Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM138832

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☐ DRILL ☑ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other INJ-DIS

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.:

8. Lease Name and Well No.: LABRADOR SWD 1

2. Name of Operator: MACK ENERGY CORPORATION

9. API Well No.: 30-005-~~64374~~ 00456

3a. Address: 11344 Lovington HWY, Artesia, NM 88211

3b. Phone No. *(include area code)*: (575) 748-1288

10. Field and Pool, or Exploratory: SWD-DEVONIAN

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NWSE / 1978 FSL / 1980 FEL / LAT 32.9996373 / LONG -104.9970742

At proposed prod. zone: NWSE / 1978 FSL / 1980 FEL / LAT 32.9996373 / LONG -104.9970742

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 23/T15S/R29E/NMP

14. Distance in miles and direction from nearest town or post office*: 15 miles

12. County or Parish: CHAVES

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 1978 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 40.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 2000 feet

19. Proposed Depth: 10985 feet / 10985 feet

20. BLM/BIA Bond No. in file: FED: NMB00286

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3937 feet

22. Approximate date work will start*: 09/01/2022

23. Estimated duration: 20 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.
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 requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	DEANA WEAVER / Ph: (575) 748-1288	05/04/2022

Title: Production Clerk

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	RUBEN J SANCHEZ / Ph: (575) 627-0250	12/13/2022

Title	Office
Assistant Field Manager, Lands & Minerals	Roswell 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.

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 12/13/2022

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-005-~~64374~~ 00456	96101	SWD; Devonian

[4] Property Code	[5] Property Name	[6] Well Number
333611	LABRADOR SWD	1

[7] OGRID No.	[8] Operator Name	[9] Elevation
13837	MACK ENERGY CORPORATION	3937.4

[10] Surface Location

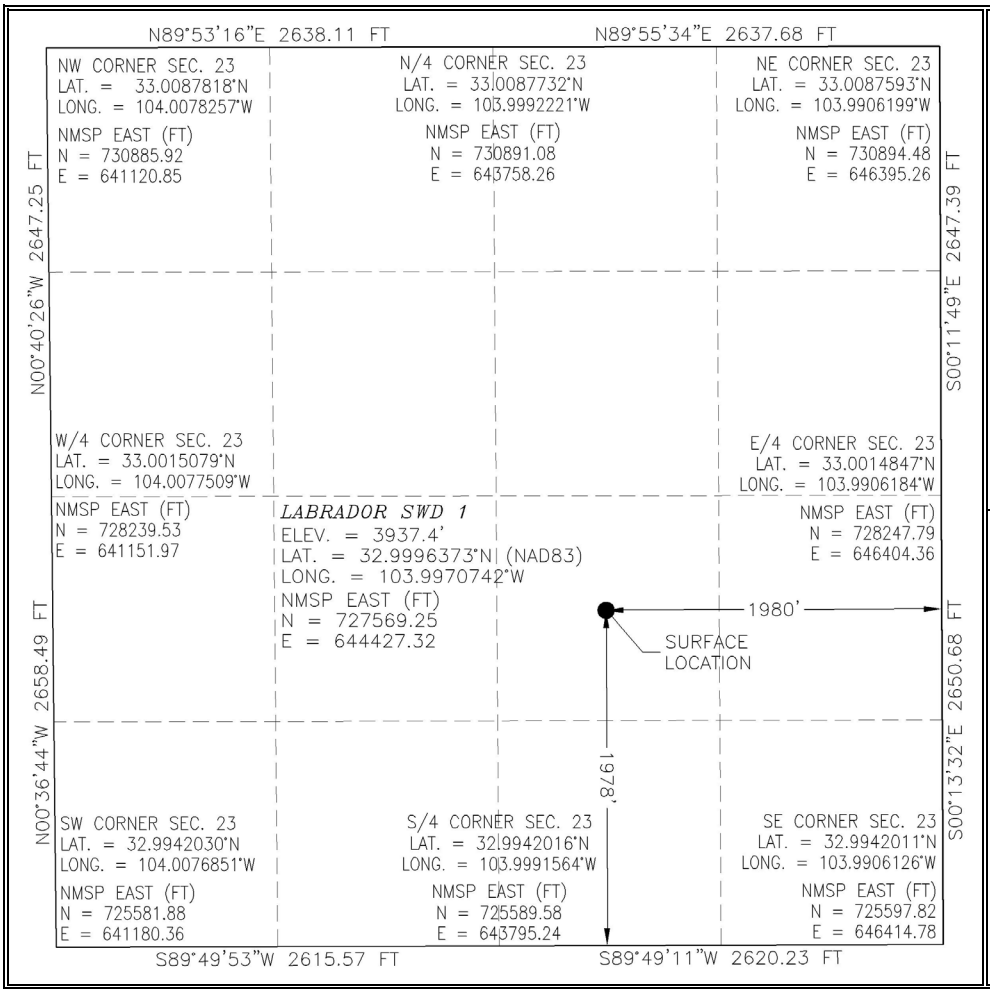
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	23	15 S	29 E		1978	SOUTH	1980	EAST	CHAVES

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
40			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Deana Weaver 4/4/2022
Signature Date

Deana Weaver
Printed Name

dweaver@mec.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

MARCH 30, 2022
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: EDMUNDO F. JARAMILLO, NM PS 12797

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

Drilling Plan Data Report
12/12/2022

APD ID: 10400084282
Submission Date: 05/04/2022
Operator Name: MACK ENERGY CORPORATION
Well Name: LABRADOR SWD
Well Number: 1
Well Type: INJECTION - DISPOSAL
Well Work Type: Reenter

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
8436306	RUSTLER	3937	0	0	ANHYDRITE, SALT	NONE	N
8436307	TOP OF SALT	3475	462	462	SALT	NONE	N
8436308	BASE OF SALT	2914	1023	1023	SALT	NONE	N
8436309	YATES	2750	1187	1187	SILTSTONE	NATURAL GAS, OIL	N
8436310	SAN ANDRES	1332	2605	2605	DOLOMITE	NATURAL GAS, OIL	N
8436311	GLORIETA	-123	4060	4060	DOLOMITE	NATURAL GAS, OIL	N
8436312	TUBB	-1445	5382	5382	DOLOMITE	NATURAL GAS, OIL	N
8436313	ABO	-2218	6155	6155	DOLOMITE	NATURAL GAS, OIL	N
8436314	WOLFCAMP	-3558	7495	7495	DOLOMITE	NATURAL GAS, OIL	N
8436315	ATOKA	-5752	9689	9689	DOLOMITE	NATURAL GAS, OIL	N
8436316	MISSISSIPPIAN UPPER	-6263	10200	10200	DOLOMITE	NATURAL GAS, OIL	N
8436317	MISSISSIPPIAN LOWER	-6498	10435	10435	DOLOMITE	NATURAL GAS, OIL	N
8436318	DEVONIAN	-7048	10985	10985	DOLOMITE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: MACK ENERGY CORPORATION

Well Name: LABRADOR SWD **Well Number:** 1

Pressure Rating (PSI): 5M **Rating Depth:** 10585

Equipment: Rotating Head, Mud -Gas Separator

Requesting Variance? NO

Variance request:

Testing Procedure: The BOP/BOPE test shall include a low pressure test for 250 to 300psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole press is 5064psig (0.052*10,585'TD*9.2). Will test to 5000psi for 30 minutes.

Choke Diagram Attachment:

5m_Choke_Manifold_20220720105044.pdf

choke_manifold_20220720105333.pdf

BOP Diagram Attachment:

5m_BOP_20220720105030.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	472	0	472	3937	3465	472	H-40	48	ST&C	3.141	3.393	BUOY	16.66	BUOY	3.46
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2888	0	2888	3937	1049	2888	J-55	36	ST&C	1.401	6.285	BUOY	4.442	BUOY	7.04
3	PRODUCTION	8.75	5.5	NEW	API	N	0	10585	0	10585	3937	-6648	10585	L-80	20	LT&C	1.662	2.703	BUOY	2.208	BUOY	3.063

Casing Attachments

Operator Name: MACK ENERGY CORPORATION

Well Name: LABRADOR SWD **Well Number:** 1

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Surface_Csg_20220406151453.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Interm_csg_20220406151825.pdf

Casing ID: 3 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cmt_20220406153043.pdf

Production_Csg_20220720114001.pdf

Section 4 - Cement

Operator Name: MACK ENERGY CORPORATION

Well Name: LABRADOR SWD **Well Number:** 1

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	472	400	0	0	0		In Place 9/9/1961 Carthel BGT Fed Com 1J 30-005-00456	In Place 9/9/1961 Carthel BGT Fed Com 1J 30-005-00456
INTERMEDIATE	Lead		0	2888	1000	0	0	0		In Place 9/9/1961 Carthel BGT Fed Com 1J 30-005-00456	In Place 9/9/1961 Carthel BGT Fed Com 1J 30-005-00456
PRODUCTION	Lead	8000	0	10585	1020	1.84	13.2	1833.33	35	Class C 4% PF20+4 pps PF45+125pps PF29	20bbls Gelled water 20bbls Chemical wash 50sx of 11# scavenger cement Shoe w/ PKR/Stage tool
PRODUCTION	Tail		0	10585	160	1.48	13	1833.33	35	PVL+1.3 (BWOW) PF44+5%PF174+.5% PF600+.1% PF153+.4pps PF44	20bbls Gelled water 20bbls Chemical wash 50sx of 11# scavenger cement Shoe w/ PKR/Stage tool
PRODUCTION	Lead	8000	0	10585	550	1.84	13.2	1833	35	Class C 4% PF 20 + 4 pps PF 45 +125 PPS PF 29	20bbls gelled water 20bbls chemical wash 50sx of 11# scavenger cement. Shoe w/ PKR/ Stage Tool
PRODUCTION	Tail		0	10585	410	1.48	13	1833	35	PVL + 1.3 (BWOW) PF 44+5% PF 174+.5% PF 606+.1% PF153+.4 pps PF44	20bbls gelled water 20bbls chemical wash 50sx of 11# scavenger cement. Shoe w/ PKR/ Stage Tool

Operator Name: MACK ENERGY CORPORATION

Well Name: LABRADOR SWD **Well Number:** 1

Section 5 - Circulating Medium

Mud System Type: Open

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: BOPE Brine Water

Describe the mud monitoring system utilized: Parson PVT with PVT Volume Recorder

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
0	472	SPUD MUD	8.5	8.8	74.8	0.1	11		12000	15	13 3/8 casing in place
472	2888	LSND/GEL	8.8	9.2	74.8	0.1	11		12000	15	9 5/8 casing In Place
2888	10985	LSND/GEL	9.2	9.6	74.8	0.1	11		12000	15	The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole press is 5064psig (0.052*10,585'TD*9.2).

Section 6 - Test, Logging, Coring

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

None

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

CNL/FDC,COMPENSATED DENSILOG,GAMMA RAY LOG,DUAL LATERAL LOG/MICRO-SPHERICALLY FOCUSED,

Coring operation description for the well:

None

Operator Name: MACK ENERGY CORPORATION

Well Name: LABRADOR SWD **Well Number:** 1

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5064 **Anticipated Surface Pressure:** 2647

Anticipated Bottom Hole Temperature(F): 95

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Escape_Route_20220407080457.pdf
h2s_contingency_plan_20220407080627.pdf
Natural_Gas_Management_Plan_20220427144444.pdf
H2S_Plan_20220427145441.pdf
Cmt_20220720112819.pdf
Drilling_Plan_20220720123239.pdf
Mud_program_20220725082859.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Other Variance attachment:

Attached to Form 3160-3
Mack Energy Corporation
Labrador SWD #1 NMNM-138832
SHL : 1978 FSL & 1980 FEL, NWSE, Sec. 23 T15S R29E
Chaves County, NM

DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Yates	1187’
San Andres	2605’
Glorieta	4060’
Tubb	5382’
Abo	6155’
Wolfcamp	7495’
Atoka	9689’
U. Miss	10,200’
L. Miss	10,435’
Devonian	10,985’

3. Estimated Depths of Anticipated Fresh Water, Oil and Gas:

Water Sand	150’	Fresh Water
Yates	1187’	Oil/Gas
San Andres	2605’	Oil/Gas
Glorieta	4060’	Oil/Gas
Tubb	5382’	Oil/Gas
Abo	6155’	Oil/Gas
Wolfcamp	7495’	Oil/Gas
Atoka	9689’	Oil/Gas
U. Miss	10,200’	Oil/Gas
L. Miss	10,435’	Oil/Gas
Devonian	10,985’	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8” casing to 472’ and circulating cement back to surface will protect the surface fresh water sand. Salt section and shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 ½” production casing, sufficient cement will be pumped to circulate back to surface.

4. Casing Program:

Hole Size Interval OD Casing Wt, Grade, Jt, cond, collapse/burst/tension

Carthel BGT Fed Com 1J 30-005-00456
Existing 9/9/61- 17 1/2”0-472’ 13 3/8” 48#, H-40, ST&C, New, 3.140618/3.39337/3.46

Existing 9/16/61- 12 1/4” 0-2888’ 9 5/8”36#, J-55,ST&C, New, 1.401134/6.284924/7.04

8 ¾” 0-10,585’ 5 ½” 20#, L-80, LT&C, New, 1.662166/2.703057/3.063333

5. Cement Program:

Carthel BGT Fed Com 1J 30-005-00456

Existing 9/9/1961 13 3/8" Surface Casing: 400sx, circ to surface

Existing 9/16/61 9 5/8" Intermediate Casing: 1000sx, TOC @ 354'

5 ½" Production Casing: Stage 1-Lead 550sx Class C 4% PF 20+4 pps PF45 +125pps PF29, yld 1.84, wt 13.2 ppg, 9.914gals/sx, excess 35%, Slurry Top-Surface Tail 410sx, PVL + 1.3 (BWOW) PF44 + 5% PF174 + .5% PF606 + .1% PF153 +.4 PF44, yield 1.48, wt 13.0, 7.577gals/sx, 35% excess, Slurry Top-9,000'. Stage 2- Lead 1020sx Class "C" 4% PF20+4 pps PF45+125pps PF29, yld 1.84, wt13.2 ppg, excess 35% Slurry Top- Surface. Tail 160sx PVL+1.3 (BWOW) PF44+5%PF174+.5%PF606+.1%PF153 +.4ppsPF44, yld 1.48 wt 13ppg, excess 35%, Slurry Top 8,000. DV Tool Set @ 8,000'

6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #10 will consist of a double ram-type (5000 psi WP) minimum preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. The 11" BOP will be nippled up on the 13 3/8" surface casing and tested by a 3rd party to 5000 psi used continuously until TD is reached. All BOP's and accessory equipment will be tested to 5000 psi before drilling out of intermediate casing. 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 (Exhibit #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 5000 psi WP rating

7. Types and Characteristics of the Proposed Mud System:

The well will be drilled to TD with a combination of fresh and cut brine mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-472'	Fresh Water	8.5-8.8	28	N.C.
472'-2,888'	Cut Brine	8.8-9.2	29	N.C.
2,888-TD	Cut Brine	9.2-9.6	29	N.C.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

8. Auxiliary Well Control and Monitoring Equipment:

A. Kelly cock will be kept in the drill string at all times.
B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

9. Logging, Testing and Coring Program:

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log from T.D. to 8 5/8 casing shoe.
B. Drill Stem test is not anticipated.
C. No conventional coring is anticipated.

D. Further testing procedures will be determined at TD.

10. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 5064 psig (0.052*10585'TD*9.2). Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H2S may be present while drilling of the well; a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations:

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is September 1, 2022. Once commenced, the drilling operation should be finished in approximately 20 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

Attachment to Exhibit #10
NOTES REGARDING THE BLOWOUT PREVENTERS
Labrador SWD #1
Chaves County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 5000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 5000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.

Attached to Form 3160-3
Mack Energy Corporation
Labrador SWD #1 NMNM-138832
SHL : 1978 FSL & 1980 FEL, NWSE, Sec. 23 T15S R29E
Chaves County, NM

11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

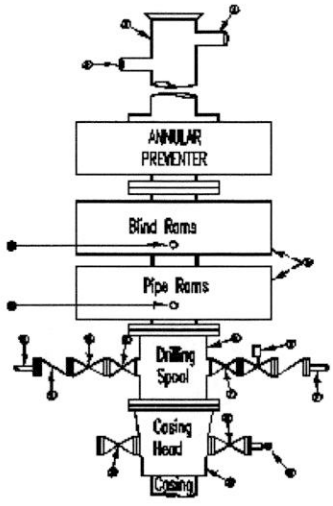
Mack Energy Corporation

Minimum Blowout Preventer Requirements

5000 psi Working Pressure
13 5/8 inch- 5 MWP
11 Inch - 5 MWP
EXHIBIT #10

Stack Requirements

NO.	Items	Min. I.D.	Min. Nominal
1	Flowline		2"
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min. kill line and 3" min choke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		
7	Valve Gate Plug	3 1/8	
8	Gate valve-power operated	3 1/8	
9	Line to choke manifold		3"
10	Valve Gate Plug	2 1/16	
11	Check valve	2 1/16	
12	Casing head		
13	Valve Gate Plug	1 13/16	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"



OPTIONAL

16	Flanged Valve	1 13/16	

CONTRACTOR'S OPTION TO FURNISH:

CONTRACTOR'S OPTION TO FURNISH:

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

MEC TO FURNISH:

1. Bradenhead or casing head and side valves.
2. Wear bushing. If required.

10.

ME

GENERAL NOTES:

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans.

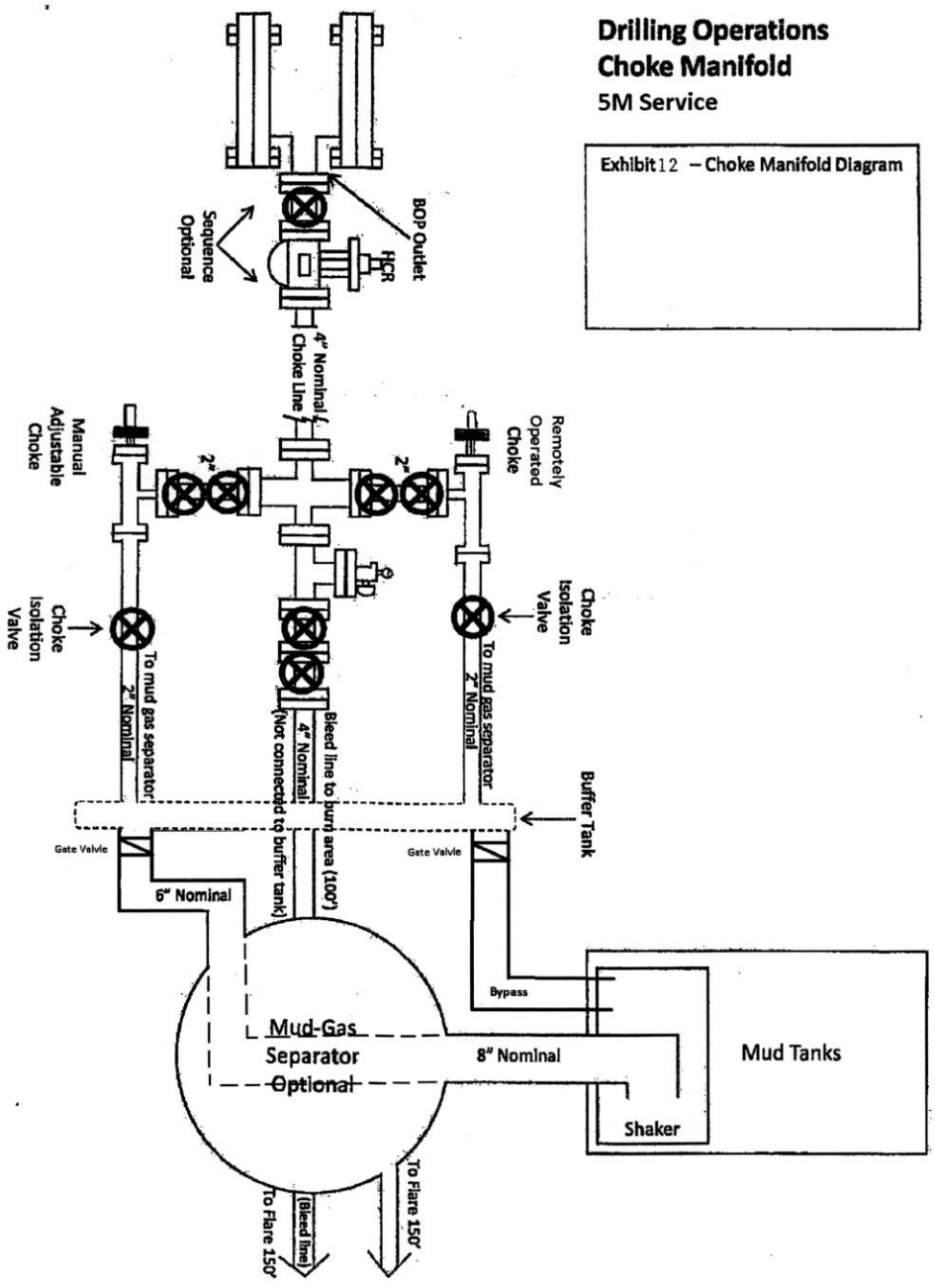
Replaceable parts for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.

5. All valves to be equipped with hand-wheels or handles ready for immediate use.
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Does not use kill line for routine fill up operations.

Mack Energy Corporation

MANIFOLD SCHEMATIC

Exhibit #12



Mack Energy Corporation

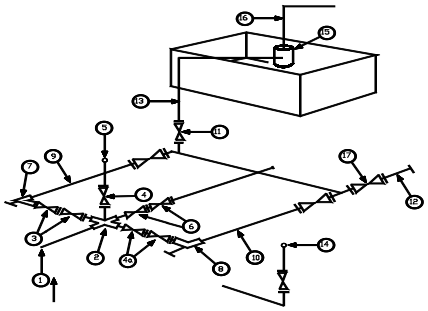
Exhibit #11

MIMIMUM CHOKE MANIFOLD

3,000, 5,000, and 10,000 PSI Working Pressure

5M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

*** Location of separator optional**

Below Substructure

Mimimum requirements

		3,000 MWP			5,000 MWP			10,000 MWP		
No.		**I.D.**	**Nominal**	**Rating**	**I.D.**	**Nominal**	**Rating**	**I.D.**	**Nominal**	**Rating**
1	Line from drilling Spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000			
2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
4	Valve Gate Plug	1 13/16		3,000	1 13/16		5,000	1 13/16		10,000
4a	Valves (1)	2 1/16		3,000	2 1/16		5,000	2 1/16		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure quage			3,000			5,000			10,000
15	Gas Separator		2' x5'			2' x5'			2' x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

(1) Only one required in Class 3M
(2) Gate valves only shall be used for Class 10 M
(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

1. All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
2. All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
3. All lines shall be securely anchored.
4. Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
5. alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
6. Line from drilling spool to choke manifold should bee as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees

DRILLING FLUIDS PROGRAM

Labrador SWD #1 (ReEntry)

Version 1.0

T-15-S, R-29-E
Section 23
Chaves County, New Mexico

Prepared for:
Mr. Jim Krogman

Written by:
Michael S. Davis
Sr. Technical Manager

Labrador SWD #1
T-15-S, R-29-E
Section 23
Chaves County, New Mexico

July 25, 2022

Mr. Jim Krogman
Mack Energy Corporation
11344 Lovington Highway
Artesia, New Mexico 88210

Dear Mr. Krogman,

Thank you for allowing Newpark Drilling Fluids, LLC to present the enclosed drilling fluids program for the Labrador SWD #1 Program in Chaves County, New Mexico. This program is derived from our present experience in the area.

All material and delivery charges will be from our stock point in Monahans, Tx and engineering services provided by **Newpark Drilling Fluids, LLC**. The estimated total mud cost is $25,500 to $35,500; this estimated cost is subject to change depending on losses & drilling contingencies.

Newpark is dedicated to providing you with quality service and products. We appreciate your business and strive to give you value in our engineering performance, technical support, and distribution services. If you have any questions please call at any time.

Sincerely,

Michael S. Davis
Sr. Technical Manager
Newpark Drilling Fluids, LLC
Midland Office: (432) 684-0911
Mobile: (432) 557-8254

Note: Some of the chemicals and mud additives specified in this program may have toxic properties. All personnel should be familiar with the inherent dangers and appropriate safeguards to prevent accidental injury. Use of the chemicals may be governed by certain laws and regulations and should only be used in accordance with such. Please refer to the MSDS sheets for the recommended safety precautions and required minimum personal protective equipment.

Index:

NEWPARK DRILLING FLUIDS

Labrador SWD #1
T-15-S, R-29-E
Section 23
Chaves County, New Mexico

MACK Energy Corporation

Hole Size	Depth MD/TVD	Casing Program Size (in.)	Lithology	Mud Weight (ppg)	API Fluid Loss (mls)	MUD SYSTEM / COMMENTS
17 1/2" Surface	361'	13 3/8"	Surface Sands	8.5 - 8.8	NC	**0' - 361'** **Fresh Water/NewGel WBM** Native/premix WBM using **NewGel** and **Soda Ash** for hole cleaning. Utilize **Paper** sweeps for hole cleaning and losses. Use **EvoCon II** for bit-balling.
12 1/4" Production	3,985'	8 5/8"	**Yates @ 575'**	8.8 - 9.2	NC	**361' to 3,985'** **Cut Brine Water** After cleaning the pit system, we will utilize Cut Brine as the primary component of the system. We will maintain wt. through solids control and dilution. Use **Caustic Soda** for alkalinity control. Mix **New 55** at flow-line to promote the settling of solids. Clean the hole with high viscosity sweep at TD with pre-hydrated **NewGel** (55-60 sec/1000cc). **SEEPAGE**: Sweep the hole with 20-30 bbls of **Drilling Paper** at 8-10 ppb. Monitor losses and efficiency of sweeps.
7 7/8" Production	10,585'		**Yates @ 2,420'** **Grayburg @ 3,665'** **Glorieta @ 5,525'** **Tubb @ 6,795'** **Abo Shale @ 7,570'** **Wolfcamp @ 8,960'**	9.0 –9.4	10-15	**3,985' - 7,000'** **Cut Brine Water** After cleaning the pit system, we will utilize Cut Brine as the primary component of the system. We will maintain wt. through solids control and dilution. Use **Caustic Soda** for alkalinity control. Mix **New 55** at flow-line to promote the settling of solids. Clean the hole with high viscosity sweep at TD with pre-hydrated **NewGel** (55-60 sec/1000cc). **SEEPAGE**: Sweep the hole with 20-30 bbls of **Drilling Paper** at 8-10 ppb. Monitor losses and efficiency of sweeps. **ABO Mud Up @ 7,000'** **NewZan D/White Starch/Oil** If Abo mud is deemed necessary then begin mud up at **7,000'** by increasing the viscosity to 36-38 sec/1000cc with ***NewZan D***. Lower API Filtrate to 10-12cc/30min with ***White Starch***. Add lease oil at 6 -8% by volume to provide lubricity. Adjust and maintain pH with ***Caustic Soda***. Utilize "Abo" drilling practices while the BHA is adjacent to the Abo. Observe the annular velocity to maintain a annular hydraulic profile in laminar flow. Make "Abo Connections" in this interval while your drill collars are in the Abo formation. Due to accumulating solids we recommend circulating reserve pit. If no Abo mud has been necessary begin mud up at **8,800'.**

Existing

Existing

NEWPARK DRILLING FLUIDS

Labrador SWD #1
T-15-S, R-29-E
Section 23
Chaves County, New Mexico

MACK Energy Corporation

Drilling Fluids Summary

TOTAL DEPTH : **10,475' (MD) 10,475' (TVD) Wolfcamp**

CASING REQUIREMENTS : **Interval 1: 17 1/2" hole to 361', set 13 3/8" casing—Existing**

Interval 2: 12 1/4" hole to 3,985, set 9 5/8" casing—Existing

Interval 3: 7 7/8" hole to 10,855', set 5 1/2" casing

PROGRAM HIGHLIGHTS: MUD PROPERTIES SUMMARY:

Depth (feet)	Weight (ppg)	Viscosity (sec/qt)	Fluid Loss API mls	PV (cps)	YP (lb/100ft^2)	6RPM Reading	PH	Mud Type
Interval 1								**Non Dispersed WBM**
0'- 361' *Set 13 3/8" Casing*	8.5 - 8.8	45 - 60	NC	10 - 18	16 - 24	NR	9.0	**NewGel/Soda Ash**
Interval 2								**Cut Brine Water/Premix Sweeps**
361' - 3,985' *Set 8 5/8" Casing*	8.8 –9.2	28 –29	NC	0 –1	0 –1	NR	9.5 - 10.0	**Cut Brine**
Interval 3								**Cut Brine Water to ABO Mud**
3,985' - 7,000'	9.0 –9.4	28 –29	NC	0 –1	0 –1	NR	9.5 - 10.0	**Cut Brine**
7,000' - 10,855 *Set 5 1/2" Casing*	9.0 –9.4	36 –38	8 –10cc	6 –10	8 –12	NR	9.5 - 10.0	**NewZan D/White Starch Live Oil**

Existing

Interval 1: 7 7/8" Hole
Interval: 3,985' - 10,585'

Drilling Fluid Recommendations: Cut Brine - Production

Drill with cut brine to 7,000'. Mix ***Caustic Soda*** for pH. Mix ***New 55*** at flow-line to promote the settling of solids. Sweep the hole with 15 barrels of fresh water and ***NewGel*** for a 50-60 sec/1000cc viscosity every connection to aid in cuttings removal. If losses occur batch treat with 12-15 ppb ***Fiber Seal*** and ***Cedar Fiber*** in a 50 bbl premix with 36-40 sec/1000cc viscosity.

Drilling Fluid Recommendations: NewZan D/Starch – Production

If Abo mud is deemed necessary then begin mud up at **7,000',** If no Abo mud has been necessary begin mud up at **9,000'.**

Jet pit bottoms, possum belly and below the shakers after casing run. Drill out with existing fluid and begin mud up with ***NewZan D/White Starch*** adhere to the following mixing procedure:

- Mix ***NewZan D*** (Viscosifier). at 1.0 lb/bbl concentration to achieve 36-38 sec/1000cc viscosity. This product should be added slowly (20min/sack) through the hopper with maximum shear to ensure proper hydration.

- Mix ***White Starch*** (Filtrate Control) at concentrations of 2.0 lb/bbl to achieve 8-10cc API filtrate.

- Add and maintain 6.0 -8.0% ***Live Oil*** to provide lubricity, inhibit formation and soften filtercake

- For foam prevention add 0.25 lb/bbl of ***NoFoam A Plus*** to entire system or batch volumes. Apply directly on surface of drilling fluid while circulating or agitating.

- Treat system with ***STC biocide*** to prevent the bacterial degradation of organic materials. Initial treatments of 5gal/100bbl of drilling fluid are recommended.

- Maintain 9.0 – 9.5 pH with ***Caustic Soda***.

Drilling Fluid Properties:

Depth	Weight	Viscosity	Fluid Loss	PV	YP	6 RPM	PH	LG Solids
(feet)	(ppg)	(sec/qt)	API mls	(cps)	($lb/100ft^2$)	Reading		(%)
3,985' - 7,000'	**9.0 –9.4**	**28 –29**	**NC**	**0 –1**	**0 –1**	**NR**	**9.0 –9.5**	**<6.0**
7,000' - 10,745'	**9.0 –9.4**	**36 –38**	**8 –10**	**8 –16**	**10 –14**	**NR**	**9.0 –9.5**	**<6.0**
Set 5 1/2" Casing								

Recommended Products:

	Description	Function	Concentration
NewZan D	**Xanthan Gum**	**Viscosifier**	**0.5 –1.0 ppb**
White Starch	**Modified Corn Starch**	**Filtrate Control**	**0.5-1.0 ppb**
Caustic Soda	**Sodium Hydroxide**	**Ph Control**	**As needed**

Hydraulics & Hole Cleaning

This is an overview of wellbore hydraulics and hole cleaning techniques that are a integral part of the Newpark Drilling Fluids operating procedures. More detailed discussions and calculations can be found elsewhere as in API Recommended Practice 13D – Recommended Practice on the Rheology and Hydraulics of Oil-Well Drilling Fluids. Herein is a discussion of basic objectives and empirically derived techniques for maximizing penetration rates and hole cleaning.

Wellbore hydraulics has two objectives – cuttings generation and efficient well bore cuttings evacuation. There are ten major factors affecting cuttings generation and annular cleaning – available pressure, available flow rate (gpm), hole size, interval length, hole angle, formation matrix strength, penetration rate, fluid rheology, fluid density, and pipe movement.

Having sufficient energy at the bit generates cuttings. The rules of thumb are fifty to sixty-five percent hydraulic energy expended at the bit and greater than or equal to four hydraulic horsepower per square inch of bit face. Efficient cuttings removal from the well bore depends on flow rate and rheology.

The rig pumps should be capable of being optimized for hole cleaning and or penetration rate, i.e., supplying enough pressure and flow to overcome slip velocity and supply adequate annular velocity in deviated well bores to minimize cuttings bed development. Well-bore cleaning difficulty is directly proportionate to the diameter, inclination and interval length. The greater the annular diameter, angle, and length, the more fluid flow and time required to clean cuttings from the well bore.

Deviation builds cuttings beds. The greater the deviation the easier cuttings beds develop. The larger the annular diameter, the greater the potential volume of material available for cuttings bed development. Sufficiently high flow rates move more cuttings, move them more quickly, minimizing retention time in the well bore and eroding beds as they form. Annular velocities ranging from 120 ft./min at 0-35° to 240 ft./min at >55° have been shown through field testing to be the required minimums. Laboratory tests show cuttings beds cannot form at annular velocities greater than 300 ft./min. If the situation does not allow adequate pump rates for an adequate cuttings transport regime, enhance well bore cleaning by modifying the drilling fluid's rheology and/or by pumping sweeps. A viscous fluid cleans vertical intervals better than a thin fluid, and a thin fluid cleans tangent and horizontal intervals better than a thick fluid. Use shear thinning fluids or a thin fluid supplemented with viscous sweeps as angle of deviation increases.

The industry characterizes sweeps as low viscosity sweeps, high viscosity sweeps or weighted sweeps. Low viscosity sweeps are intended to create turbulence and should be used if the drilling fluid is in laminar flow. Experience and laboratory data recommend high viscosity sweeps in large vertical intervals with low annular velocities, where there is fill on connections and/or trips and when unusually small, rounded cuttings appear at the shakers. Weighted sweeps are the ultimate viscous sweep. If formation integrity allows, use weighted sweeps with their greater inherent buoyancy to float cuttings from the annulus. Sweep volume should occupy 500 feet of annular space. Use sweeps in conjunction with pipe reciprocation, rotation and short trips.

Short trip at least every 500 feet. Rotate and reciprocate the drill string. Pipe movement scours cuttings from the low side of the hole and throws the cuttings into the active flow path. Without pipe movement a cuttings bed can accumulate on the low side of the hole and around the drill pipe and avoid interaction with the drilling fluid or sweeps and continue to grow.

Drill Solids Management

Drill solids management is the most important function in maintaining the proper fluid characteristics and controlling overall fluid cost. The cost of fluids treatment is directly related to the proper application of solids control equipment and drill solids management. As the fluid system drill solids content increases, fluid related non-productive time and cost will be seen. Some issues directly contributable to high low-gravity solids concentration are lost circulation due to excessive ECD, differential sticking due to poor filter cake quality, reduced penetration rates. The economic effect will be seen in excessive dilution and treatment costs.

The Effects of Drill Solids Build-up

Listed below are some of the effects drill solids have on drilling fluid and the well bore:

- Reduced bit life
- Reduced rate of penetration
- Bit and BHA balling
- Increased PV and progressive gel strengths
- Excessive swab/surge pressure
- Excessive viscosities after bit trips
- Increased equivalent circulating densities
- Increased "Packing Fraction"- the state when a fluid begins to exhibit semi-plastic tendencies due to solids build-up in the annulus
- Poor filter cake qualities and restriction of directional maneuvers
- Stuck pipe
- Lost circulation
- Treatment cost and product performance

Methods of Drill Solids Management

There are three basic mechanisms for controlling the build-up of fluid system drill solids:

1. **Screening:** Allowing fluid to flow over a screening mechanism, discarding those solids not passing through.
2. **Settling/Centrifuging:** Solids separated from fluid using a settling pit or applying centrifugal force via hydro-cyclones and centrifuges.
3. **Dilution:** Adding newly mixed fluid, or adding the systems base fluid (water or oil).

Settling/Centrifuging

⇒ **Settling**

This takes advantage of a series of tanks downstream of the shale shakers, by where the fluid flows into and is permitted to remain idle, letting the larger solid "settle" to the bottom of the tank. As flow is diverted into the tank at one end, the fluid at the other end of the tank is "skimmed" or "overflowed" into the active circulating tanks letting the solids fall in the middle. Depending on the characteristics of the fluid (yield point, gel strengths, fluid weight, etc.), this may be the least effective way of reducing solids content, although it may be very useful with clear water.

⇒ **Centrifuging**

The next means of solids removal is through centrifuging. This covers a wide range of hydro cyclones and centrifuge units. They are basically all the same devices, but with varying cut points. The units are designed to create a "centrifugal" force and settling the solids outward by pumping fluid into the unit with pressure or by forcing the solids outward by a high-speed conveyor screw.

NEWPARK DRILLING FLUIDS

Labrador SWD #1
T-15-S, R-29-E
Section 23
Chaves County, New Mexico

MACK Energy Corporation

Drill Solids Management

⇒ **Dilution**

This is the last resort in drill solids management. It is the method by which the solids content is controlled by whole fluid, base fluid (water, diesel or synthetic oil) or chemical additions. The solids are not removed, but are reduced in content by increasing the active system volume. This can also be preformed by monitoring the amount of solids entering the system, which have not been removed by mechanical means, and adding the required amount of dilution to maintain a certain percentage of drilled solids in the active system. This dilution can be estimated by the incorporated solids chart below, which is based on the estimated solids control efficiencies and hole size.
The estimated dilution formulation is:

$$\frac{\text{BBL/Ft Incorporated}}{\text{Desired LGS @ Suction}} = \text{Dilution Rate/Ft.}$$

Example: 17 1/2" Hole
70% removal efficiency = .0437
5 % LGS Desired

$$\frac{.0437}{.05} = 0.874 \text{ bbls/ft}$$

DILUTION FACTORS
Solids Removal Efficiency

	50%	55%	60%	65%	70%	75%	80%
Hole Size	Dilution Rates (bbls/ft)						
26"	.3285	.2956	.2628	.2299	.1971	.1642	.1314
22"	.2352	.2117	.1881	.1646	.1411	.1176	.0941
17-1/2"	.1488	.1339	.1190	.1042	.0893	.0744	.0595
13-1/2"	.0885	.0797	.0708	.0620	.0531	.0443	.0354
12-1/4"	.0729	.0656	.0583	.0510	.0437	.0365	.0292
11"	.0588	.0529	.0470	.0411	.0352	.0294	.0235
9-7/8"	.0474	.0426	.0379	.0332	.0284	.0237	.0190
8-1/2"	.0351	.0316	.0281	.0246	.0211	.0176	.0140
7-7/8"	.0301	.0271	.0241	.0211	.0181	.0151	.0120
6-3/4"	.0221	.0199	.0177	.0154	.0133	.0111	.0089
6-1/8"	.0182	.0164	.0145	.0128	.0109	.0091	.0073
5-1/2"	.0147	.0132	.0117	.0103	.0088	.0073	.0059

Lost Circulation

PREVENTION AND PLANNING

If offset data indicates the potential for lost circulation, improved fracture gradients can be addressed in casing design to resolve the problem; however, contingency measures should be planned for loss prevention and mitigation should the need arise. These criteria are:

⇒ Optimize mud weight to pore pressure relationships with special attention to fracture gradients;

⇒ Preplan rig design for effective flow rate to wellbore diameter operating windows;

⇒ Model annular flow dynamics and bit hydraulics using proposed rheological properties to insure optimum hole cleaning to ECD relationships are realized;

⇒ Short trip at least every 200 meters of hole drilled to reduce likelihood of wellbore constrictions and pack-off; and

⇒ Break circulation every 500 meters in the open hole during bit trips to avoid surge pressures going in the hole and swab pressures coming out.

CAUSES OF LOST CIRCULATION

⇒ **Unconsolidated or High Permeability Formations**
The most common unconsolidated formations are gravel beds and high permeability sands. Typically, sand permeability must exceed 1 Darcy before losing whole mud to the formation. Historically, an increase in bentonite concentration in conjunction with cellulosic fiber, nut shells, mica, and other graded particulates will seal these formations and stop losses. If traditional methods are ineffective, consideration should be given to use of a dehydrating, hard-set plug such as diatomaceous earth (Diaseal M). In coarse gravel beds, an engineered, cross-linked polymer squeeze such as DynaPlug or cement squeezes are often required to stem the losses.

⇒ **Naturally Fractured Formations**
While unconsolidated formations are often found at shallow depths, naturally fractured formations usually are found deeper. Natural fractures can exist with permeability or communicating flow and often no fluid losses occur; however, if the hydrostatic column exceeds the fracture gradient of the rock matrix, propagation of these fractures can result in the creation of a flow course for whole mud loss. Traditional intervention methods of spotting lost circulation material pills or incorporation of these products in the system will seal a naturally fractured theft zone.

⇒ **Mechanically Induced Fractures**
Excessive swab and surge pressures or applied equivalent circulating densities often result in induced mechanical fracturing and whole mud losses. Mechanically induced fluid losses are often much more severe than those seen in unconsolidated or naturally fractured formations. High equivalent circulating densities can be caused by annular solids loading of drill cuttings, high low gravity solids content, and/or excessive rheological properties such as yield point and gel strengths. Induced losses are most often attributed to top hole drilling where high rates of penetration in a large diameter wellbore with insufficient pump rates are typical; however, mechanically induced losses can be problematic at greater depths as well. These induced losses are often caused by improper hole cleaning and “packing off” around the drill string. Prevention of induced losses is dependent on optimized annular flow dynamics, hydraulics, and rheological maintenance. It is also prudent to plan and execute an engineered sweep program to augment hole cleaning efficiency.

⇒ **Cavernous Losses**
Cavernous losses are typically associated with carbonaceous formations which have been eroded by subterraneous water flow. Unlike most other loss scenarios, losses to cavernous formations can be extremely difficult to remedy. In some cases, solutions such as cross-linked polymer squeezes (DynaPlug) or high fluid loss, dehydration plug such as New X-Prima are effective, but cement is usually required.

Lost Circulation

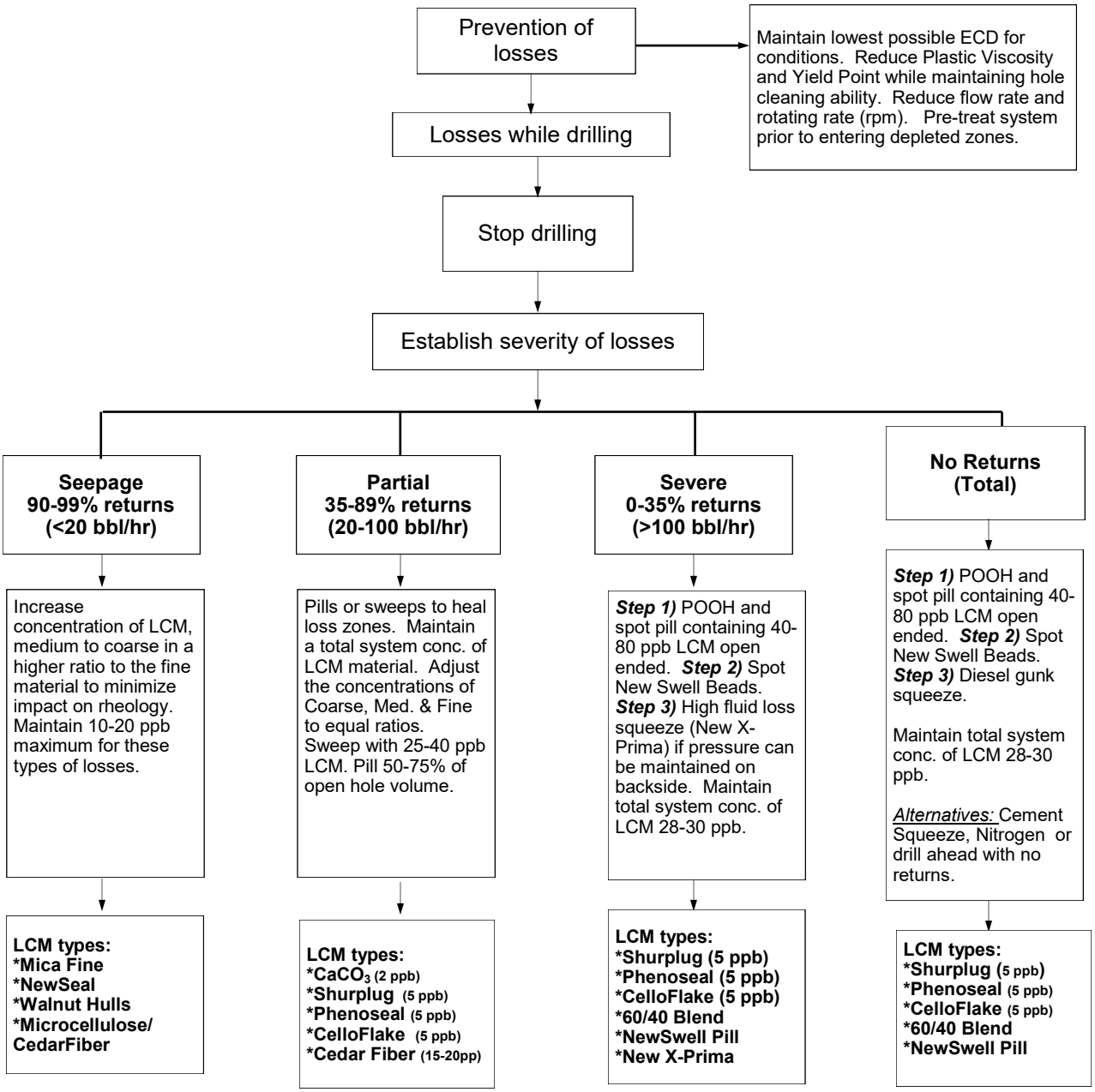
WHEN LOST CIRCULATION OCCURS

⇒ If lost returns are experienced, stop the mud pumps, pick the bit up off bottom and determine the loss rate.

⇒ Fill the trip tank, pill tank or slugging pit with water (insure volume of the tank can be easily monitored while filling the hole).

⇒ Monitor the fluid level in the annulus and the rate of fall. Fill the hole every 3-5 minutes to determine the rate of loss.

⇒ After determination of the rate of loss to the formation, follow the flow chart below



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PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Mack Energy Corporation**
LEASE NO.:	**NMNM-138832**
WELL NAME & NO.:	**Labrador SWD 1**
SURFACE HOLE FOOTAGE:	**1978' FSL & 1980' FEL**
LOCATION:	**Section 23, T. 15 S., R 29 E., NMPM**
COUNTY:	**Chaves County, New Mexico**

The Gamma Ray and Neutron well logs must be run from total depth to surface and e-mailed to Chris Bolen at aknapowski@blm.gov or hard copy mailed to 2909 West Second Street Roswell, NM 88201 to his attention.

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Chaves and Roosevelt Counties**
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After hours cll (575) 627-0205.

A. Hydrogen Sulfide

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

Approval Date: 12/13/2022

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst
Possibility of water flows in the Rustler, Queen, Rustler, Salado and Artesia Group.
Possibility of lost circulation in the Rustler, Artesia Group, and San Andres.

Existing 13-3/8'' 48#, H-40, ST&C casing is set at 472'.

Existing 9-5/8'' 36#, J-55, ST&C casing is set at 2,888'.

 Approval Date: 12/13/2022

1. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

2. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

   b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

   c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

   d. The results of the test shall be reported to the appropriate BLM office.

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e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WELL COMPLETION

A NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:

1. **Properly evaluate the injection zone utilizing open hole logs, swab testing and/or any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.**
2. **Restrict the injection fluid to the approved formation.**

If off-lease water will be disposed in this well, the operator shall provide proof of right-of-way approval .

F. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 08312022

Approval Date: 12/13/2022

Mack Energy Corporation

Legal Description:
Mack Energy-San Andres MDP Area
Chaves Co. New Mexico
Various Sections
T-15-S, R-28-E and R-29-E

H2S

"Contingency Plan"

Table of Contents

H2S CONTINGENCY PLAN SECTION

Scope:

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, or following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H_2S).

Objective:

Prevent any and all accidents, and prevent the uncontrolled release of H2S into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

Discussion of Plan:

Suspected Problem Zones:

Implementation: This plan, with all details, is to be fully implemented 1000' before drilling into the first sour zone.

Emergency Response Procedure: This section outlines the conditions and denotes steps to be taken in the event of an emergency.

Emergency Equipment and Procedure: This section outlines the safety and emergency equipment that will be required for the drilling of this well.

Training Provisions: This section outlines the training provisions that must be adhered to 1000' before drilling into the first sour zone.

Emergency call list: Included are the telephone numbers of all persons that would need to be contacted, should an H2S emergency occur.

Briefing: This section deals with the briefing of all persons involved with the drilling of this well.

Public Safety: Public Safety Personnel will be made aware of the drilling of this well.

Check Lists: Status check lists and procedural check lists have been included to ensure adherence to the plan.

Genera/Information: A general information section has been included to supply support information.

EMERGENCY PROCEDURES SECTION

I. In the event of any evidence of H2S level above l0ppm, take the following steps immediately:

a. Secure breathing apparatus.

b. Order non-essential personnel out of the danger zone.

c. Take steps to determine if the H2S level can be corrected or suppressed, and if so, proceed with normal operations.

II. If uncontrollable conditions occur, proceed with the following:

a. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify public safety personnel and the New Mexico Oil Conservation Division or Bureau of Land Management, whichever is appropriate, of the situation.

b. Remove all personnel to the Safe Briefing Area.

c. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.

d. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.

III. Responsibility:

a. The Company Approved Supervisor shall be responsible for the total implementation of the plan.

b. The Company Approved Supervisor shall be in complete command during any emergency.

c. The Company Approved Supervisor shall designate a back-up Supervisor in the event that he/she is not available.

EMERGENCY PROCEDURE IMPLEMENTATION

I. Drilling or Tripping

a. *All Personnel*

- **i.** When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
- **ii.** Check status of other personnel (buddy system).
- **iii.** Secure breathing apparatus.
- **iv.** Wait for orders from supervisor.

b. *Drilling Foreman*

- **i.** Report to the upwind Safe Briefing Area.
- **ii.** Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
- **iii.** Determine the concentration of H_2S.
- **iv.** Assess the situation and take appropriate control measures.

c. *Tool Pusher*

- **i.** Report to the upwind Safe Briefing Area.
- **ii.** Don Breathing Apparatus and return to the point of release with the Drilling Foreman or the Driller (buddy system).
- **iii.** Determine the concentration of H_2S.
- **iv.** Assess the situation and take appropriate control measures.

d. *Driller*

- **i.** Check the status of other personnel (in a rescue attempt, always use the buddy system).
- **ii.** Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
- **iii.** Assume the responsibility of the Drilling Foreman and the Tool Pusher until they arrive, in the event *of* their absence.

e. *Derrick Man and Floor Hands*

i. Remain in the upwind Safe Briefing Area until otherwise instructed by a supervisor.

f. *Mud Engineer*

i. Report to the upwind Safe Briefing Area.

ii. When instructed, begin check of mud for pH level and H_2S level.

g. *Safety Personnel*

i. Don Breathing Apparatus.

ii. Check status of personnel.

iii. Wait for instructions from Drilling Foreman or Tool Pusher.

II. Taking a Kick

a. All Personnel report to the upwind Safe Briefing Area.

b. Follow standard BOP procedures.

III. Open Hole Logging

a. All unnecessary personnel should leave the rig floor.

b. Drilling Foreman and Safety Personnel should monitor the conditions and make necessary safety equipment recommendations.

IV. Running Casing or Plugging

a. Follow "Drilling or Tripping" procedures.

b. Assure that all personnel have access to protective equipment.

SIMULATED BLOWOUT CONTROL DRILLS

All drills will be initiated by activating alarm devices (air horn). One long blast, on the air horn, for ACTUAL and SIMULATED Blowout Control Drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill #1 Bottom Drilling

Drill #2 Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire pit drill assignment. The times must be recorded on the IADC Driller's Log as "Blowout Control Drill".

Drill No.:
Reaction Time to Shut-In: minutes, seconds.
Total Time to Complete Assignment: minutes, seconds.

I. Drill Overviews

a. Drill No. 1-Bottom Drilling

i. Sound the alarm immediately.

ii. Stop the rotary and hoist Kelly joint above the rotary table.

iii. Stop the circulatory pump.

iv. Close the drill pipe rams.

v. Record casing and drill pipe shut-in pressures and pit volume increases.

b. Drill No. 2-Tripping Drill Pipe

i. Sound the alarm immediately.

ii. Position the upper tool joint just above the rotary table and set the slips.

iii. Install a full opening valve or inside blowout preventer tool in order to close the drill pipe.

iv. Close the drill pipe rams.

v. Record the shut-in annular pressure.

II. Crew Assignments

a. Drill No. 1-Bottom Drilling

i. Driller

1. Stop the rotary and hoist Kelly joint above the rotary table.
2. Stop the circulatory pump.
3. Check Flow.
4. If flowing, sound the alarm immediately
5. Record the shit-in drill pipe pressure
6. Determine the mud weight increase needed or other courses of action.

ii. Derrick man

1. Open choke line valve at BOP.
2. Signal Floor Man #1 at accumulator that choke line is open.
3. Close choke and upstream valve after pipe tam have been closed.
4. Read the shut-in annular pressure and report readings to Driller.

iii. Floor Man #1

1. Close the pipe rams after receiving the signal from the Derrickman.
2. Report to Driller for further instructions.

iv. Floor Man #2

1. Notify the Tool Pusher and Operator representative of the H_2S alarms.
2. Check for open fires and, if safe to do so, extinguish them.
3. Stop all welding operations.
4. Turn-off all non-explosions proof lights and instruments.
5. Report to Driller for further instructions.

v. Tool Pusher

1. Report to the rig floor.
2. Have a meeting with all crews.

3. Compile and summarize all information.

4. Calculate the proper kill weight.

5. Ensure that proper well procedures are put into action.

vi. Operator Representative

1. Notify the Drilling Superintendent.

2. Determine if an emergency exists and if so, activate the contingency plan.

b. Drill No. 2 - Tripping Pipe

i. Driller

1. Sound the alarm immediately when mud volume increase has been detected.

2. Position the upper tool joint just above the rotary table and set slips.

3. Install a full opening valve or inside blowout preventer tool to close the drill pipe.

4. Check flow.

5. Record all data reported by the crew.

6. Determine the course of action.

ii. Derrick man

1. Come down out of derrick.

2. Notify Tool Pusher and Operator Representative.

3. Check for open fires and, if safe to do so, extinguish them.

4. Stop all welding operations.

5. Report to Driller for further instructions.

iii. Floor Man #1

1. Pick up full opening valve or inside blowout preventer tool and stab into tool joint above rotary table (with Floor Man #2).

2. Tighten valve with back-up tongs.

3. Close pipe rams after signal from Floor Man #2.

4. Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.

5. Report to Driller for further instructions.

iv. Floor Man #2

1. Pick-up full opening valve or inside blowout preventer tool and stab into tool joint above rotary table (with Floor Man #1).

2. Position back-up tongs on drill pipe.

3. Open choke line valve at BOP.

4. Signal Floor Man #1 at accumulator that choke line is open.

5. Close choke and upstream valve after pipe rams have been closed.

6. Check for leaks on BOP stack and choke manifold.

7. Read annular pressure.

8. Report readings to the Driller.

v. Tool Pusher

1. Report to the rig floor.

2. Have a meeting with all of the crews.

3. Compile and summarize all information.

4. See that proper well kill procedures are put into action.

vi. Operator Representative

1. Notify Drilling Superintendent

2. Determine if an emergency exists, and if so, activate the contingency plan.

IGNITION PROCEDURES

Responsibility:

The decision to ignite the well is the responsibility of the DRILLING FOREMAN in concurrence with the emergency response officials. In the event the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.

2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Foreman is responsible for igniting the well.

2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.

3. Ignite from upwind and do not approach any closer than is warranted.

4. Select the ignition site best suited for protection and which offers an easy escape route.

5. Before igniting, check for the presence of combustible gases.

6. After igniting, continue emergency actions and procedures as before.

7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

Note: After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Do not assume the area is safe after the well is ignited.

TRAINING PROGRAM

When working in an area where Hydrogen Sulfide (H_2S) might be encountered, definite training requirements must be carried out. The Company Supervisor will ensure that all personnel, at the well site, have had adequate training in the following consistent with the requirements in ANSI/ASSE Z390.1-2006 (R2010) Accepted Practices for Hydrogen Sulfide (H2S) Training Programs:

1. Physical and Chemical Properties of Hydrogen Sulfide.
2. Sources of Hydrogen Sulfide.
3. Human Physiology and Medical Evaluation.
4. Work Procedures.
5. Personal Protective Equipment.
6. Use of Contingency Plans and Emergency Response.
7. Burning, Flaring and Venting of Hydrogen Sulfide.
8. State and Federal Regulatory Requirements.
9. Hydrogen Sulfide Release Dispersion Models
10. Rescue Techniques, First Aid and Post-Exposure Evaluation
11. Methods of Detection and Monitoring
12. Engineering Controls
13. Transportation of Hydrogen Sulfide Cargoes
14. Emerging Technology

Service company personnel and visiting personnel must be notified if the zone contains H_2S, and each service company must provide proof of adequate training and equipment for their employees before they arrive at the well site.

EMERGENCY EQUIPMENT REQUIREMENTS

Lease Entrance Sign:

Should be located at the lease entrance with the following information:

CAUTION- POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

Respiratory Equipment:

- Fresh air breathing equipment should be placed at the safe briefing areas and should include the following:
- Two SCBA's at each briefing area.
- Enough airline units to operate safely, anytime the H_2S concentration reaches the IDLH level (100 ppm).
- Cascade system with enough breathing air hose and manifolds to reach the rig floor, the derrick man and the other operation areas.

Windsocks or Wind Streamers:

- A minimum of two 10" windsocks located at strategic locations so that they may be seen from any point on location.
- Wind streamers (if preferred) should be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

Hydrogen Sulfide Detector and Alarms:

- 1- Four channel H_2S monitor with alarms.
- Four (4) sensors located as follows: #1- Rig Floor, #2- Bell Nipple, #3- Shale Shaker, #4- Mud Pits.
- Gastec or Draeger pump with tubes.
- Sensor test gas.

Well Condition Sign and Flags:

The Well Condition Sign w/flags should be placed a minimum of 150' before you enter the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN- Normal Operating Conditions
YELLOW- Potential Danger
RED- Danger, H_2S Gas Present

Auxiliary Rescue Equipment:

- Stretcher
- 2- 100' Rescue lines.
- First Aid Kit properly stocked.

Mud Inspection Equipment:

Garret Gas Train or Hach Tester for inspection of Hydrogen Sulfide in the drilling mud system.

Fire Extinguishers:

Adequate fire extinguishers shall be located at strategic locations.

Blowout Preventer:

- The well shall have hydraulic BOP equipment for the anticipated BHP.
- The BOP should be tested upon installation.
- BOP, Choke Line and Kill Line will be tested as specified by Operator.

Confined Space Monitor:

There should be a portable multi-gas monitor with at least 3 sensors (O_2, LEL H_2S). This instrument should be used to test the atmosphere of any confined space before entering. It should also be used for atmospheric testing for LEL gas before beginning any type of Hot Work. Proper calibration documentation will need to be provided.

Communication Equipment:

- Proper communication equipment such as cell phones or 2-way radios should be available at the rig.
- Radio communication shall be available for communication between the company man's trailer, rig floor and the tool pusher's trailer.

- Communication equipment shall be available on the vehicles.

Special Control Equipment:

- Hydraulic BOP equipment with remote control on the ground.
- Rotating head at the surface casing point.

Evacuation Plan:

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

Designated Areas:

Parking and Visitor area:

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- Designated smoking area.

Safe Briefing Areas:

- Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.
- Personal protective equipment should be stored at both briefing areas or if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

Note:

- Additional equipment will be available at the Alliance Safety office.
- Additional personal H_2S monitors are available for all employees on location.
- Automatic Flare Igniters are recommended for installation on the rig.

CHECK LISTS

Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance. _____
2. Two (2) wind socks (in required locations). _____
3. Wind Streamers (if required). _____
4. SCBA's on location for all rig personnel and mud loggers. _____
5. Air packs, inspected and ready for use. _____
6. Spare bottles for each air pack (if required). _____
7. Cascade system for refilling air bottles. _____
8. Cascade system and hose line hook up. _____
9. Choke manifold hooked-up and tested. (before drilling out surface casing.) _____
10. Remote Hydraulic BOP control (hooked-up and tested before drilling out surface casing). _____
11. BOP tested (before drilling out surface casing). _____
12. Mud engineer on location with equipment to test mud for H_2S. _____
13. Safe Briefing Areas set-up _____
14. Well Condition sign and flags on location and ready. _____
15. Hydrogen Sulfide detection system hooked -up & tested. _____
16. Hydrogen Sulfide alarm system hooked-up & tested. _____
17. Stretcher on location at Safe Briefing Area. _____
18. 2 -100' Life Lines on location. _____
19. 1-20# Fire Extinguisher in safety trailer. _____
20. Confined Space Monitor on location and tested. _____
21. All rig crews and supervisor trained (as required). _____

22. Access restricted for unauthorized personnel. _____

23. Drills on H_2S and well control procedures. _____

24. All outside service contractors advised of potential H_2S on the well. _____

25. NO SMOKNG sign posted. _____

26. H_2S Detector Pump w/tubes on location. _____

27. 25mm Flare Gun on location w/flares. _____

28. Automatic Flare Igniter installed on rig. _____

Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to insure that they have not been tampered with.
3. Check pressure on the supply air bottles to make sure they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that they are fully charged and operational. This requires that the air cylinder be opened and the mask assembly be put on and tested to make sure that the regulators and masks are properly working. Negative and Positive pressure should be conducted on all masks.
2. BOP skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all breathing air mask assemblies to see that straps are loosened and turned back, ready for use.
5. Check pressure on cascade air cylinders to make sure they are fully charged and ready to use for refill purposes if necessary.
6. Check all cascade system regulators to make sure they work properly.
7. Perform breathing drills with on-site personnel.
8. Check the following supplies for availability:
    - Stretcher
    - Safety Belts and Ropes
    - Spare air Bottles
    - Spare Oxygen Bottles (if resuscitator required)
    - Gas Detector Pump and Tubes
    - Emergency telephone lists
9. Test the Confined Space Monitor to verify the batteries are good

EVACUATION PLAN

General Plan

The direct lines of action prepared by Mack Energy Corporation to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foreman, Tool Pusher or Driller) determine that Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the area map.

2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.

3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.

4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

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

5. After the discharge of gas has been controlled, "Company" safety personnel will determine when the area is safe for re-entry.

See Specific Site Safety Plan or Job Safety Analysis to be completed during drilling

Emergency Assistance Telephone List

PUBLIC SAFETY:	911 or
Pecos Valley Communication Center (Chaves County Police, Fire, EMS)	(575) 624-7590
Central Dispatch (Eddy County Police, Fire, EMS)	(575) 616-7155
Hospitals:	
Roswell	(575) 622-8170
Artesia	(575) 748-3333
Dept. of Public Safety/SE New Mexico	(575) 622-7200
Highway Department	(575) 637-7200
New Mexico Oil Conservation	(575) 748-1283
Bureau of Land Management	(575) 622-5335

Mack Energy Corporation

Company Drilling Supervisor

Jim Krogman	(575) 703-7385

Drilling Foreman

Emilio Martinez	(575) 703-5231

Silver Oak Drilling

Silver Oak Drilling	(575) 746-4405

Tool Pusher:

Darren Mc Bride	(575) 703-6070
Osiel Sanchez	(575) 703-4109

Safety

Lee Hassell (Alliance Safety)
(806) 217-2950
Scott Ford (Mack Energy)
(505) 692-4976
Robbie Houghtaling (Silver Oak)
(575) 703-2122

Intentionally Blank –Space provided for Specific Site Safety Plan or Job Safety Analysis

Affected Notification List

(within a 65' radius of exposure @ lOOppm)

The geologic zones that will be encountered during drilling are known to contain hazardous quantities of H_2S. The accompanying map illustrates the affected areas of the community. The residents within this radius will be notified via a hand delivered written notice describing the activities, potential hazards, conditions of evacuation, evacuation drill siren alarms and other precautionary measures.

Evacuee Description:
Residents: **THERE ARE NO RESIDENTS WITHIN 3000' ROE.**

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:
All evacuees will migrate lateral to the wind direction.

The Oil Company will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local and emergency medical service as necessary.

Toxic Effects of H_2S Poisoning

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity -1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen Sulfide and other gases are compared below in Table 1. Toxicity table for H_2S and physical effects are shown in Table 2.

Table 1
Permissible Exposure Limits of Various Gases

Common Name	Symbol	Sp. Gravity	TLV	STEL	IDLH
Hydrogen Cyanide	HCN	.94	4.7 ppm	c	
Hydrogen Sulfide	H2S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	so2	2.21	2 ppm	5 ppm	
Chlorine	CL	2.45	.5 ppm	1 ppm	
Carbon Monoxide	co	.97	25 ppm	200 ppm	
Carbon Dioxide	C02	1.52	5000 ppm	30,000 ppm	
Methane	CH4	.55	4.7% LEL	14% UEL	

Definitions

A. TLV- Threshold Limit Value is the concentration employees may be exposed based on a TWA {time weighted average) for eight {8) hours in one day for 40 hours in one {1) week. This is set by ACGIH {American Conference of Governmental Hygienists) and regulated by OSHA.

B. STEL- Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL {Occupational Exposure Limit). The OEL for H_2S is 19 PPM.

C. IDLH -Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H_2S is 100 PPM.

D. TWA- Time Weighted Average is the average concentration of any chemical or gas for an eight {8) hour period. This is the concentration that any employee may be exposed based on an TWA.

TABLE 2

Toxicity Table of H_2S

Percent%	PPM	Physical Effects
.0001	1	Can smell less than 1ppm.
.001	10	TLV for 8 hours of exposure.
.0015	15	STEL for 15 minutes of exposure.
.01	100	Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins **in a few minutes.**
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.

PHYSICAL PROPERTIES OF H2S

The properties of all gases are usually described in the context of seven major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY {IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

COLOR- TRANSPARENT

Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence. In fact that makes this gas extremely dangerous to be around.

ODOR- ROTTEN EGGS

Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs". For this reason it earned its common name "sour gas". However, H_2S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

VAPOR DENSITY- SPECIFIC GRAVITY OF 1.192

Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H_2S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

EXPLOSIVE LIMITS- 4.3% TO 46%

Mixed with the right proportion of air or oxygen, H_2S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

FLAMMABILITY

Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide ($S0_2$), another hazardous gas that irritates the eyes and lungs.

SOLUBILITY- 4 TO 1 RATIO WITH WATER

Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H_2S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H_2S may release the gas into the air.

BOILING POINT- {-76 degrees Fahrenheit)

Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

RESPIRATOR USE

The Occupational Safety and Health Administration (OSHA) regulate the use of respiratory protection to protect the health of employees. OSHA's requirements are written in the Code of Federal Regulations, Title 29, Part 1910, Section 134, Respiratory Protection. This regulation requires that all employees who might be required to wear respirators, shall complete a OSHA mandated medical evaluation questionnaire. The employee then should be fit tested prior to wearing any respirator while being exposed to hazardous gases.

Written procedures shall be prepared covering safe use of respirators in dangerous atmospheric situations, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

Respirators shall be inspected prior to and after each use to make sure that the respirator has been properly cleaned, disinfected and that the respirator works properly. The unit should be fully charged prior to being used.

Anyone who may use respirators shall be properly trained in how to properly seal the face piece. They shall wear respirators in normal air and then in a test atmosphere. (Note: Such items as facial hair (beard or sideburns) and eyeglass temple pieces will not allow a proper seal.) Anyone that may be expected to wear respirators should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses. Contact lenses should not be allowed.

Respirators shall be worn during the following conditions:

A. Any employee who works near the top or on the top of any tank unless tests reveal less than 20 ppm of H_2S.

B. When breaking out any line where H_2S can reasonably be expected.

C. When sampling air in areas where H_2S may be present.

D. When working in areas where the concentration of H_2S exceeds the Threshold Limit Value for H_2S {10 ppm).

E. At any time where there is a doubt as to the H_2S level in the area to be entered.

EMERGENCY RESCUE PROCEDURES

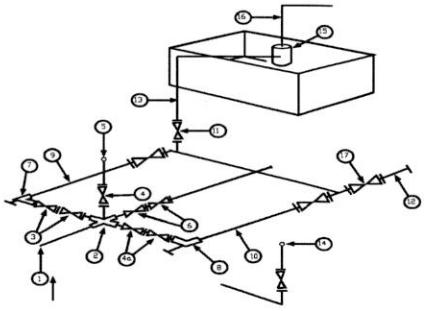
DO NOT PANIC!!!

Remain Calm -Think

1. Before attempting any rescue you must first get out of the hazardous area yourself. Go to a safe briefing area.
2. Sound alarm and activate the 911 system.
3. Put on breathing apparatus. At least two persons should do this, when available use the buddy system.
4. Rescue the victim and return them to a safe briefing area.
5. Perform an initial assessment and begin proper First Aid/CPR procedures.
6. Keep victim lying down with a blanket or coat, etc.., under the shoulders to keep airway open. Conserve body heat and do not leave unattended.
7. If the eyes are affected by H_2S, wash them thoroughly with potable water. For slight irritation, cold compresses are helpful.
8. In case a person has only minor exposure and does not lose consciousness totally, it's best if he doesn't return to work until the following day.
9. Any personnel overcome by H_2S should always be examined by medical personnel. They should always be transported to a hospital or doctor.

Mack Energy Corporation

Exhibit #11
MIMIMUM CHOKE MANIFOLD
3,000, 5,000, and 10,000 PSI Working Pressure
5M will be used
3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

*** Location of separator optional**

Below Substructure

Mimimum requirements

No.		3,000 MWP I.D.	Nominal	Rating	5,000 MWP I.D.	Nominal	Rating	10,000 MWP I.D.	Nominal	Rating
1	Line from drilling Spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000			
2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
4	Valve Gate Plug	1 13/16		3,000	1 13/16		5,000	1 13/16		10,000
4a	Valves (1)	2 1/16		3,000	2 1/16		5,000	2 1/16		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure quage			3,000			5,000			10,000
15	Gas Separator		2' x5'			2' x5'			2' x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

(1) Only one required in Class 3M
(2) Gate valves only shall be used for Class 10 M
(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

1. All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
2. All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
3. All lines shall be securely anchored.
4. Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
5. alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
6. Line from drilling spool to choke manifold should bee as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees

Mack Energy Corporation

MANIFOLD SCHEMATIC

Exhibit #12

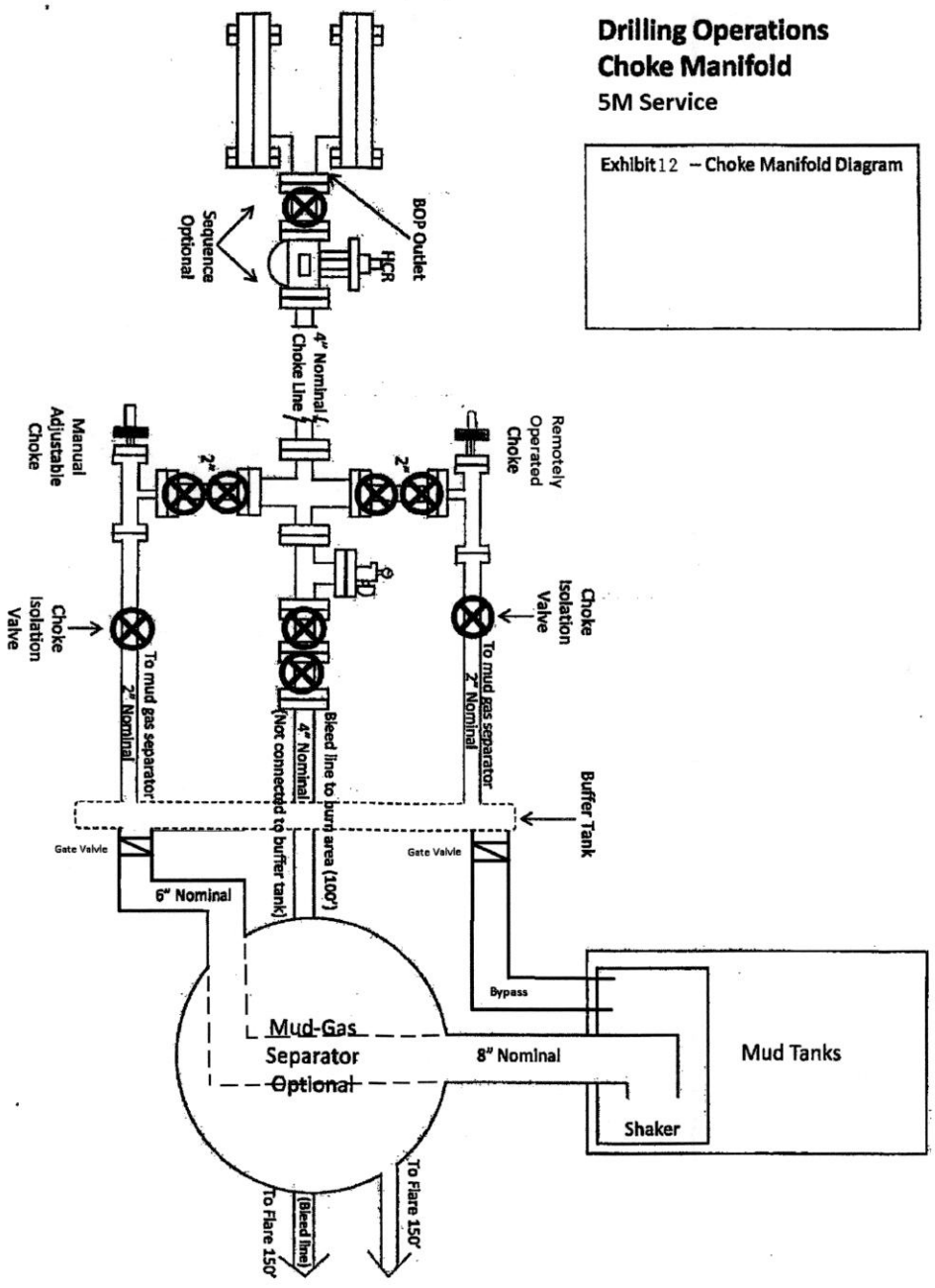


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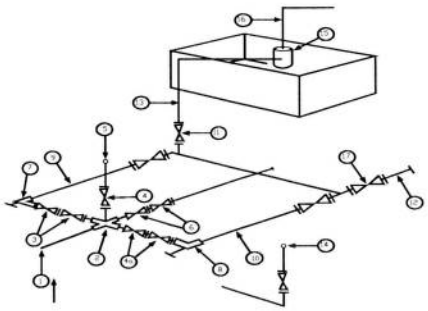
Exhibit #11
MIMIMUM CHOKE MANIFOLD
3,000, 5,000, and 10,000 PSI Working Pressure
3M will be used
3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

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Below Substructure

Mimimum requirements

No.		3,000 MWP I.D.	Nominal	Rating	5,000 MWP I.D.	Nominal	Rating	10,000 MWP I.D.	Nominal	Rating
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2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
4	Valve Gate Plug	1 13/16		3,000	1 13/16		5,000	1 13/16		10,000
4a	Valves (1)	2 1/16		3,000	2 1/16		5,000	2 1/16		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure quage			3,000			5,000			10,000
15	Gas Separator		2' x5'			2' x5'			2' x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

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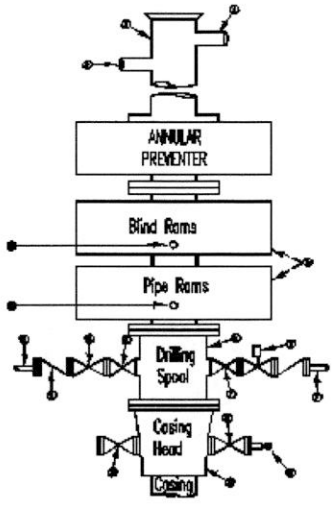
Mack Energy Corporation

Minimum Blowout Preventer Requirements

5000 psi Working Pressure
13 5/8 inch- 5 MWP
11 Inch - 5 MWP
EXHIBIT #10

Stack Requirements

NO.	Items	Min. I.D.	Min. Nominal
1	Flowline		2"
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min. kill line and 3" min choke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		
7	Valve Gate Plug	3 1/8	
8	Gate valve-power operated	3 1/8	
9	Line to choke manifold		3"
10	Valve Gate Plug	2 1/16	
11	Check valve	2 1/16	
12	Casing head		
13	Valve Gate Plug	1 13/16	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"



OPTIONAL

16	Flanged Valve	1 13/16	

CONTRACTOR'S OPTION TO FURNISH:

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.
10.

ME

MEC TO FURNISH:

1. Bradenhead or casing head and side valves.
2. Wear bushing. If required.

GENERAL NOTES:

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans. Replaceable parts for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
5. All valves to be equipped with hand-wheels or handles ready for immediate use.
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Does not use kill line for routine fill up operations.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 166768

COMMENTS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 166768
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

COMMENTS

Created By	Comment	Comment Date
ahvermersch	APD was issued a New API 30-005-64374 during review and approval; Original API/Wellbore 30-005-00456 was previously drilled and plugged back. Application being returned to original API/Wellbore. PLEASE NOTIFY THE BLM of API CHANGE	6/26/2024

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CONDITIONS

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CONDITIONS

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	Action Number: 166768
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	3/21/2023
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	3/21/2023
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	3/21/2023
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	3/21/2023