PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Devon Energy Production Company, L.P.**
LEASE NO.:	**NMNM-114990**
WELL NAME & NO.:	**Jayhawk 6-7 Fed Fee Com 2H**
SURFACE HOLE FOOTAGE:	**0365' FNL & 0260' FEL**
BOTTOM HOLE FOOTAGE	**0330' FSL & 0360' FEL Sec. 07, T. 26 S., R 34 E.**
LOCATION:	**Section 06, T. 26 S., R 34 E., NMPM**
COUNTY:	**County, New Mexico**

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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. **The operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other wells.**

4. Option – Setting surface casing with Spudder Rig

   a. Notify the BLM when removing the Spudder Rig.

   b. Notify the BLM when moving in the H&P Flex Rig. Rig to be moved in within 60 days of notification that Spudder Rig has left the location. Failure to notify or have rig on location within 60 days will result in an Incident of Non-Compliance.

   c. Once the H&P Flex Rig is on location, it shall not be removed from over the hole without prior approval unless the production casing has been run and cemented or the well has been properly plugged. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

   d. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as H&P Flex Rig is rigged up on well. CIT for the surface casing shall be performed and results recorded on subsequent sundry – pressure to be 1200 psi.

5. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will 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.

6. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If**

available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

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 Salado and Castile.
Possibility of lost circulation in the Red Beds, Rustler, and Delaware.
Abnormal pressures may be encountered upon penetrating the 3rd Bone Spring Sandstone and all subsequent formations.

1. The **10-3/4** inch surface casing shall be set at approximately **905** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

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 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 and the mud weight for the bottom of the hole. Report results to BLM office.

7-5/8'' 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 **7-5/8** inch intermediate casing is:

☐ Cement as proposed. If cement does not circulate see B.1.a, c-d above.

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 (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.

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

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

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

4. 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface 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.

Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi.)

<u>Multibowl Option:</u>

4. **Operator has proposed a multi-bowl wellhead assembly. 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 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.**

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.**

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION
LEASE NO.:	NMNM114990
WELL NAME & NO.:	2H –JAYHAWK 6-7 FED FEE COM
SURFACE HOLE FOOTAGE:	365'/N & 260'/E
BOTTOM HOLE FOOTAGE	330'/S & 360'/E
LOCATION:	Section. 6.,T26S., R.34E., NMP
COUNTY:	LEA County, New Mexico

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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.

Approval Date: 08/23/2018

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 081418

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)

In May 2008, the Pecos District Special Status Species Resource Management Plan Amendment (RMPA) was approved and is being implemented. In addition to the standard practices that minimize impacts, as listed above, the following COA will apply:

- Upon abandonment, a low profile abandoned well marker will be installed to prevent raptor perching.

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 power line structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. The holder without liability or expense shall make such modifications and/or additions to the United States.

Trenches-Escape Ramps
Devon would need to construct and maintain escape ramps according to the following criteria:

- Earthen escape ramps would be required to be constructed to sufficiently support livestock at no more than a 30- degree slope and spaced no more than 500 feet apart.
- If the trench is left open under an 8-hour time period, it would not be required to have an escape ramp; however, before the trench is backfilled the trench will be inspected for wildlife and remove any species that are trapped at a distance of at least 100 yards away from the trench.

Well and CTB Pad Berms

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.
- Tank battery locations will be line 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.
- 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.

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

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.

Cattle Guard Requirement
Where entry is granted across a fence line for an access road, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition with an appropriately sized cattle guard sufficient to carry out the project. Any new or existing cattle guards on the access 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. Once the road is abandoned, the fence would be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. 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.

During construction, the proponent shall minimize disturbance to existing fences, water lines, troughs, windmills, and other improvements on public lands. The proponent 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 grazing permittee/leasee prior to disturbing any range improvement projects. 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.

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.
- Tank battery locations will be line 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.
- 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.

CONSTRUCTION IMPACT ANAYLSIS

The construction of roads, pipelines, compressor station pads and utilities can impact bedrock integrity and reroute, impede, focus, or erode natural surface drainage systems. Increased silting and sedimentation from construction can plug downstream sinkholes, caves, springs, and other components of aquifer recharge systems and result in adverse impacts to aquifer quality and cave environments. Any contaminants released into the environment during or after construction can impact aquifers and cave systems. A possibility exists for slow subsidence or sudden surface collapse during construction operations due to collapse of underlying cave passages and voids. This would cause associated safety hazards to the operator and the potential for increased environmental impact. Subsidence processes can be triggered by blasting, intense vibrations, rerouting of surface drainages, focusing of surface drainage, and general surface disturbance.

Blasting fractures in bedrock can serve as direct conduits for transfer of contaminants into cave and groundwater systems. Blasting also creates an expanded volume of rock rubble that cannot be reclaimed to natural contours, soil condition, or native vegetative condition. As such, surface and subsurface disruptions from blasting procedures can lead to permanent changes in vegetation, rainfall percolation, silting/erosion factors, aquifer recharge, and freshwater quality and can increase the risk of contaminant migration from drilling/production facilities built atop the blast are additional or special Conditions of Approval may apply at that time.

CONSTRUCTION MITIGATION

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD or project:

In the event that any underground voids are encountered during construction activities, construction activities will be halted and the BLM will be notified immediately.
No Blasting to prevent geologic structure instabilities.
Pad Berming to minimize effects of any spilled contaminates.

DRILLING IMPACT ANALYSIS

During drilling, previously unknown cave and karst features could be encountered. If a void is encountered while drilling and a loss of circulation occurs, lost drilling fluids can directly contaminate groundwater recharge areas, aquifers, and groundwater quality. Drilling operations can also lead to sudden collapse of underground voids. Cementing operations may plug or alter groundwater flow, potentially reducing the water quantity at springs and water wells. Inadequate subsurface cementing, casing, and cave/aquifer protection measures can lead to the migration of oil, gas, drilling fluids, and produced saltwater into cave systems and freshwater aquifers.

DRILLING MITIGATION

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required.

Closed Mud System Using Steel Tanks with All Fluids and Cuttings Hauled Off.
Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
Directional Drilling allowed after at least 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
Lost Circulation zones logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers. See Drilling COAs.

PRODUCTION IMPACT ANALYSIS

Production facilities such as tank batteries, pump-jacks, compressors, transfer stations, and pipe may fail and allow contaminants to enter caves and freshwater systems. Downhole casing and cementing failures can allow migration of fluids and/or gas between formations and aquifers. Facilities may also be subject to slow subsidence or sudden collapse of the underlying bedrock.

PRODUCTION MITIGATION

In order to mitigate the impacts from production activities and due to the nature of karst terrain, the following Conditions of Approval will apply to this APD:

Tank battery liners and berms to minimize the impact resulting from leaks.
Leak detection system to provide an early alert to operators when a leak has occurred.
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of line failures used in production or drilling.

RESIDUAL AND CUMULATIVE IMPACT ANALYSIS

Any industrial activities that take place upon or within karst terrains or freshwater aquifer zones have the potential to create both short-term and long-term negative impacts to freshwater aquifers and cave systems. While a number of mitigation measures can be implemented to mitigate many impacts, it is still possible for impacts to occur from containment failures, well blowouts, accidents, spills, and structural collapses. It is therefore necessary to implement long-term monitoring studies to determine if current mitigations measures are sufficient enough to prevent long-term or cumulative impacts.

RESIDUAL AND CUMULATIVE MITIGATION

Nontoxic fluorescent dyes will be added to the drilling fluid when the hole is spudded and will be circulated to the bottom of the karst layers. This provides data as part of a long-term monitoring study.
Annual pressure monitoring will be performed by the operator. If the test results indicate a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

PLUGGING AND ABANDONMENT IMPACT ANALYSIS

Failure of a plugged and abandoned well can lead to migration of contaminants to karst resources and fresh water aquifers. While this action does not specifically approve plugging and abandonment procedures, the operator should be made aware that additional or special Conditions of Approval may apply at that time.

PLUGGING AND ABANDONMENT MITIGATION

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

MITIGATING MEASURES for ROADS:
Roads will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction and no further construction will be done until clearance has been issued by the Authorized Officer.
Turnout ditches and drainage leadoffs will not be constructed in such a manner as to increase or decrease the natural flow of water into or out of cave or karst features.
Special restoration stipulations or realignment may be required.

MITIGATING MEASURES FOR POWERLINES:

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Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems. Larger powerlines will adjust their pole spacing to avoid cave and karst features.

The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction.
No further construction will be done until clearance has been issued by the Authorized Officer.
Special restoration stipulations or realignment may be required.

MITIGATING MEASURES for BURIED PIPELINES AND CABLES:

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

MITIGATING MEASURES for SURFACE FLOWLINES:

Flowlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize the possibility of leaks and spills from entering karst systems.
If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

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

A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.

- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the 10-3/4" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the 7-5/8" intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 10M will be installed on the wellhead.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 10,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

Attachments
_X_ Directional Plan
___ Other, describe

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other facets of operation

Is this a walking operation? Yes

1. In the event the spudder rig is unable to drill the surface holes the drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2. The drilling rig will then batch drill the intermediate sections with either OBM or cut brine and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3. The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Yes

1. Spudder rig will move in and drill surface hole.
    a. Rig will utilize fresh water based mud to drill 14 ¾" surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the 10-3/4" surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.
6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nippled up and tested on the wellhead before drilling operations commences on each well.
    a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	905'	Spud	8.33-9.1	28-34	N/C
905'	12,545'	OBM/Cut Brine	8.6-10	34-65	N/C - 6
12,545'	22,587'	Oil Based Mud	11-13	45-65	N/C - 6

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	8544 psi
Abnormal Temperature	No

Y	A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly. 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 5000 (5M) psi. • Wellhead will be installed by wellhead representatives. • If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. • Wellhead representative will install the test plug for the initial BOP test. • Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. • If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. • Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. • Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 10-3/4" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP. Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron. Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
9-7/8" & 8-3/4"	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram	X	
			Double Ram	X	
			Other*		
6-3/4"	13-5/8"	10M	Annular (5M)	X	50% of rated working pressure
			Blind Ram	X	10M
			Pipe Ram	X	
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	Y	Are anchors required by manufacturer?

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	Slurry Description
10-3/4" Surface	615	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
7-5/8" Int	919	9	13.5	3.27	Lead: Tuned Light® Cement
	187	14.5	5.31	1.2	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
7-5/8" Intermediate Squeeze	1295	14.8	6.34	1.34	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	179	9	13.5	3.27	Tuned Light® Cement
	144	13.2	5.31	1.2	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
5-1/2" Production	831	14.8	6.32	1.33	Class H Cement + 0.125 lbs/sack Poly-E-Flake

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
10-3/4" Surface	0'	50%
7-5/8" Intermediate	0'	30%
5-1/2" Production Casing	12,345'	25%

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
14.75"	0	905'	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	10,360'	7.625"	29.7	P110	BTC	1.125	1.25	1.6
8.75"	10,360'	12,545'	7.625"	29.7	P110	Flushmax III	1.125	1.25	1.6
6.75"	0'	22,587'	5.5"	20	P110	Vam SG	1.125	1.25	1.6

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the centralizer requirement for the 7-5/8" flush casing in the 8-3/4" hole and the 5-1/2" SF/Flush casing in the 6-3/4" hole.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Jayhawk 6-7 Fed Fee Com 2H

1. Geologic Formations

TVD of target	12,640'	Pilot hole depth	N/A
MD at TD:	22,587'	Deepest expected fresh water:	875'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
RUSTLER	875		
TOP SALT	1227		
BASE OF SALT	4943		
BELL CANYON	5187		
CHERRY CANYON	6276		
BRUSHY CANYON	7908		
BONE SPRING	9430		
BONE SPRING 1ST	10360		
BONE SPRING 2ND	11005		
BONE SPRING 3RD	11895		
WOLFCAMP	12470		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

Cuttings Boxes: Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

Process Tank: (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

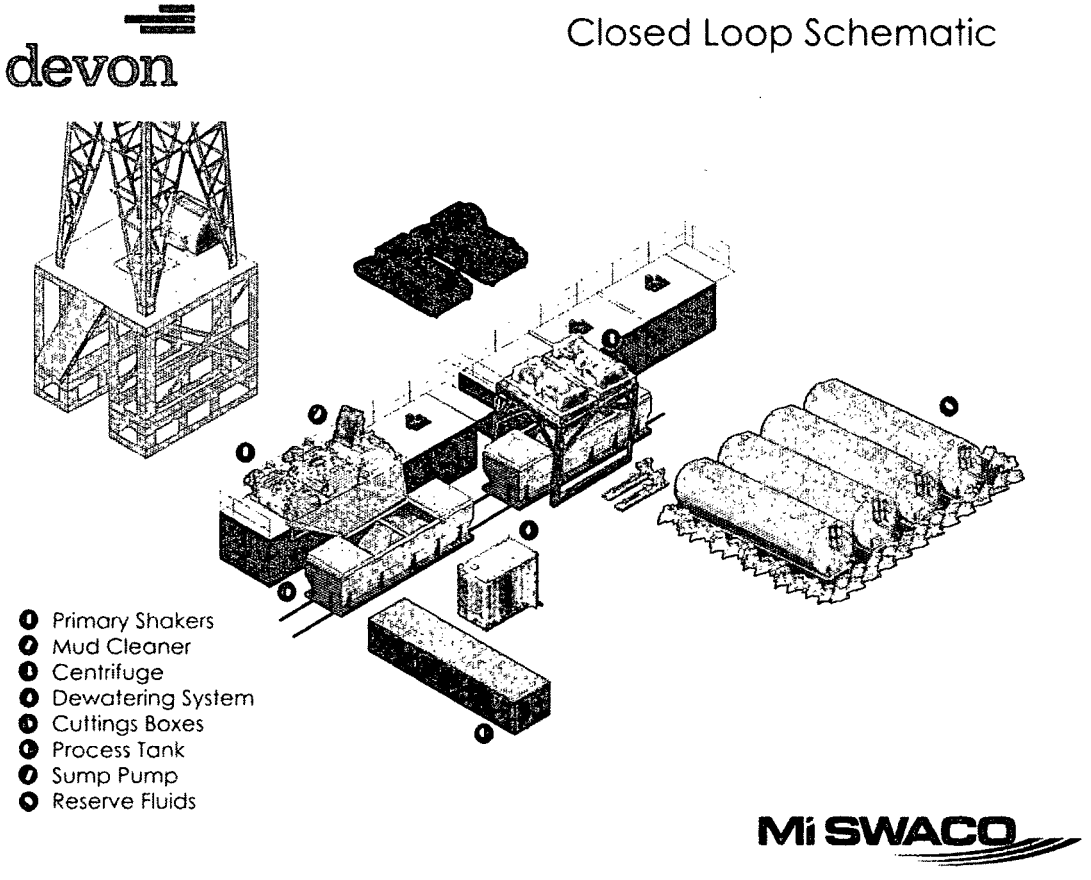
Sump and Sump Pump: The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

Reserve Fluids (Tank Farm): A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

Mud Cleaner: The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



Centrifuges: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

Dewatering System: The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

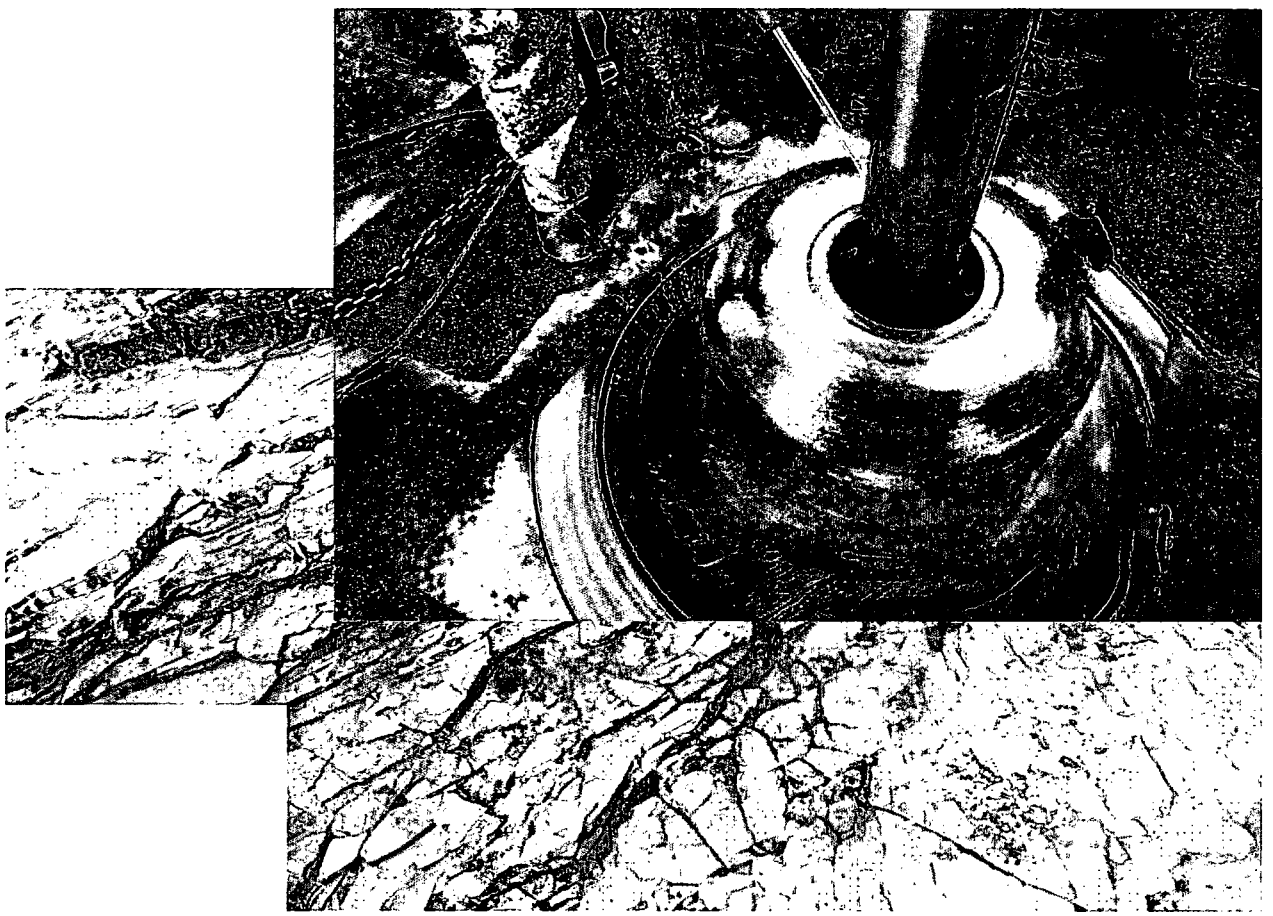
Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

II. Operations and Maintenance Plan

Primary Shakers: The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

devon

Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
June 2010

Devon Energy Annular Preventer Summary

1. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the 10M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

6-3/4" Production hole section, 10M requirement

Component	OD	Preventer	RWP
Drillpipe	4.5"	Fixed lower 4.5" Upper 4.5-7" VBR	10M
HWDP	4.5"	Fixed lower 4.5" Upper 4.5-7" VBR	10M
Drill collars and MWD tools	4.75"	Upper 4.5-7" VBR	10M
Mud Motor	4.75"	Upper 4.5-7" VBR	10M
Production casing	5.5"	Upper 4.5-7" VBR	10M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

VBR = Variable Bore Ram. Compatible range listed in chart.

2. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The pressure at which control is swapped from the annular to another compatible ram is variable, but the operator will document in the submission their operating pressure limit. The operator may chose an operating pressure less than or equal to RWP, but in no case will it exceed the RWP of the annular preventer.

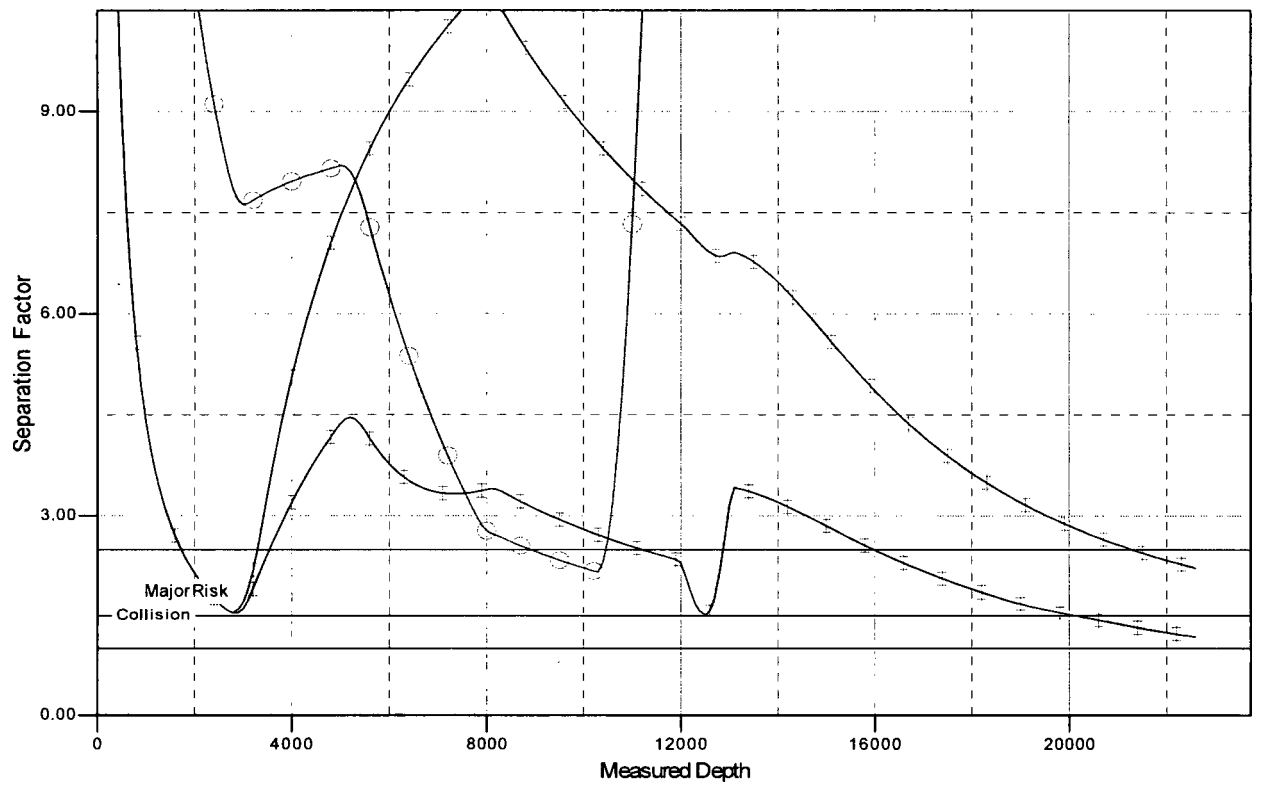
<u>General Procedure While Drilling</u>

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in Well (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB @ 3356.80ft	Coordinates are relative to: Jayhawk 6-7 FED FEE COM 2H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.44°

Separation Factor Plot



LEGEND

Jayhawk 6-7 FED FEE COM 3H, Wellbore #1, Permit Plan 1 V0
Jayhawk 6-7 FED FEE COM 4H, Wellbore #1, Permit Plan 1 V0
Jayhawk 6-7 FED FEE COM 5H, Wellbore #1, Permit Plan 1 V0
Jayhawk FED FEE COM 1H, Wellbore #1, Permit Plan 1 V0

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
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Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB @ 3356.80ft	Coordinates are relative to: Jayhawk 6-7 FED FEE COM 2H
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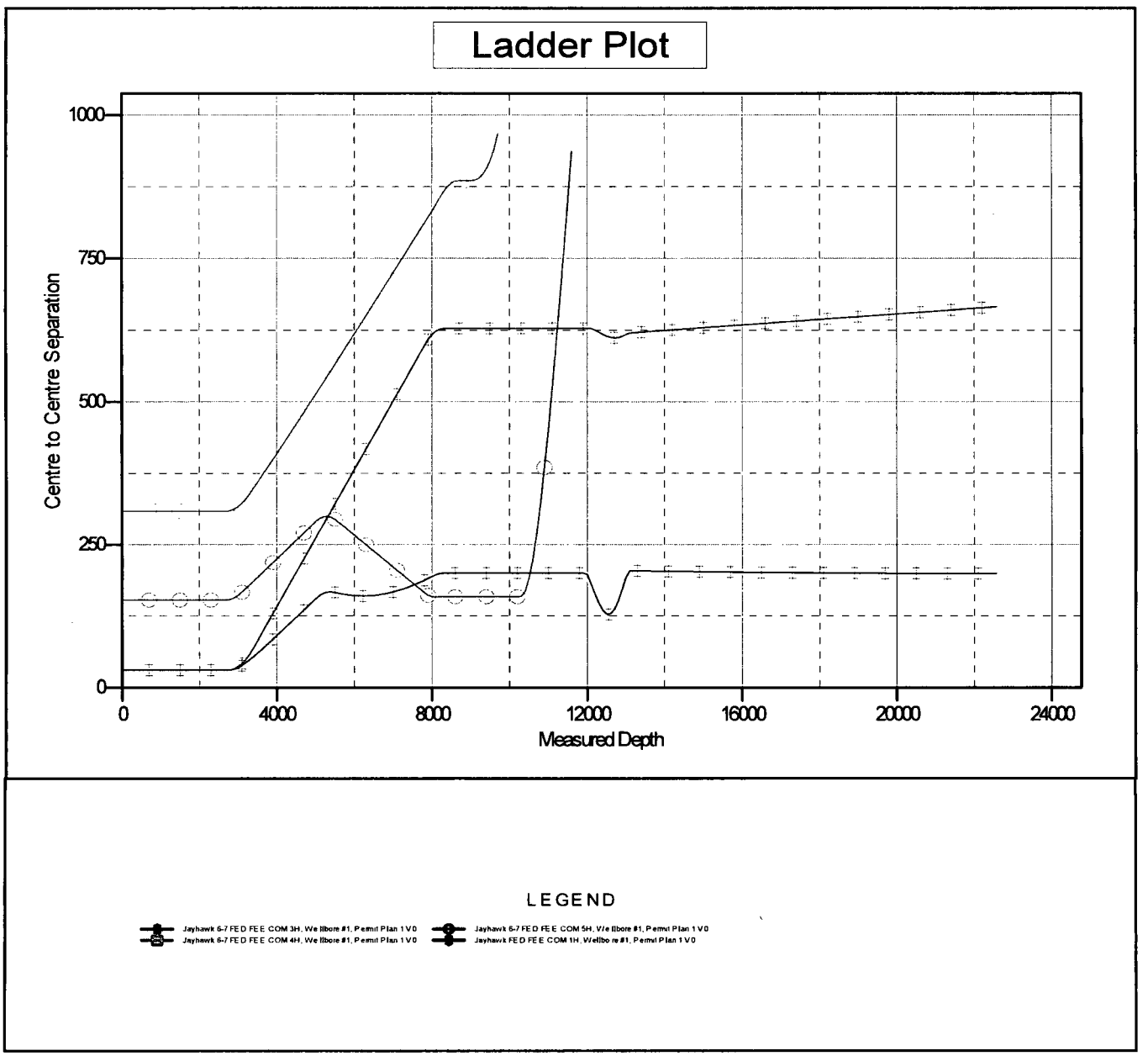


Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,600.00	12,640.00	20,763.39	12,840.00	124.12	123.87	-177.57	-7,879.50	-34.73	199.28	59.75	139.53	1.428	Major Risk
20,700.00	12,640.00	20,863.39	12,840.00	125.48	125.23	-177.70	-7,979.50	-33.85	199.26	58.32	140.94	1.414	Major Risk
20,800.00	12,640.00	20,963.39	12,840.00	126.84	126.58	-177.83	-8,079.49	-32.98	199.24	56.90	142.35	1.400	Major Risk
20,900.00	12,640.00	21,063.39	12,840.00	128.20	127.94	-177.97	-8,179.49	-32.11	199.23	55.47	143.76	1.386	Major Risk
21,000.00	12,640.00	21,163.39	12,840.00	129.57	129.30	-178.10	-8,279.48	-31.23	199.21	54.03	145.18	1.372	Major Risk
21,100.00	12,640.00	21,263.39	12,840.00	130.94	130.66	-178.23	-8,379.48	-30.36	199.20	52.60	146.60	1.359	Major Risk
21,200.00	12,640.00	21,363.39	12,840.00	132.31	132.03	-178.37	-8,479.47	-29.49	199.18	51.16	148.02	1.346	Major Risk
21,300.00	12,640.00	21,463.39	12,840.00	133.68	133.39	-178.50	-8,579.47	-28.62	199.17	49.72	149.45	1.333	Major Risk
21,400.00	12,640.00	21,563.38	12,840.00	135.05	134.76	-178.63	-8,679.46	-27.74	199.16	48.28	150.88	1.320	Major Risk
21,500.00	12,640.00	21,663.38	12,840.00	136.43	136.13	-178.77	-8,779.46	-26.87	199.15	46.84	152.31	1.307	Major Risk
21,600.00	12,640.00	21,763.38	12,840.00	137.81	137.50	-178.90	-8,879.45	-26.00	199.14	45.39	153.75	1.295	Major Risk
21,700.00	12,640.00	21,863.38	12,840.00	139.18	138.88	-179.03	-8,979.45	-25.13	199.13	43.94	155.19	1.283	Major Risk
21,800.00	12,640.00	21,963.38	12,840.00	140.57	140.25	-179.17	-9,079.44	-24.25	199.12	42.48	156.64	1.271	Major Risk
21,900.00	12,640.00	22,063.38	12,840.00	141.95	141.63	-179.30	-9,179.44	-23.38	199.12	41.03	158.09	1.260	Major Risk
22,000.00	12,640.00	22,163.38	12,840.00	143.33	143.01	-179.44	-9,279.43	-22.51	199.11	39.57	159.54	1.248	Major Risk
22,100.00	12,640.00	22,263.38	12,840.00	144.72	144.39	-179.57	-9,379.43	-21.64	199.11	38.11	161.00	1.237	Major Risk
22,200.00	12,640.00	22,363.38	12,840.00	146.10	145.77	-179.70	-9,479.42	-20.76	199.10	36.65	162.46	1.226	Major Risk
22,300.00	12,640.00	22,463.37	12,840.00	147.49	147.15	-179.84	-9,579.42	-19.89	199.10	35.18	163.92	1.215	Major Risk
22,400.00	12,640.00	22,563.37	12,840.00	148.88	148.53	-179.97	-9,679.41	-19.02	199.10	33.71	165.39	1.204	Major Risk
22,423.23	12,640.00	22,586.60	12,840.00	149.20	148.86	180.00	-9,702.64	-18.82	199.10	33.37	165.73	1.201	Major Risk
22,500.00	12,640.00	22,663.37	12,840.00	150.27	149.92	179.90	-9,779.41	-18.15	199.10	32.24	166.86	1.193	Major Risk
22,587.49	12,640.00	22,750.86	12,840.00	151.49	151.13	179.78	-9,866.90	-17.38	199.10	30.95	168.15	1.184	Major Risk, SF

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,400.00	12,640.00	15,563.45	12,840.00	60.07	60.33	-170.71	-2,679.75	-80.10	201.75	127.17	74.58	2.705	Alert
15,500.00	12,640.00	15,663.45	12,840.00	61.05	61.29	-170.84	-2,779.75	-79.23	201.67	126.12	75.56	2.669	Alert
15,600.00	12,640.00	15,763.45	12,840.00	62.04	62.27	-170.97	-2,879.74	-78.36	201.60	125.04	76.56	2.633	Alert
15,700.00	12,640.00	15,863.45	12,840.00	63.06	63.28	-171.10	-2,979.74	-77.49	201.53	123.95	77.58	2.598	Alert
15,800.00	12,640.00	15,963.44	12,840.00	64.09	64.29	-171.23	-3,079.73	-76.61	201.46	122.84	78.61	2.563	Alert
15,900.00	12,640.00	16,063.44	12,840.00	65.14	65.33	-171.36	-3,179.73	-75.74	201.39	121.72	79.66	2.528	Alert
16,000.00	12,640.00	16,163.44	12,840.00	66.21	66.38	-171.49	-3,279.72	-74.87	201.32	120.59	80.73	2.494	Minor Risk
16,100.00	12,640.00	16,263.44	12,840.00	67.28	67.44	-171.62	-3,379.72	-73.99	201.25	119.43	81.81	2.460	Minor Risk
16,200.00	12,640.00	16,363.44	12,840.00	68.38	68.52	-171.75	-3,479.71	-73.12	201.18	118.27	82.91	2.426	Minor Risk
16,300.00	12,640.00	16,463.44	12,840.00	69.48	69.62	-171.88	-3,579.71	-72.25	201.12	117.09	84.02	2.394	Minor Risk
16,400.00	12,640.00	16,563.44	12,840.00	70.60	70.72	-172.01	-3,679.71	-71.38	201.05	115.90	85.15	2.361	Minor Risk
16,500.00	12,640.00	16,663.44	12,840.00	71.73	71.84	-172.15	-3,779.70	-70.50	200.99	114.70	86.28	2.329	Minor Risk
16,600.00	12,640.00	16,763.44	12,840.00	72.88	72.97	-172.28	-3,879.70	-69.63	200.92	113.49	87.43	2.298	Minor Risk
16,700.00	12,640.00	16,863.43	12,840.00	74.03	74.11	-172.41	-3,979.69	-68.76	200.86	112.27	88.59	2.267	Minor Risk
16,800.00	12,640.00	16,963.43	12,840.00	75.20	75.26	-172.54	-4,079.69	-67.89	200.80	111.04	89.76	2.237	Minor Risk
16,900.00	12,640.00	17,063.43	12,840.00	76.37	76.43	-172.67	-4,179.68	-67.01	200.74	109.79	90.95	2.207	Minor Risk
17,000.00	12,640.00	17,163.43	12,840.00	77.55	77.60	-172.80	-4,279.68	-66.14	200.68	108.54	92.14	2.178	Minor Risk
17,100.00	12,640.00	17,263.43	12,840.00	78.75	78.78	-172.93	-4,379.67	-65.27	200.63	107.28	93.34	2.149	Minor Risk
17,200.00	12,640.00	17,363.43	12,840.00	79.95	79.97	-173.06	-4,479.67	-64.40	200.57	106.02	94.55	2.121	Minor Risk
17,300.00	12,640.00	17,463.43	12,840.00	81.16	81.17	-173.20	-4,579.66	-63.52	200.51	104.74	95.77	2.094	Minor Risk
17,400.00	12,640.00	17,563.43	12,840.00	82.38	82.38	-173.33	-4,679.66	-62.65	200.46	103.46	97.00	2.067	Minor Risk
17,500.00	12,640.00	17,663.43	12,840.00	83.61	83.60	-173.46	-4,779.65	-61.78	200.41	102.17	98.24	2.040	Minor Risk
17,600.00	12,640.00	17,763.42	12,840.00	84.84	84.82	-173.59	-4,879.65	-60.90	200.35	100.87	99.48	2.014	Minor Risk
17,700.00	12,640.00	17,863.42	12,840.00	86.08	86.05	-173.72	-4,979.64	-60.03	200.30	99.57	100.74	1.988	Minor Risk
17,800.00	12,640.00	17,963.42	12,840.00	87.33	87.29	-173.85	-5,079.64	-59.16	200.25	98.26	102.00	1.963	Minor Risk
17,900.00	12,640.00	18,063.42	12,840.00	88.58	88.53	-173.99	-5,179.63	-58.29	200.20	96.94	103.26	1.939	Minor Risk
18,000.00	12,640.00	18,163.42	12,840.00	89.84	89.78	-174.12	-5,279.63	-57.41	200.15	95.62	104.54	1.915	Minor Risk
18,100.00	12,640.00	18,263.42	12,840.00	91.10	91.04	-174.25	-5,379.62	-56.54	200.11	94.29	105.82	1.891	Minor Risk
18,200.00	12,640.00	18,363.42	12,840.00	92.38	92.30	-174.38	-5,479.62	-55.67	200.06	92.96	107.11	1.868	Minor Risk
18,300.00	12,640.00	18,463.42	12,840.00	93.65	93.57	-174.51	-5,579.61	-54.80	200.02	91.62	108.40	1.845	Minor Risk
18,400.00	12,640.00	18,563.42	12,840.00	94.93	94.84	-174.65	-5,679.61	-53.92	199.97	90.27	109.70	1.823	Minor Risk
18,500.00	12,640.00	18,663.42	12,840.00	96.22	96.12	-174.78	-5,779.60	-53.05	199.93	88.93	111.00	1.801	Minor Risk
18,600.00	12,640.00	18,763.41	12,840.00	97.51	97.41	-174.91	-5,879.60	-52.18	199.89	87.57	112.32	1.780	Minor Risk
18,700.00	12,640.00	18,863.41	12,840.00	98.81	98.69	-175.04	-5,979.59	-51.31	199.85	86.22	113.63	1.759	Minor Risk
18,800.00	12,640.00	18,963.41	12,840.00	100.11	99.99	-175.18	-6,079.59	-50.43	199.81	84.85	114.95	1.738	Minor Risk
18,900.00	12,640.00	19,063.41	12,840.00	101.41	101.28	-175.31	-6,179.58	-49.56	199.77	83.49	116.28	1.718	Minor Risk
19,000.00	12,640.00	19,163.41	12,840.00	102.72	102.58	-175.44	-6,279.58	-48.69	199.73	82.12	117.61	1.698	Minor Risk
19,100.00	12,640.00	19,263.41	12,840.00	104.04	103.89	-175.57	-6,379.57	-47.82	199.70	80.75	118.95	1.679	Minor Risk
19,200.00	12,640.00	19,363.41	12,840.00	105.35	105.20	-175.71	-6,479.57	-46.94	199.66	79.37	120.29	1.660	Minor Risk
19,300.00	12,640.00	19,463.41	12,840.00	106.67	106.51	-175.84	-6,579.56	-46.07	199.63	77.99	121.64	1.641	Minor Risk
19,400.00	12,640.00	19,563.41	12,840.00	108.00	107.83	-175.97	-6,679.56	-45.20	199.59	76.60	122.99	1.623	Minor Risk
19,500.00	12,640.00	19,663.40	12,840.00	109.32	109.15	-176.10	-6,779.55	-44.32	199.56	75.22	124.34	1.605	Minor Risk
19,600.00	12,640.00	19,763.40	12,840.00	110.66	110.47	-176.24	-6,879.55	-43.45	199.53	73.83	125.70	1.587	Minor Risk
19,700.00	12,640.00	19,863.40	12,840.00	111.99	111.80	-176.37	-6,979.54	-42.58	199.50	72.43	127.07	1.570	Minor Risk
19,800.00	12,640.00	19,963.40	12,840.00	113.33	113.13	-176.50	-7,079.54	-41.71	199.47	71.03	128.44	1.553	Minor Risk
19,900.00	12,640.00	20,063.40	12,840.00	114.67	114.46	-176.64	-7,179.53	-40.83	199.44	69.63	129.81	1.536	Minor Risk
20,000.00	12,640.00	20,163.40	12,840.00	116.01	115.80	-176.77	-7,279.53	-39.96	199.42	68.23	131.19	1.520	Minor Risk
20,100.00	12,640.00	20,263.40	12,840.00	117.35	117.14	-176.90	-7,379.52	-39.09	199.39	66.82	132.57	1.504	Minor Risk
20,200.00	12,640.00	20,363.40	12,840.00	118.70	118.48	-177.04	-7,479.52	-38.22	199.37	65.41	133.95	1.488	Major Risk
20,300.00	12,640.00	20,463.40	12,840.00	120.05	119.82	-177.17	-7,579.51	-37.34	199.34	64.00	135.34	1.473	Major Risk
20,400.00	12,640.00	20,563.39	12,840.00	121.40	121.17	-177.30	-7,679.51	-36.47	199.32	62.59	136.74	1.458	Major Risk
20,500.00	12,640.00	20,663.39	12,840.00	122.76	122.52	-177.44	-7,779.50	-35.60	199.30	61.17	138.13	1.443	Major Risk

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.00	10,288.69	10,306.16	10,289.59	36.87	36.83	89.68	315.41	47.30	200.00	126.37	73.63	2.716	Alert
10,400.00	10,388.69	10,406.16	10,389.59	37.23	37.18	89.68	315.41	47.30	200.00	125.66	74.34	2.690	Alert
10,500.00	10,488.69	10,506.16	10,489.59	37.58	37.54	89.68	315.41	47.30	200.00	124.95	75.05	2.665	Alert
10,600.00	10,588.69	10,606.16	10,589.59	37.94	37.90	89.68	315.41	47.30	200.00	124.24	75.76	2.640	Alert
10,700.00	10,688.69	10,706.16	10,689.59	38.29	38.25	89.68	315.41	47.30	200.00	123.52	76.47	2.615	Alert
10,800.00	10,788.69	10,806.16	10,789.59	38.65	38.61	89.68	315.41	47.30	200.00	122.81	77.19	2.591	Alert
10,900.00	10,888.69	10,906.16	10,889.59	39.00	38.96	89.68	315.41	47.30	200.00	122.10	77.90	2.567	Alert
11,000.00	10,988.69	11,006.16	10,989.59	39.36	39.32	89.68	315.41	47.30	200.00	121.39	78.61	2.544	Alert
11,100.00	11,088.69	11,106.16	11,089.59	39.71	39.68	89.68	315.41	47.30	200.00	120.68	79.32	2.521	Alert
11,200.00	11,188.69	11,206.16	11,189.59	40.07	40.03	89.68	315.41	47.30	200.00	119.97	80.03	2.499	Minor Risk
11,300.00	11,288.69	11,306.16	11,289.59	40.42	40.39	89.68	315.41	47.30	200.00	119.25	80.74	2.477	Minor Risk
11,400.00	11,388.69	11,406.16	11,389.59	40.78	40.75	89.68	315.41	47.30	200.00	118.54	81.46	2.455	Minor Risk
11,500.00	11,488.69	11,506.16	11,489.59	41.14	41.10	89.68	315.41	47.30	200.00	117.83	82.17	2.434	Minor Risk
11,600.00	11,588.69	11,606.16	11,589.59	41.49	41.46	89.68	315.41	47.30	200.00	117.12	82.88	2.413	Minor Risk
11,700.00	11,688.69	11,706.16	11,689.59	41.85	41.81	89.68	315.41	47.30	200.00	116.40	83.59	2.393	Minor Risk
11,800.00	11,788.69	11,806.16	11,789.59	42.20	42.17	89.68	315.41	47.30	200.00	115.69	84.31	2.372	Minor Risk
11,900.00	11,888.69	11,906.16	11,889.59	42.56	42.53	89.68	315.41	47.30	200.00	114.98	85.02	2.352	Minor Risk
12,000.00	11,988.69	12,027.59	12,010.84	42.91	42.96	89.06	317.52	43.45	197.31	111.79	85.52	2.307	Minor Risk
12,100.00	12,088.68	12,140.53	12,121.93	43.27	43.35	-93.11	324.71	24.82	180.76	95.04	85.71	2.109	Minor Risk
12,200.00	12,187.78	12,240.39	12,219.91	43.57	43.66	-97.58	318.57	6.98	163.43	77.22	86.21	1.896	Minor Risk
12,300.00	12,283.20	12,341.22	12,317.07	43.85	43.95	-103.97	298.53	-10.59	147.73	61.33	86.40	1.710	Minor Risk
12,400.00	12,372.06	12,443.57	12,411.95	44.09	44.22	-112.49	264.36	-27.62	135.33	49.36	85.97	1.574	Minor Risk
12,500.00	12,451.65	12,548.01	12,502.90	44.29	44.48	-122.92	215.84	-43.80	128.23	43.88	84.35	1.520	Minor Risk
12,550.60	12,487.61	12,601.84	12,546.85	44.38	44.60	-128.65	185.76	-51.57	127.26	44.37	82.89	1.535	Minor Risk
12,600.00	12,519.55	12,655.13	12,588.08	44.47	44.72	-134.29	152.80	-58.81	128.21	47.20	81.01	1.583	Minor Risk
12,700.00	12,573.70	12,765.59	12,665.35	44.63	44.97	-145.10	75.18	-72.25	135.86	59.81	76.05	1.786	Minor Risk
12,800.00	12,612.46	12,880.06	12,732.23	44.79	45.20	-154.12	-16.87	-83.66	150.27	79.94	70.33	2.137	Minor Risk
12,900.00	12,634.65	12,999.25	12,785.81	44.96	45.44	-160.87	-122.82	-92.52	169.63	104.69	64.94	2.612	Alert
13,000.00	12,640.00	13,123.99	12,822.79	45.11	45.69	-165.51	-241.65	-98.24	191.67	130.73	60.94	3.145	Alert
13,100.00	12,640.00	13,256.48	12,839.51	45.30	45.96	-167.69	-372.88	-100.14	203.40	143.88	59.52	3.417	Alert
13,200.00	12,640.00	13,363.47	12,840.00	45.53	46.20	-167.88	-479.86	-99.30	203.64	143.81	59.83	3.404	Alert
13,300.00	12,640.00	13,463.47	12,840.00	45.81	46.46	-168.00	-579.86	-98.43	203.55	143.42	60.13	3.385	Alert
13,400.00	12,640.00	13,563.47	12,840.00	46.13	46.76	-168.13	-679.85	-97.56	203.45	142.98	60.47	3.364	Alert
13,500.00	12,640.00	13,663.47	12,840.00	46.49	47.11	-168.26	-779.85	-96.68	203.36	142.50	60.86	3.342	Alert
13,600.00	12,640.00	13,763.47	12,840.00	46.90	47.49	-168.39	-879.84	-95.81	203.26	141.98	61.28	3.317	Alert
13,700.00	12,640.00	13,863.47	12,840.00	47.35	47.92	-168.52	-979.84	-94.94	203.17	141.42	61.75	3.290	Alert
13,800.00	12,640.00	13,963.47	12,840.00	47.83	48.39	-168.64	-1,079.83	-94.07	203.08	140.83	62.25	3.262	Alert
13,900.00	12,640.00	14,063.46	12,840.00	48.36	48.90	-168.77	-1,179.83	-93.19	202.99	140.20	62.79	3.233	Alert
14,000.00	12,640.00	14,163.46	12,840.00	48.93	49.44	-168.90	-1,279.82	-92.32	202.90	139.53	63.37	3.202	Alert
14,100.00	12,640.00	14,263.46	12,840.00	49.53	50.02	-169.03	-1,379.82	-91.45	202.81	138.83	63.98	3.170	Alert
14,200.00	12,640.00	14,363.46	12,840.00	50.16	50.64	-169.16	-1,479.81	-90.57	202.72	138.10	64.62	3.137	Alert
14,300.00	12,640.00	14,463.46	12,840.00	50.83	51.29	-169.29	-1,579.81	-89.70	202.63	137.33	65.30	3.103	Alert
14,400.00	12,640.00	14,563.46	12,840.00	51.53	51.97	-169.42	-1,679.80	-88.83	202.55	136.54	66.01	3.068	Alert
14,500.00	12,640.00	14,663.46	12,840.00	52.27	52.69	-169.54	-1,779.80	-87.96	202.46	135.71	66.75	3.033	Alert
14,600.00	12,640.00	14,763.46	12,840.00	53.03	53.43	-169.67	-1,879.79	-87.08	202.38	134.86	67.52	2.997	Alert
14,700.00	12,640.00	14,863.46	12,840.00	53.82	54.21	-169.80	-1,979.79	-86.21	202.30	133.98	68.31	2.961	Alert
14,800.00	12,640.00	14,963.45	12,840.00	54.64	55.01	-169.93	-2,079.78	-85.34	202.22	133.08	69.14	2.925	Alert
14,900.00	12,640.00	15,063.45	12,840.00	55.49	55.83	-170.06	-2,179.78	-84.47	202.13	132.15	69.98	2.888	Alert
15,000.00	12,640.00	15,163.45	12,840.00	56.36	56.69	-170.19	-2,279.77	-83.59	202.06	131.20	70.86	2.852	Alert
15,100.00	12,640.00	15,263.45	12,840.00	57.25	57.56	-170.32	-2,379.77	-82.72	201.98	130.22	71.75	2.815	Alert
15,200.00	12,640.00	15,363.45	12,840.00	58.17	58.46	-170.45	-2,479.76	-81.85	201.90	129.23	72.67	2.778	Alert
15,300.00	12,640.00	15,463.45	12,840.00	59.11	59.39	-170.58	-2,579.76	-80.98	201.82	128.21	73.61	2.742	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan 1 — Offset Site Error: 5.00 ft

Survey Program: 0-MWD+HDGM — Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,195.10	5,201.66	5,201.59	18.48	18.43	169.74	4.64	30.24	164.23	127.40	36.83	4.459	Alert
5,300.00	5,294.88	5,304.46	5,304.24	18.84	18.80	168.92	10.30	30.55	166.47	128.93	37.54	4.435	Alert
5,400.00	5,394.67	5,407.23	5,406.69	19.21	19.16	167.61	18.26	30.99	167.05	128.81	38.24	4.368	Alert
5,500.00	5,494.45	5,509.85	5,508.80	19.57	19.53	165.77	28.49	31.55	166.08	127.14	38.94	4.265	Alert
5,600.00	5,594.23	5,609.62	5,607.96	19.93	19.88	163.69	39.52	32.16	164.50	124.84	39.66	4.147	Alert
5,700.00	5,694.01	5,709.43	5,707.15	20.30	20.24	161.57	50.56	32.76	163.14	122.76	40.39	4.040	Alert
5,800.00	5,793.80	5,809.24	5,806.34	20.66	20.59	159.43	61.59	33.37	162.01	120.90	41.11	3.941	Alert
5,900.00	5,893.58	5,909.04	5,905.54	21.03	20.95	157.25	72.63	33.98	161.11	119.28	41.83	3.851	Alert
6,000.00	5,993.36	6,008.85	6,004.73	21.39	21.31	155.06	83.66	34.58	160.45	117.89	42.56	3.770	Alert
6,100.00	6,093.14	6,108.66	6,103.92	21.76	21.67	152.85	94.70	35.19	160.02	116.74	43.29	3.697	Alert
6,200.00	6,192.92	6,208.46	6,203.12	22.12	22.03	150.63	105.73	35.79	159.84	115.82	44.02	3.631	Alert
6,227.09	6,219.96	6,235.50	6,229.99	22.22	22.13	150.03	108.72	35.96	159.83	115.62	44.21	3.615	Alert
6,300.00	6,292.71	6,308.27	6,302.31	22.49	22.40	148.41	116.77	36.40	159.89	115.15	44.75	3.573	Alert
6,400.00	6,392.49	6,408.08	6,401.50	22.85	22.76	146.19	127.80	37.01	160.19	114.71	45.48	3.523	Alert
6,500.00	6,492.27	6,507.89	6,500.70	23.22	23.12	143.99	138.84	37.61	160.73	114.52	46.21	3.478	Alert
6,600.00	6,592.05	6,607.69	6,599.89	23.58	23.49	141.80	149.87	38.22	161.50	114.56	46.94	3.440	Alert
6,700.00	6,691.83	6,707.50	6,699.08	23.95	23.85	139.64	160.91	38.82	162.50	114.83	47.67	3.409	Alert
6,800.00	6,791.62	6,807.31	6,798.28	24.31	24.22	137.51	171.94	39.43	163.74	115.33	48.41	3.382	Alert
6,900.00	6,891.40	6,907.11	6,897.47	24.68	24.58	135.41	182.98	40.03	165.20	116.05	49.15	3.361	Alert
7,000.00	6,991.18	7,006.92	6,996.67	25.04	24.95	133.35	194.01	40.64	166.88	116.99	49.88	3.345	Alert
7,100.00	7,090.96	7,106.73	7,095.86	25.41	25.31	131.33	205.05	41.25	168.77	118.15	50.62	3.334	Alert
7,200.00	7,190.74	7,206.54	7,195.05	25.78	25.68	129.36	216.08	41.85	170.86	119.50	51.36	3.327	Alert
7,300.00	7,290.53	7,306.34	7,294.25	26.14	26.05	127.44	227.12	42.46	173.15	121.06	52.09	3.324	Alert
7,400.00	7,390.31	7,406.15	7,393.44	26.51	26.42	125.58	238.15	43.06	175.63	122.80	52.83	3.324	Alert
7,500.00	7,490.09	7,505.96	7,492.63	26.87	26.79	123.76	249.19	43.67	178.29	124.72	53.57	3.328	Alert
7,600.00	7,589.87	7,605.76	7,591.83	27.24	27.16	122.00	260.22	44.28	181.13	126.82	54.31	3.335	Alert
7,700.00	7,689.66	7,705.57	7,691.02	27.61	27.53	120.30	271.26	44.88	184.13	129.08	55.05	3.345	Alert
7,800.00	7,789.44	7,805.38	7,790.21	27.97	27.90	118.65	282.29	45.49	187.29	131.51	55.79	3.357	Alert
7,900.00	7,889.22	7,905.21	7,889.43	28.34	28.27	117.07	293.31	46.09	190.60	134.08	56.53	3.372	Alert
8,000.00	7,989.00	8,005.31	7,989.08	28.70	28.64	116.01	302.75	46.61	193.96	136.70	57.26	3.387	Alert
8,100.00	8,088.80	8,105.54	8,089.07	29.07	29.00	115.71	309.59	46.99	197.12	139.13	58.00	3.399	Alert
8,200.00	8,188.71	8,205.82	8,189.26	29.43	29.37	115.62	313.80	47.22	199.20	140.48	58.72	3.392	Alert
8,300.00	8,288.69	8,306.13	8,289.56	29.79	29.72	115.59	315.39	47.30	199.99	140.55	59.44	3.365	Alert
8,400.00	8,388.69	8,406.16	8,389.59	30.14	30.08	89.68	315.41	47.30	200.00	139.85	60.14	3.325	Alert
8,500.00	8,488.69	8,506.16	8,489.59	30.49	30.43	89.68	315.41	47.30	200.00	139.14	60.85	3.287	Alert
8,600.00	8,588.69	8,606.16	8,589.59	30.85	30.79	89.68	315.41	47.30	200.00	138.44	61.56	3.249	Alert
8,700.00	8,688.69	8,706.16	8,689.59	31.20	31.14	89.68	315.41	47.30	200.00	137.73	62.27	3.212	Alert
8,800.00	8,788.69	8,806.16	8,789.59	31.56	31.50	89.68	315.41	47.30	200.00	137.02	62.98	3.176	Alert
8,900.00	8,888.69	8,906.16	8,889.59	31.91	31.85	89.68	315.41	47.30	200.00	136.31	63.69	3.140	Alert
9,000.00	8,988.69	9,006.16	8,989.59	32.26	32.21	89.68	315.41	47.30	200.00	135.60	64.40	3.106	Alert
9,100.00	9,088.69	9,106.16	9,089.59	32.62	32.56	89.68	315.41	47.30	200.00	134.89	65.11	3.072	Alert
9,200.00	9,188.69	9,206.16	9,189.59	32.97	32.92	89.68	315.41	47.30	200.00	134.18	65.82	3.039	Alert
9,300.00	9,288.69	9,306.16	9,289.59	33.32	33.27	89.68	315.41	47.30	200.00	133.47	66.53	3.006	Alert
9,400.00	9,388.69	9,406.16	9,389.59	33.68	33.63	89.68	315.41	47.30	200.00	132.76	67.23	2.975	Alert
9,500.00	9,488.69	9,506.16	9,489.59	34.03	33.98	89.68	315.41	47.30	200.00	132.05	67.94	2.944	Alert
9,600.00	9,588.69	9,606.16	9,589.59	34.39	34.34	89.68	315.41	47.30	200.00	131.34	68.65	2.913	Alert
9,700.00	9,688.69	9,706.16	9,689.59	34.74	34.69	89.68	315.41	47.30	200.00	130.63	69.37	2.883	Alert
9,800.00	9,788.69	9,806.16	9,789.59	35.10	35.05	89.68	315.41	47.30	200.00	129.92	70.08	2.854	Alert
9,900.00	9,888.69	9,906.16	9,889.59	35.45	35.41	89.68	315.41	47.30	200.00	129.21	70.79	2.825	Alert
10,000.00	9,988.69	10,006.16	9,989.59	35.81	35.76	89.68	315.41	47.30	200.00	128.50	71.50	2.797	Alert
10,100.00	10,088.69	10,106.16	10,089.59	36.16	36.12	89.68	315.41	47.30	200.00	127.79	72.21	2.770	Alert
10,200.00	10,188.69	10,206.16	10,189.59	36.52	36.47	89.68	315.41	47.30	200.00	127.08	72.92	2.743	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan 1 — Offset Site Error: 5.00 ft

Survey Program: 0-MWD+HDGM — Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.90	0.90	0.50	0.50	89.60	0.21	30.00	30.00				
100.00	100.00	100.90	100.90	0.52	0.52	89.60	0.21	30.00	30.00	28.96	1.04	28.948	
200.00	200.00	200.90	200.90	0.70	0.70	89.60	0.21	30.00	30.00	28.59	1.41	21.330	
300.00	300.00	300.90	300.90	0.99	0.99	89.60	0.21	30.00	30.00	28.02	1.98	15.171	
400.00	400.00	400.90	400.90	1.31	1.31	89.60	0.21	30.00	30.00	27.38	2.62	11.446	
500.00	500.00	500.90	500.90	1.65	1.65	89.60	0.21	30.00	30.00	26.71	3.30	9.104	
600.00	600.00	600.90	600.90	1.99	1.99	89.60	0.21	30.00	30.00	26.02	3.98	7.530	
700.00	700.00	700.90	700.90	2.34	2.34	89.60	0.21	30.00	30.00	25.32	4.68	6.408	
800.00	800.00	800.90	800.90	2.69	2.69	89.60	0.21	30.00	30.00	24.62	5.38	5.572	
900.00	900.00	900.90	900.90	3.04	3.05	89.60	0.21	30.00	30.00	23.91	6.09	4.926	Alert
1,000.00	1,000.00	1,000.90	1,000.90	3.40	3.40	89.60	0.21	30.00	30.00	23.20	6.80	4.413	Alert
1,100.00	1,100.00	1,100.90	1,100.90	3.75	3.76	89.60	0.21	30.00	30.00	22.49	7.51	3.996	Alert
1,200.00	1,200.00	1,200.90	1,200.90	4.11	4.11	89.60	0.21	30.00	30.00	21.78	8.22	3.650	Alert
1,300.00	1,300.00	1,300.90	1,300.90	4.46	4.47	89.60	0.21	30.00	30.00	21.07	8.93	3.359	Alert
1,400.00	1,400.00	1,400.90	1,400.90	4.82	4.82	89.60	0.21	30.00	30.00	20.36	9.64	3.111	Alert
1,500.00	1,500.00	1,500.90	1,500.90	5.18	5.18	89.60	0.21	30.00	30.00	19.64	10.36	2.896	Alert
1,600.00	1,600.00	1,600.90	1,600.90	5.53	5.54	89.60	0.21	30.00	30.00	18.93	11.07	2.710	Alert
1,700.00	1,700.00	1,700.90	1,700.90	5.89	5.89	89.60	0.21	30.00	30.00	18.22	11.79	2.546	Alert
1,800.00	1,800.00	1,800.90	1,800.90	6.25	6.25	89.60	0.21	30.00	30.00	17.50	12.50	2.400	Minor Risk
1,900.00	1,900.00	1,900.90	1,900.90	6.61	6.61	89.60	0.21	30.00	30.00	16.79	13.21	2.270	Minor Risk
2,000.00	2,000.00	2,000.90	2,000.90	6.96	6.97	89.60	0.21	30.00	30.00	16.07	13.93	2.154	Minor Risk
2,100.00	2,100.00	2,100.90	2,100.90	7.32	7.32	89.60	0.21	30.00	30.00	15.36	14.65	2.049	Minor Risk
2,200.00	2,200.00	2,200.90	2,200.90	7.68	7.68	89.60	0.21	30.00	30.00	14.64	15.36	1.953	Minor Risk
2,300.00	2,300.00	2,300.90	2,300.90	8.04	8.04	89.60	0.21	30.00	30.00	13.92	16.08	1.866	Minor Risk
2,400.00	2,400.00	2,400.90	2,400.90	8.39	8.40	89.60	0.21	30.00	30.00	13.21	16.79	1.787	Minor Risk
2,500.00	2,500.00	2,500.90	2,500.90	8.75	8.76	89.60	0.21	30.00	30.00	12.49	17.51	1.714	Minor Risk
2,600.00	2,600.00	2,600.90	2,600.90	9.11	9.11	89.60	0.21	30.00	30.00	11.78	18.22	1.646	Minor Risk
2,700.00	2,700.00	2,700.90	2,700.90	9.47	9.47	89.60	0.21	30.00	30.00	11.06	18.94	1.584	Minor Risk, CC
2,800.00	2,799.99	2,800.89	2,800.89	9.83	9.83	116.99	0.21	30.00	30.39	10.73	19.65	1.546	Minor Risk, ES
2,900.00	2,899.96	2,900.86	2,900.86	10.18	10.19	121.20	0.21	30.00	31.66	11.29	20.37	1.554	Minor Risk
3,000.00	2,999.86	3,000.76	3,000.76	10.54	10.54	127.46	0.21	30.00	34.13	13.05	21.08	1.619	Minor Risk
3,100.00	3,099.68	3,100.58	3,100.58	10.89	10.90	134.68	0.21	30.00	38.12	16.33	21.79	1.749	Minor Risk
3,200.00	3,199.46	3,200.36	3,200.36	11.25	11.26	140.94	0.21	30.00	43.02	20.52	22.51	1.912	Minor Risk
3,300.00	3,299.24	3,300.14	3,300.14	11.61	11.62	145.87	0.21	30.00	48.33	25.11	23.22	2.081	Minor Risk
3,400.00	3,399.02	3,400.08	3,399.92	11.97	11.97	149.80	0.21	30.00	53.92	29.99	23.93	2.253	Minor Risk
3,500.00	3,498.81	3,500.29	3,499.71	12.33	12.33	152.99	0.21	30.00	59.72	35.07	24.65	2.423	Minor Risk
3,600.00	3,598.59	3,600.51	3,599.49	12.69	12.69	155.60	0.21	30.00	65.67	40.30	25.36	2.589	Alert
3,700.00	3,698.37	3,700.73	3,699.27	13.04	13.05	157.78	0.21	30.00	71.73	45.65	26.08	2.750	Alert
3,800.00	3,798.15	3,800.95	3,799.05	13.40	13.41	159.61	0.21	30.00	77.88	51.08	26.80	2.906	Alert
3,900.00	3,897.93	3,901.17	3,898.83	13.77	13.77	161.18	0.21	30.00	84.10	56.58	27.51	3.057	Alert
4,000.00	3,997.72	4,001.38	3,998.62	14.13	14.13	162.53	0.21	30.00	90.37	62.14	28.23	3.201	Alert
4,100.00	4,097.50	4,101.60	4,098.40	14.49	14.49	163.70	0.21	30.00	96.68	67.74	28.95	3.340	Alert
4,200.00	4,197.28	4,201.82	4,198.18	14.85	14.85	164.73	0.21	30.00	103.03	73.37	29.66	3.473	Alert
4,300.00	4,297.06	4,302.04	4,297.96	15.21	15.21	165.64	0.21	30.00	109.41	79.03	30.38	3.601	Alert
4,400.00	4,396.85	4,402.25	4,397.75	15.57	15.56	166.45	0.21	30.00	115.82	84.72	31.10	3.724	Alert
4,500.00	4,496.63	4,502.47	4,497.53	15.93	15.92	167.18	0.21	30.00	122.24	90.43	31.82	3.842	Alert
4,600.00	4,596.41	4,602.69	4,597.31	16.30	16.28	167.83	0.21	30.00	128.68	96.15	32.53	3.955	Alert
4,700.00	4,696.19	4,702.91	4,697.09	16.66	16.64	168.42	0.21	30.00	135.14	101.89	33.25	4.064	Alert
4,800.00	4,795.97	4,803.13	4,796.87	17.02	17.00	168.95	0.21	30.00	141.61	107.64	33.97	4.169	Alert
4,900.00	4,895.76	4,903.34	4,896.66	17.39	17.36	169.44	0.21	30.00	148.09	113.41	34.69	4.269	Alert
5,000.00	4,995.54	4,996.44	4,996.44	17.75	17.69	169.89	0.21	30.00	154.58	119.20	35.38	4.369	Alert
5,100.00	5,095.32	5,098.92	5,098.91	18.11	18.06	170.07	1.28	30.06	160.27	124.17	36.11	4.439	Alert

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 5H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,206.68	10,195.37	10,216.28	10,196.77	36.54	36.55	161.13	164.31	-101.43	158.51	85.80	72.71	2.180	Minor Risk
10,300.00	10,288.69	10,304.80	10,285.29	36.87	36.86	161.17	164.02	-101.43	158.86	85.58	73.28	2.168	Minor Risk, ES, SF
10,400.00	10,388.69	10,383.08	10,363.12	37.23	37.10	162.02	156.19	-101.37	168.40	95.38	73.03	2.306	Minor Risk
10,500.00	10,488.69	10,457.91	10,435.86	37.58	37.31	163.65	138.87	-101.22	190.70	118.75	71.95	2.650	Alert
10,600.00	10,588.69	10,527.19	10,500.67	37.94	37.49	165.50	114.51	-101.01	224.90	154.67	70.23	3.202	Alert
10,700.00	10,688.69	10,589.75	10,556.29	38.29	37.64	167.19	85.94	-100.77	269.72	201.58	68.14	3.958	Alert
10,800.00	10,788.69	10,650.00	10,606.60	38.65	37.77	168.71	52.85	-100.49	323.65	257.30	66.35	4.878	Alert
10,900.00	10,888.69	10,700.00	10,645.53	39.00	37.87	169.84	21.50	-100.23	385.09	320.83	64.26	5.992	
11,000.00	10,988.69	10,736.42	10,672.09	39.36	37.94	170.59	-3.41	-100.02	452.59	390.82	61.77	7.326	
11,100.00	11,088.69	10,773.42	10,697.40	39.71	38.00	171.27	-30.40	-99.79	525.19	465.17	60.02	8.751	
11,200.00	11,188.69	10,800.00	10,714.48	40.07	38.05	171.73	-50.76	-99.62	601.91	543.73	58.18	10.346	
11,300.00	11,288.69	10,833.91	10,734.86	40.42	38.11	172.26	-77.85	-99.39	681.84	624.62	57.22	11.916	
11,400.00	11,388.69	10,850.00	10,743.97	40.78	38.14	172.49	-91.12	-99.27	764.65	708.88	55.77	13.711	
11,500.00	11,488.69	10,880.52	10,760.20	41.14	38.19	172.91	-116.96	-99.06	849.47	794.20	55.28	15.368	
11,600.00	11,588.69	10,900.00	10,769.83	41.49	38.22	173.16	-133.89	-98.91	936.27	881.70	54.57	17.156	

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 5H - Wellbore #1 - Permit Plan 1 — Offset Site Error: 5.00 ft

Survey Program: 0-MWD+HDGM — Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,195.10	5,210.23	5,210.16	18.48	18.46	-172.88	-145.29	29.46	298.64	261.78	36.86	8.103	
5,300.00	5,294.88	5,317.19	5,316.94	18.84	18.84	-172.97	-139.63	27.07	299.46	261.89	37.57	7.971	
5,400.00	5,394.67	5,424.13	5,423.53	19.21	19.22	-173.02	-131.67	23.70	297.94	259.68	38.26	7.787	
5,500.00	5,494.45	5,530.94	5,529.76	19.57	19.60	-173.03	-121.44	19.38	294.10	255.17	38.93	7.554	
5,600.00	5,594.23	5,632.50	5,630.58	19.93	19.96	-173.02	-110.16	14.61	288.59	248.96	39.64	7.281	
5,700.00	5,694.01	5,732.35	5,729.68	20.30	20.32	-173.02	-98.99	9.89	283.01	242.66	40.35	7.014	
5,800.00	5,793.80	5,832.19	5,828.79	20.66	20.68	-173.01	-87.83	5.17	277.43	236.36	41.07	6.755	
5,900.00	5,893.58	5,932.04	5,927.89	21.03	21.04	-173.00	-76.67	0.45	271.85	230.06	41.78	6.506	
6,000.00	5,993.36	6,031.88	6,027.00	21.39	21.40	-172.99	-65.50	-4.27	266.26	223.76	42.50	6.265	
6,100.00	6,093.14	6,131.72	6,126.11	21.76	21.76	-172.97	-54.34	-8.99	260.68	217.46	43.22	6.032	
6,200.00	6,192.92	6,231.57	6,225.21	22.12	22.12	-172.96	-43.18	-13.71	255.10	211.16	43.94	5.806	
6,300.00	6,292.71	6,331.41	6,324.32	22.49	22.49	-172.95	-32.02	-18.43	249.52	204.86	44.65	5.588	
6,400.00	6,392.49	6,431.26	6,423.42	22.85	22.85	-172.94	-20.85	-23.15	243.93	198.56	45.37	5.376	
6,500.00	6,492.27	6,531.10	6,522.53	23.22	23.22	-172.93	-9.69	-27.87	238.35	192.26	46.09	5.171	
6,600.00	6,592.05	6,630.95	6,621.63	23.58	23.58	-172.91	1.47	-32.59	232.77	185.96	46.81	4.972	Alert
6,700.00	6,691.83	6,730.79	6,720.74	23.95	23.95	-172.90	12.63	-37.31	227.19	179.66	47.53	4.780	Alert
6,800.00	6,791.62	6,830.63	6,819.85	24.31	24.32	-172.89	23.80	-42.03	221.61	173.35	48.25	4.593	Alert
6,900.00	6,891.40	6,930.48	6,918.95	24.68	24.69	-172.87	34.96	-46.75	216.02	167.05	48.97	4.411	Alert
7,000.00	6,991.18	7,030.32	7,018.06	25.04	25.06	-172.85	46.12	-51.47	210.44	160.75	49.69	4.235	Alert
7,100.00	7,090.96	7,130.17	7,117.16	25.41	25.43	-172.84	57.29	-56.19	204.86	154.45	50.41	4.064	Alert
7,200.00	7,190.74	7,230.01	7,216.27	25.78	25.80	-172.82	68.45	-60.91	199.28	148.14	51.13	3.897	Alert
7,300.00	7,290.53	7,329.85	7,315.37	26.14	26.17	-172.80	79.61	-65.63	193.69	141.84	51.86	3.735	Alert
7,400.00	7,390.31	7,429.70	7,414.48	26.51	26.54	-172.78	90.77	-70.35	188.11	135.53	52.58	3.578	Alert
7,500.00	7,490.09	7,529.54	7,513.59	26.87	26.91	-172.76	101.94	-75.06	182.53	129.23	53.30	3.425	Alert
7,600.00	7,589.87	7,629.39	7,612.69	27.24	27.28	-172.73	113.10	-79.78	176.95	122.93	54.02	3.276	Alert
7,700.00	7,689.66	7,729.23	7,711.80	27.61	27.66	-172.71	124.26	-84.50	171.37	116.62	54.74	3.130	Alert
7,800.00	7,789.44	7,829.07	7,810.90	27.97	28.03	-172.68	135.43	-89.22	165.78	110.32	55.47	2.989	Alert
7,900.00	7,889.22	7,925.93	7,907.12	28.34	28.39	-172.66	145.65	-93.55	160.89	104.65	56.24	2.861	Alert
8,000.00	7,989.00	8,021.90	8,002.70	28.70	28.75	-172.73	153.63	-96.92	158.42	101.42	57.00	2.779	Alert
8,084.39	8,073.23	8,102.94	8,083.55	29.01	29.04	-172.81	158.65	-99.04	157.90	100.28	57.62	2.740	Alert
8,100.00	8,088.80	8,117.93	8,098.52	29.07	29.10	-172.84	159.41	-99.36	158.23	100.50	57.74	2.741	Alert
8,200.00	8,188.71	8,213.96	8,194.47	29.43	29.44	-172.92	162.96	-100.87	158.42	99.97	58.44	2.711	Alert
8,300.00	8,288.69	8,309.99	8,290.48	29.79	29.79	-172.95	164.30	-101.43	158.51	99.39	59.12	2.681	Alert
8,400.00	8,388.69	8,409.60	8,390.09	30.14	30.14	161.13	164.31	-101.43	158.51	98.69	59.82	2.650	Alert
8,500.00	8,488.69	8,509.60	8,490.09	30.49	30.49	161.13	164.31	-101.43	158.51	97.98	60.53	2.619	Alert
8,600.00	8,588.69	8,609.60	8,590.09	30.85	30.85	161.13	164.31	-101.43	158.51	97.26	61.25	2.588	Alert
8,700.00	8,688.69	8,709.60	8,690.09	31.20	31.20	161.13	164.31	-101.43	158.51	96.55	61.96	2.558	Alert
8,800.00	8,788.69	8,809.60	8,790.09	31.56	31.55	161.13	164.31	-101.43	158.51	95.84	62.67	2.529	Alert
8,900.00	8,888.69	8,909.60	8,890.09	31.91	31.91	161.13	164.31	-101.43	158.51	95.12	63.39	2.501	Alert
9,000.00	8,988.69	9,009.60	8,990.09	32.26	32.26	161.13	164.31	-101.43	158.51	94.41	64.10	2.473	Minor Risk
9,100.00	9,088.69	9,109.60	9,090.09	32.62	32.62	161.13	164.31	-101.43	158.51	93.70	64.81	2.446	Minor Risk
9,200.00	9,188.69	9,209.60	9,190.09	32.97	32.97	161.13	164.31	-101.43	158.51	92.99	65.53	2.419	Minor Risk
9,300.00	9,288.69	9,309.60	9,290.09	33.32	33.33	161.13	164.31	-101.43	158.51	92.27	66.24	2.393	Minor Risk
9,400.00	9,388.69	9,409.60	9,390.09	33.68	33.68	161.13	164.31	-101.43	158.51	91.56	66.95	2.368	Minor Risk
9,500.00	9,488.69	9,509.60	9,490.09	34.03	34.04	161.13	164.31	-101.43	158.51	90.84	67.67	2.343	Minor Risk
9,600.00	9,588.69	9,609.60	9,590.09	34.39	34.39	161.13	164.31	-101.43	158.51	90.13	68.38	2.318	Minor Risk
9,700.00	9,688.69	9,709.60	9,690.09	34.74	34.75	161.13	164.31	-101.43	158.51	89.42	69.09	2.294	Minor Risk
9,800.00	9,788.69	9,809.60	9,790.09	35.10	35.10	161.13	164.31	-101.43	158.51	88.70	69.81	2.271	Minor Risk
9,900.00	9,888.69	9,909.60	9,890.09	35.45	35.46	161.13	164.31	-101.43	158.51	87.99	70.52	2.248	Minor Risk
10,000.00	9,988.69	10,009.60	9,990.09	35.81	35.81	161.13	164.31	-101.43	158.51	87.28	71.23	2.225	Minor Risk
10,100.00	10,088.69	10,109.60	10,090.09	36.16	36.17	161.13	164.31	-101.43	158.51	86.56	71.95	2.203	Minor Risk
10,200.00	10,188.69	10,209.60	10,190.09	36.52	36.52	161.13	164.31	-101.43	158.51	85.85	72.66	2.181	Minor Risk

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 5H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	1.40	1.40	0.50	0.50	168.18	-149.73	31.34	152.98				
100.00	100.00	101.40	101.40	0.52	0.52	168.18	-149.73	31.34	152.98	151.94	1.04	147.540	
200.00	200.00	201.40	201.40	0.70	0.71	168.18	-149.73	31.34	152.98	151.57	1.41	108.667	
300.00	300.00	301.40	301.40	0.99	0.99	168.18	-149.73	31.34	152.98	151.00	1.98	77.299	
400.00	400.00	401.40	401.40	1.31	1.31	168.18	-149.73	31.34	152.98	150.35	2.62	58.325	
500.00	500.00	501.40	501.40	1.65	1.65	168.18	-149.73	31.34	152.98	149.68	3.30	46.399	
600.00	600.00	601.40	601.40	1.99	2.00	168.18	-149.73	31.34	152.98	148.99	3.99	38.377	
700.00	700.00	701.40	701.40	2.34	2.34	168.18	-149.73	31.34	152.98	148.29	4.68	32.662	
800.00	800.00	801.40	801.40	2.69	2.70	168.18	-149.73	31.34	152.98	147.59	5.39	28.402	
900.00	900.00	901.40	901.40	3.04	3.05	168.18	-149.73	31.34	152.98	146.88	6.09	25.111	
1,000.00	1,000.00	1,001.40	1,001.40	3.40	3.40	168.18	-149.73	31.34	152.98	146.17	6.80	22.495	
1,100.00	1,100.00	1,101.40	1,101.40	3.75	3.76	168.18	-149.73	31.34	152.98	145.46	7.51	20.369	
1,200.00	1,200.00	1,201.40	1,201.40	4.11	4.11	168.18	-149.73	31.34	152.98	144.75	8.22	18.607	
1,300.00	1,300.00	1,301.40	1,301.40	4.46	4.47	168.18	-149.73	31.34	152.98	144.04	8.93	17.124	
1,400.00	1,400.00	1,401.40	1,401.40	4.82	4.83	168.18	-149.73	31.34	152.98	143.33	9.65	15.859	
1,500.00	1,500.00	1,501.40	1,501.40	5.18	5.18	168.18	-149.73	31.34	152.98	142.62	10.36	14.767	
1,600.00	1,600.00	1,601.40	1,601.40	5.53	5.54	168.18	-149.73	31.34	152.98	141.90	11.07	13.815	
1,700.00	1,700.00	1,701.40	1,701.40	5.89	5.90	168.18	-149.73	31.34	152.98	141.19	11.79	12.978	
1,800.00	1,800.00	1,801.40	1,801.40	6.25	6.25	168.18	-149.73	31.34	152.98	140.47	12.50	12.236	
1,900.00	1,900.00	1,901.40	1,901.40	6.61	6.61	168.18	-149.73	31.34	152.98	139.76	13.22	11.574	
2,000.00	2,000.00	2,001.40	2,001.40	6.96	6.97	168.18	-149.73	31.34	152.98	139.04	13.93	10.980	
2,100.00	2,100.00	2,101.40	2,101.40	7.32	7.33	168.18	-149.73	31.34	152.98	138.33	14.65	10.444	
2,200.00	2,200.00	2,201.40	2,201.40	7.68	7.68	168.18	-149.73	31.34	152.98	137.61	15.36	9.958	
2,300.00	2,300.00	2,301.40	2,301.40	8.04	8.04	168.18	-149.73	31.34	152.98	136.90	16.08	9.515	
2,400.00	2,400.00	2,401.40	2,401.40	8.39	8.40	168.18	-149.73	31.34	152.98	136.18	16.79	9.109	
2,500.00	2,500.00	2,501.40	2,501.40	8.75	8.76	168.18	-149.73	31.34	152.98	135.47	17.51	8.737	
2,600.00	2,600.00	2,601.40	2,601.40	9.11	9.11	168.18	-149.73	31.34	152.98	134.75	18.22	8.394	
2,700.00	2,700.00	2,701.40	2,701.40	9.47	9.47	168.18	-149.73	31.34	152.98	134.03	18.94	8.076 CC	
2,800.00	2,799.99	2,801.39	2,801.39	9.83	9.83	-165.99	-149.73	31.34	153.82	134.17	19.66	7.826	
2,900.00	2,899.96	2,901.36	2,901.36	10.18	10.19	-166.21	-149.73	31.34	156.36	135.99	20.37	7.676	
3,000.00	2,999.86	3,001.26	3,001.26	10.54	10.55	-166.58	-149.73	31.34	160.60	139.52	21.08	7.617	
3,100.00	3,099.68	3,101.08	3,101.08	10.89	10.90	-167.05	-149.73	31.34	166.51	144.71	21.80	7.638	
3,200.00	3,199.46	3,200.86	3,200.86	11.25	11.26	-167.54	-149.73	31.34	172.94	150.43	22.51	7.682	
3,300.00	3,299.24	3,300.64	3,300.64	11.61	11.62	-167.99	-149.73	31.34	179.39	156.17	23.23	7.724	
3,400.00	3,399.02	3,400.42	3,400.42	11.97	11.98	-168.42	-149.73	31.34	185.85	161.91	23.94	7.763	
3,500.00	3,498.81	3,500.21	3,500.21	12.33	12.33	-168.81	-149.73	31.34	192.32	167.67	24.65	7.801	
3,600.00	3,598.59	3,600.01	3,599.99	12.69	12.69	-169.18	-149.73	31.34	198.80	173.43	25.37	7.836	
3,700.00	3,698.37	3,700.23	3,699.77	13.04	13.05	-169.53	-149.73	31.34	205.28	179.20	26.08	7.870	
3,800.00	3,798.15	3,800.45	3,799.55	13.40	13.41	-169.85	-149.73	31.34	211.77	184.97	26.80	7.902	
3,900.00	3,897.93	3,900.67	3,899.33	13.77	13.77	-170.16	-149.73	31.34	218.27	190.75	27.52	7.932	
4,000.00	3,997.72	4,000.88	3,999.12	14.13	14.13	-170.44	-149.73	31.34	224.77	196.54	28.24	7.961	
4,100.00	4,097.50	4,101.10	4,098.90	14.49	14.49	-170.71	-149.73	31.34	231.28	202.33	28.95	7.989	
4,200.00	4,197.28	4,201.32	4,198.68	14.85	14.84	-170.97	-149.73	31.34	237.80	208.13	29.67	8.015	
4,300.00	4,297.06	4,301.54	4,298.46	15.21	15.20	-171.21	-149.73	31.34	244.32	213.93	30.39	8.040	
4,400.00	4,396.85	4,401.75	4,398.25	15.57	15.56	-171.44	-149.73	31.34	250.84	219.74	31.10	8.065	
4,500.00	4,496.63	4,501.97	4,498.03	15.93	15.92	-171.66	-149.73	31.34	257.37	225.54	31.82	8.088	
4,600.00	4,596.41	4,602.19	4,597.81	16.30	16.28	-171.87	-149.73	31.34	263.90	231.36	32.54	8.110	
4,700.00	4,696.19	4,702.41	4,697.59	16.66	16.64	-172.07	-149.73	31.34	270.43	237.17	33.26	8.131	
4,800.00	4,795.97	4,802.63	4,797.37	17.02	17.00	-172.26	-149.73	31.34	276.97	242.99	33.98	8.152	
4,900.00	4,895.76	4,902.84	4,897.16	17.39	17.36	-172.44	-149.73	31.34	283.50	248.81	34.69	8.172	
5,000.00	4,995.54	4,996.94	4,996.94	17.75	17.70	-172.61	-149.73	31.34	290.05	254.66	35.39	8.196	
5,100.00	5,095.32	5,103.37	5,103.37	18.11	18.08	-172.77	-148.66	30.89	295.50	259.37	36.13	8.179	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 4H - Wellbore #1 - Permit Plan 1

Offset Site Error: 5.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,195.10	5,153.39	5,129.91	18.48	18.67	-81.89	-28.59	-570.14	533.59	496.92	36.67	14.551	
5,300.00	5,294.88	5,252.78	5,228.19	18.84	19.06	-81.56	-22.96	-583.90	544.12	506.72	37.40	14.548	
5,400.00	5,394.67	5,352.18	5,326.47	19.21	19.45	-81.24	-17.32	-597.66	554.68	516.55	38.13	14.546	
5,500.00	5,494.45	5,451.57	5,424.74	19.57	19.85	-80.94	-11.68	-611.42	565.25	526.38	38.87	14.544	
5,600.00	5,594.23	5,550.97	5,523.02	19.93	20.24	-80.64	-6.04	-625.18	575.84	536.24	39.60	14.542	
5,700.00	5,694.01	5,650.36	5,621.30	20.30	20.64	-80.36	-0.41	-638.94	586.44	546.11	40.33	14.541	
5,800.00	5,793.80	5,749.76	5,719.57	20.66	21.03	-80.08	5.23	-652.70	597.05	555.99	41.06	14.540	
5,900.00	5,893.58	5,849.15	5,817.85	21.03	21.43	-79.82	10.87	-666.46	607.68	565.88	41.80	14.539	
6,000.00	5,993.36	5,948.55	5,916.12	21.39	21.83	-79.56	16.51	-680.22	618.32	575.79	42.53	14.538	
6,100.00	6,093.14	6,047.94	6,014.40	21.76	22.23	-79.31	22.15	-693.98	628.97	585.71	43.26	14.538	
6,200.00	6,192.92	6,147.34	6,112.68	22.12	22.62	-79.07	27.78	-707.74	639.63	595.63	44.00	14.537	
6,300.00	6,292.71	6,246.73	6,210.95	22.49	23.02	-78.84	33.42	-721.49	650.31	605.57	44.73	14.537	
6,400.00	6,392.49	6,346.13	6,309.23	22.85	23.42	-78.62	39.06	-735.25	660.99	615.52	45.47	14.537	
6,500.00	6,492.27	6,445.52	6,407.51	23.22	23.82	-78.40	44.70	-749.01	671.69	625.48	46.20	14.537	
6,600.00	6,592.05	6,544.92	6,505.78	23.58	24.22	-78.19	50.33	-762.77	682.39	635.45	46.94	14.538	
6,700.00	6,691.83	6,644.31	6,604.06	23.95	24.62	-77.99	55.97	-776.53	693.10	645.42	47.68	14.538	
6,800.00	6,791.62	6,743.71	6,702.33	24.31	25.03	-77.79	61.61	-790.29	703.82	655.41	48.41	14.538	
6,900.00	6,891.40	6,843.10	6,800.61	24.68	25.43	-77.60	67.25	-804.05	714.55	665.40	49.15	14.539	
7,000.00	6,991.18	6,942.50	6,898.89	25.04	25.83	-77.41	72.89	-817.81	725.28	675.40	49.88	14.539	
7,100.00	7,090.96	7,041.89	6,997.16	25.41	26.23	-77.23	78.52	-831.57	736.03	685.41	50.62	14.540	
7,200.00	7,190.74	7,141.29	7,095.44	25.78	26.63	-77.05	84.16	-845.33	746.78	695.42	51.36	14.541	
7,300.00	7,290.53	7,240.68	7,193.72	26.14	27.04	-76.88	89.80	-859.09	757.53	705.44	52.09	14.542	
7,400.00	7,390.31	7,340.08	7,291.99	26.51	27.44	-76.72	95.44	-872.85	768.30	715.47	52.83	14.542	
7,500.00	7,490.09	7,439.47	7,390.27	26.87	27.84	-76.56	101.07	-886.61	779.07	725.50	53.57	14.543	
7,600.00	7,589.87	7,538.87	7,488.55	27.24	28.25	-76.40	106.71	-900.37	789.84	735.54	54.31	14.544	
7,700.00	7,689.66	7,638.26	7,586.82	27.61	28.65	-76.25	112.35	-914.13	800.62	745.58	55.04	14.545	
7,800.00	7,789.44	7,737.66	7,685.10	27.97	29.05	-76.10	117.99	-927.89	811.41	755.63	55.78	14.546	
7,900.00	7,889.22	7,837.05	7,783.37	28.34	29.46	-75.96	123.63	-941.65	822.20	765.68	56.52	14.547	
8,000.00	7,989.00	7,936.45	7,881.65	28.70	29.86	-75.82	129.26	-955.41	833.00	775.74	57.26	14.548	
8,100.00	8,088.80	8,035.83	7,979.92	29.07	30.27	-75.73	134.90	-969.16	843.86	785.86	57.99	14.551	
8,200.00	8,188.71	8,135.09	8,078.05	29.43	30.67	-75.61	140.53	-982.91	855.25	796.53	58.72	14.564	
8,300.00	8,288.69	8,252.81	8,194.63	29.79	31.14	-75.28	146.75	-998.08	866.51	806.94	59.58	14.544	
8,400.00	8,388.69	8,376.91	8,318.01	30.14	31.62	-100.73	151.80	-1,010.40	875.50	815.06	60.44	14.485	
8,500.00	8,488.69	8,501.78	8,442.53	30.49	32.08	-100.40	155.28	-1,018.89	881.68	820.42	61.26	14.392	
8,600.00	8,588.69	8,627.12	8,567.77	30.85	32.52	-100.23	157.15	-1,023.47	885.00	822.97	62.04	14.266	
8,700.00	8,688.69	8,743.85	8,684.49	31.20	32.92	-100.20	157.50	-1,024.32	885.62	822.86	62.76	14.111	
8,800.00	8,788.69	8,843.85	8,784.49	31.56	33.25	-100.20	157.50	-1,024.32	885.62	822.17	63.46	13.956	
8,900.00	8,888.69	8,943.85	8,884.49	31.91	33.58	-100.20	157.50	-1,024.32	885.62	821.47	64.15	13.805	
9,000.00	8,988.69	9,043.85	8,984.49	32.26	33.91	-100.20	157.50	-1,024.32	885.62	820.77	64.85	13.657	
9,100.00	9,088.69	9,127.59	9,068.11	32.62	34.18	-100.41	154.24	-1,024.30	886.33	820.82	65.51	13.530	
9,200.00	9,188.69	9,204.40	9,143.71	32.97	34.39	-101.25	140.96	-1,024.18	889.50	823.39	66.12	13.454	
9,300.00	9,288.69	9,276.48	9,212.45	33.32	34.58	-102.61	119.42	-1,024.00	895.74	829.10	66.65	13.440 SF	
9,400.00	9,388.69	9,342.25	9,272.35	33.68	34.73	-104.29	92.37	-1,023.78	905.88	838.82	67.06	13.509	
9,500.00	9,488.69	9,400.00	9,322.11	34.03	34.84	-106.09	63.10	-1,023.53	920.78	853.51	67.27	13.688	
9,600.00	9,588.69	9,450.00	9,362.62	34.39	34.92	-107.86	33.82	-1,023.29	941.19	873.95	67.24	13.998	
9,700.00	9,688.69	9,500.00	9,400.42	34.74	35.00	-109.79	1.12	-1,023.01	967.60	900.58	67.02	14.438	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 4H - Wellbore #1 - Permit Plan 1 — Offset Site Error: 5.00 ft

Survey Program: 0-MWD+HDGM — Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	4.20	-4.20	0.50	0.50	-119.53	-152.15	-268.59	308.69				
100.00	100.00	104.20	95.80	0.52	0.52	-119.53	-152.15	-268.59	308.69	307.65	1.04	296.927	
200.00	200.00	204.20	195.80	0.70	0.71	-119.53	-152.15	-268.59	308.69	307.28	1.41	218.179	
300.00	300.00	304.20	295.80	0.99	1.00	-119.53	-152.15	-268.59	308.69	306.70	1.99	155.302	
400.00	400.00	404.20	395.80	1.31	1.32	-119.53	-152.15	-268.59	308.69	306.06	2.63	117.279	
500.00	500.00	504.20	495.80	1.65	1.66	-119.53	-152.15	-268.59	308.69	305.39	3.31	93.358	
600.00	600.00	604.20	595.80	1.99	2.01	-119.53	-152.15	-268.59	308.69	304.70	4.00	77.254	
700.00	700.00	704.20	695.80	2.34	2.35	-119.53	-152.15	-268.59	308.69	304.00	4.69	65.772	
800.00	800.00	804.20	795.80	2.69	2.71	-119.53	-152.15	-268.59	308.69	303.30	5.40	57.208	
900.00	900.00	904.20	895.80	3.04	3.06	-119.53	-152.15	-268.59	308.69	302.59	6.10	50.589	
1,000.00	1,000.00	1,004.20	995.80	3.40	3.41	-119.53	-152.15	-268.59	308.69	301.88	6.81	45.328	
1,100.00	1,100.00	1,104.20	1,095.80	3.75	3.77	-119.53	-152.15	-268.59	308.69	301.17	7.52	41.049	
1,200.00	1,200.00	1,204.20	1,195.80	4.11	4.12	-119.53	-152.15	-268.59	308.69	300.46	8.23	37.502	
1,300.00	1,300.00	1,304.20	1,295.80	4.46	4.48	-119.53	-152.15	-268.59	308.69	299.75	8.94	34.516	
1,400.00	1,400.00	1,404.20	1,395.80	4.82	4.84	-119.53	-152.15	-268.59	308.69	299.04	9.66	31.969	
1,500.00	1,500.00	1,504.20	1,495.80	5.18	5.19	-119.53	-152.15	-268.59	308.69	298.32	10.37	29.769	
1,600.00	1,600.00	1,604.20	1,595.80	5.53	5.55	-119.53	-152.15	-268.59	308.69	297.61	11.08	27.852	
1,700.00	1,700.00	1,704.20	1,695.80	5.89	5.91	-119.53	-152.15	-268.59	308.69	296.89	11.80	26.166	
1,800.00	1,800.00	1,804.20	1,795.80	6.25	6.26	-119.53	-152.15	-268.59	308.69	296.18	12.51	24.672	
1,900.00	1,900.00	1,904.20	1,895.80	6.61	6.62	-119.53	-152.15	-268.59	308.69	295.47	13.23	23.338	
2,000.00	2,000.00	2,004.20	1,995.80	6.96	6.98	-119.53	-152.15	-268.59	308.69	294.75	13.94	22.142	
2,100.00	2,100.00	2,104.20	2,095.80	7.32	7.34	-119.53	-152.15	-268.59	308.69	294.03	14.66	21.061	
2,200.00	2,200.00	2,204.20	2,195.80	7.68	7.69	-119.53	-152.15	-268.59	308.69	293.32	15.37	20.081	
2,300.00	2,300.00	2,304.20	2,295.80	8.04	8.05	-119.53	-152.15	-268.59	308.69	292.60	16.09	19.188	
2,400.00	2,400.00	2,404.20	2,395.80	8.39	8.41	-119.53	-152.15	-268.59	308.69	291.89	16.80	18.371	
2,500.00	2,500.00	2,504.20	2,495.80	8.75	8.77	-119.53	-152.15	-268.59	308.69	291.17	17.52	17.620	
2,600.00	2,600.00	2,604.20	2,595.80	9.11	9.12	-119.53	-152.15	-268.59	308.69	290.46	18.23	16.929	
2,700.00	2,700.00	2,695.80	2,695.80	9.47	9.45	-119.53	-152.15	-268.59	308.69	289.77	18.92	16.315	CC, ES
2,800.00	2,799.99	2,791.06	2,791.05	9.83	9.79	-93.60	-151.72	-269.64	309.48	289.87	19.61	15.780	
2,900.00	2,899.96	2,886.05	2,885.97	10.18	10.12	-93.51	-150.36	-272.95	311.98	291.69	20.29	15.375	
3,000.00	2,999.86	2,980.93	2,980.65	10.54	10.45	-93.36	-148.08	-278.53	316.19	295.22	20.97	15.081	
3,100.00	3,099.68	3,075.63	3,074.97	10.89	10.79	-93.16	-144.87	-286.36	322.10	300.46	21.64	14.887	
3,200.00	3,199.46	3,170.07	3,168.78	11.25	11.12	-92.76	-140.75	-296.40	329.65	307.35	22.30	14.782	
3,300.00	3,299.24	3,264.89	3,262.66	11.61	11.46	-92.06	-135.71	-308.71	338.83	315.87	22.97	14.754	
3,400.00	3,399.02	3,364.28	3,360.94	11.97	11.82	-91.25	-130.07	-322.47	348.68	325.01	23.67	14.730	
3,500.00	3,498.81	3,463.68	3,459.22	12.33	12.18	-90.48	-124.44	-336.23	358.59	334.21	24.38	14.708	
3,600.00	3,598.59	3,563.07	3,557.49	12.69	12.55	-89.75	-118.80	-349.99	368.57	343.48	25.09	14.689	
3,700.00	3,698.37	3,662.47	3,655.77	13.04	12.92	-89.06	-113.16	-363.75	378.60	352.79	25.81	14.671	
3,800.00	3,798.15	3,761.86	3,754.05	13.40	13.29	-88.41	-107.52	-377.51	388.68	362.16	26.52	14.656	
3,900.00	3,897.93	3,861.26	3,852.32	13.77	13.66	-87.78	-101.89	-391.27	398.81	371.57	27.24	14.642	
4,000.00	3,997.72	3,960.65	3,950.60	14.13	14.04	-87.19	-96.25	-405.03	408.99	381.03	27.96	14.629	
4,100.00	4,097.50	4,060.05	4,048.87	14.49	14.41	-86.63	-90.61	-418.78	419.20	390.52	28.68	14.618	
4,200.00	4,197.28	4,159.44	4,147.15	14.85	14.79	-86.10	-84.97	-432.54	429.45	400.05	29.40	14.608	
4,300.00	4,297.06	4,258.84	4,245.43	15.21	15.17	-85.59	-79.33	-446.30	439.74	409.62	30.12	14.599	
4,400.00	4,396.85	4,358.23	4,343.70	15.57	15.56	-85.10	-73.70	-460.06	450.06	419.22	30.85	14.590	
4,500.00	4,496.63	4,457.63	4,441.98	15.93	15.94	-84.64	-68.06	-473.82	460.42	428.84	31.57	14.583	
4,600.00	4,596.41	4,557.02	4,540.26	16.30	16.33	-84.19	-62.42	-487.58	470.80	438.50	32.30	14.577	
4,700.00	4,696.19	4,656.42	4,638.53	16.66	16.71	-83.77	-56.78	-501.34	481.20	448.18	33.02	14.571	
4,800.00	4,795.97	4,755.81	4,736.81	17.02	17.10	-83.36	-51.15	-515.10	491.64	457.88	33.75	14.566	
4,900.00	4,895.76	4,855.20	4,835.08	17.39	17.49	-82.97	-45.51	-528.86	502.09	467.61	34.48	14.561	
5,000.00	4,995.54	4,954.60	4,933.36	17.75	17.88	-82.60	-39.87	-542.62	512.57	477.36	35.21	14.557	
5,100.00	5,095.32	5,053.99	5,031.64	18.11	18.27	-82.24	-34.23	-556.38	523.07	487.13	35.94	14.554	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
21,300.00	12,640.00	21,282.61	12,730.00	133.68	133.03	97.92	-8,585.04	-687.39	659.88	395.67	264.21	2.498	Minor Risk
21,400.00	12,640.00	21,382.60	12,730.00	135.05	134.40	97.91	-8,685.04	-686.54	660.36	393.43	266.94	2.474	Minor Risk
21,500.00	12,640.00	21,482.60	12,730.00	136.43	135.76	97.91	-8,785.03	-685.69	660.85	391.18	269.67	2.451	Minor Risk
21,600.00	12,640.00	21,582.60	12,730.00	137.81	137.14	97.90	-8,885.03	-684.85	661.33	388.93	272.40	2.428	Minor Risk
21,700.00	12,640.00	21,682.60	12,730.00	139.18	138.51	97.89	-8,985.03	-684.00	661.82	386.68	275.14	2.405	Minor Risk
21,800.00	12,640.00	21,782.60	12,730.00	140.57	139.88	97.89	-9,085.02	-683.15	662.30	384.42	277.88	2.383	Minor Risk
21,900.00	12,640.00	21,882.60	12,730.00	141.95	141.26	97.88	-9,185.02	-682.31	662.79	382.16	280.63	2.362	Minor Risk
22,000.00	12,640.00	21,982.60	12,730.00	143.33	142.64	97.88	-9,285.01	-681.46	663.27	379.90	283.38	2.341	Minor Risk
22,100.00	12,640.00	22,082.60	12,730.00	144.72	144.02	97.87	-9,385.01	-680.62	663.76	377.63	286.13	2.320	Minor Risk
22,200.00	12,640.00	22,182.59	12,730.00	146.10	145.40	97.87	-9,485.00	-679.77	664.24	375.36	288.88	2.299	Minor Risk
22,300.00	12,640.00	22,282.59	12,730.00	147.49	146.78	97.86	-9,585.00	-678.92	664.73	373.09	291.64	2.279	Minor Risk
22,400.00	12,640.00	22,382.59	12,730.00	148.88	148.16	97.85	-9,684.99	-678.08	665.21	370.82	294.40	2.260	Minor Risk
22,500.00	12,640.00	22,482.59	12,730.00	150.27	149.55	97.85	-9,784.99	-677.23	665.70	368.54	297.16	2.240	Minor Risk
22,587.49	12,640.00	22,570.08	12,730.00	151.49	150.76	97.84	-9,872.48	-676.49	666.12	366.55	299.58	2.224	Minor Risk

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
16,100.00	12,640.00	16,082.67	12,730.00	67.28	67.16	98.23	-3,385.29	-731.41	634.66	502.08	132.58	4.787	Alert
16,200.00	12,640.00	16,182.67	12,730.00	68.38	68.23	98.23	-3,485.29	-730.56	635.14	500.41	134.74	4.714	Alert
16,300.00	12,640.00	16,282.67	12,730.00	69.48	69.32	98.22	-3,585.28	-729.72	635.63	498.71	136.92	4.642	Alert
16,400.00	12,640.00	16,382.66	12,730.00	70.60	70.42	98.22	-3,685.28	-728.87	636.11	496.98	139.13	4.572	Alert
16,500.00	12,640.00	16,482.66	12,730.00	71.73	71.54	98.21	-3,785.27	-728.02	636.60	495.23	141.37	4.503	Alert
16,600.00	12,640.00	16,582.66	12,730.00	72.88	72.67	98.20	-3,885.27	-727.18	637.08	493.45	143.63	4.436	Alert
16,700.00	12,640.00	16,682.66	12,730.00	74.03	73.81	98.20	-3,985.26	-726.33	637.57	491.66	145.91	4.370	Alert
16,800.00	12,640.00	16,782.66	12,730.00	75.20	74.96	98.19	-4,085.26	-725.48	638.05	489.84	148.21	4.305	Alert
16,900.00	12,640.00	16,882.66	12,730.00	76.37	76.12	98.18	-4,185.25	-724.64	638.54	488.00	150.54	4.242	Alert
17,000.00	12,640.00	16,982.66	12,730.00	77.55	77.29	98.18	-4,285.25	-723.79	639.02	486.14	152.88	4.180	Alert
17,100.00	12,640.00	17,082.66	12,730.00	78.75	78.47	98.17	-4,385.25	-722.94	639.51	484.26	155.24	4.119	Alert
17,200.00	12,640.00	17,182.65	12,730.00	79.95	79.66	98.17	-4,485.24	-722.10	639.99	482.37	157.62	4.060	Alert
17,300.00	12,640.00	17,282.65	12,730.00	81.16	80.85	98.16	-4,585.24	-721.25	640.48	480.46	160.02	4.002	Alert
17,400.00	12,640.00	17,382.65	12,730.00	82.38	82.06	98.15	-4,685.23	-720.40	640.96	478.53	162.43	3.946	Alert
17,500.00	12,640.00	17,482.65	12,730.00	83.61	83.27	98.15	-4,785.23	-719.56	641.45	476.58	164.86	3.891	Alert
17,600.00	12,640.00	17,582.65	12,730.00	84.84	84.50	98.14	-4,885.22	-718.71	641.93	474.63	167.30	3.837	Alert
17,700.00	12,640.00	17,682.65	12,730.00	86.08	85.72	98.13	-4,985.22	-717.86	642.42	472.65	169.76	3.784	Alert
17,800.00	12,640.00	17,782.65	12,730.00	87.33	86.96	98.13	-5,085.21	-717.02	642.90	470.67	172.23	3.733	Alert
17,900.00	12,640.00	17,882.65	12,730.00	88.58	88.20	98.12	-5,185.21	-716.17	643.39	468.67	174.72	3.682	Alert
18,000.00	12,640.00	17,982.65	12,730.00	89.84	89.45	98.12	-5,285.20	-715.32	643.87	466.66	177.21	3.633	Alert
18,100.00	12,640.00	18,082.64	12,730.00	91.10	90.71	98.11	-5,385.20	-714.48	644.35	464.63	179.72	3.585	Alert
18,200.00	12,640.00	18,182.64	12,730.00	92.38	91.97	98.10	-5,485.19	-713.63	644.84	462.60	182.24	3.538	Alert
18,300.00	12,640.00	18,282.64	12,730.00	93.65	93.23	98.10	-5,585.19	-712.78	645.32	460.55	184.77	3.493	Alert
18,400.00	12,640.00	18,382.64	12,730.00	94.93	94.51	98.09	-5,685.18	-711.94	645.81	458.50	187.31	3.448	Alert
18,500.00	12,640.00	18,482.64	12,730.00	96.22	95.78	98.09	-5,785.18	-711.09	646.29	456.43	189.86	3.404	Alert
18,600.00	12,640.00	18,582.64	12,730.00	97.51	97.06	98.08	-5,885.17	-710.24	646.78	454.35	192.43	3.361	Alert
18,700.00	12,640.00	18,682.64	12,730.00	98.81	98.35	98.07	-5,985.17	-709.40	647.26	452.27	195.00	3.319	Alert
18,800.00	12,640.00	18,782.64	12,730.00	100.11	99.64	98.07	-6,085.16	-708.55	647.75	450.17	197.58	3.278	Alert
18,900.00	12,640.00	18,882.63	12,730.00	101.41	100.94	98.06	-6,185.16	-707.70	648.23	448.07	200.16	3.239	Alert
19,000.00	12,640.00	18,982.63	12,730.00	102.72	102.24	98.06	-6,285.15	-706.86	648.72	445.96	202.76	3.199	Alert
19,100.00	12,640.00	19,082.63	12,730.00	104.04	103.54	98.05	-6,385.15	-706.01	649.20	443.84	205.37	3.161	Alert
19,200.00	12,640.00	19,182.63	12,730.00	105.35	104.85	98.04	-6,485.14	-705.17	649.69	441.71	207.98	3.124	Alert
19,300.00	12,640.00	19,282.63	12,730.00	106.67	106.16	98.04	-6,585.14	-704.32	650.17	439.58	210.60	3.087	Alert
19,400.00	12,640.00	19,382.63	12,730.00	108.00	107.48	98.03	-6,685.14	-703.47	650.66	437.44	213.22	3.052	Alert
19,500.00	12,640.00	19,482.63	12,730.00	109.32	108.80	98.02	-6,785.13	-702.63	651.14	435.29	215.86	3.017	Alert
19,600.00	12,640.00	19,582.63	12,730.00	110.66	110.12	98.02	-6,885.13	-701.78	651.63	433.13	218.50	2.982	Alert
19,700.00	12,640.00	19,682.62	12,730.00	111.99	111.45	98.01	-6,985.12	-700.93	652.11	430.97	221.15	2.949	Alert
19,800.00	12,640.00	19,782.62	12,730.00	113.33	112.78	98.01	-7,085.12	-700.09	652.60	428.80	223.80	2.916	Alert
19,900.00	12,640.00	19,882.62	12,730.00	114.67	114.11	98.00	-7,185.11	-699.24	653.08	426.63	226.46	2.884	Alert
20,000.00	12,640.00	19,982.62	12,730.00	116.01	115.44	97.99	-7,285.11	-698.39	653.57	424.45	229.12	2.852	Alert
20,100.00	12,640.00	20,082.62	12,730.00	117.35	116.78	97.99	-7,385.10	-697.55	654.05	422.26	231.79	2.822	Alert
20,200.00	12,640.00	20,182.62	12,730.00	118.70	118.12	97.98	-7,485.10	-696.70	654.54	420.07	234.47	2.792	Alert
20,300.00	12,640.00	20,282.62	12,730.00	120.05	119.47	97.98	-7,585.09	-695.85	655.02	417.88	237.15	2.762	Alert
20,400.00	12,640.00	20,382.62	12,730.00	121.40	120.81	97.97	-7,685.09	-695.01	655.51	415.68	239.83	2.733	Alert
20,500.00	12,640.00	20,482.62	12,730.00	122.76	122.16	97.97	-7,785.08	-694.16	656.00	413.47	242.53	2.705	Alert
20,600.00	12,640.00	20,582.61	12,730.00	124.12	123.51	97.96	-7,885.08	-693.31	656.48	411.26	245.22	2.677	Alert
20,700.00	12,640.00	20,682.61	12,730.00	125.48	124.86	97.95	-7,985.07	-692.47	656.97	409.04	247.92	2.650	Alert
20,800.00	12,640.00	20,782.61	12,730.00	126.84	126.22	97.95	-8,085.07	-691.62	657.45	406.83	250.62	2.623	Alert
20,900.00	12,640.00	20,882.61	12,730.00	128.20	127.58	97.94	-8,185.06	-690.77	657.94	404.60	253.33	2.597	Alert
21,000.00	12,640.00	20,982.61	12,730.00	129.57	128.94	97.94	-8,285.06	-689.93	658.42	402.37	256.05	2.571	Alert
21,100.00	12,640.00	21,082.61	12,730.00	130.94	130.30	97.93	-8,385.05	-689.08	658.91	400.14	258.76	2.546	Alert
21,200.00	12,640.00	21,182.61	12,730.00	132.31	131.66	97.92	-8,485.05	-688.23	659.39	397.91	261.48	2.522	Alert

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,000.00	10,988.69	11,041.51	10,987.79	39.36	40.36	-104.27	159.45	-761.42	628.12	549.53	78.58	7.993	
11,100.00	11,088.69	11,141.51	11,087.79	39.71	40.70	-104.27	159.45	-761.42	628.12	548.83	79.29	7.922	
11,200.00	11,188.69	11,241.51	11,187.79	40.07	41.05	-104.27	159.45	-761.42	628.12	548.12	79.99	7.852	
11,300.00	11,288.69	11,341.51	11,287.79	40.42	41.39	-104.27	159.45	-761.42	628.12	547.42	80.70	7.784	
11,400.00	11,388.69	11,441.51	11,387.79	40.78	41.73	-104.27	159.45	-761.42	628.12	546.71	81.40	7.716	
11,500.00	11,488.69	11,541.51	11,487.79	41.14	42.08	-104.27	159.45	-761.42	628.12	546.01	82.11	7.650	
11,600.00	11,588.69	11,641.51	11,587.79	41.49	42.42	-104.27	159.45	-761.42	628.12	545.30	82.81	7.585	
11,700.00	11,688.69	11,741.51	11,687.79	41.85	42.77	-104.27	159.45	-761.42	628.12	544.60	83.52	7.521	
11,800.00	11,788.69	11,841.51	11,787.79	42.20	43.11	-104.27	159.45	-761.42	628.12	543.89	84.23	7.458	
11,900.00	11,888.69	11,941.51	11,887.79	42.56	43.45	-104.27	159.45	-761.42	628.12	543.19	84.93	7.396	
12,000.00	11,988.69	12,041.51	11,987.79	42.91	43.80	-104.27	159.45	-761.42	628.12	542.48	85.64	7.335	
12,100.00	12,088.68	12,141.50	12,087.78	43.27	44.15	76.54	159.45	-761.42	628.02	541.68	86.34	7.274	
12,200.00	12,187.78	12,234.83	12,181.10	43.57	44.46	77.76	158.94	-761.41	625.37	538.41	86.96	7.191	
12,300.00	12,283.20	12,315.09	12,260.79	43.85	44.71	79.47	149.97	-761.34	621.68	534.21	87.47	7.107	
12,400.00	12,372.06	12,397.18	12,340.18	44.09	44.96	81.46	129.39	-761.16	618.09	530.17	87.92	7.030	
12,500.00	12,451.65	12,481.59	12,417.89	44.29	45.18	83.70	96.62	-760.89	614.99	526.65	88.34	6.962	
12,600.00	12,519.55	12,568.89	12,492.30	44.47	45.38	86.13	51.12	-760.50	612.76	524.01	88.74	6.905	
12,700.00	12,573.70	12,659.75	12,561.47	44.63	45.55	88.69	-7.65	-760.00	611.72	522.60	89.12	6.864	
12,723.57	12,584.28	12,681.76	12,576.76	44.67	45.58	89.31	-23.48	-759.87	611.68	522.48	89.20	6.857	
12,800.00	12,612.46	12,754.94	12,623.02	44.79	45.68	91.34	-80.12	-759.39	612.13	522.70	89.42	6.845	
12,900.00	12,634.65	12,855.34	12,674.00	44.96	45.79	94.01	-166.45	-758.66	614.06	524.47	89.59	6.854	
13,000.00	12,640.00	12,961.99	12,710.79	45.11	45.87	96.67	-266.40	-757.81	617.40	527.81	89.59	6.891	
13,100.00	12,640.00	13,077.45	12,729.03	45.30	45.99	98.34	-380.20	-756.85	620.00	530.29	89.71	6.911	
13,200.00	12,640.00	13,182.70	12,730.00	45.53	46.15	98.42	-485.43	-755.96	620.60	530.48	90.13	6.886	
13,300.00	12,640.00	13,282.70	12,730.00	45.81	46.37	98.42	-585.43	-755.11	621.09	530.45	90.64	6.853	
13,400.00	12,640.00	13,382.70	12,730.00	46.13	46.64	98.41	-685.42	-754.27	621.57	530.34	91.23	6.813	
13,500.00	12,640.00	13,482.70	12,730.00	46.49	46.97	98.40	-785.42	-753.42	622.06	530.14	91.92	6.768	
13,600.00	12,640.00	13,582.70	12,730.00	46.90	47.34	98.40	-885.41	-752.57	622.54	529.85	92.69	6.717	
13,700.00	12,640.00	13,682.70	12,730.00	47.35	47.76	98.39	-985.41	-751.73	623.03	529.49	93.54	6.661	
13,800.00	12,640.00	13,782.70	12,730.00	47.83	48.22	98.38	-1,085.40	-750.88	623.51	529.04	94.47	6.600	
13,900.00	12,640.00	13,882.69	12,730.00	48.36	48.72	98.38	-1,185.40	-750.03	623.99	528.51	95.48	6.535	
14,000.00	12,640.00	13,982.69	12,730.00	48.93	49.26	98.37	-1,285.39	-749.19	624.48	527.91	96.57	6.466	
14,100.00	12,640.00	14,082.69	12,730.00	49.53	49.83	98.36	-1,385.39	-748.34	624.96	527.23	97.73	6.395	
14,200.00	12,640.00	14,182.69	12,730.00	50.16	50.44	98.36	-1,485.38	-747.49	625.45	526.48	98.96	6.320	
14,300.00	12,640.00	14,282.69	12,730.00	50.83	51.08	98.35	-1,585.38	-746.65	625.93	525.67	100.26	6.243	
14,400.00	12,640.00	14,382.69	12,730.00	51.53	51.76	98.34	-1,685.37	-745.80	626.42	524.79	101.63	6.164	
14,500.00	12,640.00	14,482.69	12,730.00	52.27	52.47	98.34	-1,785.37	-744.95	626.90	523.84	103.06	6.083	
14,600.00	12,640.00	14,582.69	12,730.00	53.03	53.21	98.33	-1,885.36	-744.11	627.39	522.84	104.55	6.001	
14,700.00	12,640.00	14,682.68	12,730.00	53.82	53.98	98.32	-1,985.36	-743.26	627.87	521.78	106.10	5.918	
14,800.00	12,640.00	14,782.68	12,730.00	54.64	54.77	98.32	-2,085.36	-742.41	628.36	520.66	107.70	5.834	
14,900.00	12,640.00	14,882.68	12,730.00	55.49	55.60	98.31	-2,185.35	-741.57	628.84	519.49	109.36	5.750	
15,000.00	12,640.00	14,982.68	12,730.00	56.36	56.44	98.30	-2,285.35	-740.72	629.33	518.26	111.06	5.666	
15,100.00	12,640.00	15,082.68	12,730.00	57.25	57.32	98.30	-2,385.34	-739.87	629.81	516.99	112.82	5.583	
15,200.00	12,640.00	15,182.68	12,730.00	58.17	58.21	98.29	-2,485.34	-739.03	630.30	515.68	114.62	5.499	
15,300.00	12,640.00	15,282.68	12,730.00	59.11	59.13	98.29	-2,585.33	-738.18	630.78	514.32	116.46	5.416	
15,400.00	12,640.00	15,382.68	12,730.00	60.07	60.07	98.28	-2,685.33	-737.33	631.26	512.92	118.35	5.334	
15,500.00	12,640.00	15,482.68	12,730.00	61.05	61.03	98.27	-2,785.32	-736.49	631.75	511.47	120.28	5.252	
15,600.00	12,640.00	15,582.67	12,730.00	62.04	62.01	98.27	-2,885.32	-735.64	632.23	509.99	122.24	5.172	
15,700.00	12,640.00	15,682.67	12,730.00	63.06	63.00	98.26	-2,985.31	-734.79	632.72	508.48	124.24	5.093	
15,800.00	12,640.00	15,782.67	12,730.00	64.09	64.02	98.25	-3,085.31	-733.95	633.20	506.92	126.28	5.014	
15,900.00	12,640.00	15,882.67	12,730.00	65.14	65.05	98.25	-3,185.30	-733.10	633.69	505.34	128.35	4.937	Alert
16,000.00	12,640.00	15,982.67	12,730.00	66.21	66.09	98.24	-3,285.30	-732.26	634.17	503.73	130.45	4.862	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit Plan 1 — Offset Site Error: 5.00 ft

Survey Program: 0-MWD+HDGM — Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,800.00	5,793.80	5,774.29	5,745.10	20.66	21.07	-77.70	86.56	-427.56	357.49	316.55	40.94	8.732	
5,900.00	5,893.58	5,873.57	5,843.27	21.03	21.46	-77.68	89.72	-442.00	369.49	327.82	41.67	8.867	
6,000.00	5,993.36	5,972.85	5,941.44	21.39	21.86	-77.66	92.87	-456.45	381.49	339.09	42.40	8.998	
6,100.00	6,093.14	6,072.12	6,039.61	21.76	22.26	-77.64	96.02	-470.89	393.49	350.36	43.13	9.123	
6,200.00	6,192.92	6,171.40	6,137.78	22.12	22.65	-77.63	99.18	-485.34	405.49	361.63	43.86	9.245	
6,300.00	6,292.71	6,270.68	6,235.95	22.49	23.05	-77.62	102.33	-499.78	417.49	372.90	44.59	9.362	
6,400.00	6,392.49	6,369.96	6,334.12	22.85	23.45	-77.60	105.48	-514.23	429.49	384.17	45.32	9.476	
6,500.00	6,492.27	6,469.23	6,432.29	23.22	23.85	-77.59	108.64	-528.68	441.49	395.44	46.06	9.586	
6,600.00	6,592.05	6,568.51	6,530.46	23.58	24.25	-77.58	111.79	-543.12	453.49	406.70	46.79	9.692	
6,700.00	6,691.83	6,667.79	6,628.63	23.95	24.65	-77.57	114.94	-557.57	465.49	417.97	47.52	9.795	
6,800.00	6,791.62	6,767.07	6,726.80	24.31	25.05	-77.56	118.10	-572.01	477.49	429.24	48.26	9.895	
6,900.00	6,891.40	6,866.34	6,824.97	24.68	25.45	-77.55	121.25	-586.46	489.49	440.51	48.99	9.992	
7,000.00	6,991.18	6,965.62	6,923.14	25.04	25.85	-77.54	124.40	-600.90	501.50	451.77	49.72	10.086	
7,100.00	7,090.96	7,064.90	7,021.31	25.41	26.25	-77.53	127.56	-615.35	513.50	463.04	50.46	10.177	
7,200.00	7,190.74	7,164.17	7,119.48	25.78	26.66	-77.52	130.71	-629.80	525.50	474.31	51.19	10.265	
7,300.00	7,290.53	7,263.45	7,217.65	26.14	27.06	-77.51	133.87	-644.24	537.50	485.57	51.93	10.351	
7,400.00	7,390.31	7,362.73	7,315.82	26.51	27.46	-77.50	137.02	-658.69	549.50	496.84	52.66	10.435	
7,500.00	7,490.09	7,462.01	7,413.99	26.87	27.86	-77.49	140.17	-673.13	561.50	508.10	53.40	10.516	
7,600.00	7,589.87	7,561.28	7,512.16	27.24	28.27	-77.49	143.33	-687.58	573.50	519.37	54.13	10.595	
7,700.00	7,689.66	7,660.56	7,610.33	27.61	28.67	-77.48	146.48	-702.02	585.50	530.64	54.87	10.671	
7,800.00	7,789.44	7,759.84	7,708.50	27.97	29.07	-77.47	149.63	-716.47	597.50	541.90	55.60	10.746	
7,900.00	7,889.22	7,871.90	7,819.46	28.34	29.52	-77.51	152.97	-731.77	608.70	552.24	56.46	10.781	
8,000.00	7,989.00	7,988.32	7,935.15	28.70	29.97	-77.68	155.72	-744.36	617.25	559.93	57.32	10.768	
8,100.80	8,088.80	8,105.12	8,051.58	29.07	30.41	-78.00	157.72	-753.52	623.13	564.98	58.15	10.716	
8,200.00	8,188.71	8,222.19	8,168.50	29.43	30.83	-78.26	158.96	-759.21	626.72	567.78	58.93	10.634	
8,300.00	8,288.69	8,339.40	8,285.68	29.79	31.23	-78.36	159.44	-761.39	628.10	568.43	59.67	10.526	
8,400.00	8,388.69	8,441.51	8,387.79	30.14	31.57	-104.27	159.45	-761.42	628.12	567.75	60.37	10.405	
8,500.00	8,488.69	8,541.51	8,487.79	30.49	31.90	-104.27	159.45	-761.42	628.12	567.06	61.06	10.287	
8,600.00	8,588.69	8,641.51	8,587.79	30.85	32.23	-104.27	159.45	-761.42	628.12	566.36	61.76	10.171	
8,700.00	8,688.69	8,741.51	8,687.79	31.20	32.57	-104.27	159.45	-761.42	628.12	565.66	62.45	10.057	
8,800.00	8,788.69	8,841.51	8,787.79	31.56	32.90	-104.27	159.45	-761.42	628.12	564.96	63.15	9.946	
8,900.00	8,888.69	8,941.51	8,887.79	31.91	33.24	-104.27	159.45	-761.42	628.12	564.27	63.85	9.837	
9,000.00	8,988.69	9,041.51	8,987.79	32.26	33.57	-104.27	159.45	-761.42	628.12	563.57	64.55	9.731	
9,100.00	9,088.69	9,141.51	9,087.79	32.62	33.91	-104.27	159.45	-761.42	628.12	562.87	65.25	9.627	
9,200.00	9,188.69	9,241.51	9,187.79	32.97	34.24	-104.27	159.45	-761.42	628.12	562.17	65.95	9.525	
9,300.00	9,288.69	9,341.51	9,287.79	33.32	34.58	-104.27	159.45	-761.42	628.12	561.47	66.65	9.425	
9,400.00	9,388.69	9,441.51	9,387.79	33.68	34.92	-104.27	159.45	-761.42	628.12	560.77	67.34	9.327	
9,500.00	9,488.69	9,541.51	9,487.79	34.03	35.25	-104.27	159.45	-761.42	628.12	560.07	68.04	9.231	
9,600.00	9,588.69	9,641.51	9,587.79	34.39	35.59	-104.27	159.45	-761.42	628.12	559.37	68.75	9.137	
9,700.00	9,688.69	9,741.51	9,687.79	34.74	35.93	-104.27	159.45	-761.42	628.12	558.67	69.45	9.045	
9,800.00	9,788.69	9,841.51	9,787.79	35.10	36.27	-104.27	159.45	-761.42	628.12	557.97	70.15	8.954	
9,900.00	9,888.69	9,941.51	9,887.79	35.45	36.61	-104.27	159.45	-761.42	628.12	557.27	70.85	8.866	
10,000.00	9,988.69	10,041.51	9,987.79	35.81	36.95	-104.27	159.45	-761.42	628.12	556.57	71.55	8.779	
10,100.00	10,088.69	10,141.51	10,087.79	36.16	37.29	-104.27	159.45	-761.42	628.12	555.86	72.25	8.693	
10,200.00	10,188.69	10,241.51	10,187.79	36.52	37.63	-104.27	159.45	-761.42	628.12	555.16	72.95	8.610	
10,300.00	10,288.69	10,341.51	10,287.79	36.87	37.97	-104.27	159.45	-761.42	628.12	554.46	73.66	8.528	
10,400.00	10,388.69	10,441.51	10,387.79	37.23	38.31	-104.27	159.45	-761.42	628.12	553.76	74.36	8.447	
10,500.00	10,488.69	10,541.51	10,487.79	37.58	38.65	-104.27	159.45	-761.42	628.12	553.05	75.06	8.368	
10,600.00	10,588.69	10,641.51	10,587.79	37.94	38.99	-104.27	159.45	-761.42	628.12	552.35	75.77	8.290	
10,700.00	10,688.69	10,741.51	10,687.79	38.29	39.33	-104.27	159.45	-761.42	628.12	551.65	76.47	8.214	
10,800.00	10,788.69	10,841.51	10,787.79	38.65	39.68	-104.27	159.45	-761.42	628.12	550.94	77.17	8.139	
10,900.00	10,888.69	10,941.51	10,887.79	39.00	40.02	-104.27	159.45	-761.42	628.12	550.24	77.88	8.065	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
600.00	600.00	600.90	599.10	1.99	1.99	-90.44	-0.23	-29.98	29.98	26.00	3.98	7.525	
700.00	700.00	700.90	699.10	2.34	2.34	-90.44	-0.23	-29.98	29.98	25.30	4.68	6.404	
800.00	800.00	800.90	799.10	2.69	2.69	-90.44	-0.23	-29.98	29.98	24.60	5.38	5.568	
900.00	900.00	900.90	899.10	3.04	3.05	-90.44	-0.23	-29.98	29.98	23.89	6.09	4.923	Alert
1,000.00	1,000.00	1,000.90	999.10	3.40	3.40	-90.44	-0.23	-29.98	29.98	23.18	6.80	4.410	Alert
1,100.00	1,100.00	1,100.90	1,099.10	3.75	3.76	-90.44	-0.23	-29.98	29.98	22.47	7.51	3.993	Alert
1,200.00	1,200.00	1,200.90	1,199.10	4.11	4.11	-90.44	-0.23	-29.98	29.98	21.76	8.22	3.648	Alert
1,300.00	1,300.00	1,300.90	1,299.10	4.46	4.47	-90.44	-0.23	-29.98	29.98	21.05	8.93	3.357	Alert
1,400.00	1,400.00	1,400.90	1,399.10	4.82	4.82	-90.44	-0.23	-29.98	29.98	20.34	9.64	3.109	Alert
1,500.00	1,500.00	1,500.90	1,499.10	5.18	5.18	-90.44	-0.23	-29.98	29.98	19.62	10.36	2.895	Alert
1,600.00	1,600.00	1,600.90	1,599.10	5.53	5.54	-90.44	-0.23	-29.98	29.98	18.91	11.07	2.708	Alert
1,700.00	1,700.00	1,700.90	1,699.10	5.89	5.89	-90.44	-0.23	-29.98	29.98	18.20	11.79	2.544	Alert
1,800.00	1,800.00	1,800.90	1,799.10	6.25	6.25	-90.44	-0.23	-29.98	29.98	17.48	12.50	2.398	Minor Risk
1,900.00	1,900.00	1,900.90	1,899.10	6.61	6.61	-90.44	-0.23	-29.98	29.98	16.77	13.21	2.269	Minor Risk
2,000.00	2,000.00	2,000.90	1,999.10	6.96	6.97	-90.44	-0.23	-29.98	29.98	16.05	13.93	2.152	Minor Risk
2,100.00	2,100.00	2,100.90	2,099.10	7.32	7.32	-90.44	-0.23	-29.98	29.98	15.34	14.65	2.047	Minor Risk
2,200.00	2,200.00	2,200.90	2,199.10	7.68	7.68	-90.44	-0.23	-29.98	29.98	14.62	15.36	1.952	Minor Risk
2,300.00	2,300.00	2,300.90	2,299.10	8.04	8.04	-90.44	-0.23	-29.98	29.98	13.90	16.08	1.865	Minor Risk
2,400.00	2,400.00	2,400.90	2,399.10	8.39	8.40	-90.44	-0.23	-29.98	29.98	13.19	16.79	1.785	Minor Risk
2,500.00	2,500.00	2,500.90	2,499.10	8.75	8.76	-90.44	-0.23	-29.98	29.98	12.47	17.51	1.712	Minor Risk
2,600.00	2,600.00	2,600.90	2,599.10	9.11	9.11	-90.44	-0.23	-29.98	29.98	11.76	18.22	1.645	Minor Risk
2,700.00	2,700.00	2,699.10	2,699.10	9.47	9.46	-90.44	-0.23	-29.98	29.98	11.05	18.93	1.584	Minor Risk, CC
2,800.00	2,799.99	2,798.46	2,798.46	9.83	9.81	-65.55	0.00	-31.01	30.65	11.01	19.63	1.561	Minor Risk, ES, SF
2,900.00	2,899.96	2,897.77	2,897.71	10.18	10.16	-68.34	0.68	-34.15	32.74	12.42	20.32	1.611	Minor Risk
3,000.00	2,999.86	2,996.96	2,996.76	10.54	10.50	-72.24	1.82	-39.38	36.39	15.39	21.00	1.733	Minor Risk
3,100.00	3,099.68	3,096.00	3,095.51	10.89	10.85	-76.46	3.42	-46.68	41.74	20.06	21.68	1.925	Minor Risk
3,200.00	3,199.46	3,194.84	3,193.87	11.25	11.19	-79.18	5.46	-56.05	49.07	26.72	22.35	2.196	Minor Risk
3,300.00	3,299.24	3,293.38	3,291.73	11.61	11.54	-80.15	7.95	-67.45	58.36	35.35	23.01	2.536	Alert
3,400.00	3,399.02	3,391.64	3,389.02	11.97	11.90	-80.00	10.88	-80.86	69.53	45.86	23.67	2.937	Alert
3,500.00	3,498.81	3,509.08	3,487.19	12.33	12.32	-79.58	14.03	-95.31	81.52	57.08	24.44	3.336	Alert
3,600.00	3,598.59	3,609.81	3,585.36	12.69	12.69	-79.27	17.18	-109.75	93.51	68.36	25.15	3.718	Alert
3,700.00	3,698.37	3,689.47	3,683.53	13.04	12.98	-79.03	20.34	-124.20	105.50	79.72	25.79	4.092	Alert
3,800.00	3,798.15	3,788.75	3,781.70	13.40	13.35	-78.83	23.49	-138.64	117.50	91.00	26.49	4.435	Alert
3,900.00	3,897.93	3,888.03	3,879.87	13.77	13.72	-78.68	26.64	-153.09	129.49	102.29	27.21	4.760	Alert
4,000.00	3,997.72	3,987.30	3,978.04	14.13	14.10	-78.55	29.80	-167.53	141.49	113.57	27.92	5.068	
4,100.00	4,097.50	4,086.58	4,076.21	14.49	14.47	-78.44	32.95	-181.98	153.49	124.86	28.63	5.360	
4,200.00	4,197.28	4,185.86	4,174.38	14.85	14.85	-78.34	36.11	-196.43	165.49	136.14	29.35	5.638	
4,300.00	4,297.06	4,285.13	4,272.55	15.21	15.23	-78.26	39.26	-210.87	177.49	147.42	30.07	5.903	
4,400.00	4,396.85	4,384.41	4,370.72	15.57	15.61	-78.19	42.41	-225.32	189.49	158.70	30.79	6.155	
4,500.00	4,496.63	4,483.69	4,468.89	15.93	15.99	-78.13	45.57	-239.76	201.48	169.98	31.51	6.395	
4,600.00	4,596.41	4,582.97	4,567.06	16.30	16.38	-78.07	48.72	-254.21	213.48	181.26	32.23	6.624	
4,700.00	4,696.19	4,682.24	4,665.23	16.66	16.76	-78.02	51.87	-268.65	225.48	192.54	32.95	6.844	
4,800.00	4,795.97	4,781.52	4,763.40	17.02	17.15	-77.98	55.03	-283.10	237.48	203.81	33.67	7.053	
4,900.00	4,895.76	4,880.80	4,861.57	17.39	17.54	-77.94	58.18	-297.55	249.48	215.09	34.39	7.254	
5,000.00	4,995.54	4,980.07	4,959.74	17.75	17.92	-77.90	61.33	-311.99	261.48	226.36	35.12	7.446	
5,100.00	5,095.32	5,079.35	5,057.91	18.11	18.31	-77.87	64.49	-326.44	273.48	237.64	35.84	7.630	
5,200.00	5,195.10	5,178.63	5,156.08	18.48	18.71	-77.84	67.64	-340.88	285.48	248.91	36.57	7.806	
5,300.00	5,294.88	5,277.91	5,254.25	18.84	19.10	-77.81	70.79	-355.33	297.48	260.19	37.30	7.976	
5,400.00	5,394.67	5,377.18	5,352.42	19.21	19.49	-77.78	73.95	-369.77	309.48	271.46	38.02	8.139	
5,500.00	5,494.45	5,476.46	5,450.59	19.57	19.88	-77.76	77.10	-384.22	321.49	282.73	38.75	8.296	
5,600.00	5,594.23	5,575.74	5,548.76	19.93	20.28	-77.74	80.26	-398.66	333.49	294.01	39.48	8.447	
5,700.00	5,694.01	5,675.02	5,646.93	20.30	20.67	-77.71	83.41	-413.11	345.49	305.28	40.21	8.592	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Project:	Lea County (NAD83 New Mexico East)	**TVD Reference:**	RKB @ 3356.80ft
Reference Site:	Sec 06-T26S-R34E	**MD Reference:**	RKB @ 3356.80ft
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	**Offset TVD Reference:**	Offset Datum

Reference	Permit Plan 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00ft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.00 ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 3/23/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	22,587.49	Permit Plan 1 (Wellbore #1)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Sec 06-T26S-R34E						
Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit P	2,700.00	2,699.10	29.98	11.05	1.584	Minor Risk, CC
Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit P	2,800.00	2,798.46	30.65	11.01	1.561	Minor Risk, ES, SF
Jayhawk 6-7 FED FEE COM 4H - Wellbore #1 - Permit P	2,700.00	2,695.80	308.69	289.77	16.315	CC, ES
Jayhawk 6-7 FED FEE COM 4H - Wellbore #1 - Permit P	9,300.00	9,276.48	895.74	829.10	13.440	SF
Jayhawk 6-7 FED FEE COM 5H - Wellbore #1 - Permit P	2,700.00	2,701.40	152.98	134.03	8.076	CC
Jayhawk 6-7 FED FEE COM 5H - Wellbore #1 - Permit P	10,300.00	10,304.80	158.86	85.58	2.168	Minor Risk, ES, SF
Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan	2,700.00	2,700.90	30.00	11.06	1.584	Minor Risk, CC
Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan	2,800.00	2,800.89	30.39	10.73	1.546	Minor Risk, ES
Jayhawk FED FEE COM 1H - Wellbore #1 - Permit Plan	22,587.49	22,750.86	199.10	30.95	1.184	Major Risk, SF
NE Salado Draw Deep Unit 1 / INC / AUD - Original Hole						Out of range
Salado Draw 6 Fed 1H - Original Hole - Actual						Out of range
Salado Draw 6 Fed 2H - Original Hole - BRN						Out of range
Salado Draw 6 Fed 2H - Original Hole - Original Hole						Out of range
Salado Draw 6 Fed 2H - Original Hole - Plan 4						Out of range
Salado Draw 6 Fed 2H - Original Hole - Plan 5						Out of range
Salado Draw 6 Fed 2H - Original Hole - Plan 6						Out of range
Salado Draw 6 Fed 2H - Original Hole - Plan 7						Out of range
Salado Draw 6 Fed 2H - Original Hole - Plan 8						Out of range
Salado Draw 6 Fed 2H - Original Hole - T&D						Out of range
Sec 07-T26S-R34E						
Ichabod 7 Federal 01H - Wellbore #1 - Wellbore #1						Out of range
Ichabod 7 Federal 04H - Wellbore #1 - Wellbore #1						Out of range

Offset Design Sec 06-T26S-R34E - Jayhawk 6-7 FED FEE COM 3H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 5.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.90	-0.90	0.50	0.50	-90.44	-0.23	-29.98	29.98				
100.00	100.00	100.90	99.10	0.52	0.52	-90.44	-0.23	-29.98	29.98	28.94	1.04	28.929	
200.00	200.00	200.90	199.10	0.70	0.70	-90.44	-0.23	-29.98	29.98	28.57	1.41	21.316	
300.00	300.00	300.90	299.10	0.99	0.99	-90.44	-0.23	-29.98	29.98	28.00	1.98	15.161	
400.00	400.00	400.90	399.10	1.31	1.31	-90.44	-0.23	-29.98	29.98	27.36	2.62	11.438	
500.00	500.00	500.90	499.10	1.65	1.65	-90.44	-0.23	-29.98	29.98	26.69	3.30	9.098	

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

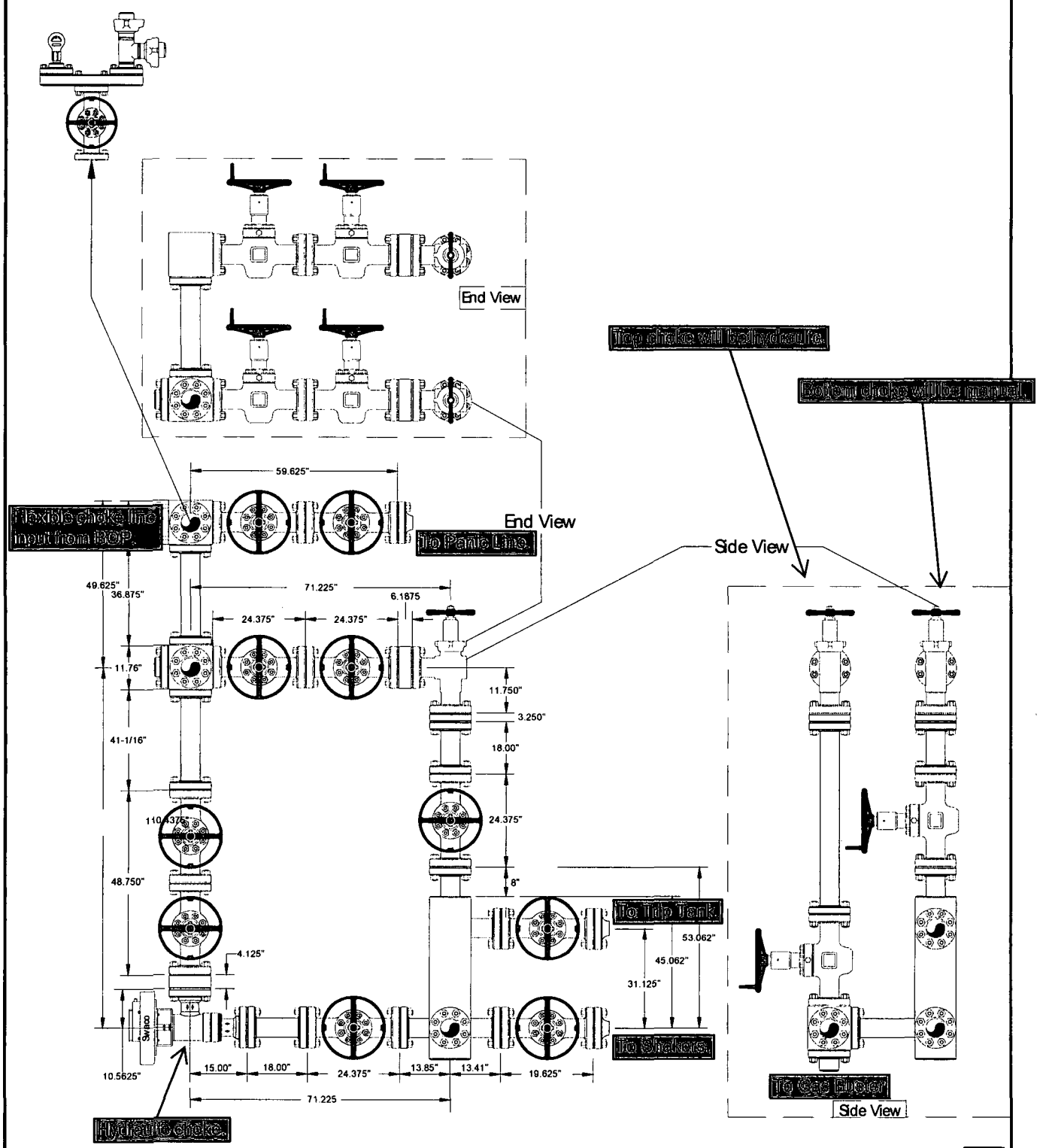
WCDSC Permian NM

Lea County (NAD83 New Mexico East)
Sec 06-T26S-R34E
Jayhawk 6-7 FED FEE COM 2H

Wellbore #1
Permit Plan 1

Anticollision Report

23 March, 2018



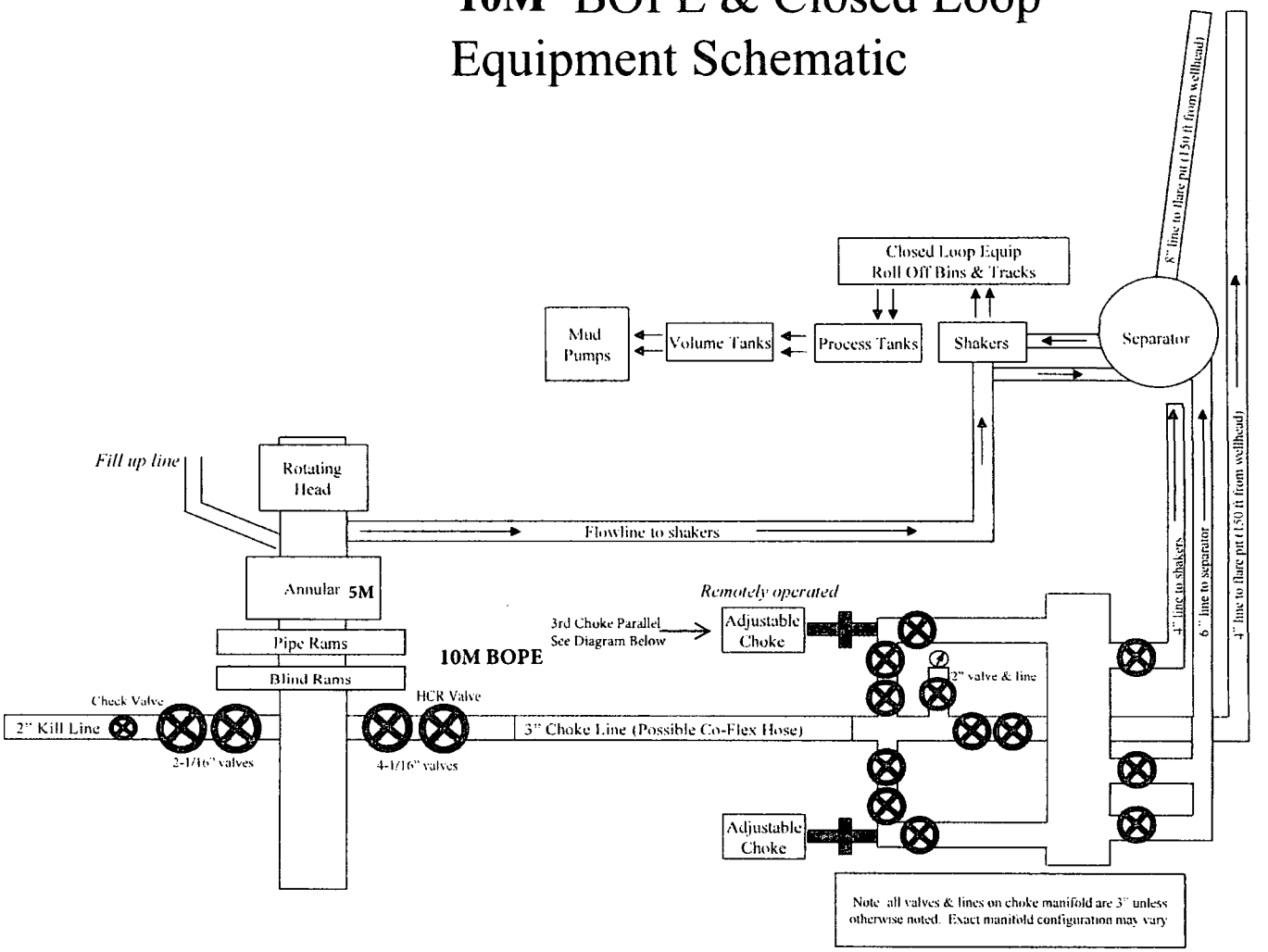
Helmerich & Payne

Flex 3 Rig w/ 3 Chokes

devon

Name	Date	Working Pressure	
Mike Potts	6-23-2010	10M	J-5132-E

10M BOPE & Closed Loop Equipment Schematic



WCDSC Permian NM

WELL DETAILS: Jayhawk 6-7 FED FEE COM 2H

RKB @ 3356.80ft
3331.80

Northing	Easting	Latitude	Longitude
393371.72	799038.73	32.078727	-103.501308

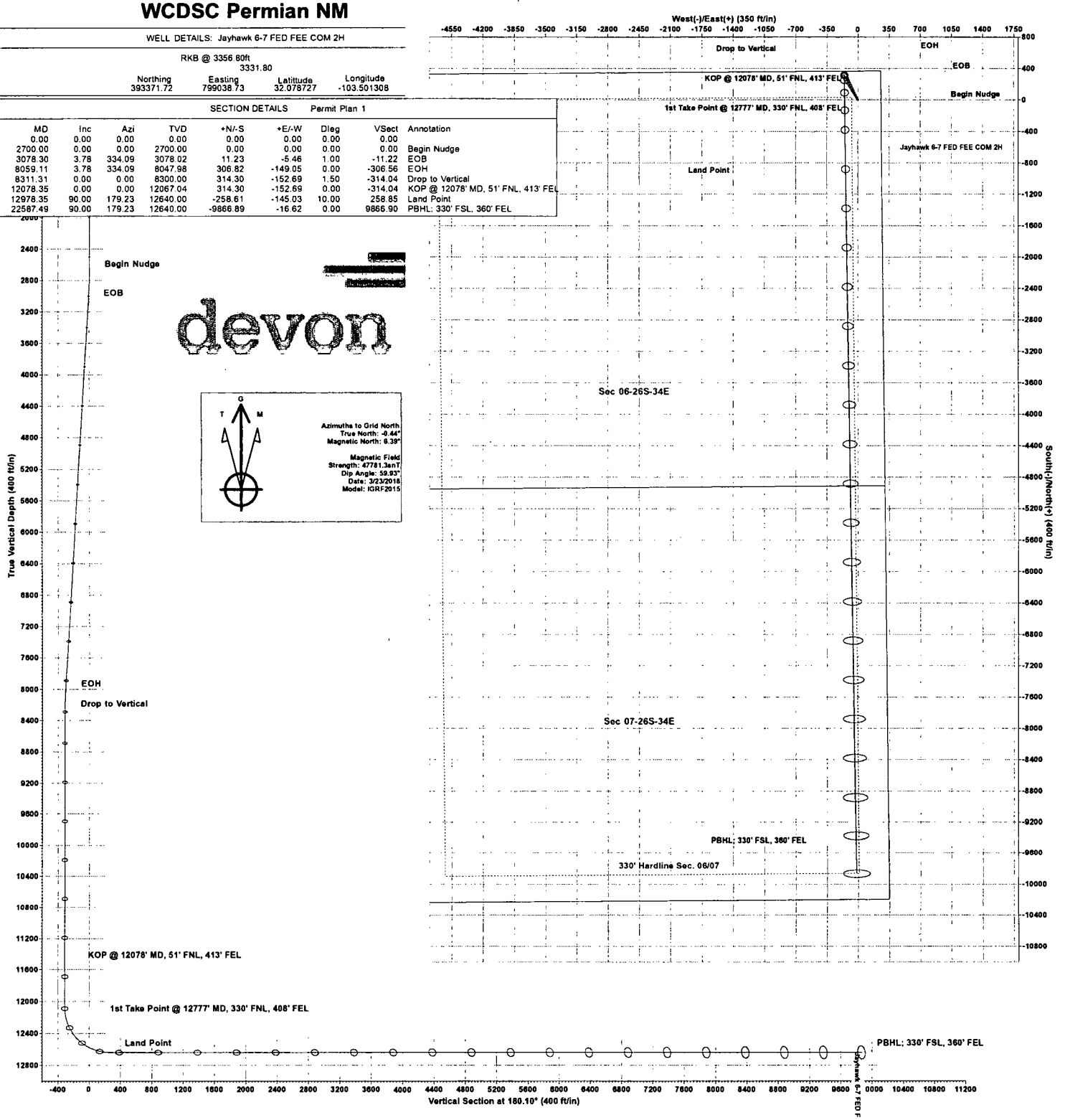
SECTION DETAILS Permit Plan 1

	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Annotation
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2700.00	0.00	0.00	2700.00	0.00	0.00	0.00	0.00	Begin Nudge
	3078.30	3.78	334.09	3078.02	11.23	-5.46	1.00	-11.22	EOB
	8059.11	3.78	334.09	8047.98	306.82	-149.05	0.00	-306.56	EOH
5	8311.31	0.00	0.00	8300.00	314.30	-152.69	1.50	-314.04	Drop to Vertical
6	12078.35	0.00	0.00	12067.04	314.30	-152.69	0.00	-314.04	KOP @ 12078' MD, 51' FNL, 413' FEL
7	12978.35	90.00	179.23	12640.00	-258.61	-145.03	10.00	258.85	Land Point
8	22587.49	90.00	179.23	12640.00	-9866.89	-16.62	0.00	9866.90	PBHL; 330' FSL, 360' FEL

devon

Azimuths to Grid North
True North: -0.44°
Magnetic North: 8.39°

Magnetic Field
Strength: 47781.3snT
Dip Angle: 59.93°
Date: 3/23/2018
Model: IGRF2015



Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3356.80ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3356.80ft
Site:	Sec 06-T26S-R34E	**North Reference:**	Grid
Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,400.00	90.00	179.23	12,640.00	-7,679.59	-45.85	385,692.14	798,992.88	32.057619	-103.501648
20,500.00	90.00	179.23	12,640.00	-7,779.58	-44.52	385,592.15	798,994.21	32.057344	-103.501646
20,600.00	90.00	179.23	12,640.00	-7,879.57	-43.18	385,492.16	798,995.55	32.057069	-103.501644
20,700.00	90.00	179.23	12,640.00	-7,979.56	-41.84	385,392.17	798,996.88	32.056794	-103.501642
20,800.00	90.00	179.23	12,640.00	-8,079.56	-40.51	385,292.18	798,998.22	32.056520	-103.501640
20,900.00	90.00	179.23	12,640.00	-8,179.55	-39.17	385,192.19	798,999.56	32.056245	-103.501638
21,000.00	90.00	179.23	12,640.00	-8,279.54	-37.83	385,092.20	799,000.89	32.055970	-103.501637
21,100.00	90.00	179.23	12,640.00	-8,379.53	-36.50	384,992.21	799,002.23	32.055695	-103.501635
21,200.00	90.00	179.23	12,640.00	-8,479.52	-35.16	384,892.22	799,003.57	32.055420	-103.501633
21,300.00	90.00	179.23	12,640.00	-8,579.51	-33.83	384,792.22	799,004.90	32.055145	-103.501631
21,400.00	90.00	179.23	12,640.00	-8,679.50	-32.49	384,692.23	799,006.24	32.054870	-103.501629
21,500.00	90.00	179.23	12,640.00	-8,779.49	-31.15	384,592.24	799,007.58	32.054595	-103.501627
21,600.00	90.00	179.23	12,640.00	-8,879.48	-29.82	384,492.25	799,008.91	32.054321	-103.501626
21,700.00	90.00	179.23	12,640.00	-8,979.48	-28.48	384,392.26	799,010.25	32.054046	-103.501624
21,800.00	90.00	179.23	12,640.00	-9,079.47	-27.14	384,292.27	799,011.58	32.053771	-103.501622
21,900.00	90.00	179.23	12,640.00	-9,179.46	-25.81	384,192.28	799,012.92	32.053496	-103.501620
22,000.00	90.00	179.23	12,640.00	-9,279.45	-24.47	384,092.29	799,014.26	32.053221	-103.501618
22,100.00	90.00	179.23	12,640.00	-9,379.44	-23.13	383,992.30	799,015.59	32.052946	-103.501616
22,200.00	90.00	179.23	12,640.00	-9,479.43	-21.80	383,892.31	799,016.93	32.052671	-103.501615
22,300.00	90.00	179.23	12,640.00	-9,579.42	-20.46	383,792.32	799,018.27	32.052396	-103.501613
22,400.00	90.00	179.23	12,640.00	-9,679.41	-19.13	383,692.32	799,019.60	32.052122	-103.501611
22,500.00	90.00	179.23	12,640.00	-9,779.40	-17.79	383,592.33	799,020.94	32.051847	-103.501609
22,587.49	90.00	179.23	12,640.00	-9,866.89	-16.62	383,504.85	799,022.11	32.051606	-103.501608
PBHL; 330' FSL, 360' FEL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Jayhawk FED FI	0.00	0.00	0.00	-9,866.89	-16.62	383,504.85	799,022.11	32.051606	-103.501608
- plan misses target center by 9866.90ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
Vertical Point - Jayhawk	0.00	0.00	8,300.00	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,700.00	2,700.00	0.00	0.00	Begin Nudge
3,078.30	3,078.03	11.23	-5.46	EOB
8,059.11	8,047.98	306.81	-149.05	EOH
8,311.31	8,300.00	314.30	-152.69	Drop to Vertical
12,078.35	12,067.04	314.30	-152.69	KOP @ 12078' MD, 51' FNL, 413' FEL
12,776.71	12,604.88	-61.12	-147.67	1st Take Point @ 12777' MD, 330' FNL, 408' FEL
12,978.35	12,640.00	-258.60	-145.03	Land Point
22,587.49	12,640.00	-9,866.89	-16.62	PBHL; 330' FSL, 360' FEL

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3356.80ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3356.80ft
Site:	Sec 06-T26S-R34E	**North Reference:**	Grid
Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,900.00	90.00	179.23	12,640.00	-2,180.08	-119.35	391,191.64	798,919.38	32.072737	-103.501748
15,000.00	90.00	179.23	12,640.00	-2,280.07	-118.02	391,091.65	798,920.71	32.072462	-103.501746
15,100.00	90.00	179.23	12,640.00	-2,380.06	-116.68	390,991.66	798,922.05	32.072187	-103.501744
15,200.00	90.00	179.23	12,640.00	-2,480.06	-115.34	390,891.67	798,923.38	32.071912	-103.501743
15,300.00	90.00	179.23	12,640.00	-2,580.05	-114.01	390,791.68	798,924.72	32.071637	-103.501741
15,400.00	90.00	179.23	12,640.00	-2,680.04	-112.67	390,691.69	798,926.06	32.071363	-103.501739
15,500.00	90.00	179.23	12,640.00	-2,780.03	-111.33	390,591.70	798,927.39	32.071088	-103.501737
15,600.00	90.00	179.23	12,640.00	-2,880.02	-110.00	390,491.70	798,928.73	32.070813	-103.501735
15,700.00	90.00	179.23	12,640.00	-2,980.01	-108.66	390,391.71	798,930.07	32.070538	-103.501733
15,800.00	90.00	179.23	12,640.00	-3,080.00	-107.33	390,291.72	798,931.40	32.070263	-103.501732
15,900.00	90.00	179.23	12,640.00	-3,179.99	-105.99	390,191.73	798,932.74	32.069988	-103.501730
16,000.00	90.00	179.23	12,640.00	-3,279.98	-104.65	390,091.74	798,934.08	32.069713	-103.501728
16,100.00	90.00	179.23	12,640.00	-3,379.98	-103.32	389,991.75	798,935.41	32.069438	-103.501726
16,200.00	90.00	179.23	12,640.00	-3,479.97	-101.98	389,891.76	798,936.75	32.069164	-103.501724
16,300.00	90.00	179.23	12,640.00	-3,579.96	-100.64	389,791.77	798,938.08	32.068889	-103.501722
16,400.00	90.00	179.23	12,640.00	-3,679.95	-99.31	389,691.78	798,939.42	32.068614	-103.501721
16,500.00	90.00	179.23	12,640.00	-3,779.94	-97.97	389,591.79	798,940.76	32.068339	-103.501719
16,600.00	90.00	179.23	12,640.00	-3,879.93	-96.63	389,491.80	798,942.09	32.068064	-103.501717
16,700.00	90.00	179.23	12,640.00	-3,979.92	-95.30	389,391.80	798,943.43	32.067789	-103.501715
16,800.00	90.00	179.23	12,640.00	-4,079.91	-93.96	389,291.81	798,944.77	32.067514	-103.501713
16,900.00	90.00	179.23	12,640.00	-4,179.90	-92.63	389,191.82	798,946.10	32.067240	-103.501711
17,000.00	90.00	179.23	12,640.00	-4,279.90	-91.29	389,091.83	798,947.44	32.066965	-103.501710
17,100.00	90.00	179.23	12,640.00	-4,379.89	-89.95	388,991.84	798,948.78	32.066690	-103.501708
17,200.00	90.00	179.23	12,640.00	-4,479.88	-88.62	388,891.85	798,950.11	32.066415	-103.501706
17,300.00	90.00	179.23	12,640.00	-4,579.87	-87.28	388,791.86	798,951.45	32.066140	-103.501704
17,400.00	90.00	179.23	12,640.00	-4,679.86	-85.94	388,691.87	798,952.78	32.065865	-103.501702
17,500.00	90.00	179.23	12,640.00	-4,779.85	-84.61	388,591.88	798,954.12	32.065590	-103.501701
17,600.00	90.00	179.23	12,640.00	-4,879.84	-83.27	388,491.89	798,955.46	32.065315	-103.501699
17,700.00	90.00	179.23	12,640.00	-4,979.83	-81.93	388,391.90	798,956.79	32.065041	-103.501697
17,800.00	90.00	179.23	12,640.00	-5,079.82	-80.60	388,291.91	798,958.13	32.064766	-103.501695
17,900.00	90.00	179.23	12,640.00	-5,179.81	-79.26	388,191.91	798,959.47	32.064491	-103.501693
18,000.00	90.00	179.23	12,640.00	-5,279.81	-77.93	388,091.92	798,960.80	32.064216	-103.501691
18,100.00	90.00	179.23	12,640.00	-5,379.80	-76.59	387,991.93	798,962.14	32.063941	-103.501690
18,200.00	90.00	179.23	12,640.00	-5,479.79	-75.25	387,891.94	798,963.48	32.063666	-103.501688
18,300.00	90.00	179.23	12,640.00	-5,579.78	-73.92	387,791.95	798,964.81	32.063391	-103.501686
18,400.00	90.00	179.23	12,640.00	-5,679.77	-72.58	387,691.96	798,966.15	32.063116	-103.501684
18,500.00	90.00	179.23	12,640.00	-5,779.76	-71.24	387,591.97	798,967.48	32.062842	-103.501682
18,600.00	90.00	179.23	12,640.00	-5,879.75	-69.91	387,491.98	798,968.82	32.062567	-103.501680
18,700.00	90.00	179.23	12,640.00	-5,979.74	-68.57	387,391.99	798,970.16	32.062292	-103.501679
18,800.00	90.00	179.23	12,640.00	-6,079.73	-67.23	387,292.00	798,971.49	32.062017	-103.501677
18,900.00	90.00	179.23	12,640.00	-6,179.73	-65.90	387,192.01	798,972.83	32.061742	-103.501675
19,000.00	90.00	179.23	12,640.00	-6,279.72	-64.56	387,092.01	798,974.17	32.061467	-103.501673
19,100.00	90.00	179.23	12,640.00	-6,379.71	-63.23	386,992.02	798,975.50	32.061192	-103.501671
19,200.00	90.00	179.23	12,640.00	-6,479.70	-61.89	386,892.03	798,976.84	32.060917	-103.501669
19,300.00	90.00	179.23	12,640.00	-6,579.69	-60.55	386,792.04	798,978.18	32.060643	-103.501668
19,400.00	90.00	179.23	12,640.00	-6,679.68	-59.22	386,692.05	798,979.51	32.060368	-103.501666
19,500.00	90.00	179.23	12,640.00	-6,779.67	-57.88	386,592.06	798,980.85	32.060093	-103.501664
19,600.00	90.00	179.23	12,640.00	-6,879.66	-56.54	386,492.07	798,982.18	32.059818	-103.501662
19,700.00	90.00	179.23	12,640.00	-6,979.65	-55.21	386,392.08	798,983.52	32.059543	-103.501660
19,800.00	90.00	179.23	12,640.00	-7,079.65	-53.87	386,292.09	798,984.86	32.059268	-103.501658
19,900.00	90.00	179.23	12,640.00	-7,179.64	-52.53	386,192.10	798,986.19	32.058993	-103.501657
20,000.00	90.00	179.23	12,640.00	-7,279.63	-51.20	386,092.11	798,987.53	32.058718	-103.501655
20,100.00	90.00	179.23	12,640.00	-7,379.62	-49.86	385,992.12	798,988.87	32.058444	-103.501653
20,200.00	90.00	179.23	12,640.00	-7,479.61	-48.53	385,892.12	798,990.20	32.058169	-103.501651
20,300.00	90.00	179.23	12,640.00	-7,579.60	-47.19	385,792.13	798,991.54	32.057894	-103.501649

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3356.80ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3356.80ft
Site:	Sec 06-T26S-R34E	**North Reference:**	Grid
Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,100.00	0.00	0.00	10,088.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,200.00	0.00	0.00	10,188.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,300.00	0.00	0.00	10,288.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,400.00	0.00	0.00	10,388.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,500.00	0.00	0.00	10,488.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,600.00	0.00	0.00	10,588.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,700.00	0.00	0.00	10,688.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,800.00	0.00	0.00	10,788.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,900.00	0.00	0.00	10,888.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,000.00	0.00	0.00	10,988.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,100.00	0.00	0.00	11,088.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,200.00	0.00	0.00	11,188.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,300.00	0.00	0.00	11,288.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,400.00	0.00	0.00	11,388.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,500.00	0.00	0.00	11,488.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,600.00	0.00	0.00	11,588.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,700.00	0.00	0.00	11,688.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,800.00	0.00	0.00	11,788.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
11,900.00	0.00	0.00	11,888.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
12,000.00	0.00	0.00	11,988.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
12,078.35	0.00	0.00	12,067.04	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
KOP @ 12078' MD, 51' FNL, 413' FEL									
12,100.00	2.16	179.23	12,088.68	313.89	-152.68	393,685.61	798,886.04	32.079593	-103.501794
12,200.00	12.16	179.23	12,187.78	301.44	-152.52	393,673.15	798,886.21	32.079559	-103.501793
12,300.00	22.16	179.23	12,283.20	271.96	-152.12	393,643.68	798,886.60	32.079478	-103.501793
12,400.00	32.16	179.23	12,372.06	226.37	-151.51	393,598.09	798,887.21	32.079352	-103.501792
12,500.00	42.16	179.23	12,451.65	166.04	-150.71	393,537.76	798,888.02	32.079186	-103.501791
12,600.00	52.16	179.23	12,519.55	92.81	-149.73	393,464.53	798,889.00	32.078985	-103.501789
12,700.00	62.16	179.23	12,573.70	8.90	-148.61	393,380.62	798,890.12	32.078754	-103.501788
12,776.71	69.84	179.23	12,604.88	-61.12	-147.67	393,310.60	798,891.06	32.078562	-103.501787
1st Take Point @ 12777' MD, 330' FNL, 408' FEL									
12,800.00	72.16	179.23	12,612.46	-83.14	-147.38	393,288.58	798,891.35	32.078501	-103.501786
12,900.00	82.16	179.23	12,634.65	-180.51	-146.08	393,191.21	798,892.65	32.078234	-103.501785
12,978.35	90.00	179.23	12,640.00	-258.60	-145.03	393,113.12	798,893.69	32.078019	-103.501783
Land Point									
13,000.00	90.00	179.23	12,640.00	-280.25	-144.74	393,091.47	798,893.98	32.077959	-103.501783
13,100.00	90.00	179.23	12,640.00	-380.24	-143.41	392,991.48	798,895.32	32.077685	-103.501781
13,200.00	90.00	179.23	12,640.00	-480.23	-142.07	392,891.49	798,896.66	32.077410	-103.501779
13,300.00	90.00	179.23	12,640.00	-580.23	-140.73	392,791.49	798,897.99	32.077135	-103.501777
13,400.00	90.00	179.23	12,640.00	-680.22	-139.40	392,691.50	798,899.33	32.076860	-103.501775
13,500.00	90.00	179.23	12,640.00	-780.21	-138.06	392,591.51	798,900.67	32.076585	-103.501774
13,600.00	90.00	179.23	12,640.00	-880.20	-136.73	392,491.52	798,902.00	32.076310	-103.501772
13,700.00	90.00	179.23	12,640.00	-980.19	-135.39	392,391.53	798,903.34	32.076035	-103.501770
13,800.00	90.00	179.23	12,640.00	-1,080.18	-134.05	392,291.54	798,904.68	32.075761	-103.501768
13,900.00	90.00	179.23	12,640.00	-1,180.17	-132.72	392,191.55	798,906.01	32.075486	-103.501766
14,000.00	90.00	179.23	12,640.00	-1,280.16	-131.38	392,091.56	798,907.35	32.075211	-103.501764
14,100.00	90.00	179.23	12,640.00	-1,380.15	-130.04	391,991.57	798,908.68	32.074936	-103.501763
14,200.00	90.00	179.23	12,640.00	-1,480.15	-128.71	391,891.58	798,910.02	32.074661	-103.501761
14,300.00	90.00	179.23	12,640.00	-1,580.14	-127.37	391,791.59	798,911.36	32.074386	-103.501759
14,400.00	90.00	179.23	12,640.00	-1,680.13	-126.03	391,691.59	798,912.69	32.074111	-103.501757
14,500.00	90.00	179.23	12,640.00	-1,780.12	-124.70	391,591.60	798,914.03	32.073836	-103.501755
14,600.00	90.00	179.23	12,640.00	-1,880.11	-123.36	391,491.61	798,915.37	32.073562	-103.501753
14,700.00	90.00	179.23	12,640.00	-1,980.10	-122.03	391,391.62	798,916.70	32.073287	-103.501752
14,800.00	90.00	179.23	12,640.00	-2,080.09	-120.69	391,291.63	798,918.04	32.073012	-103.501750

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3356.80ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3356.80ft
Site:	Sec 06-T26S-R34E	**North Reference:**	Grid
Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,100.00	3.78	334.09	5,095.32	131.21	-63.74	393,502.93	798,974.99	32.079089	-103.501511
5,200.00	3.78	334.09	5,195.10	137.14	-66.62	393,508.86	798,972.10	32.079105	-103.501520
5,300.00	3.78	334.09	5,294.88	143.08	-69.51	393,514.79	798,969.22	32.079121	-103.501529
5,400.00	3.78	334.09	5,394.67	149.01	-72.39	393,520.73	798,966.34	32.079138	-103.501538
5,500.00	3.78	334.09	5,494.45	154.94	-75.27	393,526.66	798,963.45	32.079154	-103.501548
5,600.00	3.78	334.09	5,594.23	160.88	-78.16	393,532.60	798,960.57	32.079171	-103.501557
5,700.00	3.78	334.09	5,694.01	166.81	-81.04	393,538.53	798,957.69	32.079187	-103.501566
5,800.00	3.78	334.09	5,793.80	172.75	-83.92	393,544.47	798,954.81	32.079203	-103.501575
5,900.00	3.78	334.09	5,893.58	178.68	-86.81	393,550.40	798,951.92	32.079220	-103.501584
6,000.00	3.78	334.09	5,993.36	184.62	-89.69	393,556.34	798,949.04	32.079236	-103.501593
6,100.00	3.78	334.09	6,093.14	190.55	-92.57	393,562.27	798,946.16	32.079252	-103.501603
6,200.00	3.78	334.09	6,192.92	196.49	-95.45	393,568.20	798,943.27	32.079269	-103.501612
6,300.00	3.78	334.09	6,292.71	202.42	-98.34	393,574.14	798,940.39	32.079285	-103.501621
6,400.00	3.78	334.09	6,392.49	208.36	-101.22	393,580.07	798,937.51	32.079302	-103.501630
6,500.00	3.78	334.09	6,492.27	214.29	-104.10	393,586.01	798,934.62	32.079318	-103.501639
6,600.00	3.78	334.09	6,592.05	220.22	-106.99	393,591.94	798,931.74	32.079334	-103.501648
6,700.00	3.78	334.09	6,691.83	226.16	-109.87	393,597.88	798,928.86	32.079351	-103.501657
6,800.00	3.78	334.09	6,791.62	232.09	-112.75	393,603.81	798,925.98	32.079367	-103.501667
6,900.00	3.78	334.09	6,891.40	238.03	-115.64	393,609.75	798,923.09	32.079383	-103.501676
7,000.00	3.78	334.09	6,991.18	243.96	-118.52	393,615.68	798,920.21	32.079400	-103.501685
7,100.00	3.78	334.09	7,090.96	249.90	-121.40	393,621.61	798,917.33	32.079416	-103.501694
7,200.00	3.78	334.09	7,190.74	255.83	-124.28	393,627.55	798,914.44	32.079433	-103.501703
7,300.00	3.78	334.09	7,290.53	261.77	-127.17	393,633.48	798,911.56	32.079449	-103.501712
7,400.00	3.78	334.09	7,390.31	267.70	-130.05	393,639.42	798,908.68	32.079465	-103.501722
7,500.00	3.78	334.09	7,490.09	273.63	-132.93	393,645.35	798,905.79	32.079482	-103.501731
7,600.00	3.78	334.09	7,589.87	279.57	-135.82	393,651.29	798,902.91	32.079498	-103.501740
7,700.00	3.78	334.09	7,689.66	285.50	-138.70	393,657.22	798,900.03	32.079514	-103.501749
7,800.00	3.78	334.09	7,789.44	291.44	-141.58	393,663.16	798,897.15	32.079531	-103.501758
7,900.00	3.78	334.09	7,889.22	297.37	-144.47	393,669.09	798,894.26	32.079547	-103.501767
8,000.00	3.78	334.09	7,989.00	303.31	-147.35	393,675.03	798,891.38	32.079564	-103.501777
8,059.11	3.78	334.09	8,047.98	306.81	-149.05	393,678.53	798,889.68	32.079573	-103.501782
EOH									
8,100.00	3.17	334.09	8,088.80	309.05	-150.14	393,680.76	798,888.59	32.079579	-103.501785
8,200.00	1.67	334.09	8,188.71	312.84	-151.98	393,684.56	798,886.75	32.079590	-103.501791
8,300.00	0.17	334.09	8,288.69	314.29	-152.68	393,686.00	798,886.05	32.079594	-103.501794
8,311.31	0.00	0.00	8,300.00	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
Drop to Vertical									
8,400.00	0.00	0.00	8,388.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
8,500.00	0.00	0.00	8,488.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
8,600.00	0.00	0.00	8,588.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
8,700.00	0.00	0.00	8,688.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
8,800.00	0.00	0.00	8,788.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
8,900.00	0.00	0.00	8,888.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,000.00	0.00	0.00	8,988.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,100.00	0.00	0.00	9,088.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,200.00	0.00	0.00	9,188.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,300.00	0.00	0.00	9,288.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,400.00	0.00	0.00	9,388.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,500.00	0.00	0.00	9,488.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,600.00	0.00	0.00	9,588.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,700.00	0.00	0.00	9,688.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,800.00	0.00	0.00	9,788.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
9,900.00	0.00	0.00	9,888.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794
10,000.00	0.00	0.00	9,988.69	314.30	-152.69	393,686.02	798,886.04	32.079594	-103.501794

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3356.80ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3356.80ft
Site:	Sec 06-T26S-R34E	**North Reference:**	Grid
Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
100.00	0.00	0.00	100.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
200.00	0.00	0.00	200.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
300.00	0.00	0.00	300.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
400.00	0.00	0.00	400.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
500.00	0.00	0.00	500.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
600.00	0.00	0.00	600.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
700.00	0.00	0.00	700.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
800.00	0.00	0.00	800.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
900.00	0.00	0.00	900.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,000.00	0.00	0.00	1,000.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,100.00	0.00	0.00	1,100.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,200.00	0.00	0.00	1,200.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,300.00	0.00	0.00	1,300.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,400.00	0.00	0.00	1,400.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,500.00	0.00	0.00	1,500.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,600.00	0.00	0.00	1,600.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,700.00	0.00	0.00	1,700.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,800.00	0.00	0.00	1,800.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
1,900.00	0.00	0.00	1,900.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,000.00	0.00	0.00	2,000.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,100.00	0.00	0.00	2,100.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,200.00	0.00	0.00	2,200.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,300.00	0.00	0.00	2,300.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,400.00	0.00	0.00	2,400.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,500.00	0.00	0.00	2,500.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,600.00	0.00	0.00	2,600.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
2,700.00	0.00	0.00	2,700.00	0.00	0.00	393,371.72	799,038.73	32.078727	-103.501308
Begin Nudge									
2,800.00	1.00	334.09	2,799.99	0.78	-0.38	393,372.50	799,038.35	32.078729	-103.501310
2,900.00	2.00	334.09	2,899.96	3.14	-1.53	393,374.86	799,037.20	32.078735	-103.501313
3,000.00	3.00	334.09	2,999.86	7.06	-3.43	393,378.78	799,035.30	32.078746	-103.501319
3,078.30	3.78	334.09	3,078.03	11.23	-5.46	393,382.95	799,033.27	32.078758	-103.501326
EOB									
3,100.00	3.78	334.09	3,099.68	12.52	-6.08	393,384.24	799,032.65	32.078761	-103.501328
3,200.00	3.78	334.09	3,199.46	18.45	-8.96	393,390.17	799,029.76	32.078778	-103.501337
3,300.00	3.78	334.09	3,299.24	24.39	-11.85	393,396.10	799,026.88	32.078794	-103.501346
3,400.00	3.78	334.09	3,399.02	30.32	-14.73	393,402.04	799,024.00	32.078810	-103.501355
3,500.00	3.78	334.09	3,498.81	36.25	-17.61	393,407.97	799,021.11	32.078827	-103.501364
3,600.00	3.78	334.09	3,598.59	42.19	-20.50	393,413.91	799,018.23	32.078843	-103.501374
3,700.00	3.78	334.09	3,698.37	48.12	-23.38	393,419.84	799,015.35	32.078860	-103.501383
3,800.00	3.78	334.09	3,798.15	54.06	-26.26	393,425.78	799,012.47	32.078876	-103.501392
3,900.00	3.78	334.09	3,897.93	59.99	-29.15	393,431.71	799,009.58	32.078892	-103.501401
4,000.00	3.78	334.09	3,997.72	65.93	-32.03	393,437.65	799,006.70	32.078909	-103.501410
4,100.00	3.78	334.09	4,097.50	71.86	-34.91	393,443.58	799,003.82	32.078925	-103.501419
4,200.00	3.78	334.09	4,197.28	77.80	-37.79	393,449.52	799,000.93	32.078941	-103.501429
4,300.00	3.78	334.09	4,297.06	83.73	-40.68	393,455.45	798,998.05	32.078958	-103.501438
4,400.00	3.78	334.09	4,396.85	89.67	-43.56	393,461.38	798,995.17	32.078974	-103.501447
4,500.00	3.78	334.09	4,496.63	95.60	-46.44	393,467.32	798,992.28	32.078991	-103.501456
4,600.00	3.78	334.09	4,596.41	101.53	-49.33	393,473.25	798,989.40	32.079007	-103.501465
4,700.00	3.78	334.09	4,696.19	107.47	-52.21	393,479.19	798,986.52	32.079023	-103.501474
4,800.00	3.78	334.09	4,795.97	113.40	-55.09	393,485.12	798,983.64	32.079040	-103.501483
4,900.00	3.78	334.09	4,895.76	119.34	-57.98	393,491.06	798,980.75	32.079056	-103.501493
5,000.00	3.78	334.09	4,995.54	125.27	-60.86	393,496.99	798,977.87	32.079072	-103.501502

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Jayhawk 6-7 FED FEE COM 2H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3356.80ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3356.80ft
Site:	Sec 06-T26S-R34E	**North Reference:**	Grid
Well:	Jayhawk 6-7 FED FEE COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Project	Lea County (NAD83 New Mexico East)		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 06-T26S-R34E				
Site Position:		**Northing:**	393,700.60 usft	**Latitude:**	32.079736
From:	Map	**Easting:**	794,011.60 usft	**Longitude:**	-103.517530
Position Uncertainty:	5.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.43 °

Well	Jayhawk 6-7 FED FEE COM 2H					
Well Position	**+N/-S**	0.00 ft	**Northing:**	393,371.72 usft	**Latitude:**	32.078727
	+E/-W	0.00 ft	**Easting:**	799,038.73 usft	**Longitude:**	-103.501308
Position Uncertainty		0.50 ft	**Wellhead Elevation:**		**Ground Level:**	3,331.80 ft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	3/23/2018	6.83	59.93	47,781.29054083

Design	Permit Plan 1				
Audit Notes:					
Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**	
	0.00	0.00	0.00	180.10	

Plan Survey Tool Program **Date** 3/23/2018

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,587.49	Permit Plan 1 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,078.30	3.78	334.09	3,078.02	11.23	-5.46	1.00	1.00	0.00	334.09	
8,059.11	3.78	334.09	8,047.99	306.82	-149.05	0.00	0.00	0.00	0.00	
8,311.31	0.00	0.00	8,300.00	314.30	-152.69	1.50	-1.50	0.00	180.00	Vertical Point - Jayhaw
12,078.35	0.00	0.00	12,067.04	314.30	-152.69	0.00	0.00	0.00	0.00	
12,978.35	90.00	179.23	12,640.00	-258.61	-145.03	10.00	10.00	0.00	179.23	PBHL - Jayhawk FED
22,587.49	90.00	179.23	12,640.00	-9,866.89	-16.62	0.00	0.00	0.00	0.00	PBHL - Jayhawk FED

WCDSC Permian NM

Lea County (NAD83 New Mexico East)
Sec 06-T26S-R34E
Jayhawk 6-7 FED FEE COM 2H

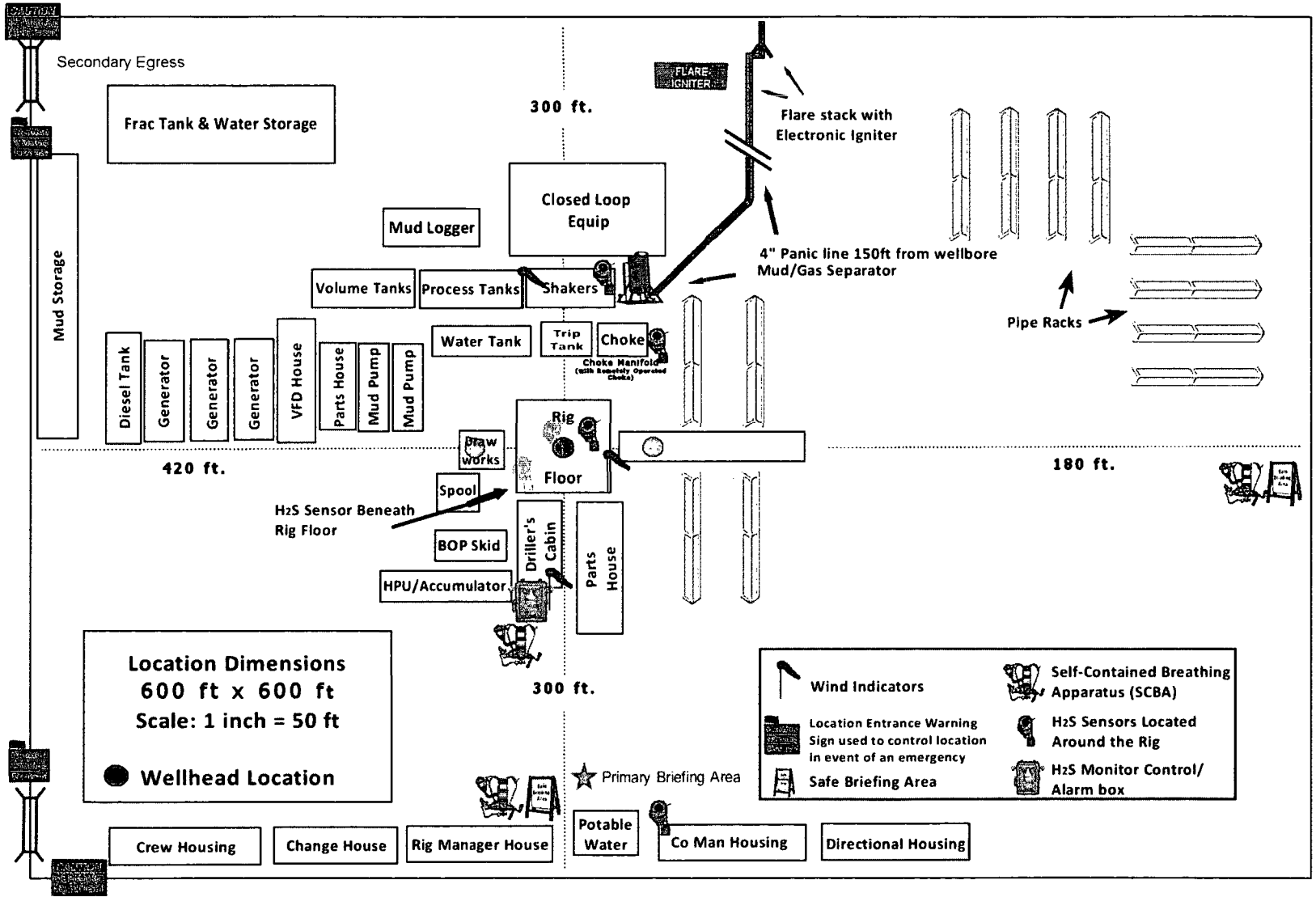
Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

23 March, 2018

Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location



Devon Energy Corp. Company Call List		
Drilling Supervisor – Basin – Mark Kramer		405-823-4796
EHS Professional – Laura Wright		405-439-8129
Agency Call List		
Lea County (575)	**Hobbs**	
	Lea County Communication Authority	393-3981
	State Police	392-5588
	City Police	397-9265
	Sheriff's Office	393-2515
	Ambulance	**911**
	Fire Department	397-9308
	LEPC (Local Emergency Planning Committee)	393-2870
	NMOCD	393-6161
	US Bureau of Land Management	393-3612
Eddy County (575)	**Carlsbad**	
	State Police	885-3137
	City Police	885-2111
	Sheriff's Office	887-7551
	Ambulance	**911**
	Fire Department	885-3125
	LEPC (Local Emergency Planning Committee)	887-3798
	US Bureau of Land Management	887-6544
	NM Emergency Response Commission (Santa Fe)	(505) 476-9600
	24 HR	(505) 827-9126
	National Emergency Response Center	(800) 424-8802
	National Pollution Control Center: Direct	(703) 872-6000
	For Oil Spills	(800) 280-7118
	Emergency Services	
	Wild Well Control	(281) 784-4700
	Cudd Pressure Control (915) 699-0139	(915) 563-3356
	Halliburton	(575) 746-2757
	B. J. Services	(575) 746-3569
Give GPS position:	Native Air – Emergency Helicopter – Hobbs	(575) 392-6429
	Flight For Life - Lubbock, TX	(806) 743-9911
	Aerocare - Lubbock, TX	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM	(800) 222-1222
	Poison Control (24/7)	(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service	(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov	

Prepared in conjunction with
Dave Small SHARP COMMUNICATIONS & CONSULTING, LLC

4. **Mud program:**

   The mud program has been designed to minimize the volume of H_2S circulated to surface. Proper mud weight, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

5. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H_2S trim.

   B. All elastomers used for packing and seals shall be H_2S trim.

6. **Communication:**

   A. Company personnel have/use cellular telephones in the field.

   B. Land line (telephone) communications at Office

7. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H_2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

1. **Well Control Equipment**

   A. Flare line

   B. Choke manifold – Remotely Operated

   C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit

   D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

   E. Mud/Gas Separator

2. **Protective equipment for essential personnel:**

   30-minute SCBA units located at briefing areas, as indicated on well site diagram, with escape units available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

3. **H_2S detection and monitoring equipment:**

   Portable H_2S monitors positioned on location for best coverage and response. These units have warning lights which activate when H_2S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

   - **Bell nipple**
   - **Rig floor**
   - **Cellar**
   - **Possum Belly/Shale shaker**
   - **Choke manifold**

   Visual warning systems:

   A. Wind direction indicators as shown on well site diagram

   B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H_2S) TRAINING

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

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

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

1. The effects of H_2S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H_2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H_2S.

100 ppm H_2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, the first responder(s) must

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H_2S monitors and air packs in order to control the release.**
- **Use the "buddy system" to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
  - **Detection of H_2S, and**
  - **Measures for protection against the gas,**
  - **Equipment used for protection and emergency response.**

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO_2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H_2S and SO_2

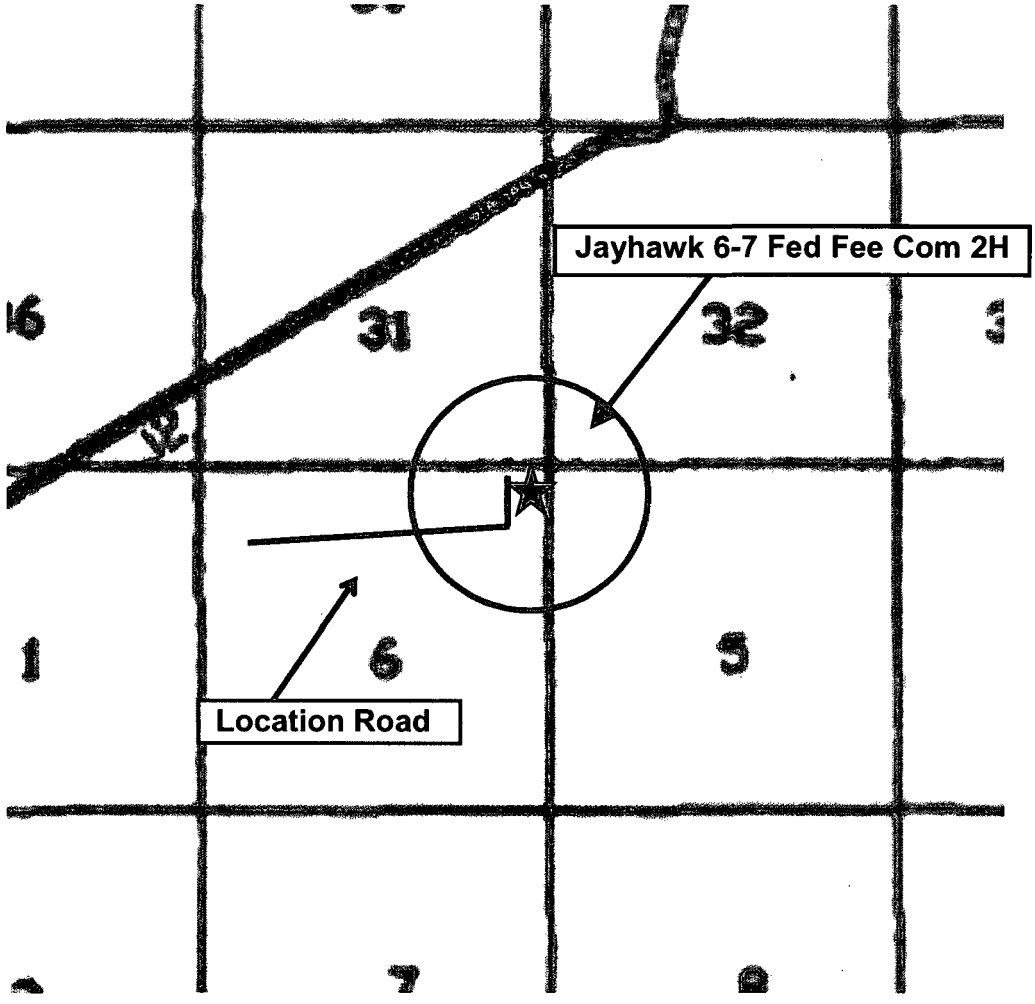
Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

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

Jayhawk 6-7 Fed Fee Com 2H

This is an open drilling site. H_2S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H_2S, including warning signs, wind indicators and H_2S monitor.



Assumed 100 ppm ROE = 3000' (Radius of Exposure)
100 ppm H2S concentration shall trigger activation of this plan.

Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block the entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

Assumed 100 ppm ROE = 3000'

Casing Assumptions and Load Cases

Surface

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

Surface Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
Pressure Test	Formation Pore Pressure	Max mud weight of next hole-section plus Test psi
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Displace to Gas	Formation Pore Pressure	Dry gas from next casing point

Surface Casing Collapse Design		
Load Case	**External Pressure**	**Internal Pressure**
Full Evacuation	Water gradient in cement, mud above TOC	None
Cementing	Wet cement weight	Water (8.33ppg)

Surface Casing Tension Design	
Load Case	**Assumptions**
Overpull	100kips
Runing in hole	3 ft/s
Service Loads	N/A

Devon Energy Center
333 West Sheridan Avenue
Oklahoma City, Oklahoma 73102-5015

Hydrogen Sulfide (H_2S) Contingency Plan

For

Jayhawk 6-7 Fed Fee Com 2H

Sec-6 T-26S R-34E
365' FNL & 260' FEL
LAT. = 32.0787267' N (NAD83)
LONG = 103.5013082' W

Lea County NM

AFMSS

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

Operator Certification Data Report

08/23/2018

Operator Certification

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

NAME: Rebecca Deal **Signed on:** 04/02/2018

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City **State:** OK **Zip:** 73102

Phone: (405)228-8429

Email address: Rebecca.Deal@dvn.com

Field Representative

Representative Name: Travis Phibbs

Street Address: 6488 Seven Rivers Hwy

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-9929

Email address: travis.phibbs@dvn.com

Seed Mixture 2, for Sandy Sites

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

Seed 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). The 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. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

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

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

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.

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.

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

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.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
(X) seed mixture 2	( ) seed mixture 4
( ) seed mixture 2/LPC	( ) 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

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 **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
- The remaining area of the 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.

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.

16. 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.

17. 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.

18. 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.

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.

11. Once the site is no longer in service or use, the site must undergo final abandonment. At final abandonment, the site 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 the abandonment of the site. All pads and 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. 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).

12. The holder shall stockpile an adequate amount of topsoil where blading occurs. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles. The topsoil will be used for final reclamation.

13. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
(X) seed mixture 2	( ) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

14. In those areas where erosion control structures are required to stabilize soil conditions, the holder shall install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound management practices. Any earth work will require prior approval by the Authorized Officer.

15. Open-topped Tanks - 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

10. 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.

4. If, during any phase of the construction, operation, maintenance, or termination of the site or related pipeline(s), any oil or other pollutant should be discharged from site facilities, the pipeline(s) or from containers or vehicles impacting Federal lands, the control and total removal, disposal, and cleanup of such oil of other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages to Federal lands resulting therefrom, the Authorized Officer may take such measures as deemed necessary to control and cleanup 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 the holder of any liability or responsibility.

5. Sites shall be maintained in an orderly, sanitary condition at all times. Waste materials, both liquid and solid, shall be disposed of promptly at an appropriate, authorized waste disposal facility in accordance with all applicable State and Federal laws. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, petroleum products, brines, chemicals, oil drums, ashes, and equipment.

6. The operator will notify the Bureau of Land Management (BLM) authorized officer and nearest Fish and Wildlife Service (FWS) Law Enforcement office within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or species listed by the FWS as threatened or endangered) in or adjacent to a pit, trench, tank, exhaust stack, or fence. (If the operator is unable to contact the FWS Law Enforcement office, the operator must contact the nearest FWS Ecological Services office.)

7. 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 a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project is **Shale Green**, Munsell Soil Color Chart Number 5Y 4/2.

8. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

9. A sales contract for removal of mineral material (caliche, sand, gravel, fill dirt) from an authorized pit, site, or on location must be obtained from the BLM prior to commencing construction. There are several options available for purchasing mineral material: contact the BLM office (575-234-5972).

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).

STANDARD STIPULATIONS FOR OIL AND GAS RELATED SITES

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

The holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer, BLM.

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 and for all response costs, penalties, damages, claims, and other costs arising from the provisions of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Chap. 82, Section 6901 et. seq., from the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. Chap. 109, Section 9601 et. seq., and from other applicable environmental statues.

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 U.S.C. 2601, et. seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized by this 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). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

Construction Steps

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

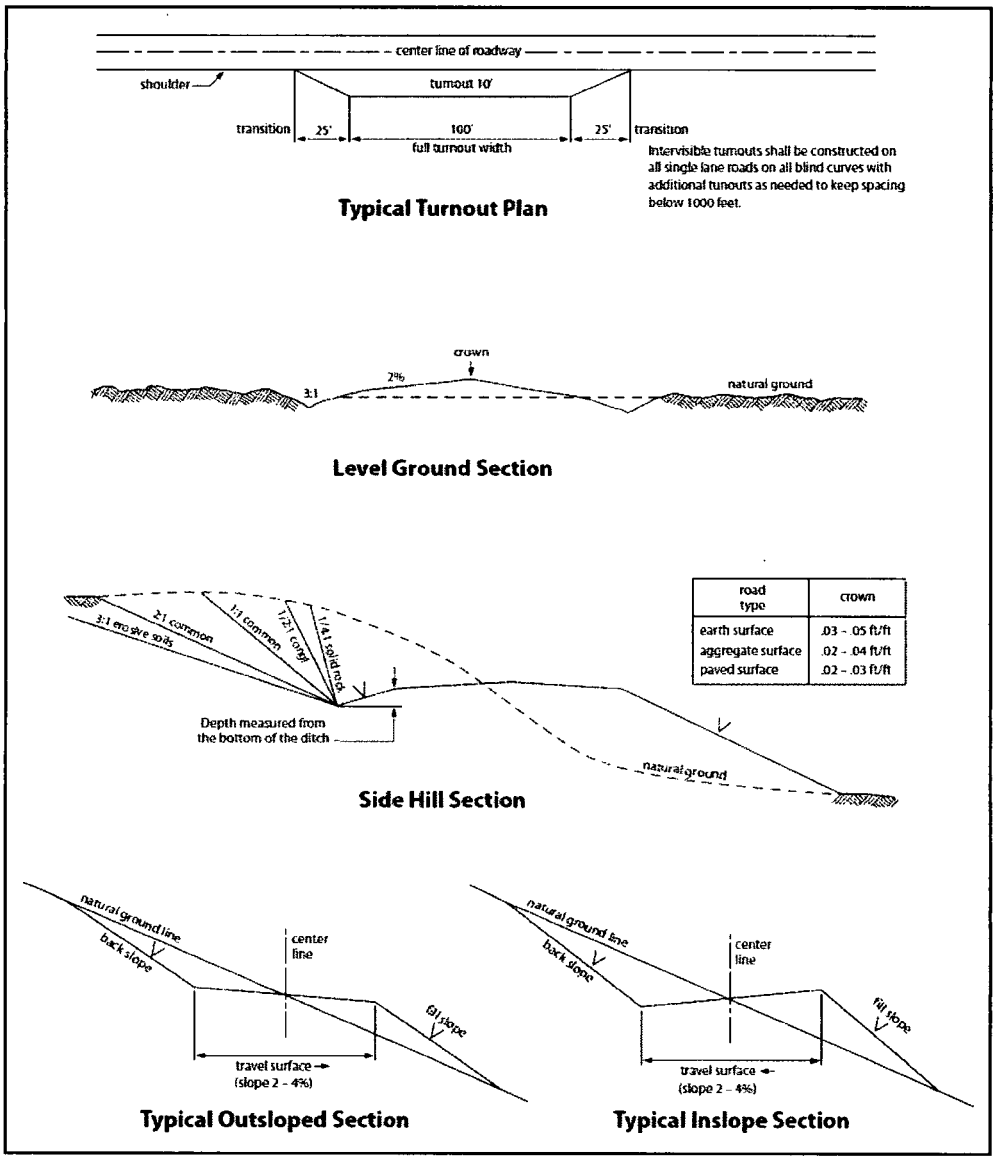


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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.

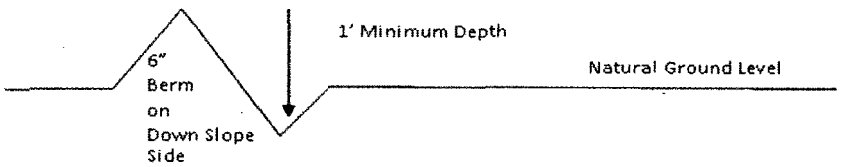
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ 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.

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)

The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction.
No further construction will be done until clearance has been issued by the Authorized Officer.
Special restoration stipulations or realignment may be required.

MITIGATING MEASURES for BURIED PIPELINES AND CABLES:

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

MITIGATING MEASURES for SURFACE FLOWLINES:

Flowlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize the possibility of leaks and spills from entering karst systems.
If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

In order to mitigate the impacts from production activities and due to the nature of karst terrain, the following Conditions of Approval will apply to this APD:

Tank battery liners and berms to minimize the impact resulting from leaks.
Leak detection system to provide an early alert to operators when a leak has occurred.
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of line failures used in production or drilling.

RESIDUAL AND CUMULATIVE IMPACT ANALYSIS

Any industrial activities that take place upon or within karst terrains or freshwater aquifer zones have the potential to create both short-term and long-term negative impacts to freshwater aquifers and cave systems. While a number of mitigation measures can be implemented to mitigate many impacts, it is still possible for impacts to occur from containment failures, well blowouts, accidents, spills, and structural collapses. It is therefore necessary to implement long-term monitoring studies to determine if current mitigations measures are sufficient enough to prevent long-term or cumulative impacts.

RESIDUAL AND CUMULATIVE MITIGATION

Nontoxic fluorescent dyes will be added to the drilling fluid when the hole is spudded and will be circulated to the bottom of the karst layers. This provides data as part of a long-term monitoring study.
Annual pressure monitoring will be performed by the operator. If the test results indicate a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

PLUGGING AND ABANDONMENT IMPACT ANALYSIS

Failure of a plugged and abandoned well can lead to migration of contaminants to karst resources and fresh water aquifers. While this action does not specifically approve plugging and abandonment procedures, the operator should be made aware that additional or special Conditions of Approval may apply at that time.

PLUGGING AND ABANDONMENT MITIGATION

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

MITIGATING MEASURES for ROADS:
Roads will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction and no further construction will be done until clearance has been issued by the Authorized Officer.
Turnout ditches and drainage leadoffs will not be constructed in such a manner as to increase or decrease the natural flow of water into or out of cave or karst features.
Special restoration stipulations or realignment may be required.

MITIGATING MEASURES FOR POWERLINES:

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Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems. Larger powerlines will adjust their pole spacing to avoid cave and karst features.

Blasting fractures in bedrock can serve as direct conduits for transfer of contaminants into cave and groundwater systems. Blasting also creates an expanded volume of rock rubble that cannot be reclaimed to natural contours, soil condition, or native vegetative condition. As such, surface and subsurface disruptions from blasting procedures can lead to permanent changes in vegetation, rainfall percolation, silting/erosion factors, aquifer recharge, and freshwater quality and can increase the risk of contaminant migration from drilling/production facilities built atop the blast are additional or special Conditions of Approval may apply at that time.

CONSTRUCTION MITIGATION

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD or project:

In the event that any underground voids are encountered during construction activities, construction activities will be halted and the BLM will be notified immediately.
No Blasting to prevent geologic structure instabilities.
Pad Berming to minimize effects of any spilled contaminates.

DRILLING IMPACT ANALYSIS

During drilling, previously unknown cave and karst features could be encountered. If a void is encountered while drilling and a loss of circulation occurs, lost drilling fluids can directly contaminate groundwater recharge areas, aquifers, and groundwater quality. Drilling operations can also lead to sudden collapse of underground voids. Cementing operations may plug or alter groundwater flow, potentially reducing the water quantity at springs and water wells. Inadequate subsurface cementing, casing, and cave/aquifer protection measures can lead to the migration of oil, gas, drilling fluids, and produced saltwater into cave systems and freshwater aquifers.

DRILLING MITIGATION

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required.

Closed Mud System Using Steel Tanks with All Fluids and Cuttings Hauled Off.
Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
Directional Drilling allowed after at least 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
Lost Circulation zones logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers. See Drilling COAs.

PRODUCTION IMPACT ANALYSIS

Production facilities such as tank batteries, pump-jacks, compressors, transfer stations, and pipe may fail and allow contaminants to enter caves and freshwater systems. Downhole casing and cementing failures can allow migration of fluids and/or gas between formations and aquifers. Facilities may also be subject to slow subsidence or sudden collapse of the underlying bedrock.

PRODUCTION MITIGATION

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.

Cattle Guard Requirement
Where entry is granted across a fence line for an access road, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition with an appropriately sized cattle guard sufficient to carry out the project. Any new or existing cattle guards on the access 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. Once the road is abandoned, the fence would be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. 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.

During construction, the proponent shall minimize disturbance to existing fences, water lines, troughs, windmills, and other improvements on public lands. The proponent 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 grazing permittee/leasee prior to disturbing any range improvement projects. 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.

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.
- Tank battery locations will be line 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.
- 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.

CONSTRUCTION IMPACT ANAYLSIS

The construction of roads, pipelines, compressor station pads and utilities can impact bedrock integrity and reroute, impede, focus, or erode natural surface drainage systems. Increased silting and sedimentation from construction can plug downstream sinkholes, caves, springs, and other components of aquifer recharge systems and result in adverse impacts to aquifer quality and cave environments. Any contaminants released into the environment during or after construction can impact aquifers and cave systems. A possibility exists for slow subsidence or sudden surface collapse during construction operations due to collapse of underlying cave passages and voids. This would cause associated safety hazards to the operator and the potential for increased environmental impact. Subsidence processes can be triggered by blasting, intense vibrations, rerouting of surface drainages, focusing of surface drainage, and general surface disturbance.

V. SPECIAL REQUIREMENT(S)

In May 2008, the Pecos District Special Status Species Resource Management Plan Amendment (RMPA) was approved and is being implemented. In addition to the standard practices that minimize impacts, as listed above, the following COA will apply:

- Upon abandonment, a low profile abandoned well marker will be installed to prevent raptor perching.

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 power line structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. The holder without liability or expense shall make such modifications and/or additions to the United States.

Trenches-Escape Ramps
Devon would need to construct and maintain escape ramps according to the following criteria:

- Earthen escape ramps would be required to be constructed to sufficiently support livestock at no more than a 30- degree slope and spaced no more than 500 feet apart.
- If the trench is left open under an 8-hour time period, it would not be required to have an escape ramp; however, before the trench is backfilled the trench will be inspected for wildlife and remove any species that are trapped at a distance of at least 100 yards away from the trench.

Well and CTB Pad Berms

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.
- Tank battery locations will be line 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.
- 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.

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

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

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.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION
LEASE NO.:	NMNM114990
WELL NAME & NO.:	2H –JAYHAWK 6-7 FED FEE COM
SURFACE HOLE FOOTAGE:	365'/N & 260'/E
BOTTOM HOLE FOOTAGE	330'/S & 360'/E
LOCATION:	Section. 6.,T26S., R.34E., NMP
COUNTY:	LEA County, New Mexico

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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.

Approval Date: 08/23/2018

Seed Mixture 2, for Sandy Sites

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

Seed 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). The 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. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

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

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

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.

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.

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

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.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
(X) seed mixture 2	( ) seed mixture 4
( ) seed mixture 2/LPC	( ) 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

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 **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the 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.

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.

16. 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.

17. 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.

18. 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.

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.

11. Once the site is no longer in service or use, the site must undergo final abandonment. At final abandonment, the site 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 the abandonment of the site. All pads and 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. 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).

12. The holder shall stockpile an adequate amount of topsoil where blading occurs. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles. The topsoil will be used for final reclamation.

13. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
(X) seed mixture 2	( ) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

14. In those areas where erosion control structures are required to stabilize soil conditions, the holder shall install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound management practices. Any earth work will require prior approval by the Authorized Officer.

15. Open-topped Tanks - 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

10. 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.

4. If, during any phase of the construction, operation, maintenance, or termination of the site or related pipeline(s), any oil or other pollutant should be discharged from site facilities, the pipeline(s) or from containers or vehicles impacting Federal lands, the control and total removal, disposal, and cleanup of such oil of other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages to Federal lands resulting therefrom, the Authorized Officer may take such measures as deemed necessary to control and cleanup 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 the holder of any liability or responsibility.

5. Sites shall be maintained in an orderly, sanitary condition at all times. Waste materials, both liquid and solid, shall be disposed of promptly at an appropriate, authorized waste disposal facility in accordance with all applicable State and Federal laws. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, petroleum products, brines, chemicals, oil drums, ashes, and equipment.

6. The operator will notify the Bureau of Land Management (BLM) authorized officer and nearest Fish and Wildlife Service (FWS) Law Enforcement office within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or species listed by the FWS as threatened or endangered) in or adjacent to a pit, trench, tank, exhaust stack, or fence. (If the operator is unable to contact the FWS Law Enforcement office, the operator must contact the nearest FWS Ecological Services office.)

7. 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 a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project is **Shale Green**, Munsell Soil Color Chart Number 5Y 4/2.

8. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

9. A sales contract for removal of mineral material (caliche, sand, gravel, fill dirt) from an authorized pit, site, or on location must be obtained from the BLM prior to commencing construction. There are several options available for purchasing mineral material: contact the BLM office (575-234-5972).

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).

STANDARD STIPULATIONS FOR OIL AND GAS RELATED SITES

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

The holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer, BLM.

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 and for all response costs, penalties, damages, claims, and other costs arising from the provisions of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Chap. 82, Section 6901 et. seq., from the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. Chap. 109, Section 9601 et. seq., and from other applicable environmental statues.

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 U.S.C. 2601, et. seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized by this 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). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

Construction Steps

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

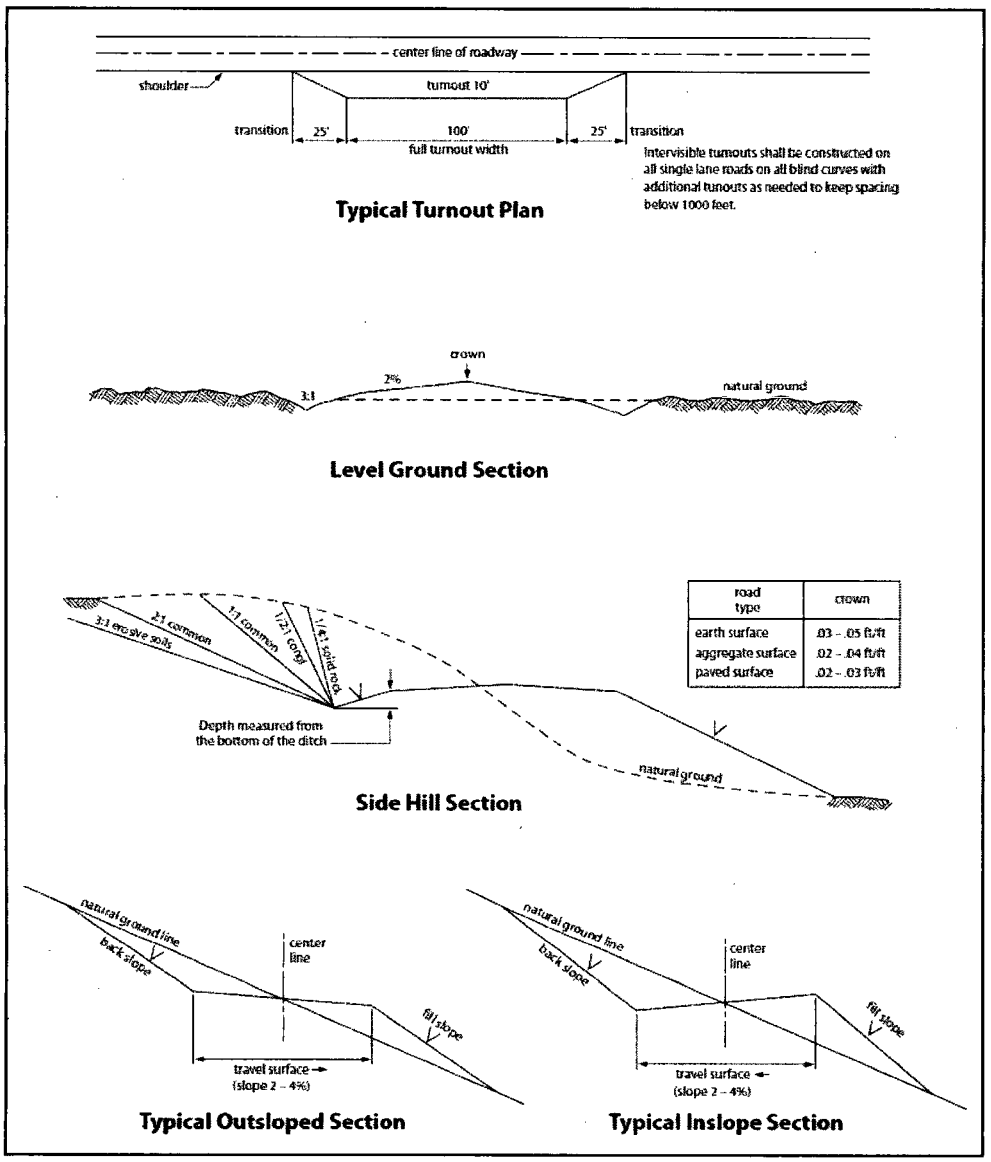
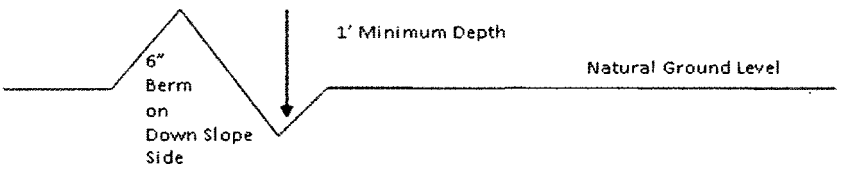


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ 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.