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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM55953
	6. If Indian, Allotee or Tribe Name
	7. If Unit or CA Agreement, Name and No.
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☑ Multiple Zone	8. Lease Name and Well No. (320828) MESA VERDE BS UNIT 22H
2. Name of Operator OXY USA INCORPORATED (16696)	9. API Well No. 30-025-44559
3a. Address 5 Greenway Plaza, Suite 110 Houston TX 770 / 3b. Phone No. (include area code) (713)366-5716	10. Field and Pool, or Exploratory 96229 MESA VERDE BONE SPRING / 2ND BC
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface SWSW / 250 FSL / 1285 FWL / LAT 32.2109526 / LONG -103.6840326 At proposed prod. zone NENW / 180 FNL / 2200 FWL / LAT 32.2388119 / LONG -103.6810876	11. Sec., T. R. M. or Blk. and Survey or Area SEC 16 / T24S / R32E / NMP
14. Distance in miles and direction from nearest town or post office* 6 miles	12. County or Parish LEA / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 50 feet	16. No. of acres in lease 1080 / 17. Spacing Unit dedicated to this well 320
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 10524 feet / 20641 feet / 20. BLM/BIA Bond No. on file FED: ESB000226
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3568 feet	22. Approximate date work will start* 06/11/2018 / 23. Estimated duration 20 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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

25. Signature (Electronic Submission)	Name (Printed Typed) David Stewart / Ph: (713)366-5716	Date 09/27/2017
Title Sr. Regulatory Advisor		
Approved by (Signature) (Electronic Submission)	Name (Printed Typed) Cody Layton / Ph: (575)234-5959	Date 02/16/2018
Title Supervisor Multiple Resources	Office CARLSBAD	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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

(Continued on page 2)

GCP rec 03/05/18

*(Instructions on page 2)

KB 03/06/18

APPROVED WITH CONDITIONS

Approval Date: 02/16/2018

APD ID: 10400022688 **Submission Date:** 09/27/2017

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 16-9 FEDERAL COM **Well Number:** 3H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3568	919	919	SHALE,DOLOMITE,ANHYDRITE	USEABLE WATER	No
2	SALADO	2337	1231	1231	SHALE,DOLOMITE,HALITE,ANHYDRITE	OTHER : SALT	No
3	CASTILE	428	3140	3140	ANHYDRITE	OTHER : Salt	No
4	LAMAR	-1161	4729	4733	LIMESTONE,SANDSTONE,SILTSTONE	NATURAL GAS,OIL,OTHER : BRINE	No
5	BELL CANYON	-1183	4751	4755	SANDSTONE,SILTSTONE	NATURAL GAS,OIL,OTHER : BRINE	No
6	CHERRY CANYON	-2074	5642	5661	SANDSTONE,SILTSTONE	NATURAL GAS,OIL,OTHER : BRINE	No
7	BRUSHY CANYON	-3377	6945	6984	SANDSTONE,SILTSTONE	NATURAL GAS,OIL,OTHER : BRINE	No
8	BONE SPRING	-5087	8655	8720	LIMESTONE,SANDSTONE,SILTSTONE	NATURAL GAS,OIL	Yes
9	BONE SPRING 1ST	-6389	9957	10036	LIMESTONE,SANDSTONE,SILTSTONE	NATURAL GAS,OIL	Yes
10	BONE SPRING 2ND	-6686	10254	10350	LIMESTONE,SANDSTONE,SILTSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 10524

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 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:

MesaVerde16_9FdCom3H_ChkManifold_20170927115657.pdf

BOP Diagram Attachment:

MesaVerde16_9FdCom3H_BOP_5M13_58_Amd_20170927115710.pdf

MesaVerde16_9FdCom3H_FlexHoseCert_20170927115723.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	13.75	NEW	API	N	0	969	0	969			969	J-55	54.5	BUTT	4.83	1.34	BUOY	2.63	BUOY	2.46
2	PRODUCTION	12.25	9.625	NEW	API	N	0	7500	0	7453			7500	HCL-80	43.5	BUTT	1.22	1.58	BUOY	2.15	BUOY	2.05
3	PRODUCTION	12.25	9.625	NEW	API	N	7500	9880	7453	9801			2380	HCL-80	47	BUTT	1.29	1.85	BUOY	4.16	BUOY	3.83
4	LINER	8.5	5.5	NEW	API	N	9780	20641	9701	10524			10861	P-110	20	OTHER - DQX	2.41	1.2	BUOY	2.49	BUOY	2.26

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde16_9FdCom3H_CsgCriteria_20170927115809.pdf

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 16-9 FEDERAL COM **Well Number:** 3H

Casing Attachments

Casing ID: 2 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde16_9FdCom3H_CsgCriteria_20170927115843.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde16_9FdCom3H_CsgCriteria_20170927115930.pdf

Casing ID: 4 **String Type:** LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

MesaVerde16_9FdCom3H_5.5_20_P110_DQX_20170927120012.pdf

MesaVerde16_9FdCom3H_CsgCriteria_20170927120024.pdf

Section 4 - Cement

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 16-9 FEDERAL COM **Well Number:** 3H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	969	623	1.68	14.2	1047	50	Class C	Accelerator
PRODUCTION	Lead	4779	0	4279	1171	1.85	12.9	2166	75	Class C	Accelerator, Retarder
PRODUCTION	Tail		4279	4779	207	1.33	14.8	275	75	Class C Cement	none
PRODUCTION	Lead		4679	8880	518	3.05	10.2	1580	20	Pozzolan/C	Retarder
PRODUCTION	Tail		8880	9880	239	1.65	13.2	394	20	Class H	Retarder, Dispersant, Salt
LINER	Lead		9780	20641	1757	1.63	13.2	2864	15	Class H	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 969-4779', 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 production/intermediate TD @ 9880'.
Describe the mud monitoring system utilized: PVT/MD Totco/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
4779	9880	WATER-BASED MUD	8.8	9.6							
9880	20641	OIL-BASED MUD	8.8	9.6							
0	969	WATER-BASED MUD	8.4	8.6							
969	4779	OTHER : BRINE	9.8	10							

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 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: 5254 **Anticipated Surface Pressure:** 2938.72

Anticipated Bottom Hole Temperature(F): 165

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:

MesaVerde16_9FdCom3H_H2S1_20170927120817.pdf
MesaVerde16_9FdCom3H_H2S2_20170927120829.pdf

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 16-9 FEDERAL COM **Well Number:** 3H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

MesaVerde16_9FdCom3H_DirectPlan_20170927120856.pdf

MesaVerde16_9FdCom3H_DirectPlot_20170927120907.pdf

Other proposed operations facets description:

Well will be drilled with a walking/skidding operation. Plan to drill the three 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 cancelation cone and not pump the second stage.

Cement Top and Liner Overlap
1. Oxy is requesting permission to have minimum fill of cement behind the 5-1/2" production liner to be 100' into previous casing string. The reason for this is so that we can come back and develop shallower benches from the same 9-5/8" mainbore in the future.
2. 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.
3. Cement will be brought to the top of this liner hanger.
4. See attached for additional casing tie-back information.

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. See attached for additional spudder rig information.

Other proposed operations facets attachment:

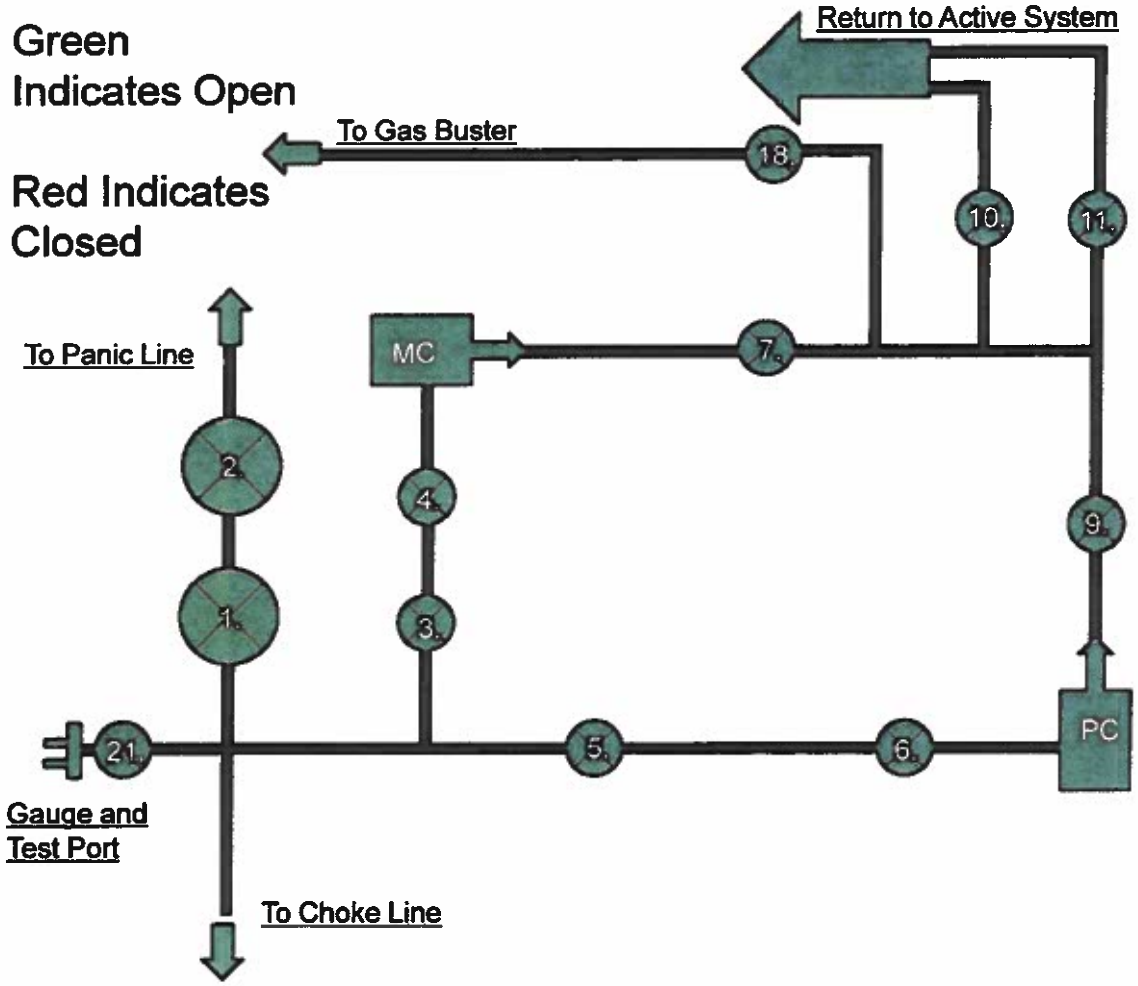
MesaVerde16_9FdCom3H_CsgTieBackDetail_20170927120923.pdf

MesaVerde16_9FdCom3H_DrillPlan_20170927120932.pdf

MesaVerde16_9FdCom3H_SpudRigData_20170927120948.pdf

Other Variance attachment:

5M Choke Panel



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

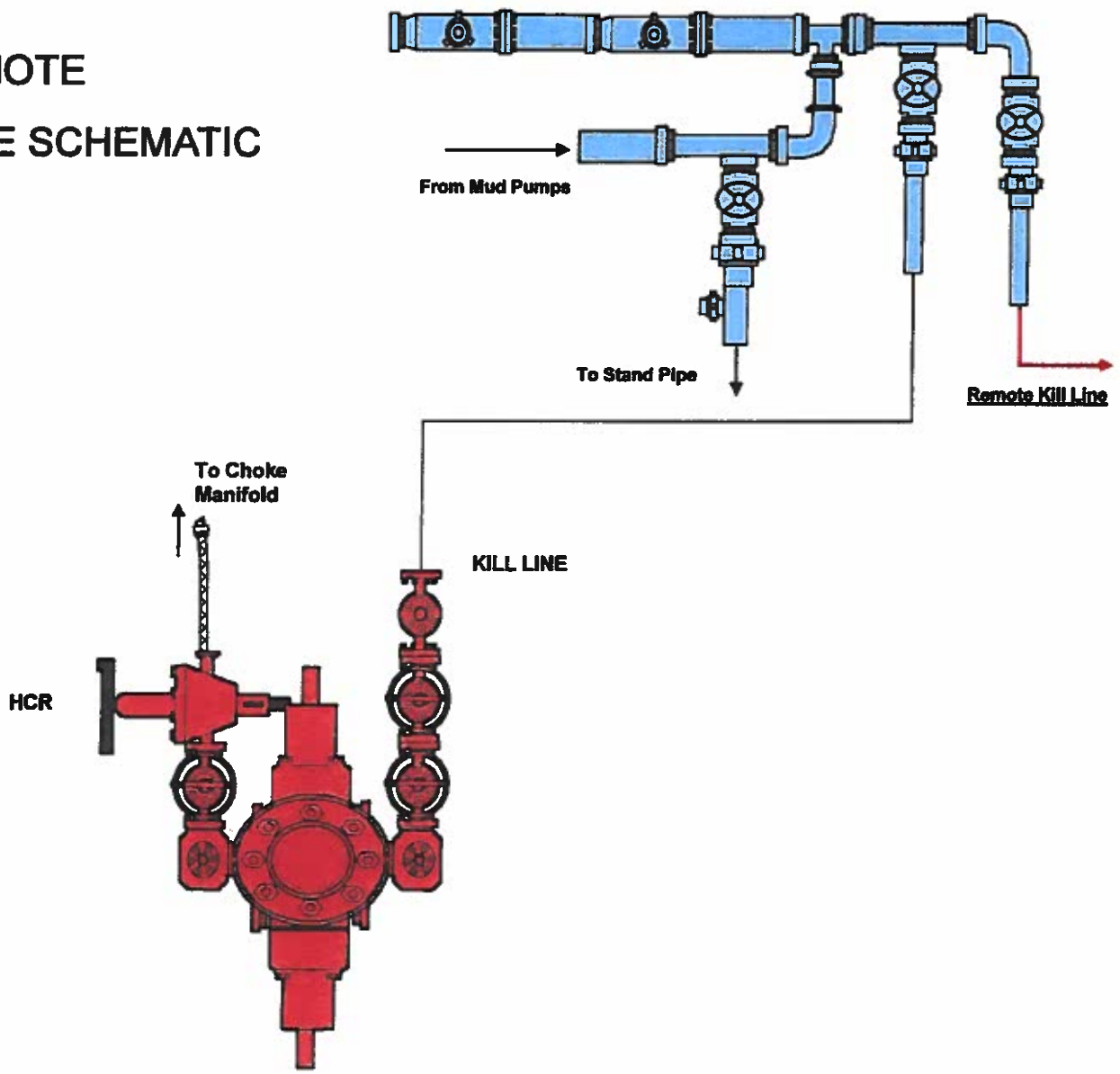
18. Choke Manifold Valve

21. Vertical Choke Manifold Valve

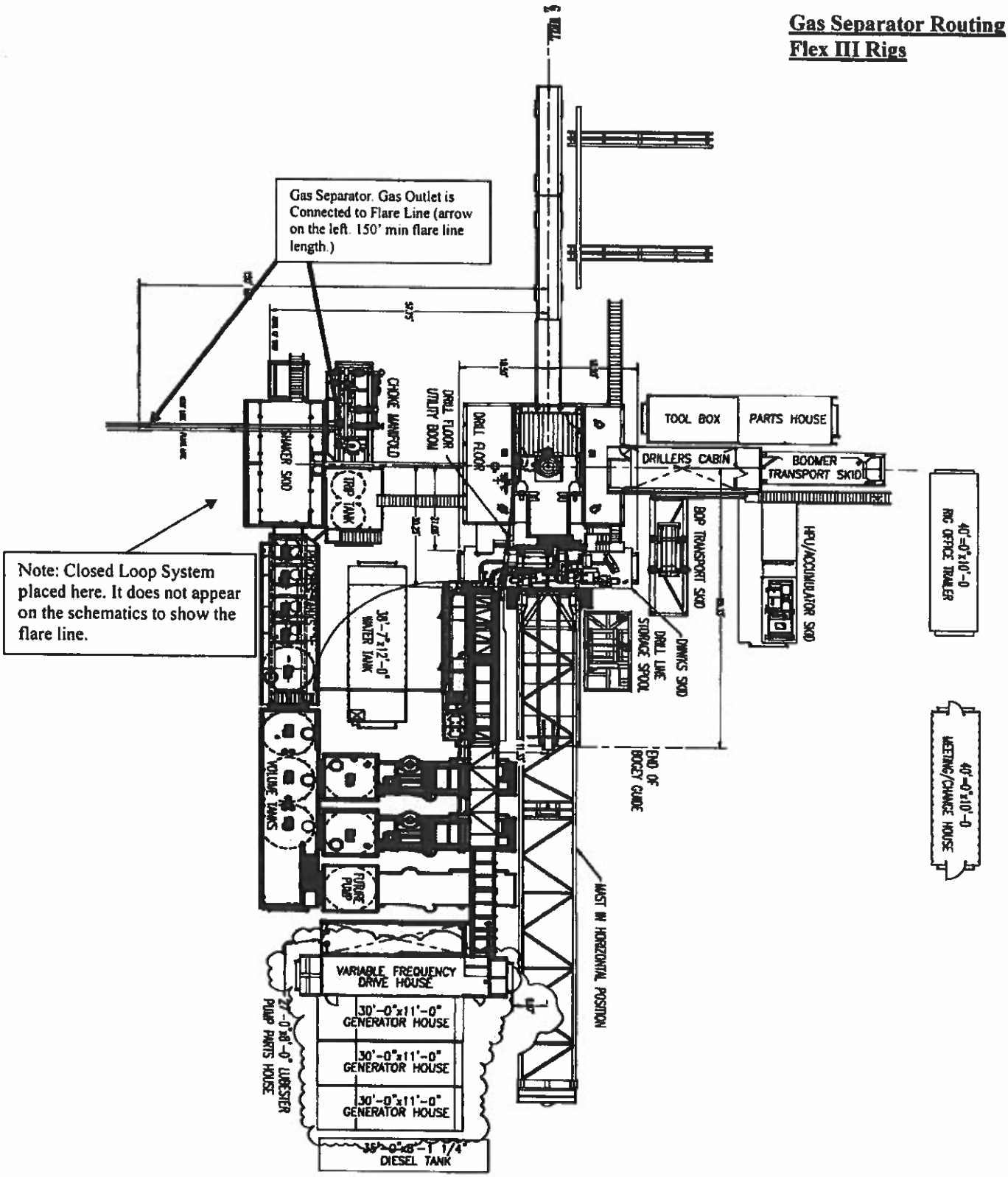
***All Valves 3" minimum**

10M REMOTE

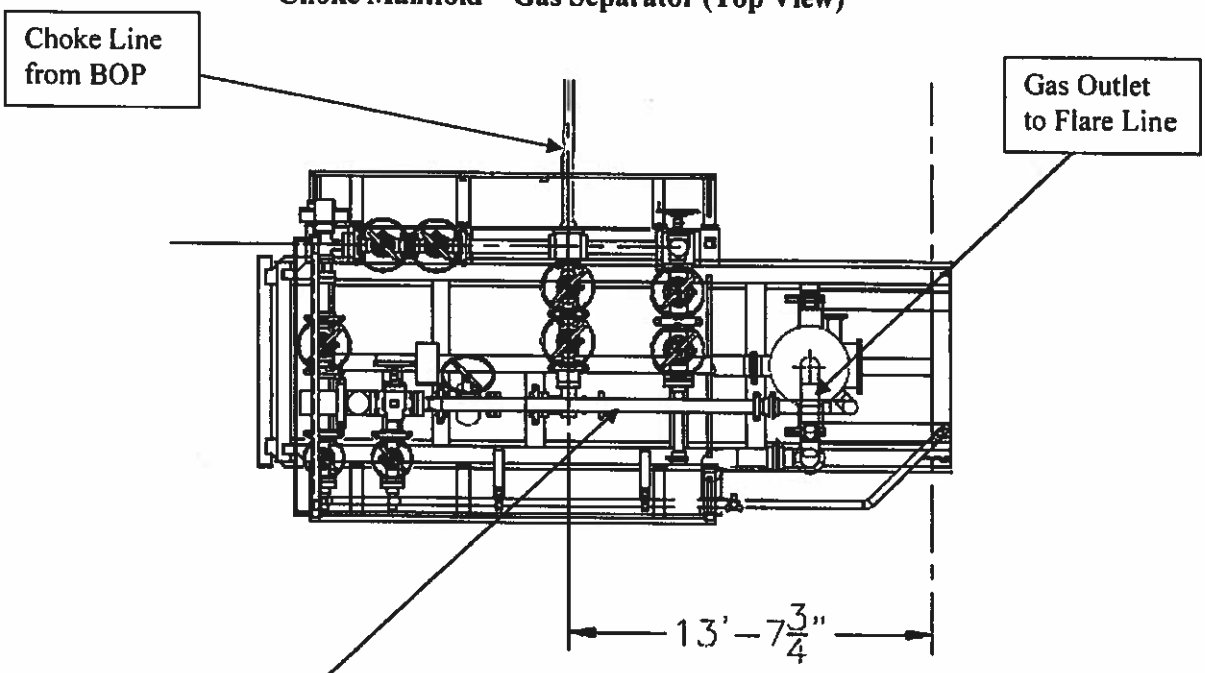
KILL LINE SCHEMATIC



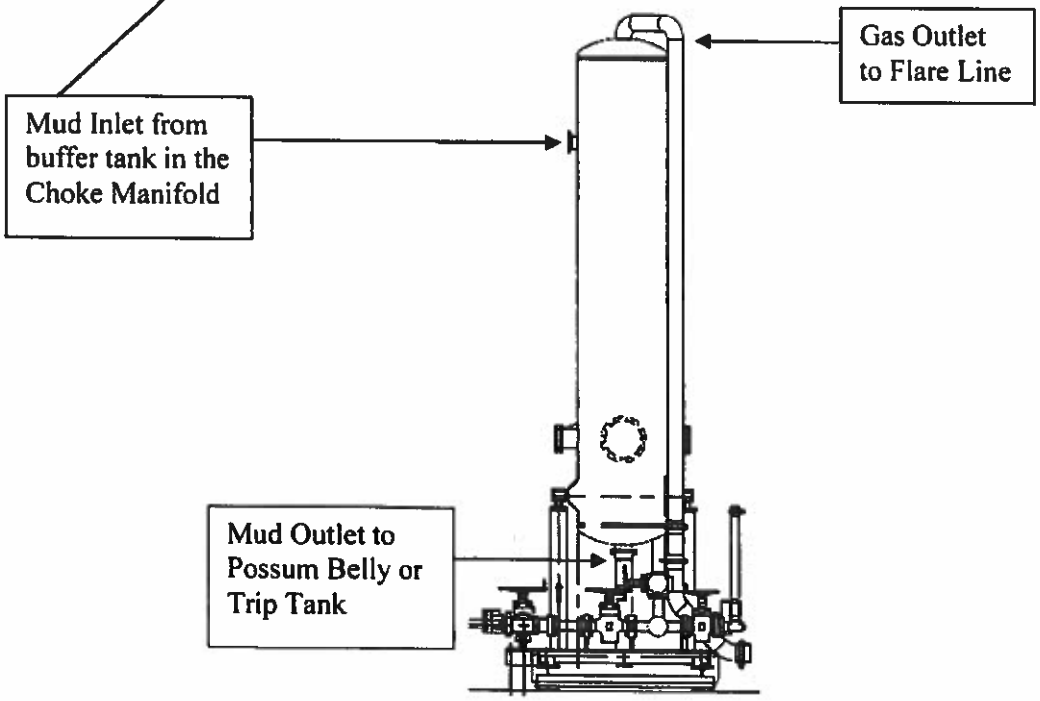
Gas Separator Routing
Flex III Rigs



Choke Manifold – Gas Separator (Top View)



Choke Manifold – Gas Separator (Side View)

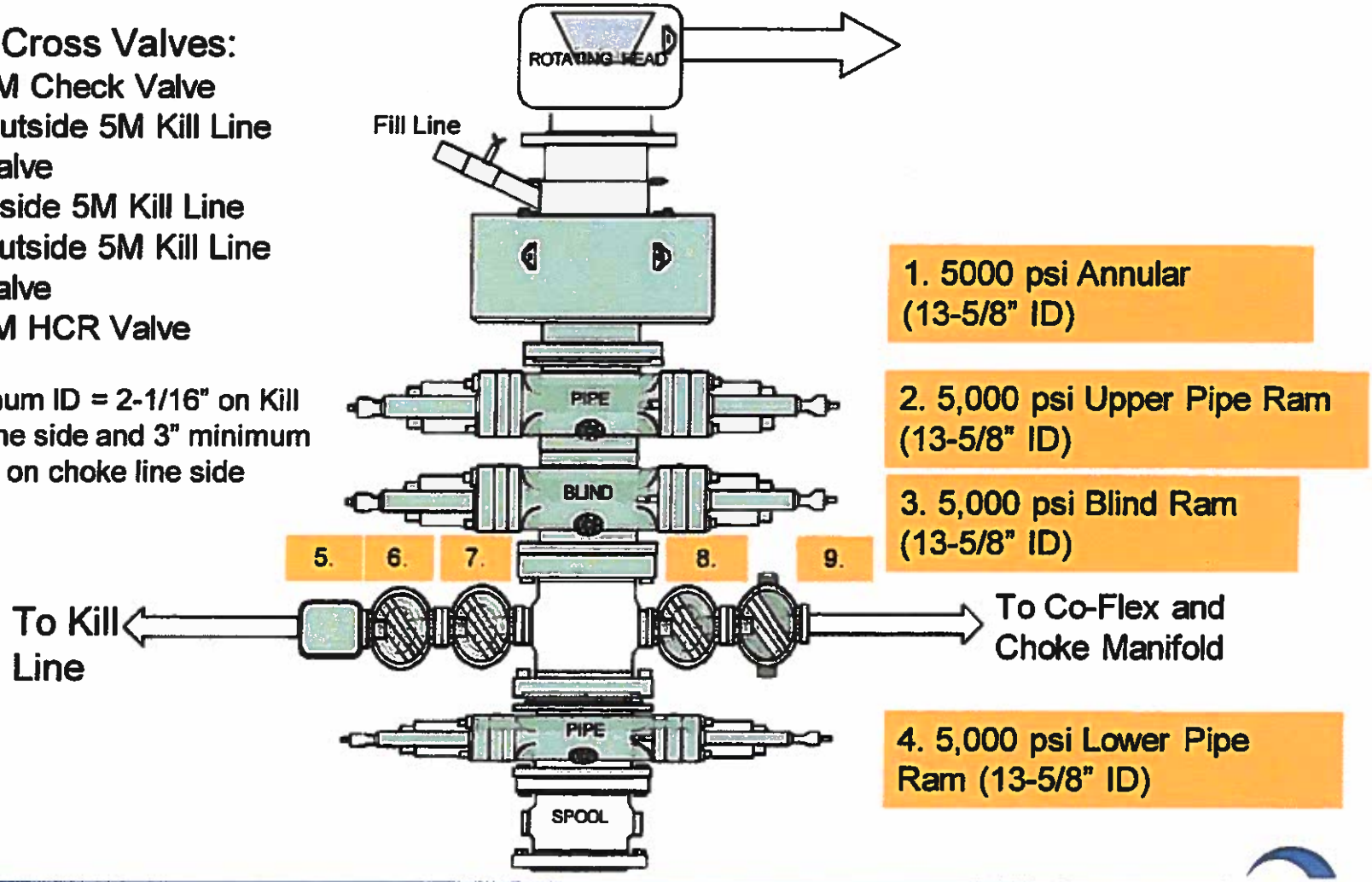


5M BOP Stack

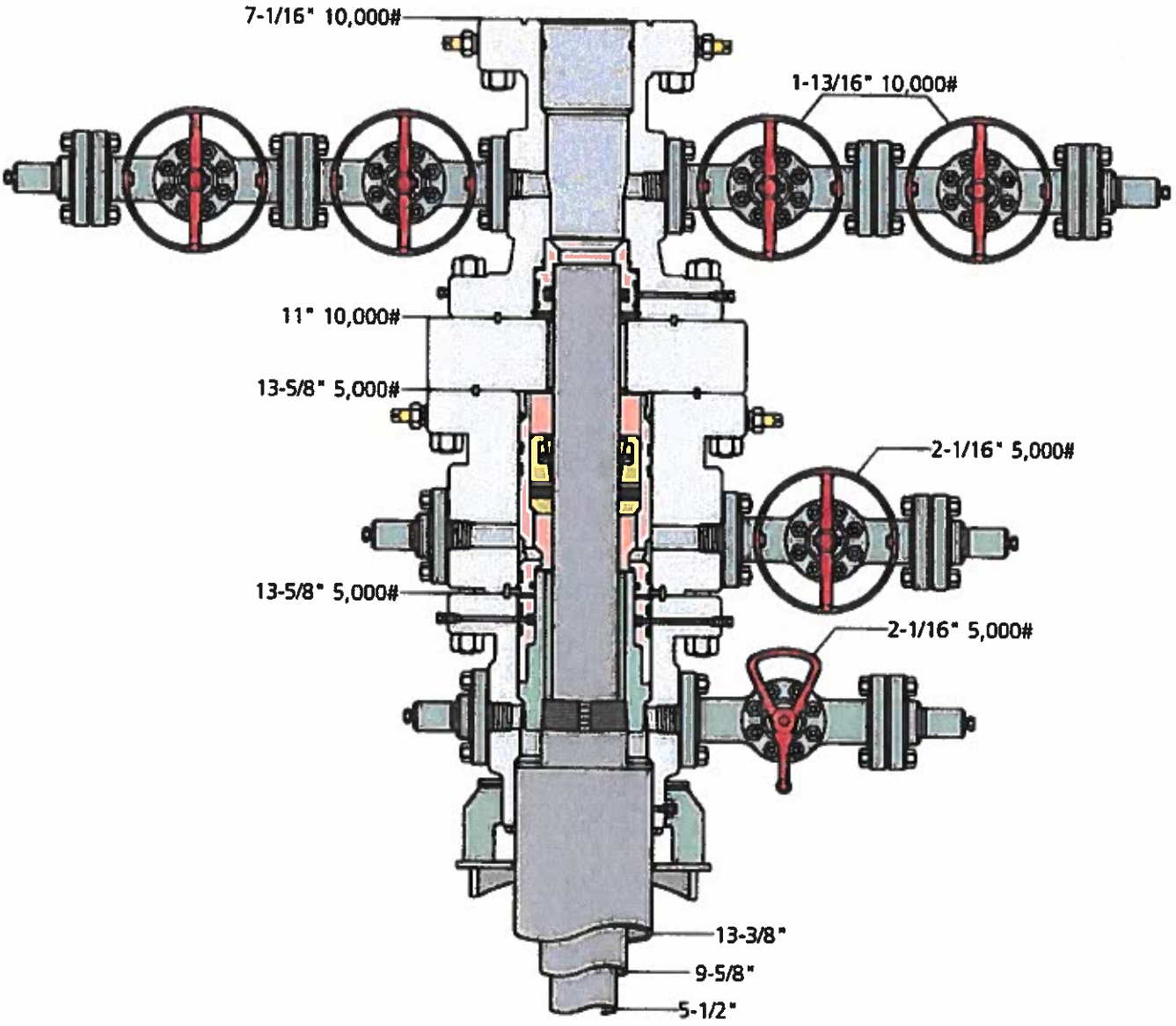
Mud Cross Valves:

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



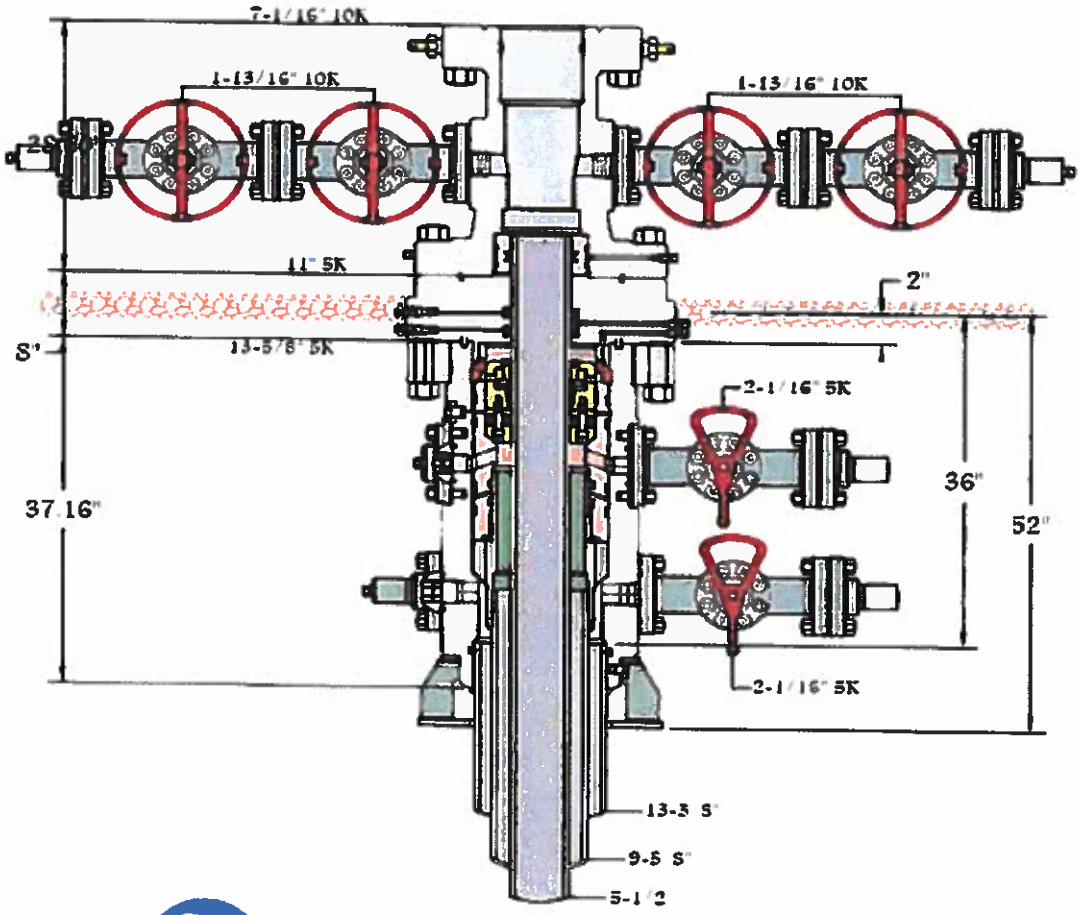
1. 5000 psi Annular (13-5/8" ID)
2. 5,000 psi Upper Pipe Ram (13-5/8" ID)
3. 5,000 psi Blind Ram (13-5/8" ID)
4. 5,000 psi Lower Pipe Ram (13-5/8" ID)



13" 5K MBS SL2 Wellhead

CAMERON
A Schlumberger Company

Jeanette	7-12-16	#	J-9786-4



13-5 S" 5K MN-DS

CAMERON
A Schlumberger Company

Brandon	5-10-17	#	1505172

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.