APD ID: 10400032745 **Submission Date:** 08/03/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: JAYHAWK 7 FED **Well Number:** 17H

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	---	3315	0	0	OTHER : Surface	NONE	No
2	RUSTLER	2424	891	891	SANDSTONE	NONE	No
3	TOP SALT	2064	1251	1251	SALT	NONE	No
4	BASE OF SALT	-1646	4961	4961	LIMESTONE	NONE	No
5	BELL CANYON	-1646	4961	4961	SANDSTONE	NATURAL GAS,OIL	No
6	CHERRY CANYON	-2986	6301	6301	SANDSTONE	NATURAL GAS,OIL	No
7	BRUSHY CANYON	-4616	7931	7931	SANDSTONE	NATURAL GAS,OIL	No
8	BONE SPRING	-6126	9441	9441	SHALE	NATURAL GAS,OIL	No
9	BONE SPRING 1ST	-7066	10381	10381	SANDSTONE	NATURAL GAS,OIL	No
10	BONE SPRING 2ND	-7606	10921	10921	SANDSTONE	NATURAL GAS,OIL	No
11	BONE SPRING 3RD	-8756	12071	12071	SANDSTONE	NATURAL GAS,OIL	Yes
12	WOLFCAMP	-9176	12491	12491	SHALE	NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 12445

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below intermediate casing, a 13-5/8" BOP/BOPE system with a minimum rating of 10M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: JAYHAWK 7 FED **Well Number:** 17H

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

Choke Diagram Attachment:

10M_BOPE_DR_CLS_RKL_20181205133623.pdf

BOP Diagram Attachment:

10M_BOPE_DR_CLS_RKL_20181205133646.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 5000

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 10-3/4” surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.
Testing Procedure: A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Choke Diagram Attachment:

Jayhawk_7_Fed_17H_5M_BOPE__CK_20180803094116.pdf

BOP Diagram Attachment:

Jayhawk_7_Fed_17H_5M_BOPE__CK_20180803094127.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	900	0	900			900	H-40	48	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5000	0	5000			5000	J-55	40	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6
3	PRODUCTION	8.75	5.5	NEW	API	N	0	17196	0	12445			17196	P-110	17	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: JAYHAWK 7 FED **Well Number:** 17H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Jayhawk_7_Fed_17H_Surf_Csg_Ass_20180803094210.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Jayhawk_7_Fed_17H_Int_Csg_Ass_20180803094255.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Jayhawk_7_Fed_17H_Prod_Csg_Ass_20180803094341.pdf

Section 4 - Cement

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: JAYHAWK 7 FED **Well Number:** 17H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	900	699	1.34	14.8	937	50	CLASS C	1% Calcium Chloride
INTERMEDIATE	Lead		0	4500	990	1.85	12.9	1832	30	CLASS C	(65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sks Poly-E-Flake
INTERMEDIATE	Tail		4500	5000	153	1.33	14.8	204	30	CLASS C	0.125 lbs/sack Poly-F-Flake
PRODUCTION	Lead		4800	11884	684	3.27	9	2237	25	TUNED	TUNED LITE
PRODUCTION	Tail		11884	17196	1398	1.2	14.5	1677	25	CLASS H	(50:50) Clas H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

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 will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: JAYHAWK 7 FED **Well Number:** 17H

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
0	900	SPUD MUD	8.34	8.6				2			
900	5000	SALT SATURATED	9	10				2			
5000	17196	WATER-BASED MUD	8.4	11				12			

Section 6 - Test, Logging, Coring

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

Will run GRMWD from TD to from KOP. Cement bond logs will be run in vertical to determine top of cement. Stated logs run will be in the Completion Report and submitted to the BLM.

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

CALIPER,CBL,DS,GR,MUDLOG

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6850 **Anticipated Surface Pressure:** 4112.1

Anticipated Bottom Hole Temperature(F): 175

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:

Jayhawk_7_Fed_17H_H2S_Plan_20180803094723.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: JAYHAWK 7 FED **Well Number:** 17H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Jayhawk_7_FED_17H_DIR_SVY_20180803094733.pdf

Other proposed operations facets description:

MULTI-BOWL VERBIAGE
MULTI-BOWL WELLHEAD - 2 VARIATIONS OF 10M
10M ANNULAR VARIANCE DOC & SCHEMATIC
CLOSED LOOP DESIGN PLAN
DRILLING PLAN
AC REPORT
CO-FLEX HOSE
SPUDDER RIG REQUEST
GCP FORM

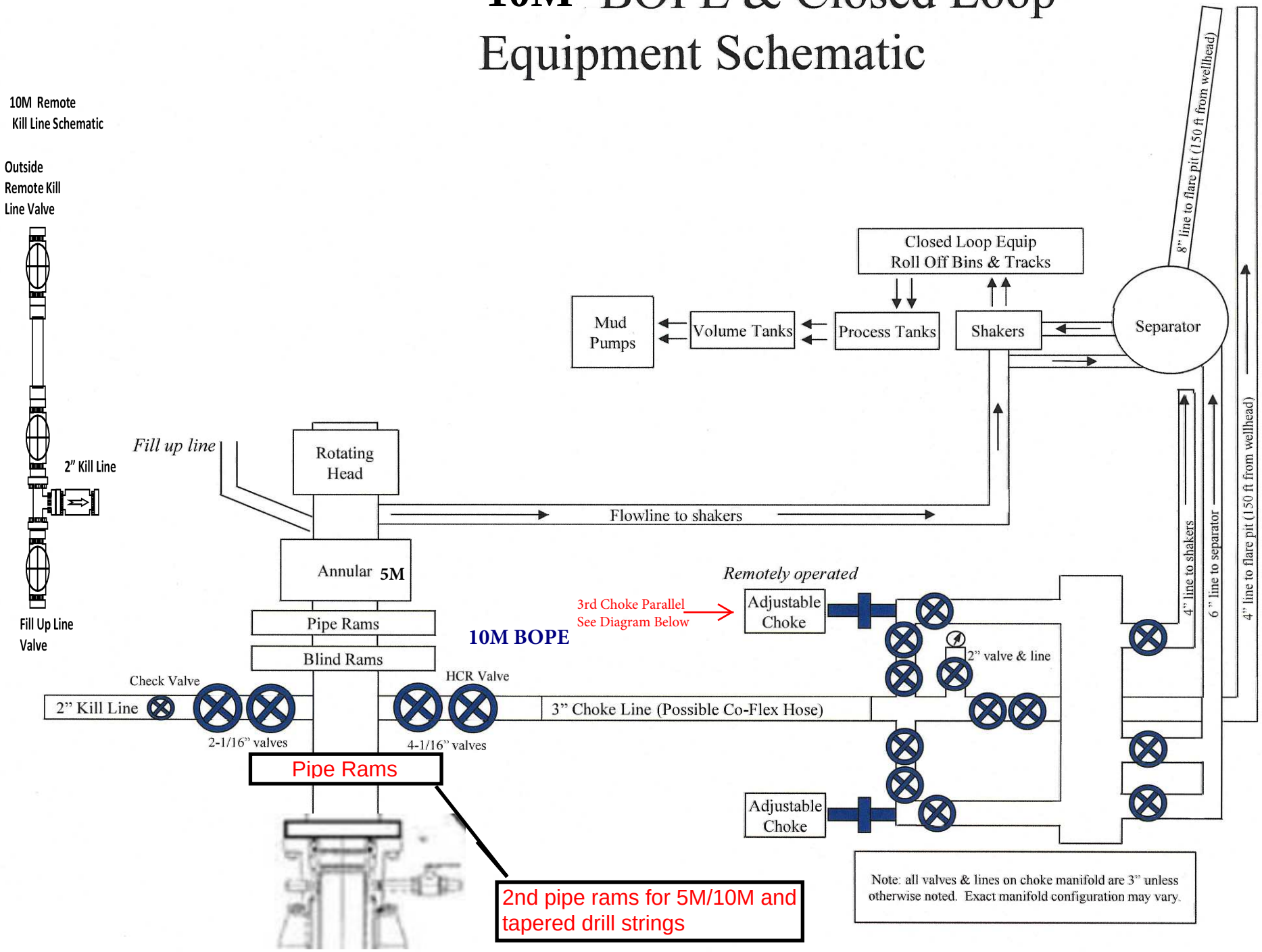
Other proposed operations facets attachment:

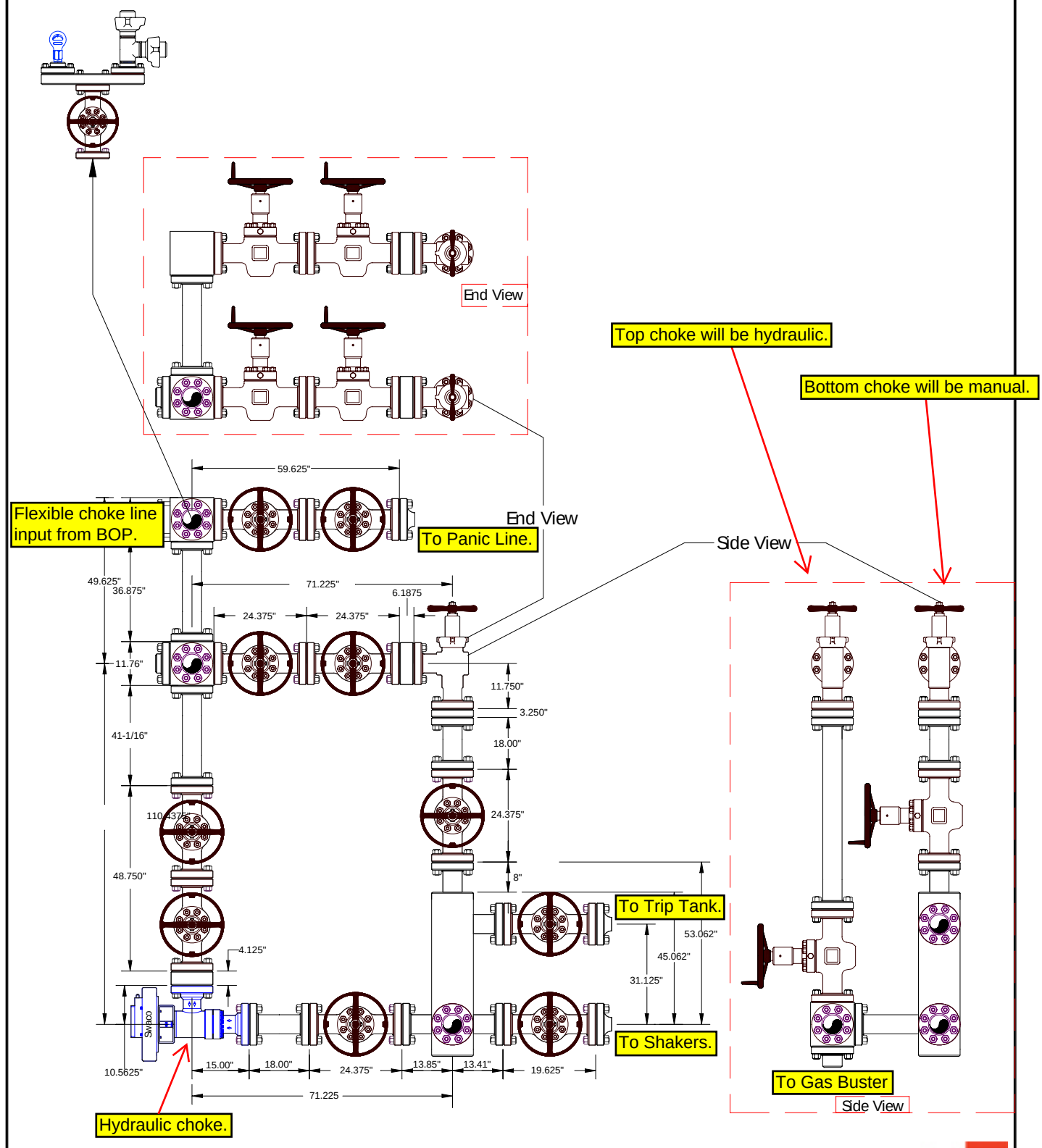
Jayhawk_7_Fed_17H_10M_BOPE_Double_Ram_and_CLS_Exception_Schematic___For_Annular_Exception_20180803095005.pdf
Jayhawk_7_FED_17H_AC_Report_20180803095006.pdf
Jayhawk_7_Fed_17H_Annular_Preventer_Summary_20180803095007.pdf
Jayhawk_7_Fed_17H_Clsd_Loop_20180803095009.pdf
Jayhawk_7_FED_17H_DIR_SVY_20180803095010.pdf
Jayhawk_7_Fed_17H_MB_Wellhd_5M___Use_for_Wolfcamp_5M_Only_20180803095012.pdf
Jayhawk_7_Fed_17H_MB_Wellhd_5M_20180803095013.pdf
Jayhawk_7_Fed_17H_MB_Wellhd_10M_20180803095014.pdf
Jayhawk_7_FED_17H_Plot_20180803095015.pdf
Jayhawk_7_Fed_17H_Spudder_Rig_Info_20180803095016.pdf
Jayhawk_7_Fed_17H_MB_Wellhd_10M_2_20181213071339.PDF
Jayhawk_7_Fed_17H_MB_Verb_10M_R1_20181213071736.pdf
10M_BOPE_DR_CLS_RKL_20181213071737.pdf
MB_Verb_5M_Alt_20181213071829.pdf
MB_Wellhd_10M_20181213072101.pdf
Jayhawk_7_Fed_17H_Drilling_Document_R2_20181213072523.pdf
WH_Diagram___SDT_1815_20181213140102.pdf

Other Variance attachment:

Jayhawk_7_Fed_17H_Co_flex_20180803095031.pdf

10M BOPE & Closed Loop Equipment Schematic



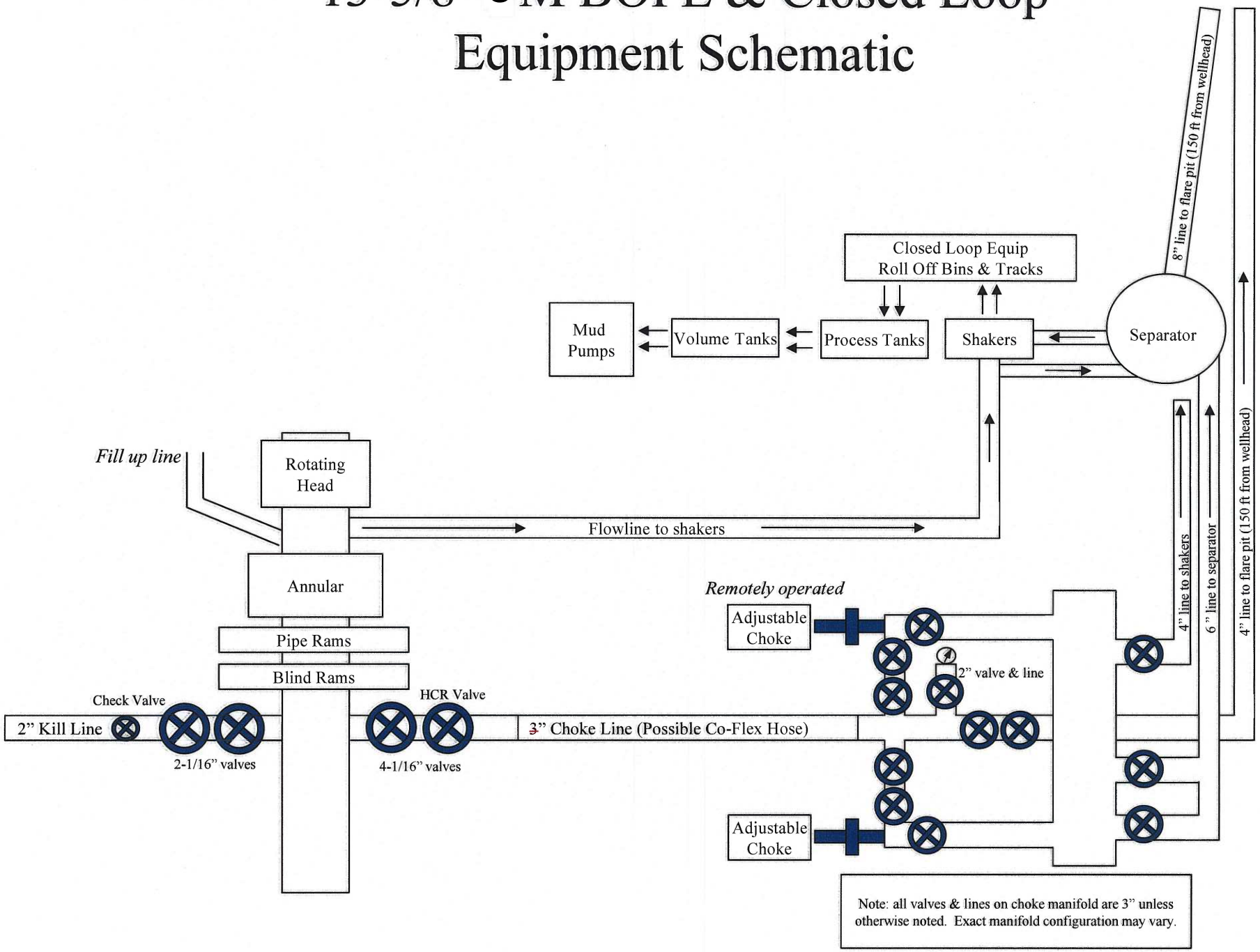


Helmerich & Payne

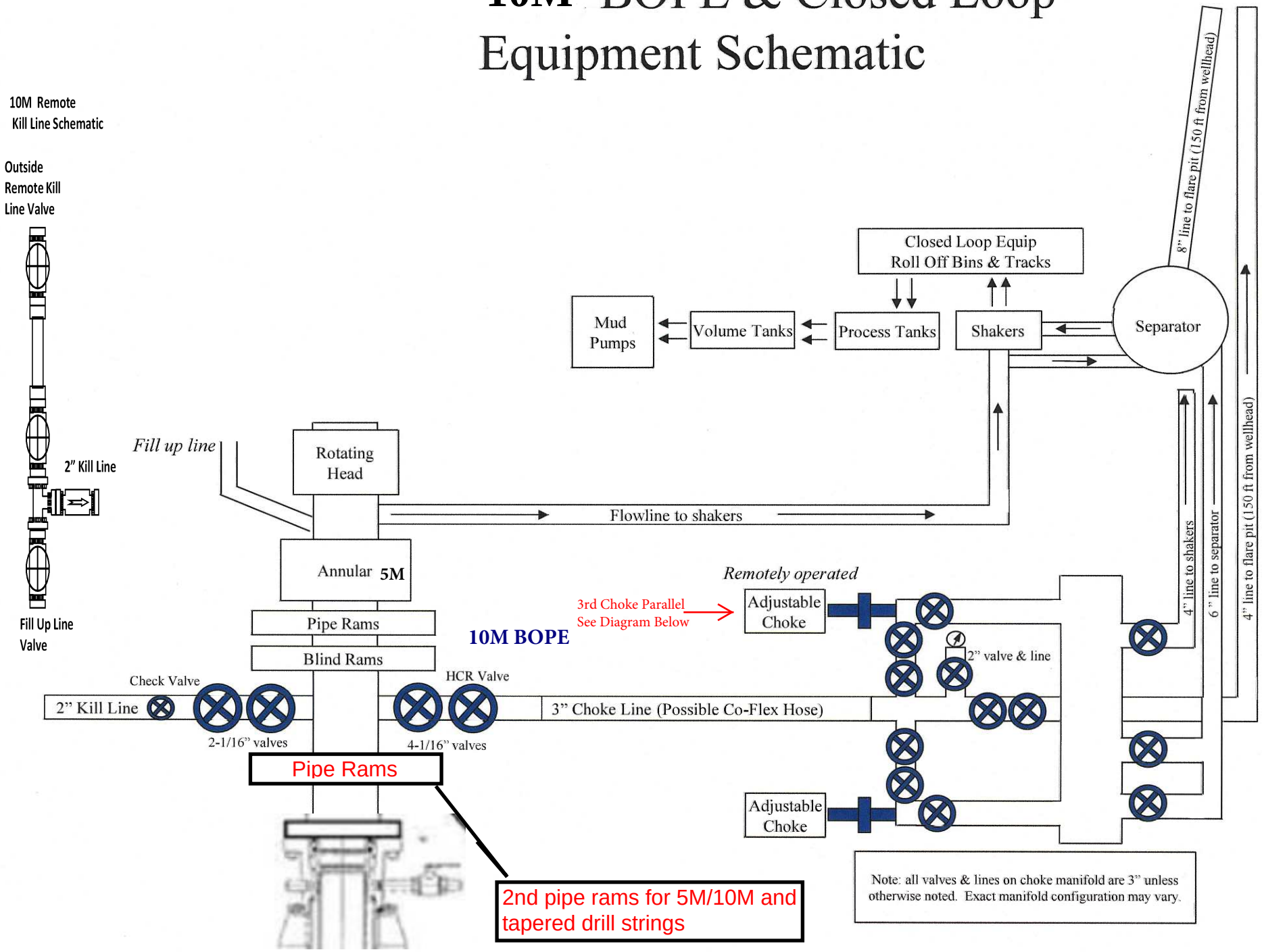
Flex 3 Rig w/ 3 Chokes

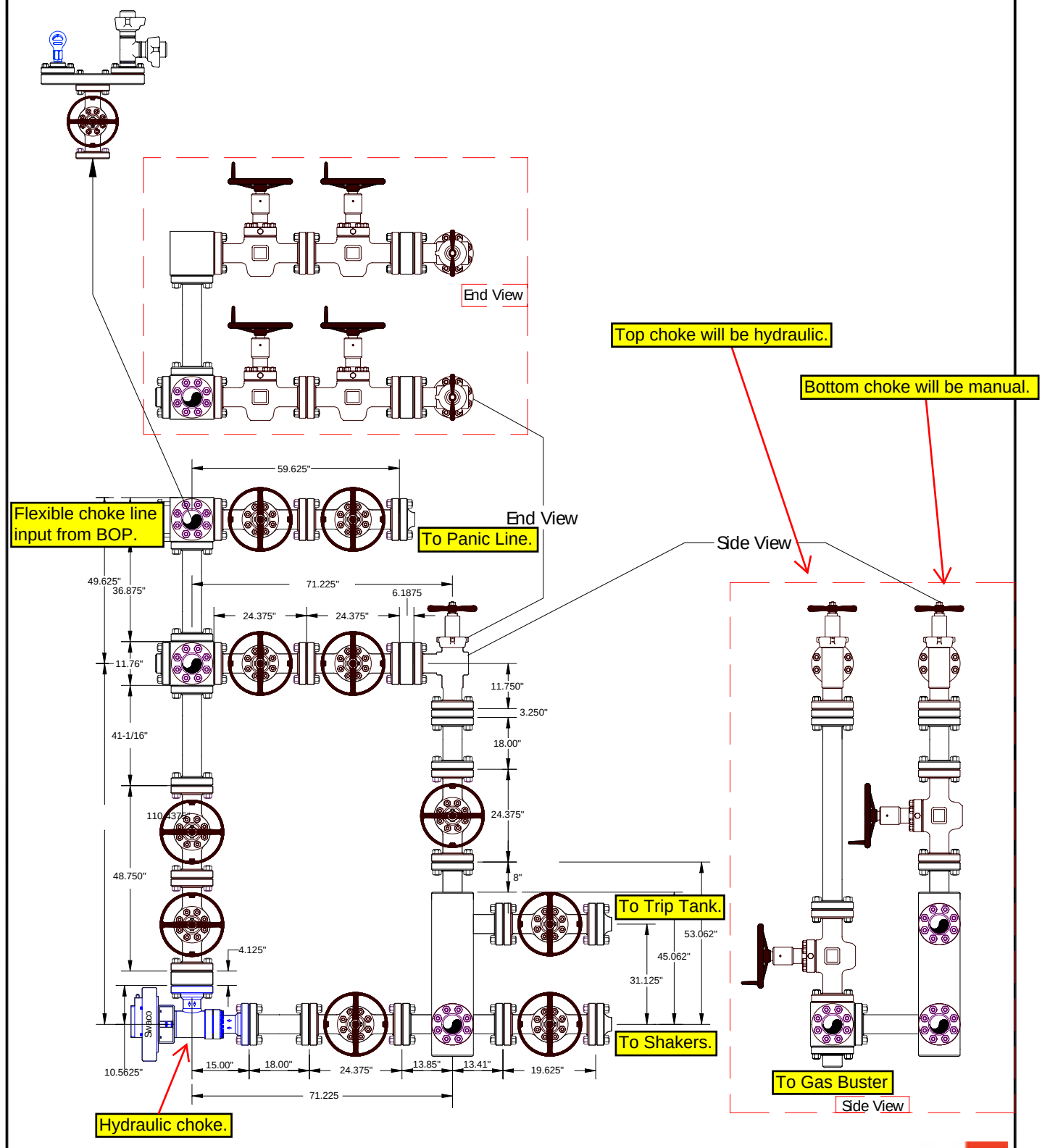
Name:	Date:	Working Pressure:	
Mike Potts	6-23-2010	10M	J-5132-E

13-5/8" 5M BOPE & Closed Loop Equipment Schematic



10M BOPE & Closed Loop Equipment Schematic





Helmerich & Payne

Flex 3 Rig w/ 3 Chokes

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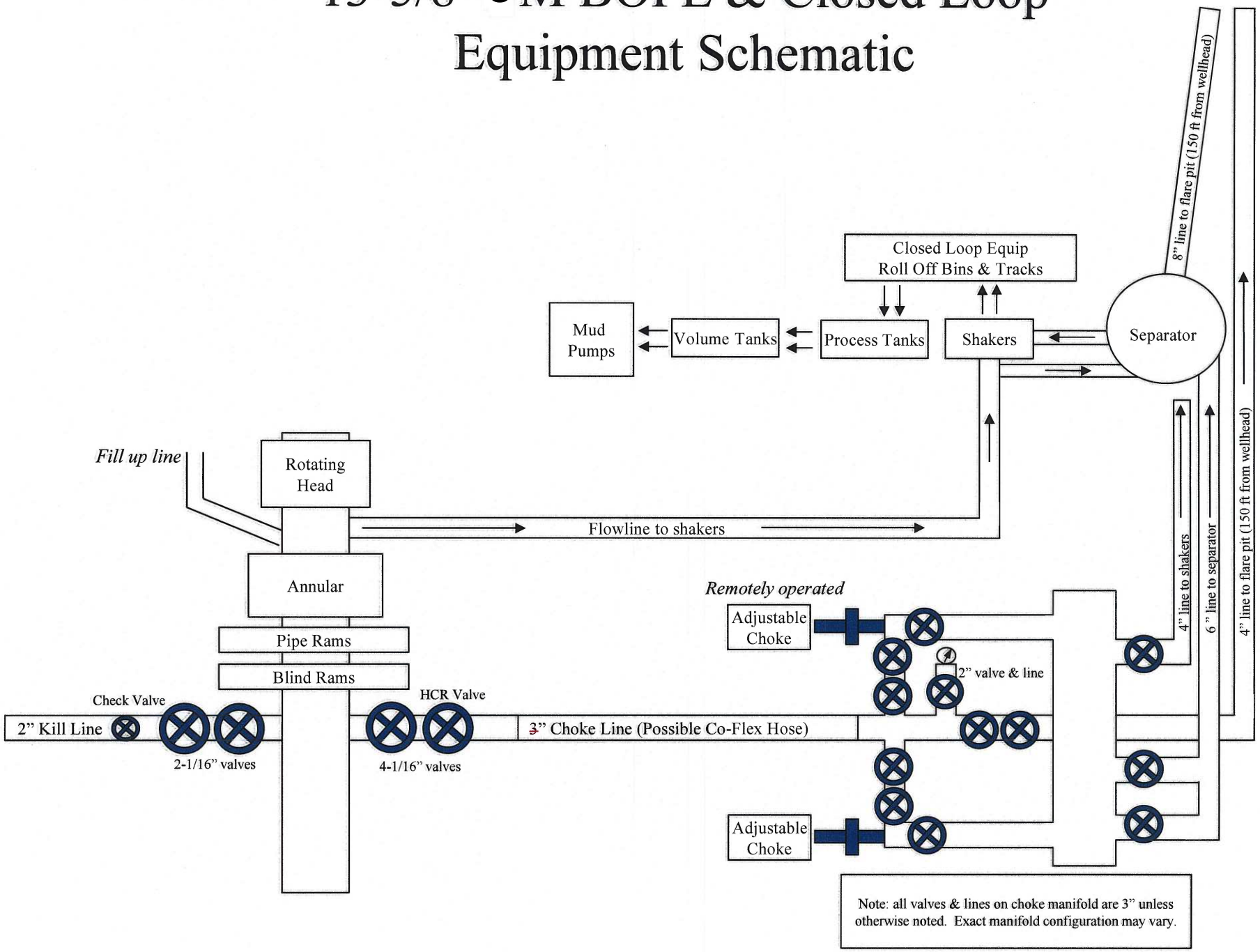
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Devon Energy, Jayhawk 7 Fed 17H

1. Geologic Formations

TVD of target	12,445	Pilot hole depth	N/A
MD at TD:	17,196	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
RUSTLER	891		
TOP SALT	1251		
BASE OF SALT	4961		
BELL CANYON	4961		
CHERRY CANYON	6301		
BRUSHY CANYON	7931		
BONE SPRING	9441		
BONE SPRING 1ST	10381		
BONE SPRING 2ND	10921		
BONE SPRING 3RD	12071		
WOLFCAMP	12491		
STRAWN	15011		

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

2. Casing Program (3-String Primary Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn
	From	To				
17.5”	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS
12.25”	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS
8.75”	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.

Casing Program (3-String Alternate Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn
	From	To				
17.5”	0	900’	13.375”	48	H-40	BTC
10.625”	0	10,000’	8.625”	32	L80HC	BTC
7.875”	0	TD	5.5”	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Variance is requested for collapse rating on 8-5/8” casing. Operator will keep pipe full while running casing. No losses are expected in subsequent hole section.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the 10-5/8” casing and 5-1/2” casing.

Casing Program (3-String Alternate Design)

Hole Size	Casing Interval		Csg. Size	Weight (PPF)	Grade	Conn.
	From	To				
17.5”	0	900’	13.375”	48	H-40	STC
12.25”	0	4,500’	9.625”	40	J-55	BTC
	4,500’	10,000’	9.625”	40	P-110EC	BTC
8.75”	0	TD	5.5”	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.

Devon Energy, Jayhawk 7 Fed 17H

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

Cementing Program (3-String Primary Design)

Casing	# Sks	TOC	Wt. (lb/gal)	H_20 (gal/sk)	Yld (ft3/sack)	Slurry Description
Surface	690	Surf	14.8	6.33	1.33	Lead: Class C Cement + additives
Int	990	Surf	9	20.6	3.31	Lead: Class C Cement + additives
	153	500' above shoe	14.8	6.42	1.33	Tail: Class C + additives
Prod.	684	9	3.27	13.5	21	Lead: Tuned Light Cement
	1388	14.5	1.2	5.31	25	Tail: (50:50) Clas H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	TOC	% Excess
Surface	0'	50%
Intermediate	0'	30%
Production Casing	200' Tie-Back to intermediate	25%

Cementing Program (3-String Alternate Design)

Casing	# Sks	TOC	Wt. (lb/gal)	H_20 (gal/sk)	Yld (ft3/sack)	Slurry Description
Surface	615	Surf	14.8	6.33	1.33	Lead: Class C Cement + additives
Int	660	Surf	9	20.6	3.31	Lead: Class C Cement + additives
	411	2000' above shoe	14.8	6.42	1.33	Tail: Class H / C + additives
Int Squeeze	As needed	Surf	14.8	6.32	1.33	Squeeze Lead: Class C Cement + additives
	411	2000' above shoe	13.2	5.31	1.6	Tail: Class H / C + additives
Production	1400	200' tieback	13.2	5.31	1.6	Lead: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	TOC	% Excess
Surface	0'	50%
Intermediate	0'	30%
Production Casing	200' Tie-Back to intermediate	25%

Cementing Program (3-String Alternate Design)

Casing	# Sks	TOC	Wt. (lb/gal)	H_20 (gal/sk)	Yld (ft3/sack)	Slurry Description
Surface	615	Surf	14.8	6.33	1.33	Lead: Class C Cement + additives
Int	985	Surf	9	20.6	3.31	Lead: Class C Cement + additives
	612	2000' above shoe	14.8	6.42	1.33	Tail: Class H / C + additives
Int Squeeze	As needed	Surf	14.8	6.32	1.33	Squeeze Lead: Class C Cement + additives
	612	2000' above shoe	14.8	6.42	1.33	Tail: Class H / C + additives
Production	1400	200' tieback	13.2	5.31	1.6	Lead: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate	50%
Production	10%

3. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-5/8”	5M	Annular	X	50% of rated working pressure
			Blind Ram		5M
			Pipe Ram		
			Double Ram		
			Other*		
Production	13-5/8”	10M	Annular (5M)	X	50% of rated working pressure
			Blind Ram		10M
			Pipe Ram		
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

4. Mud Program

1. Depth		Type	Weight (ppg)	Vis	Water Loss
From	To				
0	900’	FW Gel	8.4-8.6	28-34	N/C
900’	5000’	DBE / Brine	9 – 10	28-34	N/C
5000’	TD	OBM / WBM	8.4 - 10	28-34	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.

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

8. Other facets of operation

Is this a walking operation? Potentially

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

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

Will be pre-setting casing? Potentially

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

Attachments

_x_ Directional Plan

___ Other, describe