F/P

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD
FEB 28 2019
RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM136223

6. If Indian, Allotee or Tribe Name:

1a. Type of work: [✓] DRILL [ ] REENTER

1b. Type of Well: [✓] Oil Well [ ] Gas Well [ ] Other

1c. Type of Completion: [ ] Hydraulic Fracturing [ ] Single Zone [✓] Multiple Zone

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

8. Lease Name and Well No.: PITCHBLENDE FED 24-25 B5I 453H (325019)

2. Name of Operator: ENERGEN RESOURCES CORPORATION (162928)

9. API Well No.: 30-025-45661

3a. Address: 3510 North A Street Bldg A & B Midland TX 79705

3b. Phone No. *(include area code)*: (432)687-1155

10. Field and Pool, or Exploratory: ~~Wildcat~~ FAIRVIEW MILLS;BS (96340)

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

At surface: LOT G / 1572 FNL / 1955 FEL / LAT 32.1188767 / LONG -103.4214561

At proposed prod. zone: LOT O / 100 FSL / 1650 FEL / LAT 32.094435 / LONG -103.4204721

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 24 / T25S / R34E / NMP

14. Distance in miles and direction from nearest town or post office*: 8.6 miles

12. County or Parish: LEA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 250 feet

16. No of acres in lease: 2160.08

17. Spacing Unit dedicated to this well: 280

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 50 feet

19. Proposed Depth: 12490 feet / 20881 feet

20. BLM/BIA Bond No. in file: FED: NM2707

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3354 feet

22. Approximate date work will start*: 01/01/2019

23. Estimated duration: 60 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Jenifer Sorley / Ph: (432)818-1732	06/07/2018

Title: Asst Supervisor Regulatory Compliance

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	02/07/2019
Title: Assistant Field Manager Lands & Minerals	Office: CARLSBAD	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

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

GCP Rec 02/28/19

APPROVED WITH CONDITIONS

Approval Date: 02/07/2019

KZ 03/01/19

(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

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

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

The Paperwork Reduction Act of 1995 requires us to inform you that:

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

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

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Additional Operator Remarks

Location of Well

1. SHL: LOT G / 1572 FNL / 1955 FEL / TWSP: 25S / RANGE: 34E / SECTION: 24 / LAT: 32.1188767 / LONG: -103.4214561 (TVD: 0 feet, MD: 0 feet)
   PPP: LOT G / 1572 FNL / 1650 FEL / TWSP: 25S / RANGE: 34E / SECTION: 24 / LAT: 32.1192871 / LONG: -103.4204713 (TVD: 12460 feet, MD: 12898 feet)
   BHL: LOT O / 100 FSL / 1650 FEL / TWSP: 25S / RANGE: 34E / SECTION: 25 / LAT: 32.094435 / LONG: -103.4204721 (TVD: 12490 feet, MD: 20881 feet)

BLM Point of Contact

Name: Candy Vigil
Title: Admin Support Assistant
Phone: 5752345982
Email: cvigil@blm.gov

Approval Date: 02/07/2019

PECOS DISTRICT DRILLING
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Energen Resources Corporation**
LEASE NO.:	**NMNM-136223**
WELL NAME & NO.:	**Pitchblende Fed 24-25 453H**
SURFACE HOLE FOOTAGE:	**1572' FNL & 1955' FEL**
BOTTOM HOLE FOOTAGE	**0100' FSL & 1650' FEL Sec. 25, T. 25 S., R 34 E.**
LOCATION:	**Section 24, T. 25 S., R 34 E., NMPM**
COUNTY:	**County, New Mexico**

A. DRILLING OPERATIONS REQUIREMENTS

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

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

☐ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 3933612

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

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

B. CASING

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

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

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

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

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

Possibility of water flows in the Castile, Red Beds, and Salado.
Possibility of lost circulation in the Red Beds, Rustler, and Delaware.
Abnormal pressures may be encountered within the Wolfcamp Formation.

1. The **13-3/8** inch surface casing shall be set at approximately **1010** 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 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

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

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

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

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

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

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

a. First stage to DV tool:___

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage. **Excess calculates to 1% - Additional cement may be required.**

b. Second stage above DV tool:

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

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

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

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

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

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

C. **PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **Operator has proposed a multi-bowl wellhead assembly for after surface casing and after 10-3/4 1st intermediate casings. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be psi.**
    a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
    b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
    c. **Manufacturer representative shall install the test plug for the initial BOP test.**
    d. **Operator shall perform the 1st intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
    e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

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

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **7-5/8** 2nd intermediate casing shoe shall be psi. **10M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

5. The appropriate BLM office shall be notified a minimum of hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    c. The results of the test shall be reported to the appropriate BLM office.

    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. 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 111318

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	ENERGEN RESOURCES
LEASE NO.:	NMNM136223
WELL NAME & NO.:	453H:PITCHBLENDE FED 24-25
SURFACE HOLE FOOTAGE:	1572'/N & 1955'/E
BOTTOM HOLE FOOTAGE	330'/S & 1850'/E
LOCATION:	T-25S, R-34E, S24. NMPM
COUNTY:	LEA, NM

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

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☐ **Archaeology, Paleontology, and Historical Sites**
☐ **Noxious Weeds**
☒ **Special Requirements**
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- Watershed Management Mitigation

☐ **Construction**
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- Topsoil
- Closed Loop System
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☒ **Production (Post Drilling)**
- Well Structures & Facilities
- Pipelines
- Electric Lines

☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

Approval Date: 02/07/2019

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Wildlife Management Mitigation:

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

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

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

Rangeland Management Mitigation:

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

Watershed Management Mitigation:

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems

will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control.

Automatic shut off, check values, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

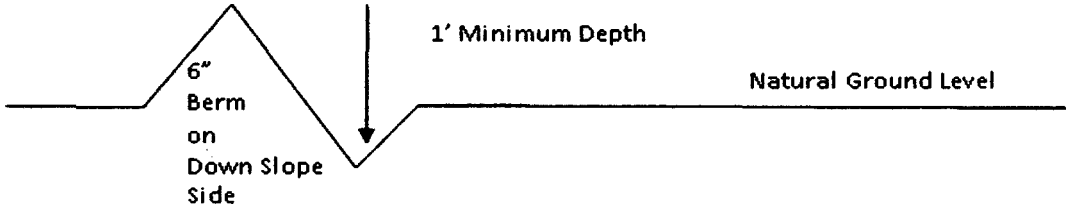
Ditching
Ditching shall be required on both sides of the road.

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

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards
An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

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

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

Construction Steps

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

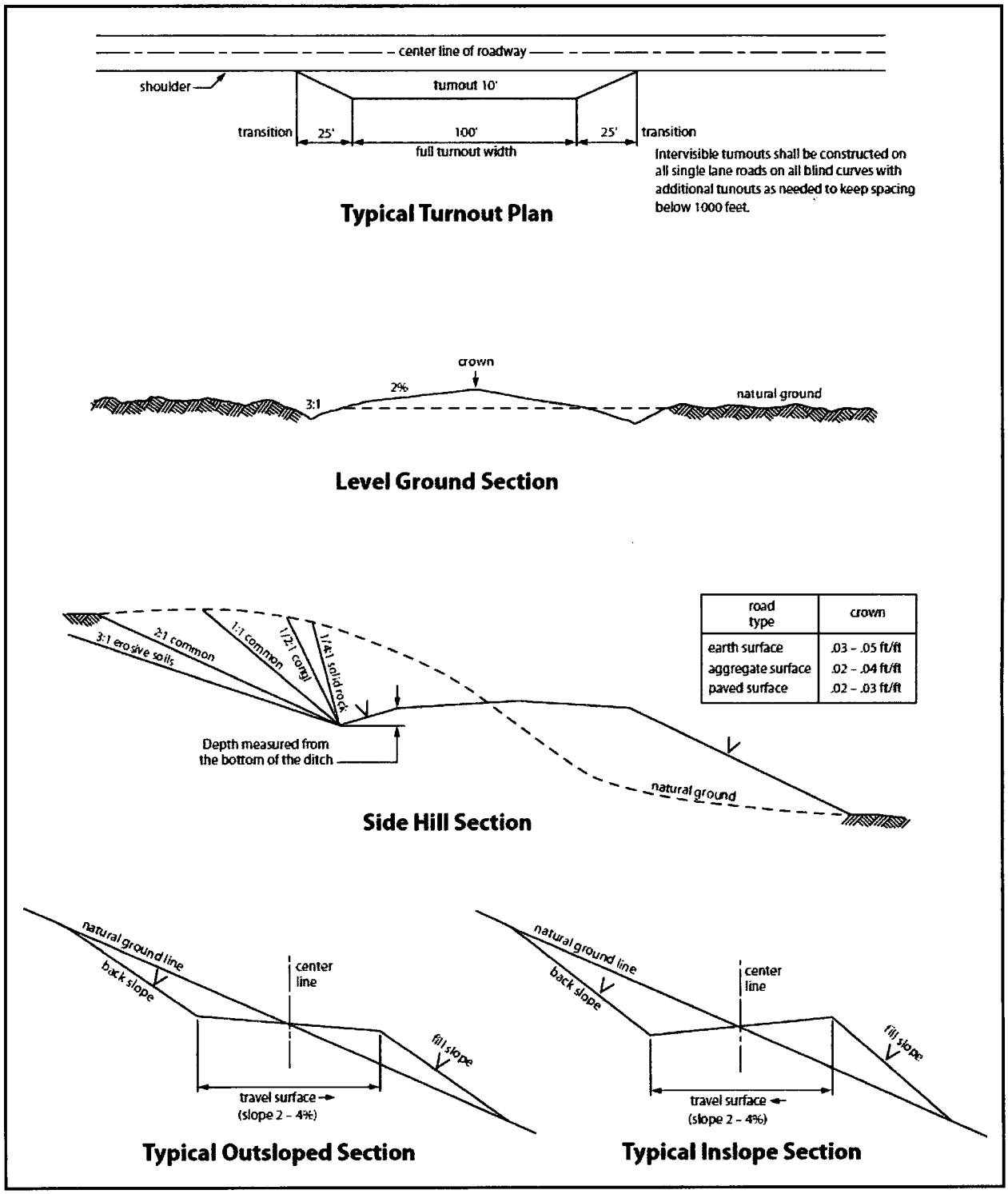


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

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

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

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

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

B. PIPELINES

BURIED PIPELINE STIPULATIONS

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

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

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

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

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

the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

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

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

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

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

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **20** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

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

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be

segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

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

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

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

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

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(**X**) 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 other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

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

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

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

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

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

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

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

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be

provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

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

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

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

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

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

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

VIII. INTERIM RECLAMATION

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

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

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

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

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

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

Seed Mixture for LPC Sand/Shinnery Sites

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

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

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

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

*Pounds of pure live seed:

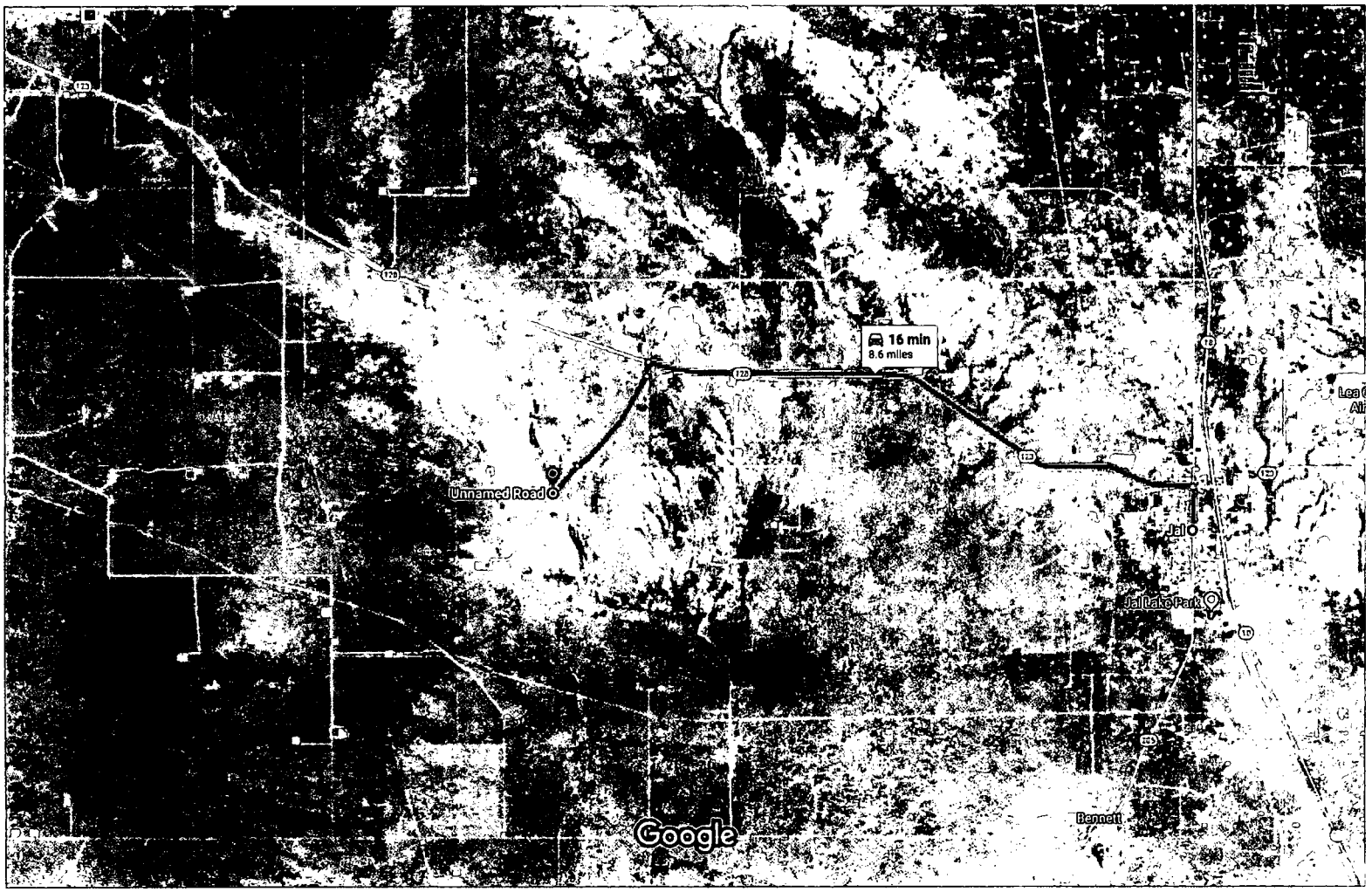
Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

Google Maps

Jal, NM to Unnamed Road, Jal, NM 88252

Pitchblende Lease enterance

Drive 8.6 miles, 16 min



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

Jal

New Mexico 88252

1. **Head east toward S 3rd St**

46 ft

2. **Turn left onto S 3rd St**

0.5 mi

3. **Turn left onto NM-128 W/W Kansas Ave**
   Continue to follow NM-128 W

6.3 mi

4. **Turn left**

0.2 mi

5. **Slight right**

1.2 mi

6. **Slight left**
   Destination will be on the right

0.4 mi

Unnamed Road

Jal, NM 88252

Midwest Hose & Specialty, Inc.

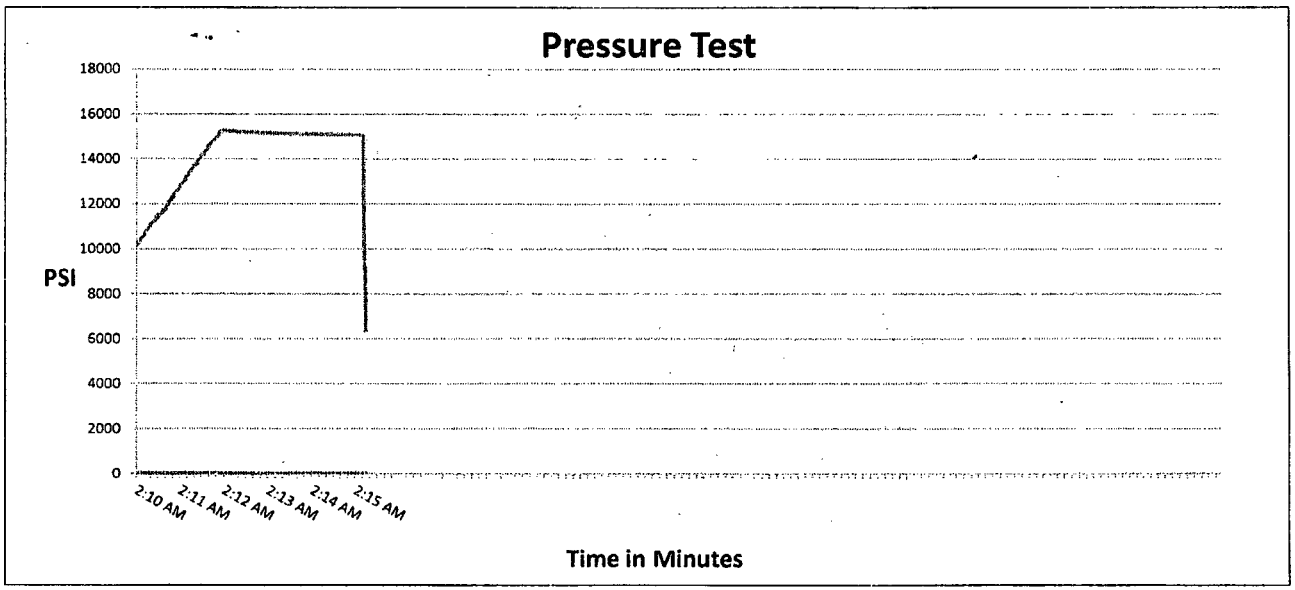
Internal Hydrostatic Test Graph

November 19, 2013

Customer: Cactus

Pick Ticket #: 226672

Hose Specifications		Verification	
Hose Type	**Length**	**Type of Fitting**	**Coupling Method**
Mud&Cement	10'	4 1/16 10K	Swage
I.D.	**O.D.**	**Die Size**	**Final O.D.**
4"	6.05"	5.56"	6.54"
Working Pressure	**Burst Pressure**	**Hose Serial #**	**Hose Assembly Serial #**
10000 PSI	Standard Safety Multiplier Applies	10768	226672



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	3 2/4 Minutes		15307 PSI

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

Tested By: *Ryan Malone*

Approved By: *Joe Proctor*

Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	CACTUS DRILLING	*Hose Assembly Type*	Choke & Kill
MWH Sales Representative	EVAN SPARKMAN	*Certification*	API 7K
Date Assembled	11/18/2013	*Hose Grade*	MUD
Location Assembled	OKC	*Hose Working Pressure*	10,000
Sales Order #	189325	*Hose Lot # and Date Code*	10768-06/13
Customer Purchase Order #	RIG#144 M12395	*Hose I.D. (Inches)*	4"
Assembly Serial # (Pick Ticket #)	226672	*Hose O.D. (Inches)*	6.52"
Hose Assembly Length	10'	*Armor (yes/no)*	YES

Fittings			
End A		**End B**	
Stem (Part and Revision #)	R.4.0X64WB	*Stem (Part and Revision #)*	R.4.0X64WB
Stem (Heat #)	3A9956	*Stem (Heat #)*	R3A9956
Ferrule (Part and Revision #)	RF.4.0	*Ferrule (Part and Revision #)*	RF.4.0
Ferrule (Heat #)	120368	*Ferrule (Heat #)*	120368
Connection (Part #)	4-1/16 10K	*Connection (Part #)*	4-1/16 10K
Connection (Heat #)		*Connection (Heat #)*	
Dies Used	6.56"	*Dies Used*	6.62"

Hydrostatic Test Requirements		
Test Pressure (psi)	15,000	***Hose assembly was tested with ambient water temperature.***
Test Pressure Hold Time (minutes)	3 1/2	

Date Tested	*Tested By*	*Approved By*
11/19/2013		

Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: **CACTUS DRILLING**	*Customer P.O.#* **RIG#144 M12395**
Sales Order # **189325**	*Date Assembled:* **11/18/2013**

Specifications

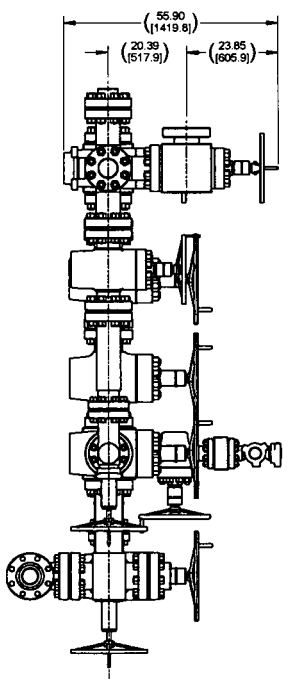
Hose Assembly Type:	**Choke & Kill**		
Assembly Serial #	**226672**	*Hose Lot # and Date Code*	**10768-06/13**
Hose Working Pressure (psi)	**10,000**	*Test Pressure (psi)*	**15000**

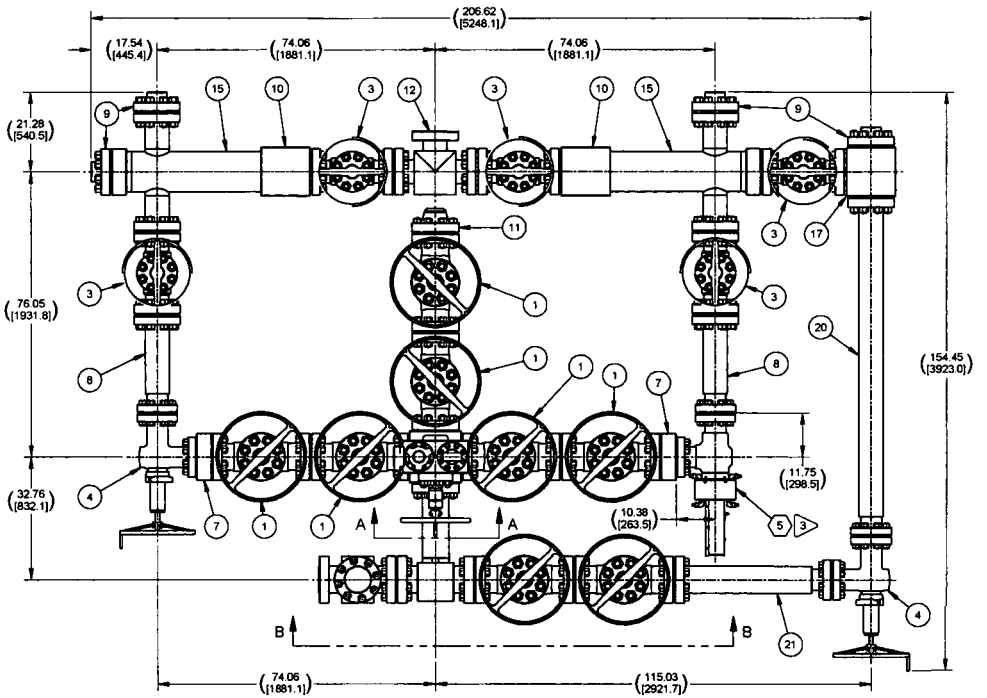
We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

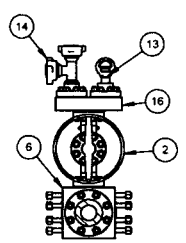
Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

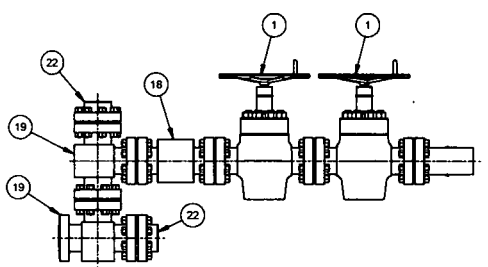
Approved By	***Date***
Joe Proctor	**11/19/2013**



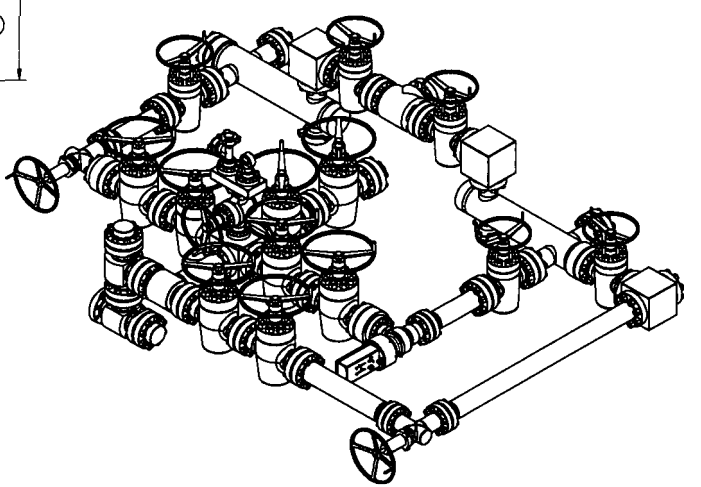




VIEW A-A



SECTION B-B



PARTS LIST		
ITEM	QTY	DESCRIPTION
1	8	GATE VALVE, MANUAL, 4.06"-10M FLANGED CONNECTIONS
2	1	GATE VALVE, MANUAL, 2.06"-10M FLANGED CONNECTIONS
3	5	GATE VALVE, MANUAL, 4.06"-5M FLANGED CONNECTIONS
4	2	ADJUSTABLE CHOKE, 3.06"-10M FLANGED INLET & OUTLET
5	1	DRILLING CHOKE, ACTUATED, 3.06"-10M FLANGED INLET & OUTLET
6	1	CROSS, 5 WAY, 4.06"-10M THRU X 4.06"-10M THRU X 2.06"-10M
7	2	DSA, 4.06-10M X 3.06-10M, 4.045" THK
8	2	ADAPTER SPOOL, 4.06"-5M X 3.06"-10M FLANGED CONNECTIONS, 26" LG
9	4	FLANGE, W/ RECESSED BUFFER CAVITY, 4.06"-5M
10	2	CONNECTING BLOCK, 4.06"-5M X 4.06"-5M 90 DEG
11	1	WELDNECK FLANGE,4.06"-10M X 5" XXS
12	1	TEE, FLANGED, 4.06"-5M THRU X 4.06"-5M
13	1	PRESSURE GAUGE, 0-15,000 PSI, W/ 2.06"-10M FLANGE
14	1	ASSY, INSTRUMENT TEE WITH 2-10M FLG INLET & (2) 2" KEMPER FIG 1502 FEMALE OUTLETS
15	2	BUFFER TANK, 10.75"OD X 9.25"ID X "56.50LG, W/ (3) 4.06-5M FLANGED SIDE OUTLETS, (1) 5"-1002 MALE UNION SIDE OUTLET, (1) 4-1/16 5M STUDDED END, (1) 10.75" OD BLIND END CAP
16	1	INSTRUMENT BLOCK, W/ (2) 2.06"-10M TOP AND (1) 2.06"-10M BOTTOM CONNECTIONS
17	1	TEE, 4.06"-5M THRU X 4.06"-5M
18	1	WELDMENT, TEE, 4-1/16 10M
19	2	TEE, FLANGED, 4.06"-10M THRU X 4.06"-10M
20	1	ADAPTER SPOOL, 4.06"-5M X 3.06"-10M FLANGED CONNECTIONS, 90.10" LG
21	1	SPACER SPOOL, 4.06"-10M X 3.06"-10M FLANGED CONNECTIONS,41.55" LG
22	2	FLANGE, W/ RECESSED BUFFER CAVITY, 4.06"-10M
23	32	STUD, AT, 1-8 UNC-2A, 6.75" LG
24	88	STUD, AT, 1 1/8-8 UN-2A, 8" LG
25	64	STUD, AT, 1 1/4-8 UN-2A, 8" LG
26	64	NUT, HEAVY HEX, 1-8 UNC-2B
27	176	NUT, HEAVY HEX, 1 1/8-8 UN-2B
28	128	NUT, HEAVY HEX, 1 1/4-8 UN-2B
29	17	RING GASKET, RX-39
30	4	RING GASKET, BX-152
31	6	RING GASKET, BX-154
32	9	RING GASKET, BX-155

CUSTOMER REVIEW/APPROVAL		
☐	CN	Correct As Noted. Submit revised document. Proceed with fabrication.
☐	NF	Not for Fabrication. Do not start fabricating equipment represented until design is corrected. Correct and resubmit design.
☐	FD	Final Design Document Design document is accepted.
REVIEWED BY:		DATE:

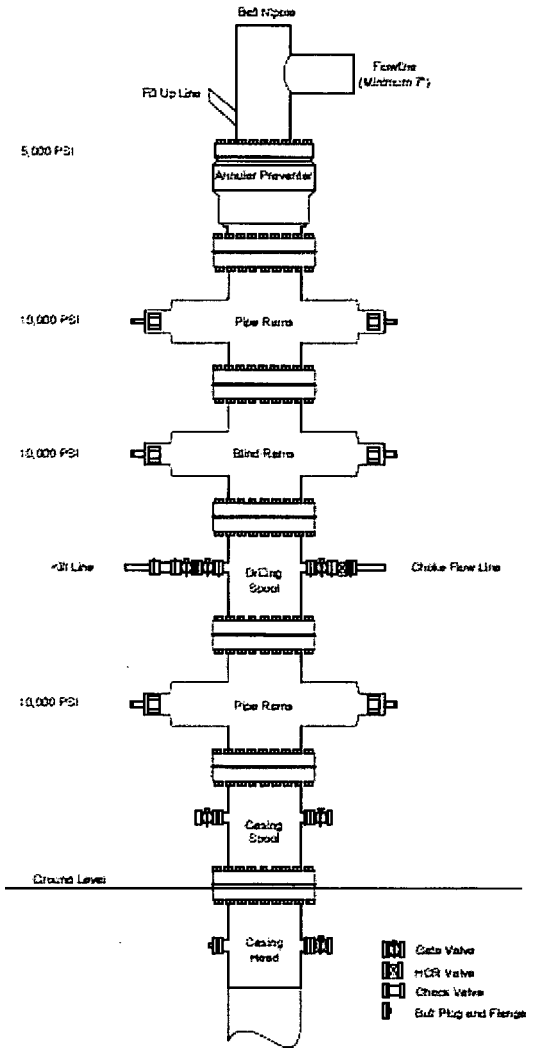
NOTES:
1. STUDS, NUTS, RING GASKETS AND NAME PLATE ARE NOT REFERENCED ON DRAWING.
2. BOLT HOLES STRADDLE COMMON CENTERLINE.
3. CUSTOMER SUPPLIED; 3-1/16" 10M HYD CHOKE; MUST FIT THESE DIMENSIONS.

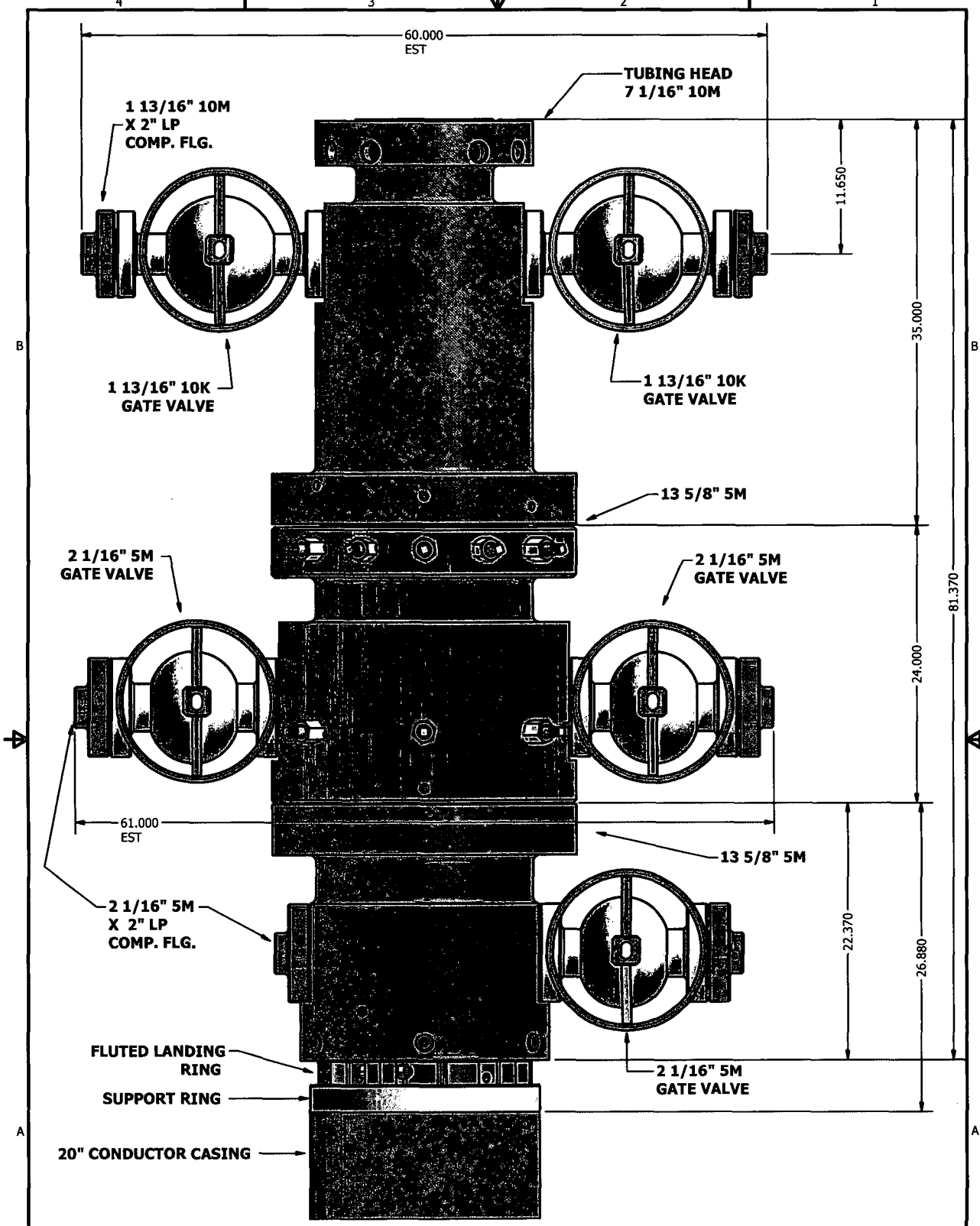
DESIGNED IN INCHES
DIMENSIONAL UNITS: INCHES [MILLIMETERS]
THIRD ANGLE
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
SURFACE TREATMENT
DO NOT SCALE
MATERIAL & HEAT TREAT
DRAWN BY: H. VO — DATE: 31 Dec 14
CHECKED BY: H. VO — DATE: 31 Dec 14
APPROVED BY: K. HICKMAN — DATE: 31 Dec 14
ESTIMATED WEIGHT: 21046.8 LBS [9548.6 KG]
PATTERN USE BAK
CAMERON
DRILLING SYSTEMS
CHOKE & KILL MANIFOLD, 4-1/16 10M X 4-1/16 5M W/ (2) 3-1/16 10M ADJ. CHOKE & (1) 3-1/16 10M HYD. CHOKE
SHEET 1 of 1
LO-085014-34-35-03
REV. 00B
INVENTOR-D

ENERGEN

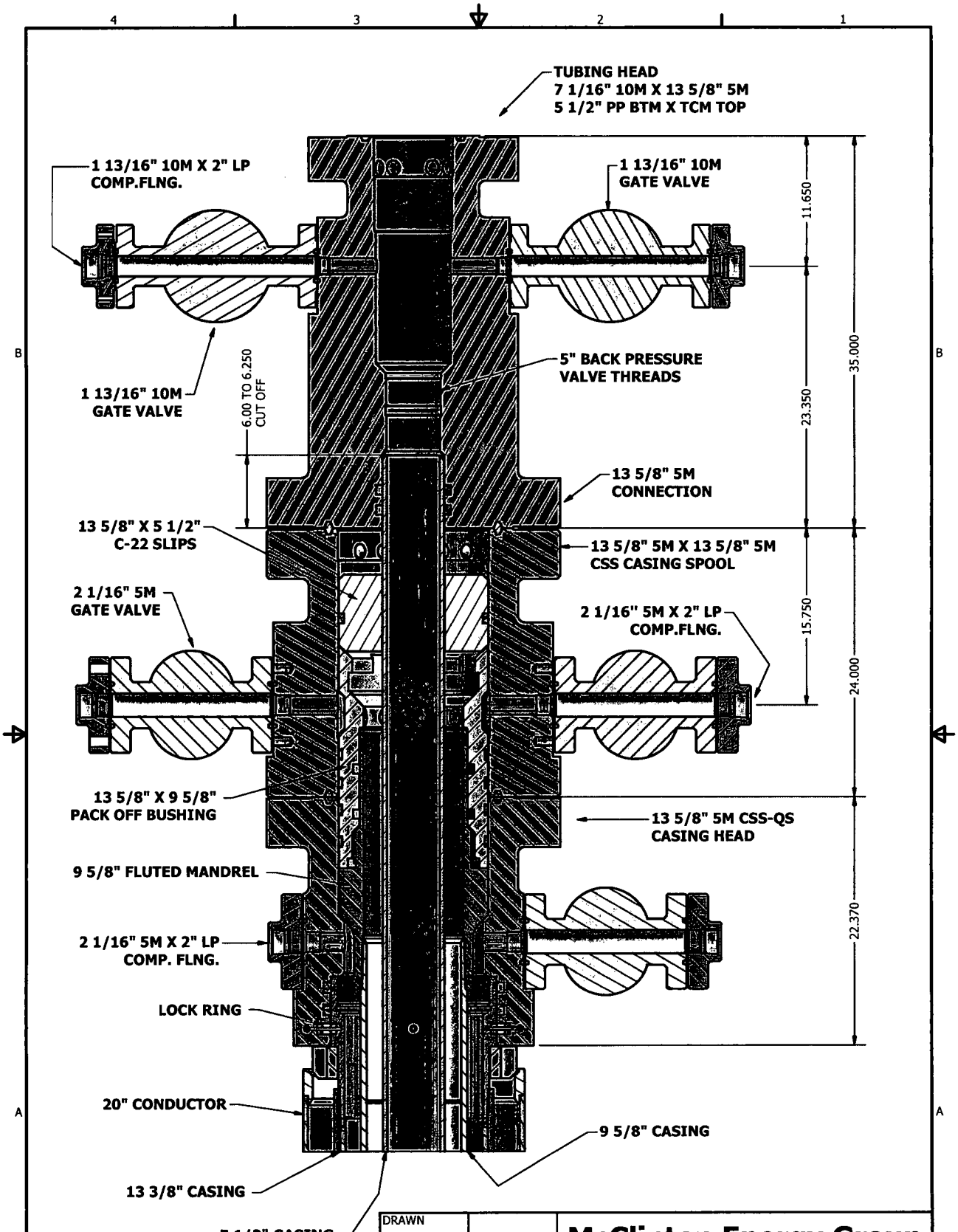
RESOURCES

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





DRAWN J.PERKINS		McClinton Energy Group
CHECKED J. PERKINS		TITLE
QA		ENERGEN
MFG		13 3/8" 9 5/8" 5 1/2"
APPROVED		SIZE B / DWG NO ENERGEN STACK UP 01 / REV
		SCALE / SHEET 1 OF 2



DRAWN	J.PERKINS	
CHECKED	J. PERKINS	
QA		
MFG		
APPROVED		

McClinton Energy Group

TITLE

ENERGEN
13 3/8" 9 5/8" 5 1/2"

SIZE	DWG NO	REV
B	ENERGEN STACK UP 01	

SCALE

SHEET 2 OF 2

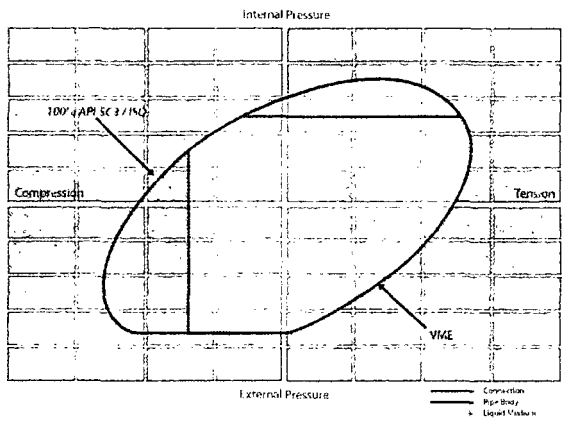
TECHNICAL DATA SHEET TMK UP DQXHT 5.5 X 23 P110 CY

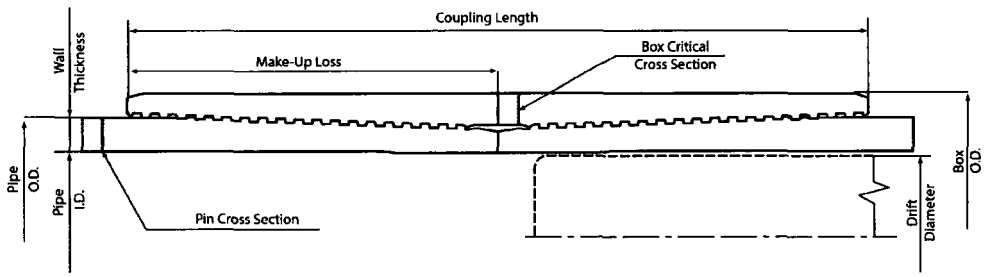
TUBULAR PARAMETERS	
Nominal OD, (inch)	5.500
Wall Thickness, (inch)	0.415
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

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

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

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





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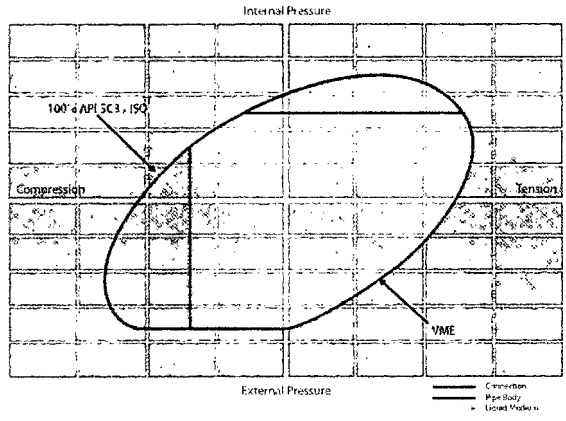
TECHNICAL DATA SHEET TMK UP DQXHT 4.5 X 15.1 P110 CY

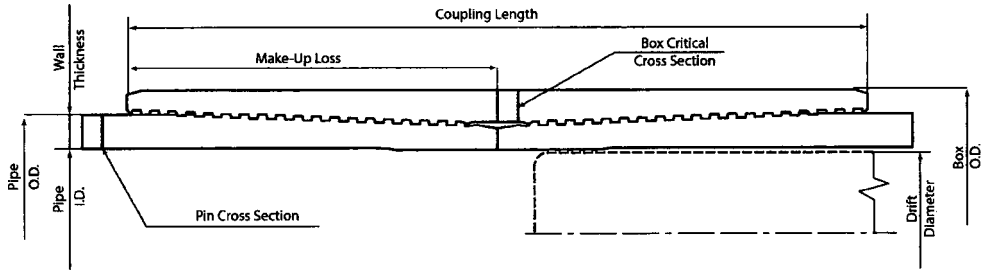
TUBULAR PARAMETERS	
Nominal OD, (inch)	4.500
Wall Thickness, (inch)	0.337
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

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

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

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





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U. S. Steel Tubular Products

5/4/2018 11:46:39 AM

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

MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	80,000	--	--	--	psi
Maximum Yield Strength	110,000	--	--	--	psi
Minimum Tensile Strength	100,000	--	--	--	psi
DIMENSIONS	**Pipe**	**BTC**	**LTC**	**STC**	
Outside Diameter	10.750	11.750	--	11.750	in.
Wall Thickness	0.400	--	--	--	in.
Inside Diameter	9.950	9.950	--	9.950	in.
Standard Drift	9.794	9.794	--	9.794	in.
Alternate Drift	9.875	9.875	--	9.875	in.
Nominal Linear Weight, T&C	45.50	--	--	--	lbs/ft
Plain End Weight	44.26	--	--	--	lbs/ft
PERFORMANCE	**Pipe**	**BTC**	**LTC**	**STC**	
Minimum Collapse Pressure	3,020	3,020	--	3,020	psi
Minimum Internal Yield Pressure	5,210	5,210	--	5,210	psi
Minimum Pipe Body Yield Strength	1,040	--	--	--	1,000 lbs
Joint Strength	--	1,097	--	701	1,000 lbs
Reference Length	--	16,067	--	10,272	ft
MAKE-UP DATA	**Pipe**	**BTC**	**LTC**	**STC**	
Make-Up Loss	--	4.81	--	3.50	in.
Minimum Make-Up Torque	--	--	--	5,260	ft-lbs
Maximum Make-Up Torque	--	--	--	8,760	ft-lbs

U. S. Steel Tubular Products
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ENERGEN®

Well: Pitchblende Fed 19-30 453H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	11879	0	11867	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	11779	0	11767	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11
Production	6.750	4.5	3.701	11779	21331	11867	12440	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.206	1.703	2.664	2.721
Production	5.5	23	CYP110	2.160	2.159	2.691	2.558
Production	4.5	15.1	CYP110	2.015	2.027	2.727	2.727

Criteria	
Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

U. S. Steel Tubular Products

5/4/2018 11:45:18 AM

13.375" 61.00lbs/ft (0.430" Wall) J55

MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	55,000	--	--	--	psi
Maximum Yield Strength	80,000	--	--	--	psi
Minimum Tensile Strength	75,000	--	--	--	psi
DIMENSIONS	**Pipe**	**BTC**	**LTC**	**STC**	
Outside Diameter	13.375	14.375	--	14.375	in.
Wall Thickness	0.430	--	--	--	in.
Inside Diameter	12.515	12.515	--	12.515	in.
Standard Drift	12.359	12.359	--	12.359	in.
Alternate Drift	--	--	--	--	in.
Nominal Linear Weight, T&C	61.00	--	--	--	lbs/ft
Plain End Weight	59.50	--	--	--	lbs/ft
PERFORMANCE	**Pipe**	**BTC**	**LTC**	**STC**	
Minimum Collapse Pressure	1,540	1,540	--	1,540	psi
Minimum Internal Yield Pressure	3,090	3,090	--	3,090	psi
Minimum Pipe Body Yield Strength	962	--	--	--	1,000 lbs
Joint Strength	--	1,025	--	595	1,000 lbs
Reference Length	--	11,204	--	6,504	ft
MAKE-UP DATA	**Pipe**	**BTC**	**LTC**	**STC**	
Make-Up Loss	--	4.81	--	3.50	in.
Minimum Make-Up Torque	--	--	--	4,460	ft-lbs
Maximum Make-Up Torque	--	--	--	7,440	ft-lbs

U. S. Steel Tubular Products
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Well: Pitchblende Fed 19-30 453H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	11879	0	11867	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	11779	0	11767	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11
Production	6.750	4.5	3.701	11779	21331	11867	12440	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.206	1.703	2.664	2.721
Production	5.5	23	CYP110	2.160	2.159	2.691	2.558
Production	4.5	15.1	CYP110	2.015	2.027	2.727	2.727

Criteria	
Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

U. S. Steel Tubular Products

5/4/2018 11:47:56 AM

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

MECHANICAL PROPERTIES	Pipe	BTC	LTC	STC	
Minimum Yield Strength	110,000	--	--	--	psi
Maximum Yield Strength	140,000	--	--	--	psi
Minimum Tensile Strength	125,000	--	--	--	psi
DIMENSIONS	**Pipe**	**BTC**	**LTC**	**STC**	
Outside Diameter	7.625	8.500	8.500	--	in.
Wall Thickness	0.375	--	--	--	in.
Inside Diameter	6.875	6.875	6.875	--	in.
Standard Drift	6.750	6.750	6.750	--	in.
Alternate Drift	--	--	--	--	in.
Nominal Linear Weight, T&C	29.70	--	--	--	lbs/ft
Plain End Weight	29.06	--	--	--	lbs/ft
PERFORMANCE	**Pipe**	**BTC**	**LTC**	**STC**	
Minimum Collapse Pressure	6,700	6,700	6,700	--	psi
Minimum Internal Yield Pressure	9,460	9,460	9,460	--	psi
Minimum Pipe Body Yield Strength	940	--	--	--	1,000 lbs
Joint Strength	--	960	769	--	1,000 lbs
Reference Length	--	21,553	17,258	--	ft
MAKE-UP DATA	**Pipe**	**BTC**	**LTC**	**STC**	
Make-Up Loss	--	4.69	4.13	--	in.
Minimum Make-Up Torque	--	--	5,770	--	ft-lbs
Maximum Make-Up Torque	--	--	9,610	--	ft-lbs

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Well: Pitchblende Fed 19-30 453H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	11879	0	11867	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	11779	0	11767	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11
Production	6.750	4.5	3.701	11779	21331	11867	12440	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.206	1.703	2.664	2.721
Production	5.5	23	CYP110	2.160	2.159	2.691	2.558
Production	4.5	15.1	CYP110	2.015	2.027	2.727	2.727

Criteria	
Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

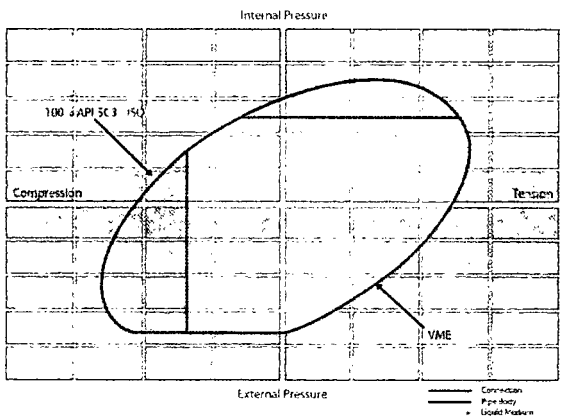
TECHNICAL DATA SHEET TMK UP DQXHT 5.5 X 23 P110 CY

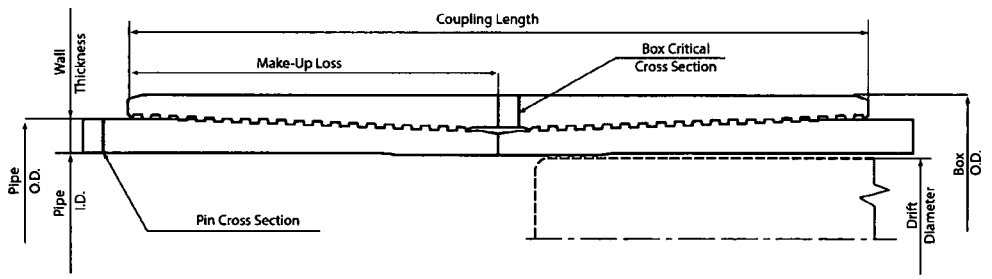
TUBULAR PARAMETERS	
Nominal OD, (inch)	5.500
Wall Thickness, (inch)	0.415
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

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

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

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





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ENERGEN®

Well: Pitchblende Fed 19-30 453H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	11879	0	11867	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	11779	0	11767	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11
Production	6.750	4.5	3.701	11779	21331	11867	12440	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.206	1.703	2.664	2.721
Production	5.5	23	CYP110	2.160	2.159	2.691	2.558
Production	4.5	15.1	CYP110	2.015	2.027	2.727	2.727

Criteria	
Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

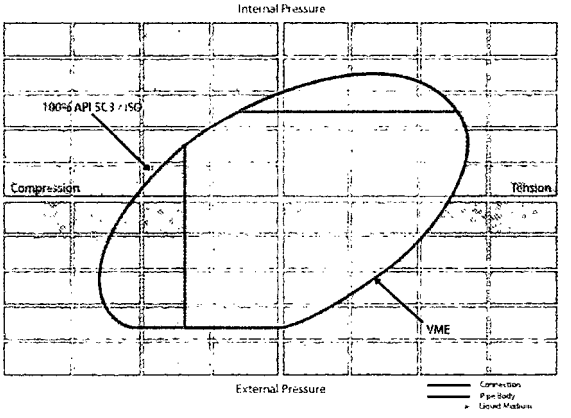
TECHNICAL DATA SHEET TMK UP DQXHT 4.5 X 15.1 P110 CY

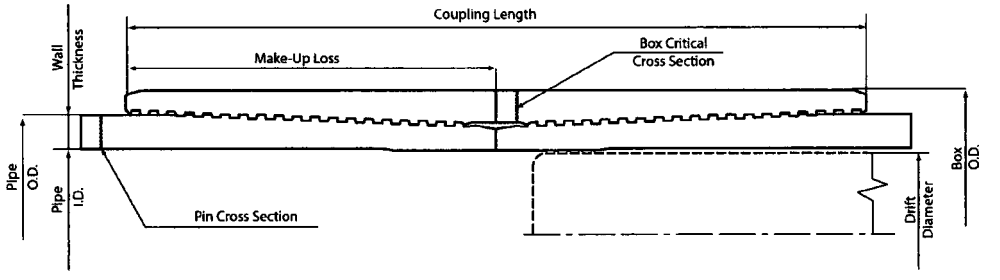
TUBULAR PARAMETERS	
Nominal OD, (inch)	4.500
Wall Thickness, (inch)	0.337
Pipe Grade	P110 CY
Coupling	Regular
Coupling Grade	P110 CY
Drift	Standard

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

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

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





Print date: 05/04/2018 20:00

ENERGEN®

Well: Pitchblende Fed 19-30 453H

Casing Assumptions

Section	Hole Size	Csg Size	Drift	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/Buoyant	Mud Weight (ppg)
Surface	17.500	13.375	12.359	0	1010	0	1010	No	61	J-55	BTC	1540	3090	962	1025	Dry	8.4
Intermediate #1	12.250	10.75	9.875	0	5300	0	5300	No	45.5	HCN-80	BTC	3020	5210	1040.00	1097	Dry	9.7
Intermediate #2	9.875	7.625	6.875	0	11879	0	11867	No	29.7	HCP110	BTC	6700	9460	940.00	960	Dry	9
Production	6.750	5.5	4.545	0	11779	0	11767	Yes	23	CYP110	DQXHT	14540	14530	729.00	693	Dry	11
Production	6.750	4.5	3.701	11779	21331	11867	12440	Yes	15.1	CYP110	DQXHT	14340	14420	485.00	485	Dry	11

Safety Factors

Section	Csg Size	Weight (lbs)	Grade	Collapse	Burst	Body Tension	Joint Tension
Surface	13.375	61	J-55	3.491	7.004	15.614	16.637
Intermediate #1	10.75	45.5	HCN-80	1.130	1.949	4.313	4.549
Intermediate #2	7.625	29.7	HCP110	1.206	1.703	2.664	2.721
Production	5.5	23	CYP110	2.160	2.159	2.691	2.558
Production	4.5	15.1	CYP110	2.015	2.027	2.727	2.727

Criteria	
Collapse	1.125
Burst	1.125
Body Tension	2
Joint Tension	2

ENERGEN®

Contact Information

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

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

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

ENERGEN®

Hydrogen Sulfide Drilling Operations Plan

1. Hydrogen Sulfide Training

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

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

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

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

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

2. H2S Safety Equipment and systems

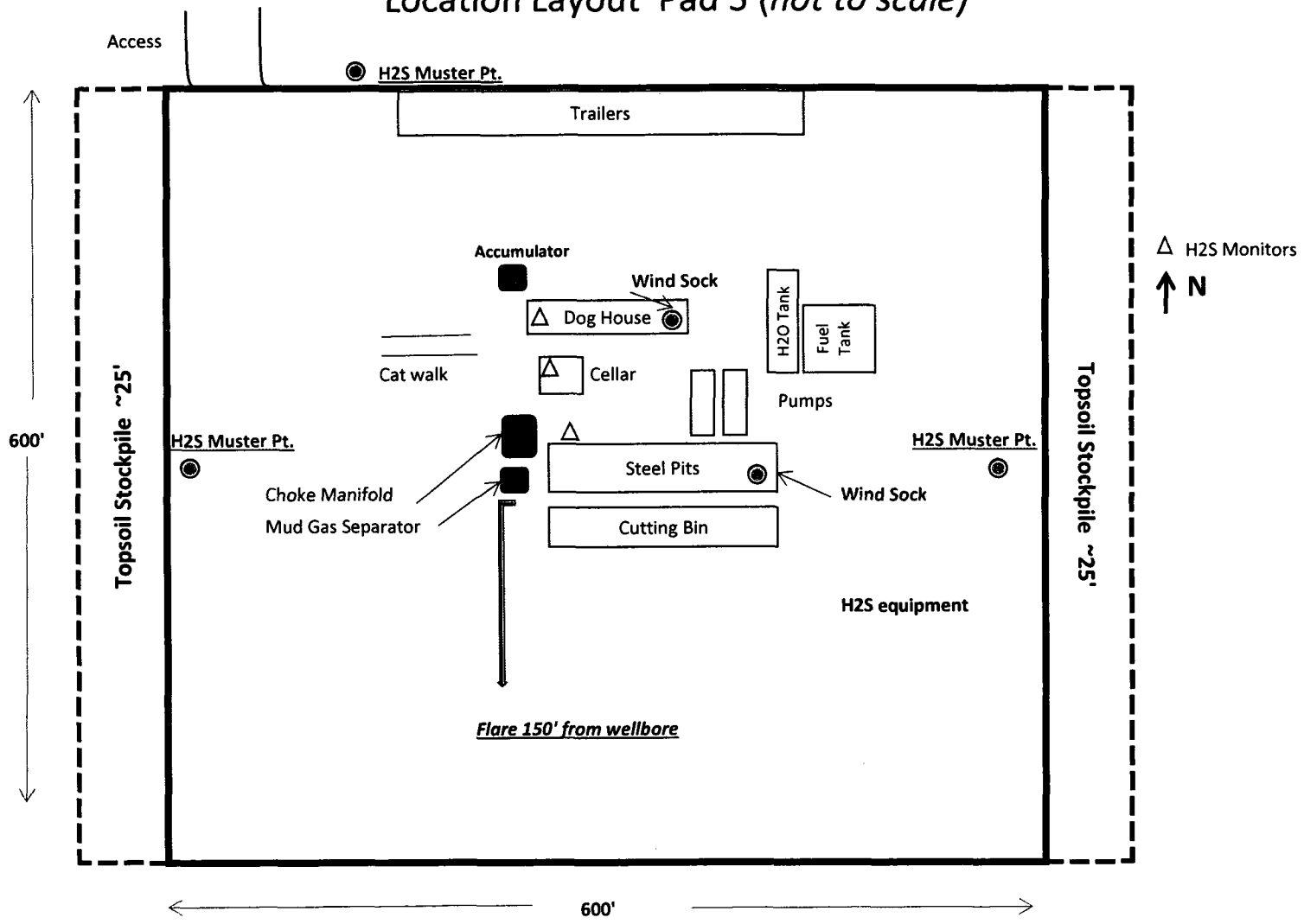
Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500' above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream, we will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

- Well Control Equipment:
    - Flare Line.

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

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

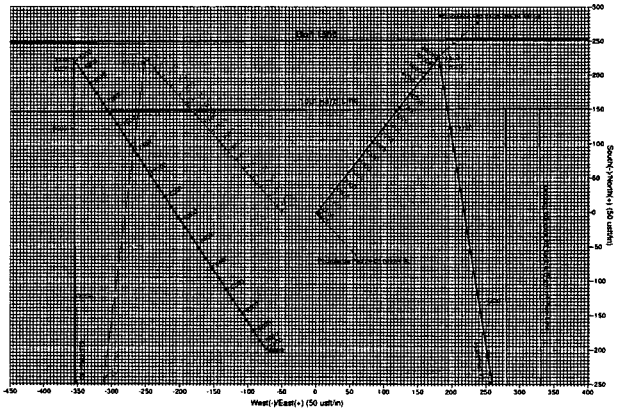
Location Layout Pad 3 (*not to scale)*



ENERGEN RESOURCES CORPORATION

Project: Lea County, NM
Site: Pitchblende Fed 24-25 033H,453H,603H
Well: 453H
Wellbore: Lateral
Design: Plan #2
Rig: XXXXX
Job: M18XXX

ENERGEN RESOURCES



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5300.00	0.00	0.00	5300.00	0.00	0.00	0.00	0.00	0.00	
3	5633.48	5.00	38.31	5633.06	11.42	9.02	1.50	38.31	-11.34	
4	8603.68	5.00	38.31	8581.84	214.62	169.58	0.00	0.00	-213.20	
5	8937.18	0.00	0.00	8915.00	226.04	178.60	1.50	180.00	224.54	Pitchblende Fed 24 25 0453H NP p2
6	11979.20	0.00	0.00	11957.04	226.04	178.60	0.00	0.00	-224.54	
7	12779.20	90.00	170.52	12440.00	339.09	272.97	10.00	170.52	341.37	
8	13229.31	90.00	178.52	12440.00	-787.05	311.99	2.00	90.00	789.63	
9	21331.49	90.00	179.52	12440.00	6888.95	379.54	0.00	0.00	6891.81	Pitchblende Fed 24 25 04534 PBHL p2

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Pitchblende Fed 24 25 0453H SL	0.00	0.00	0.00	408119.99	782461.80	32° 7' 7.50 N	103° 25' 15.56 W
Pitchblende Fed 24 25 0453H NP p2	8925.00	226.04	178.60	408346.03	782640.40	32° 7' 9.73 N	103° 25' 13.46 W
Pitchblende Fed 24 25 0453H LP p2	12440.00	339.09	272.97	407780.89	782734.77	32° 7' 4.13 N	103° 25' 12.42 W
Pitchblende Fed 24 25 0453H PBHL p2	12440.00	-6888.95	379.54	389231.04	782841.34	32° 5' 39.51 N	103° 25' 12.03 W

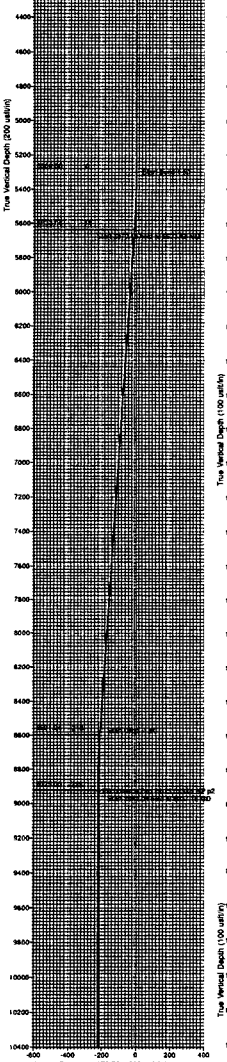
Azimuths to Grid North
True North: -0.48°
Magnetic North: 6.21°

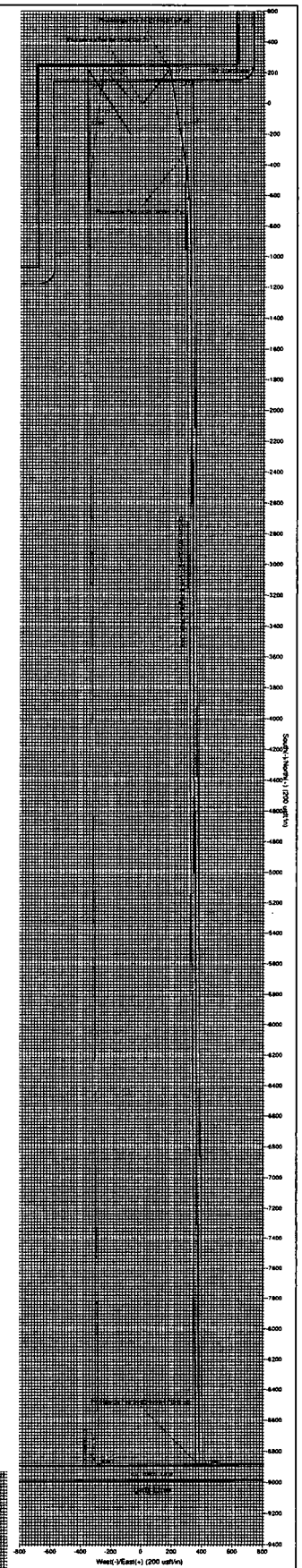
Magnetic Field
Strength: 47860.4snT
Dip Angle: 59.82°
Date: 05/30/2018
Model: HDGM

Project Details: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Geodetic Datum: NAD 1927 (NADCON CONUS)
Geodetic Ellipsoid: Clarke 1866
Geodetic Zone: New Mexico East 3001
System Datum: Mean Sea Level

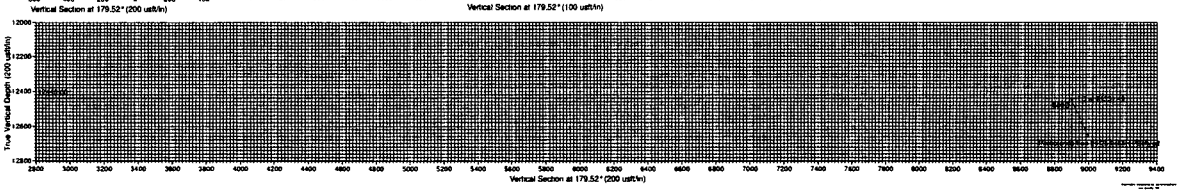
SLOTS

Slot Name	+N/-S	+E/-W	Northing	Easting
033H	200.46	-73.53	407919.53	782388.27
453H	0.00	0.00	408119.99	782461.80
603H	0.31	-50.00	408119.68	782411.80





Target Centerline at 12440'KBTVD



Premier Directional Drilling

Planning Report

Database:	EDM 5000 14 Multi User	**Local Co-ordinate Reference:**	Well 453H - Slot 453H
Company:	ENERGEN RESOURCES CORPORATION	**TVD Reference:**	3354+25 @ 3379.00usft (EST)
Project:	Lea County, NM	**MD Reference:**	3354+25 @ 3379.00usft (EST)
Site:	Pitchblende Fed 24-25 033H,453H,603H	**North Reference:**	Grid
Well:	453H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

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

Site	Pitchblende Fed 24-25 033H,453H,603H, centered on 033H				
Site Position:		**Northing:**	407,919.53 usft	***Latitude:***	32° 7' 5.53 N
From:	Map	**Easting:**	782,388.26 usft	**Longitude:**	103° 25' 16.44 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.49 °

Well	453H - Slot 453H					
Well Position	**+N/-S**	200.46 usft	**Northing:**	408,119.99 usft	**Latitude:**	32° 7' 7.50 N
	+E/-W	73.53 usft	**Easting:**	782,461.80 usft	**Longitude:**	103° 25' 15.56 W
Position Uncertainty		*0.00 usft*	***Wellhead Elevation:***		***Ground Level:***	3,354.00 usft

Wellbore	Lateral				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	05/30/18	6.70	59.82	47,860

Design	Plan #2				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	179.52	

Plan Survey Tool Program **Date** 09/17/18

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,331.49	Plan #2 (Lateral)	MWD+HRGM	
				OWSG MWD + HRGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,633.48	5.00	38.31	5,633.06	11.42	9.02	1.50	1.50	0.00	38.31	
8,603.68	5.00	38.31	8,591.94	214.62	169.58	0.00	0.00	0.00	0.00	
8,937.16	0.00	0.00	8,925.00	226.04	178.60	1.50	-1.50	0.00	180.00	Pitchblende Fed 24-2
11,879.20	0.00	0.00	11,867.04	226.04	178.60	0.00	0.00	0.00	0.00	
12,779.20	90.00	170.52	12,440.00	-339.09	272.97	10.00	10.00	0.00	170.52	
13,229.31	90.00	179.52	12,440.00	-787.05	311.99	2.00	0.00	2.00	90.00	
21,331.49	90.00	179.52	12,440.00	-8,888.95	379.54	0.00	0.00	0.00	0.00	Pitchblende Fed 24-2

Database:	EDM 5000 14 Multi User	**Local Co-ordinate Reference:**	Well 453H - Slot 453H
Company:	ENERGEN RESOURCES CORPORATION	**TVD Reference:**	3354+25 @ 3379.00usft (EST)
Project:	Lea County, NM	**MD Reference:**	3354+25 @ 3379.00usft (EST)
Site:	Pitchblende Fed 24-25 033H,453H,603H	**North Reference:**	Grid
Well:	453H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey

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

Database:	EDM 5000 14 Multi User	**Local Co-ordinate Reference:**	Well 453H - Slot 453H
Company:	ENERGEN RESOURCES CORPORATION	**TVD Reference:**	3354+25 @ 3379.00usft (EST)
Project:	Lea County, NM	**MD Reference:**	3354+25 @ 3379.00usft (EST)
Site:	Pitchblende Fed 24-25 033H,453H,603H	**North Reference:**	Grid
Well:	453H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,400.00	1.50	38.31	5,399.99	1.03	0.81	-1.02	1.50	1.50	0.00
5,500.00	3.00	38.31	5,499.91	4.11	3.25	-4.08	1.50	1.50	0.00
5,600.00	4.50	38.31	5,599.69	9.24	7.30	-9.18	1.50	1.50	0.00
5,633.48	5.00	38.31	5,633.06	11.42	9.02	-11.34	1.50	1.50	0.00
5,700.00	5.00	38.31	5,699.32	15.97	12.62	-15.86	0.00	0.00	0.00
5,800.00	5.00	38.31	5,798.94	22.81	18.02	-22.66	0.00	0.00	0.00
5,900.00	5.00	38.31	5,898.56	29.65	23.43	-29.45	0.00	0.00	0.00
6,000.00	5.00	38.31	5,998.18	36.49	28.83	-36.25	0.00	0.00	0.00
6,100.00	5.00	38.31	6,097.80	43.33	34.24	-43.04	0.00	0.00	0.00
6,200.00	5.00	38.31	6,197.42	50.17	39.64	-49.84	0.00	0.00	0.00
6,300.00	5.00	38.31	6,297.04	57.02	45.05	-56.64	0.00	0.00	0.00
6,400.00	5.00	38.31	6,396.66	63.86	50.46	-63.43	0.00	0.00	0.00
6,500.00	5.00	38.31	6,496.28	70.70	55.86	-70.23	0.00	0.00	0.00
6,600.00	5.00	38.31	6,595.90	77.54	61.27	-77.02	0.00	0.00	0.00
6,700.00	5.00	38.31	6,695.51	84.38	66.67	-83.82	0.00	0.00	0.00
6,800.00	5.00	38.31	6,795.13	91.22	72.08	-90.62	0.00	0.00	0.00
6,900.00	5.00	38.31	6,894.75	98.07	77.48	-97.41	0.00	0.00	0.00
7,000.00	5.00	38.31	6,994.37	104.91	82.89	-104.21	0.00	0.00	0.00
7,100.00	5.00	38.31	7,093.99	111.75	88.30	-111.01	0.00	0.00	0.00
7,200.00	5.00	38.31	7,193.61	118.59	93.70	-117.80	0.00	0.00	0.00
7,300.00	5.00	38.31	7,293.23	125.43	99.11	-124.60	0.00	0.00	0.00
7,400.00	5.00	38.31	7,392.85	132.27	104.51	-131.39	0.00	0.00	0.00
7,500.00	5.00	38.31	7,492.47	139.12	109.92	-138.19	0.00	0.00	0.00
7,600.00	5.00	38.31	7,592.09	145.96	115.32	-144.99	0.00	0.00	0.00
7,700.00	5.00	38.31	7,691.71	152.80	120.73	-151.78	0.00	0.00	0.00
7,800.00	5.00	38.31	7,791.32	159.64	126.14	-158.58	0.00	0.00	0.00
7,900.00	5.00	38.31	7,890.94	166.48	131.54	-165.37	0.00	0.00	0.00
8,000.00	5.00	38.31	7,990.56	173.32	136.95	-172.17	0.00	0.00	0.00
8,100.00	5.00	38.31	8,090.18	180.17	142.35	-178.97	0.00	0.00	0.00
8,200.00	5.00	38.31	8,189.80	187.01	147.76	-185.76	0.00	0.00	0.00
8,300.00	5.00	38.31	8,289.42	193.85	153.16	-192.56	0.00	0.00	0.00
8,400.00	5.00	38.31	8,389.04	200.69	158.57	-199.35	0.00	0.00	0.00
8,500.00	5.00	38.31	8,488.66	207.53	163.98	-206.15	0.00	0.00	0.00
8,603.68	5.00	38.31	8,591.94	214.62	169.58	-213.20	0.00	0.00	0.00
8,700.00	3.56	38.31	8,687.99	220.27	174.04	-218.80	1.50	-1.50	0.00
8,800.00	2.06	38.31	8,787.87	224.11	177.07	-222.62	1.50	-1.50	0.00
8,900.00	0.56	38.31	8,887.84	225.90	178.49	-224.39	1.50	-1.50	0.00
8,937.16	0.00	0.00	8,925.00	226.04	178.60	-224.54	1.50	-1.50	0.00
9,000.00	0.00	0.00	8,987.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,100.00	0.00	0.00	9,087.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,200.00	0.00	0.00	9,187.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,300.00	0.00	0.00	9,287.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,400.00	0.00	0.00	9,387.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,500.00	0.00	0.00	9,487.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,600.00	0.00	0.00	9,587.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,700.00	0.00	0.00	9,687.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,800.00	0.00	0.00	9,787.84	226.04	178.60	-224.54	0.00	0.00	0.00
9,900.00	0.00	0.00	9,887.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,000.00	0.00	0.00	9,987.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,100.00	0.00	0.00	10,087.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,200.00	0.00	0.00	10,187.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,300.00	0.00	0.00	10,287.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,400.00	0.00	0.00	10,387.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,500.00	0.00	0.00	10,487.84	226.04	178.60	-224.54	0.00	0.00	0.00

Database:	EDM 5000 14 Multi User	**Local Co-ordinate Reference:**	Well 453H - Slot 453H
Company:	ENERGEN RESOURCES CORPORATION	**TVD Reference:**	3354+25 @ 3379.00usft (EST)
Project:	Lea County, NM	**MD Reference:**	3354+25 @ 3379.00usft (EST)
Site:	Pitchblende Fed 24-25 033H,453H,603H	**North Reference:**	Grid
Well:	453H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,600.00	0.00	0.00	10,587.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,700.00	0.00	0.00	10,687.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,800.00	0.00	0.00	10,787.84	226.04	178.60	-224.54	0.00	0.00	0.00
10,900.00	0.00	0.00	10,887.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,000.00	0.00	0.00	10,987.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,100.00	0.00	0.00	11,087.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,200.00	0.00	0.00	11,187.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,300.00	0.00	0.00	11,287.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,400.00	0.00	0.00	11,387.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,500.00	0.00	0.00	11,487.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,600.00	0.00	0.00	11,587.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,700.00	0.00	0.00	11,687.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,800.00	0.00	0.00	11,787.84	226.04	178.60	-224.54	0.00	0.00	0.00
11,879.20	0.00	0.00	11,867.04	226.04	178.60	-224.54	0.00	0.00	0.00
11,900.00	2.08	170.52	11,887.84	225.67	178.66	-224.16	10.00	10.00	0.00
11,950.00	7.08	170.52	11,937.66	221.73	179.32	-220.22	10.00	10.00	0.00
12,000.00	12.08	170.52	11,986.95	213.53	180.69	-212.00	10.00	10.00	0.00
12,050.00	17.08	170.52	12,035.32	201.12	182.76	-199.58	10.00	10.00	0.00
12,100.00	22.08	170.52	12,082.42	184.59	185.52	-183.03	10.00	10.00	0.00
12,150.00	27.08	170.52	12,127.87	164.09	188.95	-162.50	10.00	10.00	0.00
12,200.00	32.08	170.52	12,171.34	139.75	193.01	-138.13	10.00	10.00	0.00
12,250.00	37.08	170.52	12,212.49	111.77	197.68	-110.11	10.00	10.00	0.00
12,300.00	42.08	170.52	12,251.02	80.35	202.93	-78.65	10.00	10.00	0.00
12,350.00	47.08	170.52	12,286.62	45.75	208.71	-44.00	10.00	10.00	0.00
12,400.00	52.08	170.52	12,319.03	8.21	214.97	-6.41	10.00	10.00	0.00
12,450.00	57.08	170.52	12,348.00	-31.96	221.68	33.82	10.00	10.00	0.00
12,500.00	62.08	170.52	12,373.31	-74.48	228.78	76.39	10.00	10.00	0.00
12,550.00	67.08	170.52	12,394.76	-119.01	236.22	120.98	10.00	10.00	0.00
12,600.00	72.08	170.52	12,412.20	-165.21	243.93	167.25	10.00	10.00	0.00
12,650.00	77.08	170.52	12,425.49	-212.74	251.87	214.84	10.00	10.00	0.00
12,700.00	82.08	170.52	12,434.53	-261.22	259.97	263.39	10.00	10.00	0.00
12,750.00	87.08	170.52	12,439.25	-310.31	268.16	312.54	10.00	10.00	0.00
12,779.20	90.00	170.52	12,440.00	-339.09	272.97	341.37	10.00	10.00	0.00
12,800.00	90.00	170.94	12,440.00	-359.62	276.32	361.92	2.00	0.00	2.00
12,900.00	90.00	172.94	12,440.00	-458.63	290.35	461.04	2.00	0.00	2.00
13,000.00	90.00	174.94	12,440.00	-558.06	300.91	560.56	2.00	0.00	2.00
13,100.00	90.00	176.94	12,440.00	-657.81	308.00	660.36	2.00	0.00	2.00
13,200.00	90.00	178.94	12,440.00	-757.74	311.60	760.32	2.00	0.00	2.00
13,229.31	90.00	179.52	12,440.00	-787.05	311.99	789.63	2.00	0.00	2.00
13,300.00	90.00	179.52	12,440.00	-857.73	312.58	860.32	0.00	0.00	0.00
13,400.00	90.00	179.52	12,440.00	-957.73	313.42	960.32	0.00	0.00	0.00
13,500.00	90.00	179.52	12,440.00	-1,057.73	314.25	1,060.32	0.00	0.00	0.00
13,600.00	90.00	179.52	12,440.00	-1,157.72	315.08	1,160.32	0.00	0.00	0.00
13,700.00	90.00	179.52	12,440.00	-1,257.72	315.92	1,260.32	0.00	0.00	0.00
13,800.00	90.00	179.52	12,440.00	-1,357.71	316.75	1,360.32	0.00	0.00	0.00
13,900.00	90.00	179.52	12,440.00	-1,457.71	317.58	1,460.32	0.00	0.00	0.00
14,000.00	90.00	179.52	12,440.00	-1,557.71	318.42	1,560.32	0.00	0.00	0.00
14,100.00	90.00	179.52	12,440.00	-1,657.70	319.25	1,660.32	0.00	0.00	0.00
14,200.00	90.00	179.52	12,440.00	-1,757.70	320.08	1,760.32	0.00	0.00	0.00
14,300.00	90.00	179.52	12,440.00	-1,857.70	320.92	1,860.32	0.00	0.00	0.00
14,400.00	90.00	179.52	12,440.00	-1,957.69	321.75	1,960.32	0.00	0.00	0.00
14,500.00	90.00	179.52	12,440.00	-2,057.69	322.59	2,060.32	0.00	0.00	0.00
14,600.00	90.00	179.52	12,440.00	-2,157.69	323.42	2,160.32	0.00	0.00	0.00
14,700.00	90.00	179.52	12,440.00	-2,257.68	324.25	2,260.32	0.00	0.00	0.00

Database:	EDM 5000 14 Multi User	**Local Co-ordinate Reference:**	Well 453H - Slot 453H
Company:	ENERGEN RESOURCES CORPORATION	**TVD Reference:**	3354+25 @ 3379.00usft (EST)
Project:	Lea County, NM	**MD Reference:**	3354+25 @ 3379.00usft (EST)
Site:	Pitchblende Fed 24-25 033H,453H,603H	**North Reference:**	Grid
Well:	453H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

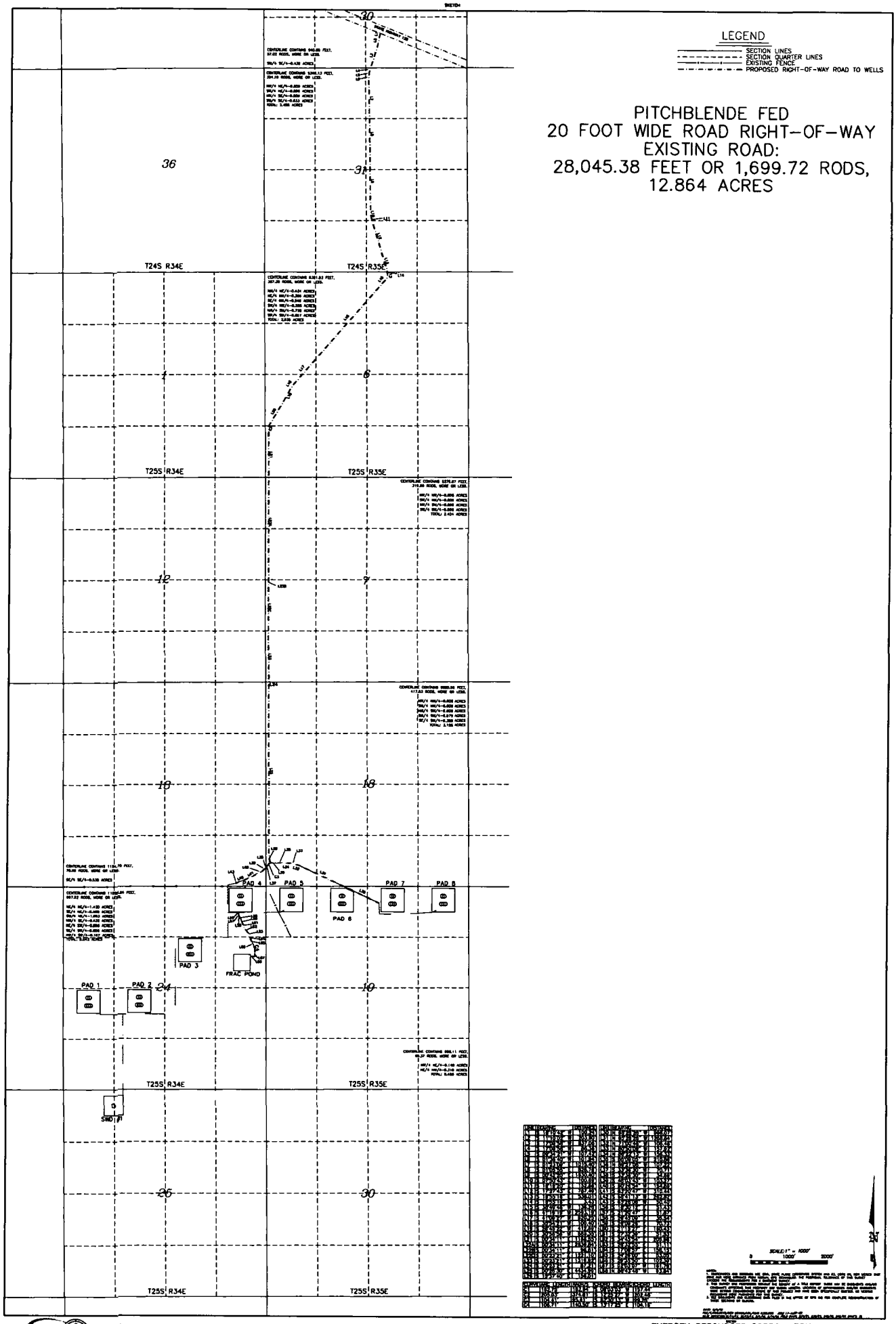
Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,800.00	90.00	179.52	12,440.00	-2,357.68	325.09	2,360.32	0.00	0.00	0.00
14,900.00	90.00	179.52	12,440.00	-2,457.68	325.92	2,460.32	0.00	0.00	0.00
15,000.00	90.00	179.52	12,440.00	-2,557.67	326.75	2,560.32	0.00	0.00	0.00
15,100.00	90.00	179.52	12,440.00	-2,657.67	327.59	2,660.32	0.00	0.00	0.00
15,200.00	90.00	179.52	12,440.00	-2,757.67	328.42	2,760.32	0.00	0.00	0.00
15,300.00	90.00	179.52	12,440.00	-2,857.66	329.26	2,860.32	0.00	0.00	0.00
15,400.00	90.00	179.52	12,440.00	-2,957.66	330.09	2,960.32	0.00	0.00	0.00
15,500.00	90.00	179.52	12,440.00	-3,057.66	330.92	3,060.32	0.00	0.00	0.00
15,600.00	90.00	179.52	12,440.00	-3,157.65	331.76	3,160.32	0.00	0.00	0.00
15,700.00	90.00	179.52	12,440.00	-3,257.65	332.59	3,260.32	0.00	0.00	0.00
15,800.00	90.00	179.52	12,440.00	-3,357.65	333.42	3,360.32	0.00	0.00	0.00
15,900.00	90.00	179.52	12,440.00	-3,457.64	334.26	3,460.32	0.00	0.00	0.00
16,000.00	90.00	179.52	12,440.00	-3,557.64	335.09	3,560.32	0.00	0.00	0.00
16,100.00	90.00	179.52	12,440.00	-3,657.63	335.93	3,660.32	0.00	0.00	0.00
16,200.00	90.00	179.52	12,440.00	-3,757.63	336.76	3,760.32	0.00	0.00	0.00
16,300.00	90.00	179.52	12,440.00	-3,857.63	337.59	3,860.32	0.00	0.00	0.00
16,400.00	90.00	179.52	12,440.00	-3,957.62	338.43	3,960.32	0.00	0.00	0.00
16,500.00	90.00	179.52	12,440.00	-4,057.62	339.26	4,060.32	0.00	0.00	0.00
16,600.00	90.00	179.52	12,440.00	-4,157.62	340.09	4,160.32	0.00	0.00	0.00
16,700.00	90.00	179.52	12,440.00	-4,257.61	340.93	4,260.32	0.00	0.00	0.00
16,800.00	90.00	179.52	12,440.00	-4,357.61	341.76	4,360.32	0.00	0.00	0.00
16,900.00	90.00	179.52	12,440.00	-4,457.61	342.59	4,460.32	0.00	0.00	0.00
17,000.00	90.00	179.52	12,440.00	-4,557.60	343.43	4,560.32	0.00	0.00	0.00
17,100.00	90.00	179.52	12,440.00	-4,657.60	344.26	4,660.32	0.00	0.00	0.00
17,200.00	90.00	179.52	12,440.00	-4,757.60	345.10	4,760.32	0.00	0.00	0.00
17,300.00	90.00	179.52	12,440.00	-4,857.59	345.93	4,860.32	0.00	0.00	0.00
17,400.00	90.00	179.52	12,440.00	-4,957.59	346.76	4,960.32	0.00	0.00	0.00
17,500.00	90.00	179.52	12,440.00	-5,057.59	347.60	5,060.32	0.00	0.00	0.00
17,600.00	90.00	179.52	12,440.00	-5,157.58	348.43	5,160.32	0.00	0.00	0.00
17,700.00	90.00	179.52	12,440.00	-5,257.58	349.26	5,260.32	0.00	0.00	0.00
17,800.00	90.00	179.52	12,440.00	-5,357.58	350.10	5,360.32	0.00	0.00	0.00
17,900.00	90.00	179.52	12,440.00	-5,457.57	350.93	5,460.32	0.00	0.00	0.00
18,000.00	90.00	179.52	12,440.00	-5,557.57	351.77	5,560.32	0.00	0.00	0.00
18,100.00	90.00	179.52	12,440.00	-5,657.57	352.60	5,660.32	0.00	0.00	0.00
18,200.00	90.00	179.52	12,440.00	-5,757.56	353.43	5,760.32	0.00	0.00	0.00
18,300.00	90.00	179.52	12,440.00	-5,857.56	354.27	5,860.32	0.00	0.00	0.00
18,400.00	90.00	179.52	12,440.00	-5,957.55	355.10	5,960.32	0.00	0.00	0.00
18,500.00	90.00	179.52	12,440.00	-6,057.55	355.93	6,060.32	0.00	0.00	0.00
18,600.00	90.00	179.52	12,440.00	-6,157.55	356.77	6,160.32	0.00	0.00	0.00
18,700.00	90.00	179.52	12,440.00	-6,257.54	357.60	6,260.32	0.00	0.00	0.00
18,800.00	90.00	179.52	12,440.00	-6,357.54	358.43	6,360.32	0.00	0.00	0.00
18,900.00	90.00	179.52	12,440.00	-6,457.54	359.27	6,460.32	0.00	0.00	0.00
19,000.00	90.00	179.52	12,440.00	-6,557.53	360.10	6,560.32	0.00	0.00	0.00
19,100.00	90.00	179.52	12,440.00	-6,657.53	360.94	6,660.32	0.00	0.00	0.00
19,200.00	90.00	179.52	12,440.00	-6,757.53	361.77	6,760.32	0.00	0.00	0.00
19,300.00	90.00	179.52	12,440.00	-6,857.52	362.60	6,860.32	0.00	0.00	0.00
19,400.00	90.00	179.52	12,440.00	-6,957.52	363.44	6,960.32	0.00	0.00	0.00
19,500.00	90.00	179.52	12,440.00	-7,057.52	364.27	7,060.32	0.00	0.00	0.00
19,600.00	90.00	179.52	12,440.00	-7,157.51	365.10	7,160.32	0.00	0.00	0.00
19,700.00	90.00	179.52	12,440.00	-7,257.51	365.94	7,260.32	0.00	0.00	0.00
19,800.00	90.00	179.52	12,440.00	-7,357.51	366.77	7,360.32	0.00	0.00	0.00
19,900.00	90.00	179.52	12,440.00	-7,457.50	367.61	7,460.32	0.00	0.00	0.00
20,000.00	90.00	179.52	12,440.00	-7,557.50	368.44	7,560.32	0.00	0.00	0.00
20,100.00	90.00	179.52	12,440.00	-7,657.50	369.27	7,660.32	0.00	0.00	0.00

Database:	EDM 5000 14 Multi User	**Local Co-ordinate Reference:**	Well 453H - Slot 453H
Company:	ENERGEN RESOURCES CORPORATION	**TVD Reference:**	3354+25 @ 3379.00usft (EST)
Project:	Lea County, NM	**MD Reference:**	3354+25 @ 3379.00usft (EST)
Site:	Pitchblende Fed 24-25 033H,453H,603H	**North Reference:**	Grid
Well:	453H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

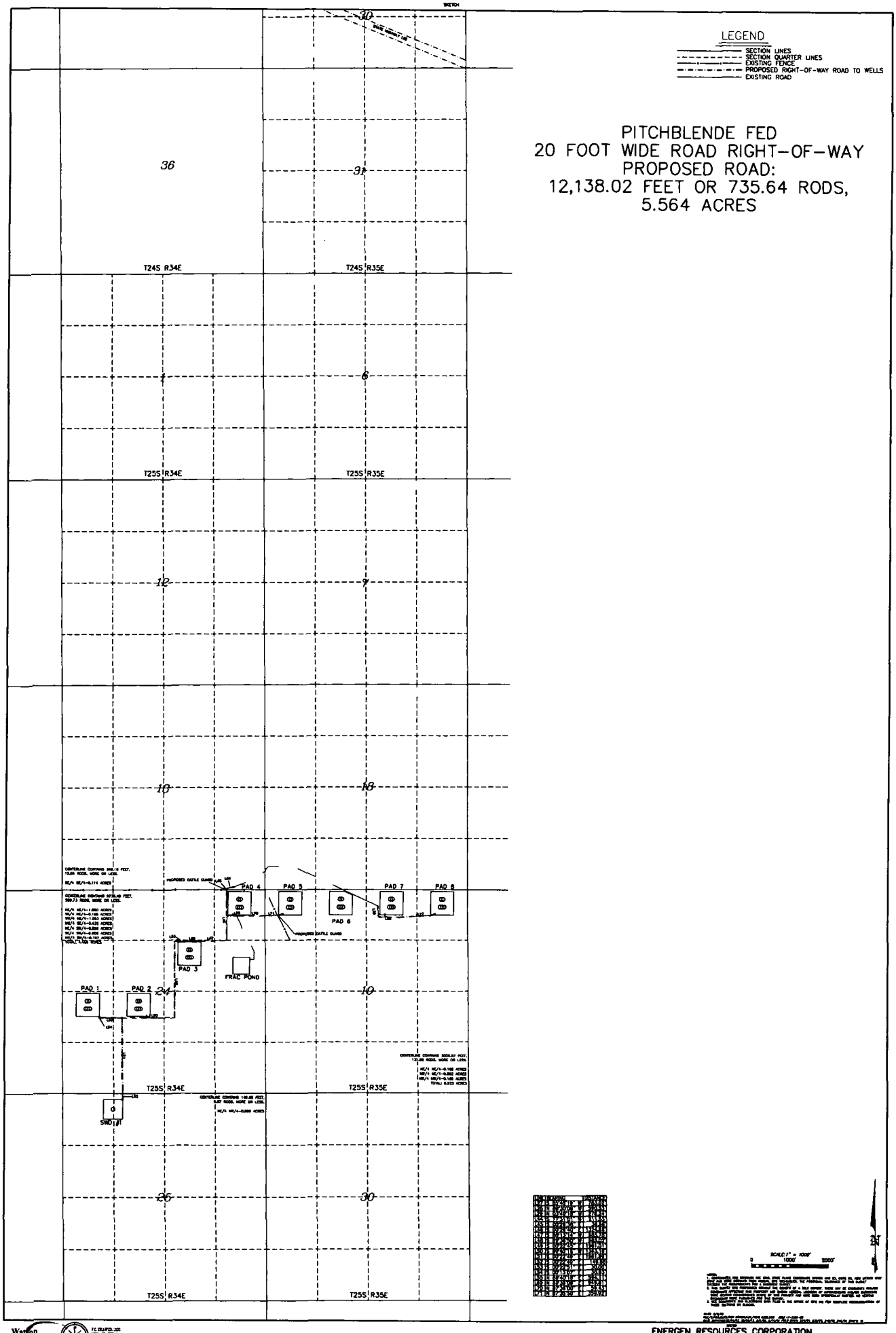
Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
20,200.00	90.00	179.52	12,440.00	-7,757.49	370.11	7,760.32	0.00	0.00	0.00
20,300.00	90.00	179.52	12,440.00	-7,857.49	370.94	7,860.32	0.00	0.00	0.00
20,400.00	90.00	179.52	12,440.00	-7,957.49	371.77	7,960.32	0.00	0.00	0.00
20,500.00	90.00	179.52	12,440.00	-8,057.48	372.61	8,060.32	0.00	0.00	0.00
20,600.00	90.00	179.52	12,440.00	-8,157.48	373.44	8,160.32	0.00	0.00	0.00
20,700.00	90.00	179.52	12,440.00	-8,257.48	374.28	8,260.32	0.00	0.00	0.00
20,800.00	90.00	179.52	12,440.00	-8,357.47	375.11	8,360.32	0.00	0.00	0.00
20,900.00	90.00	179.52	12,440.00	-8,457.47	375.94	8,460.32	0.00	0.00	0.00
21,000.00	90.00	179.52	12,440.00	-8,557.46	376.78	8,560.32	0.00	0.00	0.00
21,100.00	90.00	179.52	12,440.00	-8,657.46	377.61	8,660.32	0.00	0.00	0.00
21,200.00	90.00	179.52	12,440.00	-8,757.46	378.44	8,760.32	0.00	0.00	0.00
21,300.00	90.00	179.52	12,440.00	-8,857.45	379.28	8,860.32	0.00	0.00	0.00
21,331.49	90.00	179.52	12,440.00	-8,888.95	379.54	8,891.81	0.00	0.00	0.00



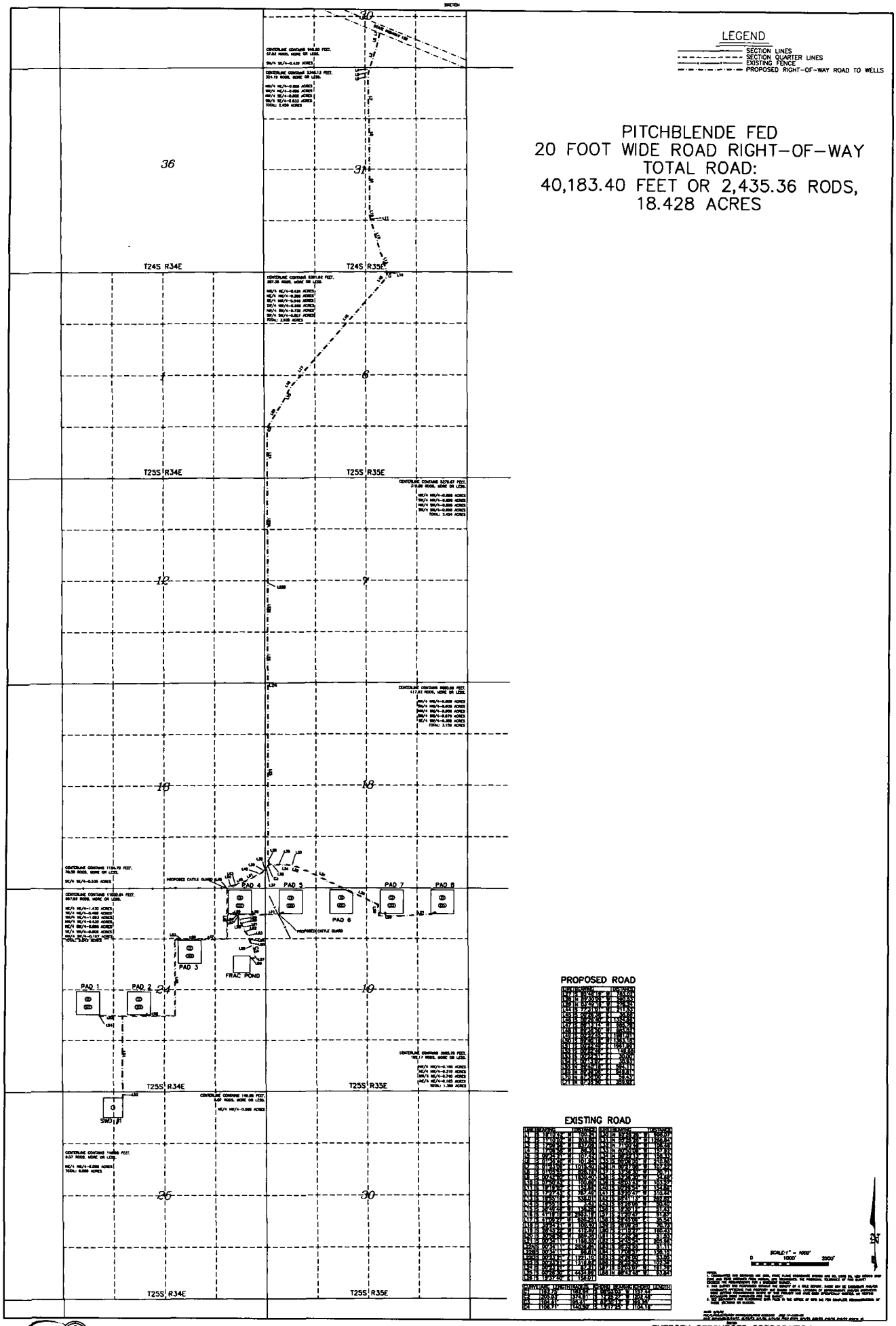
Western Professional Group Inc

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED ROAD RIGHT-OF-WAY
SECTIONS 30 & 31, T24S, R35E,
SECTIONS 6, 7, 18, & 19, T25S, R35E,
SECTIONS 13 & 24, T25S, R34E
LEA COUNTY, NEW MEXICO



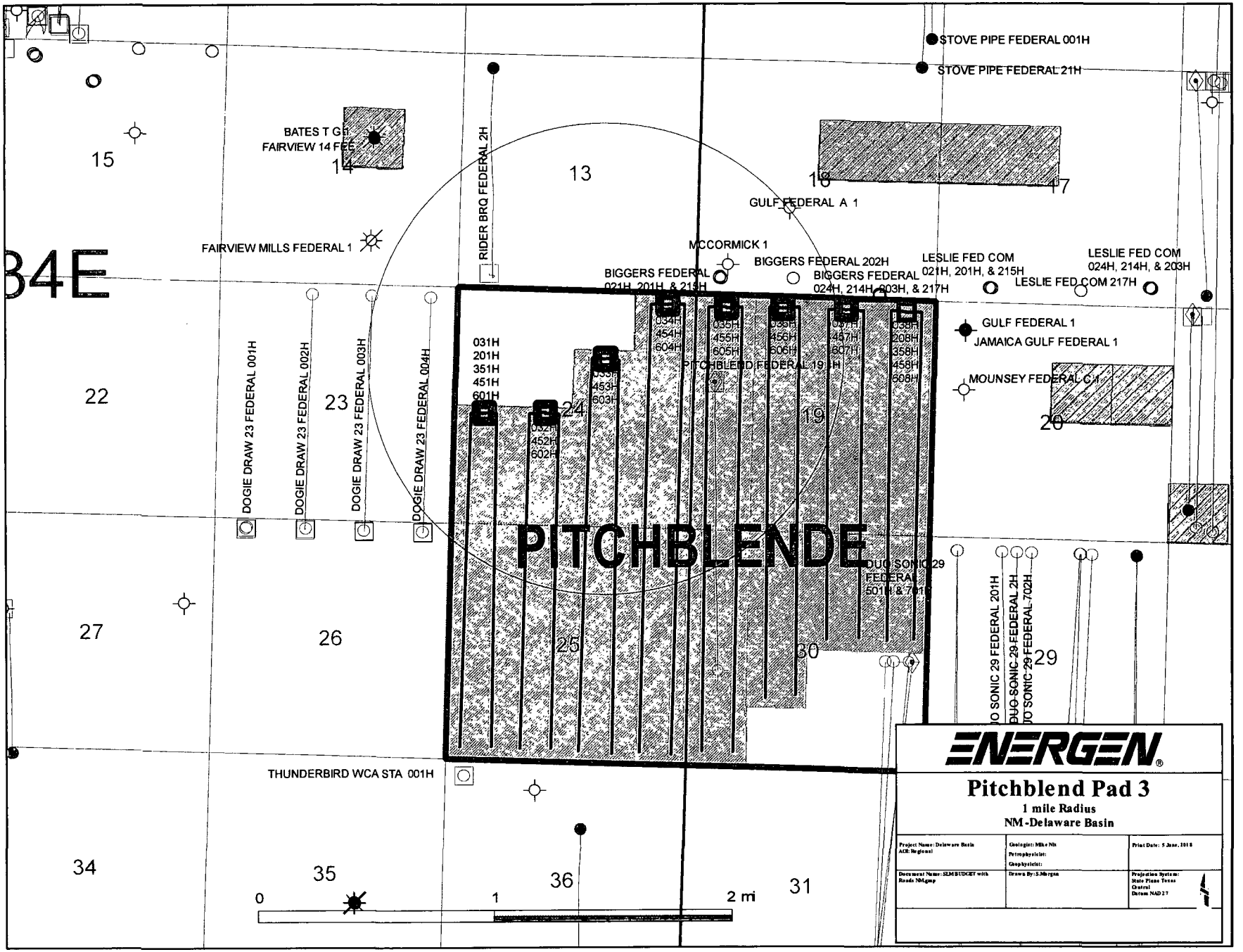
Watson Professional Group Inc

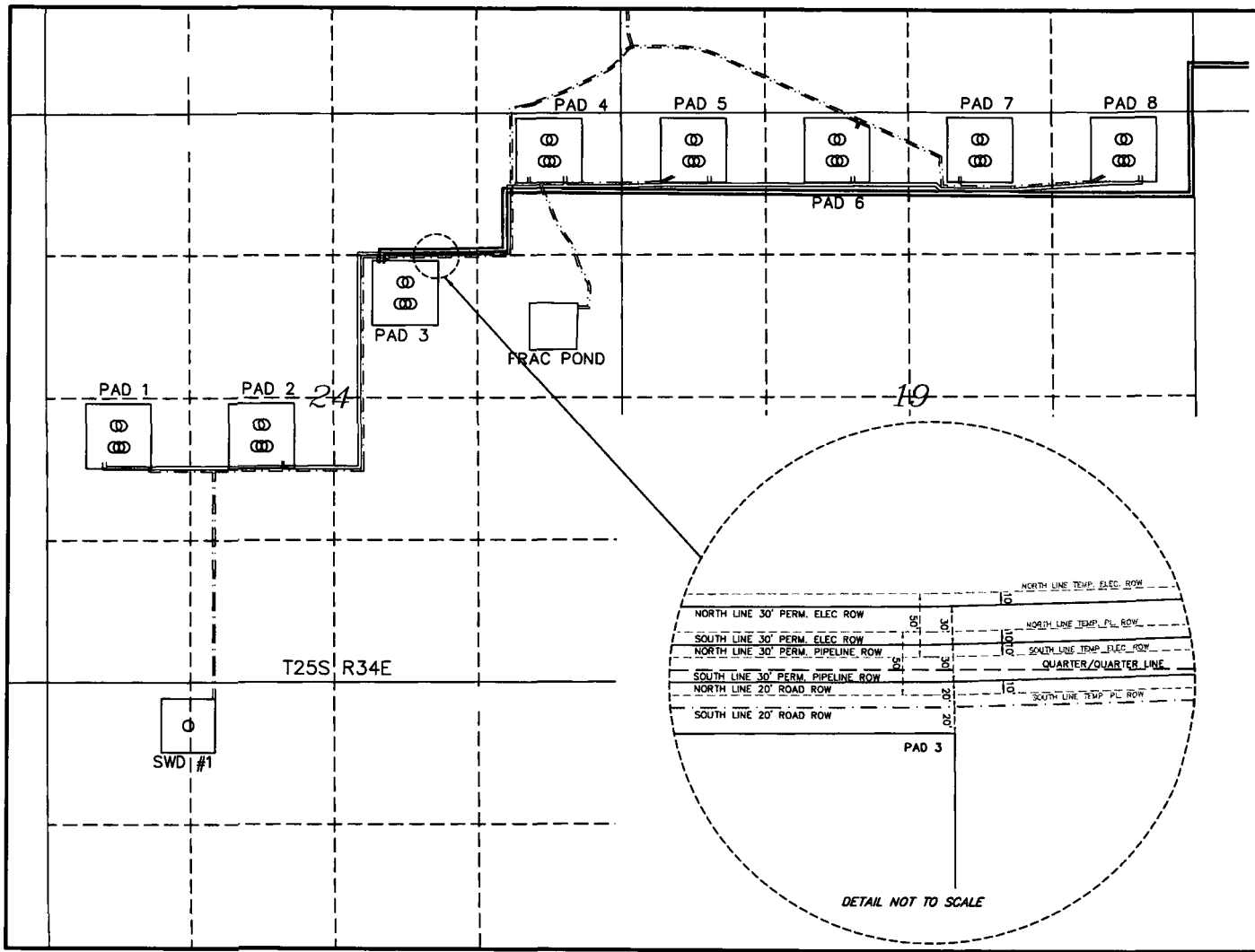
ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED ROAD RIGHT-OF-WAY
SECTION 19, T25S, R35E,
SECTIONS 13, 24, & 25, T25S, R34E
LEA COUNTY, NEW MEXICO



Watson Professional Group Inc

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED ROAD RIGHT-OF-WAY
SECTIONS 30 & 31, T24S, R35E,
SECTIONS 6, 7, 18, & 19, T25S, R35E,
SECTIONS 13, 24, & 25, T25S, R34E
LEA COUNTY, NEW MEXICO


STOVE PIPE FEDERAL 001H
STOVE PIPE FEDERAL 21H
BATES T GH
FAIRVIEW 14 FED
RIDER BRQ FEDERAL 2H
GULF FEDERAL A 1
FAIRVIEW MILLS FEDERAL 1
MCCORMICK 1
BIGGERS FEDERAL 202H
BIGGERS FEDERAL 021H, 201H, & 213H
BIGGERS FEDERAL 024H, 214H, 603H, & 217H
LESLIE FED COM 021H, 201H, & 215H
LESLIE FED COM 024H, 214H, & 203H
LESLIE FED COM 217H
GULF FEDERAL 1
JAMAICA GULF FEDERAL 1
MOUNSEY FEDERAL COM
DOGIE DRAW 23 FEDERAL 001H
DOGIE DRAW 23 FEDERAL 002H
DOGIE DRAW 23 FEDERAL 003H
DOGIE DRAW 23 FEDERAL 004H
031H
201H
351H
451H
601H
PITCHBLEND FEDERAL 19 H
PITCHBLENDE
DUO SONIC 29 FEDERAL
DUO SONIC 29 FEDERAL 201H
DUO SONIC 29 FEDERAL 2H
DUO SONIC 29 FEDERAL 702H
THUNDERBIRD WCA STA 001H
0
1
2 mi
ENERGEN
Pitchblend Pad 3
1 mile Radius
NM-Delaware Basin



LEGEND

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

PITCHBLENDE FED ROAD RIGHT-OF-WAY

20' PERMANENT RIGHT-OF-WAY
TOTAL ROAD (EXISTING AND PROPOSED):
40,183.40 FEET OR 2,435.36 RODS,
18.428 ACRES

PITCHBLENDE FED ELECTRIC RIGHT-OF-WAY

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

PITCHBLENDE FED PIPELINE RIGHT-OF-WAY

30' PERMANENT RIGHT-OF-WAY: 8.613 ACRES
20' TEMPORARY WORKSPACE: 5.699 ACRES
50' TOTAL RIGHT-OF-WAY: 14.312 ACRES
TOTAL CENTERLINE LENGTH:
12,565.91 FEET, 761.57 RODS

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

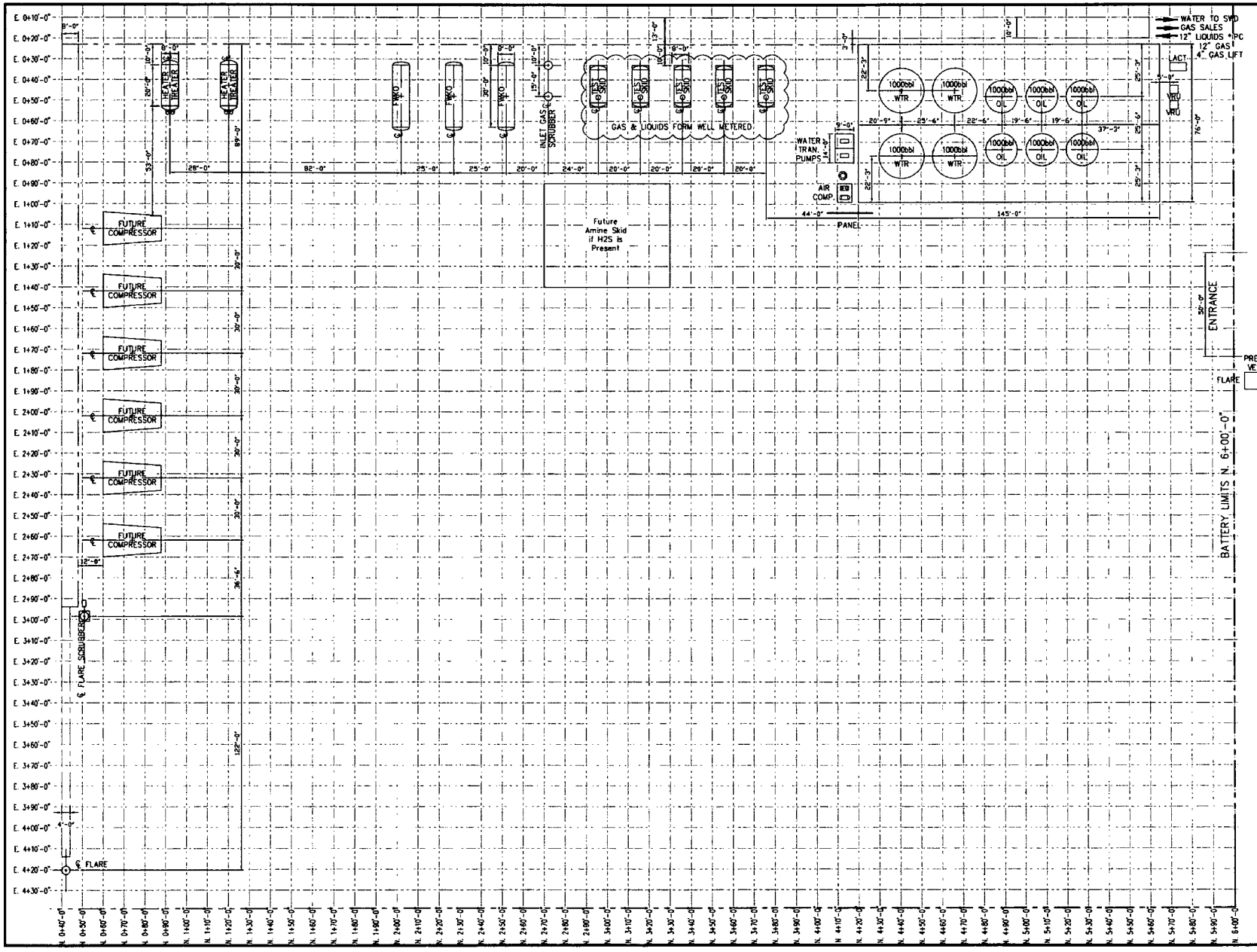
NOTES:
1. COORDINATES AND BEARINGS ARE GRID, STATE PLANE COORDINATE SYSTEM NAD 83, CORS 96, NEW MEXICO EAST ZONE AND WERE OBTAINED FROM NORMAL GPS TECHNIQUES. THE POSITIONAL TOLERANCE OF THIS SURVEY EXCEEDS THE REQUIREMENTS FOR A EASEMENT SURVEY.
2. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. THERE MAY BE EASEMENTS AND/OR COVENANTS AFFECTING THIS PROPERTY NOT SHOWN HEREON. LOCATION OF IMPROVEMENTS AND/OR EASEMENTS WERE BEYOND COMMISSIONED SCOPE OF THIS PROJECT AND HAVE BEEN SPECIFICALLY OMITTED. NO VESTING DOCUMENTS WERE FURNISHED FOR THIS SURVEY.
3. SEE DOCUMENTS AND ELECTRONIC DATA FILED IN THE OFFICE OF WPG INC FOR COMPLETE RECONSTRUCTION OF THESE SECTIONS OR BLOCKS.
4. ROW HAS NOT BEEN STAKED ON THE GROUND. PLAT FOR INFORMATION PURPOSES ONLY. INFORMATION SHOWN HEREON SUBJECT TO CHANGE.

FILE/I/PROJECTS/NEW MEXICO/LEA/T24S R35E.DWG JOB# 17-1288-00 DATE: 08/31/18
DATE SURVEYED: - FIELD BOOK: - DRAFT: TA

Watson Professional Group Inc
P.O. DRAWER 11186
MIDLAND, TEXAS
79702
(432) 520-9200
FAX (432) 520-9212
wdwatson@wpg-us.com
CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

SKETCH

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



PITCHBLEND TANK BATTERY

NOTE: REFERENCE GRID AT 10'-0" SPACING

0 10 20

EQUIPMENT SPACING CHART

	FIRED VESSEL with FLAME ARRESTOR NOTES 1&2	LOAD CONN.	COMPRESSOR NOTES 3 & 4	WATER or GAS WELLS	OIL STORAGE
OIL STORAGE	75'	75'	50'	75'	75'
WATER or GAS WELLS	75'	75'	50'	75'	75'
COMPRESSOR NOTES 3 & 4	75'	75'	50'	50'	75'
LOAD CONN.	75'	25'	50'	50'	75'
PRESSURE VESSELS	150'	150'	150'	150'	150'
FLARE	150'	150'	150'	150'	150'

NOTES:

1) FLAME ARRESTORS ARE MANDATORY FOR NEW NATURAL DRAFT FIRED HEATER PURCHASES. IF POSSIBLE, EXISTING HEATERS SHOULD BE RETROFITTED WITH FLAME ARRESTOR.

2) STABILIZERS WITH HEATING EQUIPMENT, GLYCOL ABSORBERS, RECONCENTRATORS, AND PACKAGED HEATER-SEPARATORS MAY BE CONSIDERED AS SINGLE FIRED VESSELS AND SPACED ACCORDINGLY.

3) WHEN PART OF A SKID UNIT, SCRUBBERS MAY BE LOCATED NEAR A COMPRESSOR AND ITS DRIVER CONTINGENT UPON APPROPRIATE SHUTDOWN INSTRUMENTATION AND ADEQUATE PSV VENT LOCATION.

4) FOR ELECTRIC DRIVEN COMPRESSORS, THE DISTANCE DOES NOT NECESSARILY APPLY. THE MOTOR SHALL BE APPROPRIATE FOR THE AREA OF CLASSIFICATION (i.e. VRU's & AIR COMPRESSORS).

5) LACTS & VRU SKIDS SHOULD BE LOCATED OUTSIDE BERM AND A MINIMUM OF 20' FROM STORAGE TANKS.

6) TRANSFER PUMPS SHOULD BE LOCATED OUTSIDE BERM AND A MINIMUM OF 20' FROM STORAGE TANKS.

7) ANY ELECTRICAL EQUIPMENT INSIDE THE BERM MUST MEET CLASS 1, DIV 1 ELECTRICAL AREA OF CLASSIFICATION SPECS.

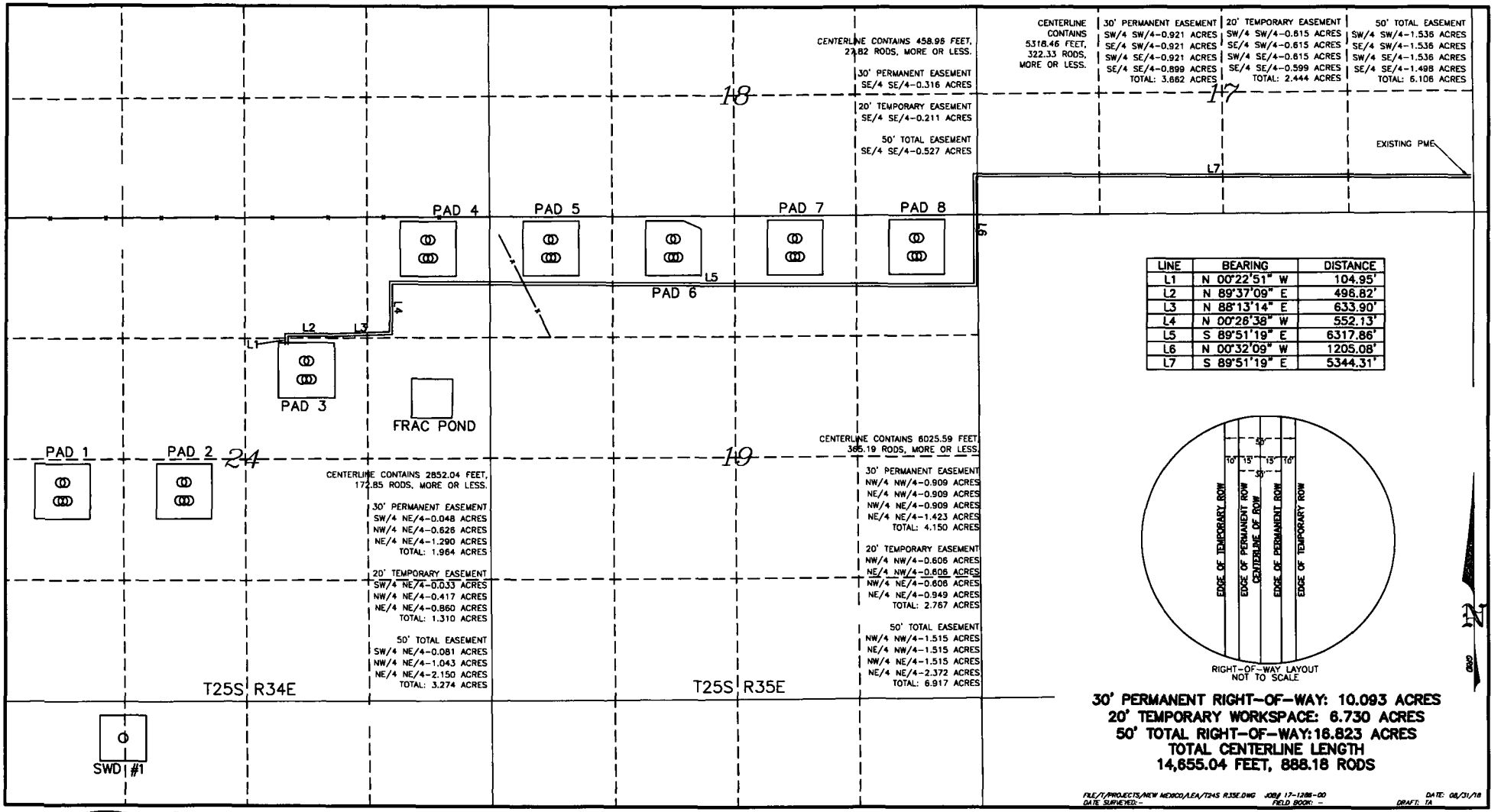
FIELD VERIFY ALL DIMENSIONS

NO	BY	DATE	REVISION	APD	DATE
B	JT		Revised Water Tanks Size		9/18
A	JT		ISSUED FOR Bid		7/18

ENERGEN RESOURCES

PLOT PLAN
Pitchblend Tank Battery
BATTERY
3510 NORTH A STREET MIDLAND, TX

DRAWN BY: Jerry Thompson	CHECKED BY / DATE
DATE: 4/18	DESIGN ENGINEER
SCALE: N/A	DWG NO: Pitchblend PLOT PLAN _ B
CAD NO: PitPln-Pitchblend	SHEET 1 of 1



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

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

FILE/T:/PROJECTS/NEW MEXICO/LEA/T24S R35E.DWG JOB# 17-1286-00 DATE: 08/31/18
DATE SURVEYED: - FIELD BOOK: - DRAFT: TA

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wdwatson@wpg-us.com
CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

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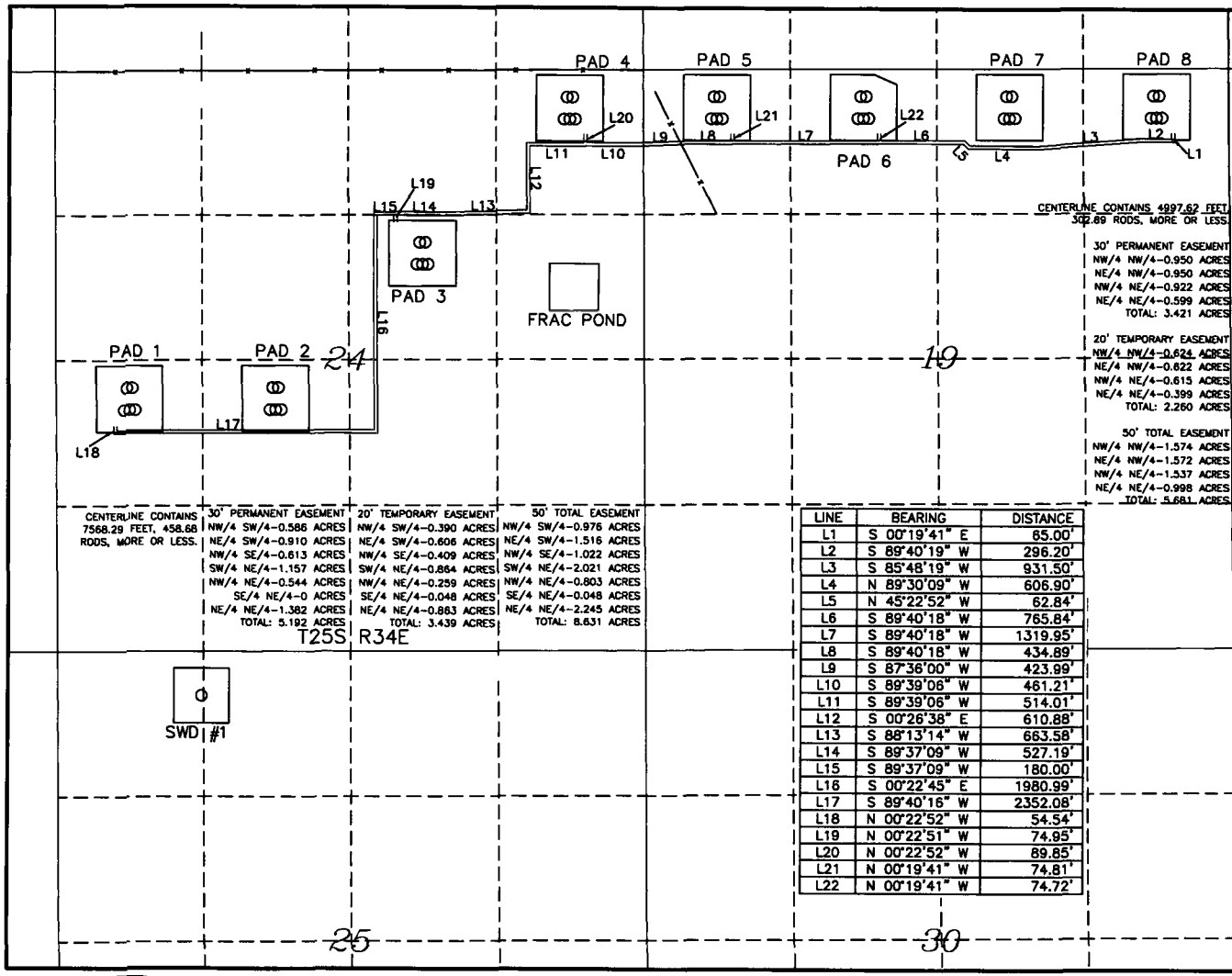
LEGEND
SECTION LINES
SECTION QUARTER LINES
EXISTING FENCE
PROPOSED ELECTRIC RIGHT-OF-WAY

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

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



CENTERLINE CONTAINS 4997.62 FEET
302.89 RODS, MORE OR LESS

30' PERMANENT EASEMENT
NW/4 NW/4–0.950 ACRES
NE/4 NW/4–0.950 ACRES
NW/4 NE/4–0.922 ACRES
NE/4 NE/4–0.599 ACRES
TOTAL: 3.421 ACRES

20' TEMPORARY EASEMENT
NW/4 NW/4–0.624 ACRES
NE/4 NW/4–0.822 ACRES
NW/4 NE/4–0.615 ACRES
NE/4 NE/4–0.399 ACRES
TOTAL: 2.260 ACRES

50' TOTAL EASEMENT
NW/4 NW/4–1.574 ACRES
NE/4 NW/4–1.572 ACRES
NW/4 NE/4–1.537 ACRES
NE/4 NE/4–0.998 ACRES
TOTAL: 5.681 ACRES

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

30' PERMANENT EASEMENT
NW/4 SW/4–0.586 ACRES
NE/4 SW/4–0.910 ACRES
NW/4 SE/4–0.613 ACRES
SW/4 NE/4–1.157 ACRES
NW/4 NE/4–0.544 ACRES
SE/4 NE/4–0 ACRES
NE/4 NE/4–1.382 ACRES
TOTAL: 5.192 ACRES

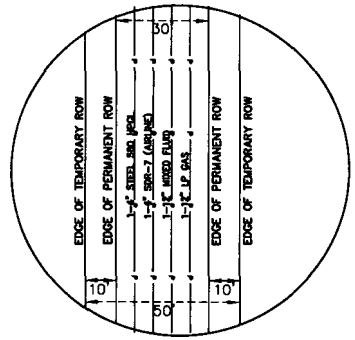
20' TEMPORARY EASEMENT
NW/4 SW/4–0.390 ACRES
NE/4 SW/4–0.606 ACRES
NW/4 SE/4–0.409 ACRES
SW/4 NE/4–0.864 ACRES
NW/4 NE/4–0.259 ACRES
SE/4 NE/4–0.048 ACRES
NE/4 NE/4–0.863 ACRES
TOTAL: 3.439 ACRES

50' TOTAL EASEMENT
NW/4 SW/4–0.976 ACRES
NE/4 SW/4–1.516 ACRES
NW/4 SE/4–1.022 ACRES
SW/4 NE/4–2.021 ACRES
NW/4 NE/4–0.803 ACRES
SE/4 NE/4–0.048 ACRES
NE/4 NE/4–2.245 ACRES
TOTAL: 8.631 ACRES

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

LEGEND

- SECTION LINES
- SECTION QUARTER LINES
- EXISTING FENCE
- PROPOSED PIPELINE RIGHT-OF-WAY
- PROPOSED PIPELINE



RIGHT-OF-WAY LAYOUT
NOT TO SCALE
PIPELINE LAYOUT SUBJECT TO CHANGE

PITCHBLENDE FED PIPELINE RIGHT-OF-WAY

30' PERMANENT RIGHT-OF-WAY: 8.613 ACRES
20' TEMPORARY WORKSPACE: 5.699 ACRES
50' TOTAL RIGHT-OF-WAY: 14.312 ACRES
TOTAL CENTERLINE LENGTH:
12,565.91 FEET, 761.57 RODS

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

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SKETCH

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

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Pitch blende - BLM Data Request

Air Line - 3" Poly - 150psig max → 100-150 NOP

Produced Water Line - 12" Poly - 250 psig Max → 125-250 psig NOP

Gas Line - 12" Poly - 12" Poly - 250psig max - 150-250 psig NOP

HP Gas - 4" Steel - 1480 Psig Max - 1000-1400 psig NOP

HT - 8'x20' MAWP - 250 psig NOP 40-110 psig

FWKO - 8'x30' MAWP - 250 Psig NOP 60-140 psig

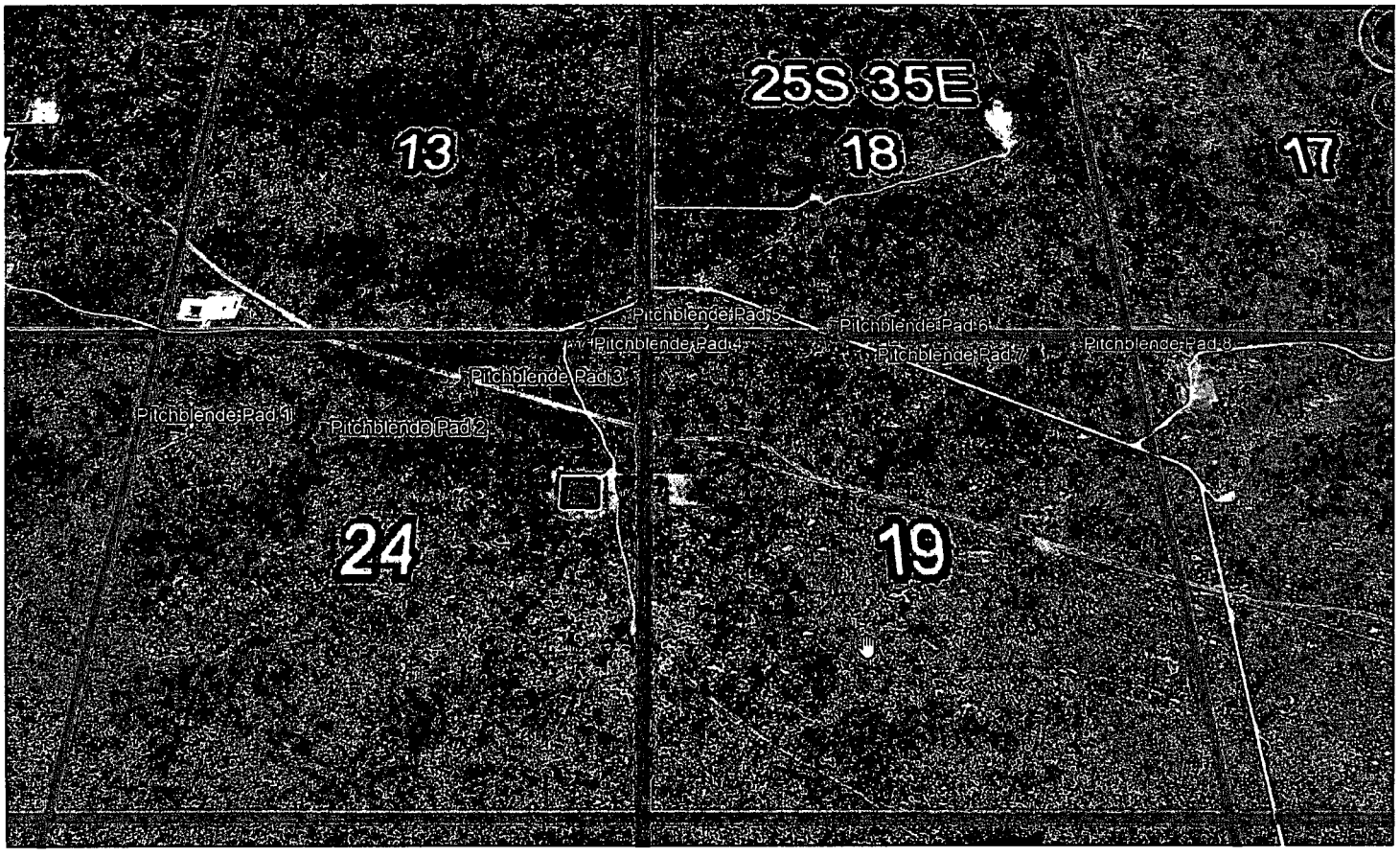
Inlet Separator - 4'x10' - MAWP-250psig NOP 80-150 psig

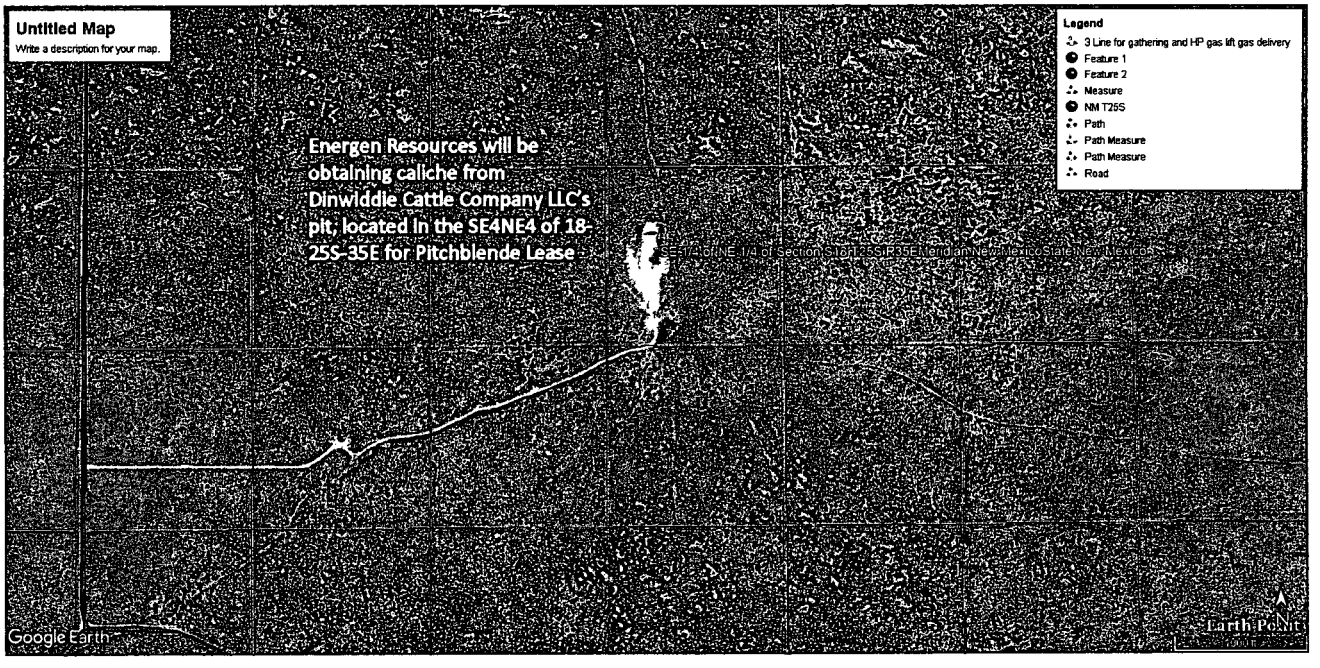
Flare Scrubber - 4'x10' - MAWP-125psig NOP 0-60 psig

Produced Water Tanks - 21'6" x 21' - Fiberglass
MAWP - 4oz. Psig NOP - 0+4 psig

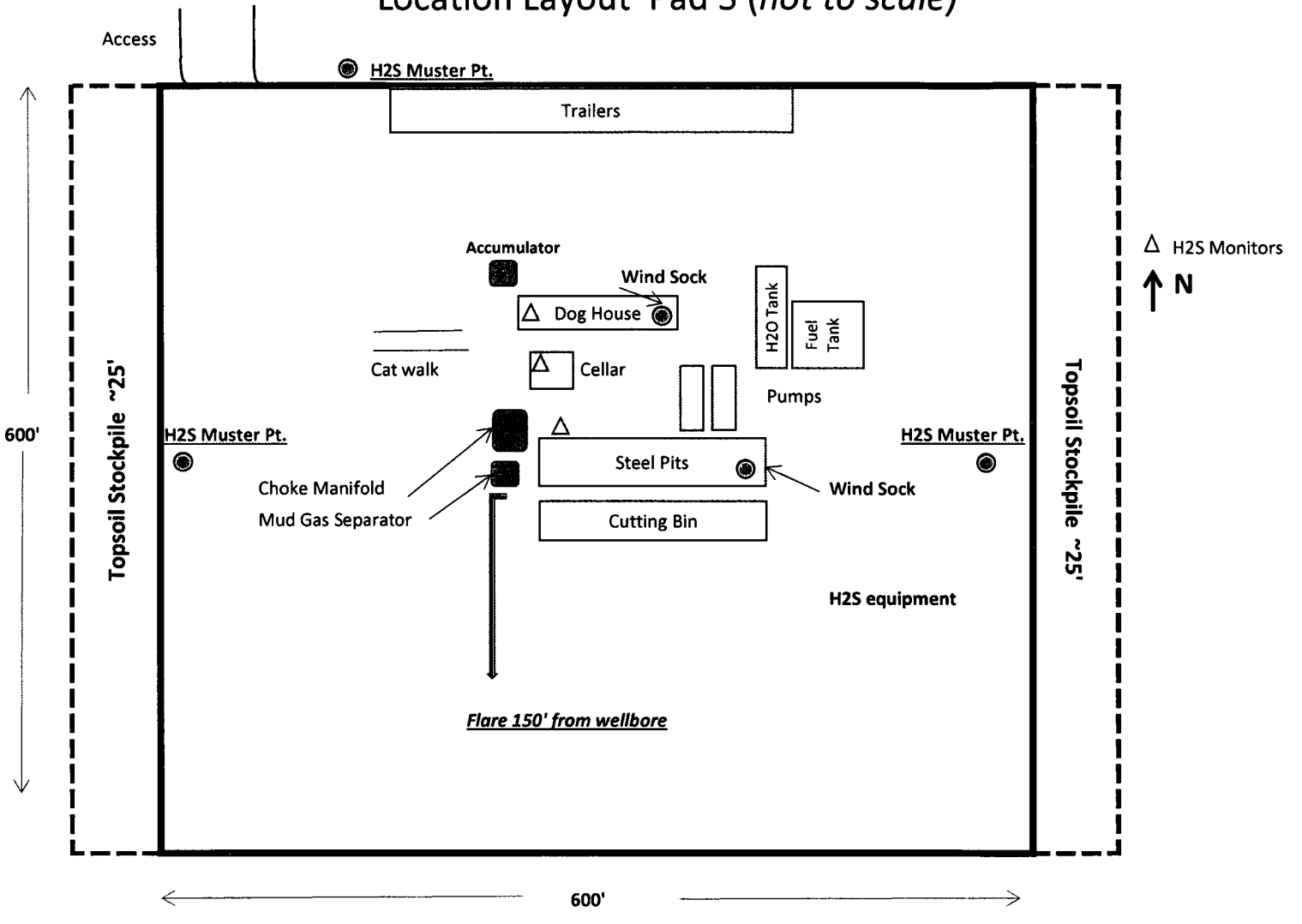
Crude Oil Tanks - 15'6'x30' - Steel
MAWP - 8oz. Psig NOP - 0+0 8psig

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


25S 35E
13
18
17
24
19
Pitchblende Pad 1
Pitchblende Pad 2
Pitchblende Pad 3
Pitchblende Pad 4
Pitchblende Pad 5
Pitchblende Pad 6
Pitchblende Pad 7
Pitchblende Pad 8

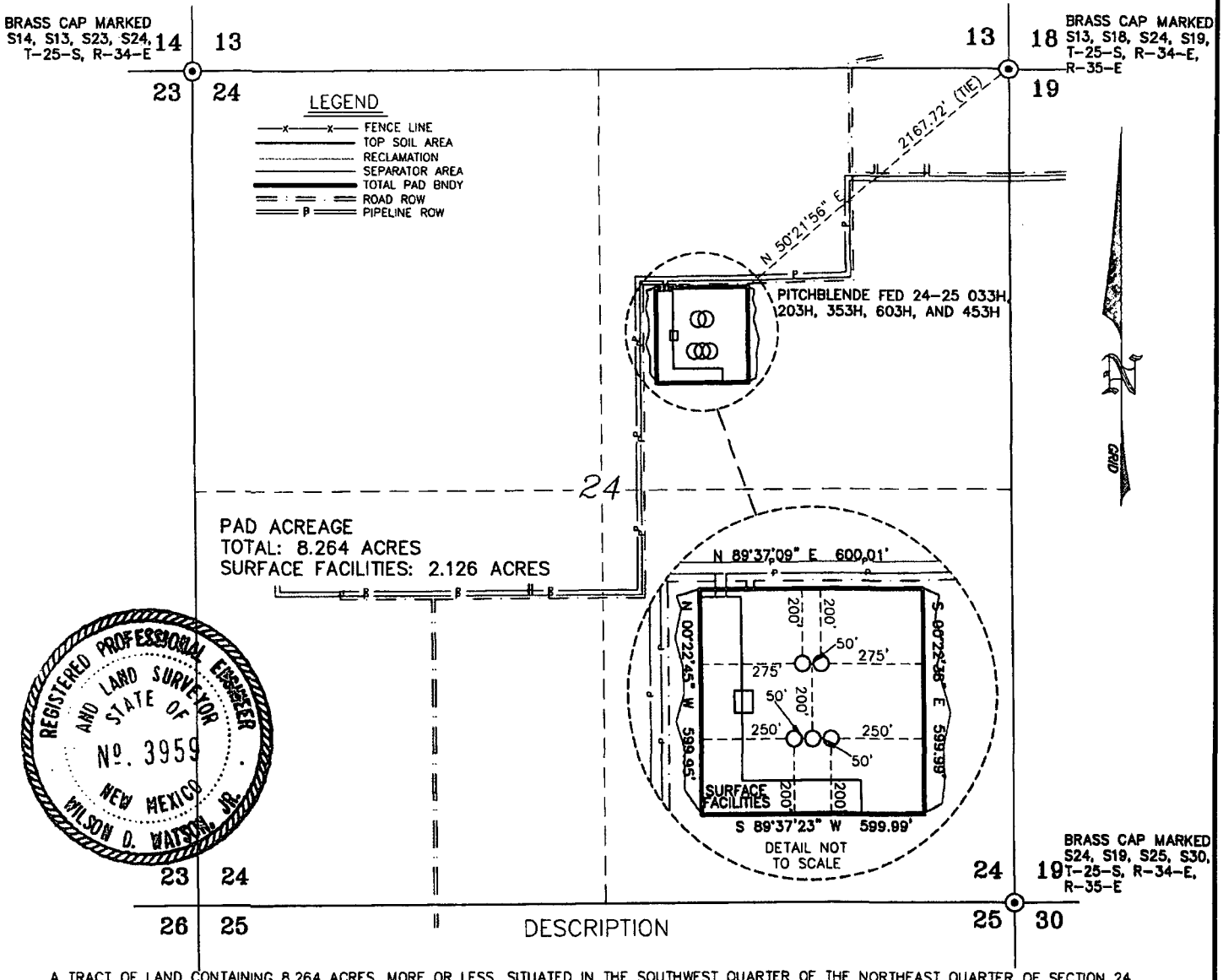

Untitled Map
Write a description for your map.
Energen Resources will be obtaining caliche from Dinwiddie Cattle Company LLC's pit, located in the SE4NE4 of 18-25S-35E for Pitchblende Lease
Legend
3 Line for gathering and HP gas lift gas delivery
Feature 1
Feature 2
Measure
NM T25S
Path
Path Measure
Path Measure
Road
Google Earth
Earth Point

Location Layout Pad 3 (*not to scale)*



SECTION 24, TOWNSHIP 25 SOUTH, RANGE 34 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO.



REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR STATE OF NEW MEXICO No. 3959 WILSON D. WATSON, JR.

A TRACT OF LAND CONTAINING 8.264 ACRES, MORE OR LESS, SITUATED IN THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 24, T-25-S, R-34-E, LEA COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS;

BEGINNING AT A POINT FOR THE NORTHEAST CORNER HEREOF, FROM WHICH A BRASS CAP MARKED "S13, S18, S24, S19, T-25-S, R-34-E, R-35-E" FOUND, FOR THE COMMON CORNER OF SAID SECTION 24, SECTION 13, T-25-S, R-34-E, AND SECTIONS 18 AND 19, T-24-S, R-35-E, BEARS NORTH 50°21'56" EAST, 2167.72 FEET; THENCE SOUTH 00°22'38" EAST, 599.99 FEET TO THE SOUTHEAST CORNER HEREOF; THENCE SOUTH 89°37'23" WEST, 599.99 FEET TO THE SOUTHWEST CORNER HEREOF; THENCE NORTH 00°22'45" WEST, 599.95 FEET TO THE NORTHWEST CORNER HEREOF; THENCE NORTH 89°37'09" EAST, 600.01 FEET TO THE POINT OF BEGINNING AND CONTAINING 8.264 ACRES OF LAND, MORE OR LESS.

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

MAY 27, 2018

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

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

1000 0 1000 2000 FEET

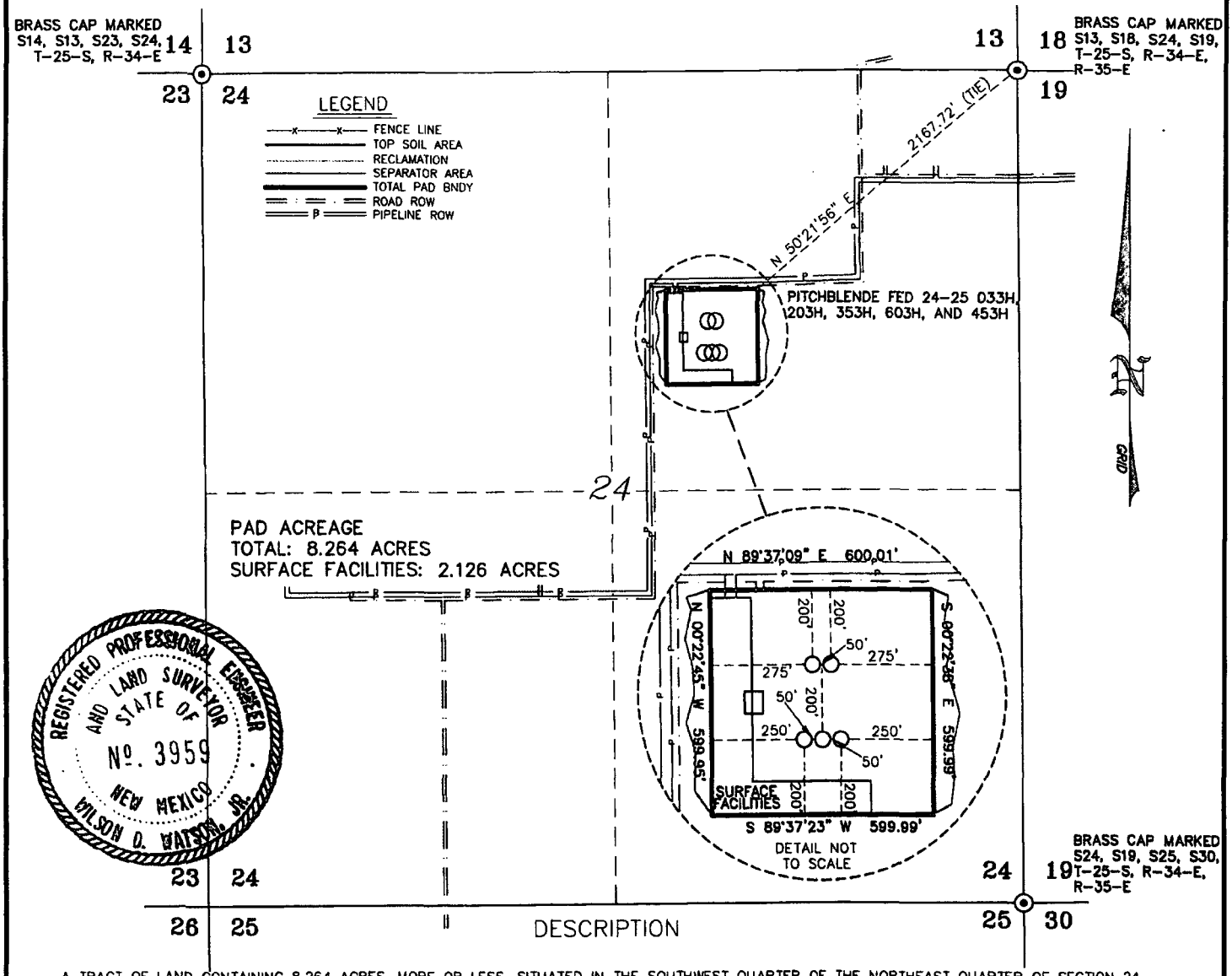
Watson Professional Group Inc
P.O. DRAWER 11256
MIDLAND, TEXAS 79702
(432) 520-2200
FAX (432) 520-2212
CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

ENERGEN RESOURCES CORPORATION
SURVEY OF THE PITCHBLENDE FED 24-25 033H, 203H, 353H, 603H, AND 453H WELL PAD IN SECTION 24, T. 24 S., R. 34 E., N.M.P.M., LEA COUNTY, NEW MEXICO.

SURVEY DATE: 12/14/17 834/51,
JOB NO.: 17-1295-00 FIELD BOOK 838/25 DRAFT DM PAGE 1

SECTION 24, TOWNSHIP 25 SOUTH, RANGE 34 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO.



REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR STATE OF NEW MEXICO No. 3959 WILSON D. WATSON, JR.

DESCRIPTION

A TRACT OF LAND CONTAINING 8.264 ACRES, MORE OR LESS, SITUATED IN THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 24, T-25-S, R-34-E, LEA COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS;

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MAY 27, 2018

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

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1000 0 1000 2000 FEET

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MIDLAND, TEXAS 79702
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FAX (432) 520-9212

CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

ENERGEN RESOURCES CORPORATION
SURVEY OF THE PITCHBLENDE FED 24-25 033H, 203H, 353H, 603H, AND 453H WELL PAD IN SECTION 24, T. 24 S., R. 34 E., N.M.P.M., LEA COUNTY, NEW MEXICO.

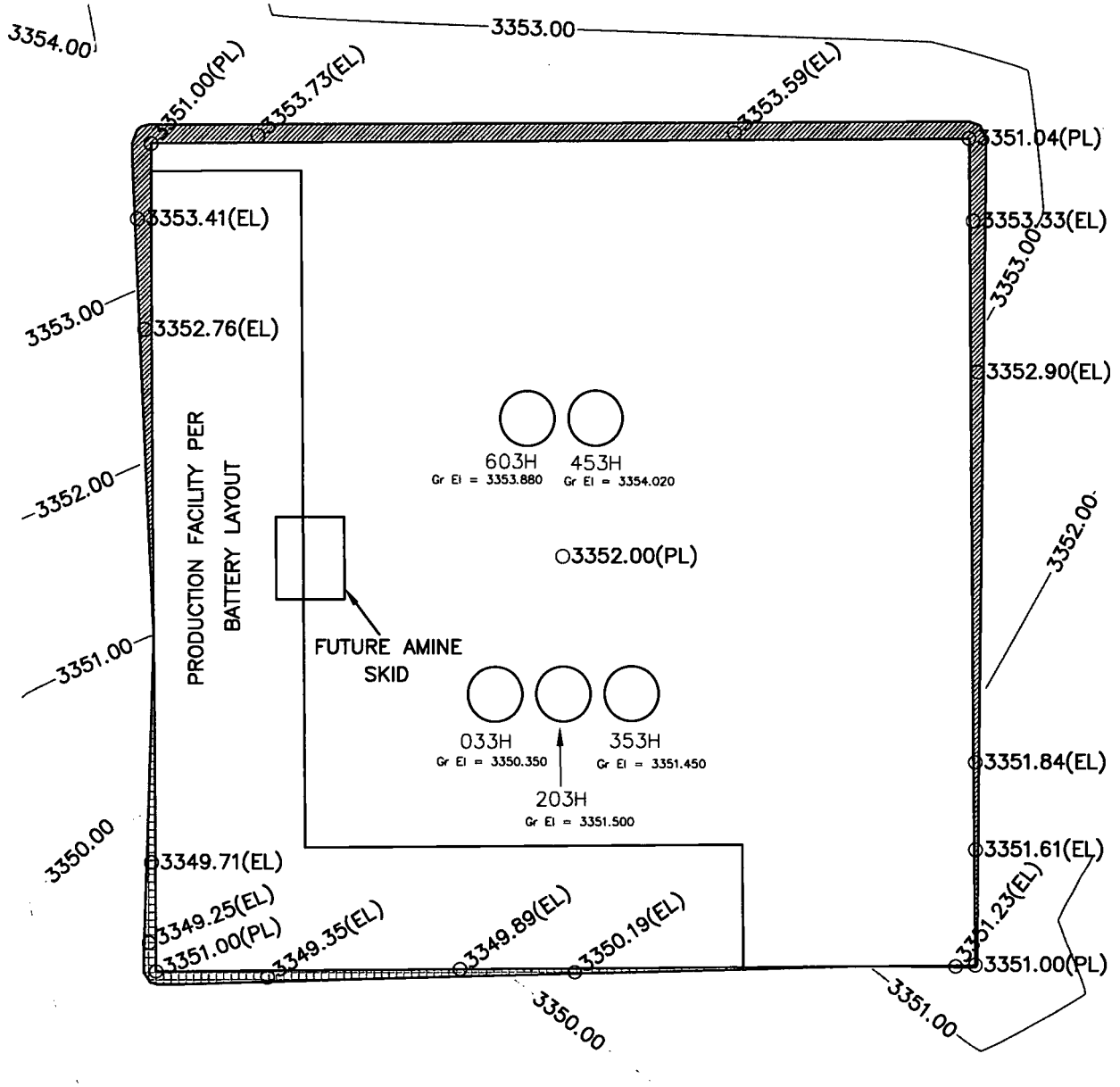
SURVEY DATE: 12/14/17

JOB NO.: 17-1295-00 FIELD BOOK 834/51, 836/25 DRAFT DM PAGE 1

SKETCH PLAT

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED #3 PAD – 603H, 453H, 033H, 203H & 353H
SECTION 24
T–24–S, R–35–E
LEA COUNTY, NEW MEXICO

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



Calculate Cut volume = 13458.33 Cu Yds
Calculate Fill Volume = 2225.47 Cu Yds

0 120' 240'

WO#17-1308-00

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

LEGEND

EL – EXISTING ELEVATION

PL – PROPOSED ELEVATION

PRELIMINARY

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

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wdwatson@pg-us.com
CONSULTING ENGINEERS, LAND SURVEYORS & PLANNERS

DIRT WORK CALCULATIONS

ENERGEN RESOURCES CORPORATION

PITCHBLENDE FED #2 PAD

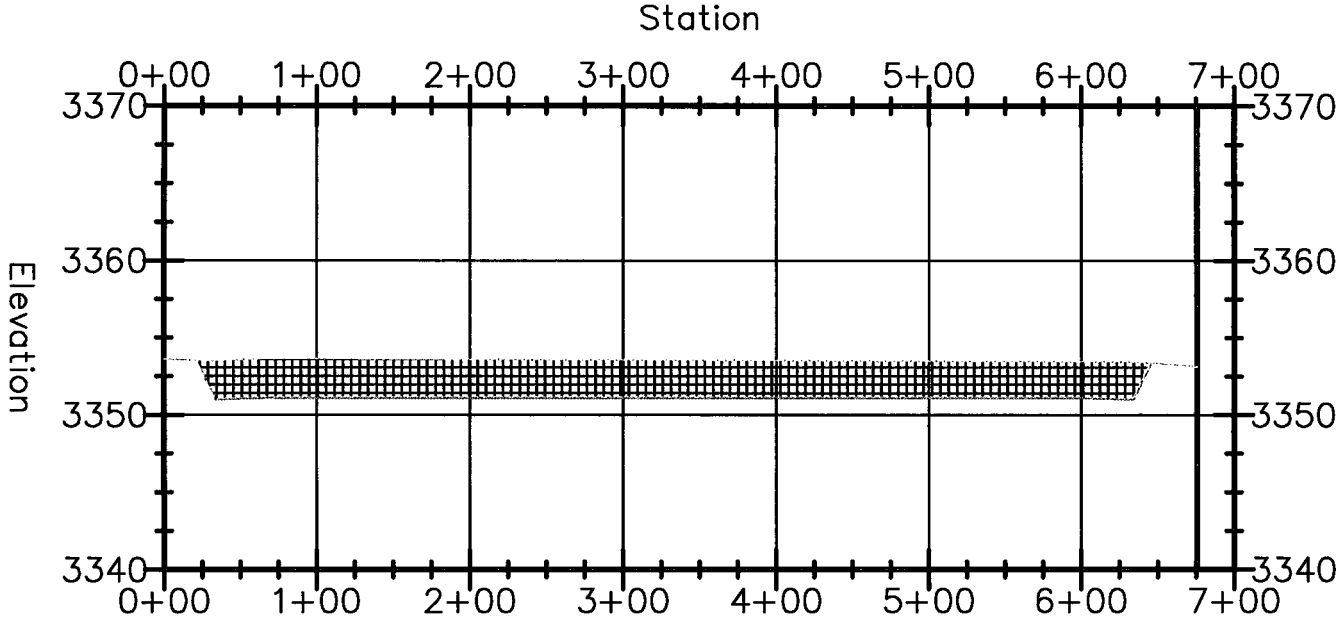
Location Pad Calculations
T–24–S, R–35–E
LEA COUNTY, NEW MEXICO.

SKETCH PLAT

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED #3 PAD
SECTION 24
T-24-S, R-35-E
LEA COUNTY, NEW MEXICO

LEGEND
FILL CUT
EXISTING GRADE
FINISHED GRADE

Alignment top cross section #3 PROFILE



0 120' 240'

WO#17-1308-00

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

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LOCATION PAD PROFILES

ENERGEN RESOURCES CORPORATION

PITCHBLENDE FED #3 PAD

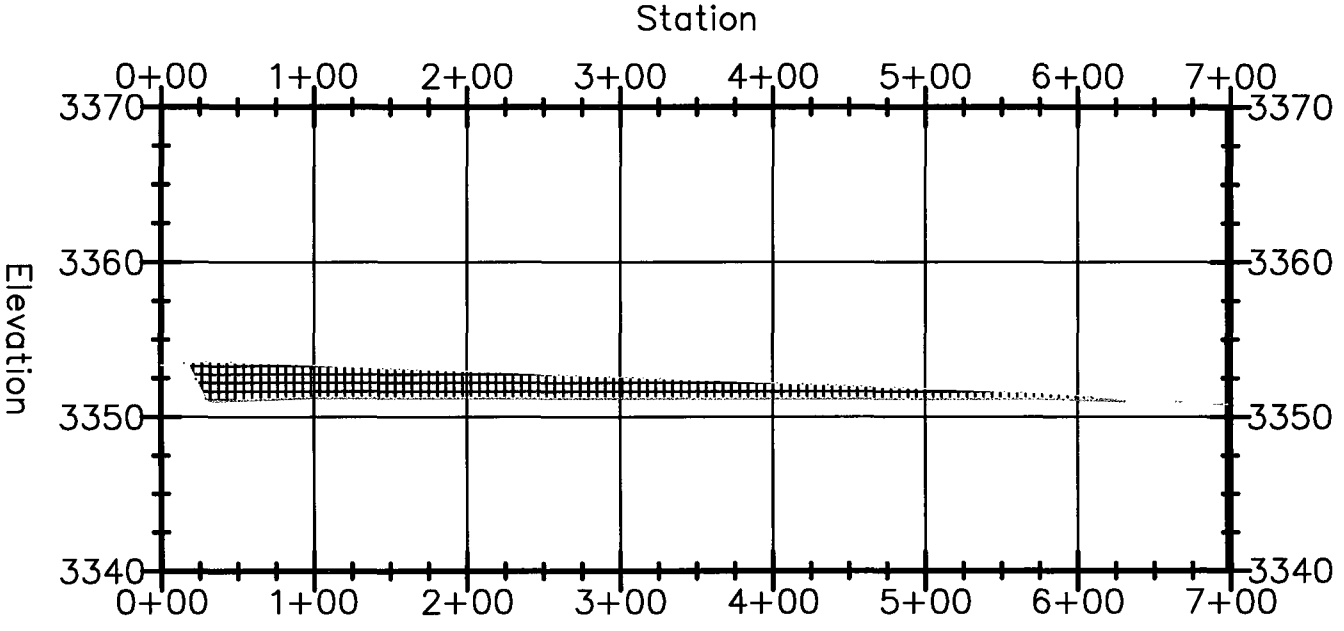
Location Pad Calculations
T-24-S, R-35-E
LEA COUNTY, NEW MEXICO.

SKETCH PLAT

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED #3 PAD
SECTION 24
T-24-S, R-35-E
LEA COUNTY, NEW MEXICO

LEGEND
FILL
CUT
EXISTING GRADE
FINISHED GRADE

Alignment side cross section #3 PROFILE



0 120' 240'

WO#17-1308-00

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

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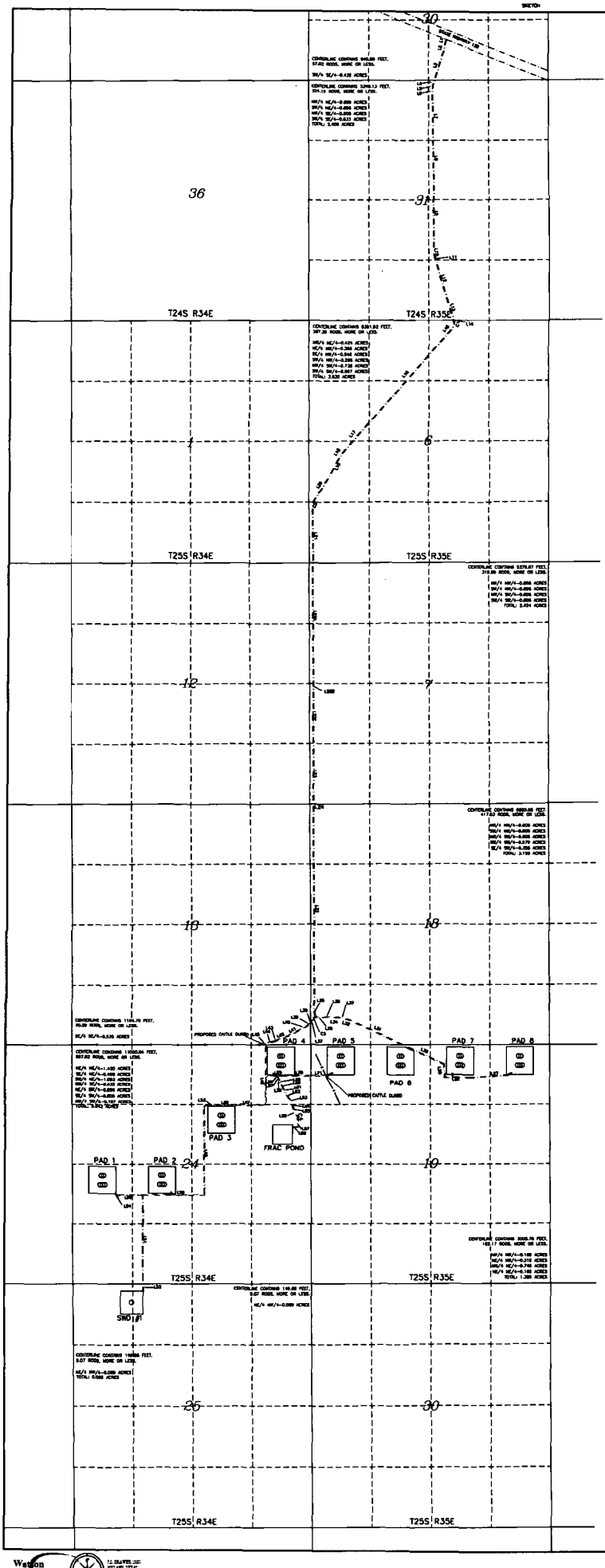
LOCATION PAD PROFILES
ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED #3 PAD
Location Pad Calculations T-24-S, R-35-E LEA COUNTY, NEW MEXICO.



Watson Professional Group Inc

ENERGEN RESOURCES CORPORATION
PITCHBLENDE FED ROAD RIGHT-OF-WAY
SECTIONS 30 & 31, T24S, R35E,
SECTIONS 6, 7, 18, & 19, T25S, R35E,
SECTIONS 13, 24, & 25, T25S, R34E
LEA COUNTY, NEW MEXICO

ENERGEN

September 17, 2018

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

Re: Energen Resources Pitchblende Federal Wells, Lea County NM

Dear Mr. Layton,

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

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

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

Sincerely,

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

Tyler Humphries

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

Yes
We are in negotiations at this time.
TD

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

Mr. Dinwiddie,

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

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

Best,
Tyler

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

<image001.jpg>