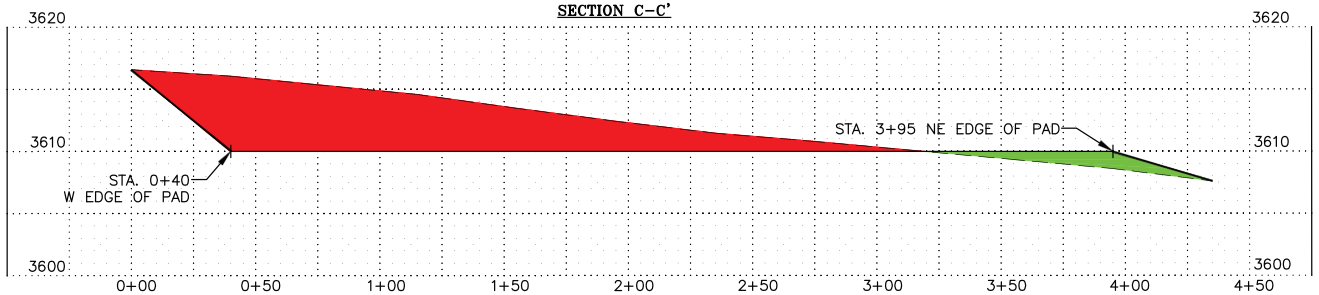
SECTION A–A'



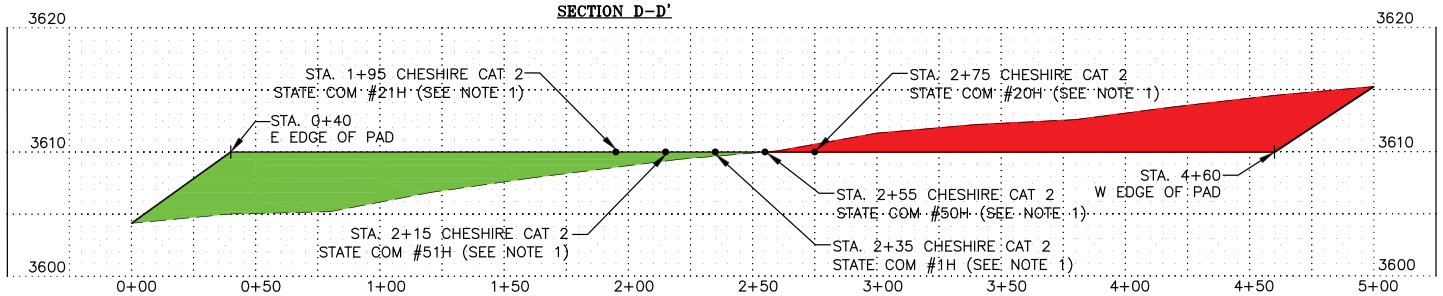
SECTION B–B'

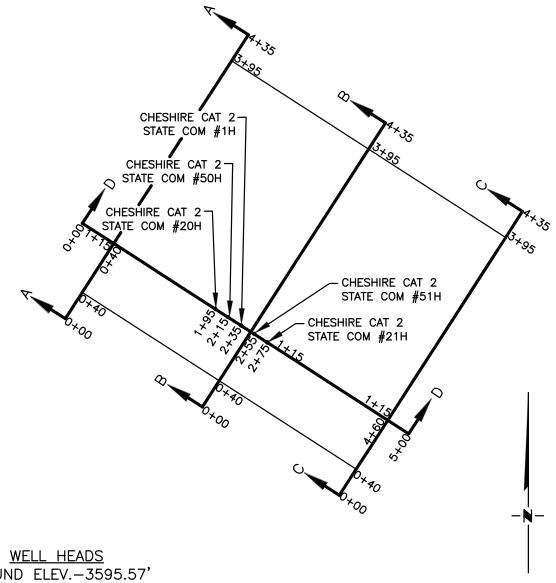


SECTION C–C'



SECTION D–D'





WELL HEADS
GROUND ELEV.–3595.57'
PROFILE ELEV.–3610.00'

CHESHIRE CAT 2 STATE COM WELL LOCATIONS
N.T.S

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Dale E. Bell NM PS 14400

DALE E. BELL
NEW MEXICO
14400
10/31/2025
PROFESSIONAL SURVEYOR

LEGEND

FILL
CUT
EXISTING GROUND
PROPOSED PAD

GENERAL NOTES:

1. CHESHIRE CAT S STATE COM WELL LOCATION GROUND ELEVATION = 3610 +/– PROFILE ELEVATION = 3582 +/–
2. BEARINGS ARE NAD 83 NM EAST ZONE DISTANCES ARE GROUND
3. SLOPES ON THE EDGE OF PAD TO EXISTING GROUND TO BE DETERMINED IN FIELD AND IS ONLY SHOWN FOR REFERENCE.
4. SCALE IS FOR 11X17 DRAWING

REVISIONS:

NO.	DESCRIPTION:	DATE:	DRAWN BY:	CHECKED BY:	APPROVED BY:

APPROVED BY:	
DRAWN BY:	DATE:
RQ	10/28/2025
CHECKED BY:	DATE:
GA	10/28/2025
APPROVED BY:	DATE:
DEB	1028/2025
SURVEYED BY:	DATE:
JH/IW	10/28/2025

PROFILE HORIZ.: 1" = 50' (0, 25', 50')
PROFILE VERT.: 1" = 20' (0, 10', 20')
PLAN VIEW: 1" = 50' (0, 25', 50')

CLIENT: SPUR ENERGY PARTNERS

PROJECT:
PROPOSED CUT & FILL FOR THE CHESHIRE CAT 2 STATE COM WELL LOCATIONS
SECTION 11, T18S, R27E
N. M. P. M., EDDY COUNTY, NEW MEXICO

SCALE	DATE	PROJECT NO.	DRAWING NO.	REVISION	SHEET NO.
1" = 50'	10/28/2025	LS25100857	LS25100857–1	0	1 OF 1

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Surface Use Plan of Operations

Operator Name/Number: Spur Energy Partners LLC – 328947

Lease Name/Well Number: Cheshire Cat 2 State Com Development

Pool Name/Number: Red Lake; Glorieta-Yeso, Northeast (96836)

Surface Location: Sec 11 Township 17 South Range 27 East – NMLC067858

Bottom Location: Sec 2 Township 17 South Range 27 East – STATE

1. **Existing Roads**
    a. A copy of the Vicinity Map is attached showing the proposed location. The well locations are spotted on the map, which shows existing road system.
    b. This well was staked by Dale Bell, Certificate No. 14400 on October 15, 2025, certified on December 1, 2025.
    c. Directions to location: From the intersection of U.S. Hwy. 62 and CR #225 (Hilltop Rd.); go southeast on CR #225 approx. 2.5 miles to a lease road on the right; turn right and go west approx. 0.6 miles to a lease road on the left; turn left and go southwest approx. 0.6 miles to a "Y"; turn right and continue west approx. 0.7 miles to a proposed road on the left; turn left and go south approx. 0.1 miles to location on the right.
2. **New or Reconstructed Access Roads**
    a. One (1) new access road will be built as follows: A strip of land 30 feet wide, being 220.76 feet in length, lying in Section 11, Township 17 South, Range 27 East, N.M.P.M., Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across B.L.M. lands.
    b. The maximum width of the road will be 14'. It will be crowned and made up of 6" compacted caliche. Water will be deflected as necessary, to avoid accumulation and prevent surface erosion.
    c. Surface material will be native caliche obtained from a B.L.M. approved pit nearest proximity to the location. The maximum grade will be 3%.
    d. No cattle guards will be required.
    e. Blade, water, and repair existing caliche roads when necessary.
3. **Location of Existing Wells**
    a. Existing wells within one-mile radius of proposed well are shown on attached plat.
4. **Location of Proposed Facilities**
    a. The Cheshire Cat 2 State Com wells will have the ability to be routed to the Red Skies 10 Federal Com multi-well pad lying in Section 11, Township 18 South, Range 27 East.
    b. Each well will have two (2) 4" buried flowlines operating at less than 125 psi.; the wells will produce into this battery at any given time. The flowlines will follow a route approved by the B.L.M. Survey a strip of land 30 feet wide, being 4,005.88 feet in length, lying in Section 11, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across B.L.M. lands.
    c. The overhead electric line will follow a route approved by the B.L.M. Survey a strip of land 30 feet wide, being 34.75 feet in length, lying in Section 2, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across State of Nex Mexico lands. Survey a strip of land 30 feet wide, being 650.16 feet in length, lying in Section 11, Township 18 South, Range 27 East, N.M.P.M.,

Eddy County, New Mexico being 15 feet left and 15 feet right of the described survey of a centerline across B.L.M. lands. If we are unable to energize the CVE meter, we will install natural gas generators on location to run the wells fueled with residue gas from the Kinetik plant by one (1) 4" surface flowline operating at less than 125 psi.

d. See attached for additional information on the Cheshire Cat 2 State Com development.

5. Location and types of Water Supply

a. Water for the Cheshire Cat 2 State Com wells will be trucked from the Spur Hub Produced Water/Recycling Facility located in NE quarter, Section 36, Township 17 South, Range 28 East, Eddy County, New Mexico. Private Surface (32.795556, -104.123056). Permit Number 2RF-111.

6. Construction Materials

a. NM One Call (811) will be notified before construction starts. Top ~6" of soil and brush will be stockpiled on the southeast side of the pad. Closed loop drilling system will be used. Caliche will be hauled from the existing caliche pit on private land in the NE/4 Section 18, Township 18 South, Range 28 East.

7. Methods of Handling Waste Material

a. A closed loop system will be utilized consisting of above ground steel tanks and haul-off bins. Disposal of drilling fluids and cuttings will be disposed of at an approved facility. Solids and Liquids – R360.

b. All trash, junk and other waste material will be contained in trash cans or bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.

c. The supplier, including broken sacks, will pick up remaining slats after the completion of the well.

d. A port-a-potty will be provided for the rig crews. The equipment will be properly maintained during the drilling and completion operations and removed when the operations are complete.

e. Disposal of fluids will be transported by the following companies:

i. Mulholland
ii. R360
iii. AR Services

8. Ancillary Facilities: None needed

9. Well-Site Layout

V-Door: Southeast CL Tanks: Northeast Pad: 420' X 355' – 5 well pad

10. Plans for Surface Reclamation

a. After concluding drilling and/or completion operations, if the well is non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the B.L.M. COAs. The original topsoil will again be returned to the pad and contoured, as close as possible to the original topography, and the area will be seeded with an approved B.L.M. mixture to re-establish vegetation.

b. If the well is deemed commercially productive, caliche from the areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. The unused areas of the drill pad will be re-contoured as close as possible to the original topography, and the area will be seeded with an approved B.L.M. mixture to re-establish vegetation.

11. Surface Ownership

a. The surface is owned by the U.S. Government and is administered to the B.L.M. The primary uses of the surface are for grazing of livestock and the production of oil and gas. The surface is leased to Key Livestock c/o Gary Key, 1012 E 2nd Street, Roswell, NM 88201. They will be notified of our intention to drill prior to any activity.

12. Other Information

a. The vegetation cover is generally sparse consisting of mesquite, yucca, shinery oak, sandsage and perennial native range grass. The topsoil is sandy in nature. Wildlife in the area is also sparse consisting of deer, coyotes, rabbits, reptiles, dove and quail.
b. There is no permanent or live water in the general proximity of the location.
c. There are no dwellings within one mile of the proposed well site.

13. Bond Information

a. Bond coverage is individual – NMB001783

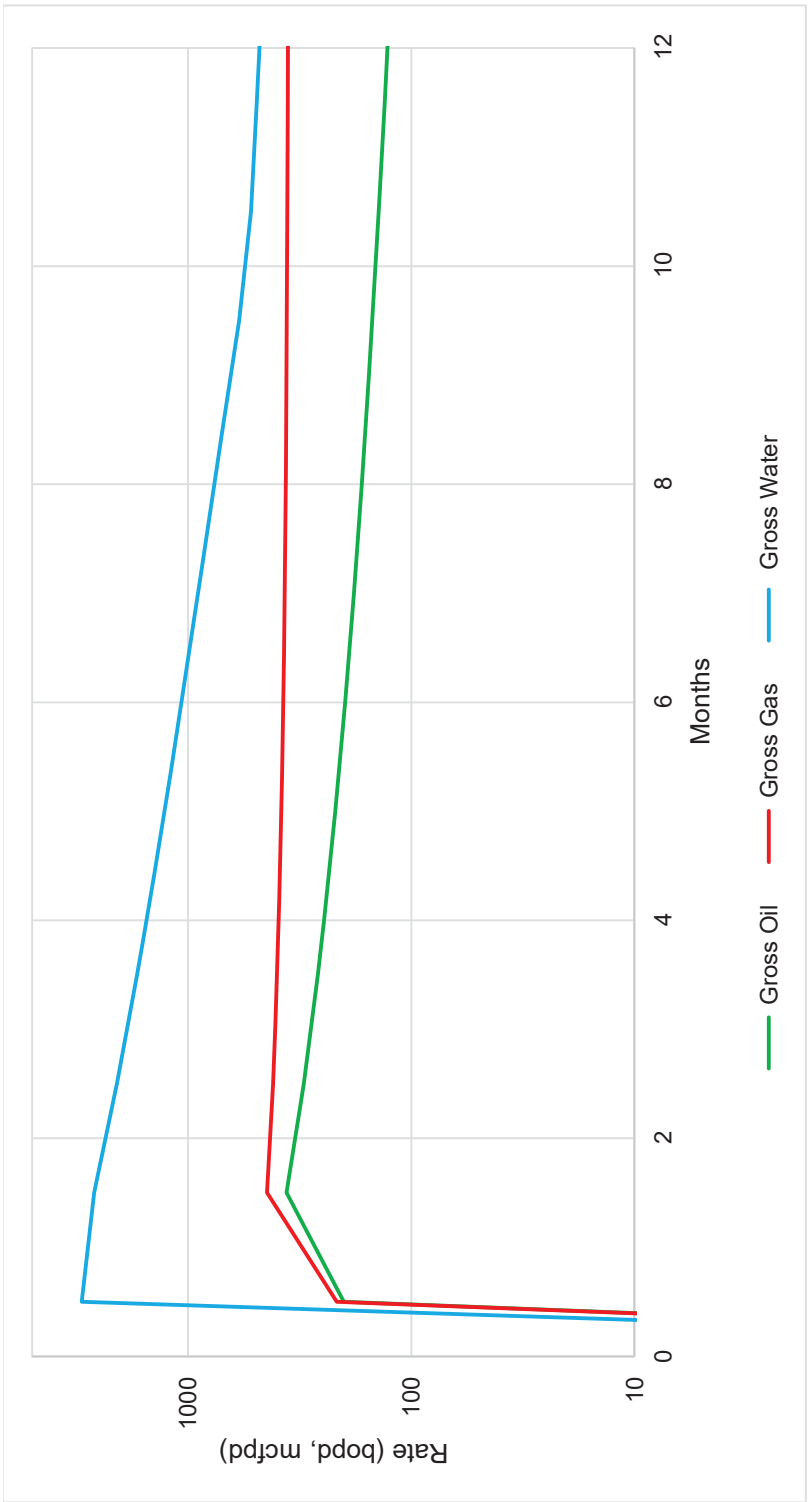
14. Operator Representatives

JP Hermes
Superintendent of Operations
2407 Pecos Avenue
Artesia, NM 88210
Cellular: 575-748-5234

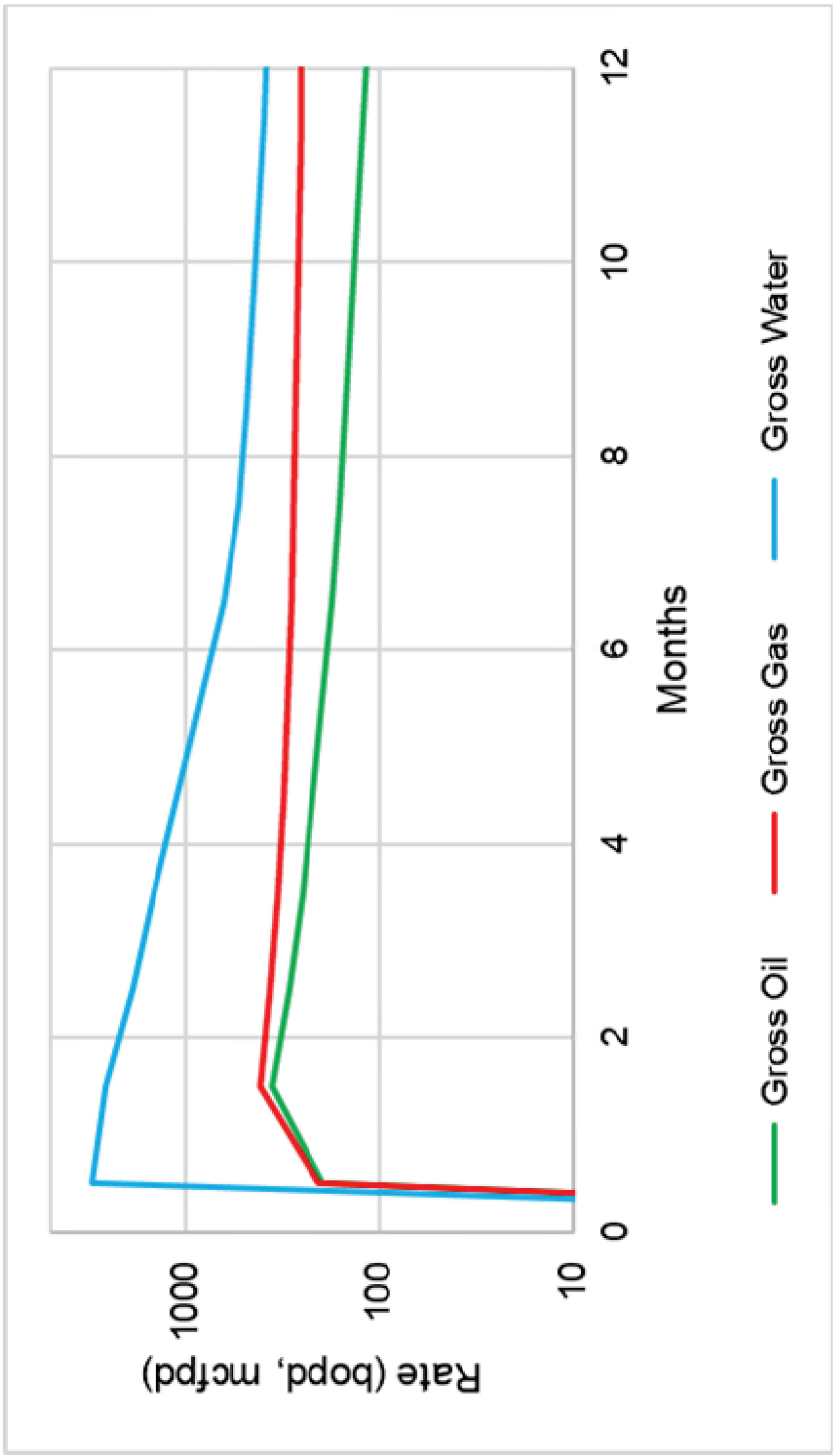
John Nabors
Senior VP of Operations
9655 Katy Freeway, Suite 500
Houston, TX 77024
Cellular: 281-904-8811
Office: 832-930-8526

Nash Bell
VP Land
9655 Katy Freeway, Suite 500
Houston, TX 77024
Cellular: 512-461-1874
Office: 832-930-8582

Loco Hills Paddock Type Curve



Loco Hills Blinebry Type Curve



State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: SPUR ENERGY PARTNERS LLC **OGRID:** 328947 **Date:** 11 / 19 / 25

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

CHESHIRE CAT 2 STATE COM 1H 30-015-

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
CHESHIRE CAT 2 STATE COM 1H	30-015-	A-11-18S-27E	699' FNL 1160' FEL	338 BBL/D	657 MCF/D	2299 BBL/D
CHESHIRE CAT 2 STATE COM 20H	30-015-	A-11-18S-27E	678' FNL 1194' FEL	413 BBL/D	650 MCF/D	2965 BBL/D
CHESHIRE CAT 2 STATE COM 21H	30-015-	A-11-18S-27E	720' FNL 1126' FEL	413 BBL/D	650 MCF/D	2965 BBL/D
CHESHIRE CAT 2 STATE COM 50H	30-015-	A-11-18S-27E	688' FNL 1177' FEL	424 BBL/D	481 MCF/D	2140 BBL/D
CHESHIRE CAT 2 STATE COM 51H	30-015-	A-11-18S-27E	710' FNL 1143' FEL	424 BBL/D	481 MCF/D	2140 BBL/D

IV. Central Delivery Point Name: RED SKIES 10 FEDERAL COM TANK BATTERY [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
CHESHIRE CAT 2 STATE COM 1H	30-015-	04/12/2026	04/17/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 20H	30-015-	04/17/2026	04/23/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 21H	30-015-	04/23/2026	04/29/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 50H	30-015-	04/29/2026	05/05/2026	05/23/2026	06/22/2026	06/26/2026
CHESHIRE CAT 2 STATE COM 51H	30-015-	05/05/2026	05/11/2026	05/23/2026	06/22/2026	06/26/2026

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan
EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	Sarah Chapman
Printed Name:	SARAH CHAPMAN
Title:	REGULATORY DIRECTOR
E-mail Address:	SCHAPMAN@SPURENERGY.COM
Date:	11/19/2025
Phone:	832-930-8613

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

Natural Gas Management Plan – Attachment

VI. Separation equipment will be sized by construction engineering staff based on anticipated daily production to ensure adequate capacity.

VII. Spur Energy Partners LLC ("Spur") will take the following actions to comply with the regulations listed in 19.15.27.8:

A. Spur will maximize the recovery of natural gas by minimizing waste, as defined by 19.15.2 NMAC, of natural gas through venting and flaring. Spur will ensure that our wells will be connected to a natural gas gathering system with sufficient capacity to transport natural gas.

B. All drilling operations will be equipped with a rig flare at least 100 feet from the nearest surface hole location. Rig flare will be utilized to combust any natural gas that is brought to surface during normal operations. In the case of emergency, flaring volumes will be reported appropriately.

C. During completion operations any natural gas brought to surface will be flared. Immediately following completion operations, wells will flow to permanent separation equipment. Produced natural gas from separation equipment will be sent to sales. If natural gas does not meet gathering pipeline specifications, Spur will flare for 60 days or until natural gas meets the pipeline specifications. Spur will ensure flare is properly sized and is equipped with an automatic igniter or continuous pilot. Gas samples will be taken twice per week and natural gas will be routed into a gathering system as soon as the pipeline specifications are met.

D. Natural gas will not be flared with the exception of 19.15.27.8(D)(1-4). If there is no adequate takeaway for the separator gas, wells will be shut-in until that natural gas gathering system is available with exception of emergency or malfunction situations. Volumes will be reported appropriately.

E. Spur will comply with performance standards pursuant to 19.15.27.8(E)(1-8). All equipment will be designed and sized to handle maximum pressures to minimize waste. Storage tanks constructed after May 25, 2021 will be equipped with an automatic gauging system that reduces venting of natural gas. Flare stacks installed or replaced after May 25, 2021 will be equipped with an automatic ignitor or continuous pilot. Spur will conduct AVO inspections as described in 19.15.27.8(E)(5)(a) with frequencies specified in 19.15.27.8(E)(5)(b) and (c). All emergencies or malfunctions will be resolved as quickly and safely as possible to minimize waste.

F. The volume of natural gas that is vented or flared as the result of an emergency or malfunction during drilling and/or completion operations will be estimated and reported accordingly. The volume of natural gas that is vented, flared or beneficially used during production operations, will be measured and reported accordingly. Spur will install equipment to measure the volume of natural gas flared from existing piping or a flowline piped from equipment such as high-pressure separators, heater treaters, or VRUs associated with a well or facility associated with a well authorized by an APD after May 25, 2021 that has an average daily production of less than 60,000 cubic feet of natural gas. If metering is not practicable due to circumstances such as low flow rate or low pressure venting or flaring, Spur will estimate the volume of flared or vented natural gas. Measuring equipment will conform to industry standards and will not be equipped with a manifold

that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing equipment.

VIII. For maintenance activities involving production equipment and compression, venting be limited to the depressurization of the subject equipment to ensure safe working conditions. For maintenance of production equipment, the associated producing wells will be shut-in to eliminate venting. For maintenance of VRUs, all natural gas normally routed to the VRU will be routed to flare.

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report
03/18/2026

APD ID: 10400108984 **Submission Date:** 12/02/2025

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD Surface Owner Description:

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit

Pit liner description:

Pit liner manufacturers

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule

Lined pit reclamation description:

Lined pit reclamation

Leak detection system description:

Leak detection system

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Lined pit Monitor description:

Lined pit Monitor

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information

Section 3 - Unlined

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Other PWD Surface Owner Description:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule

Unlined pit reclamation description:

Unlined pit reclamation

Unlined pit Monitor description:

Unlined pit Monitor

Do you propose to put the produced water to beneficial use?

Beneficial use user

Estimated depth of the shallowest aquifer (feet):

Precipitated Solids Permit

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

State

Unlined Produced Water Pit Estimated

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information

Section 4 -

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD Surface Owner Description:

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection

Underground Injection Control (UIC) Permit?

UIC Permit

Section 5 - Surface

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD Surface Owner Description :

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM **Well Number:** 21H

Section 6 -

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

PWD Surface Owner Description:

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type

Have other regulatory requirements been met?

Other regulatory requirements

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data

03/18/2026

APD ID: 10400108984

Submission Date: 12/02/2025

Operator Name: SPUR ENERGY PARTNERS LLC

Well Name: CHESHIRE CAT 2 STATE COM

Well Number: 21H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond

Federal/Indian APD: FED

BLM Bond number: NMB001783

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

ACKNOWLEDGMENTS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 564390
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

ACKNOWLEDGMENTS

☑	I hereby certify that no additives containing PFAS chemicals will be added to the completion or recompletion of this well.

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

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https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 564390
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
schapman01	Cement is required to circulate on both surface and intermediate1 strings of casing.	3/18/2026
schapman01	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	3/18/2026
ward.rikala	Notify the OCD 24 hours prior to casing & cement.	4/14/2026
ward.rikala	File As Drilled C-102 and a directional Survey with C-104 completion packet.	4/14/2026
ward.rikala	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.	4/14/2026
ward.rikala	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.	4/14/2026
ward.rikala	If the method of isolation was not by circulation, a CBL must be performed; if strata isolation is not achieved, then remediation will be required before further operations.	4/14/2026