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.

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other

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.

2. Name of Operator

9. API Well No.
30 005 64360

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool, or Exploratory

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

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

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

12. County or Parish

13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

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
Title		
Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Title	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: 11/03/2020

Entered - KMS NMOCD

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 6460	52770	Round Tank; San Andres

[4] Property Code	[5] Property Name	[6] Well Number
322478	CRANBROOK STATE COM	1H

[7] OGRID No.	[8] Operator Name	[9] Elevation
13837	MACK ENERGY CORPORATION	3602.4

[10] Surface Location

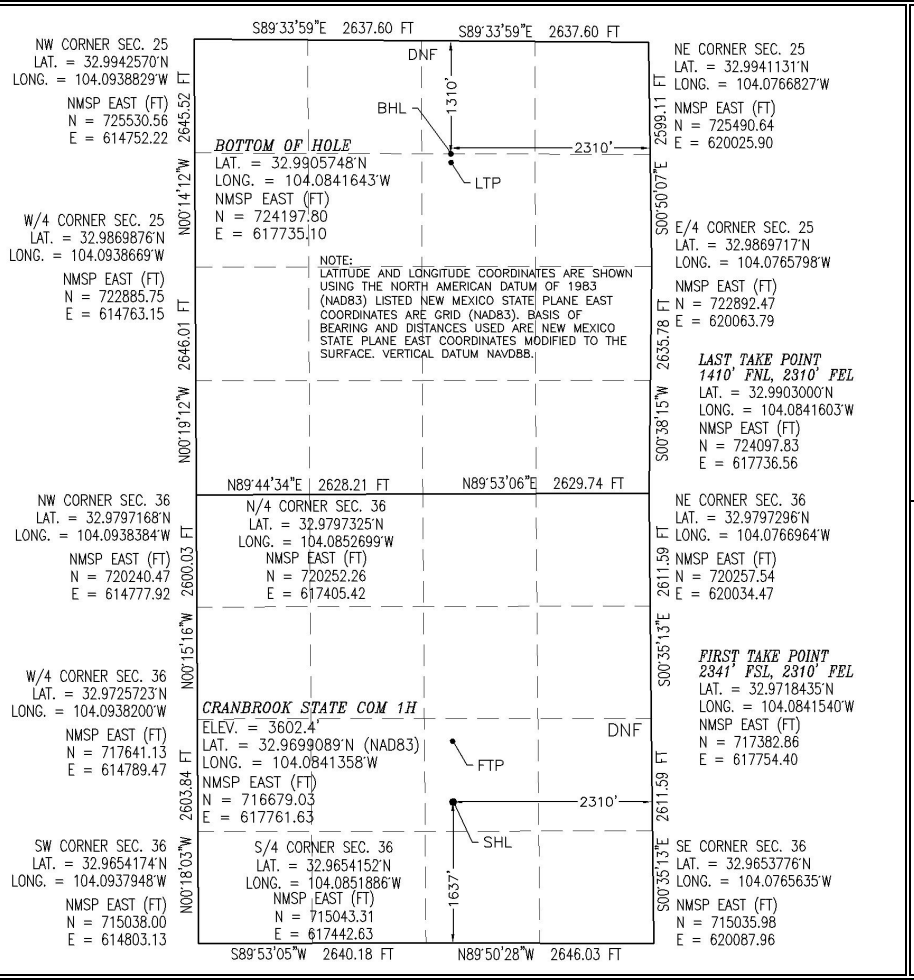
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	36	15 S	28 E		1637	SOUTH	2310	EAST	CHAVES

[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
G	25	15 S	28 E		1310	NORTH	2310	EAST	CHAVES

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
240			

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 7/1/2020
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.

JUNE 11, 2020
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: FIDELMON F. JARAMILLO, PLS 12797
SURVEY NO. 6320F

Intent [XXX] As Drilled [ ]

API #

Operator Name:	Property Name:	Well Number
MACK ENERGY CORPORATION	**CRANBROOK STATE COM**	**1H**

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
J	**36**	**15S**	**28E**		**1637**	**SOUTH**	**2310**	**EAST**	**CHAVES**

Latitude	Longitude	NAD
32.9699089	**104.0841358**	**83**

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
J	**36**	**15S**	**28E**		**2341**	**SOUTH**	**2310**	**EAST**	**CHAVES**

Latitude	Longitude	NAD
32.9718435	**104.0841540**	**83**

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
G	**25**	**15S**	**28E**		**1410**	**NORTH**	**2310**	**EAST**	**CHAVES**

Latitude	Longitude	NAD
32.9903000	**104.0841603**	**83**

Is this well the defining well for the Horizontal Spacing Unit? [ ]

Is this well an infill well? [ ]

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

Additional Operator Remarks

Location of Well

0. SHL: NWSE / 1637 FSL / 2310 FEL / TWSP: 15S / RANGE: 28E / SECTION: 36 / LAT: 32.9699089 / LONG: -104.0841358 (TVD: 0 feet, MD: 0 feet)

PPP: NWSE / 2341 FSL / 2310 FEL / TWSP: 15S / RANGE: 28E / SECTION: 36 / LAT: 32.9718435 / LONG: -104.084154 (TVD: 2983 feet, MD: 3357 feet)

BHL: SWNE / 1310 FNL / 2310 FEL / TWSP: 15S / RANGE: 28E / SECTION: 25 / LAT: 32.9905748 / LONG: -104.0841643 (TVD: 2935 feet, MD: 10172 feet)

BLM Point of Contact

Name: Meighan M Salas

Title: Land Law Examiner

Phone: (575) 627-0228

Email: mmsalas@blm.gov

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Mack Energy Corporation**
LEASE NO.:	**NMNM-132673**
WELL NAME & NO.:	**Cranbrook State Com 1H**
SURFACE HOLE FOOTAGE:	**1637' FSL & 2310' FEL**
BOTTOM HOLE FOOTAGE	**1310' FNL & 2310' FEL Sec. 25, T. 15 S., R 28 E.**
LOCATION:	**Section 36, T. 15 S., R 28 E., NMPM**
COUNTY:	**Chaves County, New Mexico**

Communitization Agreement

· The operator will submit a Communitization Agreement to the Roswell Field Office, 2909 West 2nd Street Roswell, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

· If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.

· In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

The Gamma Ray and Neutron well logs must be run from total depth to surface and e-mailed to Chris Bolen at cbolen@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.

Approval Date: 11/03/2020

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.

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 Queen and Rustler.
Possibility of lost circulation in the Base of Rustler, Queen, and San Andres formations.

1. The **13-3/8** inch surface casing shall be set at approximately **200** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

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

4. 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 **3000 (3M)** psi (**Installing 3M BOP, testing to 2,000 psi**). **BOP specs must be on location for PET inspection.**

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.

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. 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 10282020

Approval Date: 11/03/2020

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

Drilling Plan Data Report
11/03/2020

APD ID: 10400058635
Submission Date: 09/01/2020
Operator Name: MACK ENERGY CORPORATION
Well Name: CRANBROOK STATE COM
Well Number: 1H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
777111	QUÁTERNARY	3602	0	0	ALLUVIUM	NONE	N
777126	BASE OF SALT	3110	492	492	SALT	NONE	N
777127	YATES	2964	638	638	SILTSTONE	NATURAL GAS, OIL	N
777128	SEVEN RIVERS	2702	900	900	DOLOMITE, SILTSTONE	NATURAL GAS, OIL	N
777129	QUEEN	2236	1366	1366	SILTSTONE	NATURAL GAS, OIL	N
777130	GRAYBURG	1836	1766	1766	DOLOMITE, SILTSTONE	NATURAL GAS, OIL	N
777131	SAN ANDRES	1506	2096	2096	DOLOMITE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M
Rating Depth: 10172

Equipment: Rotating Head, Mud-Gas Separator

Requesting Variance? NO

Variance request:

Testing Procedure: 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 with a test plug. The estimate bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 1404 psig (0.052*2935'TVD*9.2ppg) Less than 2900 Bottom Hole Pressure. Test to 2000psi for 30 minutes.

Choke Diagram Attachment:

choke_manifold_diagram_20200701145541.pdf

choke_manifold_20200701145548.pdf

BOP Diagram Attachment:

bop_diagram_20200701145555.pdf

Operator Name: MACK ENERGY CORPORATION

Well Name: CRANBROOK STATE COM **Well Number:** 1H

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	200	0	200	3602	3402	200	J-55	48	ST&C	7.412	4.701	BUOY	52.87	BUOY	4.74
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	1200	0	1200	3602	2402	1200	J-55	36	ST&C	3.237	7.04	BUOY	10.768	BUOY	7.04
3	PRODUCTION	8.75	7.0	NEW	API	N	0	2100	0	2100	3602	1502	2100	HCP-110	26	LT&C	6.791	3.317	BUOY	5.595	BUOY	3.317
4	PRODUCTION	8.75	7.0	NEW	API	N	2100	3100	2100	3100	1502	502	1000	HCP-110	26	BUTT	4.65	3.317	BUOY	6.887	BUOY	3.317
5	PRODUCTION	8.75	5.5	NEW	API	N	3100	10172	3100	10172	502	-6570	7072	HCP-110	17	BUTT	5.62	3.547	BUOY	5.578	BUOY	3.547

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Surface_Csg_20200701153847.pdf

Operator Name: MACK ENERGY CORPORATION

Well Name: CRANBROOK STATE COM **Well Number:** 1H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Int._Csg_20200701154237.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Production_Csg_20200701154509.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Production_Csg_20200701154704.pdf

Operator Name: MACK ENERGY CORPORATION

Well Name: CRANBROOK STATE COM **Well Number:** 1H

Casing Attachments

Casing ID: 5 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Production_Csg_20200701154958.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0		0	0
PRODUCTION	Lead		0	0	0	0	0	0		0	0
SURFACE	Lead		0	200	320	1.61	14.4	139.9		RFC+12% PF53+2%PF1+5pps PF42+.125pps PF29	20bbls gelled water, 50sx of 11# scavenger cement
SURFACE	Tail		0	200	200	1.34	14.8	139.9	100	Class C+1% PF1	20bbls gelled water, 50sx of 11# scavenger cement
INTERMEDIATE	Lead		0	1200	285	1.72	13.5	375.8	100	Class C + 4% PF 20 + .4ppsPF44 + .125pps PF29	20bbls gelled water, 50sx of 11# scavenger cement
INTERMEDIATE	Tail		0	1200	200	1.34	14.8	375.8	100	Class C + 1% PF 1	20bbls gelled water, 50sx of 11# scavenger cement
PRODUCTION	Lead		0	10172	405	1.84	13.2	2119	40	Class C 4% PF20+ 4 pps PF45 + 125 pps PF29	20bbls gelled water, 20bbls chemical wash, 50sx of 11# scavenger cement

Operator Name: MACK ENERGY CORPORATION

Well Name: CRANBROOK STATE COM **Well Number:** 1H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		0	10172	1500	1.91	13	2119	40	PVL+1.3%PF44+30%PF151+5%PF174+.7%PF606+.1%PF153+3ppsPF42+.4ppsPF45	20bbls gelled water, 20bbls chemical wash, 50sx of 11# scavenger cement

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: Pason PVT with Pit 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	200	SPUD MUD	8.5	10	74.8	0.1	11		12000	15	
200	1200	LSND/GEL	8.3	10	74.8	0.1	11		12000	15	
1200	10172	LSND/GEL	8.3	9.2	74.8	0.1	11		12000	15	The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 1404 psig (0.052*2935'TVD*9.2ppg) Less than 2900 bottom hole pressure.

Operator Name: MACK ENERGY CORPORATION

Well Name: CRANBROOK STATE COM **Well Number:** 1H

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:

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

Coring operation description for the well:

None

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1404 **Anticipated Surface Pressure:** 747

Anticipated Bottom Hole Temperature(F): 95

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Horizontal_Spacing_Unit_20200723143129.pdf
GasCapturePlanFormFinal_000_20200723144551.pdf
h2s_contingency_plan_20200723144915.pdf
Drilling_Plan_20200827093500.pdf
H2S_Plan_20201006105750.pdf
Escape_Route_20201006105758.pdf
Directional_Well_Plan_20201006110747.pdf

Other proposed operations facets description:

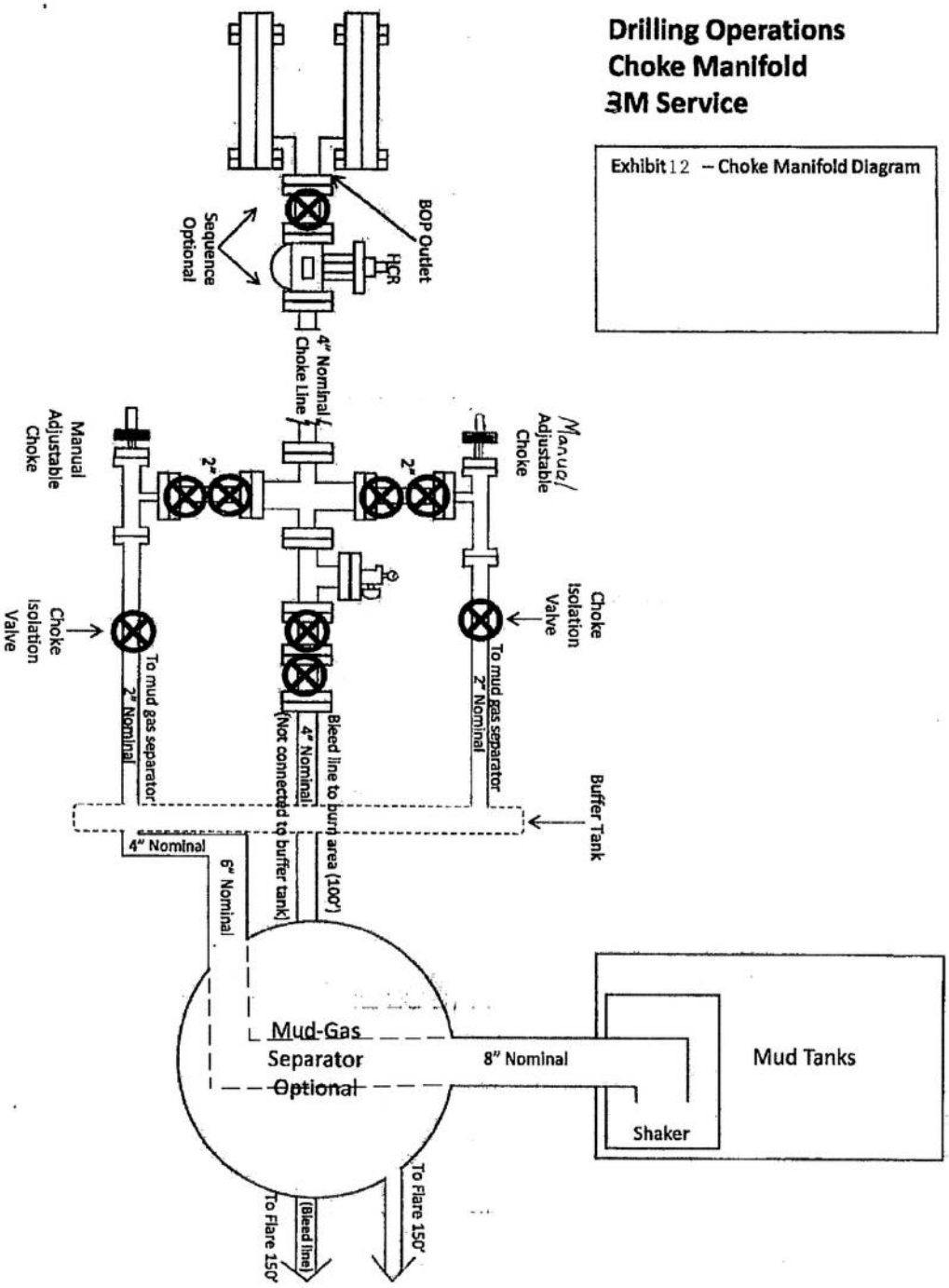
Other proposed operations facets attachment:

Other Variance attachment:

Mack Energy Corporation

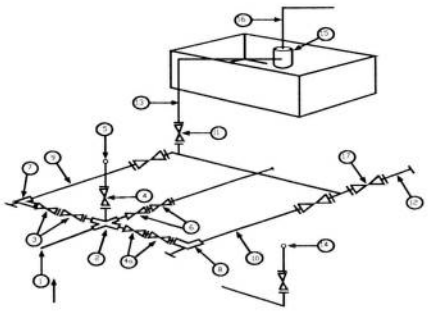
MANIFOLD SCHEMATIC

Exhibit #12



Mack Energy Corporation

Exhibit #11
MIMIMUM CHOKE MANIFOLD
3,000, 5,000, and 10,000 PSI Working Pressure
3M 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

Minimum Blowout Preventer Requirements

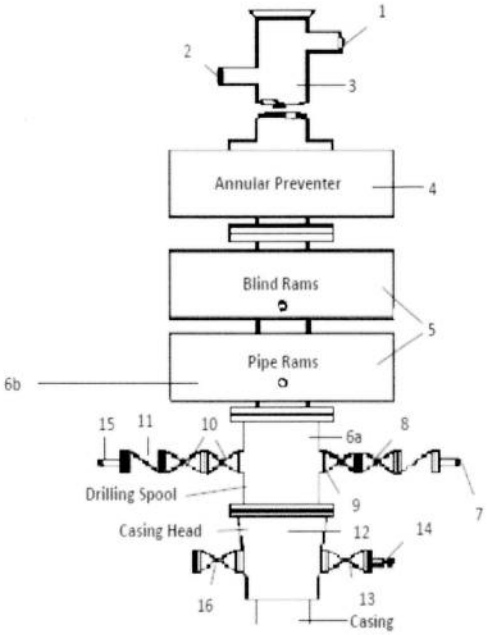
5000 psi Working Pressure

13 5/8 inch- 5 MWP

11 Inch - 5 MWP

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
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original to Appropriate District Office

GAS CAPTURE PLAN

Date: 7/23/2020

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: Mack Energy Corporation - 013837

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Cranbrook State Com 1H		Sec. 36 T15S R28E	1637 FSL 2310 FEL	50		

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to DCP Midstream and will be connected to DCP Midstream low/high pressure gathering system located in _Chaves_____ County, New Mexico. It will require _0 (existing)_____' of pipeline to connect the facility to low/high pressure gathering system. Mack Energy Corporation provides (periodically) to DCP Midstream a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Mack Energy Corporation and DCP Midstream have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at DCP Midstream Processing Plant located in Sec.___6__, Twn._19S____, Rng._37E____, _Lea_____ County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on DCP Midstream system at that time. Based on current information, it is Mack Energy Corporation belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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.

Form 3160-3
Mack Energy Corporation
Cranbrook State Com #1H NMNM-132673
SHL : 1637 FSL & 2310 FEL, NWSE, Sec. 36 T15S R28E
BHL : 1310 FNL & 2310 FEL, SWNE, Sec. 25 T15S R28E
Chaves County, NM

DRILLING PROGRAM

1. **Geologic Name of Surface Formation**

   Quaternary

2. **Estimated Tops of Important Geologic Markers:**

Base of Salt	492'
Yates	638'
Seven Rivers	900'
Queen	1366'
Grayburg	1766'
San Andres	2096'

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

Water Sand	150'	Fresh Water
Yates	638'	Oil/Gas
Seven Rivers	900'	Oil/Gas
Queen	1366'	Oil/Gas
Grayburg	1766'	Oil/Gas
San Andres	2096'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 200' 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
17 1/2"	0-200'	13 3/8"	48#, J-55, ST&C, New, 7.411859/4.700889/4.74
12 ¼"	0-1200'	9 5/8"	36#, J-55, ST&C, New, 3.237179/7.04/7.04
8 3/4"	0-2100'	7"	26#, HCP-110, LT&C, New, 6.791201/3.316667/3.316667
8 ¾"	2100-3100'	7"	26#, HCP-110, Buttress, New, 4.650288/3.316667/ 3.316667
8 ¾"	3100-10172'	5 ½"	17#, HCP-110, Buttress, New, 5.619891/3.546667/3.546667

5. **Cement Program:**

13 3/8" Surface Casing: Lead 320sx, RFC + 12% PF53 + 2% PF1 + 5 pps PF42 + .125 pps PF29, yld 1.61, wt 14.4 ppg, 7.357 gals/sx. Tail: 200sx, Class C+1% PF1, yld 1.34, wt 14.8 ppg, 6.323 gals/sx, excess 100%, Slurry Top Surface

9 5/8" Intermediate Casing: Lead 285sx Class C + 4% PF20 +.4 pps PF44 + .125 pps PF29, yld 1.72, wt 13.5 ppg, excess 100%, Slurry Top Surface. Tail: 200sx, Class C+.1% PF1, yld 1.34, wt 14.8 ppg, 6.323 gals/sx, excess 100%, Slurry Top 1,000'

7" & 5 ½" Production Casing: Lead 405sx, Class C 4% PF 20 + 4 pps PF45 + 125 pps PF29, yld 1.84, wt 13.2 ppg, 9.914 gals/sx, excess 40%, Slurry Top Surface, Tail: 1500sx, PVL + 1.3% (BWOW) PF44 + 30% PF 151 + 5% PF 174 + .7% PF 606 + .1% PF 13 + .1% PF 153 + 3pps PF42 + .4 pps PF 45 yld 1.91, wt 13 ppg, 9.502gals/sx, 40% excess, Slurry Top 2100'

6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #10 will consist of a double ram-type (3000 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 nipped up on the 8 5/8" surface casing and tested by a 3rd party to 2000 psi used continuously until TD is reached. All BOP's and accessory equipment will be tested to 2000 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 2000 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
0-200'	Fresh Water	10	28	N.C.
200-1200'	Cut Brine	10	29	N.C.
1200-TD'	Cut Brine	9.2	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 1404 psig (0.052*2935'TVD*9.2ppg) Less than 2900 Bottom Hole Pressure. Test to 2000psi for 30 mins. 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 October 1, 2020. 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.

Attached to Form 3160-3
Mack Energy Corporation
Cranbrook State Com #1H NMNM-132673
SHL : 1637 FSL & 2310 FEL, NWSE, Sec. 36 T15S R28E
BHL : 1310 FNL & 2310 FEL, SWNE, Sec. 25 T15S R28E
Chaves County, NM

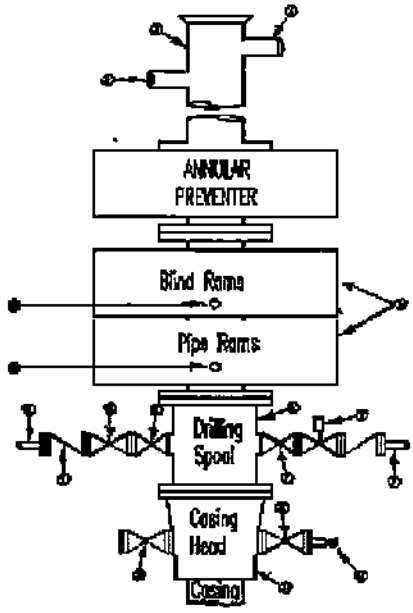
Attachment to Exhibit #10
NOTES REGARDING THE BLOWOUT PREVENTERS
Cranbrook State Com 1H
Chaves County, New Mexico

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, 2000 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 2000 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.
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
3000 psi Working Pressure
13 3/8 inch- 3 MWP
11 Inch - 3 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 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.

Mack Energy Corporation

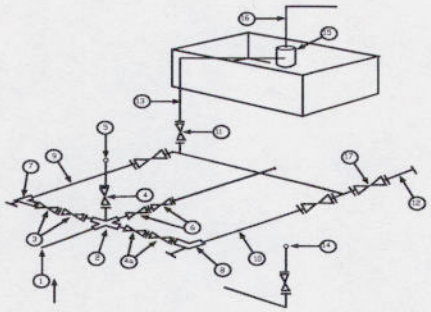
Exhibit #11

MIMIMUM CHOKE MANIFOLD

2,000, 5,000, and 10,000 PSI Working Pressure

3M will be used

2 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 2M

(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.

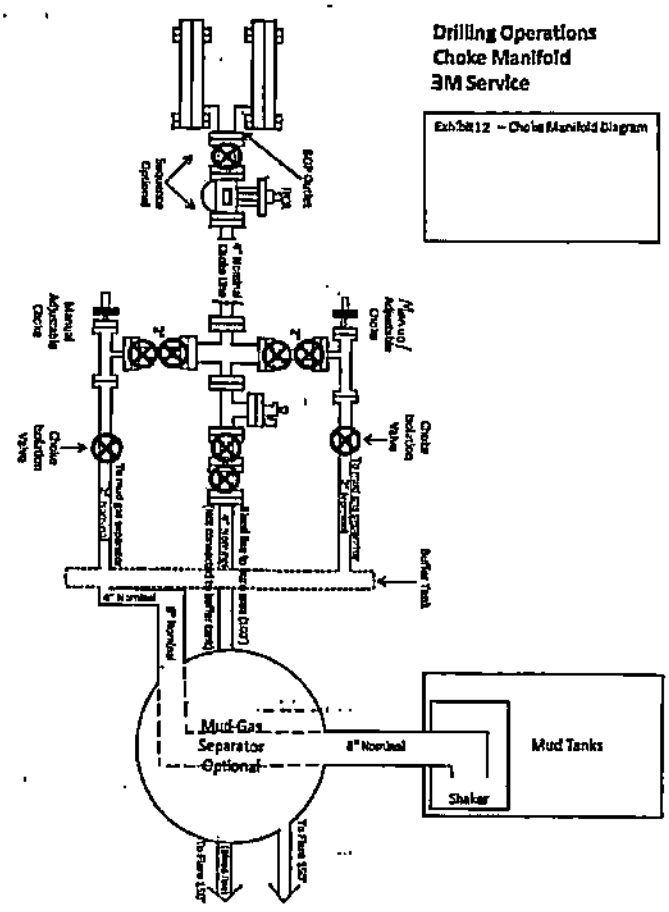
EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

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



Attached to Form 3160-3
Mack Energy Corporation
Cranbrook State Com #1H NMNM-132673
SHL : 1637 FSL & 2310 FEL, NWSE, Sec. 36 T15S R28E
BHL : 1310 FNL & 2310 FEL, SWNE, Sec. 25 T15S R28E
Chaves County, NM

Mack Energy Corporation
Onshore Order #6
Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards an characteristics of hydrogen sulfide (H2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H2S detectors alarms warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel well be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. Well Control Equipment:

A. Flare line.
B. Choke manifold.
C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

Attached to Form 3160-3
Mack Energy Corporation
Cranbrook State Com #1H NMNM-132673
SHL : 1637 FSL & 2310 FEL, NWSE, Sec. 36 T15S R28E
BHL : 1310 FNL & 2310 FEL, SWNE, Sec. 25 T15S R28E
Chaves County, NM

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2. **Protective equipment for essential personnel:**

   A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. **H2S detection and monitoring equipment:**

   A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

4. **Visual warning systems:**

   A. Wind direction indicators as shown on well site diagram (Exhibit #8).
   B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

5. **Mud program:**

   A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

6. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
   B. All elastomers used for packing and seals shall be H2S trim.

7. **Communication:**

   A. Radio communications in company vehicles including cellular telephone and 2-way radio.
   B. Land line (telephone) communication at Office.

8. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

Attached to Form 3160-3
Mack Energy Corporation
Cranbrook State Com #1H NMNM-132673
SHL : 1637 FSL & 2310 FEL, NWSE, Sec. 36 T15S R28E
BHL : 1310 FNL & 2310 FEL, SWNE, Sec. 25 T15S R28E
Chaves County, NM

B. There will be no drill stem testing.

EXHIBIT #7

WARNING

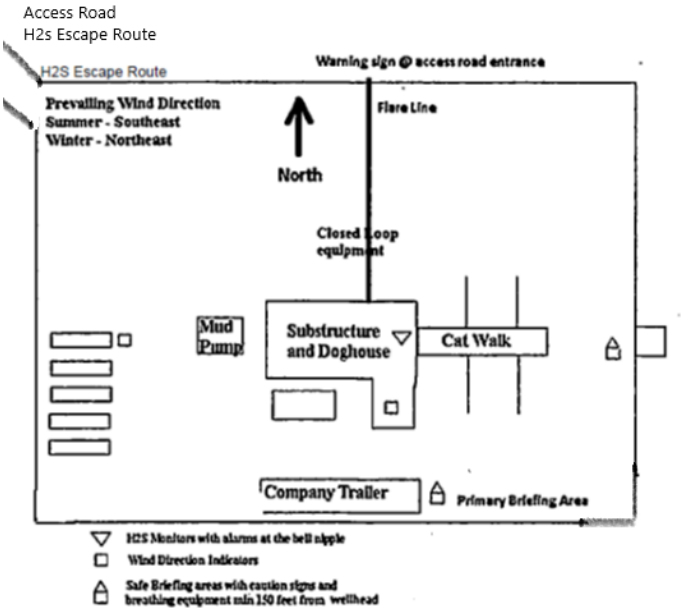
YOU ARE ENTERING AN H2S

AUTHORIZED PERSONNEL ONLY

1. **BEARDS OR CONTACT LENSES NOT ALLOWED**
2. **HARD HATS REQUIRED**
3. **SMOKING IN DESIGNATED AREAS ONLY**
4. **BE WIND CONSCIOUS AT ALL TIMES**
5. **CHECK WITH MACK ENERGY FOREMAN AT OFFICE**

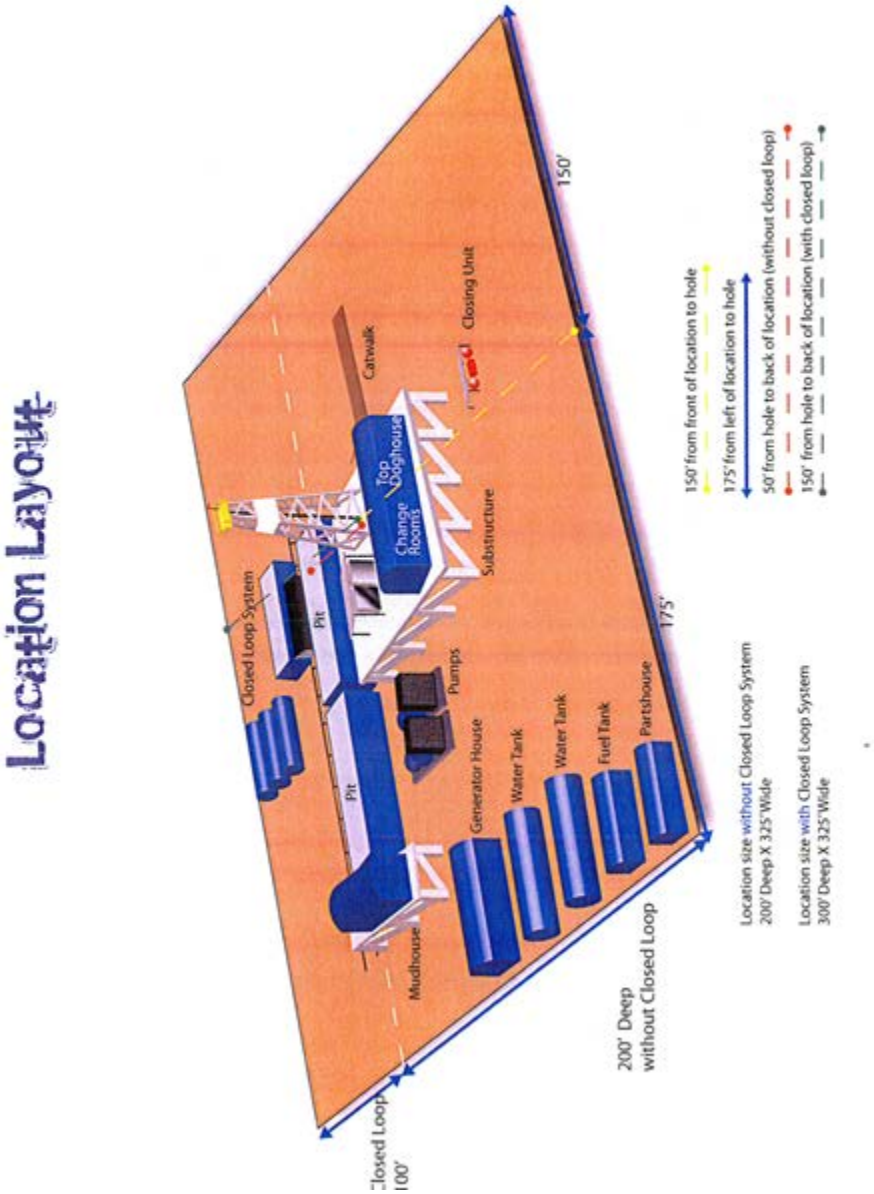
MACK ENERGY CORPORATION

1-575-748-1288



DRILLING LOCATION H2S SAFTY EQUIPMENT
Exhibit # 8

Attached to Form 3160-3
Mack Energy Corporation
Cranbrook State Com #1H NMNM-132673
SHL : 1637 FSL & 2310 FEL, NWSE, Sec. 36 T15S R28E
BHL : 1310 FNL & 2310 FEL, SWNE, Sec. 25 T15S R28E
Chaves County, NM



Mack Energy Corporation Call List, Chaves County

Artesia (575)	**Cellular**	**Office**
Jim Krogman	432-934-1596	748-1288
Emilio Martinez	432-934-7586	748-1288

Agency Call List (575)

Roswell

State Police……..622-7200
City Police……...624-6770
Sheriff's Office……624-7590
Ambulance……...624-7590
Fire Department……...624-7590
LEPC (Local Emergency Planning Committee……...624-6770
NMOCD……...748-1283
Bureau of Land Management……...627-0272

Emergency Services

Boots & Coots IWC……..…1-800-256-9688 or (281)931-8884
Cudd pressure Control…….(915)699-0139 or (915)563-3356
Halliburton……..746-2757
Par Five……..748-9539

Flight For Life-Lubbock, TX……..……(806)743-9911
Aerocare-Lubbock, TX……...(806)747-8923
Med Flight Air Amb-Albuquerque, NM…….(505)842-4433
Lifeguard Air Med Svc. Albuquerque, NM……(505)272-3115

Cranbrook State Com #1H, Plan 1

Operator	Mack Energy Corp	**Units**	feet, °/100ft	15:22 Tuesday, June 30, 2020	Page 1 of 5
Field	Round Tank	**County**	Chaves	**Vertical Section Azimuth**	359.8
Well Name	Cranbrook State Com #1H	**State**	New Mexico	**Survey Calculation Method**	Minimum Curvature
Plan	1	**Country**	USA	**Database**	Access

Location	SL: 1637 FSL & 2310 FEL Section 36-T15S-R28E BHL: 1310 FNL & 2310 FEL Secition 25-T15S-28E		**Map Zone** UTM	**Lat Long Ref**	
Site			**Surface X** 1921314.8	**Surface Long**	
Slot Name		**UWI**	**Surface Y** 11968861.5	**Surface Lat**	
Well Number	1H	**API**	**Surface Z** 3620.4	**Global Z Ref**	Mean Sea Level
Project		**MD/TVD Ref** KB	**Ground Level** 3602.4	**Local North Ref**	Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
*** TIE (at MD = 2124.00)										
2124.00	0.00	0.0	2124.00	0.00	0.00		0.00	1921314.80	11968861.50	1496.40
2150.00	0.00	0.0	2150.00	0.00	0.00	0.00	0.00	1921314.80	11968861.50	1470.40
2200.00	0.00	0.0	2200.00	0.00	0.00	0.00	0.00	1921314.80	11968861.50	1420.40
*** KOP 8 DEGREES (at MD = 2224.00)										
2224.00	0.00	0.0	2224.00	0.00	0.00	0.00	0.00	1921314.80	11968861.50	1396.40
2250.00	2.08	0.0	2249.99	0.47	0.00	8.00	0.47	1921314.80	11968861.97	1370.41
2300.00	6.08	0.0	2299.86	4.03	0.00	8.00	4.03	1921314.80	11968865.53	1320.54
2350.00	10.08	0.0	2349.35	11.06	0.00	8.00	11.05	1921314.80	11968872.56	1271.05
2400.00	14.08	0.0	2398.23	21.52	0.00	8.00	21.52	1921314.80	11968883.02	1222.17
2450.00	18.08	0.0	2446.27	35.36	0.00	8.00	35.36	1921314.80	11968896.86	1174.13
2500.00	22.08	0.0	2493.22	52.53	0.00	8.00	52.53	1921314.80	11968914.03	1127.18
2550.00	26.08	0.0	2538.86	72.92	0.00	8.00	72.92	1921314.80	11968934.42	1081.54
2600.00	30.08	0.0	2582.96	96.45	0.00	8.00	96.45	1921314.80	11968957.95	1037.44
2650.00	34.08	0.0	2625.32	123.00	0.00	8.00	123.00	1921314.80	11968984.50	995.08
2700.00	38.08	0.0	2665.72	152.44	0.00	8.00	152.44	1921314.80	11969013.94	954.68
2750.00	42.08	0.0	2703.97	184.63	0.00	8.00	184.63	1921314.80	11969046.13	916.43
2800.00	46.08	0.0	2739.88	219.40	0.00	8.00	219.40	1921314.80	11969080.90	880.52
2850.00	50.08	0.0	2773.28	256.60	0.00	8.00	256.60	1921314.80	11969118.10	847.12
2900.00	54.08	0.0	2804.00	296.04	0.00	8.00	296.03	1921314.80	11969157.54	816.40
*** 55 DEGREE TAN (at MD = 2911.50)										
2911.50	55.00	0.0	2810.67	305.40	0.00	8.00	305.40	1921314.80	11969166.90	809.73
2950.00	55.00	0.0	2832.76	336.94	0.00	0.00	336.94	1921314.80	11969198.44	787.64
3000.00	55.00	0.0	2861.44	377.90	0.00	0.00	377.90	1921314.80	11969239.40	758.96
3050.00	55.00	0.0	2890.11	418.86	0.00	0.00	418.85	1921314.80	11969280.36	730.29
*** 12 DEGREE BUILD (at MD = 3061.50)										
3061.50	55.00	0.0	2896.71	428.28	0.00	0.00	428.27	1921314.80	11969289.78	723.69
3100.00	59.62	360.0	2917.50	460.67	-0.01	12.00	460.67	1921314.79	11969322.17	702.90
3150.00	65.62	359.9	2940.48	505.05	-0.05	12.00	505.04	1921314.75	11969366.55	679.92
3200.00	71.62	359.9	2958.70	551.59	-0.12	12.00	551.58	1921314.68	11969413.09	661.70
3250.00	77.62	359.9	2971.96	599.77	-0.22	12.00	599.77	1921314.58	11969461.27	648.44
3300.00	83.62	359.8	2980.10	649.08	-0.35	12.00	649.08	1921314.45	11969510.58	640.30
3350.00	89.62	359.8	2983.05	698.97	-0.51	12.00	698.97	1921314.29	11969560.47	637.35
*** LANDING POINT (at MD = 3356.50)										
3356.50	90.40	359.8	2983.05	705.48	-0.53	12.00	705.47	1921314.27	11969566.98	637.35
3400.00	90.40	359.8	2982.75	748.97	-0.68	0.00	748.97	1921314.12	11969610.47	637.65
3450.00	90.40	359.8	2982.40	798.97	-0.86	0.00	798.97	1921313.94	11969660.47	638.00
3500.00	90.40	359.8	2982.05	848.97	-1.03	0.00	848.97	1921313.77	11969710.47	638.35
3550.00	90.40	359.8	2981.70	898.97	-1.21	0.00	898.96	1921313.59	11969760.47	638.70

Cranbrook State Com #1H, Plan 1

Operator	Mack Energy Corp	**Units**	feet, °/100ft	15:22 Tuesday, June 30, 2020	Page 2 of 5
Field	Round Tank	**County**	Chaves	**Vertical Section Azimuth**	359.8
Well Name	Cranbrook State Com #1H	**State**	New Mexico	**Survey Calculation Method**	Minimum Curvature
Plan	1	**Country**	USA	**Database**	Access

Location	SL: 1637 FSL & 2310 FEL Section 36-T15S-R28E BHL: 1310 FNL & 2310 FEL Secition 25-T15S-28E			**Map Zone**	UTM	**Lat Long Ref**	
Site				**Surface X**	1921314.8	**Surface Long**	
Slot Name		**UWI**		**Surface Y**	11968861.5	**Surface Lat**	
Well Number	1H	**API**		**Surface Z**	3620.4	**Global Z Ref**	Mean Sea Level
Project		**MD/TVD Ref**	KB	**Ground Level**	3602.4	**Local North Ref**	Grid

DIRECTIONAL WELL PLAN

MD* ft	INC* deg	AZI* deg	TVD* ft	N* ft	E* ft	DLS* °/100ft	V. S.* ft	MapE* ft	MapN* ft	SysTVD* ft
3600.00	90.40	359.8	2981.35	948.96	-1.38	0.00	948.96	1921313.42	11969810.46	639.05
3650.00	90.40	359.8	2981.00	998.96	-1.56	0.00	998.96	1921313.24	11969860.46	639.40
3700.00	90.40	359.8	2980.65	1048.96	-1.73	0.00	1048.96	1921313.07	11969910.46	639.75
3750.00	90.40	359.8	2980.30	1098.96	-1.91	0.00	1098.96	1921312.89	11969960.46	640.10
3800.00	90.40	359.8	2979.95	1148.96	-2.08	0.00	1148.96	1921312.72	11970010.46	640.45
3850.00	90.40	359.8	2979.60	1198.96	-2.25	0.00	1198.96	1921312.55	11970060.46	640.80
3900.00	90.40	359.8	2979.25	1248.95	-2.43	0.00	1248.96	1921312.37	11970110.45	641.15
3950.00	90.40	359.8	2978.91	1298.95	-2.60	0.00	1298.95	1921312.20	11970160.45	641.49
4000.00	90.40	359.8	2978.56	1348.95	-2.78	0.00	1348.95	1921312.02	11970210.45	641.84
4050.00	90.40	359.8	2978.21	1398.95	-2.95	0.00	1398.95	1921311.85	11970260.45	642.19
4100.00	90.40	359.8	2977.86	1448.95	-3.13	0.00	1448.95	1921311.67	11970310.45	642.54
4150.00	90.40	359.8	2977.51	1498.95	-3.30	0.00	1498.95	1921311.50	11970360.45	642.89
4200.00	90.40	359.8	2977.16	1548.95	-3.48	0.00	1548.95	1921311.32	11970410.45	643.24
4250.00	90.40	359.8	2976.81	1598.94	-3.65	0.00	1598.95	1921311.15	11970460.44	643.59
4300.00	90.40	359.8	2976.46	1648.94	-3.83	0.00	1648.95	1921310.97	11970510.44	643.94
4350.00	90.40	359.8	2976.11	1698.94	-4.00	0.00	1698.94	1921310.80	11970560.44	644.29
4400.00	90.40	359.8	2975.76	1748.94	-4.17	0.00	1748.94	1921310.63	11970610.44	644.64
4450.00	90.40	359.8	2975.42	1798.94	-4.35	0.00	1798.94	1921310.45	11970660.44	644.98
4500.00	90.40	359.8	2975.07	1848.94	-4.52	0.00	1848.94	1921310.28	11970710.44	645.33
4550.00	90.40	359.8	2974.72	1898.93	-4.70	0.00	1898.94	1921310.10	11970760.43	645.68
4600.00	90.40	359.8	2974.37	1948.93	-4.87	0.00	1948.94	1921309.93	11970810.43	646.03
4650.00	90.40	359.8	2974.02	1998.93	-5.05	0.00	1998.94	1921309.75	11970860.43	646.38
4700.00	90.40	359.8	2973.67	2048.93	-5.22	0.00	2048.94	1921309.58	11970910.43	646.73
4750.00	90.40	359.8	2973.32	2098.93	-5.40	0.00	2098.93	1921309.40	11970960.43	647.08
4800.00	90.40	359.8	2972.97	2148.93	-5.57	0.00	2148.93	1921309.23	11971010.43	647.43
4850.00	90.40	359.8	2972.62	2198.93	-5.75	0.00	2198.93	1921309.06	11971060.43	647.78
4900.00	90.40	359.8	2972.27	2248.92	-5.92	0.00	2248.93	1921308.88	11971110.42	648.13
4950.00	90.40	359.8	2971.92	2298.92	-6.09	0.00	2298.93	1921308.71	11971160.42	648.48
5000.00	90.40	359.8	2971.58	2348.92	-6.27	0.00	2348.93	1921308.53	11971210.42	648.82
5050.00	90.40	359.8	2971.23	2398.92	-6.44	0.00	2398.93	1921308.36	11971260.42	649.17
5100.00	90.40	359.8	2970.88	2448.92	-6.62	0.00	2448.93	1921308.18	11971310.42	649.52
5150.00	90.40	359.8	2970.53	2498.92	-6.79	0.00	2498.93	1921308.01	11971360.42	649.87
5200.00	90.40	359.8	2970.18	2548.92	-6.97	0.00	2548.92	1921307.83	11971410.42	650.22
5250.00	90.40	359.8	2969.83	2598.91	-7.14	0.00	2598.92	1921307.66	11971460.41	650.57
5300.00	90.40	359.8	2969.48	2648.91	-7.32	0.00	2648.92	1921307.48	11971510.41	650.92
5350.00	90.40	359.8	2969.13	2698.91	-7.49	0.00	2698.92	1921307.31	11971560.41	651.27
5400.00	90.40	359.8	2968.78	2748.91	-7.66	0.00	2748.92	1921307.14	11971610.41	651.62

Cranbrook State Com #1H, Plan 1

Operator	Mack Energy Corp	**Units**	feet, °/100ft	15:22 Tuesday, June 30, 2020	Page 3 of 5
Field	Round Tank	**County**	Chaves	**Vertical Section Azimuth**	359.8
Well Name	Cranbrook State Com #1H	**State**	New Mexico	**Survey Calculation Method**	Minimum Curvature
Plan	1	**Country**	USA	**Database**	Access

Location	SL: 1637 FSL & 2310 FEL Section 36-T15S-R28E BHL: 1310 FNL & 2310 FEL Secition 25-T15S-28E	**Map Zone**	UTM	**Lat Long Ref**	
Site				**Surface X** 1921314.8	**Surface Long**
Slot Name		**UWI**		**Surface Y** 11968861.5	**Surface Lat**
Well Number	1H	**API**		**Surface Z** 3620.4	**Global Z Ref** Mean Sea Level
Project		**MD/TVD Ref**	KB	**Ground Level** 3602.4	**Local North Ref** Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
5450.00	90.40	359.8	2968.43	2798.91	-7.84	0.00	2798.92	1921306.96	11971660.41	651.97
5500.00	90.40	359.8	2968.08	2848.91	-8.01	0.00	2848.92	1921306.79	11971710.41	652.32
5550.00	90.40	359.8	2967.74	2898.90	-8.19	0.00	2898.92	1921306.61	11971760.40	652.66
5600.00	90.40	359.8	2967.39	2948.90	-8.36	0.00	2948.91	1921306.44	11971810.40	653.01
5650.00	90.40	359.8	2967.04	2998.90	-8.54	0.00	2998.91	1921306.26	11971860.40	653.36
5700.00	90.40	359.8	2966.69	3048.90	-8.71	0.00	3048.91	1921306.09	11971910.40	653.71
5750.00	90.40	359.8	2966.34	3098.90	-8.89	0.00	3098.91	1921305.91	11971960.40	654.06
5800.00	90.40	359.8	2965.99	3148.90	-9.06	0.00	3148.91	1921305.74	11972010.40	654.41
5850.00	90.40	359.8	2965.64	3198.90	-9.24	0.00	3198.91	1921305.56	11972060.40	654.76
5900.00	90.40	359.8	2965.29	3248.89	-9.41	0.00	3248.91	1921305.39	11972110.39	655.11
5950.00	90.40	359.8	2964.94	3298.89	-9.58	0.00	3298.91	1921305.22	11972160.39	655.46
6000.00	90.40	359.8	2964.59	3348.89	-9.76	0.00	3348.90	1921305.04	11972210.39	655.81
6050.00	90.40	359.8	2964.25	3398.89	-9.93	0.00	3398.90	1921304.87	11972260.39	656.15
6100.00	90.40	359.8	2963.90	3448.89	-10.11	0.00	3448.90	1921304.69	11972310.39	656.50
6150.00	90.40	359.8	2963.55	3498.89	-10.28	0.00	3498.90	1921304.52	11972360.39	656.85
6200.00	90.40	359.8	2963.20	3548.88	-10.46	0.00	3548.90	1921304.34	11972410.38	657.20
6250.00	90.40	359.8	2962.85	3598.88	-10.63	0.00	3598.90	1921304.17	11972460.38	657.55
6300.00	90.40	359.8	2962.50	3648.88	-10.81	0.00	3648.90	1921303.99	11972510.38	657.90
6350.00	90.40	359.8	2962.15	3698.88	-10.98	0.00	3698.90	1921303.82	11972560.38	658.25
6400.00	90.40	359.8	2961.80	3748.88	-11.16	0.00	3748.89	1921303.64	11972610.38	658.60
6450.00	90.40	359.8	2961.45	3798.88	-11.33	0.00	3798.89	1921303.47	11972660.38	658.95
6500.00	90.40	359.8	2961.10	3848.88	-11.50	0.00	3848.89	1921303.30	11972710.38	659.30
6550.00	90.40	359.8	2960.75	3898.87	-11.68	0.00	3898.89	1921303.12	11972760.37	659.65
6600.00	90.40	359.8	2960.41	3948.87	-11.85	0.00	3948.89	1921302.95	11972810.37	659.99
6650.00	90.40	359.8	2960.06	3998.87	-12.03	0.00	3998.89	1921302.77	11972860.37	660.34
6700.00	90.40	359.8	2959.71	4048.87	-12.20	0.00	4048.89	1921302.60	11972910.37	660.69
6750.00	90.40	359.8	2959.36	4098.87	-12.38	0.00	4098.89	1921302.42	11972960.37	661.04
6800.00	90.40	359.8	2959.01	4148.87	-12.55	0.00	4148.88	1921302.25	11973010.37	661.39
6850.00	90.40	359.8	2958.66	4198.86	-12.73	0.00	4198.88	1921302.07	11973060.36	661.74
6900.00	90.40	359.8	2958.31	4248.86	-12.90	0.00	4248.88	1921301.90	11973110.36	662.09
6950.00	90.40	359.8	2957.96	4298.86	-13.08	0.00	4298.88	1921301.72	11973160.36	662.44
7000.00	90.40	359.8	2957.61	4348.86	-13.25	0.00	4348.88	1921301.55	11973210.36	662.79
7050.00	90.40	359.8	2957.26	4398.86	-13.42	0.00	4398.88	1921301.38	11973260.36	663.14
7100.00	90.40	359.8	2956.91	4448.86	-13.60	0.00	4448.88	1921301.20	11973310.36	663.49
7150.00	90.40	359.8	2956.57	4498.86	-13.77	0.00	4498.88	1921301.03	11973360.36	663.83
7200.00	90.40	359.8	2956.22	4548.85	-13.95	0.00	4548.88	1921300.85	11973410.35	664.18
7250.00	90.40	359.8	2955.87	4598.85	-14.12	0.00	4598.87	1921300.68	11973460.35	664.53

Cranbrook State Com #1H, Plan 1

Operator	Mack Energy Corp	**Units**	feet, °/100ft	15:22 Tuesday, June 30, 2020	Page 4 of 5
Field	Round Tank	**County**	Chaves	**Vertical Section Azimuth**	359.8
Well Name	Cranbrook State Com #1H	**State**	New Mexico	**Survey Calculation Method**	Minimum Curvature
Plan	1	**Country**	USA	**Database**	Access

Location	SL: 1637 FSL & 2310 FEL Section 36-T15S-R28E BHL: 1310 FNL & 2310 FEL Secition 25-T15S-28E		**Map Zone** UTM	**Lat Long Ref**	
Site			**Surface X** 1921314.8	**Surface Long**	
Slot Name		**UWI**	**Surface Y** 11968861.5	**Surface Lat**	
Well Number	1H	**API**	**Surface Z** 3620.4	**Global Z Ref**	Mean Sea Level
Project		**MD/TVD Ref** KB	**Ground Level** 3602.4	**Local North Ref**	Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
7300.00	90.40	359.8	2955.52	4648.85	-14.30	0.00	4648.87	1921300.50	11973510.35	664.88
7350.00	90.40	359.8	2955.17	4698.85	-14.47	0.00	4698.87	1921300.33	11973560.35	665.23
7400.00	90.40	359.8	2954.82	4748.85	-14.65	0.00	4748.87	1921300.15	11973610.35	665.58
7450.00	90.40	359.8	2954.47	4798.85	-14.82	0.00	4798.87	1921299.98	11973660.35	665.93
7500.00	90.40	359.8	2954.12	4848.84	-15.00	0.00	4848.87	1921299.81	11973710.34	666.28
7550.00	90.40	359.8	2953.77	4898.84	-15.17	0.00	4898.87	1921299.63	11973760.34	666.63
7600.00	90.40	359.8	2953.42	4948.84	-15.34	0.00	4948.87	1921299.46	11973810.34	666.98
7650.00	90.40	359.8	2953.08	4998.84	-15.52	0.00	4998.86	1921299.28	11973860.34	667.32
7700.00	90.40	359.8	2952.73	5048.84	-15.69	0.00	5048.86	1921299.11	11973910.34	667.67
7750.00	90.40	359.8	2952.38	5098.84	-15.87	0.00	5098.86	1921298.93	11973960.34	668.02
7800.00	90.40	359.8	2952.03	5148.84	-16.04	0.00	5148.86	1921298.76	11974010.34	668.37
7850.00	90.40	359.8	2951.68	5198.83	-16.22	0.00	5198.86	1921298.58	11974060.33	668.72
7900.00	90.40	359.8	2951.33	5248.83	-16.39	0.00	5248.86	1921298.41	11974110.33	669.07
7950.00	90.40	359.8	2950.98	5298.83	-16.57	0.00	5298.86	1921298.23	11974160.33	669.42
8000.00	90.40	359.8	2950.63	5348.83	-16.74	0.00	5348.86	1921298.06	11974210.33	669.77
8050.00	90.40	359.8	2950.28	5398.83	-16.91	0.00	5398.85	1921297.89	11974260.33	670.12
8100.00	90.40	359.8	2949.93	5448.83	-17.09	0.00	5448.85	1921297.71	11974310.33	670.47
8150.00	90.40	359.8	2949.58	5498.83	-17.26	0.00	5498.85	1921297.54	11974360.33	670.82
8200.00	90.40	359.8	2949.24	5548.82	-17.44	0.00	5548.85	1921297.36	11974410.32	671.16
8250.00	90.40	359.8	2948.89	5598.82	-17.61	0.00	5598.85	1921297.19	11974460.32	671.51
8300.00	90.40	359.8	2948.54	5648.82	-17.79	0.00	5648.85	1921297.01	11974510.32	671.86
8350.00	90.40	359.8	2948.19	5698.82	-17.96	0.00	5698.85	1921296.84	11974560.32	672.21
8400.00	90.40	359.8	2947.84	5748.82	-18.14	0.00	5748.85	1921296.66	11974610.32	672.56
8450.00	90.40	359.8	2947.49	5798.82	-18.31	0.00	5798.84	1921296.49	11974660.32	672.91
8500.00	90.40	359.8	2947.14	5848.81	-18.49	0.00	5848.84	1921296.31	11974710.31	673.26
8550.00	90.40	359.8	2946.79	5898.81	-18.66	0.00	5898.84	1921296.14	11974760.31	673.61
8600.00	90.40	359.8	2946.44	5948.81	-18.83	0.00	5948.84	1921295.97	11974810.31	673.96
8650.00	90.40	359.8	2946.09	5998.81	-19.01	0.00	5998.84	1921295.79	11974860.31	674.31
8700.00	90.40	359.8	2945.74	6048.81	-19.18	0.00	6048.84	1921295.62	11974910.31	674.66
8750.00	90.40	359.8	2945.40	6098.81	-19.36	0.00	6098.84	1921295.44	11974960.31	675.00
8800.00	90.40	359.8	2945.05	6148.81	-19.53	0.00	6148.84	1921295.27	11975010.31	675.35
8850.00	90.40	359.8	2944.70	6198.80	-19.71	0.00	6198.83	1921295.09	11975060.30	675.70
8900.00	90.40	359.8	2944.35	6248.80	-19.88	0.00	6248.83	1921294.92	11975110.30	676.05
8950.00	90.40	359.8	2944.00	6298.80	-20.06	0.00	6298.83	1921294.74	11975160.30	676.40
9000.00	90.40	359.8	2943.65	6348.80	-20.23	0.00	6348.83	1921294.57	11975210.30	676.75
9050.00	90.40	359.8	2943.30	6398.80	-20.41	0.00	6398.83	1921294.39	11975260.30	677.10
9100.00	90.40	359.8	2942.95	6448.80	-20.58	0.00	6448.83	1921294.22	11975310.30	677.45

Cranbrook State Com #1H, Plan 1

Operator	Mack Energy Corp	**Units**	feet, °/100ft	15:22 Tuesday, June 30, 2020 Page 5 of 5	
Field	Round Tank	**County**	Chaves	**Vertical Section Azimuth**	359.8
Well Name	Cranbrook State Com #1H	**State**	New Mexico	**Survey Calculation Method**	Minimum Curvature
Plan	1	**Country**	USA	**Database**	Access

Location	SL: 1637 FSL & 2310 FEL Section 36-T15S-R28E BHL: 1310 FNL & 2310 FEL Secition 25-T15S-28E		**Map Zone** UTM	**Lat Long Ref**	
Site			**Surface X** 1921314.8	**Surface Long**	
Slot Name		**UWI**	**Surface Y** 11968861.5	**Surface Lat**	
Well Number	1H	**API**	**Surface Z** 3620.4	**Global Z Ref**	Mean Sea Level
Project		**MD/TVD Ref** KB	**Ground Level** 3602.4	**Local North Ref**	Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
9150.00	90.40	359.8	2942.60	6498.79	-20.75	0.00	6498.83	1921294.05	11975360.29	677.80
9200.00	90.40	359.8	2942.25	6548.79	-20.93	0.00	6548.83	1921293.87	11975410.29	678.15
9250.00	90.40	359.8	2941.91	6598.79	-21.10	0.00	6598.83	1921293.70	11975460.29	678.49
9300.00	90.40	359.8	2941.56	6648.79	-21.28	0.00	6648.82	1921293.52	11975510.29	678.84
9350.00	90.40	359.8	2941.21	6698.79	-21.45	0.00	6698.82	1921293.35	11975560.29	679.19
9400.00	90.40	359.8	2940.86	6748.79	-21.63	0.00	6748.82	1921293.17	11975610.29	679.54
9450.00	90.40	359.8	2940.51	6798.79	-21.80	0.00	6798.82	1921293.00	11975660.29	679.89
9500.00	90.40	359.8	2940.16	6848.78	-21.98	0.00	6848.82	1921292.82	11975710.28	680.24
9550.00	90.40	359.8	2939.81	6898.78	-22.15	0.00	6898.82	1921292.65	11975760.28	680.59
9600.00	90.40	359.8	2939.46	6948.78	-22.33	0.00	6948.82	1921292.47	11975810.28	680.94
9650.00	90.40	359.8	2939.11	6998.78	-22.50	0.00	6998.82	1921292.30	11975860.28	681.29
9700.00	90.40	359.8	2938.76	7048.78	-22.67	0.00	7048.81	1921292.13	11975910.28	681.64
9750.00	90.40	359.8	2938.41	7098.78	-22.85	0.00	7098.81	1921291.95	11975960.28	681.99
9800.00	90.40	359.8	2938.07	7148.77	-23.02	0.00	7148.81	1921291.78	11976010.27	682.33
9850.00	90.40	359.8	2937.72	7198.77	-23.20	0.00	7198.81	1921291.60	11976060.27	682.68
9900.00	90.40	359.8	2937.37	7248.77	-23.37	0.00	7248.81	1921291.43	11976110.27	683.03
9950.00	90.40	359.8	2937.02	7298.77	-23.55	0.00	7298.81	1921291.25	11976160.27	683.38
10000.00	90.40	359.8	2936.67	7348.77	-23.72	0.00	7348.81	1921291.08	11976210.27	683.73
10050.00	90.40	359.8	2936.32	7398.77	-23.90	0.00	7398.81	1921290.90	11976260.27	684.08
10100.00	90.40	359.8	2935.97	7448.77	-24.07	0.00	7448.80	1921290.73	11976310.27	684.43
10150.00	90.40	359.8	2935.62	7498.76	-24.25	0.00	7498.80	1921290.56	11976360.26	684.78
*** TD (at MD = 10171.50)										
10171.50	90.40	359.8	2935.47	7520.27	-24.32	0.00	7520.31	1921290.48	11976381.77	684.93

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 13757

COMMENTS

Operator:	OGRID:	Action Number:	Action Type:
MACK ENERGY CORP P.O. Box 960 11344 Lovington Hwy Artesia, NM88211-0960	13837	13757	FORM 3160-3

Created By	Comment	Comment Date
ahvermersch	API Issued 30-005-64360; well name will stay as is; Surface and 1st take point penetrate State Minerals.	03/08/2021
kpickford	KP GEO Review 1/5/2020	01/05/2021

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

CONDITIONS

Action 13757

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
MACK ENERGY CORP P.O. Box 960 11344 Lovington Hwy Artesia, NM88211-0960	13837	13757	FORM 3160-3

OCD Reviewer	Condition
kpickford	Notify OCD 24 hours prior to casing & cement
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
kpickford	Surface casing must be set 25' below top of Rustler Anhydrite or salt in order to seal off protectable water
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
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104