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25. Signature Name (Printed/Typed)	: information and/or plans as may be required by th
	Date
(Electronic Submission) David Stewart / Ph: (713)366-	5716 06/06/2017
Title Sr. Regulatory Advisor	
Approved by (Signature) Name (Printed/Typed)	Date
(Electronic Submission) Cody Layton / Ph: (575)234-5	59 10/31/2017
Title Office	
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the conduct operations thereon. Conditions of approval, if any, are attached.	subject lease which would entitle the applicant to
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfull States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.	to make to any department or agency of the United
(Continued on page 2)	*(Instructions on page
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NM OIL CONSERVATION

ARTESIA DISTRICT

NOV 06 2017

PECOS DISTRICT DRILLING OPERATIONS CONDITIONS OF APPROVAL

RECEIVED

OPERATOR'S NAME:	OXY USA Inc
LEASE NO.:	NM114979
WELL NAME & NO.:	Mesa Verde 13 Federal – 4H
SURFACE HOLE FOOTAGE:	170'/S & 2631'/E
BOTTOM HOLE FOOTAGE	180'/N & 2203'/E
LOCATION:	Sec. 13, T. 24 S, R. 31 E
COUNTY:	Eddy County

Potash	(None	• Secretary	C R-111-P
Cave/Karst Potential	C Low	C Medium	C High
Variance		Flex Hose	C Other
Wellhead	Conventional	Multibowl	
Other	□4 String Area	□Capitan Reef	□WIPP

A. Hydrogen Sulfide

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.

B. CASING

- 1. The **13 3/8** inch surface casing shall be set at approximately **1024** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of <u>24 hours in the Potash Area</u> or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours

after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the 9 5/8 inch intermediate casing is:

<u>Option 1:</u>

• Cement to surface. If cement does not circulate see B.1.a, c-d above. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.

Option 2:

Operator has proposed a contingency DV tool. 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 operator circulates cement on the first stage, operator is approved to inflate the ACP and run the DV tool cancellation plug and cancel the second stage of the proposed cement plan. If cement does not circulate, operator will inflate ACP and proceed with the second stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.
- 3. The minimum required fill of cement behind the 5 1/2 inch production casing is:
 - Cement should tie-back at least **500** feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

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- 1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
- 2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) 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. 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.

D. SPECIAL REQUIREMENT(S)

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

MHH 10272017

GENERAL 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)
 - Chaves and Roosevelt Counties
 Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
 During office hours call (575) 627-0272.
 After office hours call (575)
 - Eddy County Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822
 - Lea County
 Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612
- 1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
- 2. 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 are located, this does not include the dog house or stairway area.

3. 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.

A. CASING

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- 1. 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.
- Wait on cement (WOC) for Potash Areas: 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 for all cement blends, 2) until cement has been in place at least <u>24</u> hours. WOC time will be recorded in the driller's log.
- <u>Wait on cement (WOC) for Water Basin:</u> 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 <u>8 hours</u>. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
- 4. 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.
- 5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
- 6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
- 7. 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.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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 RP 53 Sec. 17.

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- 2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: 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.
- 3. 5M or higher 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. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- 5. The appropriate BLM office shall be notified a minimum of 4 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).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. 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.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

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D. 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.

PECOS DISTRICT SURFACE USE CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA Inc
LEASE NO.:	NM114979
WELL NAME & NO.:	Mesa Verde 13 Federal – 4H
SURFACE HOLE FOOTAGE:	170'/S & 2631'/E
BOTTOM HOLE FOOTAGE	180'/N & 2203'/E
LOCATION:	Section 13, T. 24 S., R. 31 E., NMPM
COUNTY:	Eddy County, New Mexico

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

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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.

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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)

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, 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 feet from the source of the noise.

Below 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.

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The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

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.

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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

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

G. ON LEASE ACCESS ROADS

Road Width

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

Surfacing

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

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

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

Crowning

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

Ditching

Ditching shall be required on both sides of the road.

Turnouts

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

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards

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

Fence Requirement

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

Public Access

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





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.

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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, <u>Shale Green</u> from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

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

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

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

3. 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 activity of 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 provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third

parties.

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

- a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing
 - (2) Earth-disturbing and earth-moving work
 - (3) Blasting
 - (4) Vandalism and sabotage;
- c. Acts of God.

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

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

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of 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/she 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 Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of 20 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

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

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

9. The pipeline shall be buried with a minimum of $\underline{24}$ inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The 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.

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

13. The pipeline will be identified by signs at the point of origin and completion of the 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. Signs will be maintained in a legible condition for the life of the pipeline.

14. 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. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. 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 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.

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

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

18. Special Stipulations:

a. <u>Lesser Prairie-Chicken:</u> Oil and gas activities 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 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. Normal vehicle use on existing roads will not be restricted.

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, <u>et seq</u>. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, <u>et seq</u>.) 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 $\underline{30}$ feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed <u>20</u> 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 <u>30</u> 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.

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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. <u>Escape Ramps</u> - 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:

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- 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.
- 19. Special Stipulations:

Lesser Prairie-Chicken

Oil and gas activities 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. 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.

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, <u>et seq</u>. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, <u>et seq</u>.) 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.

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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.

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.

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

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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).

Below 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 <u>no</u> 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	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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

*** AFMSS .

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



Operator Certification

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

NAME: David Stewart		Signed on: 06/06/2017		
Title: Sr. Regulatory Advisor				
Street Address: 5 Green	way Plaza, Suite 110			
City: Houston	State: TX	Zip: 77046		
Phone: (713)366-5716				
Email address: David_st	tewart@oxy.com			
Field Representative				
Representative Name: Jim Wilson				
Street Address: P.O.	Box 50250			
City: Midland	State: RX	Zip: 79710		

Phone: (575)631-2442

Email address: jim_wilson@oxy.com

AFMSS

APD ID: 10400014883

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



Submission Date: 06/06/2017

Well Number: 4H

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Well Type: OIL WELL

Well Name: MESA VERDE 13 FEDERAL

Operator Name: OXY USA INCORPORATED

Section 1 - General

APD ID: 10400014883	Tie to previous NOS?	Submission Date: 06/06/2017
BLM Office: CARLSBAD	User: David Stewart	Title: Sr. Regulatory Advisor
Federal/Indian APD: FED	is the first lease penetrated f	or production Federal or Indian? FED
Lease number: NMNM114979	Lease Acres: 640	
Surface access agreement in place?	Allotted? Re	eservation:
Agreement in place? NO	Federal or Indian agreement:	
Agreement number:		
Agreement name:		
Keep application confidential? NO		
Permitting Agent? NO	APD Operator: OXY USA INC	ORPORATED
Operator letter of designation:		

Operator Info

Operator Organization Name: OXY USA INCORPORATED					
Operator Address: 5 Greenway Plaza, Suite 110					
Operator PO Box:		Διρ. 77040			
Operator City: Houston	State: TX				
Operator Phone: (713)366-5716					

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO	Mater Development Plan name:		
Well in Master SUPO? NO	Master SUPO name:		
Well in Master Drilling Plan? NO	Master Drilling Plan name:		
Well Name: MESA VERDE 13 FEDERAL	Well Number: 4H	Well API Number:	
Field/Pool or Exploratory? Field and Pool	Field Name: MESA VERDE BONE SPRING	Pool Name: 2ND BONE SPRING	
Is the proposed well in an area containing other mineral resources? POTASH			

Page 1 of 3

Describe other minerals:			
Is the proposed well in a Helium produ	uction area? N	Use Existing Well Pad? NO	New surface disturbance?
Type of Well Pad: MULTIPLE WELL Well Class: HORIZONTAL		Multiple Well Pad Name: MI	ESA Number: 3H
		VERDE 13 FEDERAL Number of Legs:	
Well Work Type: Drill			
Well Type: OIL WELL			
Describe Well Type:			
Well sub-Type: INFILL			
Describe sub-type:			
Distance to town: 21 Miles	Distance to ne	arest well: 30 FT Dis	tance to lease line: 50 FT
Reservoir well spacing assigned acres	s Measurement:	160 Acres	
Well plat: MesaVerde13Fd4H_C102	_06-05-2017.pdf		
Well work start Date: 08/27/2018		Duration: 20 DAYS	

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Survey number:

Vertical Datum: NAVD88

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	170	FSL	263 1	FEL	245	31E	13	Aliquot SWSE	32.21058 33	- 103.7314 857	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	358 7	0	0
KOP Leg #1	50	FSL	220 3	FEL	24S	31E	13	Aliquot SWSE	32.21025 33	- 103.7301 013	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	- 628 3	990 6	987 0
PPP Leg #1	340	FSL	220 3	FEL	24S	31E	13	Aliquot SWSE	32.21105 04	- 103.7301 019	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	- 685 6	108 06	104 43

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

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	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	Longitude County		State Meridian		Lease Number	Elevation	MD	TVD
EXIT Leg #1	340	FNL	220 3	FEL	24S	31E	13	Aliquot NWNE	32.22369 67	- 103.7301 114	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	- 685 6	151 24	104 43
BHL Leg #1	180	FNL	220 3	FEL	24S	31E	13	Aliquot NWNE	32.22413 66	- 103.7301 117	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	- 685 6	152 84	104 43



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



APD ID: 10400014883

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Well Work Type: Drill

Submission Date: 06/06/2017

Highlighted data reflects the most recent changes

Show Final Text

Well Type: OIL WELL

Section 1 - Geologic Formations

Formation			True Vertical	Measured			Producing
ID	Formation Name	Elevation	Depth	Depth	Lithologies	Mineral Resources	Formation
1	RUSTLER	3588	976	976	SHALE,DOLOMITE ,ANHYDRITE	USEABLE WATER	No
2	SALADO	2481	1107	1107	SHALE,DOLOMITE ,HALITE,ANHYDRI TE	OTHER : SALT	No
3	CASTILE	267	3321	3321	ANHYDRITE	OTHER : salt	No
4	LAMAR	-1066	4654	4654	LIMESTONE,SAND STONE,SILTSTON E	NATURAL GAS,OIL,OTHER : BRINE	No
5	BELL CANYON	-1081	4669	4669	SANDSTONE,SILT STONE	NATURAL GAS,OIL,OTHER : BRINE	No
6	CHERRY CANYON	-1963	5551	5551	SANDSTONE,SILT STONE	NATURAL GAS,OIL,OTHER : BRINE	No
7	BRUSHY CANYON	-3173	6761	6761	LIMESTONE,SAND STONE,SILTSTON E	NATURAL GAS,OIL,OTHER : BRINE	No
8	BONE SPRING	-4866	8454	8474	LIMESTONE,SAND STONE,SILTSTON E	NATURAL GAS,OIL	Yes
9	BONE SPRING 1ST	-6092	9680	9716	LIMESTONE,SAND STONE,SILTSTON E	NATURAL GAS,OIL	Yes
10	BONE SPRING 2ND	-6284	9872	9908	LIMESTONE,SAND STONE,SILTSTON E	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 10443

Equipment: 13-5/8" 5M Annular, Blind Ram, Double Ram

Requesting Variance? YES

Variance request: Request for the use of a flexible choke line from the BOP to Choke Manifold.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. A multibowl wellhead or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system will be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015.

Choke Diagram Attachment:

MesaVerde13Fd4H_ChkManifold_5M__06-06-2017.pdf

BOP Diagram Attachment:

MesaVerde13Fd4H_BOP_5M13_58__06-06-2017.pdf

MesaVerde13Fd4H_FlexHoseCert_06-06-2017.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1024	0	1024			1024	J-55	54.5	BUTT	6.23	1.33	BUOY	2.61	BUOY	2.44
2	INTERMED	12.2 5	9.625	NEW	API	N	0	4702	0	4702			4702	J - 55	36	BUTT	2.32	1.4	BUOY	2.27	BUOY	1.99
3	PRODUCTI ON	8.5	5.5	NEW	API	N	0	15284	0	10443			15284	P- 110	20	OTHER - DQX	2.09	1.28	BUOY	2.39	BUOY	2.21

Casing Attachments

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Casing Attachments

Casing ID: 1

String Type:SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde13Fd4H_CsgCriteria_06-06-2017.pdf

Casing ID: 2 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde13Fd4H_CsgCriteria_06-06-2017.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde13Fd4H_CsgCriteria_06-06-2017.pdf

MesaVerde13Fd4H_5.5_20_P110DQX_06-06-2017.pdf

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Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1024	818	1.35	14.8	1104	50	Class C Cement	Accelerator

INTERMEDIATE	Lead	0	4202	1215	1.74	12.9	2114	75	Pozzolan/C Cement	Retarder
INTERMEDIATE	Tail	420	2 4702	156	1.33	14.8	207	20	Class C Cement	none
PRODUCTION	Lead	420	2 9406	661	3.06	10.2	2023	75	Class C Cement	Retarder, Dispersant, Salt
PRODUCTION	Tail	940	6 1528 4	1861	1.63	13.2	3033	125	Class H Cement	Retarder, Dispersant, Salt

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CaCl2. OXY proposes to drill out the 13-3/8" surface casing shoe with a saturated brine system from 1024-4702', which is the base of the salt system. At this point we will swap fluid systems to a high viscosity mixed metal hydroxide system or a fully saturated direct emulsion system. We will drill with this system to the KOP @ 9906'. This fluid will also be used in the production section. However, OXY proposed both OBM and brine as contingency options. **Describe the mud monitoring system utilized:** PVT/MD Totco/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (Ibs/gal)	Max Weight (Ibs/gal)	Density (Ibs/cu ft)	Gel Strength (lbs/100 sqft)	Н	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1024	WATER-BASED MUD	8.4	8.6							

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

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Top Depth	Bottom Depth	Mud Type	Min Weight (Ibs/gal)	Max Weight (Ibs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	Н	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1024	4702	OTHER : Brine	9.8	10							
4702	9906	WATER-BASED MUD	8.8	9.6							
9906	1528 4	OIL-BASED MUD	8.8	9.6							

Section 6 - Test, Logging, Coring

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

GR from TD to surface (horizontal well – vertical portion of hole). Mud Log from Surface Csg Shoe to TD.

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

GR,MUDLOG

Coring operation description for the well:

No coring is planned at this time.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5214

Anticipated Surface Pressure: 2916.54

Anticipated Bottom Hole Temperature(F): 164

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

MesaVerde13Fd4H_H2S1_06-06-2017.pdf MesaVerde13Fd4H_H2S2_06-06-2017.pdf Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

MesaVerde13Fd4H_DirectPlan_06-06-2017.pdf

MesaVerde13Fd4H_DirectPlot_06-06-2017.pdf

Other proposed operations facets description:

Well will be drilled with a walking/skidding operation. Plan to drill the two well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.

OXY requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool will be run in case a contingency second stage is required for cement to reach surface. If cement circulated to surface during first stage we will drop a cancellation cone and not pump the second stage.

OXY requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that OXY would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.

Other proposed operations facets attachment:

MesaVerde13Fd4H_DrillPlan_06-06-2017.pdf MesaVerde13Fd4H_SpudRigData_06-06-2017.pdf Other Variance attachment:



1. 2. 3. 4. 5. 6. 7. 8. 9. 5 Choke Manifold Valve 11. Choke Manifold Valve 11. Choke Manifold Valve

21. Vertical Choke Manifold Valve

18. Choke Manifold Valve

*All Valves 3" minimum

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Fluid Technology

Quality Document

QUALIT	TY CONT	ROL CERTIFIC	CATE	CERT. N	10.	746	
PURCHASER: F	Phoenix Bea	ittie Co.		P,O. Nº:	00	2491	
CONTITECH ORDER Nº: 4	12638	HOSE TYPE:	3" (D	Cho	oke and Kill	Hose	
HOSE SERIAL Nº:	52777	NOMINAL / AC	TUAL LENGTH:		10,67 m		
W.P. 68,96 MPa 10	000 psi	T.P. 103,4	MPa 1500	0 psi	Duration:	60 ~	rnia.
Pressure test with water at ambient temperature ↑ 10 mm = 10 Min. → 10 mm = 25 MPa	See	attachment.	(1 page)				-
		COUP	LINGS				
Туре		Serial Nº		Quality		Heat N°	
3" coupling with	917	913	AIS	1 4130		T7998A	
4 1/16° Flange end			AIS	1 4130		26984	
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FH-3

Form No 100/12

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Phoenix Beattie Corp LISS Brithmore Park Drive Hauston, TX 77041 Tel: (632) 327-0141 Fax: (632) 327-0148 E-sell sell'gehoentsteettie.com ww.phoentsbeettie.com

Delivery Note

---- PHOENIX Beattie

Customer Order Number	370-369-001	Delivery Note Number	003078	Page	1
Customer / Invoice Addre Helmerich & Payne Int'l 1437 South Boulder Tulsa, OK 74119	ss DRILLING CO	Delivery / Address Helmerich & Payne IDC Attn: Joe Stephenson - Rig 13609 Industrial Road Houston, TX 77015	G 370		

Customer Acc No	Phoenix Beattie Contract Manager	Phoenix Beattie Reference	Date
HOI	JJL	006330	05/23/2008

item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Oty To Follow
1	HP10CK3A-35-4F1 3" 10K 16C C&K HOSE x 35ft OAL CW 4.1/16" API SPEC FLANGE E/ End 1: 4.1/16" 10Kps1 API Spec 6A Type 68X Flange End 2: 4.1/16" 10Kps1 API Spec 6A Type 68X Flange c/w BX155 Standard ring groove at each end Suitable for H2S Service Working pressure: 10,000psi Test pressure: 15,000psi Standard: API 16C Full specification Armor Guarding: Included Fire Rating: Not Included Temperature rating: -20 Deg C to +100 Deg C	1	1	0
2	SECK3-HPF3 LIFTING & SAFETY EQUIPMENT TO SUIT HP10CK3-35-F1 2 x 160mm ID Safety Clamps 2 x 244mm ID Lifting Collars & element C's 2 x 7ft Stainless Steel wire rope 3/4" OD 4 x 7.75t Shackles	1	1	0
3	SC725-200CS SAFETY CLAMP 200MM 7.25T C/S GALVANISED	1	1	D

Continued...

All goods remain the property of Phoenix Beattie until paid for in full. Any damage or shortage on this delivery must be edvised within 5 days. Returns may be subject to a handling charge.

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FH-4

Form No 100/12

Phoenix Beattie Corp 11535 Erittacore Perk Drive Houston, TX 77041 Tel: (822) 327-0141 Fax: (822) 327-0148 E-satil asiTephoenixbeattle.cos www.phoenixbeattle.cos

Delivery Note

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Correction and service of the servic

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Customer Order Number	370-369-001	Delivery Note Number	003078	Page	2
Customer / Invoice Addres HELMERICH & PAYNE INT'L I 1437 SOUTH BOULDER TULSA, OK 74119	15 Rilling Co	Delivery / Address Helmerich & Payne IDC Attn: Joe Stephenson - Ri 13609 Industrial Road Houston, Tx 77015	G 370		

Customer Acc'No	Phoenix Beattie Contract Manager	Phoenix Beattle Reference	Date
HOI	JJL	006330	05/23/2008

ltem No	Beattle Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
4	SC725-132CS SAFETY CLAMP 132MM 7.25T C/S GALVANIZED C/W BOLTS	1	1	0
5	OOCERT-HYDRO HYDROSTATIC PRESSURE TEST CERTIFICATE	1	1	0
б	OOCERT-LOAD LOAD TEST CERTIFICATES	1	1	0
7	OOFREIGHT INBOUND / OUTBOUND FREIGHT PRE-PAY & ADD TO FINAL INVOICE NOTE: MATERIAL MUST BE ACCOMPANIED BY PAPERWORK INCLUDING THE PURCHASE ORDER, RIG NUMBER TO ENSURE PROPER PAYMENT	1	1	0
		Pana.		
	Phoenix Beattie Inspection Signature :	ALMONTAN	WWE	
	Received in Good Condition : Signature	FT-	$\overline{\mathcal{A}}$	
	Print Name		<u> </u>	
s pt/4/4/4	nannyanna annyanna ang ang ang ang ang ang ang ang ang			

Date

All goods remain the property of Phoenix Beattle until paid for in full. Any damage or shortage on this delivery must be advised within 5 days. Returns may be subject to a handling charge.

We hereby certify thet these goods have been inspected by our Quality Management System, and to the best of our knowledge are found to conform to relevant industry standards within the requirements of the purchase order as issued to Phoenix Beattie Corporation.

05/23/09. ľ

Coflex Hose Certification

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Coflex Hose Certification

Ontinental CONTITECH

Fluid Technology

Quality Document

CERTIFICATE OF CONFORMITY

Supplier: CONTITECH RUBBER INDUSTRIAL KFT.Equipment: 6 pcs. Choke and Kill Hose with installed couplingsType :3" x 10,67 m WP: 10000 psiSupplier File Number: 412638Date of Shipment: April. 2008Customer: Phoenix Beattle Co.Customer P.o.: 002491Referenced Standards/ Codes / Specifications :API Spec 16 CSerial No.: 52754,52755,52776,52777,52778,52782

STATEMENT OF CONFORMITY

We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU



Position: Q.C. Manager

Date: 04. April. 2008

FH-6

OXY's Minimum Design Criteria

Burst, Collapse, and Tensile SF are calculated using Landmark's Stress Check (Casing Design) software. A sundry will be requested if any lesser grade or different size casing is substituted.

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1) Casing Design Assumptions

a) Burst Loads

CSG Test (Surface)

- Internal: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
- External: Pore pressure in open hole.

CSG Test (Intermediate)

- Internal: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
- External: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

CSG Test (Production)

- o Internal:
 - For Drilling: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
 - For Production: The design pressure test should be the greater of (1) the planned test pressure prior to stimulation down the casing. (2) the regulatory test pressure, and (3) the expected gas lift system pressure. The design test fluid should be the fluid associated with pressure test having the greatest pressure.
- o External:
 - For Drilling: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.
 - For Production: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Gas Column (Surface)

- Internal: Assumes a full column of gas in the casing with a Gas/Oil Gradient of 0.1 psi/ft in the absence of better information. It is limited to the controlling pressure based on the fracture pressure at the shoe or the maximum expected pore pressure within the next drilling interval, whichever results in a lower surface pressure.
- External: Fluid gradient below TOC, pore pressure from the TOC to the Intermediate CSG shoe (if applicable), and MW of the drilling mud that was in the hole when the CSG was run from Intermediate CSG shoe to surface.

Bullheading (Surface / Intermediate)

- Internal: The string must be designed to withstand a pressure profile based on the fracture pressure at the casing shoe with a column of water above the shoe plus an additional surface pressure (in psi) of 0.02 X MD of the shoe to account for pumping friction pressure.
- External: Mud weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Gas Kick (Intermediate)

- The string must be designed to at least a gas kick load case unless the rig is unable to detect a kick. For the gas kick load case, the internal pressure profile must be based on a minimum volume of 50 bbl or the minimum kick detection capability of the rig, whichever is greater, and a kick intensity of 2.0 ppg for Class 1, 1.0 ppg of Class 2, and 0.5 ppg for Class 3 and 4 wells.
- Internal: Influx depth of the maximum pore pressure of 0.55 "gas kick gravity" of gas to surface while drilling the next hole section.
- External: Mud weight to the TOC, cement mix water gradient below TOC, and pore pressure in open hole.

Tubing Leak Near Surface While Producing (Production)

- o Internal: SITP plus a packer fluid gradient to the shoe or top of packer.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Tubing Leak Near Surface While Stimulating (Production)

- Internal: Surface pressure or pressure-relief system pressure, whichever is lower plus packer fluid gradient.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Injection / Stimulation Down Casing (Production)

- Internal: Surface pressure plus injection fluid gradient.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.
- b) Collapse Loads

Lost Circulation (Surface / Intermediate)

- Internal: Lost circulation at the TD of the next hole section, and the fluid level falls to a depth where the hydrostatic of the mud equals pore pressure at the depth of the lost circulation zone.
- External: MW of the drilling mud that was in the hole when the casing was run.

Cementing (Surface / Intermediate / Production)

- o Internal: Displacement fluid density.
- External: Mud weight from TOC to surface and cement slurry weight from TOC to casing shoe.

Full Evacuation (Production)

- o Internal: Full void pipe.
- $\circ~$ External: MW of drilling mud in the hole when the casing was run.
- c) Tension Loads

Running Casing (Surface / Intermediate / Production)

 Axial: Buoyant weight of the string plus the lesser of 100,000 lb or the string weight in air.

Green Cement (Surface / Intermediate / Production)

• Axial: Buoyant weight of the string plus cement plug bump pressure load.

PERFORMANCE DATA

TMK UP DQX

5.500 is 20.00 ibs/ft P-110

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Technical Data Sheet

Tubular Parameiers	- • · ·	
Size	5 500	ir
Nominal Weight	∠ົງ.00	lbs/ft
Grade	P-110	
PE Weight	19.81	lbs/ft
Wall Thickness	J 361	in
Nominal ID	4 778	iη
Drift Diameter	.653	in
Nom Pipe Body Area	- 828	l ir:

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Mırimum 'iela	11,000	psi
M ^a nimum Tensile	125,000	ps
Yield Load	641,000	lbs
Tensile Load	729,000	lbs
Min Internal Yield Pressure	12,600	psi
Collapse Pressure	11 100	psi



NM OIL CONSERVATION ARTESIA DISTRICT **OXY** Permian NOV 06 2017 RECEIVED

Permian Drilling Hydrogen Sulfide Drilling Operations Plan Mesa Verde 13 Federal 4H

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

1. Escape

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



NM OIL CONSERVATION ARTESIA DISTRICT **OXY** Permian NOV 06 2017 RECEIVED

Permian Drilling Hydrogen Sulfide Drilling Operations Plan New Mexico

<u>Scope</u>

This contingency plan establishes guidelines for the public, all company employees, and contract employees who's work activities may involve exposure to hydrogen sulfide (H2S) gas.

While drilling this well, it is possible to encounter H2S bearing formations. At all times, the first barrier to control H2S emissions will be the drilling fluid, which will have a density high enough to control influx.

Objective

- 1. Provide an immediate and predetermined response plan to any condition when H2S is detected. All H2S detections in excess of 10 parts per million (ppm) concentration are considered an Emergency.
- 2. Prevent any and all accidents, and prevent the uncontrolled release of hydrogen sulfide into the atmosphere.
- 3. Provide proper evacuation procedures to cope with emergencies.
- 4. Provide immediate and adequate medical attention should an injury occur.

Discussion

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Implementation:	This plan with all details is to be fully implemented before drilling to <u>commence</u> .
Emergency response Procedure:	This section outlines the conditions and denotes steps to be taken in the event of an emergency.
Emergency equipment Procedure:	This section outlines the safety and emergency equipment that will be required for the drilling of this well.
Training provisions:	This section outlines the training provisions that must be adhered to prior to drilling.
Drilling emergency call lists:	Included are the telephone numbers of all persons to be contacted should an emergency exist.
Briefing:	This section deals with the briefing of all people involved in the drilling operation.
Public safety:	Public safety personnel will be made aware of any potential evacuation and any additional support needed.
Check lists:	Status check lists and procedural check lists have been included to insure adherence to the plan.
General information:	A general information section has been included to supply support information.

Hydrogen Sulfide Training

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

- 1. The hazards and characteristics of H2S.
- 2. Proper use and maintenance of personal protective equipment and life support systems.
- 3. H2S detection.

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- 4. Proper use of H2S detectors, alarms, warning systems, briefing areas, evacuation procedures and prevailing winds.
- 5. Proper techniques for first aid and rescue procedures.
- 6. Physical effects of hydrogen sulfide on the human body.
- 7. Toxicity of hydrogen sulfide and sulfur dioxide.
- 8. Use of SCBA and supplied air equipment.
- 9. First aid and artificial respiration.
- 10. Emergency rescue.

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

- 1. The effects of H2S on metal components. If high tensile strength tubular is to be used, personnel will be trained in their special maintenance requirements.
- 2. Corrective action and shut-in procedures when drilling a well, blowout prevention and well control procedures.
- 3. The contents and requirements of the H2S Drilling Operations Plan.

H2S training refresher must have been taken within one year prior to drilling the well. Specifics on the well to be drilled will be discussed during the pre-spud meeting. H2S and well control (choke) drills will be performed while drilling the well, at least on a weekly basis. This plan shall be available in the well site. All personnel will be required to carry the documentation proving that the H2S training has been taken.

Service company and visiting personnel

- A. Each service company that will be on this well will be notified if the zone contains H2S.
- B. Each service company must provide for the training and equipment of their employees before they arrive at the well site.
- C. Each service company will be expected to attend a well site briefing

Emergency Equipment Requirements

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1. <u>Well control equipment</u>

The well shall have hydraulic BOP equipment for the anticipated pressures. Equipment is to be tested on installation and follow Oxy Well Control standard, as well as BLM Onshore Order #2.

Special control equipment:

- A. Hydraulic BOP equipment with remote control on ground. Remotely operated choke.
- B. Rotating head
- C. Gas buster equipment shall be installed before drilling out of surface pipe.

2. <u>Protective equipment for personnel</u>

- A. Four (4) 30-minute positive pressure air packs (2 at each briefing area) on location.
- B. Adequate fire extinguishers shall be located at strategic locations.
- C. Radio / cell telephone communication will be available at the rig.
 - Rig floor and trailers.
 - Vehicle.

3. Hydrogen sulfide sensors and alarms

- A. H2S sensor with alarms will be located on the rig floor, at the bell nipple, and at the flow line. These monitors will be set to alarm at 10 ppm with strobe light, and audible alarm.
- B. Hand operated detectors with tubes.
- C. H2S monitor tester (to be provided by contract Safety Company.)
- D. There shall be one combustible gas detector on location at all times.

4. Visual Warning Systems

A. One sign located at each location entrance with the following language:

Caution – potential poison gas Hydrogen sulfide No admittance without authorization

Wind sock – wind streamers:

- A. One 36" (in length) wind sock located at protection center, at height visible from rig floor.
- B. One 36" (in length) wind sock located at height visible from pit areas.

Condition flags

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A. One each condition flag to be displayed to denote conditions.

green – normal conditions yellow – potential danger red – danger, H2S present

B. Condition flag shall be posted at each location sign entrance.

5. <u>Mud Program</u>

The mud program is designed to minimize the risk of having H2S and other formation fluids at surface. Proper mud weight and safe drilling practices will be applied. H2S scavengers will be used to minimize the hazards while drilling. Below is a summary of the drilling program.

Mud inspection devices:

Garrett gas train or hatch tester for inspection of sulfide concentration in mud system.

6. <u>Metallurgy</u>

- A. Drill string, casing, tubing, wellhead, blowout preventers, drilling spools or adapters, kill lines, choke manifold, lines and valves shall be suitable for the H2S service.
- B. All the elastomers, packing, seals and ring gaskets shall be suitable for H2S service.

7. <u>Well Testing</u>

No drill stem test will be performed on this well.

8. <u>Evacuation plan</u>

Evacuation routes should be established prior to well spud for each well and discussed with all rig personnel.

- 9. Designated area
 - A. Parking and visitor area: all vehicles are to be parked at a predetermined safe distance from the wellhead.
 - B. There will be a designated smoking area.
 - C. Two briefing areas on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds perpendicularly, or at a 45-degree angle if wind direction tends to shift in the area.

Emergency procedures

- A. In the event of any evidence of H2S level above 10 ppm, take the following steps:
 - 1. The Driller will pick up off bottom, shut down the pumps, slow down the pipe rotation.
 - 2. Secure and don escape breathing equipment, report to the upwind designated safe briefing / muster area.
 - 3. All personnel on location will be accounted for and emergency search should begin for any missing, the Buddy System will be implemented.
 - 4. Order non-essential personnel to leave the well site, order all essential personnel out of the danger zone and upwind to the nearest designated safe briefing / muster area.
 - 5. Entrance to the location will be secured to a higher level than our usual "Meet and Greet" requirement, and the proper condition flag will be displayed at the entrance to the location.
 - 6. Take steps to determine if the H2S level can be corrected or suppressed and, if so, proceed as required.
- B. If uncontrollable conditions occur:
 - 1. Take steps to protect and/or remove any public in the down-wind area from the rig – partial evacuation and isolation. Notify necessary public safety personnel and appropriate regulatory entities (i.e. BLM) of the situation.

- 2. Remove all personnel to the nearest upwind designated safe briefing / muster area or off location.
- 3. Notify public safety personnel of safe briefing / muster area.
- 4. An assigned crew member will blockade the entrance to the location. No unauthorized personnel will be allowed entry to the location.
- 5. Proceed with best plan (at the time) to regain control of the well. Maintain tight security and safety procedures.
- C. Responsibility:

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- 1. Designated personnel.
 - a. Shall be responsible for the total implementation of this plan.
 - b. Shall be in complete command during any emergency.
 - c. Shall designate a back-up.

All personnel:	1.	On alarm, don escape unit and report to the nearest upwind designated safe briefing / muster area upw
	2.	Check status of personnel (buddy system).
	3.	Secure breathing equipment.
	4.	Await orders from supervisor.
Drill site manager:	1.	Don escape unit if necessary and report to nearest upwind designated safe briefing / muster area.
	2.	Coordinate preparations of individuals to return to point of release with tool pusher and driller (using the buddy system)
	3	Determine H2S concentrations
	з. Л	A sease situation and take control measures
	4.	Assess situation and take control measures.
Tool pusher:	1.	Don escape unit Report to up nearest upwind designated safe briefing / muster area.
	2.	Coordinate preparation of individuals to return to point of release with tool pusher drill site manager (using the buddy system).
	3.	Determine H2S concentration.
	4.	Assess situation and take control measures.
Driller:	1.	Don escape unit, shut down pumps, continue

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	2. 3. 4. 5.	rotating DP. Check monitor for point of release. Report to nearest upwind designated safe briefing / muster area. Check status of personnel (in an attempt to rescue, use the buddy system). Assigns least essential person to notify Drill Site Manager and tool pusher by quickest means in case of their absence. Assumes the responsibilities of the Drill Site Manager and tool pusher until they arrive should they be absent.
Derrick man Floor man #1 Floor man #2	1.	Will remain in briefing / muster area until instructed by supervisor.
Mud engineer:	1. 2.	Report to nearest upwind designated safe briefing / muster area. When instructed, begin check of mud for ph and H2S level. (Garett gas train.)
Safety personnel:	1.	Mask up and check status of all personnel and secure operations as instructed by drill site manager.

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Taking a kick

When taking a kick during an H2S emergency, all personnel will follow standard Well control procedures after reporting to briefing area and masking up.

Open-hole logging

All unnecessary personnel off floor. Drill Site Manager and safety personnel should monitor condition, advise status and determine need for use of air equipment.

Running casing or plugging

Following the same "tripping" procedure as above. Drill Site Manager and safety personnel should determine if all personnel have access to protective equipment.

Ignition procedures

The decision to ignite the well is the responsibility of the operator (Oxy Drilling Management). The decision should be made only as a last resort and in a situation where it is clear that:

- 1. Human life and property are endangered.
- 2. There is no hope controlling the blowout under the prevailing conditions at the well.

Instructions for igniting the well

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- 1. Two people are required for the actual igniting operation. They must wear self-contained breathing units and have a safety rope attached. One man (tool pusher or safety engineer) will check the atmosphere for explosive gases with the gas monitor. The other man is responsible for igniting the well.
- 2. Primary method to ignite: 25 mm flare gun with range of approximately 500 feet.
- 3. Ignite upwind and do not approach any closer than is warranted.
- 4. Select the ignition site best for protection, and which offers an easy escape route.
- 5. Before firing, check for presence of combustible gas.
- 6. After lighting, continue emergency action and procedure as before.
- 7. All unassigned personnel will remain in briefing area until instructed by supervisor or directed by the Drill Site Manager.

<u>Remember</u>: After well is ignited, burning hydrogen sulfide will convert to sulfur dioxide, which is also highly toxic. **<u>Do not assume the area is safe after the well is</u> ignited.**

Status check list

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Note: All items on this list must be completed before drilling to production casing point.

- 1. H2S sign at location entrance.
- 2. Two (2) wind socks located as required.
- 3. Four (4) 30-minute positive pressure air packs (2 at each Briefing area) on location for all rig personnel and mud loggers.
- 4. Air packs inspected and ready for use.
- 5. Cascade system and hose line hook-up as needed.
- 6. Cascade system for refilling air bottles as needed.
- 7. Condition flag on location and ready for use.
- 8. H2S detection system hooked up and tested.
- 9. H2S alarm system hooked up and tested.
- 10. Hand operated H2S detector with tubes on location.
- 11. 1-100' length of nylon rope on location.
- 12. All rig crew and supervisors trained as required.
- 13. All outside service contractors advised of potential H2S hazard on well.
- 14. No smoking sign posted and a designated smoking area identified.
- 15. Calibration of all H2S equipment shall be noted on the IADC report.

Checked by:	Date:

Procedural check list during H2S events

Perform each tour:

- 1. Check fire extinguishers to see that they have the proper charge.
- 2. Check breathing equipment to ensure that it in proper working order.
- 3. Make sure all the H2S detection system is operative.

Perform each week:

- 1. Check each piece of breathing equipment to make sure that demand or forced air regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you receive air or feel air flow.
- 2. BOP skills (well control drills).
- 3. Check supply pressure on BOP accumulator stand by source.
- 4. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.
- 5. Check pressure on breathing equipment air bottles to make sure they are charged to full volume. (Air quality checked for proper air grade "D" before bringing to location)
- 6. Confirm pressure on all supply air bottles.
- 7. Perform breathing equipment drills with on-site personnel.
- 8. Check the following supplies for availability.
 - A. Emergency telephone list.
 - B. Hand operated H2S detectors and tubes.

General evacuation plan

- 1. When the company approved supervisor (Drill Site Manager, consultant, rig pusher, or driller) determines the H2S gas cannot be limited to the well location and the public will be involved, he will activate the evacuation plan.
- 2. Drill Site Manager or designee will notify local government agency that a hazardous condition exists and evacuation needs to be implemented.
- 3. Company or contractor safety personnel that have been trained in the use of H2S detection equipment and self-contained breathing equipment will monitor H2S concentrations, wind directions, and area of exposure. They will delineate the outer perimeter of the hazardous gas area. Extension to the evacuation area will be determined from information gathered.
- 4. Law enforcement personnel (state police, police dept., fire dept., and sheriff's dept.) Will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.
- 5. After the discharge of gas has been controlled, company safety personnel will determine when the area is safe for re-entry.

<u>Important:</u> Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

Emergency actions

Well blowout – if emergency

- 1. Evacuate all personnel to "Safe Briefing / Muster Areas" or off location if needed.
- 2. If sour gas evacuate rig personnel.
- 3. If sour gas evacuate public within 3000 ft radius of exposure.
- 4. Don SCBA and shut well in if possible using the buddy system.
- 5. Notify Drilling Superintendent and call 911 for emergency help (fire dept and ambulance) if needed.
- 6. Implement the Blowout Contingency Plan, and Drilling Emergency Action Plan.
- 6. Give first aid as needed.

Person down location/facility

- 1. If immediately possible, contact 911. Give location and wait for confirmation.
- 2. Don SCBA and perform rescue operation using buddy system.

Toxic effects of hydrogen sulfide

Hydrogen sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 ppm, which is .001% by volume. Hydrogen sulfide is heavier than air (specific gravity -1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen sulfide is almost as toxic as hydrogen cyanide and is between five and six times more toxic than carbon monoxide. Toxicity data for hydrogen sulfide and various other gases are compared in table i. Physical effects at various hydrogen sulfide exposure levels are shown in table ii.

Table i

Toxicity of various gases

Common	Chemical	Specific	Threshold	Hazardous	Lethal concentration
name	formula	gravity	limit	limit	(3)
		(sc=1)	(1)	(2)	
Hydrogen	Hcn	0.94	10 ppm	150 ppm/hr	300 ppm
Cyanide			**	••	**
Hydrogen	H2S	1.18	10 ppm	250 ppm/hr	600 ppm
Sulfide			• •	•••	
Sulfur	So2	2.21	5 ppm	-	1000 ppm
Dioxide					
Chlorine	Cl2	2.45	l ppm	4 ppm/hr	1000 ppm
			• •		
Carbon	Co	0.97	50 ppm	400 ppm/hr	1000 ppm
Monoxide					**
Carbon	Co2	1.52	5000 ppm	5%	10%
Dioxide			••		
Methane	Ch4	0.55	90,000 ppm	Combustible	e above 5% in air

1) threshold limit – concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.

- 2) hazardous limit concentration that will cause death with short-term exposure.
- 3) lethal concentration concentration that will cause death with short-term exposure.

Toxic effects of hydrogen sulfide

Table ii Physical effects of hydrogen sulfide

		Concentration	Physical effects
Percent (%)	<u>Ppm</u>	Grains	
		100 std. Ft3*	
0.001	<10	00.65	Obvious and unpleasant odor.

0.002	10	01.30	Safe for 8 hours of exposure.
0.010	100	06.48	Kill smell in $3 - 15$ minutes. May sting eyes and throat.
0.020	200	12.96	Kills smell shortly; stings eyes and throat.
0.050	500	32.96	Dizziness; breathing ceases in a few minutes; needs prompt artificial respiration.
0.070	700	45.36	Unconscious quickly; death will result if not rescued promptly.
0.100	1000	64.30	Unconscious at once; followed by death within minutes.

*at 15.00 psia and 60'f.

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Use of self-contained breathing equipment (SCBA)

- 1. Written procedures shall be prepared covering safe use of SCBA's in dangerous atmosphere, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available SCBA.
- 2 SCBA's shall be inspected frequently at random to insure that they are properly used, cleaned, and maintained.
- 3. Anyone who may use the SCBA's shall be trained in how to insure proper facepiece to face seal. They shall wear SCBA's in normal air and then wear them in a test atmosphere. (note: such items as facial hair {beard or sideburns} and eyeglasses will not allow proper seal.) Anyone that may be reasonably expected to wear SCBA's should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses or contact lenses.
- 4. Maintenance and care of SCBA's:
 - a. A program for maintenance and care of SCBA's shall include the following:
 - 1. Inspection for defects, including leak checks.
 - 2. Cleaning and disinfecting.
 - 3. Repair.
 - 4. Storage.
 - b. Inspection, self-contained breathing apparatus for emergency use shall be inspected monthly.
 - 1. Fully charged cylinders.
 - 2. Regulator and warning device operation.
 - 3. Condition of face piece and connections.
 - 4. Rubber parts shall be maintained to keep them pliable and prevent deterioration.
 - c. Routinely used SCBA's shall be collected, cleaned and disinfected as frequently as necessary to insure proper protection is provided.
- 5. Persons assigned tasks that requires use of self-contained breathing equipment shall be certified physically fit (medically cleared) for breathing equipment usage at least annually.
- 6. SCBA's should be worn when:
 - A. Any employee works near the top or on top of any tank unless test reveals less than 10 ppm of H2S.
- B. When breaking out any line where H2S can reasonably be expected.
- C. When sampling air in areas to determine if toxic concentrations of H2S exists.
- D. When working in areas where over 10 ppm H2S has been detected.
- E. At any time there is a doubt as to the H2S level in the area to be entered.

Rescue First aid for H2S poisoning

Do not panic!

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Remain calm – think!

- 1. Don SCBA breathing equipment.
- 2. Remove victim(s) utilizing buddy system to fresh air as quickly as possible. (go up-wind from source or at right angle to the wind. Not down wind.)
- 3. Briefly apply chest pressure arm lift method of artificial respiration to clean the victim's lungs and to avoid inhaling any toxic gas directly from the victim's lungs.
- 4. Provide for prompt transportation to the hospital, and continue giving artificial respiration if needed.
- 5. Hospital(s) or medical facilities need to be informed, before-hand, of the possibility of H2S gas poisoning no matter how remote the possibility is.
- 6. Notify emergency room personnel that the victim(s) has been exposed to H2S gas.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration.

Revised CM 6/27/2012

ENGINEERING DESIGNS

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PRD NM DIRECTIONAL PLANS (NAD 1983) Mesa Verde 13 Mesa Verde 13 Federal 4H

WB00

Plan: Permitting Plan

Standard Planning Report

25 January, 2017

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Planning Report

Database: Company: Project: Site: Well: Wellbore: Design:	HOPS ENGI PRD Mesa WB00 Perm	HOPSPPLocal Co-ordinate Reference:Well Mesa Verde 13 FereENGINEERING DESIGNSTVD Reference:WELL @ 3613.90ft (Origonal Control Con				e 13 Federal 4H 20ft (Original We 20ft (Original We ture	II Elev) II Elev)				
Project	PRD N	M DIRECTION	NAL PLANS	(NAD 1983)	····						
Map System: Geo Datum: Map Zone:	US Stat North A New Me	e Plane 1983 merican Datum exico Eastern Z	n 1983 Cone		System Da	itum:	Me Us	an Sea Level	ale factor		
Site	Mesa	Verde 13									
Site Position: From: Position Unce	Ma rtainty:	p 0	Nort East .00 ft Slot	hing: ing: Radius:	440, 725,	856.54 usft 672.12 usft 13.200 in	Latitude: Longitude: Grid Converg	gence:	32 103°	° 12' 38.111684 N 44' 14.355743 W 0.32 °	
Well	Mesa	/erde 13 Fede	ral 4H								
Well Position	tion +N/-S 8.85 ft +E/-W 1,804.89 ft		8.85 ft N 4.89 ft E	Northing: Easting:		440,865.39 usft Lati 727,476.91 usft Lon		tude: gitude:	32 103°	32° 12' 38.099744 N 103° 43' 53.348505 W	
Position Unce	rtainty		0.00 ft V	Vellhead Elev	vation:	3,587	.40 ft Gro	ound Level:		3,587.40 ft	
Wellbore	WBOC)			na i ti ing sa ti a ti a#−						
Magnetics	Mc	odel Name	Samp	le Date	Declina (°)	ition	۵ °) Dip	ngle)	Field Stre (nT)	ngth	
	_,, .,	HDGM		12/31/2016		6.92		60.00		48,184	
Design Audit Notes:	Permit	tting Plan		·					,		
Version:			Pha	se:	PROTOTYPE	Ti	e On Depth:		0.00	I	
Vertical Section	on:	D	epth From ((ft)	TVD)	+N/-S (ft)	+1	E/-W (ft)	Dire	ection (°)	:	
Ĺ			0.00		0.00).00	4	.60		
Plan Sections							• •				
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target	
0.00 6,846.00 7,345.86 9,406.50	0.00 0.00 10.00 10.00	0.00 0.00 105.34 105.34	0.00 6,846.00 7,343,32 9,372.68	0.00 0.00 -11.51 -106.15	0.00 0.00 41.95 386.93	0.00 0.00 2.00 0.00	0.00 0.00 2.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 105.34 0.00		
9,906.35 10,806.35	0.00	359.64 359.64	9,870.00 10,442.96	-117.66 455.29	428.87 425.29	2.00 10.00	-2.00 10.00	0.00	180.00 MV -0.36	(_13_4H_KOP	
15,284.34	90.00	359.64	10,443.00	4,933.19	397.29	0.00	0.00	0.00	0.00 MV	/_13_4H_BHL	

Planning Report

Database: HOPSPP Company: ENGINEERI Project: PRD NM DII Site: Mesa Verde Well: Mesa Verde Wallberg: W(800)	NG DESIGNS RECTIONAL PLANS (NAD 1983) 13 13 Federal 4H	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Mesa Verde 13 Federal 4H WELL @ 3613.90ft (Original Well Elev) WELL @ 3613.90ft (Original Well Elev) Grid Minimum Curvature
Design: VVB00 Permitting P	an		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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
976.00	0.00	0.00	976.00	0.00	0.00	0.00	0.00	0.00	0.00
1,107.00	0.00	0.00	1,107.00	0.00	0.00	0.00	0.00	0.00	0.00
3,321.00	0.00	0.00	3,321.00	0.00	0.00	0.00	0.00	0.00	0.00
Castile 4,654.00	0.00	0.00	4,654.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware									
4,669.00 Bell Canvo	0.00	0.00	4,669.00	0.00	0.00	0.00	0.00	0.00	0.00
5,551.00	0.00	0.00	5,551.00	0.00	0.00	0.00	0.00	0.00	0.00
6,761.00	0.00	0.00	6,761.00	0.00	0.00	0.00	0.00	0.00	0.00
Brushy Car 6,846.00	1 yon 0.00	0.00	6,846.00	0.00	0.00	0.00	0.00	0.00	0.00
Build @ 2.0 6,900.00	1.08	105.34	6,900.00	-0.13	0.49	-0.09	2.00	2.00	0.00
7 000 00	3.08	105.34	6 999 93	-1.09	3 99	-0 77	2.00	2.00	0.00
7,100.00	5.08	105.34	7.099.67	-2.98	10.85	-2.10	2.00	2.00	0.00
7,200.00	7.08	105.34	7,199.10	-5.78	21.07	-4.07	2.00	2.00	0.00
7.300.00	9.08	105.34	7,298,10	-9.50	34.62	-6.69	2.00	2.00	0.00
7,345.86	10.00	105.34	7,343.32	-11.51	41.95	-8.10	2.00	2.00	0.00
Hold Tange	ent @ 10°				•				
7,400.00	10.00	105.34	7,396.65	-13.99	51.01	-9.85	0.00	0.00	0.00
7,500.00	10.00	105.34	7,495.13	-18.59	67.75	-13.09	0.00	0.00	0.00
7,600.00	10.00	105.34	7,593.61	-23.18	84.49	-16.32	0.00	0.00	0.00
7,700.00 7.800.00	10.00 10.00	105.34 105.34	7,692.09 7,790.57	-27.77 -32.37	101.24 117.98	-19.56 -22.79	0.00 0.00	0.00 0.00	0.00 0.00
7.900.00	10.00	105.34	7,889.05	-36.96	134.72	-26.02	0.00	0.00	0.00
8,000.00	10.00	105.34	7,987,54	-41.55	151.46	-29.26	0.00	0.00	0.00
8,100.00	10,00	105.34	8,086.02	-46.14	168.20	-32.49	0.00	0.00	0.00
8,200.00	10,00	105.34	8,184.50	-50.74	184.94	-35.73	0.00	0.00	0.00
8,300.00	10.00	105.34	8,282.98	-55.33	201.68	-38,96	0,00	0.00	0.00
8,400.00	10.00	105.34	8,381.46	-59.92	218.42	-42.20	0.00	0.00	0.00
8,473.66	10.00	105.34	8,454.00	-63.31	230.76	-44.58	0.00	0.00	0.00
Bone Sprin	g								
8,500.00	10.00	105.34	8,479.94	-64.52	235.17	-45.43	0.00	0.00	0.00
8,600.00 8,700.00	10.00 10.00	105.34 105.34	8,578.43 8,676.91	-69.11 -73.70	251.91 268.65	-48.66 -51.90	0.00 0.00	0.00 0.00	0.00 0.00
8,800.00	10.00	105.34	8,775.39	-78.29	285.39	-55.13	0.00	0.00	0.00
8,900.00	10.00	105.34	8,873.87	-82.89	302.13	-58.37	0.00	0.00	0.00
9,000.00	10.00	105.34	8,972.35	-87.48	318.87	-61.60	0.00	0.00	0.00
9,100.00	10.00	105.34	9,070,83	-92.07	335,61	-64.83	0.00	0.00	0.00
9,200.00	10.00	105.34	9,169.32	-96.66	352.36	-68.07	0.00	0.00	0.00
9,300.00	10.00	105.34	9,267.80	-101.26	369.10	-71.30	0.00	0.00	0.00
9,400.00	10.00	105.34	9,366.28	-105.85	385,84	-74.54	0.00	0.00	0.00
9,406.50	10.00	105.34	9,372,68	-106.15	386.93	-74.75	0.00	0.00	0.00
Drop @ 2.0	0 DLS								
9,500.00	8.13	105.34	9,465.01	-110.04	401.13	-77.49	2.00	-2.00	0.00
9,600.00	6.13	105.34	9,564.23	-113.33	413.09	-79.80	2.00	-2.00	0.00
9,700.00	4.13	105.34	9,663.83	-115.69	421.71	-81.47	2.00	-2.00	0.00
	0.40	105.24	0 762 67	117 10	406.07	07.40	2 00	2.00	· 0.00

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Planning Report

Database: Company: Project: Site: Well: Well: Well:	HOPSPP ENGINEERING DESIGNS PRD NM DIRECTIONAL PLANS (NAD 1983) Mesa Verde 13 Mesa Verde 13 Federal 4H WB00	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Mesa Verde 13 Federal 4H WELL @ 3613.90ft (Original Well Elev) WELL @ 3613.90ft (Original Well Elev) Grid Minimum Curvature
Design:	Permitting Plan		

Planned Survey

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Measured Depth (ft)	Inclination	Azimuth	Vertical Depth (ft)	+N/-S	+E/-W	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
(**)	0	0	()	(11)	(11)		(/ / 0014)	()	(, , , , , , , , , , , , , , , , , , ,
9,900.00	0.13	105.34	9,863.65	-117.65	428.87	-82.85	2.00	-2.00	0.00
9,906.35	0.00	359.64	9,870.00	-117.66	428.87	-82.85	2.00	-2.00	0.00
Build Curv	e @ 10.00 DLS								
9,908,35	0.20	359.64	9,872.00	-117.65	428.87	-82.85	10.00	10.00	0.00
2nd Bone S	Spring								
40.000.00		050.04	0.000.00	110.00	400.00	75.04	40.00	10.00	0.00
10,000.00	9.35	359.64	9,963.23	-110.02	428.83	-75.24	10.00	10.00	0.00
10,100.00	19.36	359.64	10,059.98	-85.24	428.67	-50.56	10.00	10.00	0.00
10,200.00	29.36	359.64	10,150.96	-44.04	428.41	-9.51	10.00	10.00	0.00
10,300.00	39.30	359.64	10,233.40	12.33	428.00	40.05	10.00	10.00	0.00
10,400.00	49.30	309,64	10,304.80	62.10	427.02	110.23	10.00	10.00	0.00
10,500.00	59.36	359.64	10,362.99	163.33	427.12	197.09	10.00	10.00	0.00
10,600.00	69.36	359.64	10,406.20	253.37	426.55	286.80	10.00	10.00	0.00
10,700.00	79.36	359.64	10,433.12	349.55	425.95	382.61	10.00	10.00	0.00
10,800.00	89.36	359.64	10,442.92	448.94	425.33	481.63	10.00	10.00	0.00
10,806.35	90.00	359.64	10,442.96	455.29	425.29	487.96	10.00	10.00	0.00
Landing Po	oint								
10.900.00	90.00	359 64	10,442,96	548 94	424 70	581 26	0 00	0.00	0.00
11.000.00	90.00	359.64	10,442.96	648.93	424.08	680 88	0.00	0.00	0.00
11 100 00	90.00	359.64	10,442,96	748 93	423 45	780.51	0.00	0.00	0.00
11 200 00	90.00	359.64	10 442 96	848 93	422.83	880 13	0.00	0.00	0.00
11.300.00	90.00	359.64	10,442,96	948.93	422.20	979.76	0.00	0.00	0.00
44 400 00	00.00	250.64	10 440 06	4 0 4 9 0 9	404 60	1 070 29	0.00	0.00	0.00
11,400.00	90.00	359.64	10,442.96	1,048.93	421.58	1,079.38	0.00	0.00	0.00
11,500.00	90.00	359.04	10,442.90	1,140.92	420.93	1,179.01	0.00	0.00	0.00
11,000.00	90.00	309.04	10,442.90	1,240.92	420.33	1,270.03	0.00	0.00	0.00
11 800 00	90.00	359.64	10,442.96	1,340.92	419.70	1 477 88	0.00	0.00	0.00
11,000.00	00.00	000.01	10,112.00	1,110.02	110.00	4,577,64	0.00	0.00	0.00
11,900.00	90.00	359.64	10,442.96	1,548.92	418.45	1,577.51	0.00	0.00	0.00
12,000.00	90.00	359.64	10,442.96	1,648.91	417.83	1,677.13	0.00	0.00	0.00
12,100.00	90.00	359.64	10,442.96	1,748.91	417.20	1,776,76	0.00	0.00	0.00
12,200.00	90.00	359.64	10,442.96	1,848.91	416.58	1,876.38	0.00	0.00	0.00
12,300.00	90.00	359.64	10,442.96	1,948.91	415.95	1,976.01	0.00	0.00	0.00
12,400.00	90.00	359.64	10,442.96	2,048.91	415.33	2,075.63	0.00	0.00	0.0
12,500.00	90.00	359.64	10,442.96	2,148.90	414.70	2,175.26	0.00	0.00	0.00
12,600.00	90.00	359.64	10,442.96	2,248.90	414.08	2,274.88	0.00	0.00	0.00
12,700.00	90.00	359.64	10,442.96	2,348.90	413.45	2,374.51	0.00	0.00	0.00
12,800.00	90.00	359.64	10,442.96	2,448.90	412.82	2,474.14	0.00	0.00	0.00
12,900.00	90.00	359.64	10,442.96	2,548.90	412.20	2,573.76	0.00	0.00	0.00
13,000.00	90.00	359.64	10,442.96	2,648.89	411.57	2,673.39	0,00	0.00	0.00
13,100.00	90.00	359.64	10,442.96	2,748.89	410.95	2,773.01	0.00	0.00	0.00
13,200.00	90.00	359.64	10,442.96	2,848.89	410.32	2,872.64	0.00	0.00	0.00
13,300.00	90.00	359.64	10,442.96	2,948.89	409.70	2,972.26	0.00	0.00	0.00
13,400.00	90.00	359.64	10,442.96	3,048.89	409.07	3,071.89	0.00	0.00	0.00
13,500.00	90.00	359.64	10,442.96	3,148.89	408.45	3,171.51	0.00	0.00	0.00
13,600.00	90.00	359.64	10,442.96	3,248.88	407.82	3,271.14	0.00	0.00	0.00
13,700.00	90.00	359.64	10,442.96	3,348.88	407.20	3,370.76	0.00	0.00	0.00
13,800.00	90.00	359,64	10,442.96	3,448.88	406,57	3,470.39	0,00	0.00	0.00
13 900 00	90.00	350 64	10 442 96	3 548 88	105 95	3 570 01	0.00	0.00	0.00
14 000 00	90.00 00.00	359.04	10,442.30	3,040.00	405,35	3,570,01	0.00	0.00	0.00
14 100 00	90,00 00,00	355.04	10,442.90	3,040.00	400,02	3760 26	0.00	0.00	0.00
14,100.00	90.00	303.04	10,442.90	3,140.01	404.70	3,109.20	0.00	0.00	0.00
14 300 00	90.00 00 00	350.04	10,442.30	3040.01	404.07	3 069 51	0.00	0.00	0.00
14,000.00	90.00	559.04	10,442.90	3,540.07	403.43	5,506.5	0.00	0.00	0.00
14,400.00	90,00	359.64	10,442.96	4,048.87	402.82	4,068.14	0.00	0.00	0.00
14 500 00	90.00	350.64	10 112 06	1 1/0 97	402.20	1 167 76	0.00	0.00	0.00

Planning Report

Database: Company: Project: Site: Well: Wellbore: Design:	HOPSPP ENGINEERING DESIGNS PRD NM DIRECTIONAL PLANS (NAD 1983 Mesa Verde 13 Mesa Verde 13 Federal 4H WB00 Permitting Plan			IAD 1983)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:				Well Mesa Verde 13 Federal 4H WELL @ 3613.90ft (Original Well Elev) WELL @ 3613.90ft (Original Well Elev) Grid Minimum Curvature			
Planned Survey		*** ************										цугалаа оноо от статот и
Measured Depth (ft)	Incli	nation (°)	Azimu (°)	Vert th Dep (fi	ical oth l)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dog Ra (°/10	gleg ate 00ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,600.00 14,700.00 14,800.00		90.00 90.00 90.00	359 359 359	9.64 10,4 9.64 10,4 9.64 10,4	142.96 142.96 142.96	4,248.86 4,348.86 4,448.86	401.57 400.94 400.32	4,267.3 4,367.0 4,466.6	39 01 64	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00
14,900.00 15,000.00 15,100.00 15,200.00 15,284.34 TD at 15284.	34	90.00 90.00 90.00 90.00 90.00	359 359 359 359 359	9.64 10,4 9.64 10,4 9.64 10,4 9.64 10,4 9.64 10,4 9.64 10,4	142.96 142.96 142.96 142.96 143.00	4,548.86 4,648.86 4,748.85 4,848.85 4,933.19	399.69 399.07 398.44 397.82 397.29	4,566.2 4,665.8 4,765.5 4,865.1 4,949.1	26 39 51 14 16	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Design Targets				·····			*					
Target Name - hit/miss target - Shape	Dip	o Angle (°)	Dip Dir. (°)	. TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northi (usff	ing t)	Easting (usft)		Latitude	Longitude
MV_13_4H_KOP - plan hits target c - Point	enter	0.00	0.0	0 9,870.00	-117.	66 428.87	7 440,	747.74	727,905	.76 32° [.]	12' 36.911745 N	103° 43' 48.364640
MV_13_4H_BHL - plan hits target c - Point	enter	0.00	0.0	0 10,443.00	4,933	19 397.29	9 445,	798.32	727,874	.18 32° ·	13' 26.891642 N	103° 43' 48.402241
Formations							,					
Meas Der (fi	ured oth t)	Ve D	ertical epth (ft)		Name			Litholog	y	Dip (°)	Dip Direction (°)	
ç	976.00	0	976.00	Rustler								
1,1	07.00	0 1	1,107.00	Salado								
3,3	321.00	0 3	3,321.00	Castile								
4,6	654.00	0 4	4,654.00	Delaware								
4,6	69.00	0 2	4,669.00	Bell Canyor	1							
5,5	51.00	U 5	5,551.00	Cherry Can	yon							
6,7	61.00	0 E	5,761.00	Brushy Can	yon							
8,4 9,9	173.60 908.39	ь 8 5 9	9,872.00	Bone Spring 2nd Bone S	a pring							
Plan Annotations												a.e
Measu Dep (ft)	red th	Ver De (1	tical pth ft)	Loc +N/-S (ft)	al Coordii	nates +E/-W (ft)	Commer	nt				

6,846.00	6,846.00	0.00	0.00	Build @ 2.00 DLS	
7,345.86	7,343.32	-11,51	41,95	Hold Tangent @ 10°	
9,406.50	9,372.68	-106,15	386.93	Drop @ 2.00 DLS	
9,906.35	9,870.00	-117.66	428.87	Build Curve @ 10.00 DLS	
10,806.35	10,442.96	455.29	425.29	Landing Point	
15,284.34	10,443.00	4,933.19	397.29	TD at 15284.34	

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1. Geologic Formations

TVD of target	10443'	Pilot Hole Depth	N/A
MD at TD:	15284'	Deepest Expected fresh water:	973'

Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	976	Water/Oil/Gas
Salado	1107	
Castile	3321	
Lamar/Delaware	4654	
Bell Canyon*	4669	
Cherry Canyon*	5551	
Brushy Canyon*	6761	Oil/Gas
Bone Spring	8454	Oil/Gas
1st Bone Spring	9680	Oil/Gas
2nd Bone Spring	9872	Oil/Gas

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

2. Casing Program

									Buoyant	Buoyant
Hole Size (in)	Casing Interval		Csg. Size Weight	C 1	0	SF	SF	Body SF	Joint SF	
	From (ft)	To (ft)	(in)	(lbs)	(lbs) Grade	Conn.	Collapse	Burst	Tension	Tension
17.5	0	1024	13.375	54.5	J55	BTC	6.23	1.33	2.44	2.61
12.25	0	4702	9.625	36	J55	BTC	2.32	1.40	1.99	2.27
8.5	0	15284	5.5	20	P-110	DQX	2.09	1.28	2.21	2.39

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h *Oxy requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool will be run in case a contingency second stage is required for cement to reach surface. If cement circulated to surface during first stage we will drop a cancelation cone and not pump the second stage.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	

OXY USA Inc. - Mesa Verde 13 Federal 4H

Is well located in SOPA but not in R-111-P?	Y
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back	V
500' into previous casing?	Y Y
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

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Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	818	14.8	1.35	6.53	6:50	Class C Cement, Accelerator
Intermediate	1215	12.9	1.74	8.67	15:07	Pozzolan Cement, Retarder
Casing	156	14.8	1.326	6.34	6:31	Class C Cement, Retarder, Dispersant, Salt
Production	661	10.2	3.057	15.65	19:09	Class C Cement
Casing	1861	13.2	1.631	8.37	15:15	Class H Cement, Retarder, Dispersant, Salt

Casing String	Top of Lead (ft)	Bottom of Lead (ft)	Top of Tail (ft)	Bottom of Tail (ft)	% Excess Lead	% Excess Tail
Surface	N/A	N/A	0	1024	N/A	50%
Intermediate Casing	0	4202	4202	4702	75%	20%
Production Casing	4202	9406	9406	15284	75%	125%

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Туре	~	Tested to:											
		Annular Blind Ram	Annular	1	70% of working pressure											
12.25" Intermediate	12 5/0"		×													
12.25 Intermediate	13-5/6	.5 intermediate 15-5/8	13-378 3101	13-3/8 JWI		-5/6 5101	JIVI	J1VI		J1V1	5101	5111	5-5/6 51VI	Pipe Ram		250/5000mai
			Double Ram 🖌													
			Other*													

*Specify if additional ram is utilized.

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

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

Forma	tion integrity test will be performed per Onshore Order #2.		
On Exploratory wells or on that portion of any well approved for a 5M BOPE system or			
greate	r, a pressure integrity test of each casing shoe shall be performed. Will be tested in		
accord	lance with Onshore Oil and Gas Order #2 III.B.1.i.		
A vari	ance is requested for the use of a flexible choke line from the BOP to Choke		
Manif	old. See attached for specs and hydrostatic test chart.		
Y	Are anchors required by manufacturer?		
A mu	tibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after		
install	ation on the surface casing which will cover testing requirements for a maximum of		
30 days. If any seal subject to test pressure is broken the system must be tested. We will			
test the flange connection of the wellhead with a test port that is directly in the flange. We			
are pr	oposing that we will run the wellhead through the rotary prior to cementing surface		
casing	as discussed with the BLM on October 8, 2015.		
See at	tached schematic.		

5. Mud Program

Depth		There		X / ! ! 4	Weden I am
From (ft)	To (ft)	Туре	weight (ppg)	viscosity	water Loss
0	1024	Water-Based Mud	8.4-8.6	40-60	N/C
1024	4702	Brine	9.8-10.0	35-45	N/C
4702	9906	Water-Based Mud	8.8-9.6	38-50	N/C
9906	15284	Oil-Based Mud	8.8-9.6	35-50	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Oxy will use a closed mud system.

OXY proposes to drill out the 13-3/8" surface casing shoe with a saturated brine system from 1024-4702', which is the base of the salt system. At this point we will swap fluid systems to a high viscosity mixed metal hydroxide system or a fully saturated direct emulsion system. We will drill with this system to the KOP @ 9906'.

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

6. Logging and Testing Procedures

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

Additional logs planned		Interval	
No	Resistivity		
No	Density		
No	CBL		
Yes	Mud log	Surface Shoe - TD	
No	PEX		

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5214 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	164°F

Pump high viscosity sweeps as needed for hole cleaning. The mud system will be monitored visually/manually as well as with an electronic PVT. The necessary mud products for additional weight and fluid loss control will be on location at all times. Appropriately weighted mud will be used to isolate potential gas, oil, and water zones until such time as casing can be cemented into place for zonal isolation.

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

N	H2S is present
Y	H2S Plan attached

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8. Other facets of operation

	Yes/No
Will the well be drilled with a walking/skidding operation? If yes, describe.	Yes
• We plan to drill the two well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.	
 Will more than one drilling rig be used for drilling operations? If yes, describe. Oxy requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Oxy would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document 	Yes
for information on the spudder rig.	

Total estimated cuttings volume: 1583.5 bbls.

9. Company Personnel

Name	Title	Office Phone	Mobile Phone
Philippe Haffner	Drilling Engineer	713-985-6379	832-767-9047
Diego Tellez	Drilling Engineer Supervisor	713-350-4602	713-303-4932
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
John Willis	Drilling Manager	713-366-5556	713-259-1417

OXY USA Inc APD ATTACHMENT: SPUDDER RIG DATA

OPERATOR NAME / NUMBER: OXY USA Inc

1. SUMMARY OF REQUEST:

Oxy USA respectfully requests approval for the following operations for the surface hole in the drill plan:

1. Utilize a spudder rig to pre-set surface casing for time and cost savings.

2. Description of Operations

- 1. Spudder rig will move in to drill the surface hole and pre-set surface casing on the well.
 - **a.** After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
 - **b.** The spudder rig will utilize fresh water-based mud to drill the surface hole to TD. Solids control will be handled entirely on a closed loop basis. No earth pits will be used.
- 2. The wellhead will be installed and tested as soon as the surface casing is cut off and the WOC time has been reached.
- 3. A blind flange at the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wingvalves.
 - **a.** A means for intervention will be maintained while the drilling rig is not over the well.
- 4. Spudder rig operations are expected to take 2-3 days per well on the pad.
- 5. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
- 6. Drilling operations will begin with a larger rig and a BOP stack equal to or greater than the pressure rating that was permitted will be nippled up and tested on the wellhead before drilling operations resume on each well.
 - **a.** The larger rig will move back onto the location within 90 days from the point at which the wells are secured and the spudder rig is moved off location.

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- **b.** The BLM will be contacted / notified 24 hours before the larger rig moves back on the pre-set locations.
- 7. Oxy will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.
- 8. Once the rig is removed, Oxy will secure the wellhead area by placing a guard rail around the cellar area.



FMSS

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



APD ID: 10400014883 Operator Name: OXY USA INCORPORATED Well Name: MESA VERDE 13 FEDERAL Well Type: OIL WELL Submission Date: 06/06/2017

Well Number: 4H

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

MesaVerde13Fd4H_ExistRoads_06-06-2017.pdf Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES		
New Road Map:		
MesaVerde13Fd4H_Nev	vRoad_06-06-2017.pd	Jf
New road type: LOCAL		
Length: 3027.3	Feet	Width (ft.): 30
Max slope (%): 0		Max grade (%) : 0
Army Corp of Engineers (ACOE) permit required? NO		
ACOE Permit Number(\$):	
New road travel width:	14	
New road access erosion control: Watershed Diversion every 200' if needed.		
New road access plan or profile prepared? YES		
New road access plan a	attachment:	
MesaVerde13Fd4H_NewRoad_06-06-2017.pdf		
Access road engineerir	na desian? NO	

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Access road engineering design attachment:

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 0

Offsite topsoil source description:

Onsite topsoil removal process: If available

Access other construction information: Turnouts every 1000' as needed.

Access miscellaneous information: The access road will run approximately 802.4' west, then 429.1' southwest, then 1775.8' west, then 20' south through pasture to the northwest corner of the pad. Number of access turnouts: Access turnout map:

Drainage Control

New road drainage crossing: CULVERT

Drainage Control comments: Watershed Diversion every 200' if needed.

Road Drainage Control Structures (DCS) description: Watershed Diversion every 200' if needed.

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

MesaVerde13Fd4H_ExistWells_06-06-2017.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Estimated Production Facilities description:

Production Facilities description: a. In the event the well is found productive, the Mesa Verde Federal central tank battery would be utilized and the necessary production equipment will be installed at the well site. See proposed facilities layout diagram. b. All flow lines will adhere to API standards. They will consist of 2 – 4" composite flowlines operating 75% MAWP, surface, lines to follow surveyed route. Survey of a strip of land 30' wide and 7487.5' in length crossing USA Land in Section 13 T24S R31E NMPM, Eddy County and Section 18 T24S R32E NMPM, Lea County, NM and being 15' left and 15' right of the centerline survey, see attached. c. Electric line will follow a route approved by the BLM. Survey of a strip of land 30' wide and 230.4' in length crossing USA Land in Section 13 T24S R31E NMPM, Eddy County, NM and being 15' left and 15' right

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

of the centerline survey, see attached. d. See attached for additional information on the Mesa Verde Development Surface Production Facilities and the Fresh Water Station. **Production Facilities map:**

MesaVerde13Fd4H_FacilityPLEL_06-06-2017.pdf MesaVerde13Fd4H_MVFWPond_06-06-2017.pdf MesaVerde13Fd4H_MVSurfFac_06-06-2017.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: INTERMEDIATE/PRODUCTION CASING, OTHER, SURFACE CASING Describe type:	Water source type: GW WELL
Source latitude:	Source longitude:
Source datum:	
Water source permit type: WATER WELL	
Source land ownership: COMMERCIAL	

Water source transport method: PIPELINE, TRUCKING

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 2000

Source volume (gal): 84000

Water source and transportation map:

MesaVerde13Fd4H_GRRWtrSource_06-06-2017.pdf MesaVerde13Fd4H MesqWtrSrc 06-06-2017.pdf

Water source comments: This well will be drilled using a combination of water mud systems. It will be obtained from commercial water stations (Gregory Rockhouse, Mesquite) in the area and will be hauled to location by transport truck using existing and proposed roads.

New water well? NO

New Water Well Info

Well latitude:	Well Longitude:	Well datum:
Well target aquifer:		
Est. depth to top of aquifer(ft):	Est thickness of	aquifer:
Aquifer comments:		
Aquifer documentation:		
Well depth (ft):	Well casing type:	
Well casing outside diameter (in.):	Well casing inside	diameter (in.):
New water well casing?	Used casing source	ce:

Source volume (acre-feet): 0.25778618

Operator Name: OXY USA INCORPORATED **Well Name:** MESA VERDE 13 FEDERAL

Well Number: 4H

Drilling method:	
Grout material:	
Casing length (ft.):	
Well Production type:	
Water well additional information:	
State appropriation permit:	
Additional information attachment:	

Drill material: Grout depth: Casing top depth (ft.): Completion Method:

Construction Materials description: Primary - All caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on the location. Will use BLM recommended extra caliche from other locations close by for roads, if available. Secondary - The secondary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cubic yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel: a. The top 6" of topsoil is pushed off and stockpiled along the side of the location. b. An approximate 120' X 120' area is used within the proposed well site to remove caliche. c. Subsoil is removed and piled alongside the 120' X 120' within the pad site. d. When caliche is found, material will be stockpiled within the pad site to build the location and road. e. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road. f. Once the well is drilled the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad. Caliche will be provided from the following pit located in Sections 6, T24S R32E. Water will be provided from the provided from the proved and proved pit or be located in Section 18, T24S R32E.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Section 6 - Construction Materials

Waste type: DRILLING

Waste content description: Water-Based Cuttings, Water-Based Mud, Oil-Based Cuttings, Oil-Based Mud, Produced Water

Amount of waste: 1583.5 barrels

Waste disposal frequency : Daily

Safe containment description: Haul-Off Bins

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL Disposal location ownership: COMMERCIAL FACILITY

Disposal type description:

Disposal location description: An approved facility that can process drill cuttings, drill fluids, flowback water, produced water, contaminated soils, and other non-hazardous wastes.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Reserve pit length (ft.) Reserve pit width (ft.)

Reserve pit volume (cu. yd.)

Reserve pit depth (ft.)

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location A closed loop system will be utilized consisting of above ground steel tanks and haul-offbins. Disposal of liquids, drilling fluids and cuttings will be disposed of at an approved facility.Cuttings area length (ft.)Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

MesaVerde13Fd4H_WellSiteCL_06-06-2017.pdf

Comments: V-Door-West - CL Tanks-South - 330' X 440'-Two Well Pad

Well Number: 4H

Section 10 - Plans for Surface Reclamation

Type of disturbance: NEW	
Recontouring attachment:	
Drainage/Erosion control construction: Reclamation to	be wind rowed as needed to control erosion
Drainage/Erosion control reclamation: Reclamation to I	pe wind rowed as needed to control erosion
Wellpad long term disturbance (acres): 2.12	Wellpad short term disturbance (acres): 3.33
Access road long term disturbance (acres): 0.97	Access road short term disturbance (acres): 2.08
Pipeline long term disturbance (acres): 1.4625344	Pipeline short term disturbance (acres): 0.4875115
Other long term disturbance (acres): 0	Other short term disturbance (acres): 1.44
Total long term disturbance: 4.5525346	Total short term disturbance: 7.3375115

Reconstruction method: If the well is deemed commercially productive, caliche from the areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original topsoil will again be returned to the pad and contoured, as close as possible, to the original topography, and the area will be seeded with an approved BLM mixture to re-establish, to the original topography, and the area will be seeded with an approved BLM mixture to re-establish.

Topsoil redistribution: The original topsoil will be returned to the area of the drill pad not necessary to operate the well.

Soil treatment: To be determined by the BLM.

Existing Vegetation at the well pad: To be determined by the BLM at Onsite.

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: To be determined by the BLM at Onsite.

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: To be determined by the BLM at Onsite.

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: To be determined by the BLM at Onsite.

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Well Number: 4H

Seed Management

Seed Table	
Seed type:	Seed source:
Seed name:	
Source name:	Source address:
Source phone:	
Seed cultivar:	
Seed use location:	
PLS pounds per acre:	Proposed seeding season:
Seed Summary	Total pounds/Acre:

Seed Type Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: JIM	Last Name: WILSON
Phone: (575)631-2442	Email: jim_wilson@oxy.com
Seedbed prep:	
Seed BMP:	
Seed method:	
Existing invasive species? NO	
Existing invasive species treatment description:	
Existing invasive species treatment attachment:	
Weed treatment plan description: To be determined by	by the BLM.
Weed treatment plan attachment:	
Monitoring plan description: To be determined by the	BLM.
Monitoring plan attachment:	
Success standards: To be determined by the BLM.	
Pit closure description: NA	
Pit closure attachment:	

Section 11 - Surface Ownership

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Disturbance type: WELL PAD	
Describe:	
Surface Owner: BUREAU OF LAND MANAGEMENT	
Other surface owner description:	
BIA Local Office:	
BOR Local Office:	
COE Local Office:	
DOD Local Office:	
NPS Local Office:	
State Local Office:	
Military Local Office:	
USFWS Local Office:	
Other Local Office:	
USFS Region:	
USFS Forest/Grassland:	USFS Ranger District:

Disturbance type: PIPELINE Describe: Surface Owner: BUREAU OF LAND MANAGEMENT Other surface owner description: **BIA Local Office: BOR Local Office: COE Local Office: DOD Local Office: NPS Local Office:** State Local Office: Military Local Office: **USFWS Local Office: Other Local Office: USFS Region: USFS Forest/Grassland: USFS Ranger District:**

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Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 13 FEDERAL

Well Number: 4H

Disturbance type: OTHER	
Describe: Electric Line	
Surface Owner: BUREAU OF LAND MANAGEMENT	
Other surface owner description:	
BIA Local Office:	
BOR Local Office:	
COE Local Office:	
DOD Local Office:	
NPS Local Office:	
State Local Office:	
Military Local Office:	
USFWS Local Office:	
Other Local Office:	
USFS Region:	
USFS Forest/Grassland:	USFS Ranger District:

Disturbance type: NEW ACCESS ROAD **Describe:** Surface Owner: BUREAU OF LAND MANAGEMENT Other surface owner description: **BIA Local Office: BOR Local Office: COE Local Office: DOD Local Office: NPS Local Office:** State Local Office: Military Local Office: **USFWS Local Office: Other Local Office: USFS Region: USFS Forest/Grassland: USFS Ranger District:**

Well Number: 4H

Section 12 - Other Information

Right of Way needed? YES

Use APD as ROW? YES

ROW Type(s): 281001 ROW - ROADS,285003 ROW - POWER TRANS,288100 ROW - O&G Pipeline,289001 ROW- O&G Well Pad

ROW Applications

SUPO Additional Information: Permian Basin MOA - see attached SUPO and to be determined by BLM. GIS Shapefiles furnished upon request **Use a previously conducted onsite?** NO

Previous Onsite information:

Other SUPO Attachment

MesaVerde13Fd4H_GasCapPlan_06-06-2017.pdf MesaVerde13Fd4H_MiscSvyPlats_06-06-2017.pdf MesaVerde13Fd4H_StakeNotice_06-06-2017.pdf MesaVerde13Fd4H_SUPO_06-06-2017.pdf •

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USA INC. "13" FEDERAL #4H FE PLAN

FAA PERMIT: NO

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DESIGN & CONSTRUCTIO Installation of a fresh water stati

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bbls. The fresh water pond surfabbls. The fresh water pond surfaconstructed in 6" lifts and hydra the subgrade proof rolled to loca the pond and a wide gate for truc

© \Anjelico\2017\OXY USA INC\TRACTS\17110043 930x880 for Mesa Verde Fresh Water Pond in Sec 18, T245, R32E

C \Anjelica\2017\OXY USA INC\TRACTS\17110043 930x880 for Mesa Verde Fresh Water Pond in Sec 18, T245 R32E

sa verde ⊦resh Water Pond in Sec 18, T24S R

Electrical Lines

Power lines will be routed from PME to well sites and surface facilities per referenced survey plats. Reference Plats:

(1) John West Surveying Company W.O. No: 16.11.0949 Survey: 12/15/16-1/3/2017 CAD: 1/24/17

(1) John West Surveying Company W.O. No: 16111047 Survey: 1/10/17 CAD: 2/01/17

Buried Lines (General)

Mesa Verde development will have a 100' "pipeline corridor" that buried lines will be consolidated to where possible as to minimize disturbances. Pipelines within corridor are described below. Certain interconnections outside of the pipeline corridor are required but have been minimized.

Reference Plat:

(1) John West Surveying Company W.O. No: 16.11.0947 Survey: 12/13/16 CAD: 1/19/17 Rev: 2/03/17

Gas Lift Compressor Site, Suction, and Injection Lines

Wells with gas lift as their artificial lift mechanism in the Mesa Verde development will be supported by a centralized gas lift compressor station. This gas lift compressor station will be located on a 400'x200' pad in Section 18 Township 24 South Range 32 East and will be fed by a buried 20" HDPE line, laid in the pipeline corridor, from the Mesa Verde unit CTB operating at less than 125 PSIG. The discharge of the compressors will feed into (1) 6" gas injection trunk line operating < 1,500 PSIG running the length of the pipeline corridor connecting to each well pad. An access road will be required to access this pad per the associated plat.

Reference Plat:

(1) John West Surveying Company W.O. No: 16.11.0947 Survey: 12/13/16 CAD: 1/19/17 Rev: 2/03/17

- (2) John West Surveying Company W.O. No: 16110948 Survey: 12/14/16 CAD: 1/13/17
- (1) John West Surveying Company W.O. No: 16111041 Survey: 1/4/17 CAD: 1/13/17

Salt Water Disposal

Produced water will be pumped into (2) 16" HDPE buried lines operating at less than 300 PSIG in the pipeline corridor. This produced water line will also connect to the McCloy SWD and Bran SWD through routes outside of the pipeline corridor per the attached plats.

Reference Plats:

(1) John West Surveying Company W.O. No: 16.11.0947 Survey: 12/13/16 CAD: 1/19/17 Rev: 2/03/17

- (1) John West Surveying Company W.O. No: 16110099 Survey: 2/2/16 CAD: 2/17/16
- (1) John West Surveying Company W.O. No: 16110113 Survey: 2/5/16 CAD: 2/17/16
- (4) John West Surveying Company W.O. No: 16110102 Survey: 2/3&4/16 CAD: 2/22/16

ating at less than 750 PSIG in the pipeline corridor. gathering point through a route outside of the

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)947 Survey: 12/13/16 CAD: 1/19/17 Rev: 2/03/17)47 Survey: 1/10/17 CAD: 2/01/17

g at less than 125 PSIG in the pipeline corridor. This cessor) tie-in point through a route outside of the PE line will also interconnect to the Sand Dunes To allow movement of higher volumes of gas (1) 12" installed along these routes.

947 Survey: 12/13/16 CAD: 1/19/17 Rev: 2/03/17 42 Survey: 1/27/17 CAD: 2/1/17



CORNER "1916" B.C



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CAnjelico/2016/0XY USA INC/TRACTS/16110946 6002600, 1502150 & PL Corridor for the Meso Verde CTB in Sec 18, 1245, R32E

1,14 CORNER ື້ GLC "1916" B.



1/4 CORNER GLO "1916" B.C.



O An,elics 2, 18/0XY USA INC/TRAC 5/18/10946 600x500, 150x150 & PL Corridor for the Mesa Verde CTB in Sec 18, 7245, R32E





C Anjelica/2016/0XY USA INC/EASCHENTS/16111047 Elec Ln & Pipeline to the Nesa Verde OF Cathering Station in Sec 17, T245, R32E



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C Anjelico/2016/OXY USA IN , TRACT' 16110948 400x200 Tract w Access F in Sec 18 41, R32E



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JOHN WEST SURVEYING COMPANY 412 N. DAL PASO HOBBS, N.M. B8240 (375) 393 3117 www.jwsc.biz TBPLS# 10021000 W.O. No.: 16111041 Rev. Rel. W.O.:

Drown By: ACK

Sheet 1 of 1

I C TRACTS 161 4 orrider to Meso Verde 18 Fed Well: 11H & 12H in Sec 18 1245, R32E













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412 N. DAL PASO HO885, N.M. 88240 (575) 393 3117 www.jwsc.bit TBB cs. 10031000	Survey Date 1 1	2/01/17 W0	W ACK

CAN HAN 2016 OXY USA INCLEASENEN 16

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18

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1/4 CORNER GLO "1916" B.C.



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iRR, INC. WATER SOURCES XY CERTAIN POND LOCATIONS

iter Source2	Water Source3	Water Source4
<u>C-3478</u>	<u>C-2772</u>	
<u>C-1361</u>	<u>C-3358</u>	
<u>C-3478</u>	<u>C-2772</u>	
<u>C-2574</u>	<u>J-27</u>	—
<u>C-3200</u>	<u>SP-55 & SP-1279</u> <u>A</u>	<u>C-100</u>

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GRF ME

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	ell shack		104.254317"
	n		1856° -104.254443°
			2315° -104.254812°
			5949°-104.374371°
° C-1246			3978°-104.271212°
			316° -104.312930°
			JU4° -104.109/9°
			/845-104.17/410
G-1360	ENG#1		32.064922* - 103.906818*
C-1361	ENG#2	PRIVATE	32.064908* -103.906266*
C-1573		PRIVALE	32.113463° -104.108092°
C-1575	ROCKHOUSE Hanch Well - Wildcat	BLM	32.493190° -104.444163°
C-2270	CW#1 (Oliver Kiehne)	PRIVATE	32.021440° -103.559208°
C-2242	Walterscheid	PRIVATE	32.39199° -104.17694°
C-2492POD2	Stacy Mills	PRIVATE	32.324203° -103.812472°
C-2569	Paduca well #2	BLM	32.160588 -103.742051
C-2569POD2	Paduca well replacement	BLM	32.160588 -103.742051
C-2570	Paduca (tank) well #4	BLM	32.15668 -103.74114
C-2571	Paduca (road) well	BLM	32.163993° -103.745457°
C-2572	Paduca well #6	BLM	32.163985 -103.7412
C-2573	Paduca (in the bush) well	BLM	32.16229 -103.74363
C-2574	Paduca well (on grid power)	BLM	32.165777° -103.747590°
C-2701	401 Water Station	BLM	32.458767° -104.528097°
C-2772	Mobley Alternate	BLM	32.305220° -103.852360°
C-3011	ROCKY ARROYO - MIDDLE	BLM	32.409046° -104.452045°
C-3060	Max Vasquez	PRIVATE	32.31291° -104.17033°
C-3095	ROCKHOUSE Ranch Well - North of Rockcrusher	PRIVATE	32.486794° -104.426227°
C-3200	Beard East	PRIVATE	32.168720 -104.276600
C-3260	Hayhurst	PRIVATE	32.227110° -104.150925
C-3350	Winston Barn	PRIVATE	32.511871° -104.139094
C-3358	Branson	PRIVATE	32.19214° -104.06201
C-3363	Watts#2	PRIVATE	32.444637° -103.931313
C-3453	ROCKY ARROYO - FIELD	PRIVATE	32.458657° -104.460804
C-3478	Mobley Private	PRIVATE	32.294937° -103.888656
C-3483pod1	ENG#3	BLM	32.065556° -103.894722
C-3483pod3	ENG#5	BLM	32.06614° -103.89231
C-3483POD4	CW#4 (Oliver Kiehne)	PRIVATE	32.021803° -103.559030
C-3483POD5	CW#5 (Oliver Kiehne)	PRIVATE	32.021692° -103.560158
C-3554	Jesse Baker #1 well	PRIVATE	32.071937° -103.723030
C-3577	CW#3 (Oliver Kiehne)	PRIVATE	32.021773° -103.559738
C-3581	ENG#4	BLM	32.066083° -103.895024
C-3595	Oliver Kiehne house well #2	PRIVATE	32.025484° -103.682529
C-3596	CW#2 (Oliver Kiehne)	PRIVATE	32.021793° -103.559018°

WELL NUMBER WELL COMMON NAME LAND OWNERSHIP GPS LOCATION Beckham PRIVATE 32.020403*-103.299333* EPNG Jal Well PRIVATE 32.00643*-103.297714* Beckham PRIVATE 32.016443*-103.297714* Beckham PRIVATE 32.016443*-103.297714* Beckham PRIVATE 32.016443*-103.297714* Beckham PRIVATE 32.016443*-103.297714* L-10613 Northcutt3 (2nd House well) PRIVATE 32.016443*-103.297714* L-10613 Northcutt3 (2nd House well) PRIVATE 32.68792*-103.472452 L-11281 Northcutt3 (2nd House well) PRIVATE 32.687975*-103.471512 L-14259 Northcutt4 PRIVATE 32.689498*-103.472697 L-13049 EPNG Maljamar well PRIVATE 32.682938*-103.435609 L-13129 Pearce Trust STATE 32.731304*-103.624139* L-13805-2 HB Intrepid well #7 PRIVATE 32.68212**-103.624139* L-18805-3 HB Intrepid well #7 PRIVATE 32.682036*-103.42419* L-18805-3 HB Intrepid well #8 <th></th> <th>GRB II</th> <th>nc.</th> <th>• •</th>		GRB II	nc.	• •
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L-11281 Northcutt4 PRIVATE 32.687675°-103.471512 L-12459 Northcutt1 (House well) PRIVATE 32.689498°-103.472697 L-12462 Northcutt8 Private Well PRIVATE 32.686238°-103.435409 L-13049 EPNG Maljamar well PRIVATE 32.81274°-103.67730 L-13129 Pearce State STATE 32.763005°-103.553172 L-13179 Pearce Trust STATE 32.763004°-103.548461 L-13384 Northcutt7 (State) CAZA STATE 32.68451°-103.434997 L-18805-3 HB Intrepid well #7 PRIVATE 32.822415°-103.621299° L-1881 HB Intrepid well #4 PRIVATE 32.8282415°-103.624139' L-1883 HB Intrepid well #4 PRIVATE 32.8289124°-103.624139' L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.828941°-103.607654'' L-3844 Northcutt6 (State) STATE 32.693355°-103.40704'' L-3844 Northcutt6 (State) STATE 32.693355°-103.40704'' L-5434-S Northcutt6 (State) STATE 32.693355°-103.40700'' RA-	L-10613	Northcutt3 (2nd House well)	PRIVATE	32.687922°-103.472452
L-12459 Northcutt1 (House well) PRIVATE 32.689498°-103.472697 L-12462 Northcutt8 Private Well PRIVATE 32.686238°-103.435409 L-13049 EPNG Maljamar well PRIVATE 32.686238°-103.435409 L-13129 Pearce State STATE 32.726305°-103.553172 L-13179 Pearce Trust STATE 32.731304°-103.648461 L-13384 Northcutt7 (State) CAZA STATE 32.694651°-103.434997 L-1805-2 HB Intrepid well #7 PRIVATE 32.694651°-103.621299° L-1880S-3 HB Intrepid well #8 PRIVATE 32.692124°-103.624139° L-1883 HB Intrepid well #1 PRIVATE 32.694074°-103.624139° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.694074°-103.40211° L-5434 Northcutt6 (State) STATE 32.694074°-103.405111° L-5434-S Northcutt6 (State) STATE 32.694074°-103.40704° RA-14 Horner Can PRIVATE 32.69355°-103.407004° RA-147 Irvin Smith PRIVATE 32.693355°-104.293095° RA-1474 <td>L-11281</td> <td>Northcutt4</td> <td>PRIVATE</td> <td>32.687675°-103.471512</td>	L-11281	Northcutt4	PRIVATE	32.687675°-103.471512
L-12462 Northcutt8 Private Well PRIVATE 32.686238°-103.435409 L-13049 EPNG Maljamar well PRIVATE 32.81274° -103.67730 L-13129 Pearce State STATE 32.726305'-103.553172 L-13179 Pearce Trust STATE 32.731304*-103.548461 L-13384 Northcutt7 (State) CAZA STATE 32.694651*-103.434997 L-1805-2 HB Intrepid well #7 PRIVATE 32.822415* -103.627405* L-1880S-3 HB Intrepid well #8 PRIVATE 32.822415* -103.624139* L-1883 HB Intrepid well #1 PRIVATE 32.828041* -103.624139* L-1883 HB Intrepid well #4 PRIVATE 32.828041* -103.607654* L-3887 Northcutt5 (State) STATE 32.694074* -103.405111* L-5434 Northcut5 (State) STATE 32.693355* -103.407004* RA-14 Horner Can PRIVATE 32.89348* -104.37208* RA-1474 Irvin Smith PRIVATE 32.69121* -104.393043* RA-1474B NLake WS / Jack Clayton PRIVATE 32.695162* -103.676376* SP-55 & SP-127	L-12459	Northcutt1 (House well)	PRIVATE	32.689498°-103.472697
L-13049 EPNG Maljamar well PRIVATE 32.81274° -103.67730 L-13129 Pearce State STATE 32.726305°-103.553172 L-13179 Pearce Trust STATE 32.731304°-103.548461 L-13384 Northcutt7 (State) CAZA STATE 32.694651°-103.434997 L-18005-2 HB Intrepid well #7 PRIVATE 32.842212° -103.621299° L-1880S-3 HB Intrepid well #8 PRIVATE 32.82212° -103.62415° L-1880S-3 HB Intrepid well #1 PRIVATE 32.82212° -103.62415° L-1881 HB Intrepid well #4 PRIVATE 32.828914° -103.62405° L-1883 HB Intrepid well #4 PRIVATE 32.828041° -103.607654° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.694074° -103.407654° L-5434 Northcutt5 (State) STATE 32.693355° -103.40704° L-5434-S Northcutt6 (State) STATE 32.89348° -104.37208° RA-14 Horner Can PRIVATE 32.89348° -104.3208° RA-1474 Irvin Smith PRIVATE 32.805162° -103.676376° SP-55 & SP-1	L-12462	Northcutt8 Private Well	PRIVATE	32.686238°-103.435409
L-13129 Pearce State STATE 32.726305°-103.553172 L-13179 Pearce Trust STATE 32.731304°-103.548461 L-13384 Northcutt7 (State) CAZA STATE 32.694651°-103.434997 L-1880S-2 HB Intrepid well #7 PRIVATE 32.842212°-103.621299° L-1880S-3 HB Intrepid well #8 PRIVATE 32.852415°-103.620405° L-1881 HB Intrepid well #1 PRIVATE 32.829124°-103.624139° L-1883 HB Intrepid well #4 PRIVATE 32.828041°-103.607654° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.699036°-103.472437° L-5434 Northcutt5 (State) STATE 32.69936°-103.472437° L-5434 Northcutt6 (State) STATE 32.694074°-103.405111° L-5434-S Northcutt6 (State) STATE 32.69348°-104.37208° RA-14 Horner Can PRIVATE 32.89348°-104.37208° RA-1474-B NLake WS / Jack Clayton PRIVATE 32.69121°-104.293095° RA-1474-B NLake WS / Jack Clayton PRIVATE 32.86162°-103.676376° S	L-13049	EPNG Maljamar well	PRIVATE	32.81274° -103.67730
L-13179 Pearce Trust STATE 32.731304°-103.548461 L-13384 Northcutt7 (State) CAZA STATE 32.694651°-103.434997 L-1860S-2 HB Intrepid well #7 PRIVATE 32.82212°-103.621299° L-1880S-3 HB Intrepid well #8 PRIVATE 32.82212°-103.624139° L-1881 HB Intrepid well #1 PRIVATE 32.8229124°-103.624139° L-1883 HB Intrepid well #4 PRIVATE 32.828041°-103.607654° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.828041°-103.607654° L-3887 Northcutt5 (State) STATE 32.694036°-103.472437° L-5434 Northcutt6 (State) STATE 32.693355°-103.407004° RA-14 Horner Can PRIVATE 32.89348°-104.37208° RA-144 Horner Can PRIVATE 32.661221°-104.293095° RA-1474 Irvin Smith PRIVATE 32.661221°-104.293095° RA-1474 Iske WS / Jack Clayton PRIVATE 32.661221°-104.293095° RA-9193 Angell Ranch North Hummingbird PRIVATE 32.685162°-103.676376° S	L-13129	Pearce State	STATE	32.726305°-103.553172
L-13384 Northcutt7 (State) CAZA STATE 32.694651°-103.434997 L-1880S-2 HB Intrepid well #7 PRIVATE 32.842212°-103.621299° L-1880S-3 HB Intrepid well #8 PRIVATE 32.852415°-103.620405° L-1881 HB Intrepid well #1 PRIVATE 32.852415°-103.620405° L-1881 HB Intrepid well #1 PRIVATE 32.829124°-103.624139° L-1883 HB Intrepid well #4 PRIVATE 32.828041°-103.607654° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.6940674°-103.472437° L-5434 Northcutt5 (State) STATE 32.694074°-103.405111° L-5434-S Northcutt6 (State) STATE 32.89348°-104.37208° RA-14 Horner Can PRIVATE 32.89348°-104.37208° RA-1474 Irvin Smith PRIVATE 32.89348°-104.39208° RA-1474-B NLake WS / Jack Clayton PRIVATE 32.61221°-104.293095° RA-9193 Angell Ranch North Hummingbird PRIVATE 32.181358°-104.294009° SP-55 & SP-1279 (Bounds) Bounds Surface POD PRIVATE 32.203875°-104.247076°<	L-13179	Pearce Trust	STATE	32.731304°-103.548461
L-1880S-2 HB Intrepid well #7 PRIVATE 32.842212° -103.621299° L-1880S-3 HB Intrepid well #8 PRIVATE 32.852415° -103.620405° L-1881 HB Intrepid well #1 PRIVATE 32.829124° -103.624139° L-1883 HB Intrepid well #1 PRIVATE 32.829124° -103.624139° L-1883 HB Intrepid well #4 PRIVATE 32.829041° -103.607654° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.689036° -103.472437° L-5434 Northcutt5 (State) STATE 32.694074° -103.405111° L-5434-S Northcutt6 (State) STATE 32.89348° -104.37208° RA-14 Horner Can PRIVATE 32.89348° -104.37208° RA-1474 Irvin Smith PRIVATE 32.89348° -104.37208° RA-1474-B NLake WS / Jack Clayton PRIVATE 32.61221° -104.293095° RA-9193 Angell Ranch North Hummingbird PRIVATE 32.885162° -103.676376° SP-55 & SP-1279 (Bounds) Bounds Surface POD PRIVATE 32.181358° -104.247076° SP-55 & SP-1279 (Wilson) Wilson Surface POD PRIVATE 32.411122° -104.177030° City Treated Effluent Cit	L-13384	Northcutt7 (State) CAZA	STATE	32.694651°-103.434997
L-1880S-3HB Intrepid well #8PRIVATE32.852415° -103.620405°L-1881HB Intrepid well #1PRIVATE32.829124° -103.624139°L-1883HB Intrepid well #4PRIVATE32.829041° -103.607654°L-3887Northcutt2 (Tower or Pond well)PRIVATE32.689036° -103.472437°L-5434Northcutt5 (State)STATE32.694074° -103.405111°L-5434-SNorthcutt6 (State)STATE32.693355° -103.407004°RA-14Horner CanPRIVATE32.89348° -104.37208°RA-1474Irvin SmithPRIVATE32.61221° -104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.661221° -104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.161358° -104.247076°SP-55 & SP-1279 (Bounds)Bue Springs Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.411122° -104.177030°City Treated EffluentCity of Carlsbad Waste TreatmentPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mableu State Woll (VIOMableu SenathSTATE32.370286° -103.947839°	L-1880S-2	HB Intrepid well #7	PRIVATE	32.842212° -103.621299°
L-1881 HB Intrepid well #1 PRIVATE 32.829124° -103.624139° L-1883 HB Intrepid well #4 PRIVATE 32.828041° -103.607654° L-3887 Northcutt2 (Tower or Pond well) PRIVATE 32.689036°-103.472437° L-5434 Northcutt5 (State) STATE 32.69036°-103.472437° L-5434-S Northcutt6 (State) STATE 32.690355°-103.407004° RA-14 Horner Can PRIVATE 32.89348° -104.37208° RA-1474 Invin Smith PRIVATE 32.705773° -104.393043° RA-1474-B NLake WS / Jack Clayton PRIVATE 32.561221°-104.293095° RA-9193 Angell Ranch North Hummingbird PRIVATE 32.865162° -103.676376° SP-55 & SP-1279 (Bounds) Bounds Surface POD PRIVATE 32.181358° -104.247076° SP-55 & SP-1279 (Wilson) Wilson Surface POD PRIVATE 32.203875° -104.247076° SP-55 & SP-1279 (Wilson) Wilson Surface POD PRIVATE 32.203875° -104.247076° SP-55 & SP-1279 (Wilson) Wilson Surface POD PRIVATE 32.203875° -104.247076° SP-55 & SP-1279 (Wilson) Wilson Surface POD PRIVATE 32.203875° -104.052197° City Treated Effluent City of Carlsbad Waste Treatment PRIVATE 32.411122° -104.177030° Plant Mosaic Industrial Water PRIVATE 32.370286° -103.947839°	L-1880S-3	HB Intrepid well #8	PRIVATE	32.852415° -103.620405°
L-1883HB Intrepid well #4PRIVATE32.828041° -103.607654°L-3887Northcutt2 (Tower or Pond well)PRIVATE32.699036° -103.472437°L-5434Northcutt5 (State)STATE32.694074° -103.405111°L-5434-SNorthcutt6 (State)STATE32.693355° -103.407004°RA-14Horner CanPRIVATE32.89348° -104.37208°RA-1474Irvin SmithPRIVATE32.705773° -104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221° -104.293095°RA-9193Angell Ranch North HurmingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279 (Bounds)Blue Springs Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste TreatmentPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mableu State Woll (NO)Mableu State Wate PareshPRIVATE32.30286° -103.947839°	L-1881	HB Intrepid well #1	PRIVATE	32.829124° -103.624139°
L-3887Northcutt2 (Tower or Pond well)PRIVATE32.689036°-103.472437°L-5434Northcutt5 (State)STATE32.694074°-103.405111°L-5434-SNorthcutt6 (State)STATE32.693355°-103.407004°RA-14Horner CanPRIVATE32.89348°-104.37208°RA-1474Irvin SmithPRIVATE32.561221°-104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221°-104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.885162°-103.676376°SP-55 & SP-1279 (Bounds)Blue Springs Surface PODPRIVATE32.203875°-104.294009°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.203875°-104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.411122°-104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286°-103.947839°Mahlay State Well (MO)Masking RapachSTATE32.370286°-103.947839°	L-1883	HB Intrepid well #4	PRIVATE	32.828041° -103.607654°
L-5434Northcutt5 (State)STATE32.694074°-103.405111°L-5434-SNorthcutt6 (State)STATE32.693355°-103.407004°RA-14Horner CanPRIVATE32.89348° -104.37208°RA-1474Irvin SmithPRIVATE32.705773° -104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221°-104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279 (Bounds)Blue Springs Surface PODPRIVATE32.181358° -104.294009°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mableu State Woll (VIOMableu BaraehSTATE32.370286° -103.947839°	L-3887	Northcutt2 (Tower or Pond well)	PRIVATE	32.689036°-103.472437°
L-5434-SNorthcutt6 (State)STATE32.693355°-103.407004°RA-14Horner CanPRIVATE32.89348° -104.37208°RA-1474Irvin SmithPRIVATE32.705773° -104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221°-104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279 (Bounds)Blue Springs Surface PODPRIVATE32.181358° -104.294009°SP-55 & SP-1279 (Bounds)Bounds Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste TreatmentPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mabley Etate Well (NOMabley BoundsSTATE22.00895° 103.947839°	L-5434	Northcutt5 (State)	STATE	32.694074°-103.405111°
RA-14Horner CanPRIVATE32.89348° -104.37208°RA-1474Irvin SmithPRIVATE32.705773° -104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221°-104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279-ABlue Springs Surface PODPRIVATE32.181358° -104.294009°SP-55 & SP-1279 (Bounds)Bounds Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mehlay State Well (MOMehlay BasehSTATE22.309859° 103.947839°	L-5434-S	Northcutt6 (State)	STATE	32.693355°-103.407004°
RA-1474Irvin SmithPRIVATE32.705773° -104.393043°RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221° -104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279 ABlue Springs Surface PODPRIVATE32.181358° -104.294009°SP-55 & SP-1279 (Bounds)Bounds Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mahlau Stata Well (MOMahlau ParachSTATE20.9860° 103.947839°	RA-14	Horner Can	PRIVATE	32.89348° -104.37208°
RA-1474-BNLake WS / Jack ClaytonPRIVATE32.561221°-104.293095°RA-9193Angell Ranch North HummingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279 ABlue Springs Surface PODPRIVATE32.181358° -104.294009°SP-55 & SP-1279 (Bounds)Bounds Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mabley State Well (NOMabley BonethSTATE23.209850° 102.901806°	RA-1474	Irvin Smith	PRIVATE	32.705773° -104.393043°
RA-9193Angell Ranch North HummingbirdPRIVATE32.885162° -103.676376°SP-55 & SP-1279 (ABlue Springs Surface PODPRIVATE32.181358° -104.294009°SP-55 & SP-1279 (Bounds)Bounds Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mebley State Well (MOMebley ParachSTATE22.209850° 102.901406°	RA-1474-B	NLake WS / Jack Clayton	PRIVATE	32.561221°-104.293095°
SP-55 & SP-1279 A SP-55 & SP-1279 (Bounds)Blue Springs Surface POD Bounds Surface PODPRIVATE32.181358° -104.294009° 32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839° 23.209850° 103.947839°	RA-9193	Angell Ranch North Hummingbird	PRIVATE	32.885162° -103.676376°
SP-55 & SP-1279 (Bounds)Bounds Surface PODPRIVATE32.203875° -104.247076°SP-55 & SP-1279 (Wilson)Wilson Surface PODPRIVATE32.243010° -104.052197°City Treated EffluentCity of Carlsbad Waste Treatment PlantPRIVATE32.411122° -104.177030°Mine IndustrialMosaic Industrial WaterPRIVATE32.370286° -103.947839°Mebley State Well (MOMebley PapelsSTATE23.209850° 103.947839°	SP-55 & SP-1279-A	Blue Springs Surface POD	PRIVATE	32.181358° -104.294009°
SP-55 & SP-1279 (Wilson) Wilson Surface POD PRIVATE 32.243010° -104.052197° City Treated Effluent City of Carlsbad Waste Treatment PRIVATE 32.411122° -104.177030° Mine Industrial Mosaic Industrial Water PRIVATE 32.370286° -103.947839° Mehlow State Well (MO Mehlow Papet STATE 32.309850° -103.947839°	SP-55 & SP-1279 (Bounds)	Bounds Surface POD	PRIVATE	32.203875° -104.247076°
City Treated Effluent City of Carlsbad Waste Treatment PRIVATE 32.411122° -104.177030° Plant Plant 32.370286° -103.947839° Mine Industrial Mosaic Industrial Water PRIVATE 32.370286° -103.947839° Mehlow State Well (NO Mehlow Repet STATE 32.309850° -103.947839°	SP-55 & SP-1279 (Wilson)	Wilson Surface POD	PRIVATE	32.243010° -104.052197°
Mine Industrial Mosaic Industrial Water PRIVATE 32.370286° -103.947839° Mobiou State Well (NO Mobiou Report STATE 32.309850° 103.947839°	City Treated Effluent	City of Carlsbad Waste Treatment	PRIVATE	32.411122° -104.177030°
Mobiou State Mall /NO Mobiou Parab STATE 22 209950° 102 901906°	Mine Industrial	Mosaic Industrial Water	PRIVATE	32.370286° -103.947839°
Mobiley State Well (NO Mobiley Harich STATE 52.500059 -105.091000	Mobley State Well (NO	Mobley Ranch	STATE	32.308859° -103.891806°
EPNG Industrial Monument Water Well Pipeline (Oil PRIVATE 32.512943° -103.290300° Center, Funice)	EPNG Industrial	Monument Water Well Pipeline (Oil Center, Eunice)	PRIVATE	32.512943° -103.290300°
MCOX Commercial Matt Cox Commercial PRIVATE 32.529431° -104.188017°	MCOX Commercial	Matt Cox Commercial	PRIVATE	32.529431° -104.188017°
AMAX Mine Industrial Mosaic Industrial Water N/A VARIOUS TAPS	AMAX Mine Industrial	Mosaic Industrial Water	N/A	VARIOUS TAPS
WAG Mine Industrial Mosaic Industrial Water N/A VARIOUS TAPS	WAG Mine Industrial	Mosaic Industrial Water	N/A	VARIOUS TAPS
HB Mine Industrial Intrepid Industrial Water N/A VARIOUS TAPS	HB Mine Industrial	Intrepid Industrial Water	N/A	VARIOUS TAPS

Mesquite

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Cedar Canyon Major Source: C464 (McDonald) Sec. 13 T24S R28E Secondary Source: C-00738 (McDonald/Faulk) Sec. 12 T24S R28E

Corral Fly – South of Cedar Canyon

Major Source: C464 (McDonald) Sec. 13 T24S R28E Secondary Source: C-00738 (McDonald/Faulk) Sec. 12 T24S R28E

Cypress – North of Cedar Canyon

Major Source: Caviness B: C-501-AS2 Sec 23 T28S R15E Secondary Source: George Arnis; C-1303

Sand Dunes – new frac pond

Major Source: 128 Fresh Water Pond (Mesquite/Mosaic) – located at MM 4 on 128; 240,000 bbl pond

Secondary Source: George Arnis; C-1303

Mesa Verde – east of Sand Dunes

Major Source: 128 Fresh Water Pond (Mesquite/Mosaic) – located at MM 4 on 128; 240,000 bbl pond

Secondary Source: Unknown at this time; needs coordinates to determine secondary source

Smokey Bits/Ivore/Misty - had posiden tanks before

Major Source: Unknown at this time; need coordinates to determine major source Secondary Source: Unknown at this time; needs coordinates to determine secondary source

Red Tank/Lost Tank

Major Source: Unknown at this time; need coordinates to determine major source Secondary Source: Unknown at this time; needs coordinates to determine secondary source

Peaches

Major Source: Unknown at this time; need coordinates to determine major source Secondary Source: Unknown at this time; needs coordinates to determine secondary source



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USA INC. "13" federal #4H ITE PLAN

FAA PERMIT: NO





Pad Site Overall Rig Layout 2 Well Pad Site





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Ory U.S.A Inc.

	ew Mexico Staking Form
Date Staked:	13-11-15
Lease/Weii Name:	MESA VERDE 13 Fed #4H
Legal Description:	170 FSC 2631 FEL Soc 13 TAYS RE
(Mitude:	32' 12' 38.69" Mind 83
Longitude:	-113 43 53.34
Move Information:	
Sounty:	[.e.+
Surface Owner/Tenant:	130177
Regrest Residence:	5 miles
Nearest Water Well:	
V-D601:	West
Read Description:	Read into N/W corner from 110/TH
New Roed:	
Upgrade Existing Road:	
interim Reclamation:	SO'SOUTH EL'EAST
Source of Caliche:	
Top Soll:	EAST
Oasite Date Performed:	10-5-15 Jessie Bitssell, Bricke Wilson-BUM TIM Wilson On
Onsite Attendees:	Mike Wilson - Day SWCA Asel Survey
Special Notes:	

Surface Use Plan of Operations

Operator Name/Number:	<u>OXY USA Inc. – 16696</u>	
Lease Name/Number:	Mesa Verde 13 Federal #4H	
Pool Name/Number:	Mesa Verde Bone Spring	96229
Surface Location:	170 FSL 2631 FEL SWSE (O) Se	c 13 T24S R31E – NMNM114979
Bottom Hole Location:	180 FNL 2203 FEL NWNE (B) Se	c 13 T24S R31E - NMNM114979

1. Existing Roads

- a. A copy of the USGS "Paduca Breaks, NW, NM" quadrangle map is attached showing the proposed location. The well location is spotted on the map, which shows the existing road system.
- b. The well was staked by Terry J Asel, Certificate No. 15079 on 10/5/15, certified 11/21/16.
- c. Directions to Location: From the intersection of SH 128 and CR 786 (Buck Jackson Rd), go southwest on CR 786 for 0.4 miles. Turn left on caliche road and go south for 1.3 miles. Turn right on proposed road and go west for 802.4', then southwest for 429.1', then west for 1775.8', then south for 20' to location.

2. New or Reconstructed Access Roads:

- a. A new access road will be built. The access road will run approximately 802.4' west, then 429.1' southwest, then 1775.8' west, then 20' south through pasture to the northwest corner of the pad.
- b. The maximum width of the road will be 14'. It will be crowned and made up of 6" of rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.
- c. Surface material will be native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location. The average grade will be approximately 1%.
- d. No cattle guards, grates or fence cuts will be required. Turnouts are planned every 1000' as needed.
- e. Blade, water and repair existing caliche roads as needed.
- f. Water Bars will be incorporated every 200' during the construction of the road.

3. Location of Existing Wells:

Existing wells within a one mile radius of the proposed well are shown on attached plat.

4. Location of Existing and/or Proposed Facilities:

- a. In the event the well is found productive, the Mesa Verde Federal central tank battery would be utilized and the necessary production equipment will be installed at the well site. See proposed facilities layout diagram.
- b. All flow lines will adhere to API standards. They will consist of 2 4" composite flowlines operating < 75% MAWP, surface, lines to follow surveyed route. Survey of a strip of land 30' wide and 7487.5' in length crossing USA Land in Section 13 T24S R31E NMPM, Eddy County and Section 18 T24S R32E NMPM, Lea County, NM and being 15' left and 15' right of the centerline survey, see attached.</p>
- c. Electric line will follow a route approved by the BLM. Survey of a strip of land 30' wide and 230.4' in length crossing USA Land in Section 13 T24S R31E NMPM, Eddy County, NM and being 15' left and 15' right of the centerline survey, see attached.
- d. See attached for additional information on the Mesa Verde Development Surface Production Facilities and the Fresh Water Station.

5. Location and types of Water Supply

This well will be drilled using a combination of water mud systems. It will be obtained from commercial water stations in the area and will be hauled to location by transport truck using existing and proposed roads.

6. Construction Materials:

Primary

All caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on the location. Will use BLM recommended extra caliche from other locations close by for roads, if available.

Secondary

The secondary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cubic yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- a. The top 6" of topsoil is pushed off and stockpiled along the side of the location.
- b. An approximate 120' X 120' area is used within the proposed well site to remove caliche.
- c. Subsoil is removed and piled alongside the 120' X 120' within the pad site.
- d. When caliche is found, material will be stockpiled within the pad site to build the location and road.
- e. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
- f. Once the well is drilled the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the attached plat.

7. Methods of Handling Waste Material:

- a. A closed loop system will be utilized consisting of above ground steel tanks and haul-off bins. Disposal of liquids, drilling fluids and cuttings will be disposed of at an approved facility. Solids-CRI, Liquids-Laguna
- b. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.
- c. The supplier, including broken sacks, will pickup slats remaining after completion of well.
- d. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- e. Disposal of fluids to be transported will be by the following companies. TFH Ltd, Laguna SWD Facility

8. Ancillary Facilities: None needed.

9. Well Site Layout:

The proposed well site layout with dimensions of the pad layout and equipment location.

V-Door – West CL Tanks – South Pad – 330' X 440' – Two Well Pad

10. Plans for Surface Reclamation:

a. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original topsoil will again be returned to the pad and contoured, as close as possible, to the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

 b. If the well is deemed commercially productive, caliche from the areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

11. Surface Ownership:

The surface is owned by the U.S. Government and is administered by the BLM. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas. The surface is leased to: Richardson Cattle Co., P.O. Box 487, Carlsbad NM 88221. They will be notified of our intention to drill prior to any activity.

12. Other Information:

- a. The vegetation cover is generally sparse consisting of mesquite, yucca, shinnery oak, sandsage and perennial native range grass. The topsoil is sandy in nature. Wildlife in the area is also sparse consisting of deer, coyotes, rabbits, rodents, reptiles, dove and quail.
- b. There is no permanent or live water in the general proximity of the location.
- c. There are no dwellings within one mile of the proposed well site.
- d. Cultural Resources Examination–This well is located in the Permian Basin PA. Payment to be determined by BLM. This well shares the same pad as the Mesa Verde 13 Federal #3H.

Pad + 1/4 mile road	<u>\$1550.00</u>	\$.24/ft over ¼ mile	<u>\$ 409.75</u>	<u>\$1959.75</u>
Pipeline-up to 1 mile	<u>\$1431.00</u>	\$.27/ft over 1 mile	<u>\$ 0.00</u>	<u>\$1431.00</u>
Electric Line-up to 1 mile	\$717.00	\$.11/ft over 1 mile	<u>\$ 0.00</u>	<u>\$ 717.00</u>
Total	<u>\$3698.00</u>		<u>\$ 409.75</u>	<u>\$4107.75</u>

e. Copy of this application has been mailed to SWCA Environmental Consultants, 5647 Jefferson St. NE, Albuquerque, NM 87109. No Potash leases within one mile of surface location.

13. Bond Coverage:

Bond coverage is Individual-NMB000862, Nationwide-ESB00226.

14. Operators Representatives:

The OXY Permian representatives responsible for ensuring compliance of the surface use plan are listed below:

Van Barton	Corrie Hartman
Supt. Operations	Manager Asset
1502 West Commerce Dr.	P.O. Box 4294
Carlsbad, NM 88220	Houston, TX Carlsbad, NM 88220
Office – 575-628-4111	Office – 713-215-7084
Cellular – 575-706-7671	Cellular – 832-541-3190
Jim Wilson	Cuong Q. Phan
Jim Wilson Operation Specialist	Cuong Q. Phan RMT Leader
Jim Wilson Operation Specialist P.O. Box 50250	Cuong Q. Phan RMT Leader P.O. Box 4294
Jim Wilson Operation Specialist P.O. Box 50250 Midland, TX 79710	Cuong Q. Phan RMT Leader P.O. Box 4294 Houston, TX 77210
Jim Wilson Operation Specialist P.O. Box 50250 Midland, TX 79710 Cellular – 575-631-2442	Cuong Q. Phan RMT Leader P.O. Box 4294 Houston, TX 77210 Office – 713-513-6645

FAFMSS

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



Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO Produced Water Disposal (PWD) Location: **PWD surface owner:** Lined pit PWD on or off channel: Lined pit PWD discharge volume (bbl/day): Lined pit specifications: Pit liner description: Pit liner manufacturers information: Precipitated solids disposal: Decribe precipitated solids disposal: Precipitated solids disposal permit: Lined pit precipitated solids disposal schedule: Lined pit precipitated solids disposal schedule attachment: Lined pit reclamation description: Lined pit reclamation attachment: Leak detection system description: Leak detection system attachment: Lined pit Monitor description: Lined pit Monitor attachment: Lined pit: do you have a reclamation bond for the pit? Is the reclamation bond a rider under the BLM bond? Lined pit bond number: Lined pit bond amount: Additional bond information attachment:

PWD disturbance (acres):

Section 3 - Unlined Pits

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Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

PWD disturbance (acres):

PWD disturbance (acres):
Injection well type: Injection well number: Assigned injection well API number? Injection well new surface disturbance (acres): Minerals protection information: Mineral protection attachment: Underground Injection Control (UIC) Permit? UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

 Produced Water Disposal (PWD) Location:

 PWD surface owner:
 PV

 Surface discharge PWD discharge volume (bbl/day):
 Surface Discharge NPDES Permit?

 Surface Discharge NPDES Permit attachment:
 Surface Discharge site facilities information:

 Surface discharge site facilities map:
 Surface Discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location: PWD surface owner: Other PWD discharge volume (bbl/day): Other PWD type description: Other PWD type attachment: Have other regulatory requirements been met? Other regulatory requirements attachment: Injection well name:

Injection well API number:

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PWD disturbance (acres):

PWD disturbance (acres):

⇒AFMSS

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

Bond Information

Federal/Indian APD: FED

BLM Bond number: ESB000226

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Bond Info Data Report

11/02/2017

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: