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HOBBS OCD

Form 3160-3
(June 2015)

FEB 28 2019

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM136223	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name	
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.	
2. Name of Operator ENERGEN RESOURCES CORPORATION (162928)		8. Lease Name and Well No. PITCHBLEND SEC 19-30 FEL 608H (329021)	
3a. Address 3510 North A Street Bldg A & B Midland TX 79705	3b. Phone No. (include area code) (432)687-1155	9. API Well No. 30-025-45669	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface LOT A / 250 FNL / 685 FEL / LAT 32.1224628 / LONG -103.4003041 At proposed prod. zone LOT H / 2539 FNL / 990 FEL / LAT 32.1016558 / LONG -103.4012711		10. Field and Pool, or Exploratory (12580) Wildcat BOGIE DRAWING	
11. Sec., T. R. M. or Blk. and Survey or Area SEC 19 / T25S / R35E / NMP		12. County or Parish LEA	
13. State NM		14. Distance in miles and direction from nearest town or post office* 8.6 miles	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 250 feet	16. No of acres in lease 2160.08	17. Spacing Unit dedicated to this well 240	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 50 feet	19. Proposed Depth 12710 feet / 19779 feet	20. BLM/BIA Bond No. in file FED: NM2707	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3329 feet	22. Approximate date work will start* 01/01/2019	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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Jenifer Sorley / Ph: (432)818-1732	Date 05/31/2018
Title Asst Supervisor Regulatory Compliance		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 02/07/2019
Title Assistant Field Manager Lands & Minerals		
Office CARLSBAD		

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.

GCP Rec on 2/28/19

APPROVED WITH CONDITIONS
Approval Date: 02/07/2019

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02/07/19

(Continued on page 2)

*(Instructions on page 2)

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 well, 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 directionally 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 well 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 will 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 connects this information to an 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 Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 L.S., Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

1. SHL: LOT A / 250 FNL / 685 FEL / TWSP: 25S / RANGE: 35E / SECTION: 19 / LAT: 32.1224628 / LONG: -103.4003041 (TVD: 0 feet, MD: 0 feet)
PPP: LOT A / 100 FNL / 990 FEL / TWSP: 25S / RANGE: 35E / SECTION: 19 / LAT: 32.1228776 / LONG: -103.4012896 (TVD: 12710 feet, MD: 13118 feet)
BHL: LOT H / 2539 FNL / 990 FEL / TWSP: 25S / RANGE: 35E / SECTION: 30 / LAT: 32.1016558 / LONG: -103.4012711 (TVD: 12710 feet, MD: 19779 feet)

BLM Point of Contact

Name: Candy Vigil

Title: Admin Support Assistant

Phone: 5752345982

Email: cvigil@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Energen Resources Corporation
LEASE NO.:	NMNM-136223
WELL NAME & NO.:	Pitchblende Fed 19-30 608H
SURFACE HOLE FOOTAGE:	0250' FNL & 0685' FEL
BOTTOM HOLE FOOTAGE:	2539' FNL & 0990' FEL Sec. 30, T. 25 S., R 35 E.
LOCATION:	Section 19, T. 25 S., R 35 E., NMPM
COUNTY:	County, New Mexico

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 3933612

1. **Hydrogen Sulfide (H₂S) 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 Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. 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 be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **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.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). 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.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

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.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possibility of water flows in the Castile and Salado.

Possibility of lost circulation in the Red Beds, Rustler, and Delaware.

Abnormal Pressure may be encountered in the 3rd Bone Spring Limestone, and all subsequent formations.

1. The 13-3/8 inch surface casing shall be set at approximately **1010** feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 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 is to include the lead cement slurry.**
 - 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.

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

10-3/4" 1st Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

2. The minimum required fill of cement behind the 10-3/4 inch 1st intermediate casing is:

Cement to surface. If cement does not circulate see B.1.a, c-d above.

Formation below the 10-3/4" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

3. The minimum required fill of cement behind the 7-5/8 inch 2nd intermediate casing is:

Operator has proposed DV tool at depth of 5350', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool: _____

Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage. **Excess calculates to negative 2% - Additional cement will be required.**

b. Second stage above DV tool:

Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Formation below the 7-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

4. The minimum required fill of cement behind the 5-1/2 X 4-1/2 inch production casing is:

Cement as proposed by operator. Operator shall provide method of verification.

5. 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.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. **Operator has proposed a multi-bowl wellhead assembly for after surface casing and after 10-3/4 1st intermediate casings. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be psi.**
 - 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. **Operator shall perform the 1st intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
 - 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.**

5M system requires 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.

4. **Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 7-5/8 2nd intermediate casing shoe shall be psi. 10M system requires 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.**

5. The appropriate BLM office shall be notified a minimum of hours in advance for a representative to witness the tests.
 - a. 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).
 - a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
 - b. 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.
 - c. The results of the test shall be reported to the appropriate BLM office.
 - d. 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.**
 - e. 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.
 - f. 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 Onshore Order No. 2.

D. DRILLING MUD

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.

E. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

F. WASTE MATERIAL AND FLUIDS

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.

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

JAM 111918

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	ENERGEN RESOURCES
LEASE NO.:	NMNM136223
WELL NAME & NO.:	608H:PITCHBLENDE FED 19-30
SURFACE HOLE FOOTAGE:	250'/N & 685'/E
BOTTOM HOLE FOOTAGE:	2969'/S & 990'/E
LOCATION:	T-25S, R-35E, S19. NMPM
COUNTY:	LEA, NM

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
 - Wildlife Management Mitigation
 - Rangeland Management Mitigation
 - Watershed Management Mitigation
- Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- Road Section Diagram**
- Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- Interim Reclamation**
- Final Abandonment & Reclamation**

Approval Date: 02/07/2019

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. 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 and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Wildlife Management Mitigation:

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

Timing Limitation Exceptions:

The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

Ground-level Abandoned Well Marker to avoid raptor perching:

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

Rangeland Management Mitigation:

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.

Watershed Management Mitigation:

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. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. 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.

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 top soil 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.

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.

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.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 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 Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. 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 (below six inches) 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.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS 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.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

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 pit 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.)

G. ON LEASE ACCESS ROADS

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.

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 should 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.

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.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

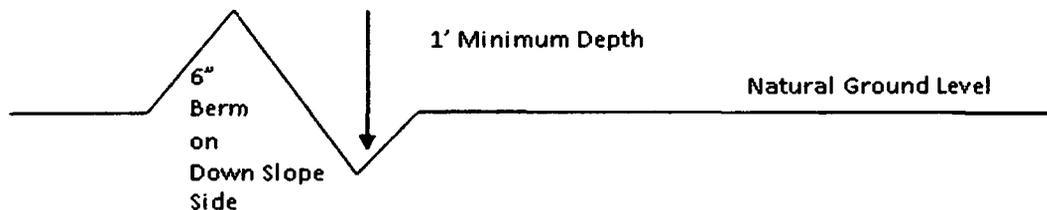
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off 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:

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

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route 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 cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

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

Approval Date: 02/07/2019

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

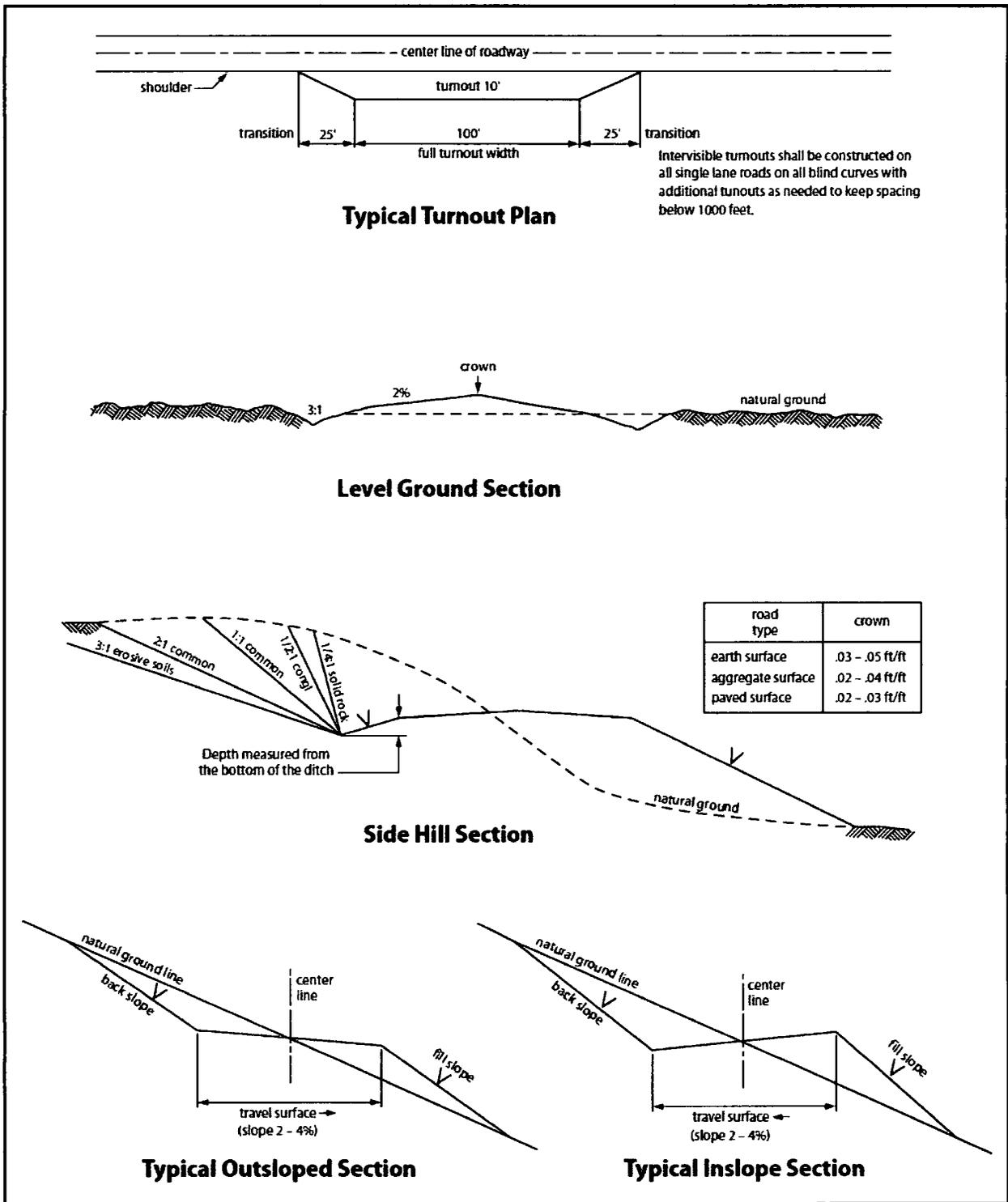


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

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.

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.

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.

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.

Painting Requirement

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

B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, 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 to you a copy of your permit during construction to ensure compliance with all stipulations.

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

1. The Holder 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 grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder 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 right-of-way or on facilities authorized under this right-of-way grant. (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 holder 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 Right-of-Way (unless the release or threatened release is wholly unrelated to

the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, 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 should be 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 holder, regardless of fault. Upon failure of holder 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 holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

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 right-of-way will be 30 feet:

- Blading of vegetation within the right-of-way 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 right-of-way will be allowed: maximum width of clearing operations will not exceed 20 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 right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 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. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder 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.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way 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.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder 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. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- | | |
|--|--|
| <input type="checkbox"/> seed mixture 1 | <input type="checkbox"/> seed mixture 3 |
| <input type="checkbox"/> seed mixture 2 | <input type="checkbox"/> seed mixture 4 |
| <input checked="" type="checkbox"/> seed mixture 2/LPC | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder'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.

15. The holder 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 holder before maintenance begins. The holder 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 holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area 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 to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. 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.

18. 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 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.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

A copy of the grant 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.

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

1. The holder 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 grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder 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 right-of-way or on facilities authorized under this right-of-way grant. (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 holder 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 Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. There will be no clearing or blading of the right-of-way 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 holder 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 right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

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.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder 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.

7. 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.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. 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 grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area 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 to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should 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 should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. 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 below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

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 should 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.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

Holder 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 shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

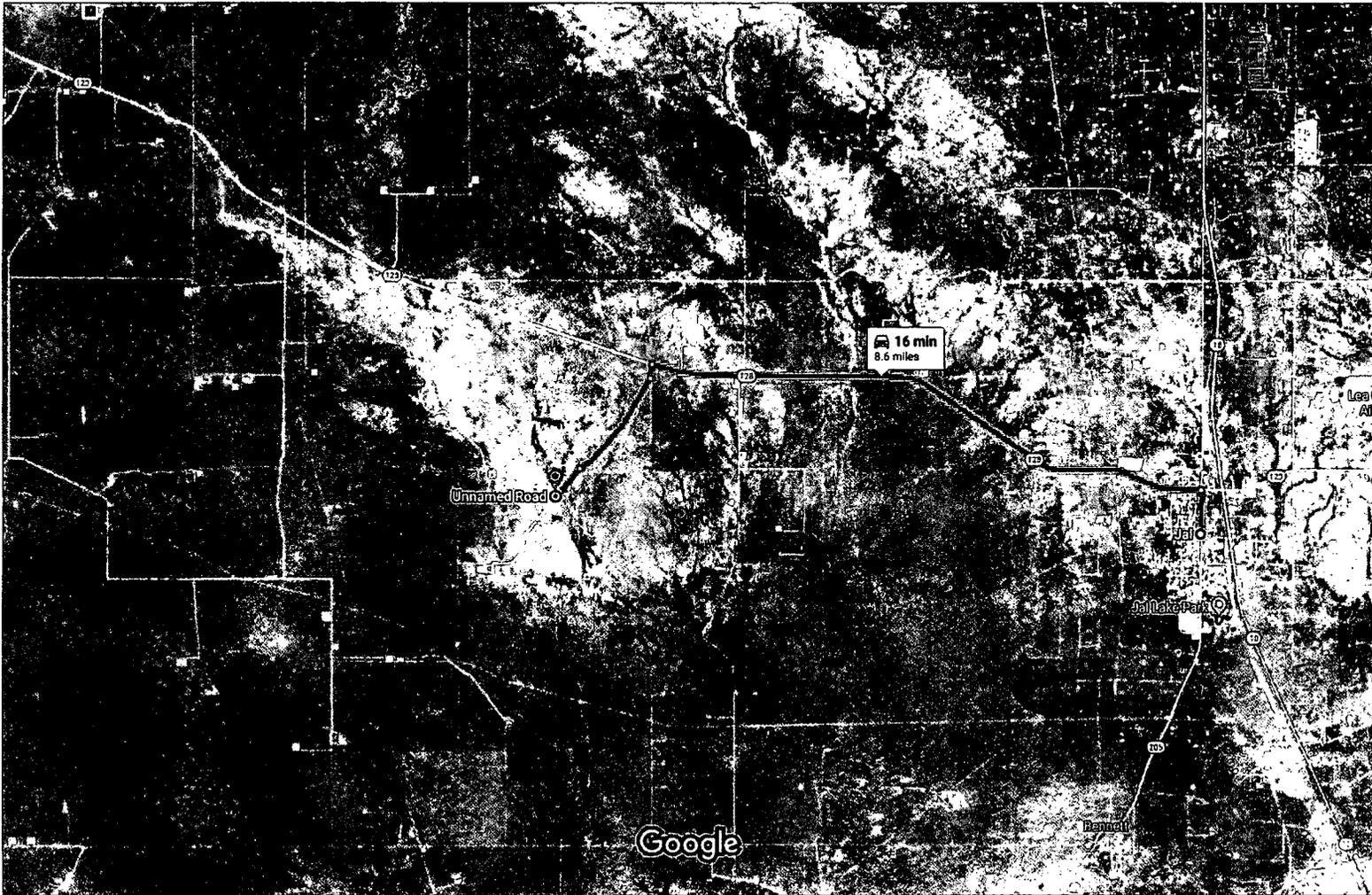
Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder 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. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

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

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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



Imagery ©2018 Google, Map data ©2018 Google 1 mi

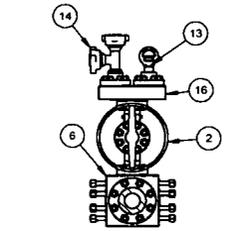
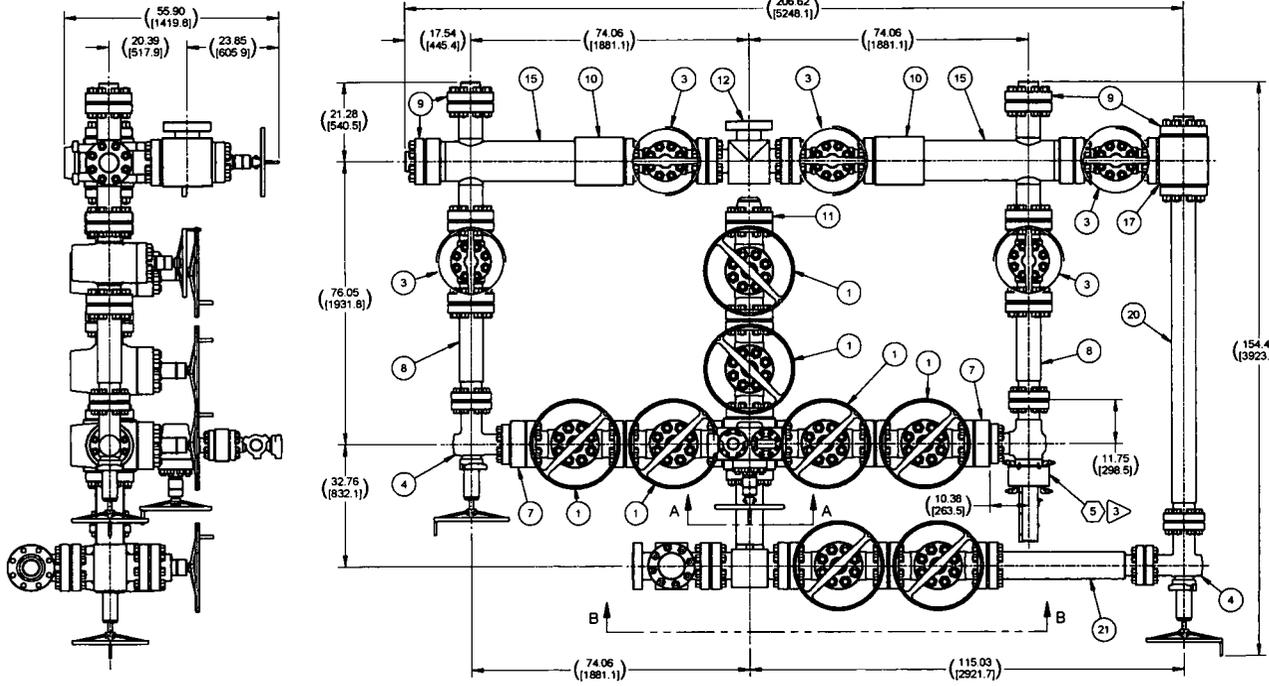
Jal

New Mexico 88252

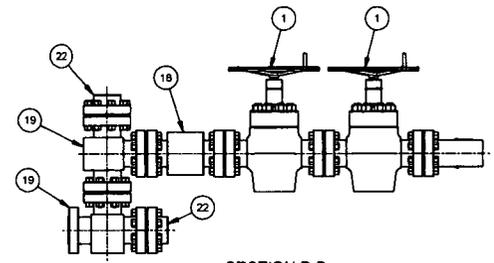
- ↑ 1. Head east toward S 3rd St 46 ft
- ↶ 2. Turn left onto S 3rd St 0.5 mi
- ↶ 3. Turn left onto NM-128 W/W Kansas Ave
 i Continue to follow NM-128 W 6.3 mi
- ↶ 4. Turn left 0.2 mi
- ↷ 5. Slight right 1.2 mi
- ↶ 6. Slight left
 i Destination will be on the right 0.4 mi

Unnamed Road

Jal, NM 88252



VIEW A-A



SECTION B-B

- NOTES:**
1. STUDS, NUTS, RING GASKETS AND NAME PLATE ARE NOT REFERENCED ON DRAWING.
 2. BOLT HOLES STRADDLE COMMON CENTERLINE.
 3. CUSTOMER SUPPLIED; 3-1/16" 10M HYD CHOKE; MUST FIT THESE DIMENSIONS.

CUSTOMER REVIEW/APPROVAL

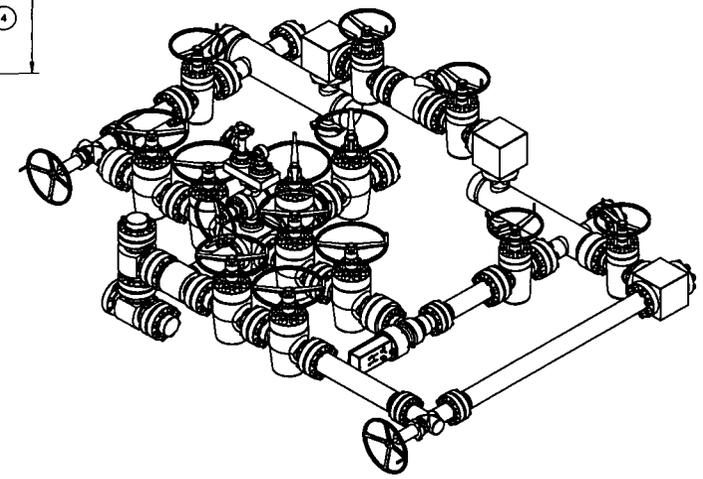
CN Correct As Noted. Submit revised document. Proceed with fabrication.

NF Not for Fabrication. Do not start fabricating equipment represented until design is corrected. Correct and resubmit design.

FD Final Design Document Design document is accepted.

REVIEWED BY: _____ DATE: _____

PARTS LIST		
ITEM	QTY	DESCRIPTION
1	8	GATE VALVE, MANUAL, 4.06"-10M FLANGED CONNECTIONS
2	1	GATE VALVE, MANUAL, 2.06"-10M FLANGED CONNECTIONS
3	5	GATE VALVE, MANUAL, 4.06"-5M FLANGED CONNECTIONS
4	2	ADJUSTABLE CHOKE, 3.06"-10M FLANGED INLET & OUTLET
5	1	DRILLING CHOKE, ACTUATED, 3.06"-10M FLANGED INLET & OUTLET
6	1	CROSS, 5 WAY, 4.06"-10M THRU X 4.06"-10M THRU X 2.06"-10M
7	2	ISA, 4.06"-10M X 3.06"-10M, 4.045" THK
8	2	ADAPTER SPOOL, 4.06"-5M X 3.06"-10M FLANGED CONNECTIONS, 26" LG
9	4	FLANGE, W/ RECESSED BUFFER CAVITY, 4.06"-5M
10	2	CONNECTING BLOCK, 4.06"-5M X 4.06"-5M 90 DEG
11	1	WELDNECK FLANGE, 4.06"-10M X 5" XXS
12	1	TEE, FLANGED, 4.06"-5M THRU X 4.06"-5M
13	1	PRESSURE GAUGE, 0-15,000 PSI, W/ 2.06"-10M FLANGE
14	1	ASSY, INSTRUMENT TEE WITH 2-10M FLG INLET & (2) 2" KEMPER FIG 1502 FEMALE OUTLETS
15	2	BUFFER TANK, 10.75"OD X 9.25"ID X .56"SOLG, W/ (3) 4.06"-5M FLANGED SIDE OUTLETS, (1) 5"-1002 MALE UNION SIDE OUTLET, (1) 4-1/16" 5M STUDD END, (1) 10.75" OD BLIND END CAP
16	1	INSTRUMENT BLOCK, W/ (2) 2.06"-10M TOP AND (1) 2.06"-10M BOTTOM CONNECTIONS
17	1	TEE, 4.06"-5M THRU X 4.06"-5M
18	1	WELDMENT, TEE, 4-1/16" 10M
19	2	TEE, FLANGED, 4.06"-10M THRU X 4.06"-10M
20	1	ADAPTER SPOOL, 4.06"-5M X 3.06"-10M FLANGED CONNECTIONS, 90.10" LG
21	1	SPACER SPOOL, 4.06"-10M X 3.06"-10M FLANGED CONNECTIONS, 41.55" LG
22	2	FLANGE, W/ RECESSED BUFFER CAVITY, 4.06"-10M
23	32	STUD, AT, 1-8 UNC-2A, 6.75" LG
24	88	STUD, AT, 1 1/8-8 UN-2A, 8" LG
25	64	STUD, AT, 1 1/4-8 UN-2A, 8" LG
26	64	NUT, HEAVY HEX, 1-8 UNC-2B
27	176	NUT, HEAVY HEX, 1 1/8-8 UN-2B
28	128	NUT, HEAVY HEX, 1 1/4-8 UN-2B
29	17	RING GASKET, RX-39
30	4	RING GASKET, BX-152
31	6	RING GASKET, BX-154
32	9	RING GASKET, BX-155



DESIGNED BY: MCHS DIMENSIONAL LIMITS THIRD ANGLE	MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED FINISH: ± .001 SURFACE FINISH: 32 RAY UNLESS OTHERWISE SPECIFIED	DO NOT SCALE		
		DATE: 31 Dec 14 CHECKED BY: H. VO DATE: 31 Dec 14 APPROVED BY: K. HICKOMAN DATE: 31 Dec 14	DATE: 31 Dec 14 CHECKED BY: H. VO DATE: 31 Dec 14 APPROVED BY: K. HICKOMAN DATE: 31 Dec 14	

10-085014-34-35-03 (008)



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Graph

November 19, 2013

Customer: Cactus

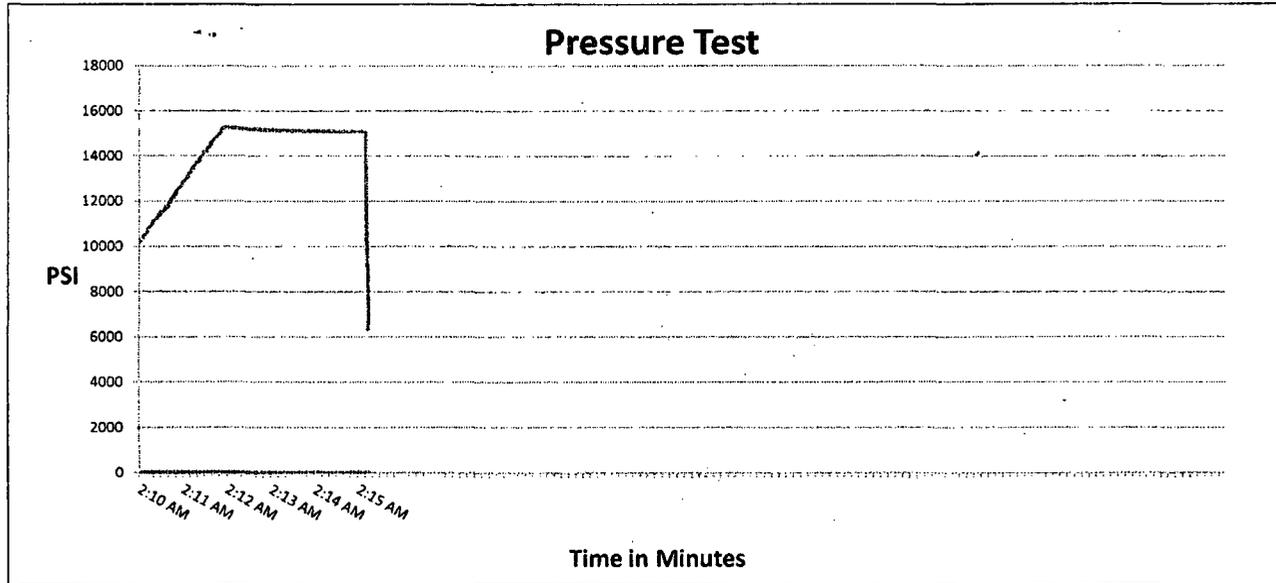
Pick Ticket #: 226672

Hose Specifications

Hose Type	Length
Mud&Cement	10'
I.D.	O.D.
4"	6.05"
Working Pressure	Burst Pressure
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4 1/16 10K	Swage
Die Size	Final O.D.
5.56"	6.54"
Hose Serial #	Hose Assembly Serial #
10768	226672



Test Pressure
15000 PSI

Time Held at Test Pressure
3 2/4 Minutes

Actual Burst Pressure

Peak Pressure
15307 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

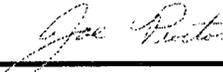
Tested By: Ryan Malone

Approved By: Joe Proctor



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	CACTUS DRILLING	Hose Assembly Type	Choke & Kill
MWH Sales Representative	EVAN SPARKMAN	Certification	API 7K
Date Assembled	11/18/2013	Hose Grade	MUD
Location Assembled	OKC	Hose Working Pressure	10,000
Sales Order #	189325	Hose Lot # and Date Code	10768-06/13
Customer Purchase Order #	RIG#144 M12395	Hose I.D. (Inches)	4"
Assembly Serial # (Pick Ticket #)	226672	Hose O.D. (Inches)	6.52"
Hose Assembly Length	10'	Armor (yes/no)	YES
Fittings			
End A		End B	
Stem (Part and Revision #)	R.4.0X64WB	Stem (Part and Revision #)	R.4.0X64WB
Stem (Heat #)	3A9956	Stem (Heat #)	R3A9956
Ferrule (Part and Revision #)	RF.4.0	Ferrule (Part and Revision #)	RF.4.0
Ferrule (Heat #)	120368	Ferrule (Heat #)	120368
Connection (Part #)	4-1/16 10K	Connection (Part #)	4-1/16 10K
Connection (Heat #)		Connection (Heat #)	
Dies Used	6.56"	Dies Used	6.62"
Hydrostatic Test Requirements			
Test Pressure (psi)	15,000	Hose assembly was tested with ambient water temperature.	
Test Pressure Hold Time (minutes)	3 1/2		
Date Tested		Tested By	
11/19/2013			
		Approved By	
			



Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: **CACTUS DRILLING**

Customer P.O.# **RIG#144 M12395**

Sales Order # **189325**

Date Assembled: **11/18/2013**

Specifications

Hose Assembly Type: **Choke & Kill**

Assembly Serial # **226672**

Hose Lot # and Date Code **10768-06/13**

Hose Working Pressure (psi) **10,000**

Test Pressure (psi) **15000**

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:

Midwest Hose & Specialty, Inc.

3312 S I-35 Service Rd

Oklahoma City, OK 73129

Comments:

Approved By

Date

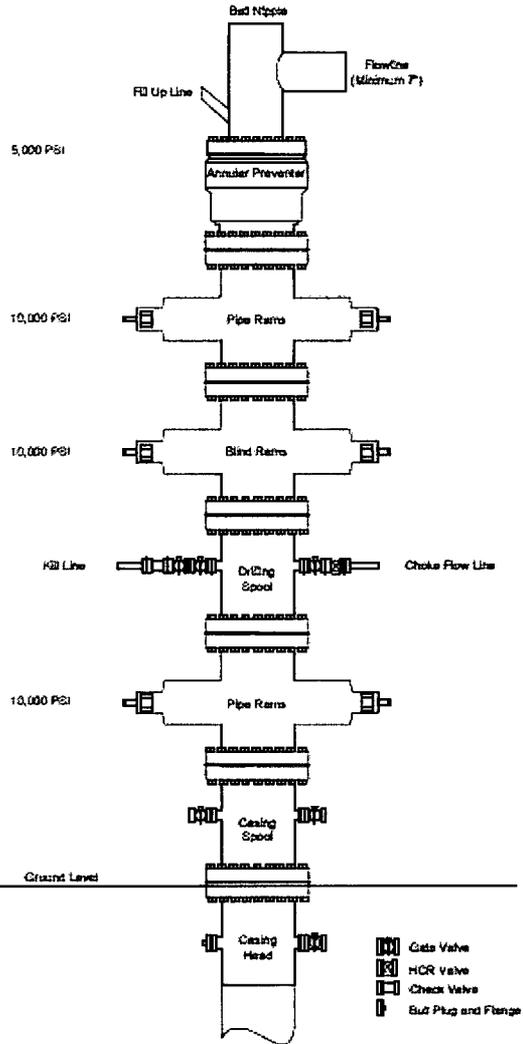
Joe Pector

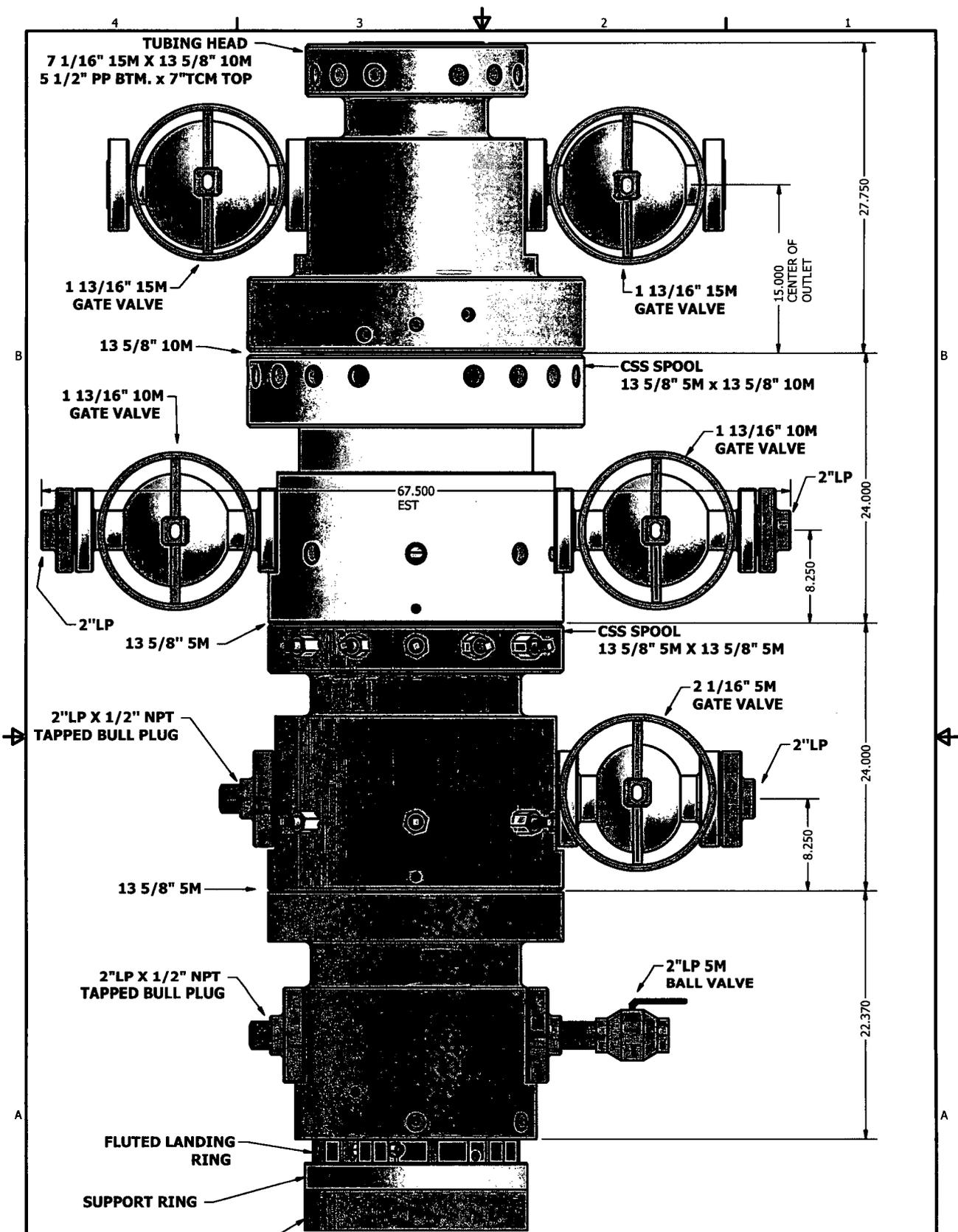
11/19/2013

ENERGEN

RESOURCES

10,000# - 13-5/8" - 3R BOP



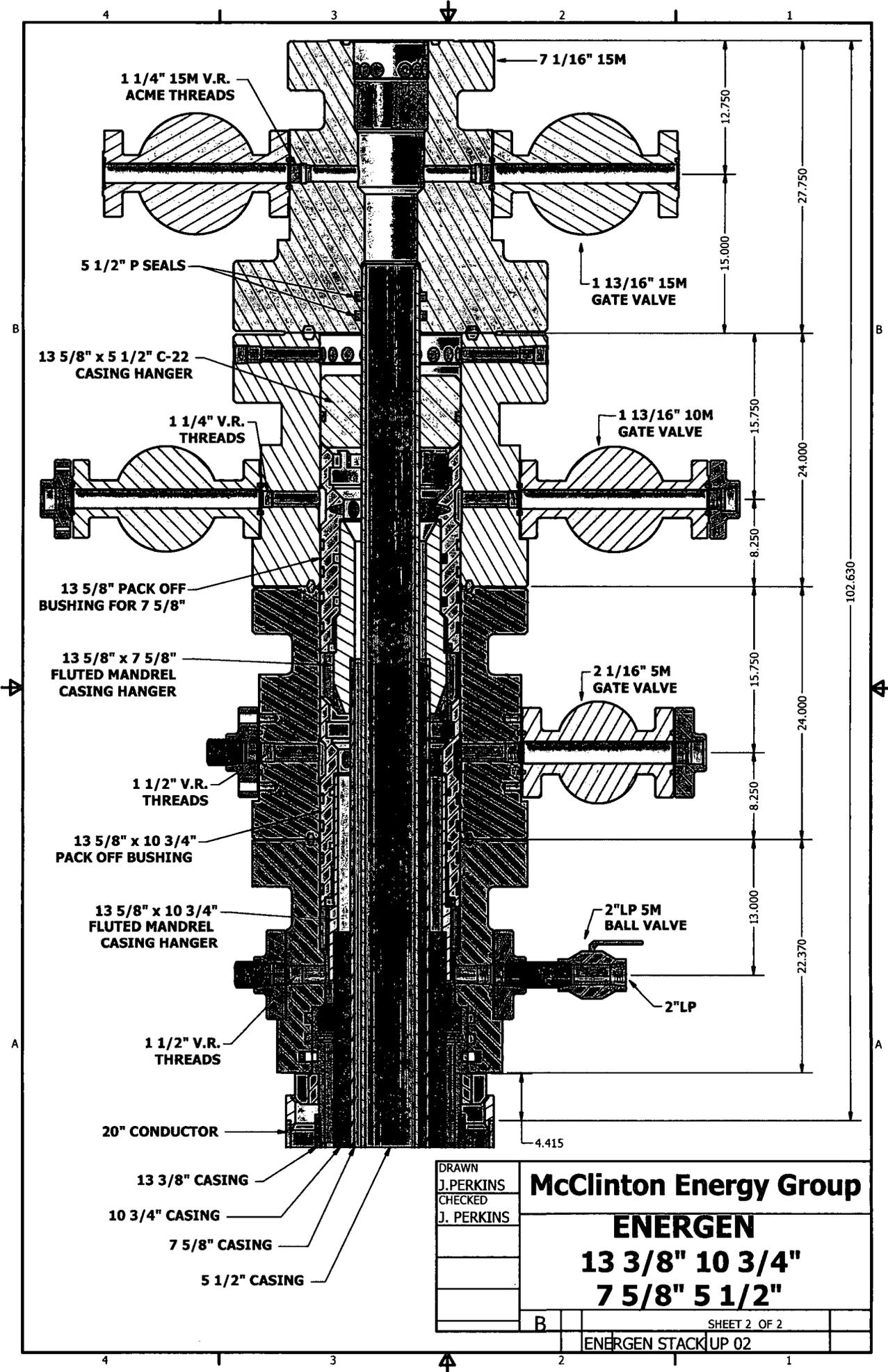


DRAWN
 J. PERKINS
 CHECKED
 J. PERKINS

McClinton Energy Group

ENERGEN
13 3/8" 10 3/4"
7 5/8" 5 1/2"

B SHEET 1 OF 2
 ENERGEN STACKUP 02



1 1/4" 15M V.R. ACME THREADS

7 1/16" 15M

5 1/2" P SEALS

1 13/16" 15M GATE VALVE

13 5/8" x 5 1/2" C-22 CASING HANGER

1 1/4" V.R. THREADS

1 13/16" 10M GATE VALVE

13 5/8" PACK OFF BUSHING FOR 7 5/8"

13 5/8" x 7 5/8" FLUTED MANDREL CASING HANGER

2 1/16" 5M GATE VALVE

1 1/2" V.R. THREADS

13 5/8" x 10 3/4" PACK OFF BUSHING

13 5/8" x 10 3/4" FLUTED MANDREL CASING HANGER

2" LP 5M BALL VALVE

1 1/2" V.R. THREADS

20" CONDUCTOR

2" LP

13 3/8" CASING

10 3/4" CASING

7 5/8" CASING

5 1/2" CASING

DRAWN
J. PERKINS
CHECKED
J. PERKINS

McClinton Energy Group

ENERGEN

13 3/8" 10 3/4"

7 5/8" 5 1/2"

B SHEET 2 OF 2

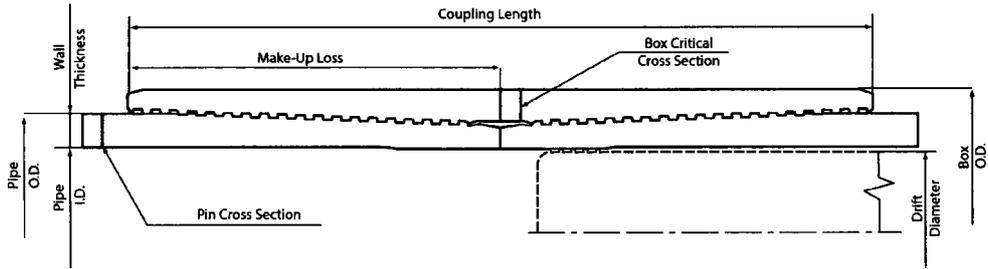
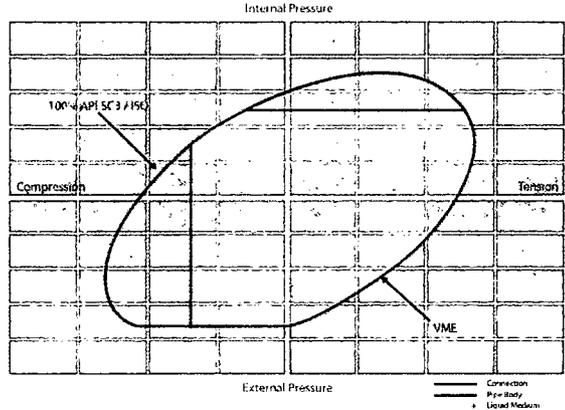
ENERGEN STACK UP 02

TECHNICAL DATA SHEET TMK UP DQXHT 5.5 X 23 P110 CY

TUBULAR PARAMETERS		PIPE BODY PROPERTIES	
Nominal OD, (inch)	5.500	PE Weight, (lbs/ft)	22.54
Wall Thickness, (inch)	0.415	Nominal Weight, (lbs/ft)	23.00
Pipe Grade	P110 CY	Nominal ID, (inch)	4.670
Coupling	Regular	Drift Diameter, (inch)	4.545
Coupling Grade	P110 CY	Nominal Pipe Body Area, (sq inch)	6.630
Drift	Standard	Yield Strength in Tension, (klbs)	729
		Min. Internal Yield Pressure, (psi)	14 530
		Collapse Pressure, (psi)	14 540

CONNECTION PARAMETERS	
Connection OD (inch)	6.05
Connection ID, (inch)	4.633
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.919
Yield Strength in Tension, (klbs)	693
Yield Strength in Compression, (klbs)	685
Tension Efficiency	94%
Compression Efficiency	94%
Min. Internal Yield Pressure, (psi)	14 530
Collapse Pressure, (psi)	14 540
Uniaxial Bending (deg/100ft)	86.0

MAKE-UP TORQUES	
Yield Torque, (ft-lb)	28 500
Minimum Make-Up Torque, (ft-lb)	16 000
Optimum Make-Up Torque, (ft-lb)	17 800
Maximum Make-Up Torque, (ft-lb)	19 500



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TECHNICAL DATA SHEET TMK UP DQXHT 4.5 X 15.1 P110 CY

TUBULAR PARAMETERS

Nominal OD, (inch)	4.500
Wall Thickness, (inch)	0.337
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

PIPE BODY PROPERTIES

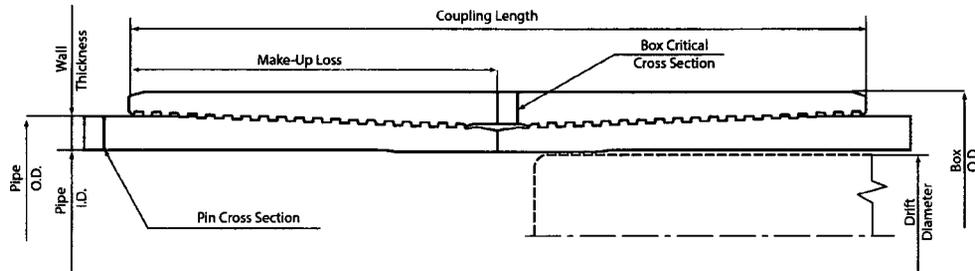
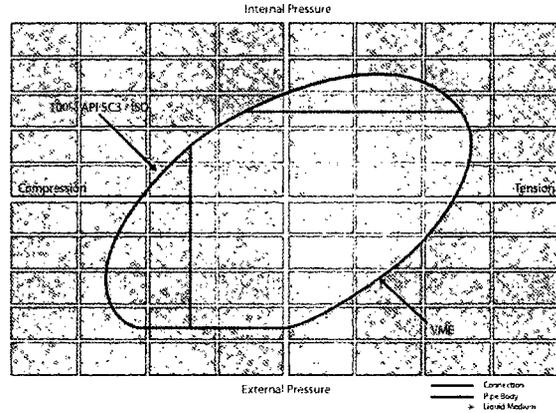
PE Weight, (lbs/ft)	14.98
Nominal Weight, (lbs/ft)	15.10
Nominal ID, (inch)	3.826
Drift Diameter, (inch)	3.701
Nominal Pipe Body Area, (sq inch)	4.407
Yield Strength in Tension, (klbs)	485
Min. Internal Yield Pressure, (psi)	14 420
Collapse Pressure, (psi)	14 340

CONNECTION PARAMETERS

Connection OD (inch)	5.00
Connection ID, (inch)	3.789
Make-Up Loss, (inch)	3.772
Connection Critical Area, (sq inch)	4.407
Yield Strength in Tension, (klbs)	485
Yield Strength in Compression, (klbs)	485
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	14 420
Collapse Pressure, (psi)	14 340
Uniaxial Bending (deg/100ft)	112.0

MAKE-UP TORQUES

Yield Torque, (ft-lb)	15 400
Minimum Make-Up Torque, (ft-lb)	8 600
Optimum Make-Up Torque, (ft-lb)	9 600
Maximum Make-Up Torque, (ft-lb)	10 500



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U. S. Steel Tubular Products
13.375" 61.00lbs/ft (0.430" Wall) J55

5/4/2018 11:45:18 AM

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	0.430	--	--	--	in.
Inside Diameter	12.515	12.515	--	12.515	in.
Standard Drift	12.359	12.359	--	12.359	in.
Alternate Drift	--	--	--	--	in.
Nominal Linear Weight, T&C	61.00	--	--	--	lbs/ft
Plain End Weight	59.50	--	--	--	lbs/ft

PERFORMANCE	Pipe	BTC	LTC	STC	
Minimum Collapse Pressure	1,540	1,540	--	1,540	psi
Minimum Internal Yield Pressure	3,090	3,090	--	3,090	psi
Minimum Pipe Body Yield Strength	962	--	--	--	1,000 lbs
Joint Strength	--	1,025	--	595	1,000 lbs
Reference Length	--	11,204	--	6,504	ft

MAKE-UP DATA	Pipe	BTC	LTC	STC	
Make-Up Loss	--	4.81	--	3.50	in.
Minimum Make-Up Torque	--	--	--	4,460	ft-lbs
Maximum Make-Up Torque	--	--	--	7,440	ft-lbs

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Well: Pitchblende Fed 19-30 608H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	12150	0	12137	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	12050	0	12037	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11.8
Production	6.750	4.5	3.701	12050	20278	12037	12710	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11.8

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.180	1.665	2.605	2.660
Production	5.5	23	CYP110	1.969	1.967	2.630	2.500
Production	4.5	15.1	CYP110	1.839	1.849	2.668	2.668

Criteria

Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2



U. S. Steel Tubular Products

10.750" 45.50lbs/ft (0.400" Wall) N80 HC

5/4/2018 11:48:39 AM

MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	80,000	--	--	--	psi
Maximum Yield Strength	110,000	--	--	--	psi
Minimum Tensile Strength	100,000	--	--	--	psi

DIMENSIONS	Pipe	BTC	LTC	STC	
Outside Diameter	10.750	11.750	--	11.750	in.
Wall Thickness	0.400	--	--	--	in.
Inside Diameter	9.950	9.950	--	9.950	in.
Standard Drift	9.794	9.794	--	9.794	in.
Alternate Drift	9.875	9.875	--	9.875	in.
Nominal Linear Weight, T&C	45.50	--	--	--	lbs/ft
Plain End Weight	44.26	--	--	--	lbs/ft

PERFORMANCE	Pipe	BTC	LTC	STC	
Minimum Collapse Pressure	3,020	3,020	--	3,020	psi
Minimum Internal Yield Pressure	5,210	5,210	--	5,210	psi
Minimum Pipe Body Yield Strength	1,040	--	--	--	1,000 lbs
Joint Strength	--	1,097	--	701	1,000 lbs
Reference Length	--	16,067	--	10,272	ft

MAKE-UP DATA	Pipe	BTC	LTC	STC	
Make-Up Loss	--	4.81	--	3.50	in.
Minimum Make-Up Torque	--	--	--	5,260	ft-lbs
Maximum Make-Up Torque	--	--	--	8,760	ft-lbs

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Well: Pitchblende Fed 19-30 608H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	12150	0	12137	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	12050	0	12037	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11.8
Production	6.750	4.5	3.701	12050	20278	12037	12710	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11.8

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.180	1.665	2.605	2.660
Production	5.5	23	CYP110	1.969	1.967	2.630	2.500
Production	4.5	15.1	CYP110	1.839	1.849	2.668	2.668

Criteria	
Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2



U. S. Steel Tubular Products

7.625" 29.70lbs/ft (0.375" Wall) P110 HC

5/4/2018 11:47:56 AM

MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	110,000	--	--	--	psi
Maximum Yield Strength	140,000	--	--	--	psi
Minimum Tensile Strength	125,000	--	--	--	psi

DIMENSIONS	Pipe	BTC	LTC	STC	
Outside Diameter	7.625	8.500	8.500	--	in.
Wall Thickness	0.375	--	--	--	in.
Inside Diameter	6.875	6.875	6.875	--	in.
Standard Drift	6.750	6.750	6.750	--	in.
Alternate Drift	--	--	--	--	in.
Nominal Linear Weight, T&C	29.70	--	--	--	lbs/ft
Plain End Weight	29.06	--	--	--	lbs/ft

PERFORMANCE	Pipe	BTC	LTC	STC	
Minimum Collapse Pressure	6,700	6,700	6,700	--	psi
Minimum Internal Yield Pressure	9,460	9,460	9,460	--	psi
Minimum Pipe Body Yield Strength	940	--	--	--	1,000 lbs
Joint Strength	--	960	769	--	1,000 lbs
Reference Length	--	21,553	17,258	--	ft

MAKE-UP DATA	Pipe	BTC	LTC	STC	
Make-Up Loss	--	4.69	4.13	--	in.
Minimum Make-Up Torque	--	--	5,770	--	ft-lbs
Maximum Make-Up Torque	--	--	9,610	--	ft-lbs

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U. S. Steel Tubular Products 1-877-893-9461
 460 Wildwood Forest Drive, Suite 300S connections@uss.com
 Spring, Texas 77380 www.usstubular.com



Well: Pitchblende Fed 19-30 608H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	12150	0	12137	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	12050	0	12037	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11.8
Production	6.750	4.5	3.701	12050	20278	12037	12710	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11.8

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.180	1.665	2.605	2.660
Production	5.5	23	CYP110	1.969	1.967	2.630	2.500
Production	4.5	15.1	CYP110	1.839	1.849	2.668	2.668

Criteria

Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

TECHNICAL DATA SHEET TMK UP DQXHT 4.5 X 15.1 P110 CY

TUBULAR PARAMETERS

Nominal OD, (inch)	4.500
Wall Thickness, (inch)	0.337
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

PIPE BODY PROPERTIES

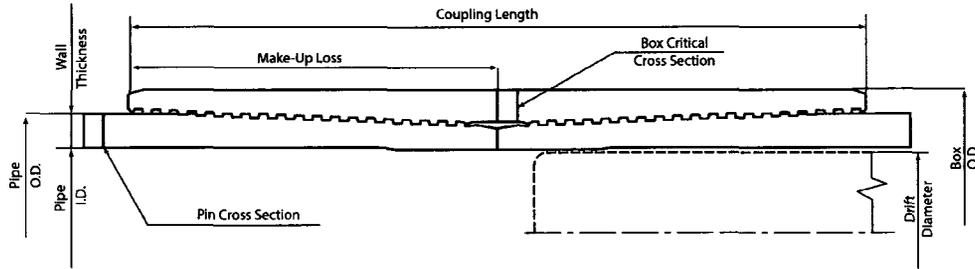
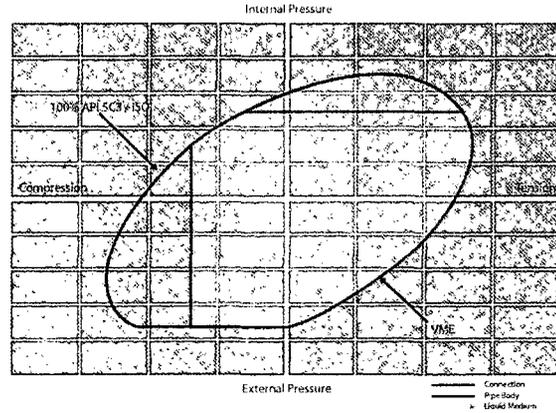
PE Weight, (lbs/ft)	14.98
Nominal Weight, (lbs/ft)	15.10
Nominal ID, (inch)	3.826
Drift Diameter, (inch)	3.701
Nominal Pipe Body Area, (sq inch)	4.407
Yield Strength in Tension, (klbs)	485
Min. Internal Yield Pressure, (psi)	14 420
Collapse Pressure, (psi)	14 340

CONNECTION PARAMETERS

Connection OD (inch)	5.00
Connection ID, (inch)	3.789
Make-Up Loss, (inch)	3.772
Connection Critical Area, (sq inch)	4.407
Yield Strength in Tension, (klbs)	485
Yield Strength in Compression, (klbs)	485
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	14 420
Collapse Pressure, (psi)	14 340
Uniaxial Bending (deg/100ft)	112.0

MAKE-UP TORQUES

Yield Torque, (ft-lb)	15 400
Minimum Make-Up Torque, (ft-lb)	8 600
Optimum Make-Up Torque, (ft-lb)	9 600
Maximum Make-Up Torque, (ft-lb)	10 500



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Print date: 05/04/2018 20:00



Well: Pitchblende Fed 19-30 608H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	12150	0	12137	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	12050	0	12037	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11.8
Production	6.750	4.5	3.701	12050	20278	12037	12710	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11.8

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.180	1.665	2.605	2.660
Production	5.5	23	CYP110	1.969	1.967	2.630	2.500
Production	4.5	15.1	CYP110	1.839	1.849	2.668	2.668

Criteria

Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

TECHNICAL DATA SHEET TMK UP DQXHT 5.5 X 23 P110 CY

TUBULAR PARAMETERS

Nominal OD, (inch)	5.500
Wall Thickness, (inch)	0.415
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

PIPE BODY PROPERTIES

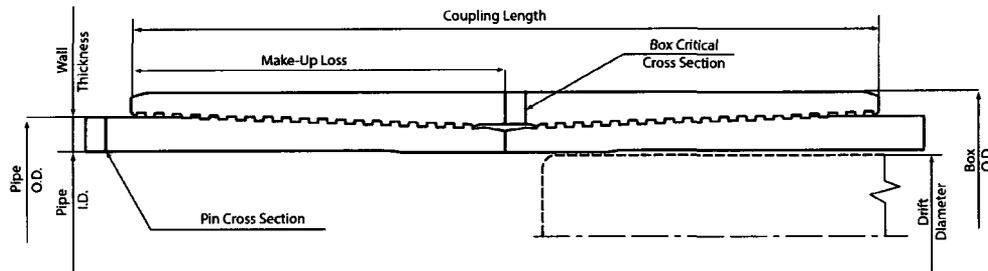
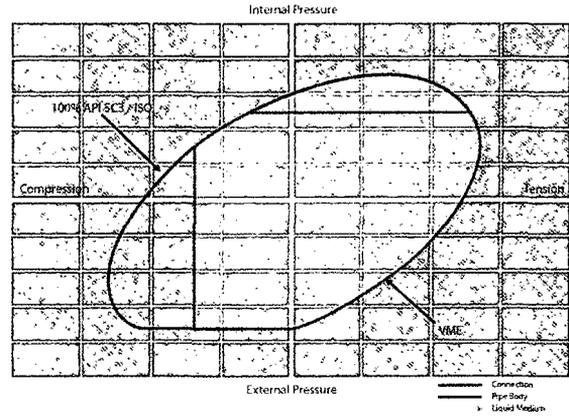
PE Weight, (lbs/ft)	22.54
Nominal Weight, (lbs/ft)	23.00
Nominal ID, (inch)	4.670
Drift Diameter, (inch)	4.545
Nominal Pipe Body Area, (sq inch)	6.630
Yield Strength in Tension, (klbs)	729
Min. Internal Yield Pressure, (psi)	14 530
Collapse Pressure, (psi)	14 540

CONNECTION PARAMETERS

Connection OD (inch)	6.05
Connection ID, (inch)	4.633
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.919
Yield Strength in Tension, (klbs)	693
Yield Strength in Compression, (klbs)	685
Tension Efficiency	94%
Compression Efficiency	94%
Min. Internal Yield Pressure, (psi)	14 530
Collapse Pressure, (psi)	14 540
Uniaxial Bending (deg/100ft)	86.0

MAKE-UP TORQUES

Yield Torque, (ft-lb)	28 500
Minimum Make-Up Torque, (ft-lb)	16 000
Optimum Make-Up Torque, (ft-lb)	17 800
Maximum Make-Up Torque, (ft-lb)	19 500



NOTE: The content of this Technical Data Sheet is for general information only and does not guarantee performance or imply fitness for a particular purpose, which only a competent drilling professional can determine considering the specific installation and operation parameters. This information supersedes all prior versions for this connection. Information that is printed or downloaded is no longer controlled by TMK and might not be the latest information. Anyone using the information herein does so at their own risk. To verify that you have the latest technical information, please contact PAO 'TMK' Technical Sales in Russia (Tel: +7 (495) 775-76-00, Email: techsales@tmk-group.com) and TMK IPSCO in North America (Tel: +1 (281)949-1044, Email: techsales@tmk-ipSCO.com).



Well: Pitchblende Fed 19-30 608H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	12150	0	12137	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	12050	0	12037	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11.8
Production	6.750	4.5	3.701	12050	20278	12037	12710	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11.8

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.180	1.665	2.605	2.660
Production	5.5	23	CYP110	1.969	1.967	2.630	2.500
Production	4.5	15.1	CYP110	1.839	1.849	2.668	2.668

Criteria

Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2



Hydrogen Sulfide Drilling Operations Plan

1. Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on a unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- The hazards and characteristics of hydrogen sulfide (H₂S).
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- The proper techniques for first aid and rescue procedures.

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

- The effects of H₂S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- The contents and requirements of the H₂S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500') and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H₂S Safety Equipment and systems

Note: All H₂S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500' above, or three days prior to penetrating the first zone containing or reasonably expected to contain H₂S. If H₂S greater than 100 ppm is encountered in the gas stream, we will shut in the install H₂S equipment.

- Well Control Equipment:
 - Flare Line.

- Choke manifold with remotely operated choke.
- Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- Auxiliary equipment to include: annular preventer, mud-gas, separator, rotating head.
- Protective equipment for essential personnel:
 - Mark II Surviveair 30 minute units located in the dog house and at briefing areas.
- H2S detection and monitoring equipment:
 - 2 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.
- Visual warning systems:
 - Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate.
- Mud program:
 - The mud program has been designed to minimize the volume of H2S circulated to the surface.

Energen has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal.



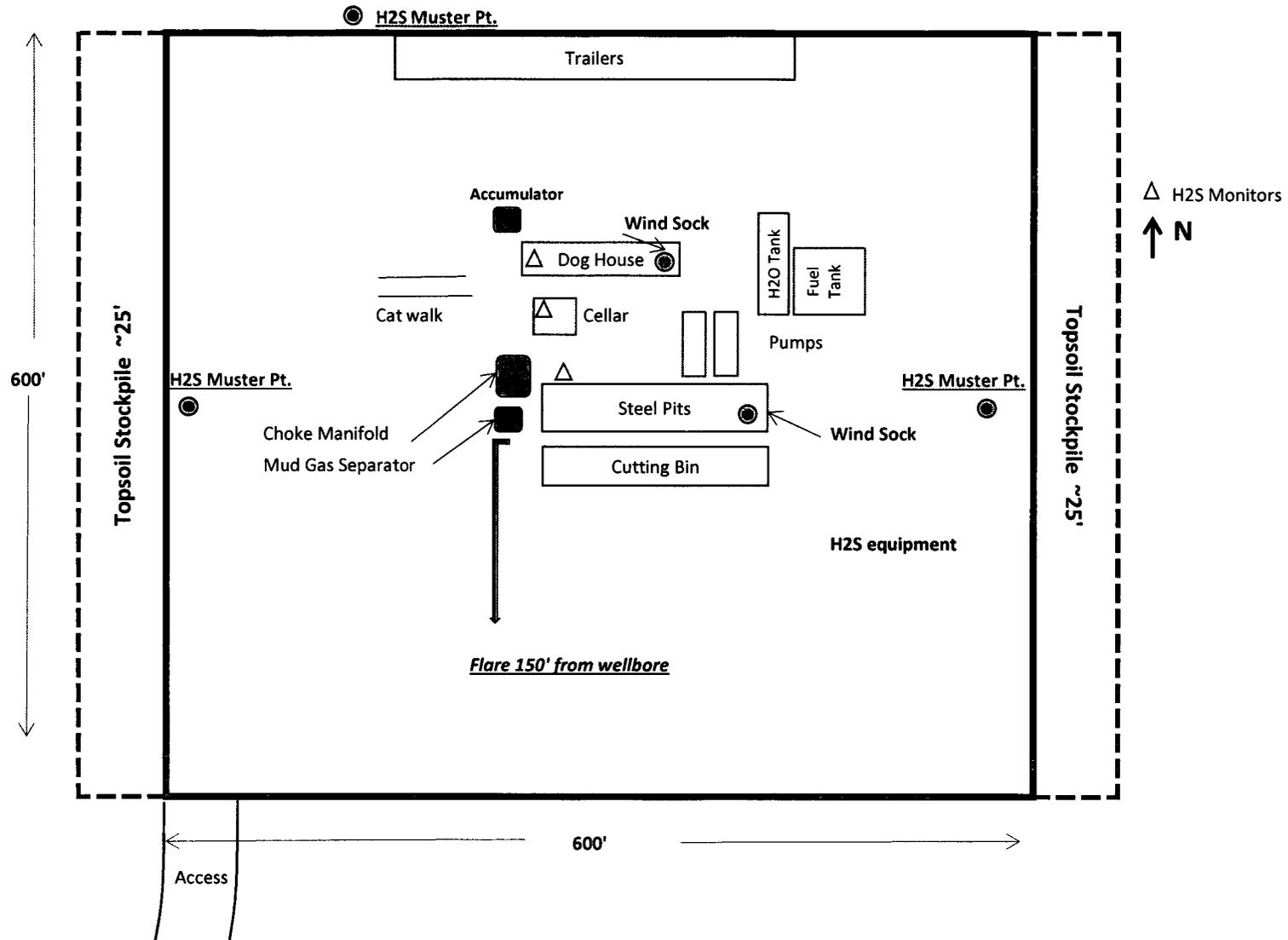
Contact Information

In at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harm's way he will take the necessary steps to protect the workers and the public.

Key Personnel	Title	Office	Mobile
Richard Adams	Drilling Manager	432-818-1747	432-557-1864
Manny Heald	Drilling Supt.	432-688-3330	432-967-5016
Santos Moroles	Drilling Supt.	432-818-1722	432-238-0031
Andy Cobb	Dir EH&S	432-686-3599	432-557-3145
Callie Marsh	Sr. Cood E&S	432-688-3337	432-634-3752

Lea County	Contact
Ambulance	911
Nor Lea General Hospital (Hobbs)	575-397-0560
State Police (Hobbs)	575-392-5580
City Police (Hobbs)	575-397-9625
Sheriff's Office (Lovington)	575-396-3611
Fire Marshall (Lovington)	575-391-2983
Volunteer Fire Dept. (Jal)	575-395-2221
Emergency Management (Lovington)	575-391-2983
New Mexico Oil Conservation Division (Hobbs)	575-393-6161
BLM (Hobbs)	575-393-3612
Hobbs Animal Clinic	575-392-5563
Dal Paso Animal Hospital (Hobbs)	575-397-2286
Mountain States Equine (Hobbs)	575-392-7488
Carlsbad	
BLM	575-234-5972
Santa Fe	
New Mexico Emergency Response Commission	505-476-9600
New Mexico Emergency Response Commission (24 hrs)	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635
National	
National Emergency Response Center (Washington, D.C.)	800-424-8802
Medical	
Flight for Life - 4000 24th Lubbock, Tx	806-743-9911
Aerocare - R3, Box 49F; Lubbock, Tx	806-747-8923
Med Flight Air Amb - 2301 Yale Blvd SD, D3; Albuquerque, NM	505-842-4433
SB Air Med Service - 2505 Clark Carr Loop SE; Albuquerque, NM	505-842-4949
Other	
Boots & Coots IWC	800-256-9688
Cudd Pressure Control	432-699-0139
NM Dept. of Transportation (Roswell)	575-637-7200

Location Layout Pad 8 (not to scale)



Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Pitchblende Fed 19-30 038H,208H,358H,458H,608H, centered on 038H				
Site Position:	Northing:	409,280.45 usft	Latitude:	32° 7' 18.44 N	
From: Map	Easting:	788,976.08 usft	Longitude:	103° 23' 59.71 W	
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	608H - Slot 608H			
Well Position	+N/-S	200.11 usft	Northing:	409,480.56 usft
	+E/-W	23.14 usft	Easting:	788,999.22 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	Ground Level:
				3,329.00 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/8/2018	6.70	59.82	47,866

Design	Plan #2			
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	179.46

Plan Survey Tool Program	Date	9/17/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,278.93	Plan #2 (Lateral)	MWD+HRGM OWSG MWD + HRGM

Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,641.51	5.12	318.04	5,641.05	11.34	-10.20	1.50	1.50	0.00	318.04	
8,671.51	5.12	318.04	8,658.95	212.51	-191.10	0.00	0.00	0.00	0.00	
9,013.01	0.00	0.00	9,000.00	223.85	-201.30	1.50	-1.50	0.00	180.00	Pitchblende Fed 19-30
12,150.05	0.00	0.00	12,137.04	223.85	-201.30	0.00	0.00	0.00	0.00	
13,050.05	90.00	187.40	12,710.00	-344.33	-275.10	10.00	10.00	0.00	187.40	
13,447.13	90.00	179.46	12,710.00	-740.39	-298.83	2.00	0.00	-2.00	-90.00	
20,278.93	90.00	179.46	12,710.00	-7,571.88	-234.24	0.00	0.00	0.00	0.00	Pitchblende Fed 19-30

Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	1.50	318.04	5,399.99	0.97	-0.88	-0.98	1.50	1.50	0.00
5,500.00	3.00	318.04	5,499.91	3.89	-3.50	-3.93	1.50	1.50	0.00
5,600.00	4.50	318.04	5,599.69	8.76	-7.87	-8.83	1.50	1.50	0.00
5,641.51	5.12	318.04	5,641.05	11.34	-10.20	-11.44	1.50	1.50	0.00
5,700.00	5.12	318.04	5,699.31	15.23	-13.69	-15.36	0.00	0.00	0.00
5,800.00	5.12	318.04	5,798.91	21.87	-19.66	-22.05	0.00	0.00	0.00
5,900.00	5.12	318.04	5,898.51	28.51	-25.63	-28.75	0.00	0.00	0.00
6,000.00	5.12	318.04	5,998.11	35.14	-31.60	-35.44	0.00	0.00	0.00
6,100.00	5.12	318.04	6,097.71	41.78	-37.57	-42.14	0.00	0.00	0.00
6,200.00	5.12	318.04	6,197.31	48.42	-43.54	-48.83	0.00	0.00	0.00
6,300.00	5.12	318.04	6,296.92	55.06	-49.52	-55.53	0.00	0.00	0.00
6,400.00	5.12	318.04	6,396.52	61.70	-55.49	-62.22	0.00	0.00	0.00
6,500.00	5.12	318.04	6,496.12	68.34	-61.46	-68.92	0.00	0.00	0.00
6,600.00	5.12	318.04	6,595.72	74.98	-67.43	-75.61	0.00	0.00	0.00
6,700.00	5.12	318.04	6,695.32	81.62	-73.40	-82.31	0.00	0.00	0.00
6,800.00	5.12	318.04	6,794.92	88.26	-79.37	-89.00	0.00	0.00	0.00
6,900.00	5.12	318.04	6,894.52	94.90	-85.34	-95.70	0.00	0.00	0.00
7,000.00	5.12	318.04	6,994.12	101.54	-91.31	-102.39	0.00	0.00	0.00
7,100.00	5.12	318.04	7,093.72	108.17	-97.28	-109.09	0.00	0.00	0.00
7,200.00	5.12	318.04	7,193.32	114.81	-103.25	-115.78	0.00	0.00	0.00
7,300.00	5.12	318.04	7,292.92	121.45	-109.22	-122.48	0.00	0.00	0.00
7,400.00	5.12	318.04	7,392.52	128.09	-115.19	-129.17	0.00	0.00	0.00
7,500.00	5.12	318.04	7,492.12	134.73	-121.16	-135.87	0.00	0.00	0.00
7,600.00	5.12	318.04	7,591.72	141.37	-127.13	-142.56	0.00	0.00	0.00
7,700.00	5.12	318.04	7,691.32	148.01	-133.10	-149.26	0.00	0.00	0.00
7,800.00	5.12	318.04	7,790.92	154.65	-139.07	-155.95	0.00	0.00	0.00
7,900.00	5.12	318.04	7,890.52	161.29	-145.04	-162.65	0.00	0.00	0.00
8,000.00	5.12	318.04	7,990.13	167.93	-151.01	-169.34	0.00	0.00	0.00
8,100.00	5.12	318.04	8,089.73	174.57	-156.98	-176.04	0.00	0.00	0.00
8,200.00	5.12	318.04	8,189.33	181.20	-162.95	-182.73	0.00	0.00	0.00
8,300.00	5.12	318.04	8,288.93	187.84	-168.92	-189.43	0.00	0.00	0.00
8,400.00	5.12	318.04	8,388.53	194.48	-174.89	-196.12	0.00	0.00	0.00
8,500.00	5.12	318.04	8,488.13	201.12	-180.86	-202.82	0.00	0.00	0.00
8,600.00	5.12	318.04	8,587.73	207.76	-186.83	-209.51	0.00	0.00	0.00
8,671.51	5.12	318.04	8,658.95	212.51	-191.10	-214.30	0.00	0.00	0.00
8,700.00	4.70	318.04	8,687.34	214.32	-192.73	-216.13	1.50	-1.50	0.00
8,800.00	3.20	318.04	8,787.10	219.44	-197.33	-221.29	1.50	-1.50	0.00
8,900.00	1.70	318.04	8,887.01	222.61	-200.18	-224.49	1.50	-1.50	0.00
9,000.00	0.20	318.04	8,986.99	223.84	-201.29	-225.72	1.50	-1.50	0.00
9,013.01	0.00	0.00	9,000.00	223.85	-201.30	-225.74	1.50	-1.50	0.00
9,100.00	0.00	0.00	9,086.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,200.00	0.00	0.00	9,186.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,300.00	0.00	0.00	9,286.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,400.00	0.00	0.00	9,386.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,500.00	0.00	0.00	9,486.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,600.00	0.00	0.00	9,586.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,700.00	0.00	0.00	9,686.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,800.00	0.00	0.00	9,786.99	223.85	-201.30	-225.74	0.00	0.00	0.00
9,900.00	0.00	0.00	9,886.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,000.00	0.00	0.00	9,986.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,100.00	0.00	0.00	10,086.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,200.00	0.00	0.00	10,186.99	223.85	-201.30	-225.74	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,300.00	0.00	0.00	10,286.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,400.00	0.00	0.00	10,386.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,500.00	0.00	0.00	10,486.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,600.00	0.00	0.00	10,586.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,700.00	0.00	0.00	10,686.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,800.00	0.00	0.00	10,786.99	223.85	-201.30	-225.74	0.00	0.00	0.00
10,900.00	0.00	0.00	10,886.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,000.00	0.00	0.00	10,986.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,100.00	0.00	0.00	11,086.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,200.00	0.00	0.00	11,186.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,300.00	0.00	0.00	11,286.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,400.00	0.00	0.00	11,386.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,500.00	0.00	0.00	11,486.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,600.00	0.00	0.00	11,586.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,700.00	0.00	0.00	11,686.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,800.00	0.00	0.00	11,786.99	223.85	-201.30	-225.74	0.00	0.00	0.00
11,900.00	0.00	0.00	11,886.99	223.85	-201.30	-225.74	0.00	0.00	0.00
12,000.00	0.00	0.00	11,986.99	223.85	-201.30	-225.74	0.00	0.00	0.00
12,100.00	0.00	0.00	12,086.99	223.85	-201.30	-225.74	0.00	0.00	0.00
12,150.05	0.00	0.00	12,137.04	223.85	-201.30	-225.74	0.00	0.00	0.00
12,200.00	4.99	187.40	12,186.93	221.69	-201.58	-223.58	10.00	10.00	0.00
12,250.00	9.99	187.40	12,236.48	215.23	-202.42	-217.13	10.00	10.00	0.00
12,300.00	14.99	187.40	12,285.28	204.50	-203.81	-206.42	10.00	10.00	0.00
12,350.00	19.99	187.40	12,332.95	189.60	-205.75	-191.53	10.00	10.00	0.00
12,400.00	24.99	187.40	12,379.14	170.64	-208.21	-172.59	10.00	10.00	0.00
12,450.00	29.99	187.40	12,423.47	147.75	-211.19	-149.74	10.00	10.00	0.00
12,500.00	34.99	187.40	12,465.63	121.13	-214.64	-123.14	10.00	10.00	0.00
12,550.00	39.99	187.40	12,505.29	90.95	-218.56	-93.01	10.00	10.00	0.00
12,600.00	44.99	187.40	12,542.15	57.47	-222.91	-59.57	10.00	10.00	0.00
12,650.00	49.99	187.40	12,575.92	20.93	-227.66	-23.07	10.00	10.00	0.00
12,700.00	54.99	187.40	12,606.35	-18.39	-232.76	16.20	10.00	10.00	0.00
12,750.00	59.99	187.40	12,633.21	-60.20	-238.19	57.95	10.00	10.00	0.00
12,800.00	64.99	187.40	12,656.29	-104.16	-243.90	101.86	10.00	10.00	0.00
12,850.00	69.99	187.40	12,675.43	-149.96	-249.85	147.59	10.00	10.00	0.00
12,900.00	74.99	187.40	12,690.46	-197.23	-255.99	194.81	10.00	10.00	0.00
12,950.00	80.00	187.40	12,701.28	-245.62	-262.28	243.14	10.00	10.00	0.00
13,000.00	85.00	187.40	12,707.81	-294.76	-268.66	292.22	10.00	10.00	0.00
13,050.05	90.00	187.40	12,710.00	-344.33	-275.10	341.72	10.00	10.00	0.00
13,100.00	90.00	186.40	12,710.00	-393.92	-281.10	391.25	2.00	0.00	-2.00
13,200.00	90.00	184.40	12,710.00	-493.47	-290.51	490.71	2.00	0.00	-2.00
13,300.00	90.00	182.40	12,710.00	-593.29	-296.44	590.47	2.00	0.00	-2.00
13,400.00	90.00	180.40	12,710.00	-693.26	-298.89	690.41	2.00	0.00	-2.00
13,447.13	90.00	179.46	12,710.00	-740.39	-298.83	737.54	2.00	0.00	-2.00
13,500.00	90.00	179.46	12,710.00	-793.25	-298.33	790.41	0.00	0.00	0.00
13,600.00	90.00	179.46	12,710.00	-893.25	-297.38	890.41	0.00	0.00	0.00
13,700.00	90.00	179.46	12,710.00	-993.24	-296.44	990.41	0.00	0.00	0.00
13,800.00	90.00	179.46	12,710.00	-1,093.24	-295.49	1,090.41	0.00	0.00	0.00
13,900.00	90.00	179.46	12,710.00	-1,193.23	-294.55	1,190.41	0.00	0.00	0.00
14,000.00	90.00	179.46	12,710.00	-1,293.23	-293.60	1,290.41	0.00	0.00	0.00
14,100.00	90.00	179.46	12,710.00	-1,393.23	-292.66	1,390.41	0.00	0.00	0.00
14,200.00	90.00	179.46	12,710.00	-1,493.22	-291.71	1,490.41	0.00	0.00	0.00
14,300.00	90.00	179.46	12,710.00	-1,593.22	-290.77	1,590.41	0.00	0.00	0.00
14,400.00	90.00	179.46	12,710.00	-1,693.21	-289.82	1,690.41	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,500.00	90.00	179.46	12,710.00	-1,793.21	-288.88	1,790.41	0.00	0.00	0.00
14,600.00	90.00	179.46	12,710.00	-1,893.20	-287.93	1,890.41	0.00	0.00	0.00
14,700.00	90.00	179.46	12,710.00	-1,993.20	-286.98	1,990.41	0.00	0.00	0.00
14,800.00	90.00	179.46	12,710.00	-2,093.19	-286.04	2,090.41	0.00	0.00	0.00
14,900.00	90.00	179.46	12,710.00	-2,193.19	-285.09	2,190.41	0.00	0.00	0.00
15,000.00	90.00	179.46	12,710.00	-2,293.19	-284.15	2,290.41	0.00	0.00	0.00
15,100.00	90.00	179.46	12,710.00	-2,393.18	-283.20	2,390.41	0.00	0.00	0.00
15,200.00	90.00	179.46	12,710.00	-2,493.18	-282.26	2,490.41	0.00	0.00	0.00
15,300.00	90.00	179.46	12,710.00	-2,593.17	-281.31	2,590.41	0.00	0.00	0.00
15,400.00	90.00	179.46	12,710.00	-2,693.17	-280.37	2,690.41	0.00	0.00	0.00
15,500.00	90.00	179.46	12,710.00	-2,793.16	-279.42	2,790.41	0.00	0.00	0.00
15,600.00	90.00	179.46	12,710.00	-2,893.16	-278.48	2,890.41	0.00	0.00	0.00
15,700.00	90.00	179.46	12,710.00	-2,993.15	-277.53	2,990.41	0.00	0.00	0.00
15,800.00	90.00	179.46	12,710.00	-3,093.15	-276.59	3,090.41	0.00	0.00	0.00
15,900.00	90.00	179.46	12,710.00	-3,193.15	-275.64	3,190.41	0.00	0.00	0.00
16,000.00	90.00	179.46	12,710.00	-3,293.14	-274.69	3,290.41	0.00	0.00	0.00
16,100.00	90.00	179.46	12,710.00	-3,393.14	-273.75	3,390.41	0.00	0.00	0.00
16,200.00	90.00	179.46	12,710.00	-3,493.13	-272.80	3,490.41	0.00	0.00	0.00
16,300.00	90.00	179.46	12,710.00	-3,593.13	-271.86	3,590.41	0.00	0.00	0.00
16,400.00	90.00	179.46	12,710.00	-3,693.12	-270.91	3,690.41	0.00	0.00	0.00
16,500.00	90.00	179.46	12,710.00	-3,793.12	-269.97	3,790.41	0.00	0.00	0.00
16,600.00	90.00	179.46	12,710.00	-3,893.11	-269.02	3,890.41	0.00	0.00	0.00
16,700.00	90.00	179.46	12,710.00	-3,993.11	-268.08	3,990.41	0.00	0.00	0.00
16,800.00	90.00	179.46	12,710.00	-4,093.10	-267.13	4,090.41	0.00	0.00	0.00
16,900.00	90.00	179.46	12,710.00	-4,193.10	-266.19	4,190.41	0.00	0.00	0.00
17,000.00	90.00	179.46	12,710.00	-4,293.10	-265.24	4,290.41	0.00	0.00	0.00
17,100.00	90.00	179.46	12,710.00	-4,393.09	-264.30	4,390.41	0.00	0.00	0.00
17,200.00	90.00	179.46	12,710.00	-4,493.09	-263.35	4,490.41	0.00	0.00	0.00
17,300.00	90.00	179.46	12,710.00	-4,593.08	-262.40	4,590.41	0.00	0.00	0.00
17,400.00	90.00	179.46	12,710.00	-4,693.08	-261.46	4,690.41	0.00	0.00	0.00
17,500.00	90.00	179.46	12,710.00	-4,793.07	-260.51	4,790.41	0.00	0.00	0.00
17,600.00	90.00	179.46	12,710.00	-4,893.07	-259.57	4,890.41	0.00	0.00	0.00
17,700.00	90.00	179.46	12,710.00	-4,993.06	-258.62	4,990.41	0.00	0.00	0.00
17,800.00	90.00	179.46	12,710.00	-5,093.06	-257.68	5,090.41	0.00	0.00	0.00
17,900.00	90.00	179.46	12,710.00	-5,193.06	-256.73	5,190.41	0.00	0.00	0.00
18,000.00	90.00	179.46	12,710.00	-5,293.05	-255.79	5,290.41	0.00	0.00	0.00
18,100.00	90.00	179.46	12,710.00	-5,393.05	-254.84	5,390.41	0.00	0.00	0.00
18,200.00	90.00	179.46	12,710.00	-5,493.04	-253.90	5,490.41	0.00	0.00	0.00
18,300.00	90.00	179.46	12,710.00	-5,593.04	-252.95	5,590.41	0.00	0.00	0.00
18,400.00	90.00	179.46	12,710.00	-5,693.03	-252.01	5,690.41	0.00	0.00	0.00
18,500.00	90.00	179.46	12,710.00	-5,793.03	-251.06	5,790.41	0.00	0.00	0.00
18,600.00	90.00	179.46	12,710.00	-5,893.02	-250.11	5,890.41	0.00	0.00	0.00
18,700.00	90.00	179.46	12,710.00	-5,993.02	-249.17	5,990.41	0.00	0.00	0.00
18,800.00	90.00	179.46	12,710.00	-6,093.02	-248.22	6,090.41	0.00	0.00	0.00
18,900.00	90.00	179.46	12,710.00	-6,193.01	-247.28	6,190.41	0.00	0.00	0.00
19,000.00	90.00	179.46	12,710.00	-6,293.01	-246.33	6,290.41	0.00	0.00	0.00
19,100.00	90.00	179.46	12,710.00	-6,393.00	-245.39	6,390.41	0.00	0.00	0.00
19,200.00	90.00	179.46	12,710.00	-6,493.00	-244.44	6,490.41	0.00	0.00	0.00
19,300.00	90.00	179.46	12,710.00	-6,592.99	-243.50	6,590.41	0.00	0.00	0.00
19,400.00	90.00	179.46	12,710.00	-6,692.99	-242.55	6,690.41	0.00	0.00	0.00
19,500.00	90.00	179.46	12,710.00	-6,792.98	-241.61	6,790.41	0.00	0.00	0.00
19,600.00	90.00	179.46	12,710.00	-6,892.98	-240.66	6,890.41	0.00	0.00	0.00
19,700.00	90.00	179.46	12,710.00	-6,992.98	-239.72	6,990.41	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.14 Multi User	Local Co-ordinate Reference:	Well 608H - Slot 608H
Company:	ENERGEN RESOURCES CORPORATION	TVD Reference:	3329+25 @ 3354.00usft (EST)
Project:	Lea County, NM	MD Reference:	3329+25 @ 3354.00usft (EST)
Site:	Pitchblende Fed 19-30 038H,208H,358H,458H,608H	North Reference:	Grid
Well:	608H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

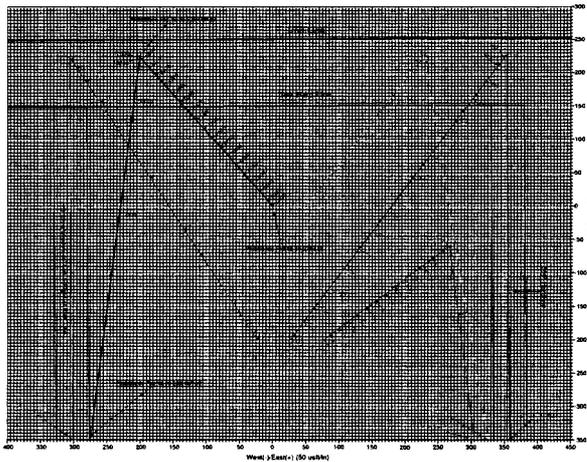
Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
19,800.00	90.00	179.46	12,710.00	-7,092.97	-238.77	7,090.41	0.00	0.00	0.00
19,900.00	90.00	179.46	12,710.00	-7,192.97	-237.82	7,190.41	0.00	0.00	0.00
20,000.00	90.00	179.46	12,710.00	-7,292.96	-236.88	7,290.41	0.00	0.00	0.00
20,100.00	90.00	179.46	12,710.00	-7,392.96	-235.93	7,390.41	0.00	0.00	0.00
20,200.00	90.00	179.46	12,710.00	-7,492.95	-234.99	7,490.41	0.00	0.00	0.00
20,278.93	90.00	179.46	12,710.00	-7,571.88	-234.24	7,569.33	0.00	0.00	0.00

ENERGEN RESOURCES CORPORATION

Project: Lea County, NM
 Site: Pflöchblende Fed 19-30 038H,208H,358H,456H,608H
 Well: 608H
 Wellbore: Lateral
 Design: Plan #2
 Rig: XXXXXX
 Job: M16XXX



WELLBORE LABELS	
Target Well	---
Production Well	---
Injection Well	---
Water Well	---

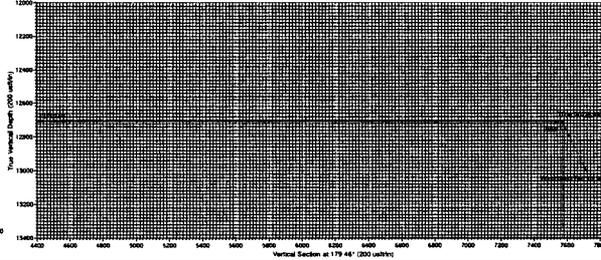
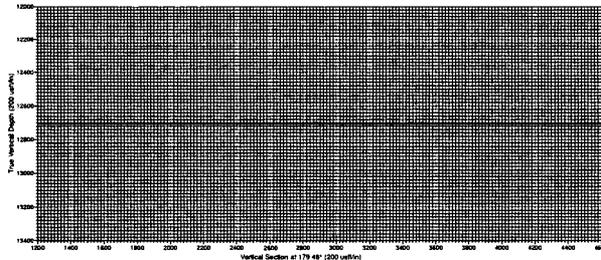
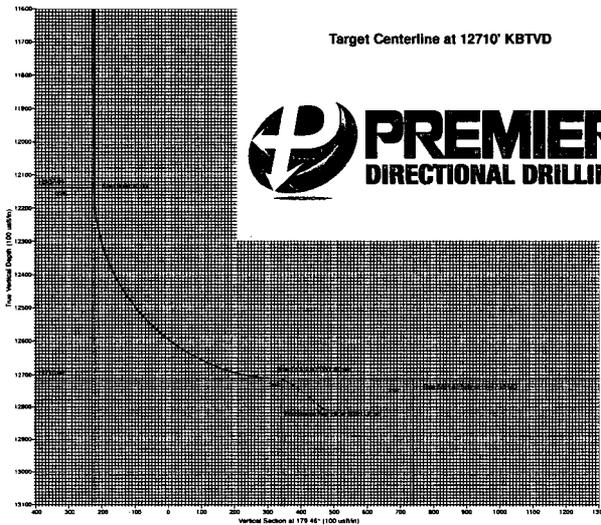


Sec	MD	Inc	Asp	TVD	Surf S	Surf W	Dirg	TRace	VISat	Target
1	5300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5441.51	5.12	318.04	5441.05	11.54	-10.30	1.50	318.04	-11.44	
3	5671.51	5.12	318.04	5671.05	232.51	-181.10	0.00	318.04	-234.93	Production Fac 19-30 608H HP #2
4	5913.01	0.00	0.00	5909.00	325.86	-201.30	1.00	180.00	-228.74	
5	6155.00	0.00	0.00	6151.04	323.85	-201.30	0.00	0.00	-228.74	
6	6396.00	90.00	187.40	6392.00	-344.33	274.10	1.00	187.40	-241.72	Production Fac 19-30 608H PBA #2
7	6637.13	90.00	179.46	6633.00	-740.39	-286.83	2.00	90.00	-772.64	
8	6878.93	90.00	179.46	6874.00	-757.88	-254.24	0.00	0.00	-759.93	

DESIGN TARGET DETAILS

Name	TRC	N/S	E/W	Northing	Easting	Lat/Long	Longitude
Production Fac 19-30 608H SL	0.00	0.00	0.00	409890.84	738979.22	32° 7' 10.41" N	102° 27' 38.02" W
Production Fac 19-30 608H HP #2	0.00	0.00	0.00	409890.84	738979.22	32° 7' 10.41" N	102° 27' 38.02" W
Production Fac 19-30 608H HP #2	12710.00	344.34	274.10	409138.22	738774.13	32° 7' 17.05" N	102° 24' 3.65" W
Production Fac 19-30 608H PBA #2	12710.00	-757.88	-254.24	401822.84	738761.98	32° 6' 5.91" N	102° 24' 2.99" W

Target Centerline at 12710' KBTVD



Slot Name	N/S	E/W	Northing	Easting
530-H	200.11	23.14	409260.44	738979.05
205-H	-108.84	-28.87	409260.72	738979.09
358-H	-189.58	76.89	409260.88	738979.11
458-H	0.00	50.94	409440.34	738979.24
608-H	0.00	0.00	409440.34	738979.22



Attitudes to Grid North
 True North: -0.20°
 Magnetic North: 6.20°
 Magnetic Field
 Strength: 47864.3uT
 Dip Angle: 58.30°
 Date: 5/8/2018
 Model: HDGM

Project: Lea County, NM
 Client: Lea County, NM
 Design: M16XXX
 Date: 5/8/2018



Energen Resources

Prepared For
Mr. Richard Hill

Pitchblende Fed 19-30 #608H

Surface Casing Cement

Located in

Lea County, New Mexico

Prepared by
Jonathan Smith
on
Thursday, May 10, 2018

Serviced from the Pecos, Texas facility
For Customer Service Call
432-755-4999

Proposal Version: 0

5/10/2018 14:40

3.36N032318

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Energen Resources
 Pitchblende Fed 19-30 #608H
 Surface Casing
 5/10/2018

Rig: RIG



Job Data

Job Type	Surface Casing
Round Trip Mileage	200
Hole Size	17.5" to 1010'
Casing Size/Weight	13.375" 61# to 1010'
MD	1010
Est. BHST/BHCT	88-F BHST / 80-F BHCT (0.8-F/100-ft)

Volumes

	Length (ft)	OD (in)	ID (in)	Excess (%)	CF/FT	Vol. (cf)	Vol. (bbl)
Lead	808	17.500	13.375	150%	1.7365	1403.1	249.9
Tail	202	17.500	13.375	150%	1.7365	350.8	62.5

Fluid Requirements

<u>Spacer</u>	
20-bbls. water	

Lead

100% Class C+4% Gel+2% CaCl₂+0.25#/sx Cello Flake+0.75-GAL/100-SX CF-41L

Volume (sx)	805	251 (bbls)
Weight (ppg)	13.50	
Yield (cf/sx)	1.75	
Water (gps)	9.18	
Top of Cement (ft)	0	
Excess (%)	150%	
Compressive Strengths (psi)	12/352, 24/719, 72/1311	

Tail

100% Class C+2% CaCl₂+0.75-GAL/100-SX CF-41L

Volume (sx)	265	64 (bbls)
Weight (ppg)	14.80	
Yield (cf/sx)	1.35	
Water (gps)	6.36	
Top of Cement (ft)	808	
Excess (%)	150%	
Compressive Strengths (psi)	500 psi: 6:48, 12/1136, 24/1953, 72/3169	

Energen Resources
Pitchblende Fed 19-30 #608H
Surface Casing
5/10/2018

Rig: RIG



Displacement

153.7-bbls. water

Energen Resources
 Pitchblende Fed 19-30 #608H
 Surface Casing
 5/10/2018

Rig: RIG



REF. #	DESCRIPTION	QUANTITY	UNIT PRICE	DISCOUNT	GROSS	NET TOTAL
CP001	C (Premium Plus Cement) (94 lbs/ft3)	1070	\$ 30.80	60.00%	\$ 32,956.04	\$ 13,182.42
CP018	Calcium Chloride	2013	\$ 1.22	60.00%	\$ 2,455.86	\$ 982.34
CP010	Cello Flake	202	\$ 4.20	60.00%	\$ 848.40	\$ 339.36
CP005	GEL	3027	\$ 0.68	60.00%	\$ 2,058.36	\$ 823.34
CP009	CF-41 (Foam Preventer)	9	\$ 86.06	60.00%	\$ 774.54	\$ 309.82
CC002	Pump Charge 1000'-2000'	1	\$ 3,070.98	60.00%	\$ 3,070.98	\$ 1,228.39
JM001	Data Acquisition System	1	\$ 1,437.48	60.00%	\$ 1,437.48	\$ 574.99
AE001	Hi Volume Air compressor	1	\$ 457.38	60.00%	\$ 457.38	\$ 182.95
AE007	1" to 2" valves	1	\$ 424.71	60.00%	\$ 424.71	\$ 169.88
PC003	Employee/Supervisor Retention/perdiem	1	\$ 1,306.80	0.00%	\$ 1,306.80	\$ 1,306.80
RP001	Reserve (standby) Pump	1	\$ 3,267.00	60.00%	\$ 3,267.00	\$ 1,306.80
AE002	Cement Head with manifold	1	\$ 1,176.12	60.00%	\$ 1,176.12	\$ 470.45
AE003	Circulation Equipment(40' of equipment)	1	\$ 1,633.50	60.00%	\$ 1,633.50	\$ 653.40
AE004	Portable Field Storage Bin (3 days)	1	\$ 1,960.20	60.00%	\$ 1,960.20	\$ 784.08
ML014	Fuel Surcharge	3	\$ 653.40	60.00%	\$ 1,960.20	\$ 784.08
CL021	13 3/8" Top Rubber Plug	1	\$ 1,016.40	60.00%	\$ 1,016.40	\$ 406.56
ML001	Pickup Mileage	400	\$ 4.26	60.00%	\$ 1,704.00	\$ 681.60
ML002	Pump Truck/Heavy Vehicle Mileage	600	\$ 7.32	60.00%	\$ 4,392.00	\$ 1,756.80
ML003	Bulk Cement Delivery/Return	5292	\$ 2.95	60.00%	\$ 15,611.40	\$ 6,244.56
MX001	Bulk Material Mixing Service Charge	1175	\$ 3.27	60.00%	\$ 3,842.25	\$ 1,536.90
GROSS/BOOK PRICE:						\$ 82,353.62
DISCOUNTED AMOUNT:						\$ 48,628.09
ESTIMATED JOB COST:						\$ 33,725.53

0

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Energen Resources

Prepared For
Mr. Richard Hill

Pitchblende Fed 19-30 #608H
First Intermediate Casing Cement
Located in
Lea County, New Mexico

Prepared by
Jonathan Smith
on
Thursday, May 10, 2018

Serviced from the Pecos, Texas facility
For Customer Service Call
432-755-4999

Proposal Version: 0

5/10/2018 14:42

3.36N032318

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Energen Resources
 Pitchblende Fed 19-30 #608H
 First Intermediate Casing
 5/10/2018

Rig: RIG



Job Data

Job Type	First Intermediate Casing
Round Trip Mileage	200
Previous Casing	13.375" 61# to 1010'
Hole Size	12.25" to 5300'
Casing Size/Weight	10.75" 45.5# to 5300'
MD	5300
Est. BHST/BHCT	122-F BHST / 107-F BHCT (0.8-F/100-ft)

Volumes

	Length (ft)	OD (in)	ID (in)	Excess (%)	CF/FT	Vol. (cf)	Vol. (bbl)
Lead	1010	12.515	10.750	0%	0.2240	226.2	40.3
Lead	3230	12.250	10.750	100%	0.3763	1215.5	216.5
Tail	1060	12.250	10.750	25%	0.2352	249.3	44.4

Fluid Requirements

<u>Spacer</u>	
20-bbls. water	

Lead

50% Poz+50% Class C+10% Gel+0.25#/sx Cello Flake+3#/sx Kolseal+5% SALT+0.75-GAL/100-SX CF-41L

Volume (sx)	585	258 (bbls)
Weight (ppg)	11.80	
Yield (cf/sx)	2.47	
Water (gps)	14.01	
Top of Cement (ft)	0	
Excess (%)	100%	

Tail

100% Class C+0.15% O-TX20+0.75-GAL/100-SX CF-41L

Volume (sx)	190	45 (bbls)
Weight (ppg)	14.80	
Yield (cf/sx)	1.33	
Water (gps)	6.33	
Top of Cement (ft)	4240	
Excess (%)	25%	

Energen Resources
Pitchblende Fed 19-30 #608H
First Intermediate Casing
5/10/2018

Rig: RIG



Displacement

509.7-bbls. water

Energen Resources
 Pitchblende Fed 19-30 #608H
 First Intermediate Casing
 5/10/2018

Rig: RIG



REF. #	DESCRIPTION	QUANTITY	UNIT PRICE	DISCOUNT	GROSS	NET TOTAL
CP001	C (Premium Plus Cement) (94 lbs/ft3)	483	\$ 30.80	60.00%	\$ 14,876.42	\$ 5,950.57
CP003	POZ (Fly Ash) (74 lbs/ft3) -	293	\$ 13.55	60.00%	\$ 3,970.19	\$ 1,588.08
CP010	Cello Flake	147	\$ 4.20	60.00%	\$ 617.40	\$ 246.96
CP005	GEL	4914	\$ 0.68	60.00%	\$ 3,341.52	\$ 1,336.61
CP011	Kolseal	1755	\$ 1.02	60.00%	\$ 1,790.10	\$ 716.04
CP013	O-TX20 (CF-20) LS Retarder (below 220°)	27	\$ 13.55	60.00%	\$ 365.85	\$ 146.34
CP020	Salt (NaCl), 100 mesh sacked	3417	\$ 0.68	60.00%	\$ 2,323.56	\$ 929.42
CP009	CF-41 (Foam Preventer)	7	\$ 86.06	60.00%	\$ 602.42	\$ 240.97
CC006	Pump Charge 5001-6000'	1	\$ 4,671.81	60.00%	\$ 4,671.81	\$ 1,868.72
JM001	Data Acquisition System	1	\$ 1,437.48	60.00%	\$ 1,437.48	\$ 574.99
AE001	Hi Volume Air compressor	1	\$ 457.38	60.00%	\$ 457.38	\$ 182.95
AE007	1" to 2" valves	1	\$ 424.71	60.00%	\$ 424.71	\$ 169.88
PC003	Employee/Supervisor Retention/perdiem	1	\$ 1,306.80	0.00%	\$ 1,306.80	\$ 1,306.80
RP001	Reserve (standby) Pump	1	\$ 3,267.00	60.00%	\$ 3,267.00	\$ 1,306.80
AE002	Cement Head with manifold	1	\$ 1,176.12	60.00%	\$ 1,176.12	\$ 470.45
AE003	Circulation Equipment(40' of equipment)	1	\$ 1,633.50	60.00%	\$ 1,633.50	\$ 653.40
AE004	Portable Field Storage Bin (3 days)	1	\$ 1,960.20	60.00%	\$ 1,960.20	\$ 784.08
ML014	Fuel Surcharge	2	\$ 653.40	60.00%	\$ 1,306.80	\$ 522.72
CL019	10 3/4" Top Rubber Plug	1	\$ 453.99	60.00%	\$ 453.99	\$ 181.60
ML001	Pickup Mileage	400	\$ 4.26	60.00%	\$ 1,704.00	\$ 681.60
ML002	Pump Truck/Heavy Vehicle Mileage	600	\$ 7.32	60.00%	\$ 4,392.00	\$ 1,756.80
ML003	Bulk Cement Delivery/Return	3864	\$ 2.95	60.00%	\$ 11,398.80	\$ 4,559.52
MX001	Bulk Material Mixing Service Charge	952	\$ 3.27	60.00%	\$ 3,113.04	\$ 1,245.22
GROSS/BOOK PRICE:						\$ 66,591.09
DISCOUNTED AMOUNT:						\$ 39,170.57
ESTIMATED JOB COST:						\$ 27,420.52

0

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Energen Resources

Prepared For
Mr. Richard Hill

Pitchblende Fed 19-30 #608H
Second Intermediate Two Stage Casing Cement
Located in
Lea County, New Mexico

Prepared by
Jonathan Smith
on
Thursday, May 10, 2018

Serviced from the Pecos, Texas facility
For Customer Service Call
432-755-4999

Proposal Version: 0

5/10/2018 14:44

3.36N032318

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Energen Resources
 Pitchblende Fed 19-30 #608H
 Second Intermediate Two Stage Casing
 5/10/2018

Rig: RIG



Job Data

Job Type	Second Intermediate Two Stage Casing
Round Trip Mileage	200
Previous Casing	10.75" 45.5# to 5300'
Hole Size	9.875" to 12000'
Casing Size/Weight	7.625" 29.7# to 12000'
MD	12000
Est. BHST/BHCT	176-F BHST / 140-F BHCT (0.8-F/100-ft)
DV Tool Depth	5200

Volumes

	Length (ft)	OD (in)	ID (in)	Excess (%)	CF/FT	Vol. (cf)	Vol. (bbl)
Stage 2 Lead	4160	9.950	7.625	20%	0.2674	1112.5	198.1
Stage 2 Tail	1040	9.950	7.625	20%	0.2674	278.1	49.5
Stage 1 Lead	200	9.950	7.625	100%	0.4457	89.1	15.9
Stage 1 Lead	4300	9.875	7.625	100%	0.4295	1846.9	328.9
Stage 1 Tail	2400	9.875	7.625	50%	0.3221	773.1	137.7

Fluid Requirements

<u>Spacer</u>	
20-bbls. water	

Stage 1 Lead

50% Poz+50% Class H+10% Gel+0.6% SMS+0.65% O-TX20+0.25#/sx Cello Flake+5#/sx Korseal+5% SALT+0.75-GAL/100-SX CF-41L

Volume (sx)	655	347 (bbls)
Weight (ppg)	11.30	
Yield (cf/sx)	2.98	
Water (gps)	17.44	
Top of Cement (ft)	5100	
Excess (%)	100%	

Stage 1 Tail

100% Class H+0.5% FL-17+0.05% C-51+0.2% O-TX20+0.75-GAL/100-SX CF-41L

Volume (sx)	655	138 (bbls)
Weight (ppg)	15.60	
Yield (cf/sx)	1.19	
Water (gps)	5.21	
Top of Cement (ft)	9600	
Excess (%)	50%	

Energen Resources
Pitchblende Fed 19-30 #608H
Second Intermediate Two Stage Casing
5/10/2018

Rig: RIG



Displacement
551-bbls. water

Spacer
20-bbls. water

Stage 2 Lead
50% Poz+50% Class C+10% Gel+0.6% SMS+0.3% O-TX20+5% SALT+0.75-GAL/100-SX CF-41L

Volume (sx)	385	200 (bbls)
Weight (ppg)	11.30	
Yield (cf/sx)	2.92	
Water (gps)	17.51	
Top of Cement (ft)	0	
Excess (%)	20%	

Stage 2 Tail
100% Class C+0.15% O-TX20+0.75-GAL/100-SX CF-41L

Volume (sx)	210	50 (bbls)
Weight (ppg)	14.80	
Yield (cf/sx)	1.33	
Water (gps)	6.33	
Top of Cement (ft)	4160	
Excess (%)	20%	

Displacement
236.68-bbls. water

Energen Resources
 Pitchblende Fed 19-30 #608H
 Second Intermediate Two Stage Casing
 5/10/2018

Rig: RIG



REF. #	DESCRIPTION	QUANTITY	UNIT PRICE	DISCOUNT	GROSS	NET TOTAL
CP001	C (Premium Plus Cement) (94 lbs/ft3)	403	\$ 30.80	60.00%	\$ 12,412.42	\$ 4,964.97
CP002	H (Premium Cement) (94 lbs/ft3)	983	\$ 30.80	60.00%	\$ 30,276.44	\$ 12,110.58
CP003	POZ (Fly Ash) (74 lbs/ft3) -	521	\$ 13.55	60.00%	\$ 7,059.62	\$ 2,823.85
CP034	CF - 51 (Anti settling agent)	31	\$ 27.10	60.00%	\$ 840.10	\$ 336.04
CP010	Cello Flake	164	\$ 4.20	60.00%	\$ 688.80	\$ 275.52
CPC29	FL-17 Fluid Loss Additive	308	\$ 40.00	60.00%	\$ 12,320.00	\$ 4,928.00
CP005	GEL	8736	\$ 0.68	60.00%	\$ 5,940.48	\$ 2,376.19
CP011	Kolseal	3275	\$ 1.02	60.00%	\$ 3,340.50	\$ 1,336.20
CP021	Sodium Metasilicate	526	\$ 3.39	60.00%	\$ 1,783.14	\$ 713.26
CP013	O-TX20 (CF-20) LS Retarder (below 220°)	610	\$ 13.55	60.00%	\$ 8,265.50	\$ 3,306.20
CP020	Salt (NaCl), 100 mesh sacked	7576	\$ 0.68	60.00%	\$ 5,151.68	\$ 2,060.67
CP009	CF-41 (Foam Preventer)	15	\$ 86.06	60.00%	\$ 1,290.90	\$ 516.36
CC011	Pump Charge 10,001-12,000'	1	\$ 10,846.44	60.00%	\$ 10,846.44	\$ 4,338.58
MS001	Multiple Stage Cementing	1	\$ 3,234.44	60.00%	\$ 3,234.44	\$ 1,293.78
JM001	Data Acquisition System	1	\$ 1,437.48	60.00%	\$ 1,437.48	\$ 574.99
AE001	Hi Volume Air compressor	1	\$ 457.38	60.00%	\$ 457.38	\$ 182.95
AE007	1" to 2" valves	1	\$ 424.71	60.00%	\$ 424.71	\$ 169.88
PC003	Employee/Supervisor Retention/perdiem	1	\$ 1,306.80	0.00%	\$ 1,306.80	\$ 1,306.80
RP001	Reserve (standby) Pump	1	\$ 3,267.00	60.00%	\$ 3,267.00	\$ 1,306.80
AE002	Cement Head with manifold	1	\$ 1,176.12	60.00%	\$ 1,176.12	\$ 470.45
AE003	Circulation Equipment(40' of equipment)	1	\$ 1,633.50	60.00%	\$ 1,633.50	\$ 653.40
AE004	Portable Field Storage Bin (3 days)	2	\$ 1,960.20	60.00%	\$ 3,920.40	\$ 1,568.16
ML014	Fuel Surcharge	4	\$ 653.40	60.00%	\$ 2,613.60	\$ 1,045.44
AE006	Transfer Pump	1	\$ 980.10	60.00%	\$ 980.10	\$ 392.04
ML001	Pickup Mileage	400	\$ 4.26	60.00%	\$ 1,704.00	\$ 681.60
ML002	Pump Truck/Heavy Vehicle Mileage	800	\$ 7.32	60.00%	\$ 5,856.00	\$ 2,342.40
ML003	Bulk Cement Delivery/Return	9496	\$ 2.95	60.00%	\$ 28,013.20	\$ 11,205.28
MX001	Bulk Material Mixing Service Charge	2271	\$ 3.27	60.00%	\$ 7,426.17	\$ 2,970.47
GROSS/BOOK PRICE:					\$	163,666.92
DISCOUNTED AMOUNT:					\$	97,416.07
ESTIMATED JOB COST:					\$	66,250.85

0

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Prepared For
Mr. Richard Hill

Pitchblende Fed 19-30 #608H

Production Casing Cement

Located in

Lea County, New Mexico

Prepared by
Jonathan Smith
on
Thursday, May 10, 2018

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Energen Resources
 Pitchblende Fed 19-30 #608H
 Production Casing
 5/10/2018

Rig: RIG



Job Data

Job Type	Production Casing
Round Trip Mileage	200
Previous Casing	7.625" 29.7# to 12000'
Hole Size	6.75" to 21130'
Casing Size/Weight	5.5" 23# to 11900' 4.5" 15.1# to 21130'
MD	21130
TVD	12710
Mud	12.5# OBM
Est. BHST/BHCT	182-F BHST / 182-F BHCT (0.8-F/100-ft)
Kick off Point	10160
C-20L Needed for job	128-gals (20% extra)
Water needed for job	227-bbbls. (20% extra)

Volumes

	Length (ft)	OD (in)	ID (in)	Excess (%)	CF/FT	Vol. (cf)	Vol. (bbl)
Tail	3900	6.875	5.500	0%	0.0928	361.9	64.5
Tail	100	6.875	4.500	0%	0.1473	14.7	2.6
Tail	9130	6.750	4.500	15%	0.1588	1449.5	258.2

Fluid Requirements

Spacer

40 bbbls of 13.5 ppg Weighted Spacer: 30.13gpb (28.6bbbl) Fresh Water + 281.23ppb (11249lbs) Barite + 1ppb (40lbs) Citric Acid + 8.99ppb (360lbs) C-65 + 1.5gpb (60gal) Plexaid 803 + 1.5gpb (60gal) Plexaid 830 + 1ppb (40lbs) C-40P

Tail

50% Poz+50% Class H+2% Gel+0.5% FL-17+0.75-GAL/100-SX CF-41L+0.07-GPS C-20L

Volume (sx)	1525	326 (bbbls)
Weight (ppg)	14.50	
Yield (cf/sx)	1.20	
Water (gps)	5.20	
Top of Cement (ft)	8000	
Excess (%)	15%	

Displacement

20-bbbls. water (300-lbs. sugar)

Displacement

363.4-bbbls. CaCl2 water provided by rig + 0.25 gpt. Plexicide 24L (4 gal)

Energen Resources
 Pitchblende Fed 19-30 #608H
 Production Casing
 5/10/2018

Rig: RIG



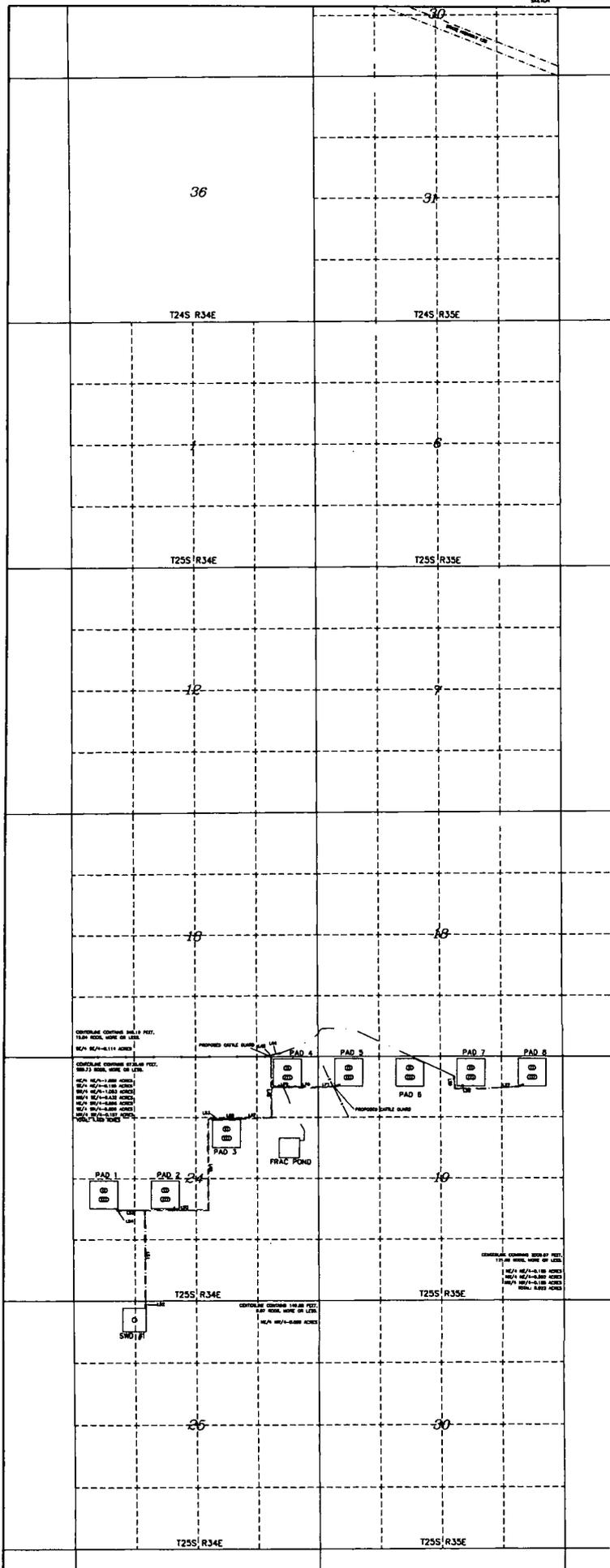
REF. #	DESCRIPTION	QUANTITY	UNIT PRICE	DISCOUNT	GROSS	NET TOTAL
CP002	H (Premium Cement) (94 lbs/ft3)	763	\$ 30.80	60.00%	\$ 23,500.43	\$ 9,400.17
CP003	POZ (Fly Ash) (74 lbs/ft3) -	763	\$ 13.55	60.00%	\$ 10,338.76	\$ 4,135.50
CPC29	FL-17 Fluid Loss Additive	641	\$ 40.00	60.00%	\$ 25,640.00	\$ 10,256.00
CP005	GEL	2562	\$ 0.68	60.00%	\$ 1,742.16	\$ 696.86
CPC51	C-20L Liquid Retarder	107	\$ 50.40	60.00%	\$ 5,392.80	\$ 2,157.12
CP009	CF-41 (Foam Preventer)	12	\$ 86.06	60.00%	\$ 1,032.72	\$ 413.09
CP025	Barite (weighting material)	11249	\$ 1.10	60.00%	\$ 12,373.90	\$ 4,949.56
CPC45	C-65 (Weighted Spacer Mix OBM)	360	\$ 12.85	60.00%	\$ 4,626.00	\$ 1,850.40
CPC18	Plexaid 803	60	\$ 60.98	60.00%	\$ 3,658.80	\$ 1,463.52
CPC35	Plexaid 830 Surfactant	60	\$ 137.94	60.00%	\$ 8,276.40	\$ 3,310.56
RFC16	CI-Tric (powder citric acid)	40	\$ 13.55	60.00%	\$ 542.00	\$ 216.80
CPC53	C-40P	40	\$ 9.25	60.00%	\$ 370.00	\$ 148.00
CPC51	C-20L Liquid Retarder	21	\$ 50.40	60.00%	\$ 1,058.40	\$ 423.36
CP031	Sugar	300	\$ 3.39	60.00%	\$ 1,017.00	\$ 406.80
MC024	Plec-Cide 24L	5	\$ 92.40	60.00%	\$ 462.00	\$ 184.80
CC013	Pump Charge 14001-15,000'	1	\$ 21,954.24	60.00%	\$ 21,954.24	\$ 8,781.70
CC014	Pump Charge Every 1,000' Over 15,000'	7	\$ 3,267.00	60.00%	\$ 22,869.00	\$ 9,147.60
JM001	Data Acquisition System	1	\$ 1,437.48	60.00%	\$ 1,437.48	\$ 574.99
AE001	Hi Volume Air compressor	1	\$ 457.38	60.00%	\$ 457.38	\$ 182.95
AE007	1" to 2" valves	1	\$ 424.71	60.00%	\$ 424.71	\$ 169.88
PC003	Employee/Supervisor Retention/perdiem	1	\$ 1,306.80	0.00%	\$ 1,306.80	\$ 1,306.80
RP001	Reserve (standby) Pump	1	\$ 3,267.00	60.00%	\$ 3,267.00	\$ 1,306.80
BB001	Batch Mixer	1	\$ 2,384.91	60.00%	\$ 2,384.91	\$ 953.96
AE002	Cement Head with manifold	1	\$ 1,176.12	60.00%	\$ 1,176.12	\$ 470.45
AE003	Circulation Equipment(40' of equipment)	1	\$ 1,633.50	60.00%	\$ 1,633.50	\$ 653.40
AE004	Portable Field Storage Bin (3 days)	2	\$ 1,960.20	60.00%	\$ 3,920.40	\$ 1,568.16
ML014	Fuel Surcharge	4	\$ 653.40	60.00%	\$ 2,613.60	\$ 1,045.44
CL036	4 1/2" x 5 1/2" Top Rubber Plugs	1	\$ 360.00	60.00%	\$ 360.00	\$ 144.00
ML001	Pickup Mileage	400	\$ 4.26	60.00%	\$ 1,704.00	\$ 681.60
ML002	Pump Truck/Heavy Vehicle Mileage	1000	\$ 7.32	60.00%	\$ 7,320.00	\$ 2,928.00
ML003	Bulk Cement Delivery/Return	6572	\$ 2.95	60.00%	\$ 19,387.40	\$ 7,754.96
MX001	Bulk Material Mixing Service Charge	1590	\$ 3.27	60.00%	\$ 5,199.30	\$ 2,079.72
GROSS/BOOK PRICE:					\$	197,447.21
DISCOUNTED AMOUNT:					\$	117,684.24
ESTIMATED JOB COST:					\$	79,762.96

The services and materials quoted are based on the best information available at the time that this quotation was prepared. When the actual work is performed the amounts and types of services and materials may require adjustments from this quotation. Actual amounts and types of services and materials will be charged at the time the work is performed. Unit prices from C&J's current price list and discounts quoted are applied as per this quotation, unless otherwise noted. This quotation is for the materials and services presented under this cover letter. The prices and discounts are based on C&J being awarded the work on a first call basis. Prices may be adjusted if the work is not on a first call basis. Prices are valid for a period of 30 days following this quotation. Taxes, if any, will be applied to the actual invoice. All services and materials sold and/or provided by C&J are subject to C&J's "Contractor's Standard Terms and Conditions" document, which contains provisions concerning risk allocation and warranties associated with C&J's services. The parties hereby agree that all materials and services will be furnished pursuant to C&J's "Contractor's Standard Terms and Conditions" document and a customary work order agreement.

LEGEND

- SECTION LINES
- SECTION QUARTER LINES
- - - - - EXISTING FENCE
- - - - - PROPOSED RIGHT-OF-WAY ROAD TO WELLS
- EXISTING ROAD

**PITCHBLENDE FED
20 FOOT WIDE RIGHT-OF-WAY
PROPOSED ROAD:
12,138.02 FEET OR 735.64 RODS,
5.564 ACRES**



CENTRAL COMING BEER OF FEET,
12.00 HOLE, NONE OR LESS,
N/A/ 100/1000 ACRES

CENTRAL COMING BEER OF FEET,
12.00 HOLE, NONE OR LESS,
N/A/ 100/1000 ACRES

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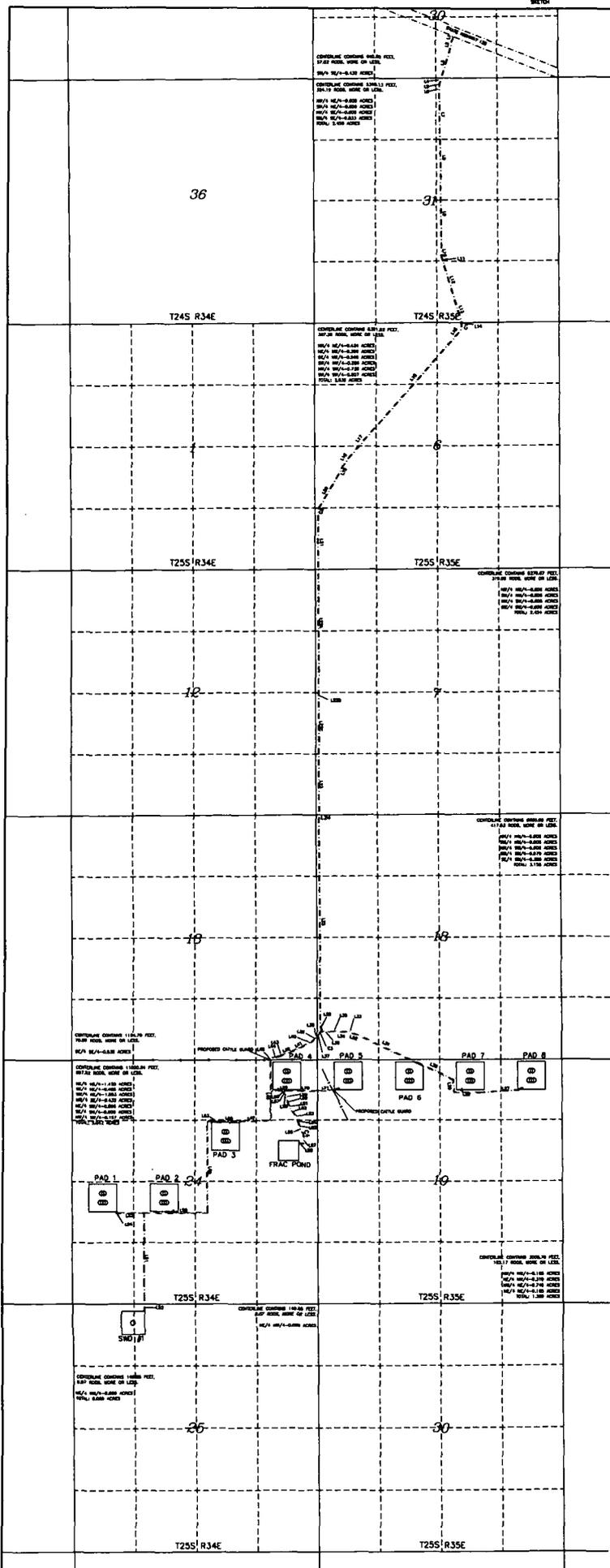


SCALE: 1" = 1000'
1000'
0 1000 2000

LEGEND

- SECTION LINES
- - - SECTION QUARTER LINES
- EXISTING FENCE
- - - PROPOSED RIGHT-OF-WAY ROAD TO WELLS

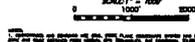
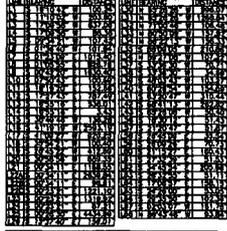
**PITCHBLENDE FED
20 FOOT WIDE ROAD RIGHT-OF-WAY
TOTAL ROAD:
40,183.40 FEET OR 2,435.36 RODS,
18.428 ACRES**



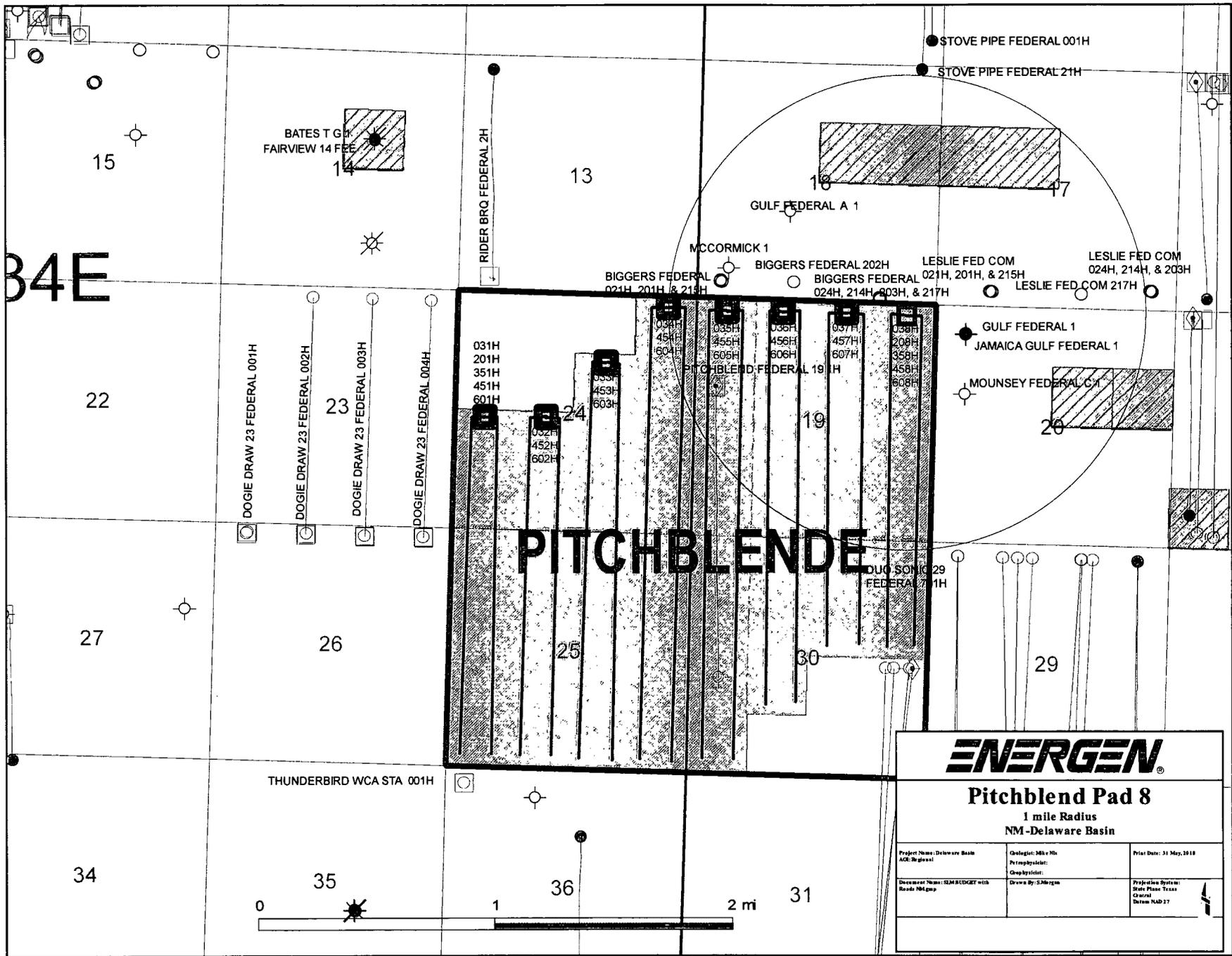
PROPOSED ROAD



EXISTING ROAD



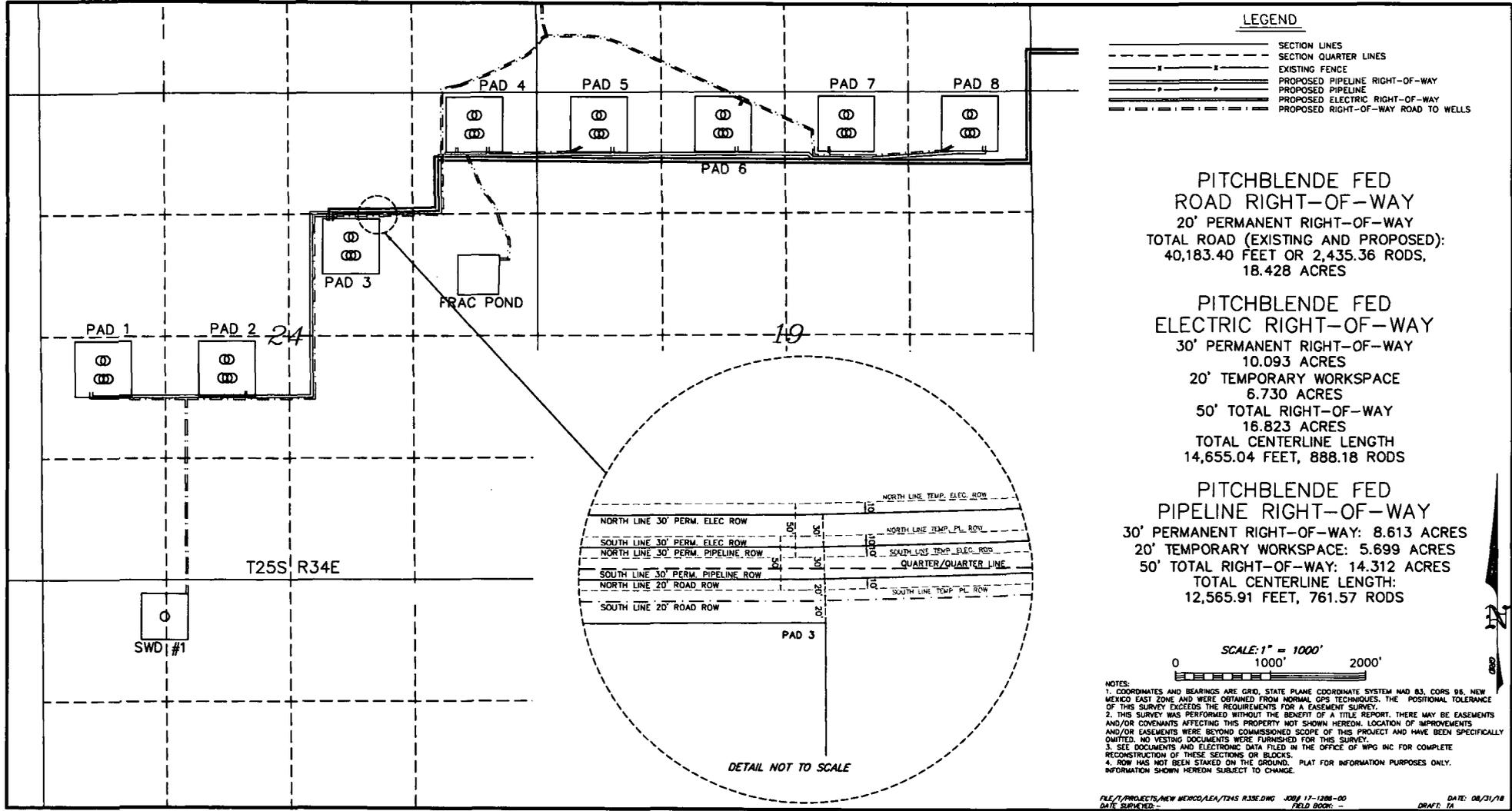
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ENERGEN

Pitchblend Pad 8
1 mile Radius
NM-Delaware Basin

Project Name: Delaware Basin ACE Regional	Geologist: Mike Pitt Project Geologist: Geophysicist:	Print Date: 31 May, 2018
Document Name: SLMR/EDGE2 with Roads N4 map	Drawn By: S.Morgan	Project File System: State Plane Texas Central Datum NAD 83

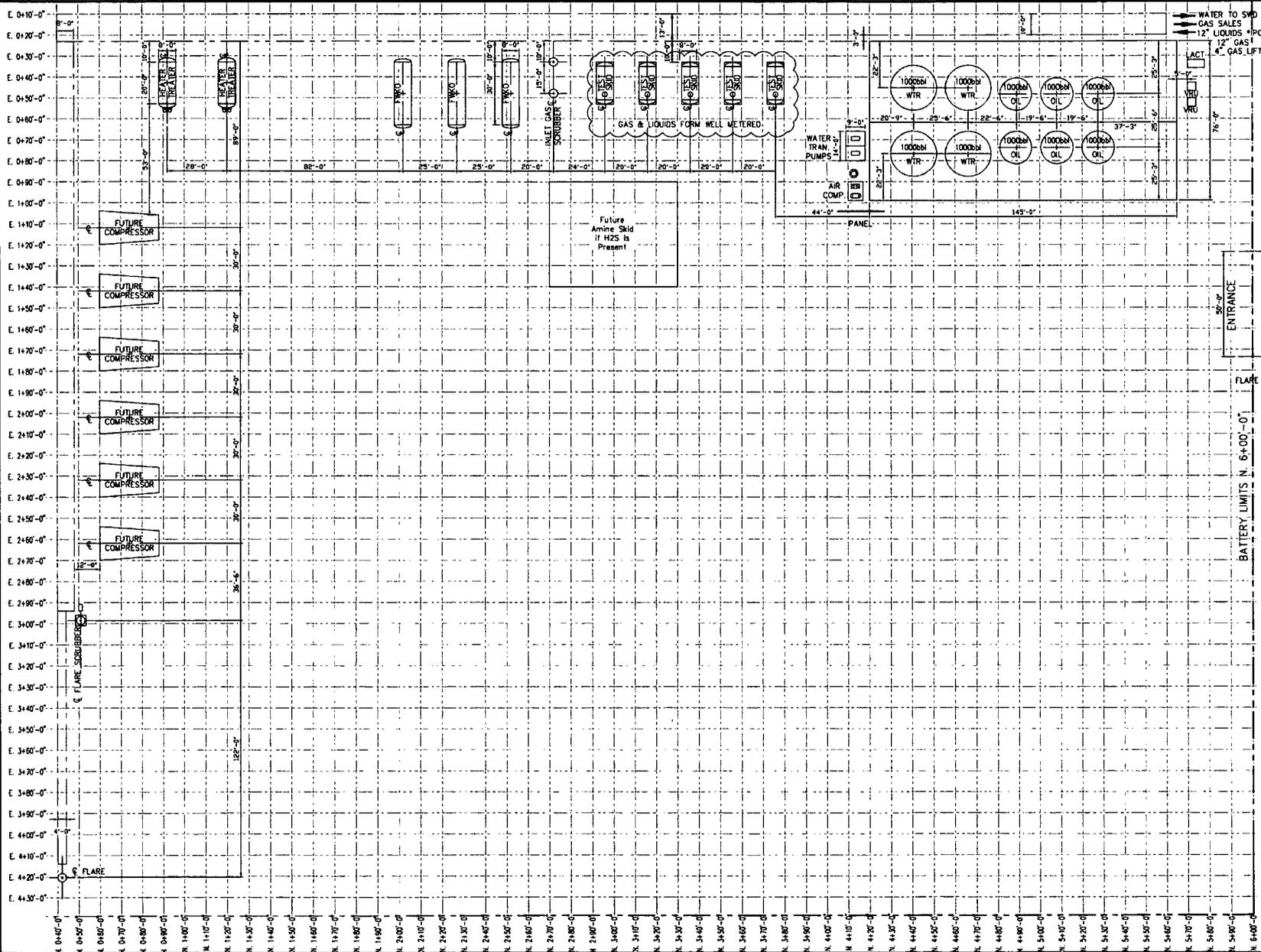


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 wdwatson@wpg-usa.com

CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED UTILITY & ROAD RIGHT-OF-WAYS
T24S R35E, T25S R34E, & T25S R35E
LEA COUNTY, NEW MEXICO



PITCHBLEND TANK BATTERY



EQUIPMENT SPACING CHART

PRESSURE VESSELS	WATER or GAS WELLS		OIL STORAGE	
	75'	75'	75'	75'
150'	150'	150'	150'	150'

LOAD CONN. 75' 75' 50' 75'

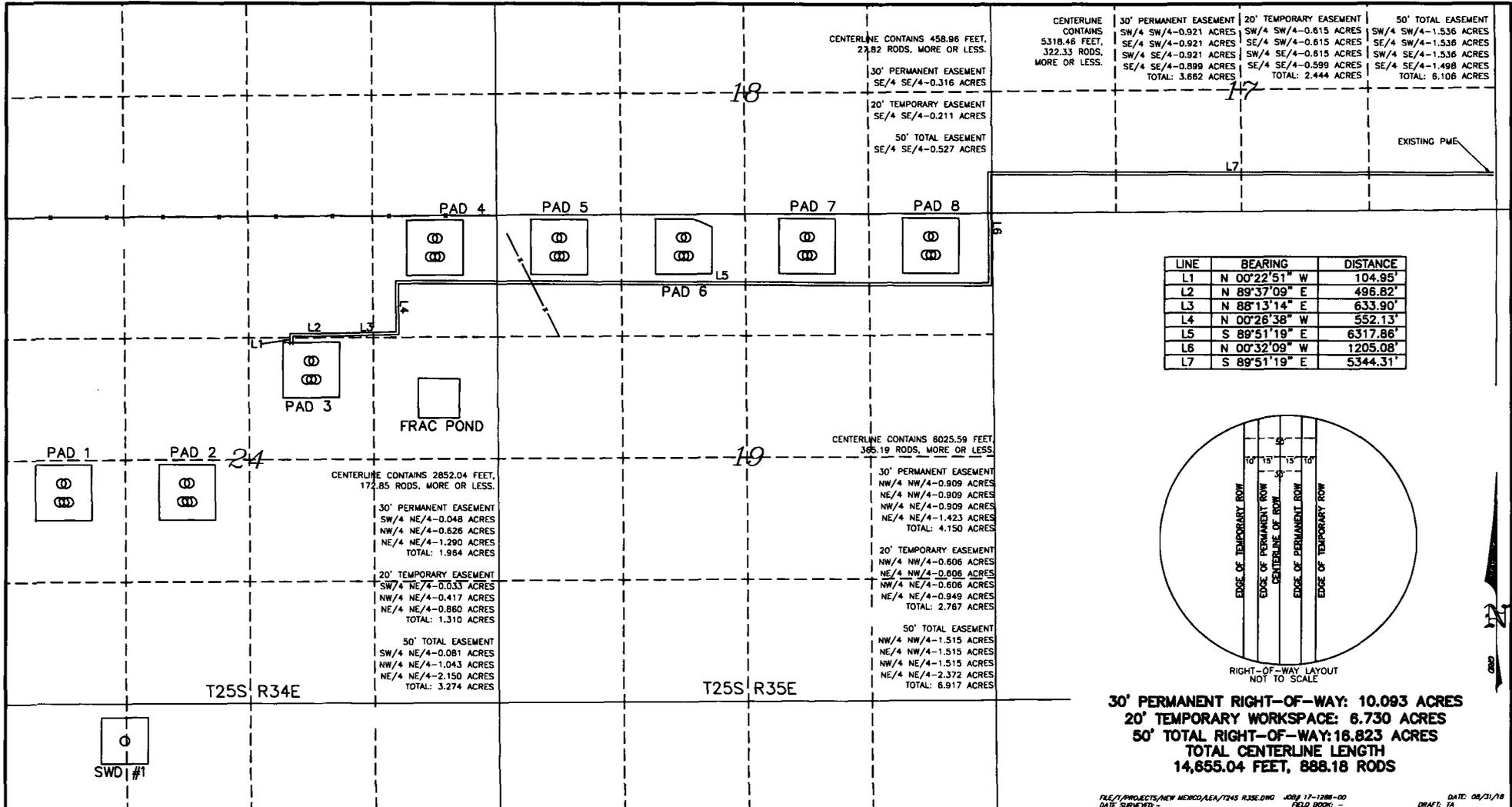
COMPRESSION NOTES 3 & 4 75' 75' 50'

FIRE VESSEL with FLAME ARRESTOR NOTES 1&2 75' 75'

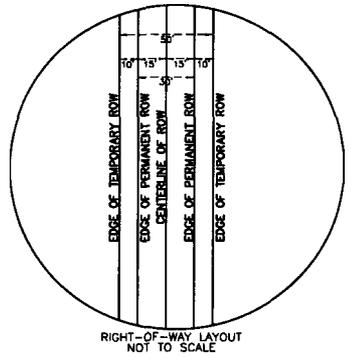
- NOTES:**
- 1) FLAME ARRESTORS ARE MANDATORY FOR NEW NATURAL DRAFT FIRED HEATER PURCHASES. IF POSSIBLE, EXISTING HEATERS SHOULD BE RETROFITTED WITH FLAME ARRESTOR.
 - 2) STABILIZERS WITH HEATING EQUIPMENT, GLYCOL ABSORBERS, RECONCENTRATORS, AND PACKAGED HEATER-SEPARATORS MAY BE CONSIDERED AS SINGLE FIRED VESSELS AND SPACED ACCORDINGLY.
 - 3) WHEN PART OF A SKID UNIT, SCRUBBERS MAY BE LOCATED NEAR A COMPRESSOR AND ITS DRIVER CONTINGENT UPON APPROPRIATE SHUTDOWN INSTRUMENTATION AND ADEQUATE P/SV VENT LOCATION.
 - 4) FOR ELECTRIC DRIVEN COMPRESSORS, THE DISTANCE DOES NOT NECESSARILY APPLY. THE MOTOR SHALL BE APPROPRIATE FOR THE AREA OF CLASSIFICATION (i.e. VRU's & AIR COMPRESSORS).
 - 5) LACTS & VRU SKIDS SHOULD BE LOCATED OUTSIDE BERM AND A MINIMUM OF 20' FROM STORAGE TANKS.
 - 6) TRANSFER PUMPS SHOULD BE LOCATED OUTSIDE BERM AND A MINIMUM OF 20' FROM STORAGE TANKS.
 - 7) ANY ELECTRICAL EQUIPMENT INSIDE THE BERM MUST MEET CLASS 1, DIV 1 ELECTRICAL AREA OF CLASSIFICATION SPECS.

FIELD VERIFY ALL DIMENSIONS

DESIGN	ISSUED FOR BID	8/18
DATE	REVISION	DATE
ENERGEN RESOURCES		
PITCHBLEND TANK BATTERY		
BATTERY		
3510 NORTH A STREET	MIDLAND, TX	
DRAWN BY: Wally Thompson	CHECKED BY:	DATE:
DATE: 4/18	DESIGN ENGINEER:	
SCALE: 1/4" = 1'	DWG NO:	
CAD NO: PVP-Pitchblend	PITCHBLEND PLOT PLAN - B	
	SHEET 1 of 1	



LINE	BEARING	DISTANCE
L1	N 00°22'51" W	104.95'
L2	N 89°37'09" E	496.82'
L3	N 88°13'14" E	633.90'
L4	N 00°26'38" W	552.13'
L5	S 89°51'19" E	6317.86'
L6	N 00°32'09" W	1205.08'
L7	S 89°51'19" E	5344.31'



30' PERMANENT RIGHT-OF-WAY: 10.093 ACRES
20' TEMPORARY WORKSPACE: 6.730 ACRES
50' TOTAL RIGHT-OF-WAY: 16.823 ACRES
TOTAL CENTERLINE LENGTH
14,655.04 FEET, 888.18 RODS

FILE: \PROJECTS\NEW MEXICO\EA\T25S R35E.DWG JOB# 17-1288-00 DATE: 08/21/18
 DATE SURVEYED: FIELD BOOK: DRAFT: TA

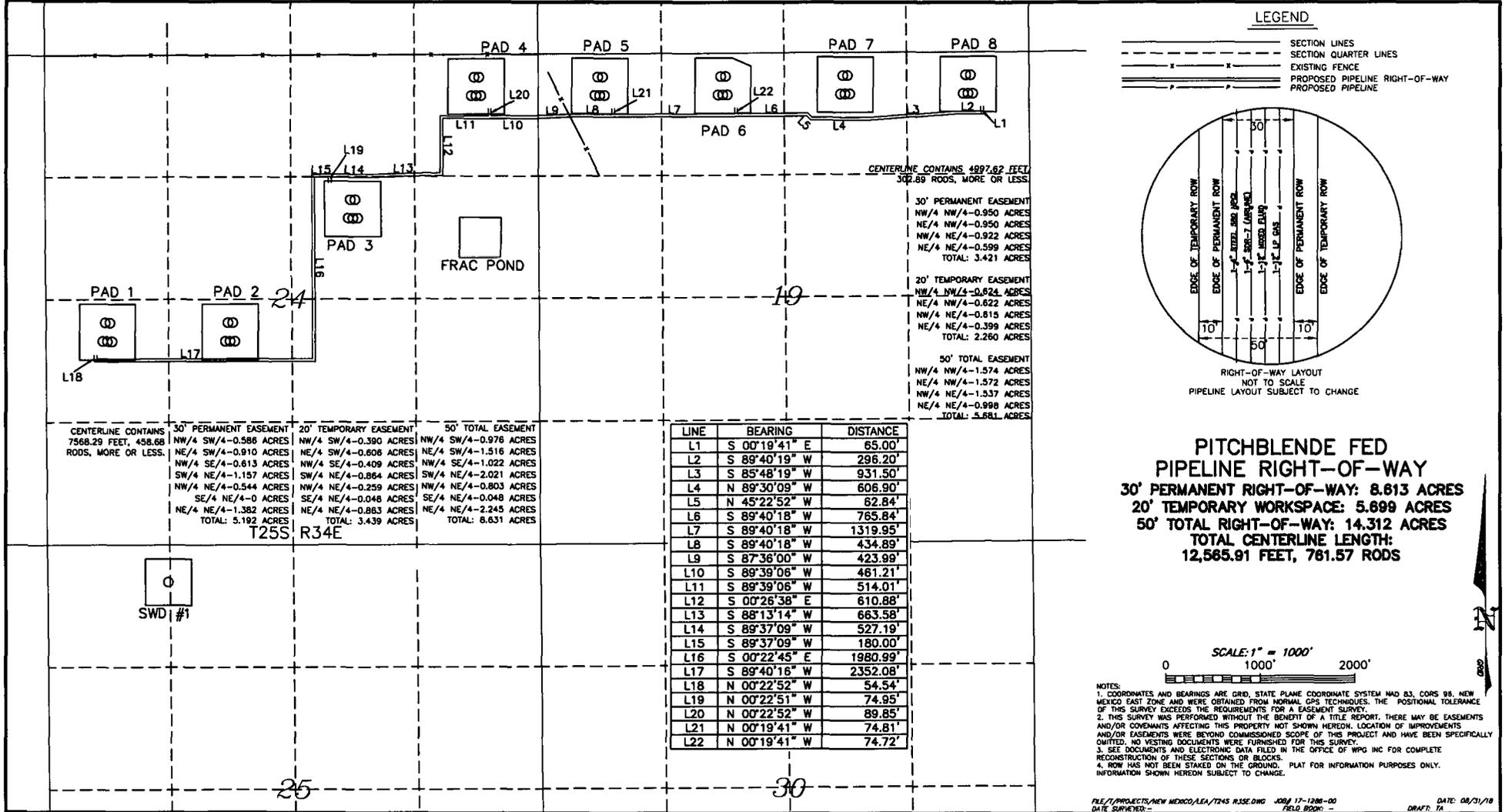
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 FAX (432) 520-9212
 wd@watsonwpg.com

NOTES:
 1. COORDINATES AND BEARINGS ARE GRID, STATE PLANE COORDINATE SYSTEM NAD 83, ZONE 98, NEW MEXICO EAST ZONE AND WERE OBTAINED FROM NORMAL GPS TECHNIQUES. THE POSITIONAL TOLERANCE OF THIS SURVEY EXCEEDS THE REQUIREMENTS FOR A EASEMENT SURVEY.
 2. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. THERE MAY BE EASEMENTS AND/OR COVENANTS AFFECTING THIS PROPERTY NOT SHOWN HEREIN. LOCATION OF IMPROVEMENTS AND/OR EASEMENTS WERE BEYOND COMMISSIONED SCOPE OF THIS PROJECT AND HAVE BEEN SPECIFICALLY OMITTED. NO VESTING DOCUMENTS WERE FURNISHED FOR THIS SURVEY.
 3. SEE DOCUMENTS AND ELECTRONIC DATA FILED IN THE OFFICE OF WPG INC FOR COMPLETE RECONSTRUCTION OF THESE SECTIONS OR BLOCKS.
 4. ROW HAS NOT BEEN STAKED ON THE GROUND. PLAT FOR INFORMATION PURPOSES ONLY. INFORMATION SHOWN HEREON SUBJECT TO CHANGE.

LEGEND
 --- SECTION LINES
 --- SECTION QUARTER LINES
 --- EXISTING FENCE
 --- PROPOSED ELECTRIC RIGHT-OF-WAY
 SCALE: 1" = 1000'
 0 1000' 2000'

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED ELECTRIC RIGHT-OF-WAY
SECTION 24, T25S, R34E &
SECTIONS 17, 18, & 19, T25S, R35E
LEA COUNTY, NEW MEXICO

CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS



CENTERLINE CONTAINS 7568.29 FEET, 458.68 RODS, MORE OR LESS.

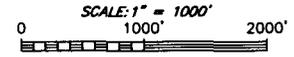
30' PERMANENT EASEMENT	20' TEMPORARY EASEMENT	50' TOTAL EASEMENT
NW/4 SW/4-0.586 ACRES	NW/4 SW/4-0.390 ACRES	NW/4 SW/4-0.976 ACRES
NE/4 SW/4-0.910 ACRES	NE/4 SW/4-0.606 ACRES	NE/4 SW/4-1.516 ACRES
NW/4 SE/4-0.613 ACRES	NW/4 SE/4-0.409 ACRES	NW/4 SE/4-1.022 ACRES
SW/4 NE/4-1.157 ACRES	SW/4 NE/4-0.864 ACRES	SW/4 NE/4-2.021 ACRES
NW/4 NE/4-0.544 ACRES	NW/4 NE/4-0.259 ACRES	NW/4 NE/4-0.803 ACRES
SE/4 NE/4-0 ACRES	SE/4 NE/4-0.048 ACRES	SE/4 NE/4-0.048 ACRES
NE/4 NE/4-1.382 ACRES	NE/4 NE/4-0.863 ACRES	NE/4 NE/4-2.245 ACRES
TOTAL: 5.192 ACRES	TOTAL: 3.439 ACRES	TOTAL: 8.631 ACRES

CENTERLINE CONTAINS 4897.62 FEET
302.89 RODS, MORE OR LESS.

30' PERMANENT EASEMENT
NW/4 NW/4-0.950 ACRES
NE/4 NW/4-0.950 ACRES
NW/4 NE/4-0.922 ACRES
NE/4 NE/4-0.599 ACRES
TOTAL: 3.421 ACRES
20' TEMPORARY EASEMENT
NW/4 NW/4-0.624 ACRES
NE/4 NW/4-0.622 ACRES
NW/4 NE/4-0.615 ACRES
NE/4 NE/4-0.399 ACRES
TOTAL: 2.260 ACRES
50' TOTAL EASEMENT
NW/4 NW/4-1.574 ACRES
NE/4 NW/4-1.572 ACRES
NW/4 NE/4-1.537 ACRES
NE/4 NE/4-0.998 ACRES
TOTAL: 5.681 ACRES

LINE	BEARING	DISTANCE
L1	S 00°19'41" E	65.00'
L2	S 89°40'19" W	296.20'
L3	S 85°48'19" W	931.50'
L4	N 89°30'09" W	606.90'
L5	N 45°22'52" W	62.84'
L6	S 89°40'18" W	765.84'
L7	S 89°40'18" W	1319.95'
L8	S 89°40'18" W	434.89'
L9	S 87°36'00" W	423.99'
L10	S 89°39'06" W	461.21'
L11	S 89°39'06" W	514.01'
L12	S 00°26'38" E	610.88'
L13	S 88°13'14" W	663.58'
L14	S 89°37'09" W	527.19'
L15	S 89°37'09" W	180.00'
L16	S 00°22'45" E	1980.99'
L17	S 89°40'16" W	2352.08'
L18	N 00°22'52" W	54.54'
L19	N 00°22'51" W	74.95'
L20	N 00°22'52" W	89.85'
L21	N 00°19'41" W	74.81'
L22	N 00°19'41" W	74.72'

**PITCHBLENDE FED
PIPELINE RIGHT-OF-WAY**
 30' PERMANENT RIGHT-OF-WAY: 8.613 ACRES
 20' TEMPORARY WORKSPACE: 5.699 ACRES
 50' TOTAL RIGHT-OF-WAY: 14.312 ACRES
 TOTAL CENTERLINE LENGTH:
 12,565.91 FEET, 781.57 RODS



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FILE://PROJECTS/NEW MEXICO/LEA/T25S R35E.DWG JOB# 17-1200-00 DATE SURVEYED: FIELD BOOK: DATE: 08/31/18 DRAFT: TA

Watson Professional Group Inc

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 wdwatson@wpg-us.com

CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

**ENERGEN RESOURCES CORPORATION
 PITCHBLENDE FED PIPELINE RIGHT-OF-WAY
 SECTION 24, T25S, R34E & SECTION 19, T25S, R35E
 LEA COUNTY, NEW MEXICO**

Pitchblende - BLM Data Request

AIR LINE - 3" POLY - 150 PSIG MAX → 100-150 NOP

PRODUCED WATER LINE - 12" POLY - 250 PSIG MAX → 125-250 PSIG
NOP

GAS LINE - 12" POLY - 12" POLY - 250 PSIG MAX - 150-250 PSIG
NOP

HP GAS - 4" STEEL - 1480 PSIG MAX - 1000-1400 PSIG NOP

NT - 8'x20' MAWP - 250 PSIG NOP 40-110 PSIG

FWKO - 8'x30' MAWP - 250 PSIG NOP 60-140 PSIG

INLET SEPARATOR - 4'x10' - MAWP-250 PSIG NOP 80-150
PSIG

FLARE SCRUBBER - 4'x10' - MAWP-125 PSIG NOP 0-60
PSIG

PRODUCED
WATER TANKS - 21'6" x 21' - FIBERGLASS
MAWP - 40z. PSIG NOP - 0+4 PSIG

CRUDE OIL TANKS - 15'6" x 30' - STEEL
MAWP - 80z. PSIG NOP - 0+8 PSIG

All pipelines will be buried w/36" of cover.

25S 35E

13

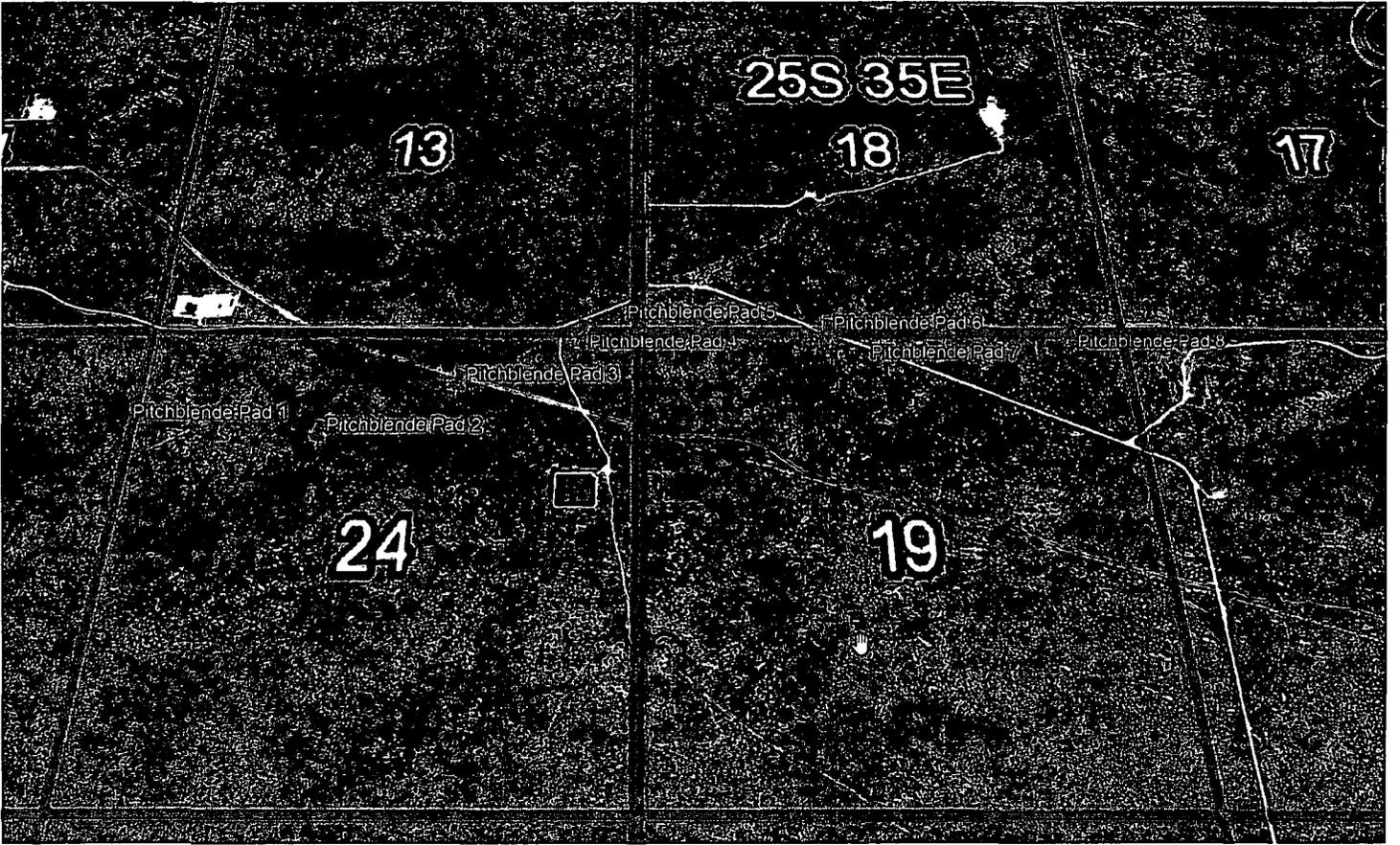
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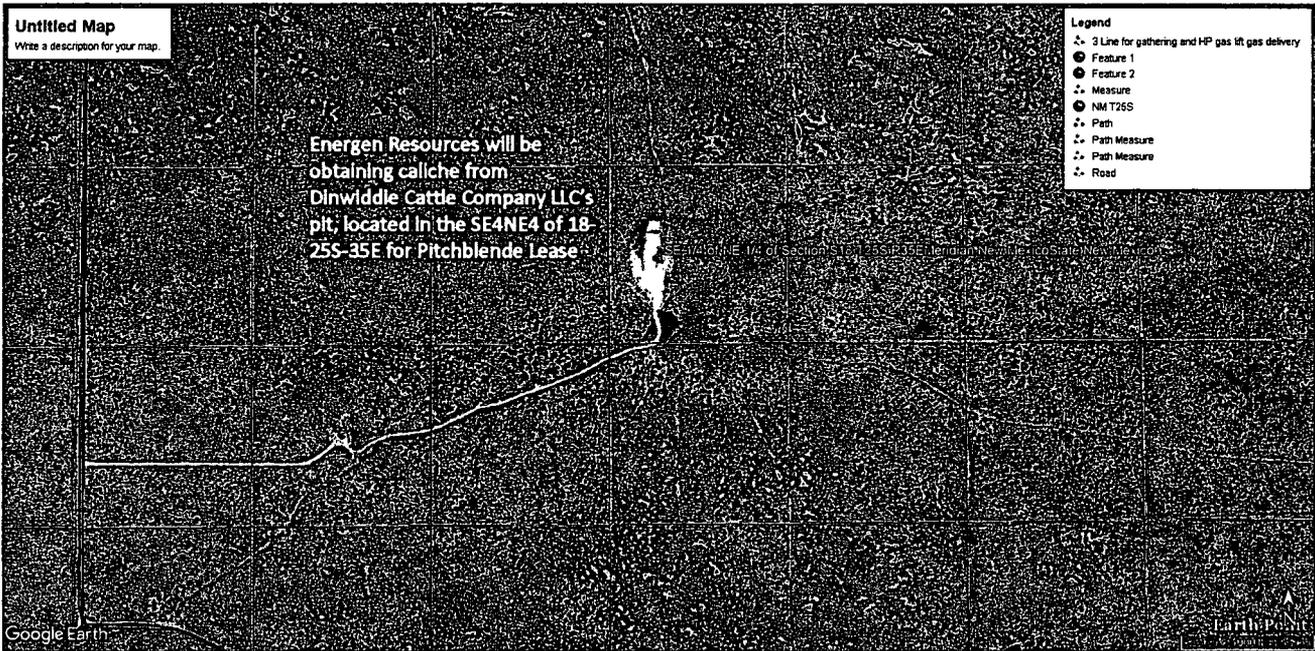
17

Pitchblende: Pad 1
Pitchblende: Pad 2
Pitchblende: Pad 3
Pitchblende: Pad 4
Pitchblende: Pad 5
Pitchblende: Pad 6
Pitchblende: Pad 7
Pitchblende: Pad 8

24

19





Untitled Map
Write a description for your map.

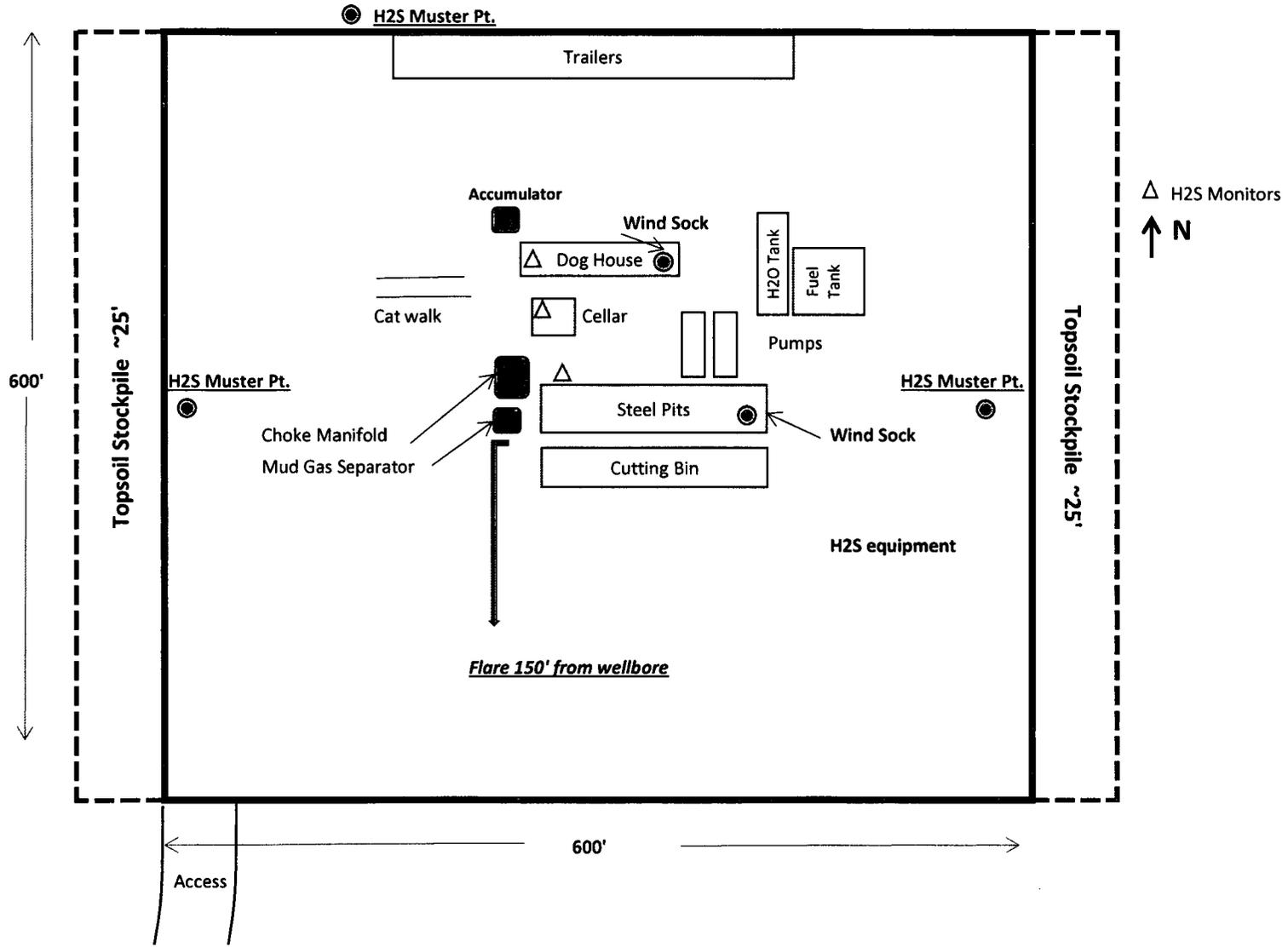
- Legend
- 3 Line for gathering and HP gas lift gas delivery
 - Feature 1
 - Feature 2
 - Measure
 - NM T255
 - Path
 - Path Measure
 - Path Measure
 - Road

Energen Resources will be obtaining caliche from Dinwiddle Cattle Company LLC's pit; located in the SE4NE4 of 18-25S-35E for Pitblende Lease

Google Earth

EarthPoint

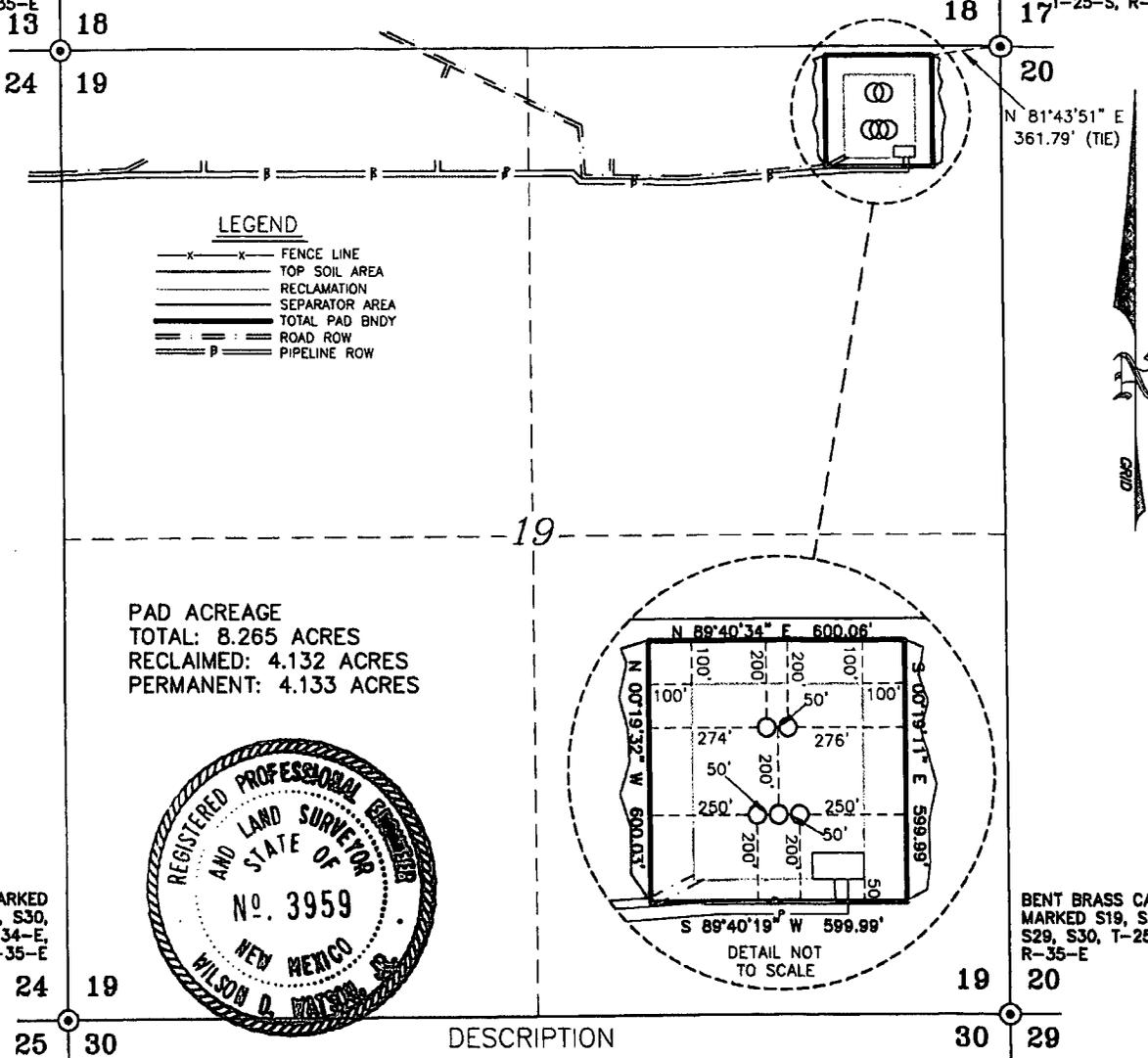
Location Layout Pad 8 (not to scale)



SECTION 19, TOWNSHIP 25 SOUTH, RANGE 35 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.

BRASS CAP MARKED
S13, S18, S24, S19,
T-25-S, R-34-E,
R-35-E

BRASS CAP MARKED
S17, S18, S19, S20,
T-25-S, R-35-E



BRASS CAP MARKED
S24, S19, S25, S30,
T-25-S, R-34-E,
R-35-E

BENT BRASS CAP MARKED
S19, S20,
S29, S30, T-25-S,
R-35-E

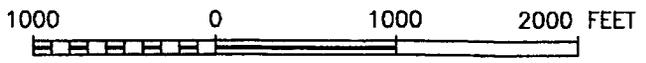
A TRACT OF LAND CONTAINING 8.265 ACRES, MORE OR LESS, SITUATED IN THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 19, T-25-S, R-35-E, LEA COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT FOR THE NORTHEAST CORNER HEREOF, FROM WHICH A BRASS CAP MARKED "S17, S18, S19, S20, T-25-S, R-35-E" FOUND, FOR THE COMMON CORNER OF SAID SECTION 19, AND SECTIONS 17, 18, AND 20, T-25-S, R-35-E, BEARS NORTH 81°43'51" EAST, 361.79 FEET; THENCE SOUTH 00°19'11" EAST, 599.99 FEET TO THE SOUTHEAST CORNER HEREOF; THENCE SOUTH 89°40'19" WEST, 599.99 FEET TO THE SOUTHWEST CORNER HEREOF; THENCE NORTH 00°19'32" WEST, 600.03 FEET TO THE NORTHWEST CORNER HEREOF; THENCE NORTH 89°40'34" EAST, 600.06 FEET TO THE POINT OF BEGINNING AND CONTAINING 8.265 ACRES OF LAND, MORE OR LESS.

I, THE UNDERSIGNED, DO HEREBY CERTIFY THAT THE FOREGOING DESCRIPTION AND PLAT HERETO IS A REPRESENTATION OF A SURVEY COMPLETED ON THE GROUND UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

- NOTES:
1. BASIS OF BEARING IS A TRANSVERSE MERCATOR PROJECTION OF THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE (3001), NAD 83 (CORS96)
 2. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. THERE MAY BE EASEMENTS AND/OR COVENANTS AFFECTING THIS PROPERTY NOT SHOWN HEREON. LOCATION OF IMPROVEMENTS AND/OR EASEMENTS WERE BEYOND COMMISSIONED SCOPE OF THIS PROJECT AND HAVE BEEN SPECIFICALLY OMITTED; THEREFORE, NO EFFORT HAS BEEN MADE TO LOCATE OBSERVABLE AND/OR RECORDED EASEMENTS WITHIN THE BOUNDS OF THIS SURVEY.
 3. SEE DOCUMENTS AND ELECTRONIC DATA FILED IN THE OFFICE OF WPG INC FOR COMPLETE RECONSTRUCTION OF THESE SECTIONS OR BLOCKS.

[Signature]
MAY 27, 2018
W. D. WATSON JR. N.M. P.L.S. No. 3959



Watson Professional Group Inc

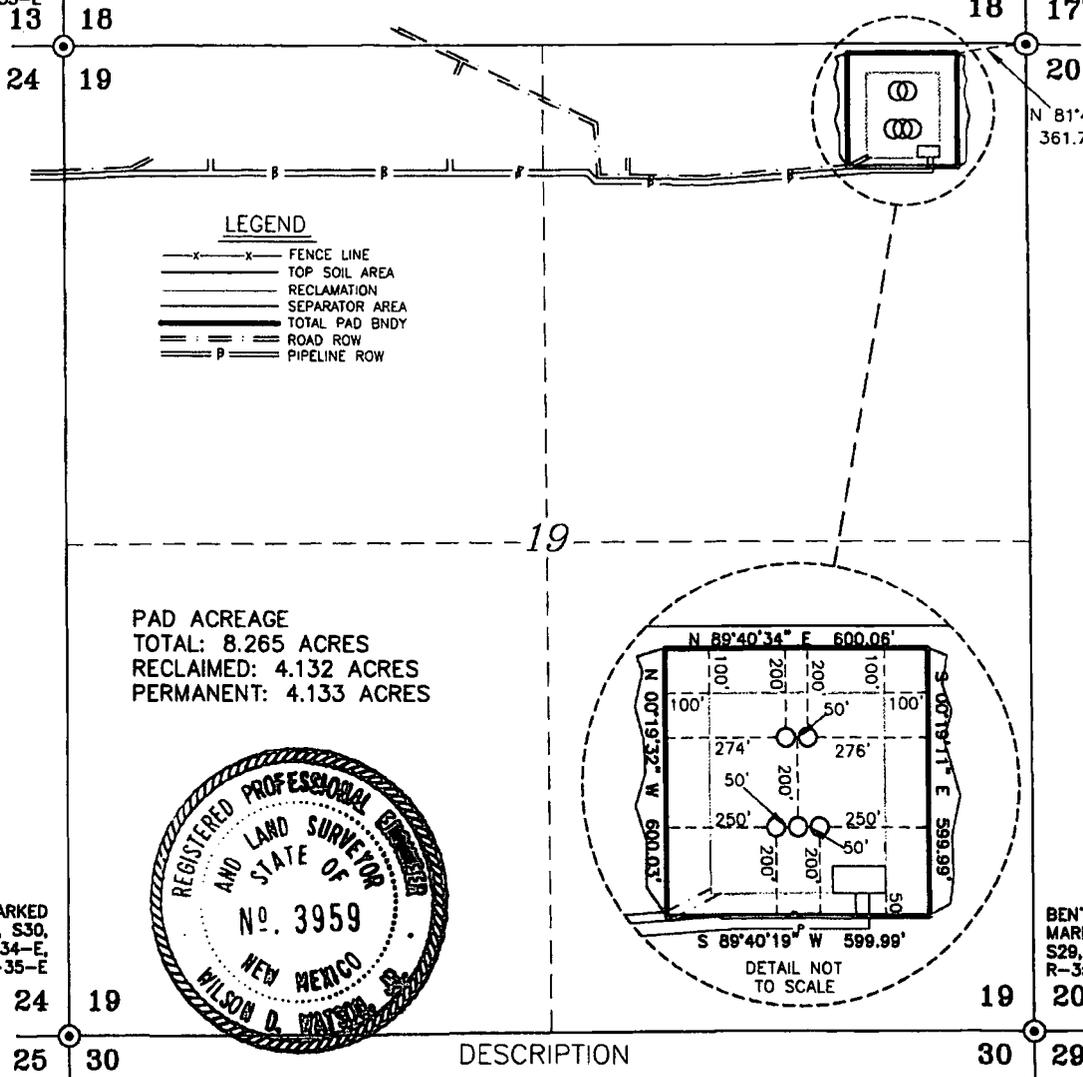
P.O. DRAWER 1186
MIDLAND, TEXAS 79702
(432) 520-9200
FAX (432) 520-9212
www.watsongroup.com

ENERGEN RESOURCES CORPORATION
SURVEY OF THE PITCHBLLENDE FED 19-30
038H, 208H, 358H, 608H, AND 458H WELL PAD
IN SECTION 24, T. 24 S., R. 35 E., N.M.P.M.,
LEA COUNTY, NEW MEXICO.

SECTION 19, TOWNSHIP 25 SOUTH, RANGE 35 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.

BRASS CAP MARKED
S13, S18, S24, S19,
T-25-S, R-34-E,
R-35-E

BRASS CAP MARKED
S17, S18, S19, S20,
T-25-S, R-35-E



PAD ACREAGE
TOTAL: 8.265 ACRES
RECLAIMED: 4.132 ACRES
PERMANENT: 4.133 ACRES



BRASS CAP MARKED
S24, S19, S25, S30,
T-25-S, R-34-E,
R-35-E

BENT BRASS CAP
MARKED S19, S20,
S29, S30, T-25-S,
R-35-E

DESCRIPTION

A TRACT OF LAND CONTAINING 8.265 ACRES, MORE OR LESS, SITUATED IN THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 19, T-25-S, R-35-E, LEA COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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MAY 27, 2018

W. D. WATSON JR. N.M. P.L.S. No. 3959



Watson Professional Group Inc



P.O. DRAWER 1166
MIDLAND, TEXAS 79702
(432) 520-2200
FAX (432) 520-9252
www.watson1.com

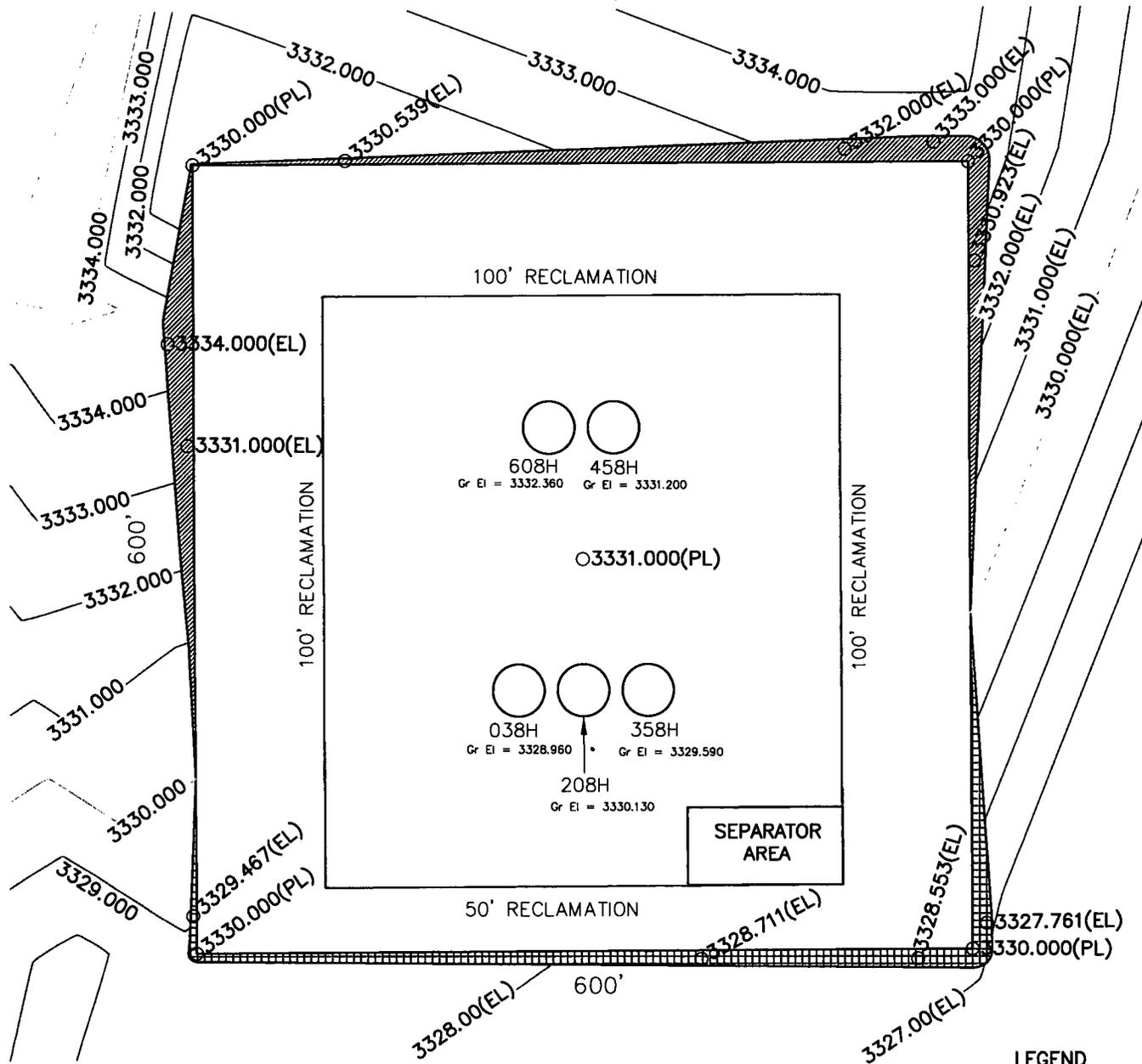
ENERGEN RESOURCES CORPORATION
SURVEY OF THE PITCHBLLENDE FED 19-30
038H, 208H, 358H, 608H, AND 458H WELL PAD
IN SECTION 24, T. 24 S., R. 35 E., N.M.P.M.,
LEA COUNTY, NEW MEXICO.

SURVEY DATE: 12/14/17
JOB NO.: 17-1320-00 FIELD BOOK 834/51, 838/25 DRAFT DM PAGE 1

SKETCH PLAT

ENERGEN RESOURCES CORPORATION
 PITCHBLENDE FED #8 PAD – 608H, 458H, 038H,
 208H & 358H
 SECTION 19
 T-24-S, R-35-E
 LEA COUNTY, NEW MEXICO

NOTES:
 1. RECLAIM ALL TOP SOIL
 TO TOPSOIL STOCK PILE.



Calculate Cut volume = 10357.22 Cu Yds
 Calculate Fill Volume = 7263.14 Cu Yds

LEGEND

EL – EXISTING ELEVATION
 PL – PROPOSED ELEVATION

0 120' 240'

WO#17-1308-00

FILE:T/PROJECTS/NEW MEXICO/LEA/ENGINEERING/T24S R35E.DWG PRE-CONSTRUCTION AS SURVEYED IN 2018

(PAGE 1 OF 3)

PRELIMINARY

THIS DOCUMENT SHALL NOT BE
 RECORDED FOR ANY PURPOSE AND
 SHALL NOT BE USED OR VIEWED
 OR RELIED UPON AS A FINAL
 SURVEY DOCUMENT.



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 79702
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 wdwtson@pgrp-us.com

CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

DIRT WORK CALCULATIONS

ENERGEN RESOURCES CORPORATION

PITCHBLENDE FED #8 PAD

Location Pad Calculations
 T-24-S, R-35-E
 LEA COUNTY, NEW MEXICO.

SKETCH PLAT

ENERGEN RESOURCES CORPORATION
 PITCHBLENDE FED #8 PAD
 SECTION 19
 T-24-S, R-35-E
 LEA COUNTY, NEW MEXICO

LEGEND

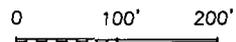
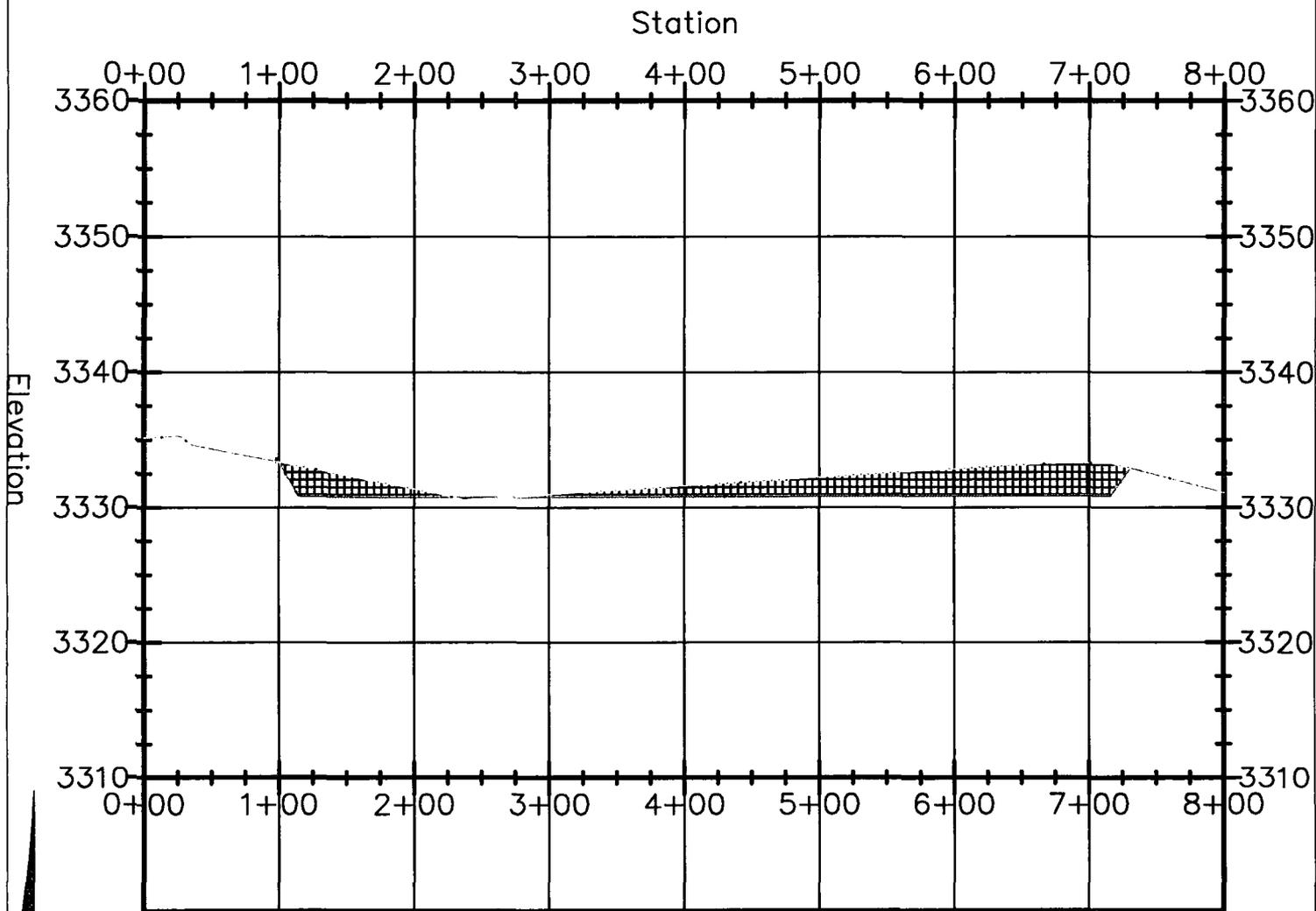
 FILL

 CUT

 EXISTING GRADE

 FINISHED GRADE

Alignment top Cross Section PROFILE



WO#17-1308-00

FILE/T/PROJECTS/NEW MEXICO/LEA/ENGINEERING/T24S R35E.DWG PRE-CONSTRUCTION AS SURVEYED IN 2018

(PAGE 2 OF 3)

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LOCATION PAD PROFILES
ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED #8 PAD
Location Pad Calculations T-24-S, R-35-E LEA COUNTY, NEW MEXICO.

SKETCH PLAT

ENERGEN RESOURCES CORPORATION
 PITCHBLENDE FED #8 PAD
 SECTION 19
 T-24-S, R-35-E
 LEA COUNTY, NEW MEXICO

LEGEND

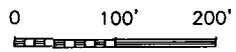
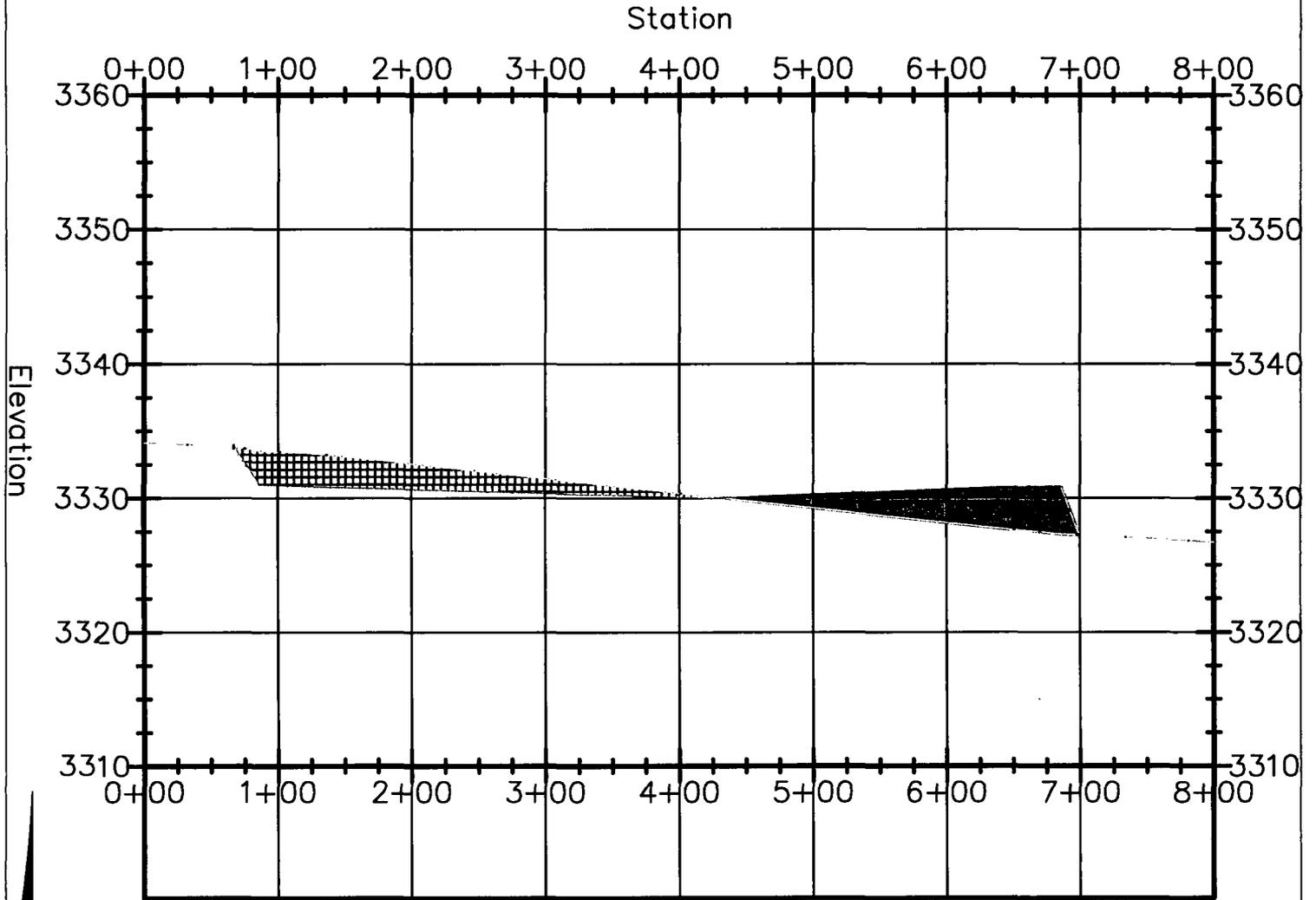
 FILL

 CUT

 EXISTING GRADE

 FINISHED GRADE

Alignment Side Cross section PROFILE



WO#17-1308-00

FILE/T/PROJECTS/NEW MEXICO/LEA/ENGINEERING/T24S R35E.DWG PRE-CONSTRUCTION AS SURVEYED IN 2018

(PAGE 3 OF 3)

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CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

LOCATION PAD PROFILES

ENERGEN RESOURCES CORPORATION

PITCHBLENDE FED #8 PAD

Location Pad Calculations

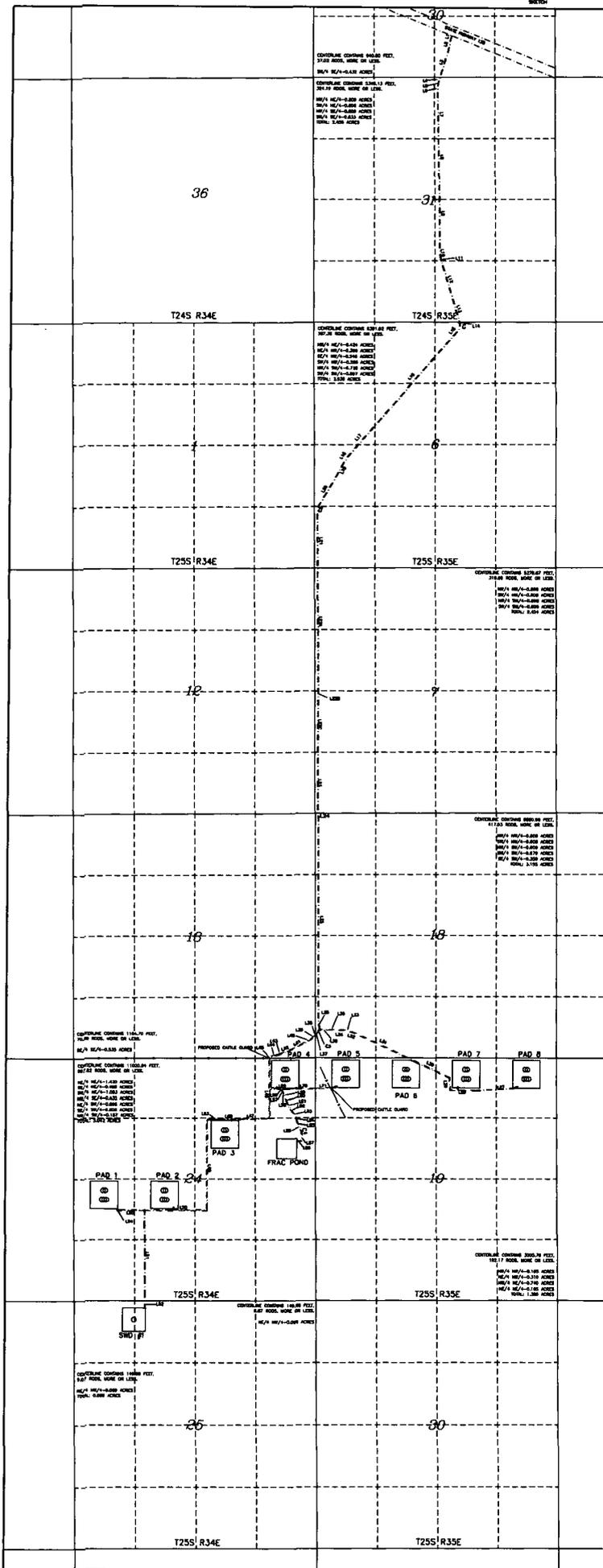
T-24-S, R-35-E

LEA COUNTY, NEW MEXICO.

LEGEND

- SECTION LINES
- SECTION QUARTER LINES
- EXISTING FENCE
- PROPOSED RIGHT-OF-WAY ROAD TO WELLS

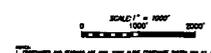
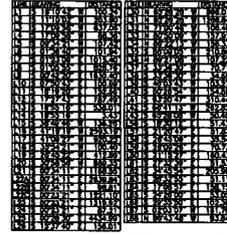
PITCHBLENDE FED
 20 FOOT WIDE ROAD RIGHT-OF-WAY
 TOTAL ROAD:
 40,183.40 FEET OR 2,435.36 RODS,
 18.428 ACRES



PROPOSED ROAD



EXISTING ROAD



SCALE: 1" = 1000'
 0 1000 2000
 FEET



September 17, 2018

ATTN: Cody Layton – Assistant Field Manager
Bureau of Land Management
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220

Re: Energen Resources Pitchblende Federal Wells, Lea County NM

Dear Mr. Layton,

This letter is in response to the deficiency letter received by Energen Resources dated September 5, 2018. Energen has been, and remains in, good-faith negotiations with the surface owner of the private tract located in Section 24, Township 25 South, Range 34 East.

In addition to owning this private tract, the same surface owner is the lessee of BLM owned surface also located in Section 24, Township 25 South, Range 34 East and all of Section 19, Township 25 South, Range 35 East. The agreement is quite lengthy and contains numerous development provisions that we are working through with the landowner. It's our anticipation this will be resolved well in advance of the permits being approved.

An email from the surface owner is included supporting our good-faith negotiations. Please let us know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Tyler Humphries", with a long horizontal flourish extending to the right.

Tyler Humphries

Land - Permian Development
Energen Resources Corporation
3510 North "A" Street, Bldg. B
Midland, TX 79705
Office: 432.818.1731
Email: tyler.humphries@energen.com

Tyler Humphries

From: Tommy Dinwiddie <jtdinwiddie@gmail.com>
Sent: Monday, September 17, 2018 11:05 AM
To: Tyler Humphries
Subject: [EXTERNAL] Re: Energen/Pitchblende SUA

Yes
We are in negotiations at this time.
TD

On Sep 17, 2018, at 10:03 AM, Tyler Humphries <Tyler.Humphries@energen.com> wrote:

Mr. Dinwiddie,

As part of our permitting process with the BLM, they have requested a status update on the surface use agreement regarding the wells that will be drilled on your private land. I am going to let them know we have been in good-faith negotiations with you and are working towards a finalized agreement by the time the permits will be approved.

Would you mind replying and confirming such so that I can include this email with my letter?

Best,
Tyler

Thanks,
Tyler Humphries
Land - Permian Development
Energen Resources Corporation
3510 North "A" Street, Bldg. B
Midland, TX 79705
Office: 432.818.1731
Cell: 432.557.4245
Email: tyler.humphries@energen.com

<image001.jpg>