

**Re-entry**

**HOBBS OGD**  
OCD Hobbs  
JUN 14 2016  
**RECEIVED**

16-797

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

(V)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No. LC-065710-A		6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No.		8. Lease Name and Well No. LUSK FEDERAL #3-A #3 (715243)	
9. API Well No. 30-025-00913		10. Field and Pool, or Exploratory LUSK; DELAWARE, WEST (41540)	
11. Sec., T. R. M. or Blk. and Survey or Area Section 20, T. 19 S., R. 32 E.		12. County or Parish LEA	
13. State NM		14. Distance in miles and direction from nearest town or post office* 40 MILES SOUTHWEST OF HOBBS, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	660'	16. No of acres in lease	640
17. Spacing Unit dedicated to this well		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	360' (LDU #25)
19. Proposed Depth	5300'	20. BLM/BIA Bond No. in file	NM 2156
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3572' GL	22. Approximate date work will start* ASAP	23. Estimated duration 15 DAYS	

24. Attachments

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

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

25. Signature <i>[Signature]</i>	Name (Printed/Typed) BARRY W. HUNT	Date 2/25/16
Title Permit Agent for Shackelford Oil Co.		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) Cody Layton	Date JUN 9 - 2016
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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. **APPROVAL FOR TWO YEARS**

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.

Capitan Controlled Water Basin

*Ka*  
06/14/16  
**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

Approval Subject to General Requirements  
& Special Stipulations Attached

## **Well Name Change**

**Lusk Deep Unit 3-A  
E-Sec. 20-T19S-R32E  
1650' FNL & 660' FWL  
API# 3002500913**

**1. Proposed zones to be tested:**

**4932'-4982' Cherry Canyon (Non-unitized zone)**

**4872'-4902' Cherry Canyon (Non-unitized zone)**

**2608'-2650' Yates Sand (Non-Unitized zone)**

**The Lusk Deep Unit #3-A re-entry will be a non-unit well, the proposed well name change will be the Lusk Federal #3-A.**

*Existing*

Field Name		Lease Name		Well No.	County	State	API No.	
Lusk Delaware, West		Lusk Deep Unit		3	Lea	New Mexico	30025009130000	
Version	Version Tag			Spud Date	Comp. Date	GL (ft)	KB (ft)	
1	Present			7/22/1961	11/1/1961	3,574.0	3,593.0	
Section	Township/Block	Range/Survey	Dist. N/S (ft)	N/S Line	Dist. E/W (ft)	E/W Line	Footage From	
20	19S	32E	1,650	FNL	660	FWL		
Operator			Well Status		Latitude	Longitude	Prop Num	
Shackelford Oil Company			Plugged					
Other 1		Other 2		Other 3		Other 4		
Last Updated			Prepared By			Updated By		
03/10/2016 10:03 AM			Shackelford			Shackelford		
Additional Information								

**Hoie Summary**

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	17.500	0	807	
	12.250	0	4,532	
	8.750	0	12,621	

**Tubular Summary**

Date	Description	No. Jts	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)	Comments
	Surface Casing		13.375	54.50	J-55	0	807	circulated
	Intermediate Casing		9.625	40.00	N-80	0	4,532	circulated
	Production Casing		5.500	17.00	N-80	5,400	12,458	

**Casing Cement Summary**

C	Date	No. Sx	Yield (ft3/sk)	Vol. (ft3)	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
		900	.00	900	13.375	0	807		CIRCULATED
		2,730	.00	2,730	9.625	0	4,532		2 STAGES, CIRCULATED
		382	1.00	382	5.500	10,065	12,458		

**Tools/Problems Summary**

Date	Tool Type	O.D. (in)	I.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
	DV tool (drilled out)	0.000	0.000	2,522	0		
	Cast Iron Bridge Plug	0.000	0.000	10,500	0		ABOVE EXISTING PERFS, W/ 20SX CEMENT PLUG. TOP OF PLUG IS EST.

**Cement Plug Summary**

Date	No. Sx	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
10	9.625	0	40	800	BASE OF PLUG EST.
25	9.625	700	800		
25	9.625	2,400	2,500		
35	9.625	4,443	4,552		
25	8.750	5,325	5,400		TOP OF PLUG EST.

**Perforation Summary**

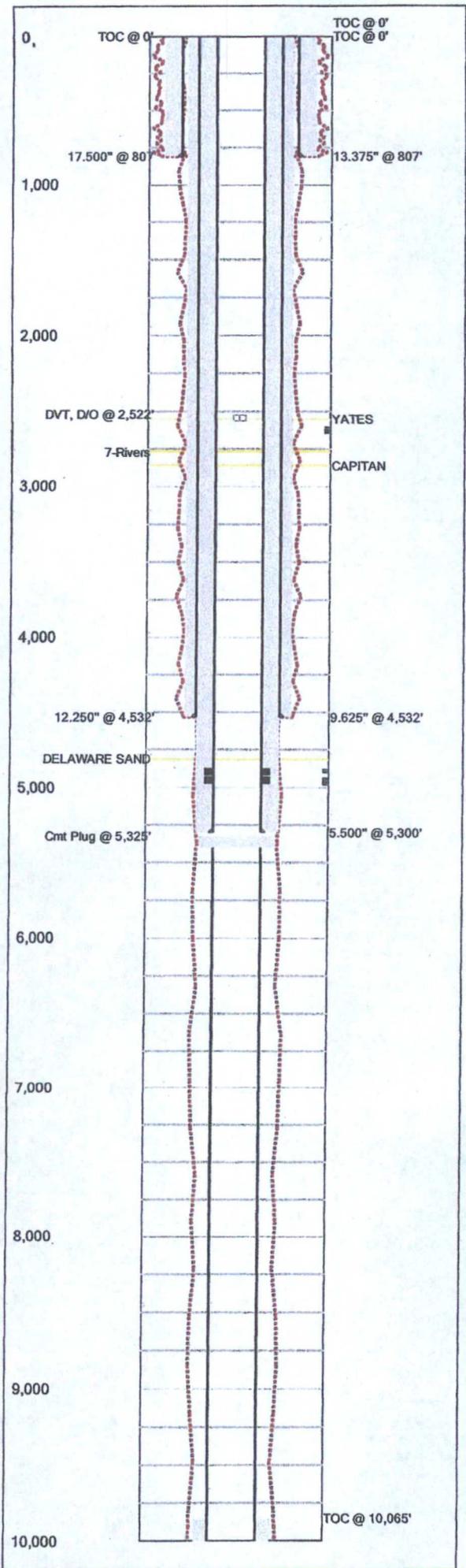
C	Date	Perf. Status	Formation	Comments			
		Isolated	Morrow				
		Top (MD ft)	Bottom (MD ft)	SPF	Shots	Phasing (deg)	Interval Comments
		11,310	11,340				
		12,370	12,390				

**Formation Top Summary**

Formation Name	Top(TVD ft)	Comments
RUSTLER	746	
Tansill	2,361	
YATES	2,553	
7-Rivers	2,769	
CAPTAN	2,860	
DELAWARE SAND	4,815	

**Behind Pipe Summary**

C	Formation Name	Top (MD ft)	Bottom (MD ft)	Net Pay (ft)	Drain. Area (Acre)	Res. Pres. (psi)	Water Sat. (%)	Eff. Por. (%)	EUR Oil (MBO)	EUR Gas (MMCF)	Comments
	YATES	2,600	2,650	0	0	0	0.0%	0.0%	0	0	
	DELAWARE (4950)	4,873	4,905	0	0	0	0.0%	0.0%	0	0	
	DELAWARE (5000)	4,932	4,987	0	0	0	0.0%	0.0%	0	0	



Field Name		Lease Name		Well No.
Lusk Delaware, West		Lusk Deep Unit		3
County		State		API No.
Lea		New Mexico		30025009130000
Version	Version Tag			
2	Proposed			
GL (ft)	KB (ft)	Section	Township/Block	Range/Survey
3,574.0	3,593.0	20	19S	32E
Operator		Well Status	Latitude	Longitude
Shackelford Oil Company		Plugged		
Dist. N/S (ft)	N/S Line	Dist. E/W (ft)	E/W Line	Footage From
1650	FNL	660	FWL	
Prop Num		Spud Date	Comp. Date	
		7/22/1961	11/1/1961	
Additional Information				
PROPOSED				
Other 1	Other 2	Other 3	Other 4	
Prepared By		Updated By	Last Updated	
Shackelford		Shackelford	3/10/2016 10:03 AM	

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	17.500	0	807	
	12.250	0	4,532	
	8.750	0	12,621	

Date	Description	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)
	Surface Casing	13.375	54.50	J-55	0	807
	Intermediate Casing	9.625	40.00	N-80	0	4,532
	Production Casing	5.500	15.50	J-55	0	5,300
	Production Casing	5.500	17.00	N-80	5,400	12,458

C	Date	No. Sx	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
		900	13.375	0	807	CIRCULATED
		2,730	9.625	0	4,532	2 STAGES, CIRCULATED
		1,300	5.500	0	5,300	CIRCULATE TO SURFACE
		382	5.500	10,065	12,458	

Date	Tool Type	O.D. (in)	I.D. (in)	Top (MD ft)	Bottom (MD ft)
	DVT, D/O	0.000	0.000	2,522	0
	CIBP	0.000	0.000	10,500	0

Date	No. Sx	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	25	8.750	5,325	5,400	TOP OF PLUG EST.

C	Date	Perf. Status	Formation	OA Top (MD ft)	OA Bottom (MD ft)	Shots
			DELAWARE MTN GP	4,874	4,943	
		Isolated	Morrow	11,310	12,390	

Formation	Top (TVD ft)	Comments
RUSTLER	746	
Tansill	2,361	
YATES	2,553	
7-Rivers	2,769	
CAPITAN	2,860	
DELAWARE SAND	4,815	

*Proposed*

Field Name		Lease Name		Well No.	County	State	API No.	
Lusk Delaware, West		Lusk Deep Unit		3	Lea	New Mexico	30025009130000	
Version	Version Tag			Spud Date	Comp. Date	GL (ft)	KB (ft)	
2	Proposed			7/22/1961	11/1/1961	3,574.0	3,593.0	
Section	Township/Block	Range/Survey	Dist. N/S (ft)	N/S Line	Dist. E/W (ft)	E/W Line	Footage From	
20	19S	32E	1,650	FNL	660	FWL		
Operator		Well Status		Latitude	Longitude		Prop Num	
Shackelford Oil Company		Plugged						
Other 1		Other 2		Other 3		Other 4		
Last Updated		Prepared By			Updated By			
03/10/2016 10:03 AM		Shackelford			Shackelford			
Additional Information								
PROPOSED								

Hole Summary

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	17.500	0	807	
	12.250	0	4,532	
	8.750	0	12,621	

Tubular Summary

Date	Description	No. Jts	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)	Comments
	Surface Casing		13.375	54.50	J-55	0	807	circulated
	Intermediate Casing		9.625	40.00	N-80	0	4,532	circulated
	Production Casing		5.500	15.50	J-55	0	5,300	
	Production Casing		5.500	17.00	N-80	5,400	12,458	existing

Casing Cement Summary

C	Date	No. Sx	Yield (ft3/sk)	Vol. (ft3)	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
		900	.00	900	13.375	0	807		CIRCULATED
		2,730	.00	2,730	9.625	0	4,532		2 STAGES, CIRCULATED
		1,300	1.26	1,638	5.500	0	5,300		CIRCULATE TO SURFACE
		382	1.00	382	5.500	10,065	12,458		

Tools/Problems Summary

Date	Tool Type	O.D. (in)	I.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
	DV tool (drilled out)	0.000	0.000	2,522	0		
	Cast Iron Bridge Plug	0.000	0.000	10,500	0		ABOVE EXISTING PERFS, W/ 20SX CEMENT PLUG. TOP OF PLUG IS EST.

Cement Plug Summary

Date	No. Sx	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	25	8.750	5,325	5,400	TOP OF PLUG EST.

Perforation Summary

C	Date	Perf. Status	Formation	Comments			
		Isolated	Morrow				
		Top (MD ft)	Bottom (MD ft)	SPF	Shots	Phasing (deg)	Interval Comments
		11,310	11,340				
		12,370	12,390				
C	Date	Perf. Status	Formation	Comments			
			DELAWARE MTN GP	PROPOSED			
		Top (MD ft)	Bottom (MD ft)	SPF	Shots	Phasing (deg)	Interval Comments
		4,874	4,890	4			PROPOSED
		4,931	4,943	4			PROPOSED

Formation Top Summary

Formation Name	Top(TVD ft)	Comments
RUSTLER	746	
Tansill	2,361	
YATES	2,553	
7-Rivers	2,789	
CAPITAN	2,860	
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Behind Pipe Summary

C	Formation Name	Top (MD ft)	Bottom (MD ft)	Net Pay (ft)	Drain. Area (Acre)	Res. Pres. (psi)	Water Sat. (%)	Eff. Por. (%)	EUR Oil (MBO)	EUR Gas (MMCF)	Comments
	YATES	2,600	2,650	0	0	0	0.0%	0.0%	0	0	
	DELAWARE (4950)	4,873	4,905	0	0	0	0.0%	0.0%	0	0	
	DELAWARE (5000)	4,932	4,987	0	0	0	0.0%	0.0%	0	0	

## RE-ENTRY PROCEDURE

### LUSK DEEP UNIT 3-A (Lusk Fed #3-A)

1. Cut Well Head
2. Install BOP. Test to 3000 PSI
3. GIH w/ 7 7/8" bit and drill collars
4. Drill out 40' surface plug. Tag 2<sup>nd</sup> plug @ 700'
5. Drill out 2<sup>nd</sup> plug from 700'-800'
6. Drill out 3<sup>rd</sup> plug from 2400'-2500'. Tag 4<sup>th</sup> plug at 4443'. Pressure test 9 5/8" casing to 1000 PSI
7. Drill out 4<sup>th</sup> plug from 4443'-4552'. Drill and circulate hole clean to ~ 5325'
8. RIH w/ 5 1/2" 15.5# J-55 LTC casing to 5300'
9. RU cementers. Break circulation. If good circulation, cement 5 1/2" casing w/ 1300 sacks 50/50 POZ class C, 2% Gel 5% salt, .5% FL-62 (Fluid loss) Yield 1.26. Cement to surface. Displace cement
10. Nipple up BOP. GIH with 2 7/8" tubing. Clean out hole to ~ 5300'
11. Spot 15% NEFE acid over proposed perfs. POOH
12. Run GR/CLL Log from ~ 5300' to 2400'. Perforate 4931'-4943' and 4874'-4890' Cherry Canyon Sands
13. Acidize perfs w/1500 gallons 15% NEFE
14. Swab test well. If good oil show, frack well through casing

**DRILLING PLAN:**

SHACKELFORD OIL COMPANY, INC.  
 (RE-ENTRY) LUSK FEDERAL #3-A  
 1650' FNL & 660' FWL, SECTION 20, T19S, R32E  
 Lea County, NM

**1. GEOLOGIC NAME OF SURFACE FORMATION:**

A. Recent Permian with quaternary alluvium and other surficial deposits.

**2. ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:**

Formation	Subsea Depth	Well Depth	Water / Oil / Gas
Anhydrite		745'	Salt
Tansil		2363'	Water/Oil/Gas
Yates		2552'	Water/Oil/Gas
Seven Rivers		2763'	Water/Oil/Gas
Top Capitan Reef		2860'	Water/Oil/Gas
Base Capitan Reef		3920'	Water/Oil/Gas
Delaware		4755'	Water/Oil/Gas
TD		5300'	Water/Oil/Gas

Water : Surface water between 50' – 230' behind casing.

Oil : Possible in the Yates below 2,600' and the Delaware below 4,820'

Gas: None expected.

This project will involve re-entering the plugged and abandoned #3-A well, drilling out cement and plugs and setting CIBP at 5400'. This vertical gas well will be re-entered for the Delaware.

**3. CASING PROGRAM: EXISTING IN WELL**

Hole Size	Depth	Casing Size	Weight	Joint	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17 1/2"	0' - 807'	13 3/8"	54.5#	STC	J-55 (8 Round)	New	N/A	N/A	N/A
12-1/4"	0' - 4532'	9-5/8"	40#	<del>STC</del> LTC	N-80 (8 Round)	New	N/A	N/A	N/A
7-7/8"	0' - 12,458'	5 1/2"	17#	LTC	N-80 (8 Round)	New	N/A	N/A	N/A

**Plan on running new 5 1/2" casing (15.5#, J-55 (8-Round), LTC) to 5300'. SF (Burst 1.84) (Collapse 1.54) (Tension 3.43).**

**4. CEMENT PROGRAM: EXISTING**

- A. Surface Casing: Existing. 13 3/8", 54.5#, J-55, @807' cmtnd w 900 sx circ to surface.
- B. Intermediate Casing: Existing. 9 5/8", 40#, N-80, @ 4532' cmtnd w 2730 sx, circ to surface.
- C. Production Casing: Existing. 5 1/2", 17#, N-80 @ 5400 - 12458' cmtnd w 382 sx, circ to surface.

**NEW 5 1/2" CEMENT PROGRAM: 5 1/2", 15.5, J-55 @0-5300' cmtnd w 1300 sx. Circ to surface. 50/50 POZ C, 2 % Gel, 5% Salt, .5% FL – 25, yield 1.26 (20% Excess).**

**5. PRESSURE CONTROL EQUIPMENT:**

The blow out preventer equipment (BOP) for this well consists of a 10" 3M Cameron Space Saver, double ram BOP with choke manifold. The BOP will be installed on the 9 5/8" casing. Casing and BOP will be tested as described in Onshore Order No. 2. The pipe rams will be operated and checked daily, plus each time drill pipe is out of hole. This will be documented on drillers log. (See Exhibits).

**6. PROPOSED MUD CIRCULATION SYSTEM: In lateral hole**

INTERVAL		Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0 – 5300'		Brine water mud	9.5	29	NC

If needed, the necessary mud products for weight addition and fluid loss control will be on location at all times.

**7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT:**

- A. A Kelly cock will be in the drill string at all times.
- B. A full opening drill pipe stabbing valve having appropriate connections will be on the rig floor at all times.
- C. H2S monitors will be on location.

**8. LOGGING, CORING AND TESTING PROGRAM:**

Drill Stem Tests : None.  
Logging: Bond Log was previously run.  
Coring: None.

**9. ABNORMAL PRESSURES AND TEMPERATURES / POTENTIAL HAZARDS:**

None anticipated. In the event abnormal pressures are encountered, the proposed mud program will be modified to increase the mud weight. Max bottom hole pressure should not exceed 3,218 psi., surface pressure 1,856 psi (part. Evac. Hole) with BHT of 122 F anticipated.

inhibitors sufficient to control the gas. The well will be shut down until a mud separator and flare line can be installed on the choke manifold, if the gas monitor approaches 10.

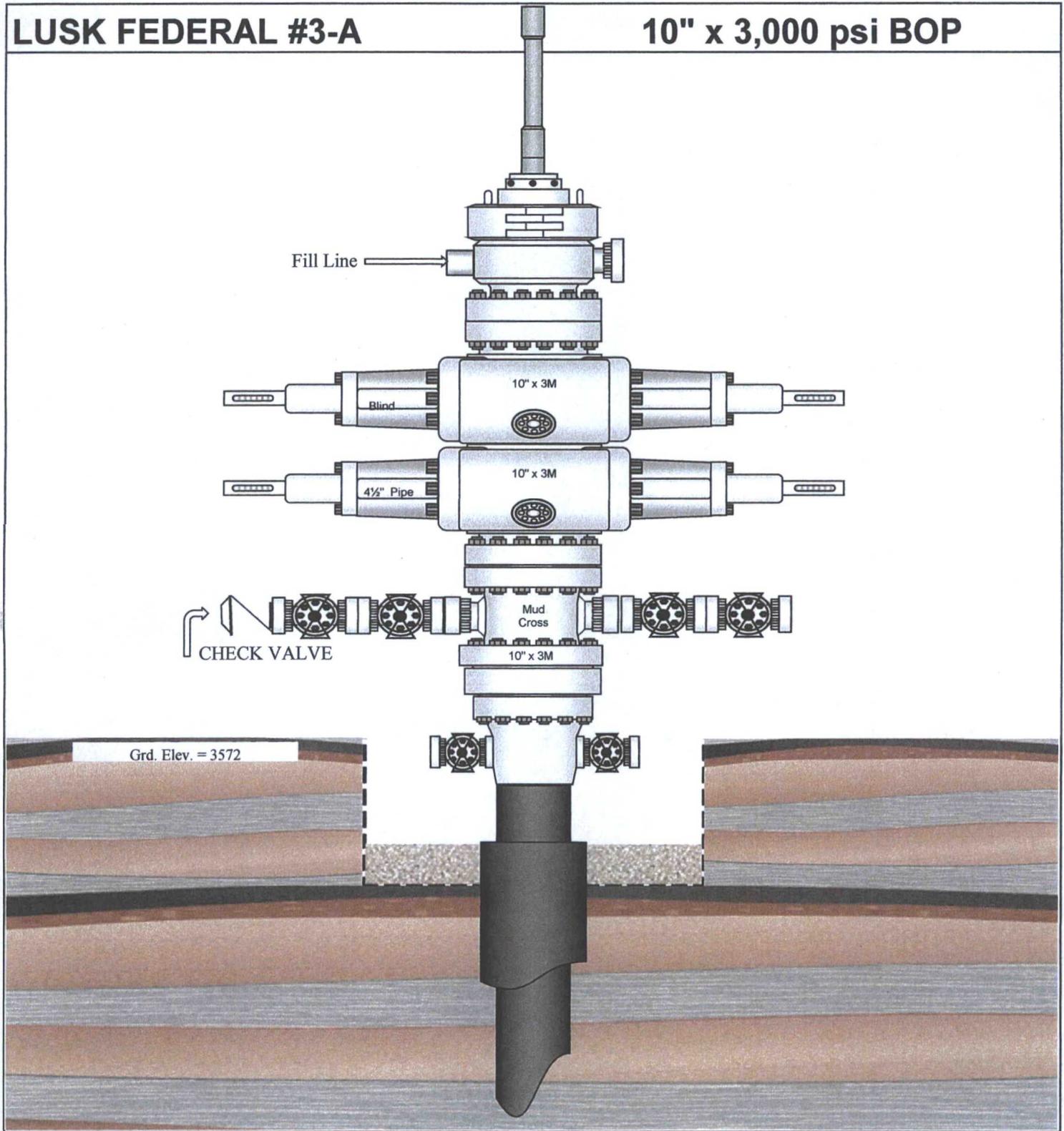
The operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment.

**10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:**

A. Road and location construction will begin after BLM has approved APD. Anticipated spud date will be as soon after BLM approval and as soon as rig will be available. Move in operations and drilling is expected to take 25 days. An additional 30 days will be needed to complete the well and construct surface facilities and/or lay flow lines in order to place well on production.

**LUSK FEDERAL #3-A**

**10" x 3,000 psi BOP**



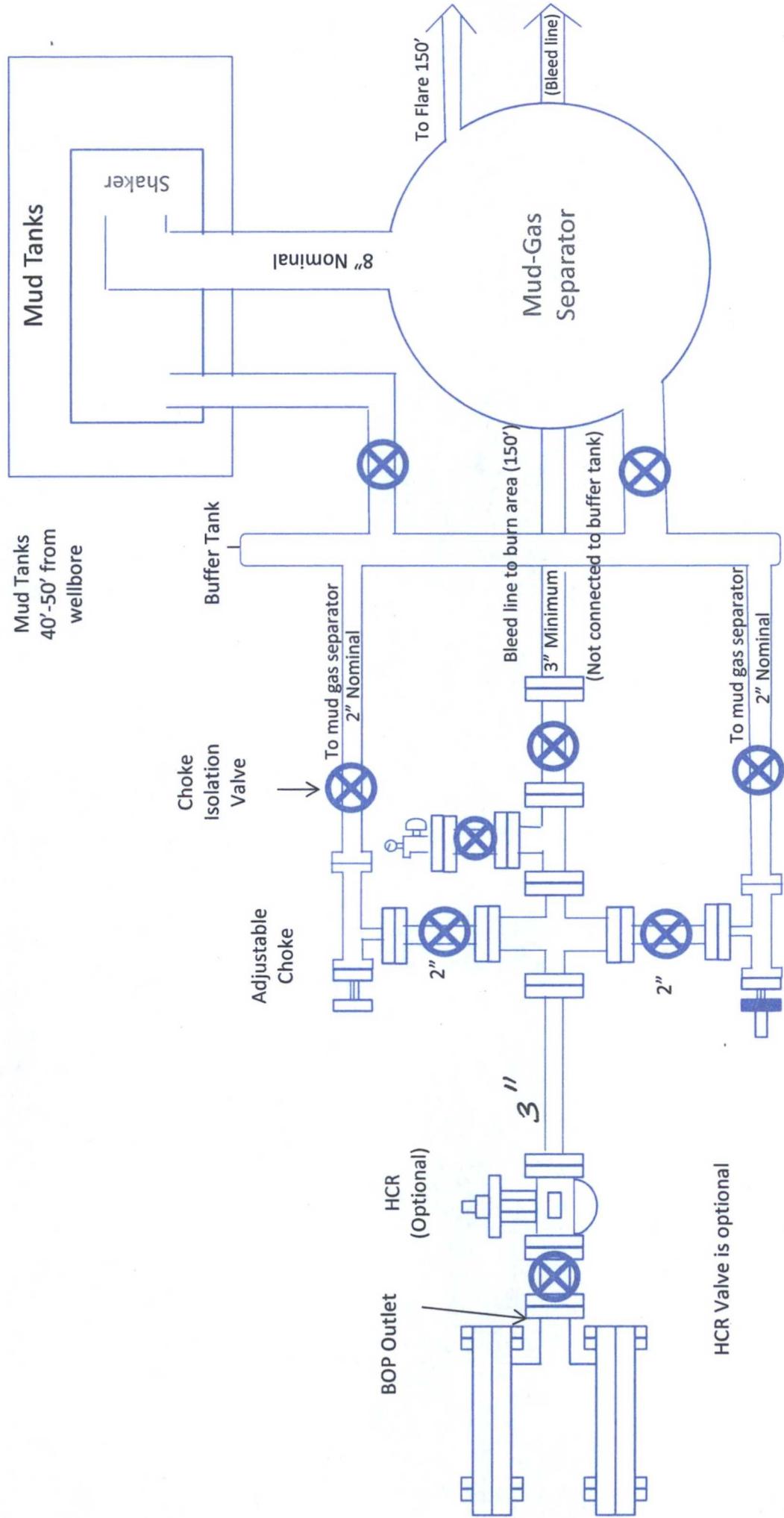


Exhibit E-1 – Choke Manifold Diagram  
 Lusk Federal #3-A  
 SHACKELFORD OIL COMPANY.

**Drilling Operations  
 Choke Manifold  
 3M Service**

**SHACKELFORD OIL COMPANY**

**203 W. Wall STE 200**

**Midland, TX 79701**

**DESIGN: Closed-Loop system with roll-off steel bin (pits)**

Contacts: Bob Shackelford – Office: 432-682-9784 Cell: 432-813-7090

Art Marquez – Office: 432-682-9784 Cell: 575-405-1334

Monitoring: 12 hour service

Equipment:

500 bbl waste fluid tank

500 bbl brine water tank

500 bbl 2% KCL Water Tank

Pump, swivel manifold

Reverse tank

1 CRI Bin with track system

Air pumps on location for immediate remediation process

Layout of Closed Loop System with bin, attached

Cuttings and associated liquids will be hauled to a State regulated third party disposal site, via CRI (Controlled Recovery, Inc.) Disposal Facility Permit # R9166

**OPERATIONS:**

Closed Loop equipment will be inspected daily by each tour and any necessary maintenance performed.

Any leak in system will be repaired and/or contained immediately.

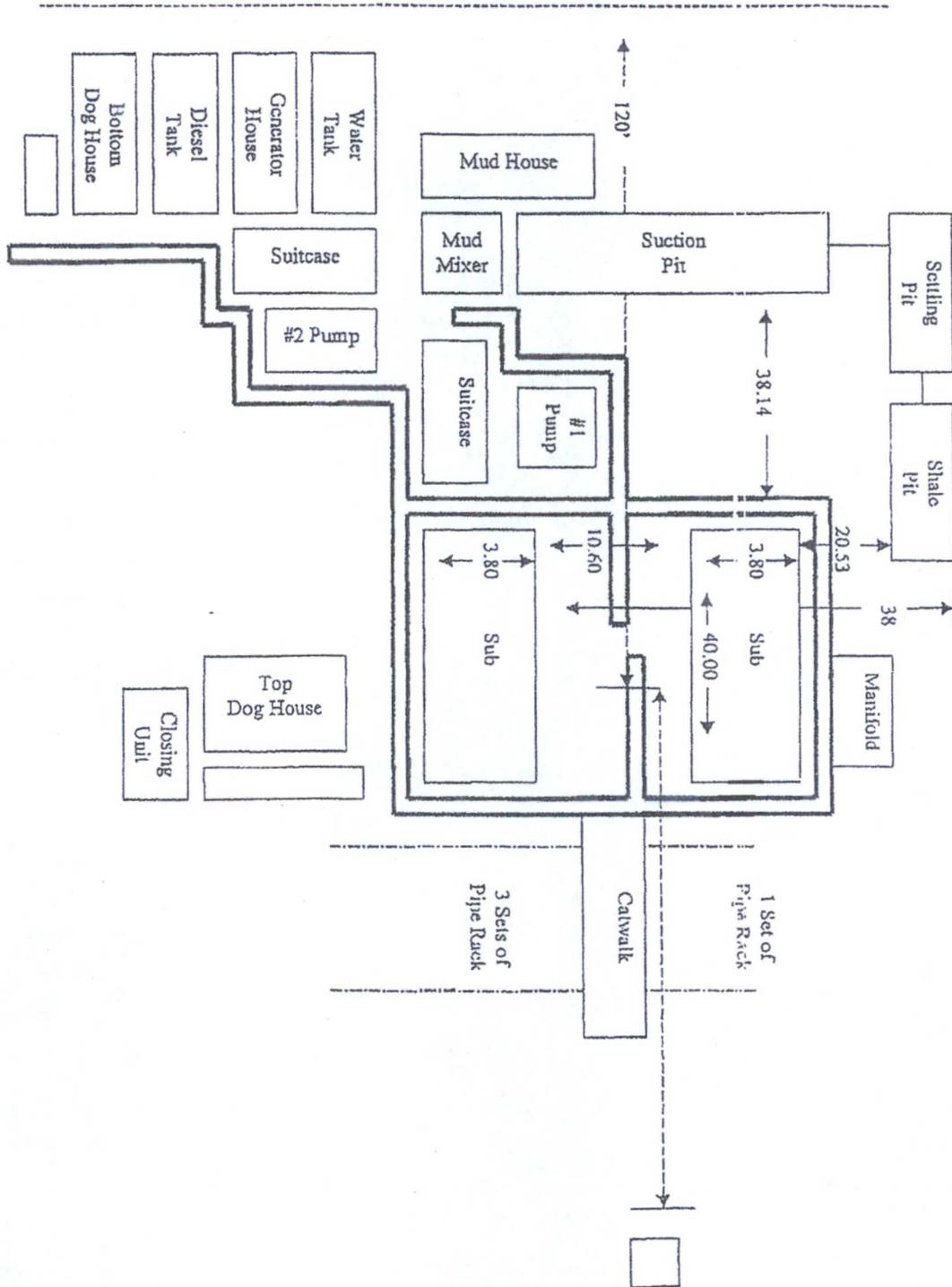
OCD will be notified within 48 hours of the spill.

Remediation process started immediately.

**CLOSURE:**

During drilling operations all liquids, drilling fluids and cuttings will be hauled off via CRI (Controlled Recovery Incorporated) Disposal Facility Permit # R9166

# Plat for Closed Loop System



**EXHIBIT D**

**Rig Plat Only  
LUSK FEDERAL #3-A  
V-DOOR EAST NORTHEAST  
Rig Up South**

NORTH

