OXY USA Inc. - Mesa Verde 18-7 Federal Com 4H

1. Geologic Formations

TVD of target	10470'	Pilot Hole Depth	N/A
MD at TD:	17968'	Deepest Expected fresh water:	920'

Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	920	Water/Oil/Gas
Salado	1030	
Castile	3310	
Lamar/Delaware	4632	
Bell Canyon*	4647	
Cherry Canyon*	5554	
Brushy Canyon*	6827	Oil/Gas
Bone Spring	8477	Oil/Gas
1st Bone Spring	9655	Oil/Gas
2nd Bone Spring	**9909**	**Oil/Gas**

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

2. Casing Program

Hole Size (in)	Casing Interval From (ft)	Casing Interval To (ft)	Csg. Size (in)	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	Buoyant Body SF Tension	Buoyant Joint SF Tension
14.75	0	971	10.75	45.5	J55	BTC	8.91	1.75	3.51	3.56
9.875	0	7500	7.625	29.7	L80	BTC	1.22	1.84	4.65	2.16
9.875	7500	9854	7.625	29.7	HP L80	BTC	1.46	1.95	2.13	2.15
6.75	9754	17968	4.5	11.6	P-110	DQX	1.68	1.20	2.25	2.28

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 may be run in case hole conditions merit pumping a second stage cement job to comply with permitted top of cement. 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.	

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

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	496	14.2	1.68	6.53	6:50	Class C Cement, Accelerator
Production Casing	1043	10.2	3.05	15.63	15:07	Pozzolan Cement, Retarder
	163	13.2	1.65	8.45	12:57	Class H Cement, Retarder, Dispersant, Salt
DV/ECP Tool @ 4682' (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations)						
2nd Stage	770	12.9	1.85	9.86	12:44	Class C Cement, Accelerator, Retarder
	182	14.8	1.33	6.34	6:31	Class C Cement
Production Liner	802	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	971	N/A	50%
Production Casing	0	8854	8854	9854	75%	20%
2nd Stage Prodution Casing	0	4182	4182	4682	75%	125%
Production Liner	N/A	N/A	9754	17968	N/A	15%

- **<u>Cement Top and Liner Overlap</u>**
  - OXY is requesting permission to have minimum fill of cement behind the 4.5" production liner to be 100 ft into previous casing string. The reason for this is so that we can come back and develop shallower benches from the same 7.625" mainbore in the future
  - Our plan is to use a whipstock for our exit through the mainbore. Based on our lateral target, we are planning a whipstock cased/hole exit so that kick-off point will allow for roughly 10deg/100' doglegs needed for the curve
  - Cement will be brought to the top of this liner hanger

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
9.875" Production	13-5/8"	5M	Annular	✓	70% of working pressure
			Blind Ram	✓	250/5000psi
			Pipe Ram		
			Double Ram	✓	
			Other*		

*Specify if additional ram is utilized.

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

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

	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	Y	Are anchors required by manufacturer?
	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. 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. See attached schematic.	

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	971	Water-Based Mud	8.4-8.6	40-60	N/C
971	4682	Brine	9.8-10.0	35-45	N/C
4682	9854	Water-Based Mud	8.8-9.6	38-50	N/C
9854	17968	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 10-3/4" surface casing shoe with a saturated brine system from 971-4682', 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 brine direct emulsion system. We will drill with this system to the production TD @ 9854'.

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

6. Logging and Testing Procedures

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

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5227 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

8. Other facets of operation

	Yes/No
Will the well be drilled with a walking/skidding operation? If yes, describe. • 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.	Yes
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 for information on the spudder rig.	Yes

Total estimated cuttings volume: 1405.8 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.
    - **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.

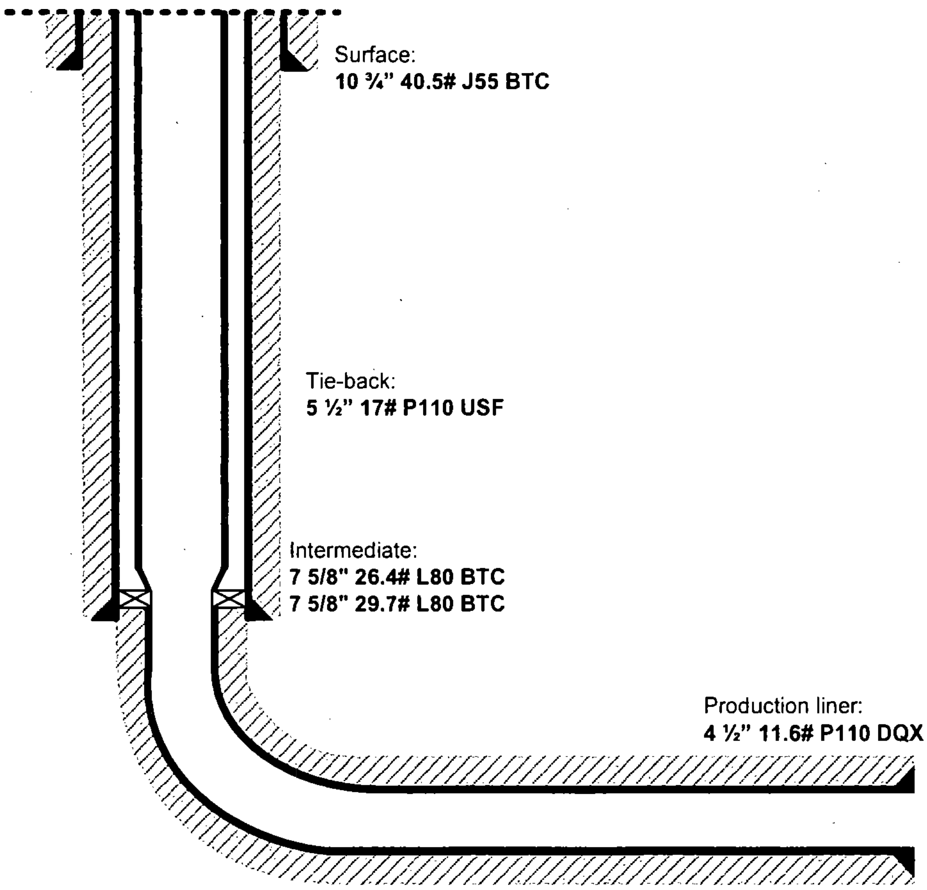
OXY USA Inc.
Mesa Verde 18-7 Federal Com 4H

Below is a summary that describes the general operational steps to drill and complete this well:

- Drill 14-3/4" hole x 10-3/4" casing for surface section. Cement to surface.
- Drill 9-7/8" hole x 7-5/8" casing for intermediate section. Cement to surface.
- Drill 6-3/4" hole x 4-1/2" liner for production section. Cement to top of liner, 100' inside 7-5/8" shoe.
- Release drilling rig from location.
- Move in workover rig and run a 5-1/2" 17# P110 USF tie-back frack string and seal assembly (see connection specs below). Tie into liner hanger Polished Bore Receptacle (PBR) with seal assembly.
- Pump hydraulic fracture job.
- Flowback and produce well.

When a decision is made to develop a secondary bench from this wellbore, a workover rig will be moved to location. The workover rig will then retrieve the tie-back frack string and seal assembly before temporarily abandoning the initial lateral.

General well schematic:



5 ½" 17# P110 USF Tie-back string specifications:

PERFORMANCE DATA

TMK UP ULTRA™ SF	5.500 in	17.00 lbs/ft	P-110
Technical Data Sheet			

Tubular Parameters

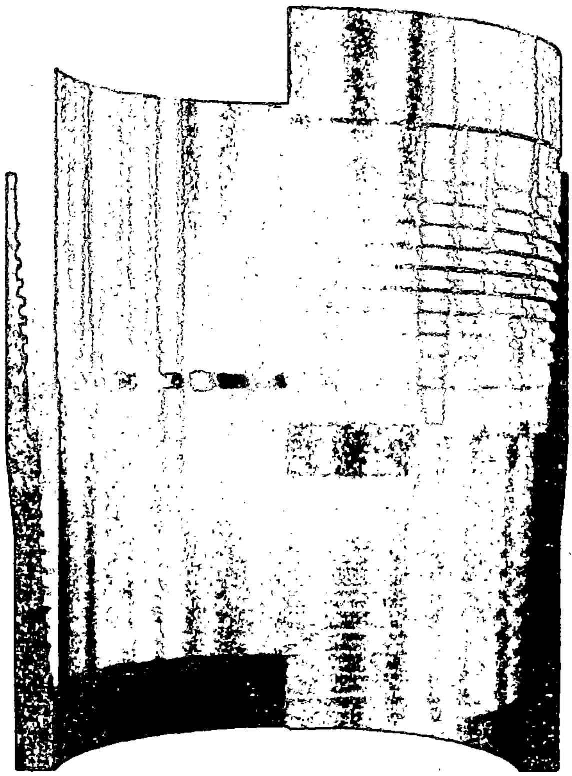
Size	5.500	in	Minimum Yield	110 000	psi
Nominal Weight	17.00	lbs/ft	Minimum Tensile	125 000	psi
Grade	P-110		Yield Load	545 000	lbs
PE Weight	16.87	lbs/ft	Tensile Load	620 000	lbs
Wall Thickness	0.304	in	Min. Internal Yield Pressure	10 600	psi
Nominal ID	4.892	in	Collapse Pressure	7 480	psi
Drift Diameter	4.767	in			
Nom. Pipe Body Area	4.962	in²			

Connection Parameters

Connection OD	5.653	in
Connection ID	4.848	in
Make-Up Loss	5.911	in
Critical Section Area	4.559	in²
Tension Efficiency	91.8	%
Compression Efficiency	91.8	%
Yield Load In Tension	499 000	lbs
Min. Internal Yield Pressure	10 600	psi
Collapse Pressure	7 480	psi
Uniaxial Bending	84	°/100 ft

Make-Up Torques

Min. Make-Up Torque	10 300	ft-lbs
Opt. Make-Up Torque	11 300	ft-lbs
Max. Make-Up Torque	12 400	ft-lbs
Yield Torque	15 500	ft-lbs



Printed on: July-24-2015

NOTE

TMK IPSCO

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.

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)

- 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.
- 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)

- 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)

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

Full Evacuation (Production)

- Internal: Full void pipe.
- 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.

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.

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.

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- External:
  - For Drilling: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.
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- 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.
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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.
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Gas Kick (Intermediate)

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- 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)

- 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)

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- External:
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- 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)

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- 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.

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- 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)

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

Full Evacuation (Production)

- Internal: Full void pipe.
- 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.

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.

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)

- 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.
- 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)

- 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)

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

Full Evacuation (Production)

- Internal: Full void pipe.
- 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 **4.500 in** **11.60 lbs/ft** **P-110**

Technical Data Sheet

Tubular Parameters

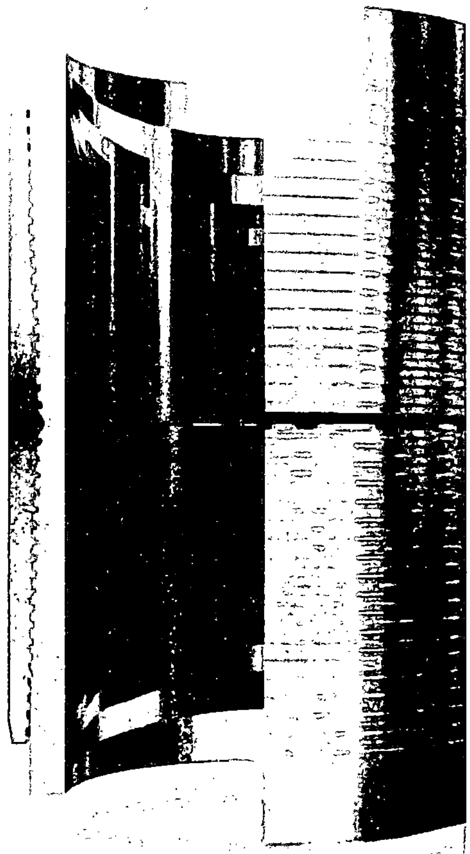
Size	4.500	in	Minimum Yield	110,000
Nominal Weight	11.60	lbs/ft	Minimum Tensile	125,000
Grade	P-110		Yield Load	367,000
PE Weight	11.35	lbs/ft	Tensile Load	417,000
Wall Thickness	0.250	in	Min. Internal Yield Pressure	10,700
Nominal ID	4.000	in	Collapse Pressure	7,600
Drift Diameter	3.875	in		
Nom. Pipe Body Area	3.338	in²		

Connection Parameters

Connection OD	5.000	in
Connection ID	4.000	in
Make-Up Loss	3.772	in
Critical Section Area	3.338	in²
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	367,000	lbs
Min. Internal Yield Pressure	10,700	psi
Collapse Pressure	7,600	psi

Make-Up Torques

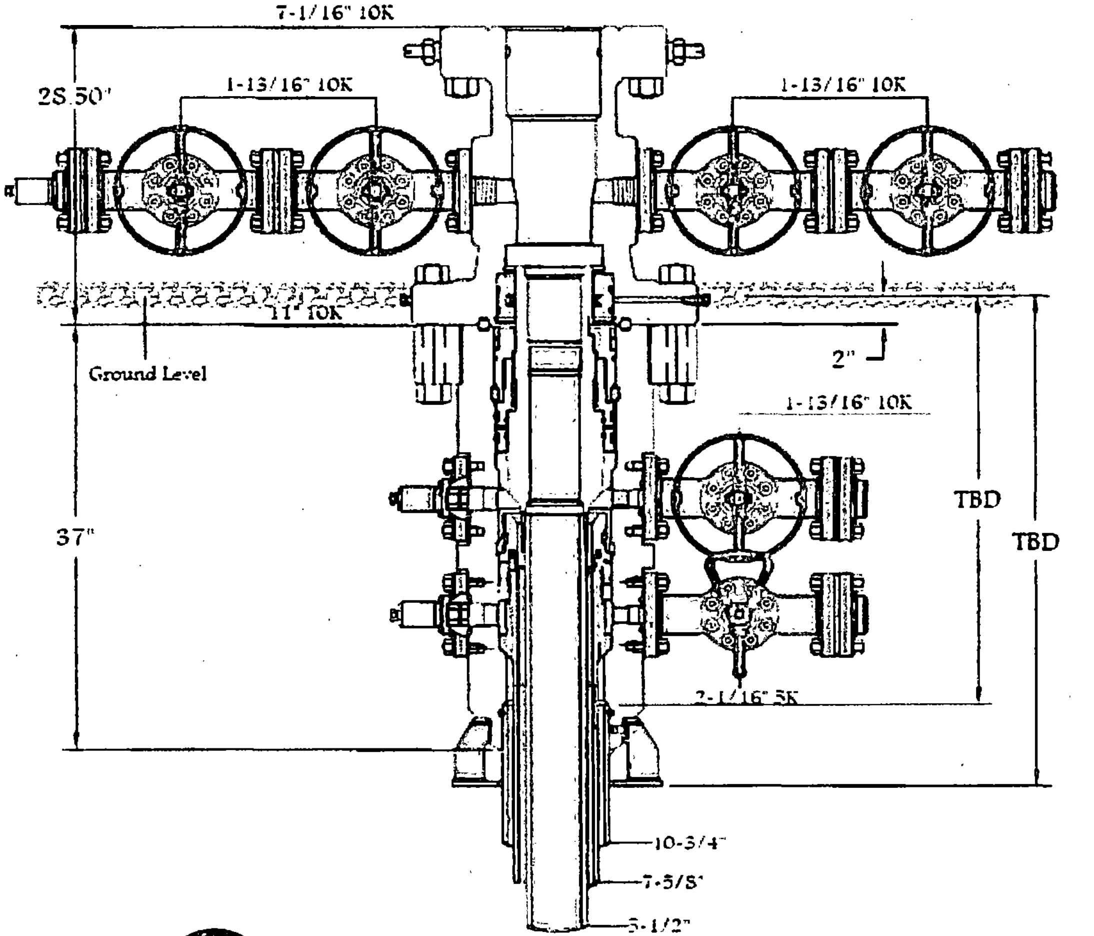
Min. Make-Up Torque	4,800	ft-lbs
Opt. Make-Up Torque	5,400	ft-lbs
Max. Make-Up Torque	5,900	ft-lbs
Yield Torque	8,600	ft-lbs



Printed on: July-29-2014

psi
psi
lbs
lbs
psi
psi

SCO



OXY

11" 10K SSD-II

CAMERON
A Schlumberger Company

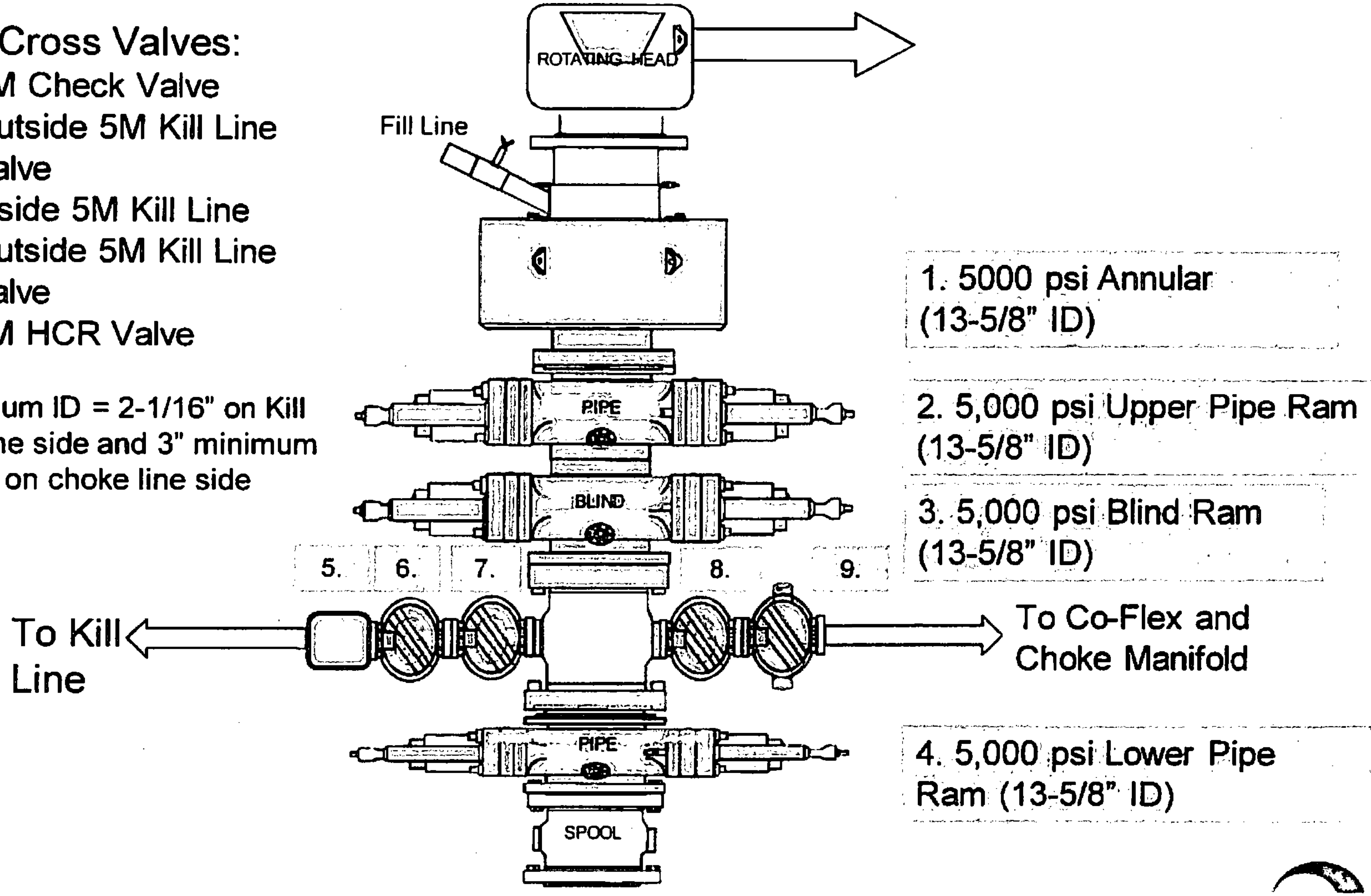
Brandon	5-3-17		#	1466162

5M BOP Stack

Mud Cross Valves:

5. 5M Check Valve
6. Outside 5M Kill Line Valve
7. Inside 5M Kill Line
8. Outside 5M Kill Line Valve
9. 5M HCR Valve

*Minimum ID = 2-1/16" on Kill Line side and 3" minimum ID on choke line side



Continental CONTITECH

Fluid Technology

Quality Document

FH-6

CERTIFICATE OF CONFORMITY

Supplier : CONTITECH RUBBER INDUSTRIAL KFT.
Equipment : 6 pcs. Choke and Kill Hose with installed couplings
Type : **3" x 10,67 m WP: 10000 psi**
Supplier File Number : 412638
Date of Shipment : April. 2008
Customer : Phoenix Beattie Co.
Customer P.o. : 002491
Referenced Standards
/ Codes / Specifications : API Spec 16 C
Serial 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

Signed : ....

ContiTech Rubber Industrial Kft. Quality Control Dept. (1)

Date: 04. April. 2008

Position: Q.C. Manager

PHOENIX Beattie

Material Identification Certificate

PA No	006330	Client	HELMERICH & PAYNE INT'L DRILLING	Client Ref	370-369-001	Page	1

Part No	Description	Material Desc	Material Spec	Qty	WO No	Batch No	Test Cert No	Bin No	Drg No	Issue No
HP10CK3A-35-4F1	3" 10K 16C C&K HOSE x 35ft OAL			1	2491	52777/H884		WATER		
SECK3-HPF3	LIFTING & SAFETY EQUIPMENT TO			1	2440	002440		N/STK		
SC725-200CS	SAFETY CLAMP 200MM 7.25T	CARBON STEEL		1	2519	H66S		22C		
SC725-132CS	SAFETY CLAMP 132MM 7.25T	CARBON STEEL		1	2242	H139		22		

We hereby certify that 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.

05/23/08.

Coflex Hose Certification

FH-5

FH-4

Coflex Hose Certification

Form No 100/12

PHOENIX Beattie

Phoenix Beattie Corp
11535 Brittmoore Park Drive
Houston, TX 77041
Tel: (832) 327-0141
Fax: (832) 327-0148
E-mail mail@phoenixbeattie.com
www.phoenixbeattie.com

Delivery Note

Customer Order Number	370-369-001	Delivery Note Number	003078	Page	2

Customer / Invoice Address	Delivery / Address
HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119	HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015

Customer Acc No	Phoenix Beattie Contract Manager	Phoenix Beattie Reference	Date
H01	JJL	006330	05/23/2008

Item No	Beattie 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	00CERT-HYDRO HYDROSTATIC PRESSURE TEST CERTIFICATE	1	1	0
6	00CERT-LOAD LOAD TEST CERTIFICATES	1	1	0
7	00FREIGHT 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

Phoenix Beattie Inspection Signature :

Received In Good Condition : Signature

Print Name

Date

All goods remain the property of Phoenix Beattie 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.

FH-3

Coflex Hose Certification

Form No 100/12

PHOENIX Beattie

Phoenix Beattie Corp
11535 Brittmoore Park Drive
Houston, TX 77041
Tel: (832) 327-0141
Fax: (832) 327-0148
E-mail mail@phoenixbeattie.com
www.phoenixbeattie.com

Delivery Note

Customer Order Number	370-369-001	Delivery Note Number	003078	Page	1

Customer / Invoice Address	Delivery / Address
HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119	HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015

Customer Acc No	Phoenix Beattie Contract Manager	Phoenix Beattie Reference	Date
H01	JJL	006330	05/23/2008

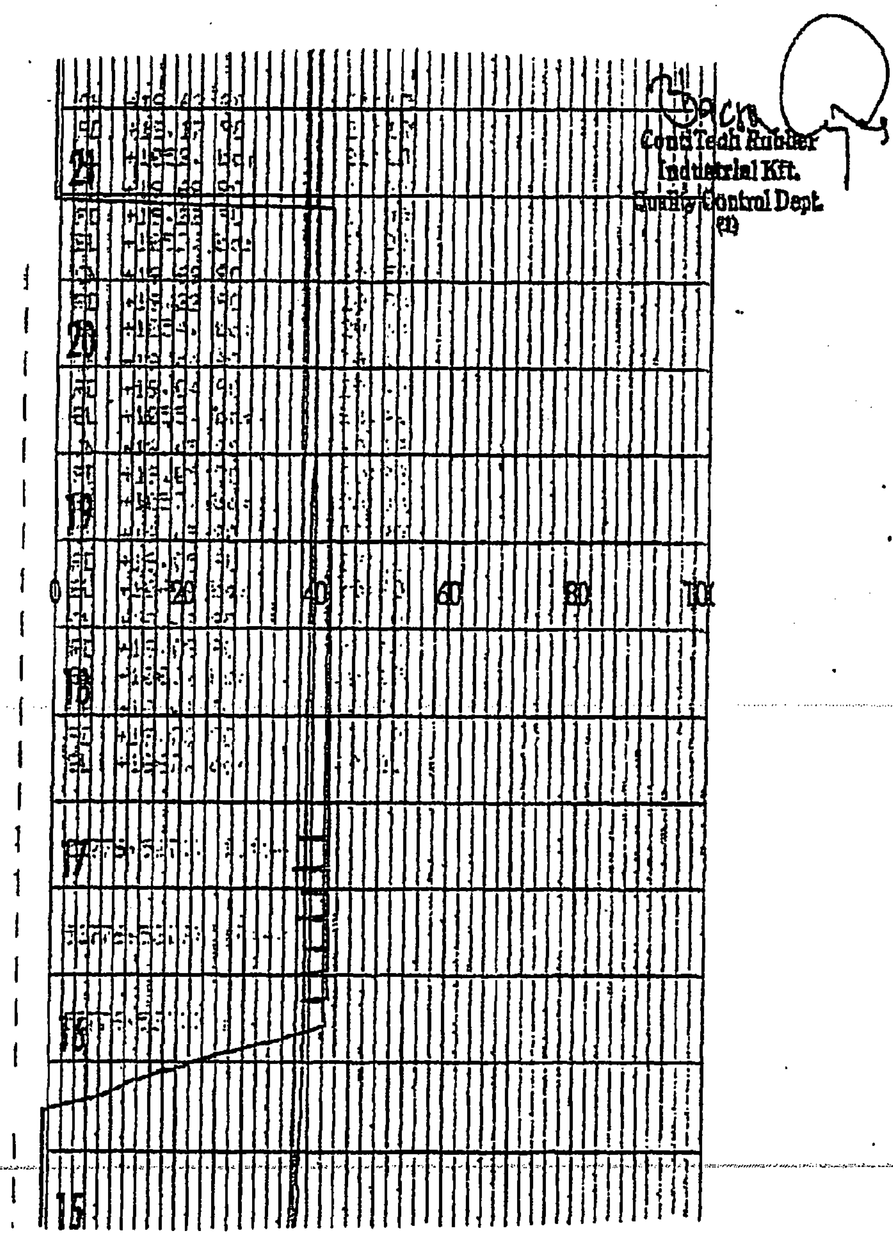
Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
1	HP10CK3A-35-4F1 3" 10K 16C C&K HOSE x 35ft OAL CW 4.1/16" API SPEC FLANGE E/ End 1: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange End 2: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange c/w BX155 Standard ring groove at each end Suitable 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	0

Continued...

FH-2

Coflex Hose Certification

Page: 1/1



FH-1

Continental CONTITECH

Fluid Technology

Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE							CERT. N°: 746	
PURCHASER:	Phoenix Beattie Co.						P.O. N°: 002491	
CONTITECH ORDER N°:	412638	HOSE TYPE:	3"	ID	Choke and Kill Hose			
HOSE SERIAL N°:	52777	NOMINAL / ACTUAL LENGTH:			10,67 m			
W.P. 68,96 MPa	10000 psi	T.P. 103,4 MPa		15000 psi			Duration: 60 ~	min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 25 MPa

COUPLINGS

Type	Serial N°		Quality	Heat N°
3" coupling with	917	913	AISI 4130	T7998A
4 1/16" Flange end			AISI 4130	26984

INFOCHIP INSTALLED

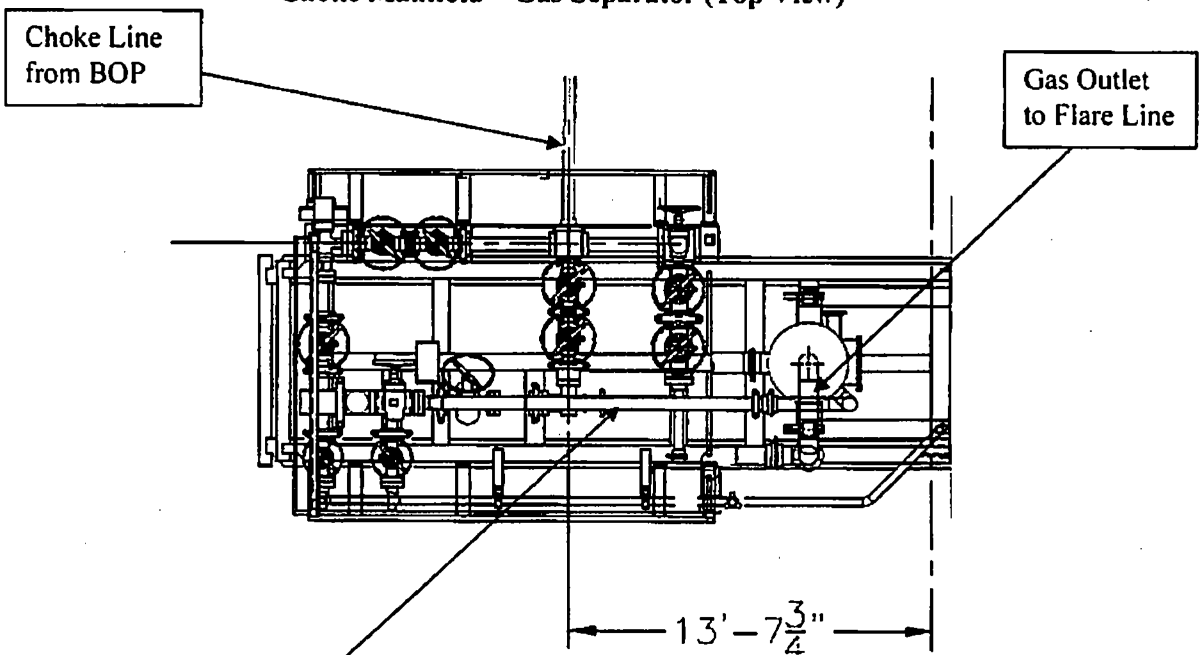
API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

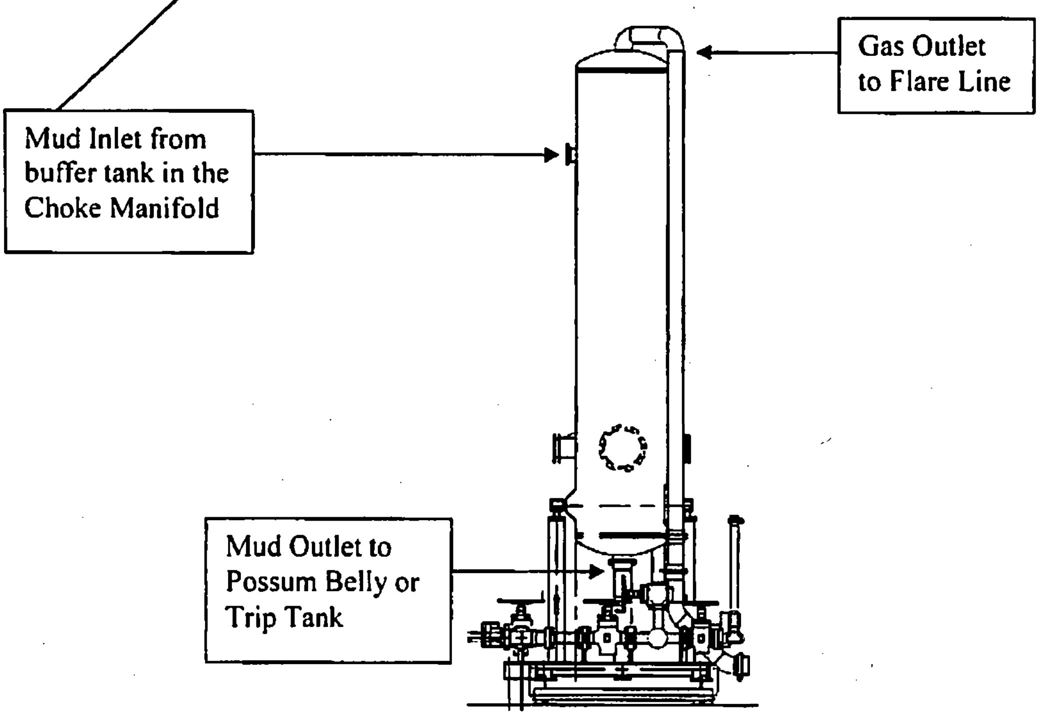
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
04. April. 2008		ContiTech Rubber Industrial Kft. Quality Control Dept. (1)

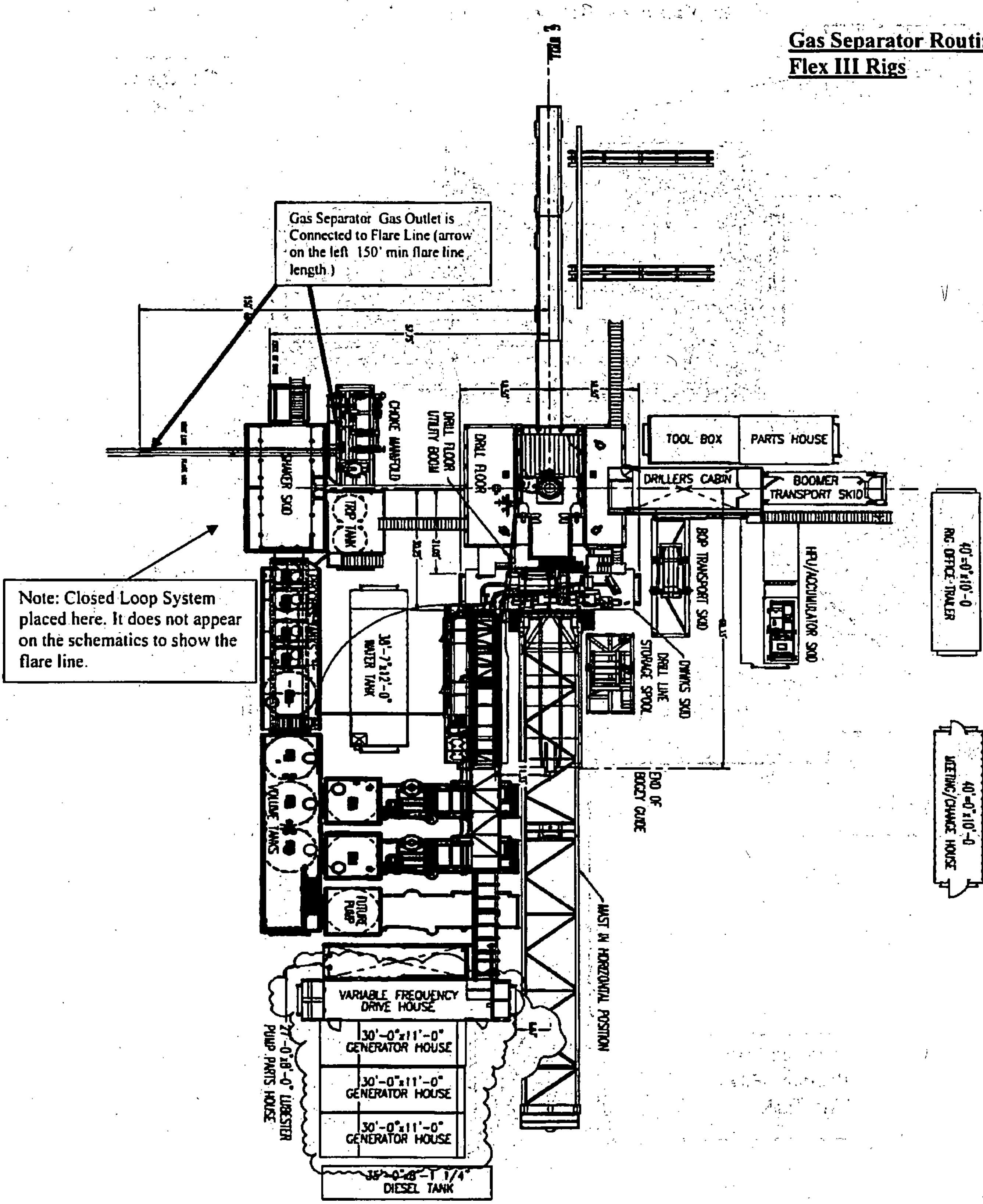
Choke Manifold – Gas Separator (Top View)



Choke Manifold – Gas Separator (Side View)

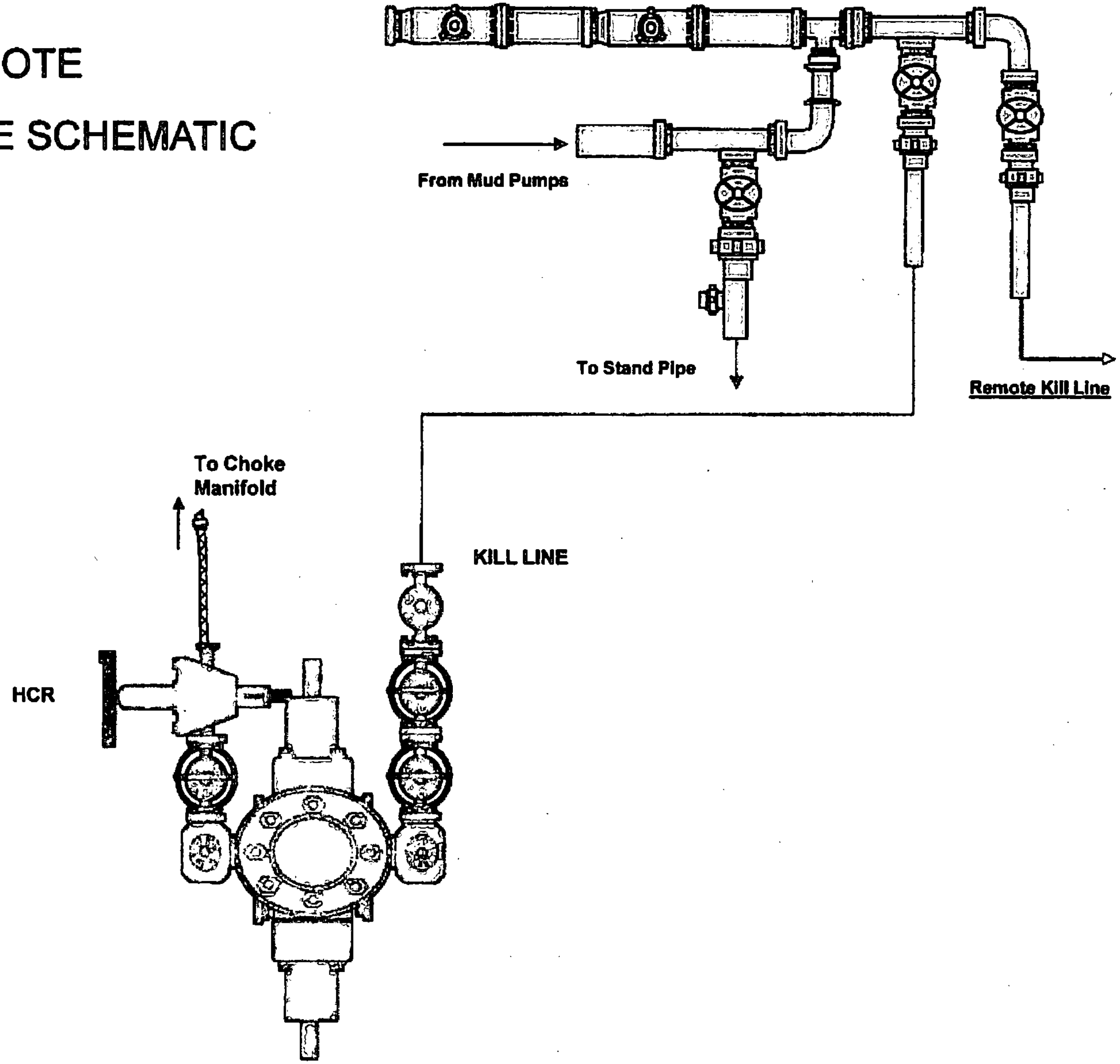


Gas Separator Routing Flex III Rigs



10M REMOTE

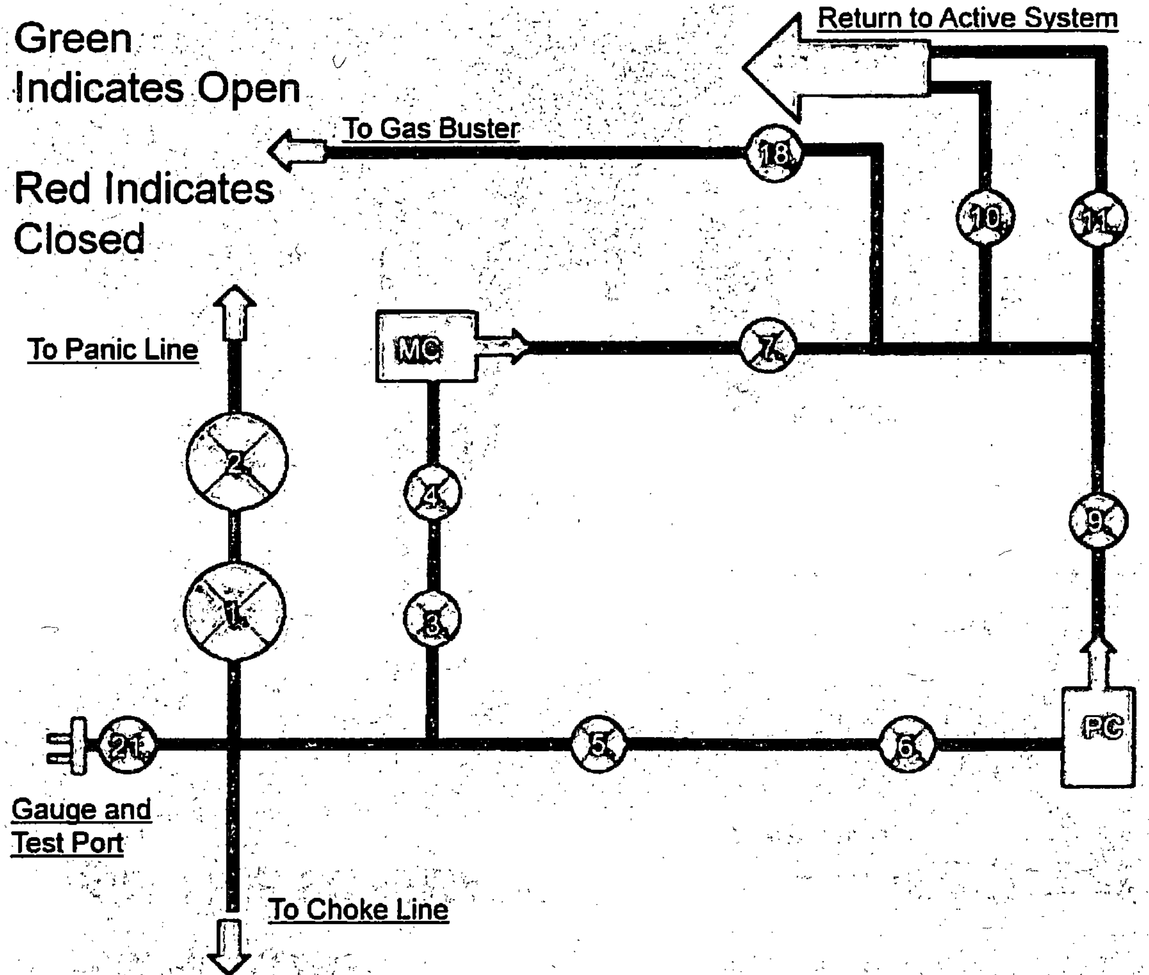
KILL LINE SCHEMATIC



5M Choke Panel

Green Indicates Open

Red Indicates Closed



1. 4" Choke Manifold Valve
2. 4" Choke Manifold Valve
3. 3" Choke Manifold Valve
4. 3" Choke Manifold Valve
5. 3" Choke Manifold Valve
6. 3" Choke Manifold Valve
7. 3" Choke Manifold Valve
8. PC – Power Choke
9. 3" Choke Manifold Valve
10. 3" Choke Manifold Valve
11. Choke Manifold Valve
12. MC – Manual Choke

18. Choke Manifold Valve

21. Vertical Choke Manifold Valve

*All Valves 3" minimum

Mesa Verde Development – Surface Production Facilities – 9/6/17

CTB Site

All wells will route to the Mesa Verde Unit CTB which will be composed of (3) tracts with the following dimensions: 600'x600', 200'x30', and 150'x150'.

Reference Plats:

(3) John West Surveying Company W.O. No: 16110946 Survey: 12/12/16 CAD: 1/13/17

Production Flowlines

Each well will have (2) surface laid flowlines operating at less than 75% of the MAWP of the flowline per the survey plats from the well site to the CTB following access roads.

Reference plats per well APD package

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 Plats:

(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) 8" gas injection trunk line operating < 1,500 PSIG running the length of the pipeline corridor connecting to each well pad.

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

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: 17110705 Survey: 7/6/17 CAD: 7/31/17
(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
(1) John West Surveying Company W.O. No: 16110102 Survey: 2/3&4/16 CAD: 2/22/16

Oil Sales

Oil will be pumped into (1) 6" steel buried line operating at less than 750 PSIG in the pipeline corridor. This oil line will interconnect to the Mesa Verde oil gathering point through a route outside of the pipeline corridor per the attached 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
(1) John West Surveying Company W.O. No: 17110705 Survey: 7/6/17 CAD: 7/31/17

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

Gas Sales

Gas will flow into (1) 20" HDPE buried line operating at less than 125 PSIG in the pipeline corridor. This gas line will interconnect to the Enlink (3rd Party Processor) tie-in point through a route outside of the pipeline corridor per the attached plat. This 20" HDPE line will also interconnect to the Sand Dunes development to provide more takeaway capacity. To allow movement of higher volumes of gas (1) 12" steel line operating less than 1,500 PSIG will also be installed along these routes.

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
(1) John West Surveying Company W.O. No: 17110705 Survey: 7/6/17 CAD: 7/31/17
(1) John West Surveying Company W.O. No: 17110042 Survey: 1/27/17 CAD: 2/1/17

Prepared by:
Dave Andersen
GRR Land Department

GRR, INC. WATER SOURCES
FOR OXY CERTAIN POND LOCATIONS

08/26/2016

Pond Name	Water Source1	Water Source2	Water Source3	Water Source4
Cedar Canyon	Mine_Industrial	C-3478	C-2772	C-1360
Corral Fly	C-1360	C-1361	C-3358	C-3836
Cypress	Mine_Industrial	C-3478	C-2772	C-1361
Mesa Verde	C-2571	C-2574	J-27	J-5
Peaches	C-906	C-3200	SP-55 & SP-1279-A	C-100

GRR Inc.

NMOSE WELL NUMBER	WELL COMMON NAME	LAND OWNERSHIP	GPS LOCATION
C-100	Tres Rios - Next to well shack	PRIVATE	32.201921° -104.254317°
C-100-A	Tres Rios - Center of turnaround	PRIVATE	32.201856° -104.254443°
C-272-B	Tres Rios - Northwest	PRIVATE	32.202315° -104.254812°
C-906	Whites City Commercial	PRIVATE	32.176949°-104.374371°
C-1246-AC & C-1246-AC-S	Lackey	PRIVATE	32.266978°-104.271212°
C-1886	1886 Tank	BLM	32.229316° -104.312930°
C-1083	Petska	PRIVATE	32.30904° -104.16979°
C-1142	Winston West	BLM	32.507845-104.177410
C-1360	ENG#1	PRIVATE	32.064922° -103.908818°
C-1361	ENG#2	PRIVATE	32.064908° -103.906266°
C-1573	Cooksey	PRIVATE	32.113463° -104.108092°
C-1575	ROCKHOUSE Ranch 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°

GRR Inc.

NMOSE WELL NUMBER	WELL COMMON NAME	LAND OWNERSHIP	GPS LOCATION
C-3614	Dale Hood #2 well	PRIVATE	32.449290° -104.214500°
C-3639	Jesse Baker #2 well	PRIVATE	32.073692° -103.727121°
C-3679	McCloy-Batty	PRIVATE	32.215790° -103.537690°
C-3689	Winston Bam_South	PRIVATE	32.511504° -104.139073°
C-3731	Ballard Construction	PRIVATE	32.458551° -104.144219°
C-3764	Watts#4	PRIVATE	32.443360° -103.942890°
C-3795	Beckham#6	BLM	32.023434°-103.321968°
C-3821	Three River Trucking	PRIVATE	32.34636° -104.21355
C-3824	Collins	PRIVATE	32.224053° -104.090129°
C-3829	Jesse Baker #3 well	PRIVATE	32.072545°-103.722258°
C-3830	Paduca	BLM	32.156400° -103.742060°
C-3836	Granger	PRIVATE	32.10073° -104.10284°
C-384	ROCKHOUSE Ranch Well - Rockcrusher	PRIVATE	32.481275° -104.420706°
C-459	Walker	PRIVATE	32.3379° -104.1498°
C-496pod2	Munoz #3 Trash Pit Well	PRIVATE	32.34224° -104.15365°
C-496pod3&4	Munoz #2 Corner of Porter & Derrick	PRIVATE	32.34182° -104.15272°
C-552	Dale Hood #1 well	PRIVATE	32.448720° -104.214330°
C-764	Mike Vasquez	PRIVATE	32.230553° -104.083518°
C-766(old)	Grandi	PRIVATE	32.32352° -104.16941°
C-93-S	Don Kidd well	PRIVATE	32.344876 -104.151793
C-987	ROCKY ARROYO - HOUSE	PRIVATE	32.457049° -104.461506°
C-98-A	Bindel well	PRIVATE	32.335125° -104.187255°
CP-1170POD1	Beckham#1	PRIVATE	32.065889° -103.312583°
CP-1201	Winston Ballard	BLM	32.580380° -104.115980°
CP-1202	Winston Ballard	BLM	32.538178° -104.046024°
CP-1231	Winston Ballard	PRIVATE	32.618968° -104.122690°
CP-1263POD5	Beckham#5	PRIVATE	32.065670° -103.307530°
CP-1414	Crawford #1	PRIVATE	32.238380° -103.260890°
CP-1414 POD 1	RRR	PRIVATE	32.23911° -103.25988°
CP-1414 POD 2	RRR	PRIVATE	32.23914° -103.25981°
CP-519	Bond_Private	PRIVATE	32.485546 -104.117583
CP-556	Jimmy Mills (Stacy)	STATE	32.317170° -103.495080°
CP-626	Ol Loco (W)	STATE	32.692660° -104.068064°
CP-626-S	Beach Exploration/ Ol Loco (E)	STATE	32.694229° -104.064759°
CP-73	Laguna #1	BLM	32.615015°-103.747615°
CP-74	Laguna #2	BLM	32.615255°-103.747688°
CP-741	Jimmy Richardson	BLM	32.61913° -104.06101°
CP-742	Jimmy Richardson	BLM	32.614061° -104.017211°
CP-742	Hidden Well	BLM	32.614061 -104.017211
CP-745	Leaning Tower of Pisa	BLM	32.584619° -104.037179°
CP-75	Laguna #3	BLM	32.615499°-103.747715°
CP-924	Winston Ballard	BLM	32.545888° -104.110114°
CP-926	Winchester well (Winston)	BLM	32.601125° -104.128358°

GRR Inc.

NMOSE WELL NUMBER	WELL COMMON NAME	LAND OWNERSHIP	GPS LOCATION
J-27	Beckham	PRIVATE	32.020403° -103.299333°
J-5	EPNG Jal Well	PRIVATE	32.050232° -103.313117°
J-33	Beckham	PRIVATE	32.016443° -103.297714°
J-34	Beckham	PRIVATE	32.016443° -103.297714°
J-35	Beckham	PRIVATE	32.016443° -103.297714°
L-10167	Angell Ranch well	PRIVATE	32.785847° -103.644705°
L-10613	Northcutt3 (2nd House well)	PRIVATE	32.687922°-103.472452°
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	32.726305°-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	32.689036°-103.472437°
L-5434	Northcutt5 (State)	STATE	32.694074°-103.405111°
L-5434-S	Northcutt6 (State)	STATE	32.693355°-103.407004°
RA-14	Horner Can	PRIVATE	32.89348° -104.37208°
RA-1474	Irvin 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	32.885162° -103.676376°
SP-55 & SP-1279-A	Blue Springs Surface POD	PRIVATE	32.181358° -104.294009°
SP-55 & SP-1279 (Bounds)	Bounds Surface POD	PRIVATE	32.203875° -104.247076°
SP-55 & SP-1279 (Wilson)	Wilson Surface POD	PRIVATE	32.243010° -104.052197°
City Treated Effluent	City of Carlsbad Waste Treatment Plant	PRIVATE	32.411122° -104.177030°
Mine Industrial	Mosaic Industrial Water	PRIVATE	32.370286° -103.947839°
Mobley State Well (NO OSE)	Mobley Ranch	STATE	32.308859° -103.891806°
EPNG Industrial	Monument Water Well Pipeline (Oil Center, Eunice)	PRIVATE	32.512943° -103.290300°
MCOX Commercial	Matt Cox Commercial	PRIVATE	32.529431° -104.188017°
AMAX 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

Mesquite

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

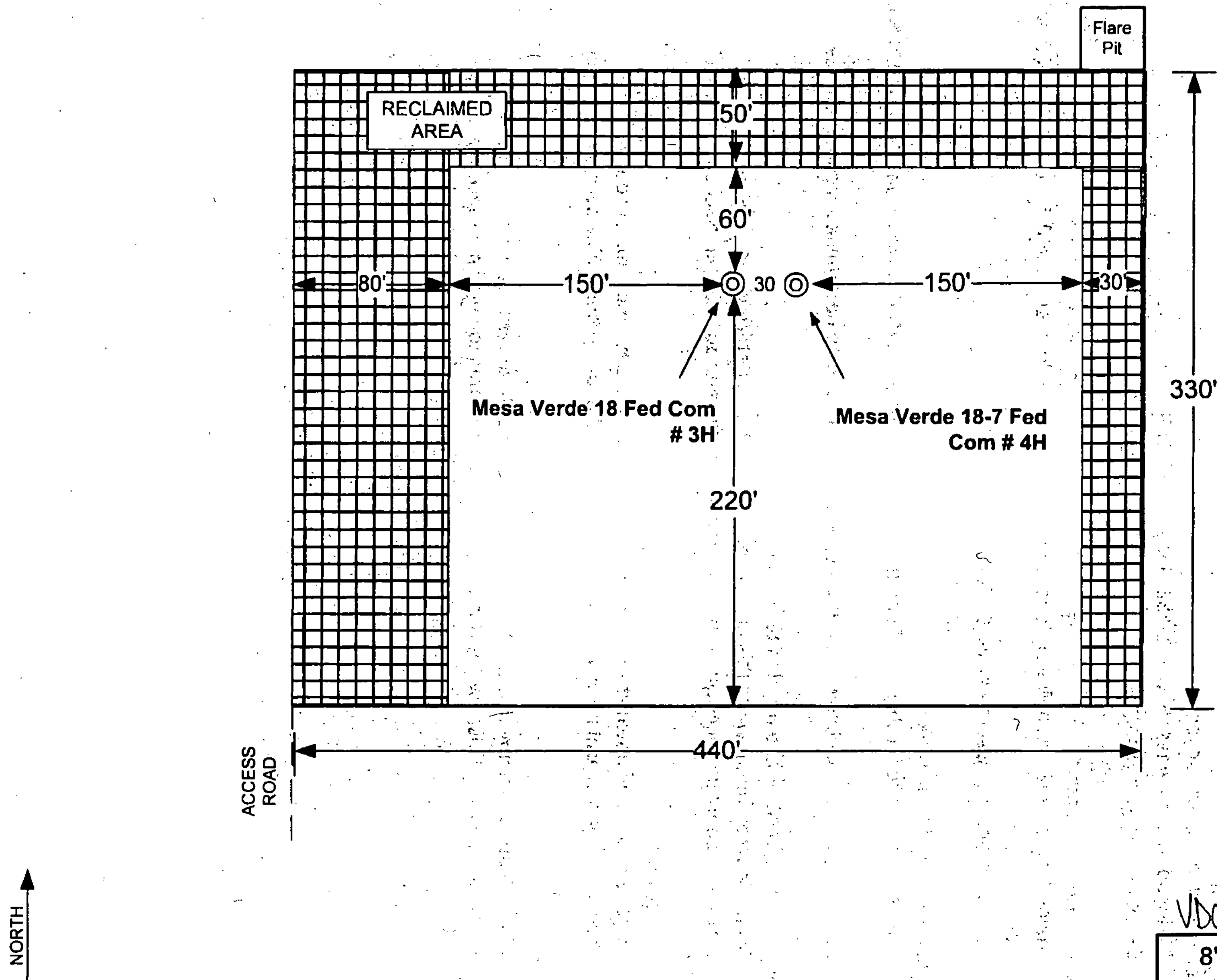
Major Source: Unknown at this time; need coordinates to determine major source

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



VDOOR-EAST

8' Diameter x 8' Deep Tinhorn Cellar

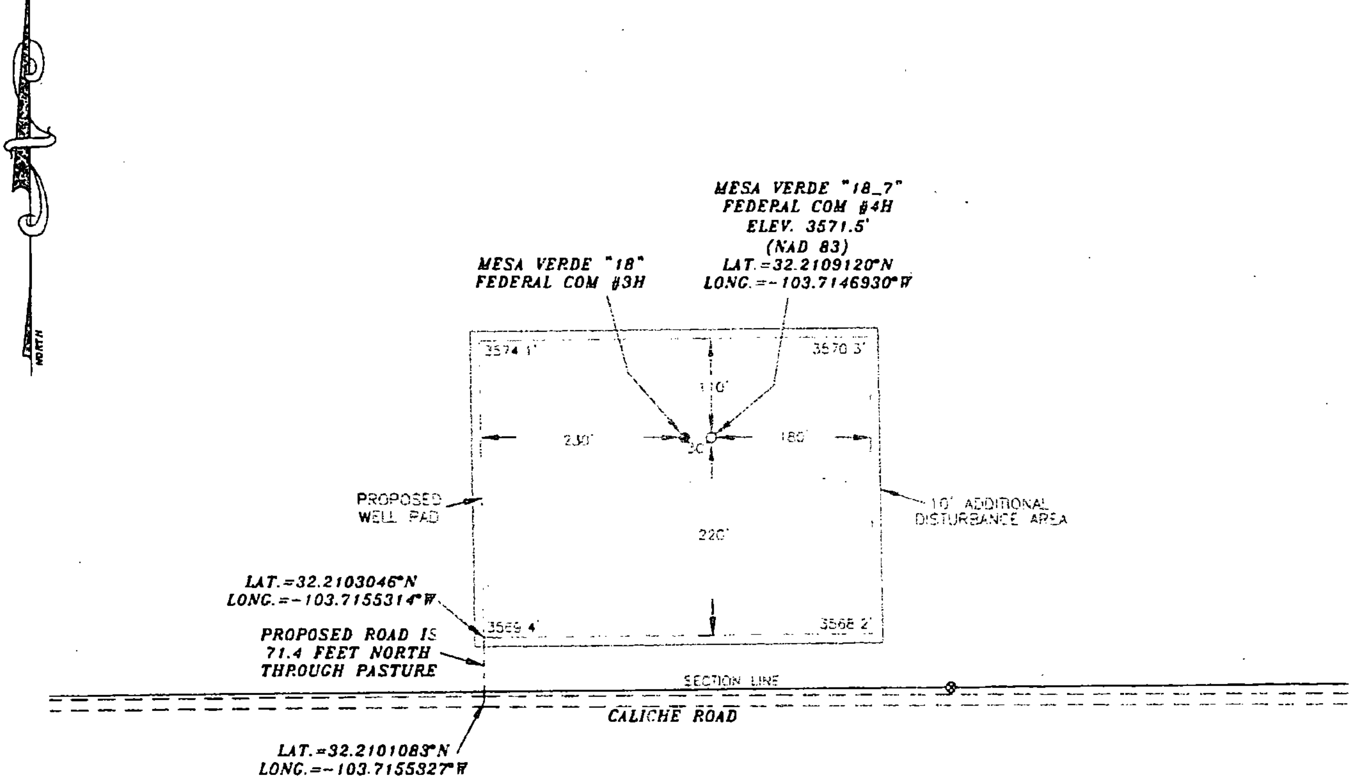
REVISION BLOCK						ENGINEERING RECORD	
NO.	DATE	DESCRIPTION	BY	CHK	APP	BY	DATE

FLEX 3 & ENSIGN RIG DIAGRAM
Mesa Verde 18 Fed Com # 3H &
Mesa Verde 18-7 Fed Com # 4H
LEA COUNTY, NEW MEXICO

OXY USA INC.

MESA VERDE "18_7" FEDERAL COM #4H
SITE PLAN

FAA PERMIT: NO



LEGEND

- DENOTES PROPOSED WELL PAD

- - - — - DENOTES PROPOSED ROAD

200' 0 200' 400' FEET

SCALE: 1"=200'

SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMIUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 10/4/2016

Terry J. Asel N.M. R.P.L.S. No. 15079

Asel Surveying

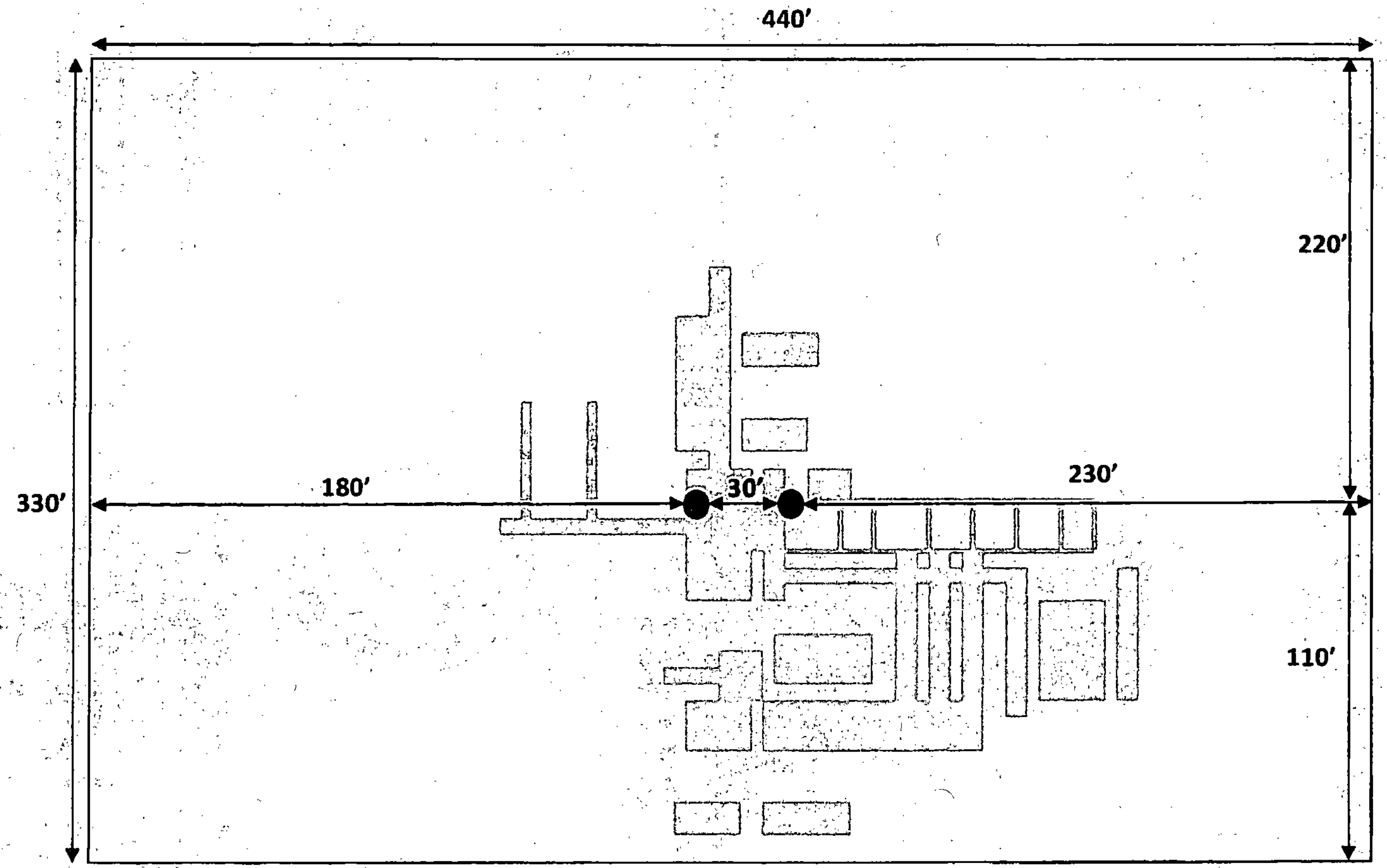
P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

OXY USA INC.

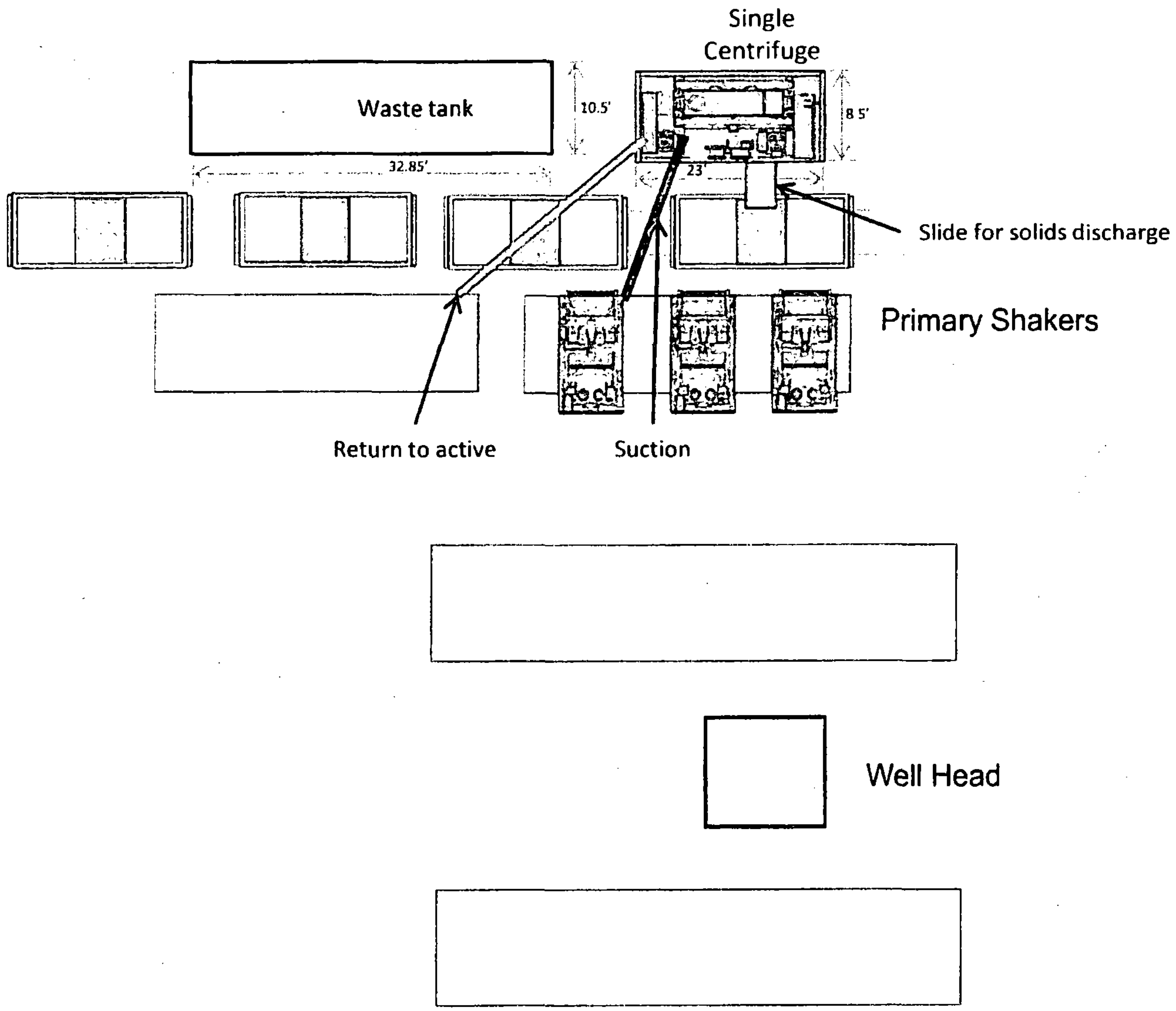
MESA VERDE "18_7" FEDERAL COM #4H
LOCATED AT 280' FSL & 2563' FWL IN
SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32
EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 10/01/15	Sheet 1 of 1 Sheets	
W.O. Number: 151001WL-b (Rev. A)	Drawn By: KA	Rev: A
Date: 09/28/16	151001WL-b	Scale:1"=200'

Pad Site Overall Rig Layout
2 Well Pad Site



Oxy

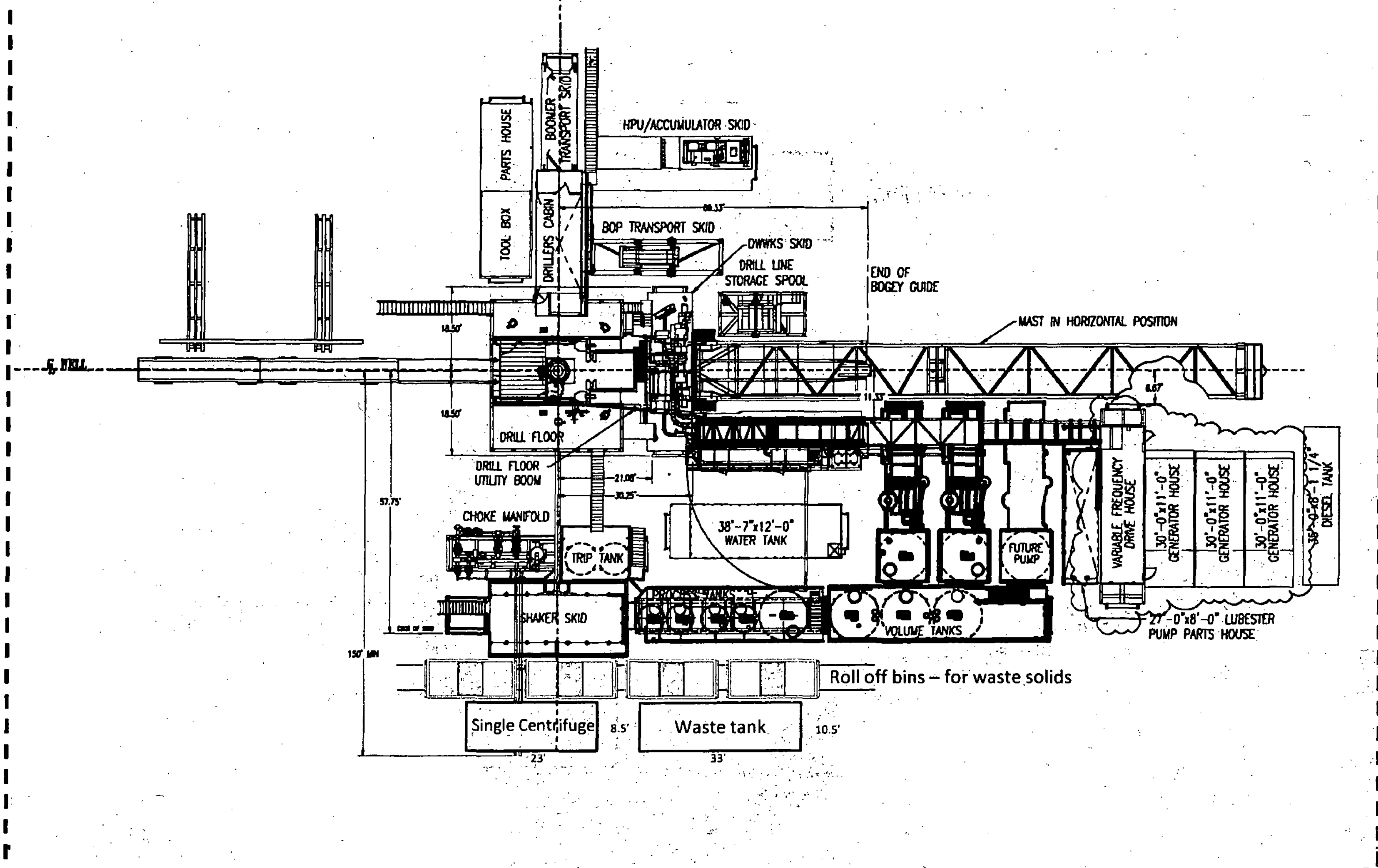


Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

May 28, 2013

Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

May 28, 2013



Oxy U.S.A Inc.

New Mexico Staking Form

Date Staked: 12-17-15

Lease/Well Name: MESA VERDE 18-7 Fed COM #4H

Legal Description: 280' FSL 2563 FWL Sec 18 T24S R32E

Latitude: 32° 12' 39.28" Nad 83

Longitude: -103° 42' 52.89"

Move Information:

County: Lea

Surface Owner/Tenant: BLM

Nearest Residence: 5 miles

Nearest Water Well:

V-Door: EAST

Road Description: Road into comes from

New Road:

Upgrade Existing Road:

Interim Reclamation: 30' EAST 50' NorTH

Source of Caliche:

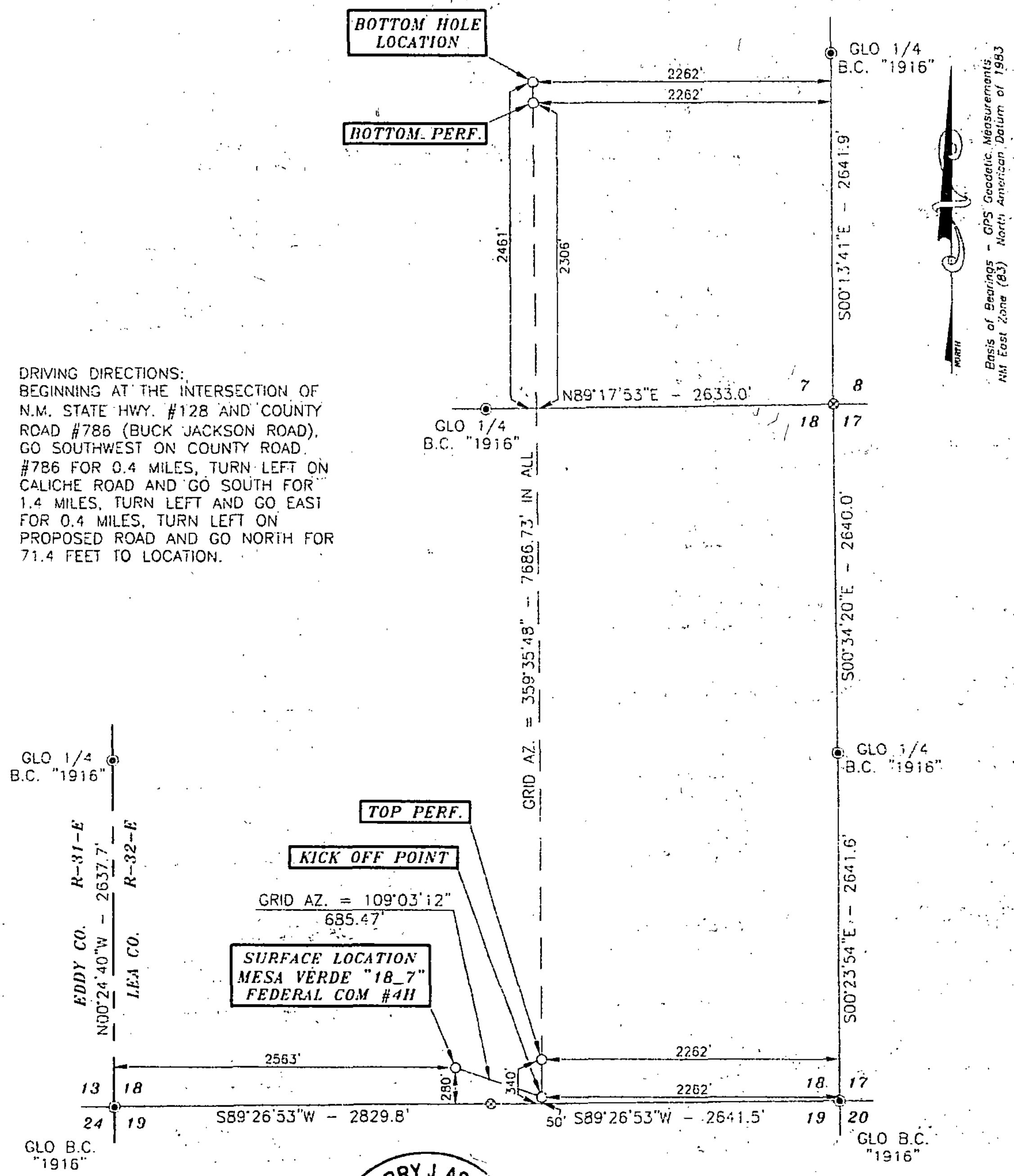
Top Soil: West

Onsite Date Performed: 10-5-15

Onsite Attendees: Jessie Bassett, Brooke Wilson - BLM Jim Wilson - Oxy Mike Wilson - Oxy SWCA Asel Survey

Special Notes:

SECTIONS 18 & 7, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY NEW MEXICO



DRIVING DIRECTIONS:
BEGINNING AT THE INTERSECTION OF N.M. STATE HWY. #128 AND COUNTY ROAD #786 (BUCK JACKSON ROAD), GO SOUTHWEST ON COUNTY ROAD #786 FOR 0.4 MILES, TURN LEFT ON CALICHE ROAD AND GO SOUTH FOR 1.4 MILES, TURN LEFT AND GO EAST FOR 0.4 MILES, TURN LEFT ON PROPOSED ROAD AND GO NORTH FOR 71.4 FEET TO LOCATION.

TERRY J ASEL NEW MEXICO 15079 REGISTERED PROFESSIONAL LAND SURVEYOR

LEGEND
- ◉ - DENOTES FOUND MONUMENT AS NOTED
- ⊗ - DENOTES CALCULATED CORNER

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

SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMIUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 10/4/2016
Terry J. Asel N.M. R.P.L.S. No. 15079

Asel Surveying

P.O. BOX 3931 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

OXY USA INC.

MESA VERDE "18_7" FEDERAL COM #4H
LOCATED AT 280' FSL & 2563' FWL IN
SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32
EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 10/01/15	Sheet 1 of 1 Sheets	
W.O. Number: 151001WL-b (Rev. A)	Drawn By: KA	Rev: A
Date: 09/12/16	151001WL-b	Scale:1"=1000'

Mesa Verde Development – Surface Production Facilities – 02/13/2017

CTB Site

All wells will route to the Mesa Verde Unit CTB which will be composed of (3) tracts with the following dimensions: 600'x600', 200'x30', and 150'x150'.

Reference Plats:

(3) John West Surveying Company W.O. No: 16110946 Survey: 12/12/16 CAD: 1/13/17

Production Flowlines

Each well will have (2) surface laid flowlines operating at less than 75% of the MAWP of the flowline per the survey plats from the well site to the CTB following access roads.

Reference plats per well APD package

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:

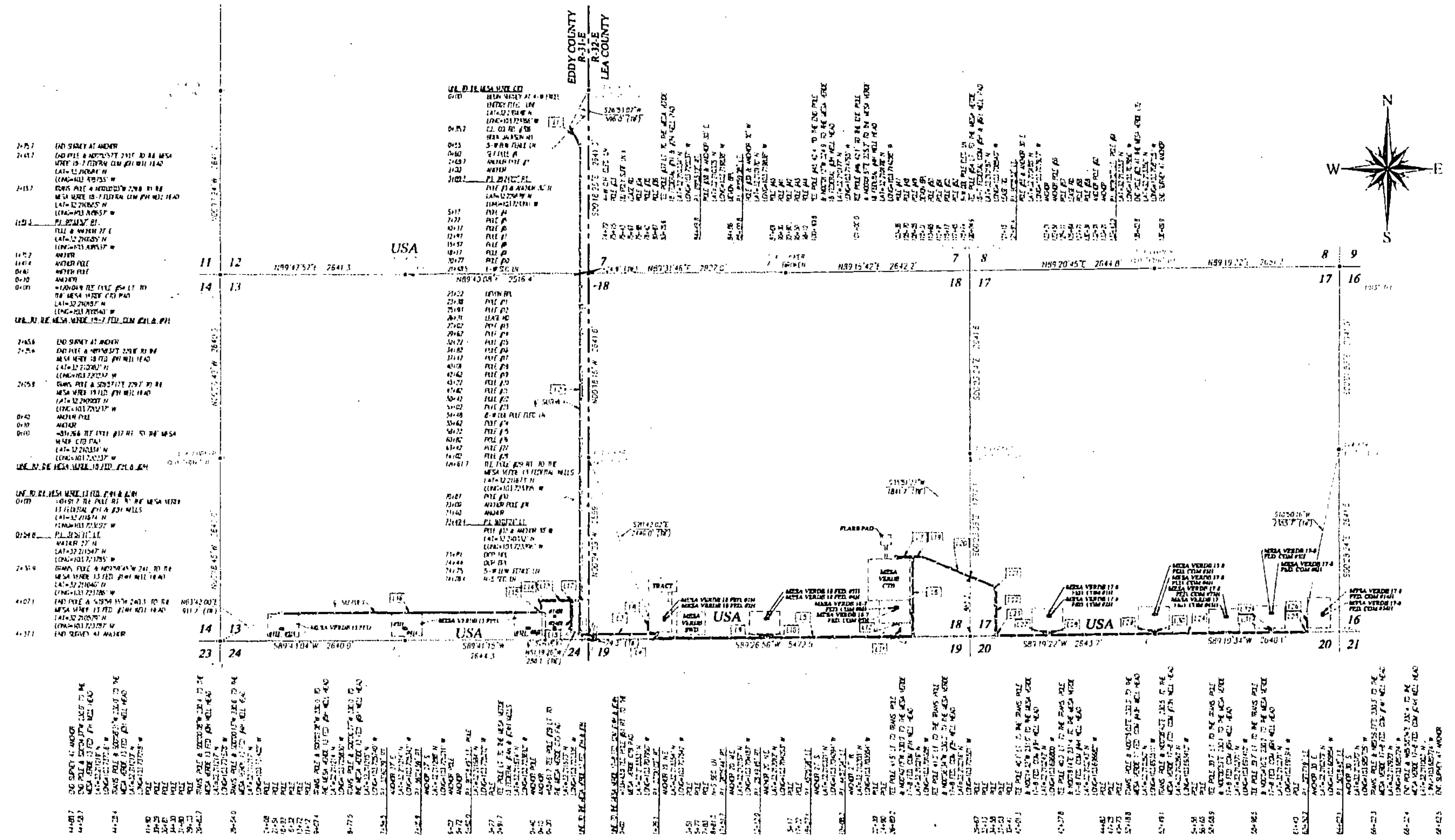
(1) John West Surveying Company W.O. No: 16.11.0947 Survey: 12/13/16 CAD: 1/19/17 Rev: 2/03/17
(2) John West Surveying Company W.O. No: 16110948 Survey: 12/14/16 CAD: 1/13/17
(1) John West Surveying Company W.O. No: 16111041 Survey: 1/4/17 CAD: 1/13/17

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



LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	S28°47'33"E	309.7'	L17	S11°16'44"W	51.8'
L2	S00°18'37"E	2339.7'	L18	S00°14'27"E	382.1'
L3	N83°37'59"E	1100.4'	L19	N83°25'59"E	176.1'
L4	S00°26'49"E	60.0'	L20	S67°31'57"E	1125.6'
L5	N83°34'03"E	3587.6'	L21	S29°09'15"E	60.3'
L6	N00°31'49"W	1151.6'	L22	S00°18'30"E	615.1'
L7	S89°27'03"W	266.9'	L23	S15°44'28"E	61.1'
L8	N00°22'51"W	265.6'	L24	N83°17'58"E	4162.0'
L9	N30°02'18"W	42.4'	L25	N50°00'37"E	51.9'
L10	N00°20'38"W	42.2'	L26	N00°18'09"W	280.4'
L11	N00°00'15"W	181.3'	L27	N03°46'34"E	41.5'
L12	S43°25'45"W	94.4'	L28	N00°13'14"W	41.3'
L13	N89°54'32"W	562.0'	L29	N01°14'03"W	40.2'
L14	S00°23'21"E	141.9'	L30	N00°42'06"E	40.0'
L15	S56°01'39"W	49.6'	L31	N00°03'29"W	33.7'
L16	S59°42'07"W	3734.2'	L32	N00°11'05"W	33.7'

DESCRIPTION

SURVEY FOR A STRIP OF LAND 30.0 FEET WIDE AND 26,065.5 FEET OR 4.937 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 12 & 13 TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY AND SECTIONS 17 & 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

Feet

LEGEND

● DENOTES FOUND CORNER AS NOTED

NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

Survey Date: 12/15/16 TO 1/3/17

Work Order No.: 16.11.0949

CAD Drafter & Date: ACK 1/24/17

Revised Date: n/a

Anadarko\2016\OXY USA INC\EASEMENTS\16110949 Elec Ln to the Mesa Verde Wells Imp. Secs 12 & 13, T24S, R31E & Sec 18, T24S, R32E

Scale: One Inch = One Thousand Feet JWSC File No. D-1215

SURVEYOR'S CERTIFICATE:

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION THAT I AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON Ronald J Eidson DATE 01/25/2017

RONALD J EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

OXY U.S.A. INC.

SURVEY FOR ELECTRIC LINES TO THE MESA VERDE WELLS CROSSING SECTIONS 12 & 13, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY AND SECTIONS 17 & 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, NEW MEXICO 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Oil Sales

Oil will be pumped into (1) 6" steel buried line operating at less than 750 PSIG in the pipeline corridor. This oil line will interconnect to the Mesa Verde oil gathering point through a route outside of the pipeline corridor per the attached 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

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

Gas Sales

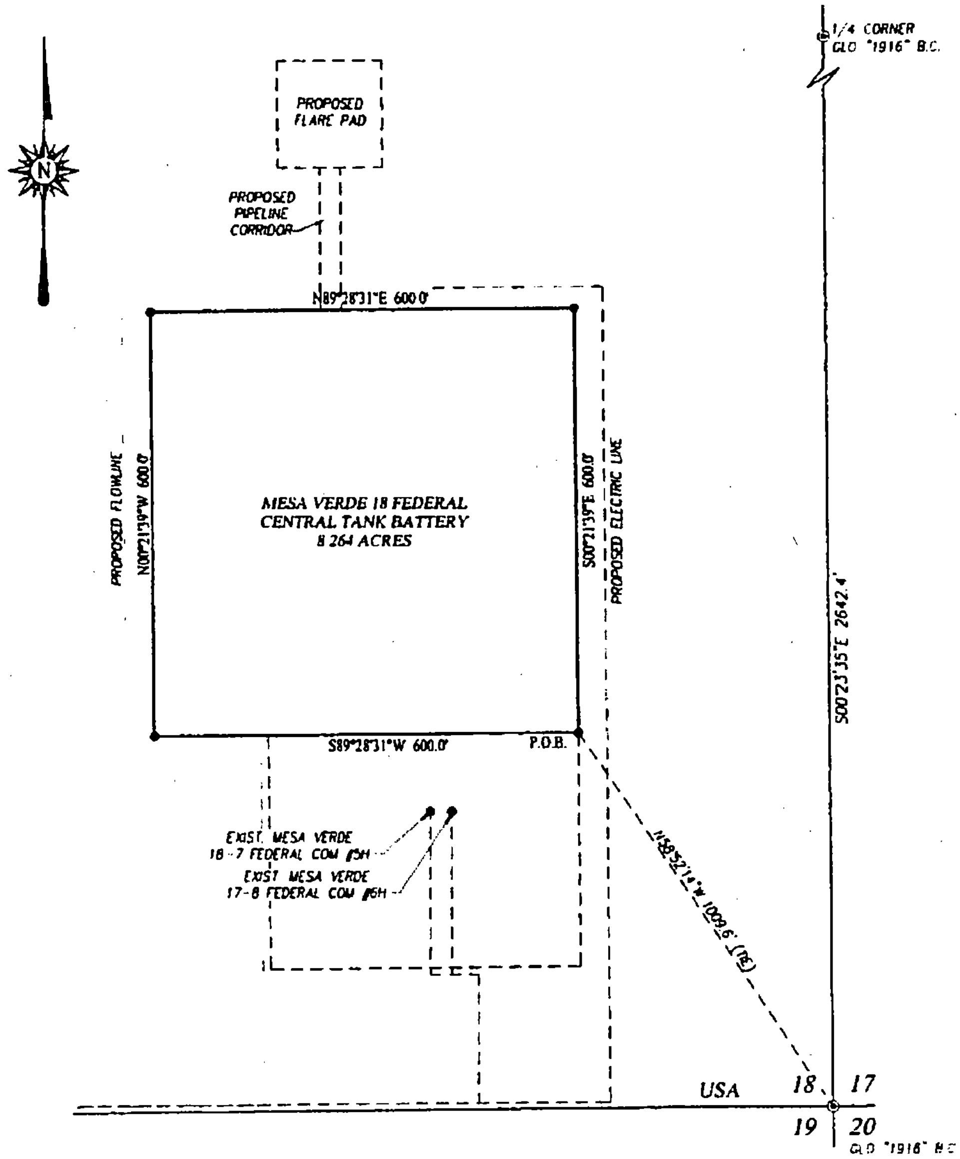
Gas will flow into (1) 20" HDPE buried line operating at less than 125 PSIG in the pipeline corridor. This gas line will interconnect to the Enlink (3rd Party Processor) tie-in point through a route outside of the pipeline corridor per the attached plat. This 20" HDPE line will also interconnect to the Sand Dunes development to provide more takeaway capacity. To allow movement of higher volumes of gas (1) 12" steel line operating less than 1,500 PSIG will also be installed along these routes.

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

(1) John West Surveying Company W.O. No: 17110042 Survey: 1/27/17 CAD: 2/1/17

CTB Site (1)



DESCRIPTION:

A TRACT SITUATED IN THE SOUTHEAST QUARTER OF SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER WHICH LIES N58°52'14"W 1009.6 FEET FROM THE SOUTHEAST CORNER; THEN S89°28'31"W 600.0 FEET; THEN N00°21'39"W 600.0 FEET; THEN N89°28'31"E 600.0 FEET; THEN S00°21'39"E 600.0 FEET TO THE POINT OF BEGINNING AND CONTAINING 8.264 ACRES MORE OR LESS.

NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON [signature]

DATE: 01/17/2017

LEGEND

◉ DENOTES FOUND CORNER AS NOTED
● DENOTES SET SPIKE NAIL

200 0 200 400 Feet

Scale: 1"=200'

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

OXY U.S.A. INC.

SURVEY FOR A 600x600 TANK BATTERY TRACT
SITUATED IN THE SE/4 OF SECTION 18,
TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, NEW MEXICO

Survey Date: 12/12/16	CAD Date: 1/13/17	Drawn By: ACK
W.O. No.: 16110946	Rev: .	Rel. W.O.:	Sheet 1 of 1

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