

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

OCD Hobbs
NOBBS OOD

NOV 23 2015

RECEIVED

5. Lease Serial No. **NH128366**
SHL: NM-02127B, BHL: NM-01747

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.
LEA UNIT (NMNM-70976B)

8. Lease Name and Well No.
LEA UNIT 51H

9. API Well No.
30-025-42958

10. Field and Pool, or Exploratory
LEA; BONE SPRING

11. Sec., T. R. M. or Blk. and Survey or Area
**SHL: SECTION 1, T. 20 S., R. 34 E.
BHL: SECTION 12, T. 20 S., R. 34 E.**

12. County or Parish
LEA

13. State
NM

1a. Type of work: ☒ DRILL ☐ REENTER

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator **LEGACY RESERVES OPERATING, L. P.**

3a. Address **P. O. BOX 10848
MIDLAND, TX. 79702**

3b. Phone No. (include area code)
432-221-6334 (Craig Sparkman)

4. Location of Well (Report location clearly and in accordance with any State requirements.)
At surface **630 FSL & 660 FEL Section 1 (First Take: 330 FNL & 890 FEL, Section 12)**

At proposed prod. zone **330 FSL & 890 FEL Section 12 (Last take)**

**UNORTHODOX
LOCATION**

14. Distance in miles and direction from nearest town or post office*
26 MILES SOUTHWEST OF HOBBS, NM

15. Distance from proposed*
location to nearest SHL: 630'
property or lease line, ft. BHL: 330'
(Also to nearest drig. unit line, if any)

16. No. of acres in lease
SHL: 480
BHL: 360

17. Spacing Unit dedicated to this well
160

18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft. **100' Lea Unit #19**

19. Proposed Depth
TVD: 10,800'
MD: 16,076'

20. BLM/BIA Bond No. on file
NMB001014 & NMB001015

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3680' GL

22. Approximate date work will start*
ASAP

23. Estimated duration
45 DAYS

24. Attachments

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

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

25. Signature **[Signature]**
Title **PERMIT AGENT FOR LEGACY RESERVES OPERATING, L. P.**

Name (Printed/Typed)
BARRY W. HUNT

Date **9/25/15**

Approved by (Signature) **[Signature]**
Title **FIELD MANAGER**

Name (Printed/Typed)

Date **NOV 18 2015**

Office **CARLSBAD FIELD OFFICE**

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

KZ
11/24/15
E-PERMITTING - - New Well _____
Comp _____ P&A _____ TA _____
CSNG _____ Loc Chng _____
ReComp _____ Add New Well **FM**
Cancl Well _____ Create Pool _____

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

NOV 20 2015

DRILLING PLAN
LEA UNIT 51H
LEGACY RESERVES OPERATING LP
SHL: Unit P, Section 01
BHL: Unit P, Section 12
T20S-R34E, Lea County, New Mexico

To satisfy requirements of Onshore Oil and Gas Order No. 1, Legacy Reserves Operating LP submits the following for your consideration:

1. **Location:** SHL: 630' FSL & 660' FEL, Sec. 01, T20S-R34E (First Take: 330 FNL & 890 FEL, Sec. 12)
BHL: 330' FSL & 890' FEL, Sec. 12, T20S-R34E (Last Take)

2. **Elevations:** 3,680' GL

3. **Geological Name of Surface Formation:** Quaternary alluvium deposits

4. **Drilling Tools and Associated Equipment:** Rotary drilling rig using fluid as a means for removal of solid cuttings from the well.

5. **Proposed Drilling Depth:** 16,076' MD 10,800' TVD

6. **Estimated Tops of Geological Markers:**

Rustler	1,680'	Delaware	5,666'
Top Salt	1,720'	Bone Spring Lime	8,205'
Bottom Salt	3,150'	Avalon	8,760'
Top of Capitan Reef	3,150'	1 st . Bone Spring	9,501'
Capitan Reef Bottom	4,710'	2 nd Bone Spring	10,034'
San Andres	4,710'	3 rd . Bone Spring	10,745'

7. **Possible mineral bearing formations:**

Primary: Bone Spring (oil); Secondary: Delaware (oil), Avalon (oil), fresh water (~125')

8. **Proposed Mud System:**

Depth	Mud Wt.	Visc	Fluid Loss	Type Mud
0' to 1800' 1800' 1850'	8.4-8.9	30-32	NC	Fresh water gel spud mud
1800' to 5400'	9.8-10	28-29	NC	Brine water
5400' to 10,800'	8.4-8.6	28-29	NC	Fresh water/brine, use hi-viscosity Weeps to clean hole
10,800' to 16,076'	8.9-9.1	28-29	18-20	Fresh water/brine

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. A Pason PVT system will be rigged up prior to spudding this well. A volume monitoring system that measures, calculates and displays readings from the mud system on the rig to alert the rig crew of impending

gas kicks and lost circulation. In order to effectively run open hole logs and casing, the mud viscosity and fluid loss properties may be adjusted.

9. **Proposed Drilling Plan:**

Set surface and intermediate casing and cement to surface. Drill 8-3/4" to ~10,800', Kick off and drill 8-3/4" hole to TD of ~16,076'. Set 5-1/2" casing from surface to TD (~16,076'). Cement 5-1/2" production casing back to surface.

10. **Casing Information:**

See COA

String	Hole size	Depth	Casing OD	Collar	Weight	Grade
Surface	17-1/2"	1850' 1800' MD	New 13-3/8"	STC	54.5#	J-55
Intermediate	12-1/4"	3901' MD	New 9-5/8"	LTC	40#	J-55
Intermediate	12-1/4"	5400' MD	New 9-5/8"	LTC	40#	HCK-55
Production	8-3/4"	16,076' MD	New 5-1/2"	BTC	20#	P-110

5-1/2", P-110:

9-5/8", HCK-55

Collapse Factor:	1.55	Collapse Factor:	1.28
Burst Factor:	1.29	Burst Factor:	2.03
Tension Factor:	3.06	Tension Factor:	3.33

9-5/8, J-55

13-3/8, J-55

Collapse Factor:	1.24	Collapse Factor:	3.08
Burst Factor:	1.82	Burst Factor:	3.54
Tension Factor:	3.12	Tension Factor:	5.66

11. **Cementing Information:**

Surface Casing (75% excess on lead & 75% excess on tail to design for cement top at surface):

Lead: 1100 sxs class C cement + 4% bwoc bentonite II + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.005% bwoc Static Free + 0.005 gps FP-6L (13.50 ppg, 1.93 cfps, 9.71 gps wtr).

Tail: 200 sxs class C cement + 1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L (14.80 ppg, 1.34 cfps, 6.35 gps wtr).

Intermediate Casing (80% excess on lead & 80% excess on tail to design for cement top at surface):

A DV tool and ECP will be used to cement the 9-5/8" casing if losses greater than 50% are encountered in the Capitan Reef. DV tool will be placed at approximately 3,950'.

No DV tool:

Lead: 1300 sxs (35:65) poz (fly ash) class C cement + 4% bwoc bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk Cello Flake + 0.005 lbs/sk Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwoc Sodium Chloride (12.5 ppg, 2.13 cf/sx, 8.81 gps wtr).

Tail: 300 sxs class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr).

With DV Tool:

Stage 1

Lead: 300 sxs (35:65) poz (fly ash) class C cement + 4% bwoc bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk Cello Flake + 0.005 lbs/sk Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cf/sx, 8.81 gps wtr).

Tail: 300 sxs class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr).

Stage 2

Lead: 800 sxs (35:65) poz (fly ash) class C cement + 4% bwoc bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sk Cello Flake + 0.005 lbs/sk Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cf/sx, 8.81 gps wtr).

Tail: 200 sxs class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr).

Production Casing (80% excess on lead & 20% excess on tail to design for cement top at surface):

Lead: 1600 sxs (50:50) poz (fly ash) class H cement + 10% bwoc bentonite II + 5% bwow sodium chloride + 5 pps LCM-1 + 0.005 lbs/sk Static Free + 0.005 gps FP-6L (11.90 ppg, 2.38 cf/sx, 13.22 gps wtr).

Tail: 1200 sxs Class H (15:61:11) poz (fly ash): class H cement: CSE-2 + 4% bwow sodium chloride + 3 pps LCM-1 + 0.6% bwoc FL-25 + 0.005 gps FP-6L + 0.005% bwoc Static Free (13.20 ppg, 1.62 cf/sx, 9.45 gps wtr).

12. Pressure Control Eqpt/BOP:

Legacy Reserves plans to use a 13-5/8" 5000-psi working pressure BOP system consisting of a double ram BOP with one ram being pipe and one ram being blind, a 5000-psi annular type preventer, a 5000-psi choke manifold and 80 gallon accumulator with floor, five remote operating stations and an auxiliary power system. A rotating head will be utilized as needed. A drill string safety valve in the open position will be available on the rig floor. A mud gas separator will be available for use if needed.

A 3M BOP will be used to drill from the surface casing shoe (~1800') to the intermediate casing shoe (~5400'). The BOP will be a 5M system, however the "A" section wellhead will be a 3M wellhead (see attached BOP Diagram).

The BOP unit will be hydraulically operated. The BOP will be operated at least once per day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling.

The BOPs will be tested by an independent service company to 250 psi low and 5000 psi high.

13. Testing, Logging, and Coring Program:

- See COA*
- A. Mud logging program: 2 man unit from approximately after setting intermediate casing.
 - B. No open hole logs, DST's or cores are planned.

14. Potential Hazards

See COA

No abnormal pressures or temperatures are expected during the drilling of this well. If H2S is encountered the operator will comply with provisions of Onshore Order 6. Since there will be an H2S Safety package on location, attached is an "H2S Drilling Operations Plan". Adequate flare lines will be installed on the mud/gas separator so gas may be flared safely. All personnel will be familiar with all aspects of safe operations of equipment being used. Lost circulation may occur and a cement contingency plan is included in this plan along with mud materials to be kept on location at all times in order to combat lost circulation or unexpected kicks. Estimated BHP: 4752 psi, estimated BHT: 162°F.

15. **Road and Location**

Road and location construction will begin after BLM approval of the APD. Drilling is expected to take 30-35 days and an additional 10 days for the completion.

16. **Additional Requirements of Project:**

Completion: The targeted Bone Spring pay zone will be perforated and stimulated in multiple stages using acid and hydraulic fracturing treatments. Fresh water used in the drilling and completion of this well will be transferred from off-site via temporary flowlines and stored in frac tanks on the location.



Legacy Reserves
Project: Lea County, NM
Site: Lea Unit
Well: #51H
Wellbore: OH
Plan: Plan #1 (#51H/OH)

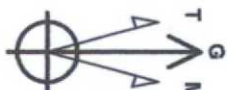
WELL DETAILS: #51H

Ground Elevation: 3680.0
RKB Elevation: KB @ 3680.0usft (McVay 4)
Rig Name: McVay 4

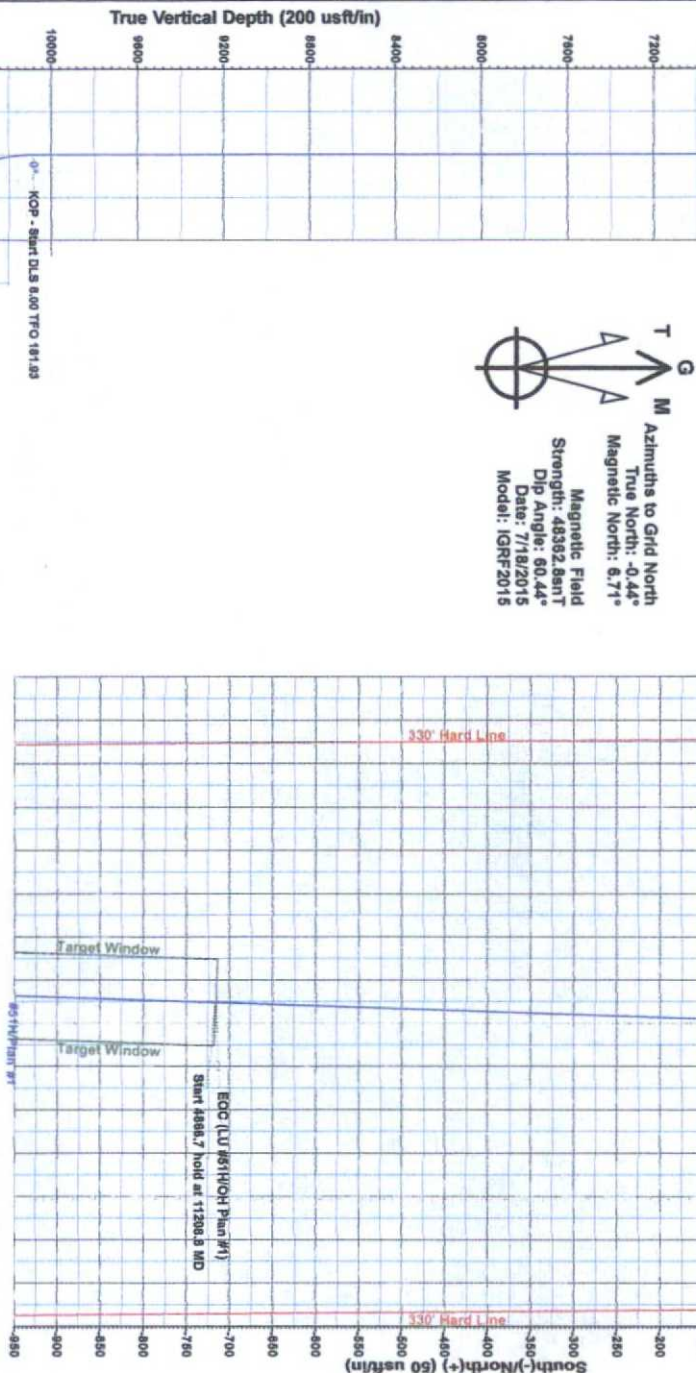
Northing 6817700.70 Easting 764647.70 Latitude 32° 35' 47.333 N Longitude 103° 30' 24.532 W

Section Details									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	TFace	Vsect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	10083.8	0.00	0.00	10083.8	0.0	0.0	0.00	0.0	0.0
3	11208.8	90.00	181.93	10800.0	-716.8	-24.1	8.00	181.93	716.2
4	16076.5	90.00	181.93	10800.0	-5679.7	-187.6	0.00	0.00	6582.9
									BHL (LU #51H/OH)

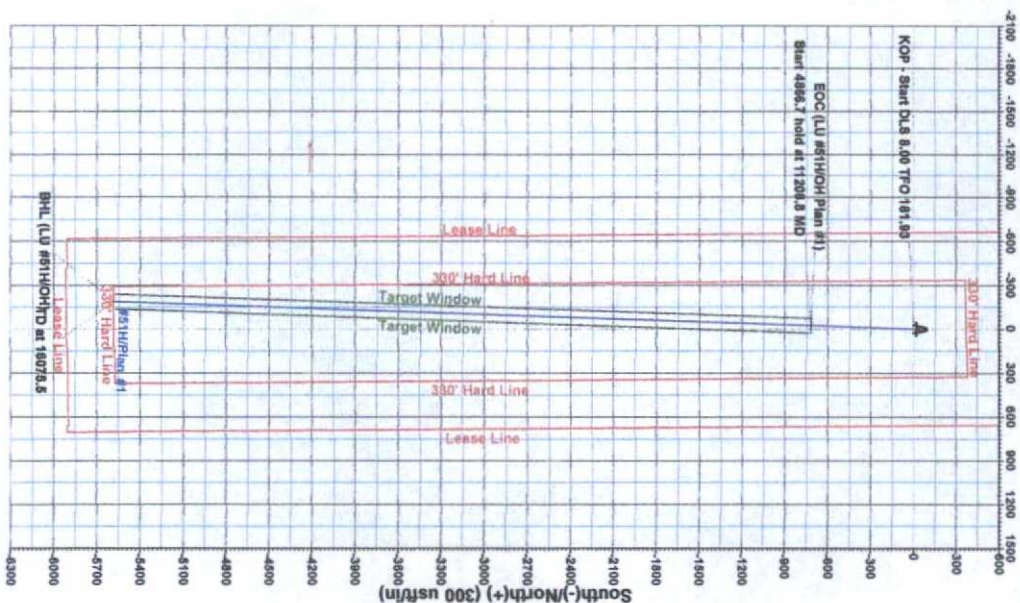
West(-)/East(+) (50 usft/in)



Azimuths to Grid North
True North: -0.44°
Magnetic North: 6.71°
Magnetic Field Strength: 48362.8nT
Dip Angle: 66.44°
Date: 7/16/2015
Model: IGRF2015



West(-)/East(+) (300 usft/in)



Plan: Plan #1 (#51H/OH)
Created By: Well Planner Date: 5/24, July 21 2015

Vertical Section at 181.93° (200 usft/in)

Terra Directional Services
3706 South County Road 1210, Midland, TX 79706
Office: (432) 618-1210

PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Legacy Reserves

Lea County, NM

Lea Unit

#51H

OH

Plan: Plan #1

Standard Planning Report

21 July, 2015



Database: EDM 5000.1 Single User Db
Company: Legacy Reserves
Project: Lea County, NM
Site: Lea Unit
Well: #51H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #51H
TVD Reference: KB @ 3698.0usft (McVay 4)
MD Reference: KB @ 3698.0usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Lea Unit			
Site Position:		Northing:	567,504.40 usft	Latitude: 32° 33' 26.922 N
From: Map		Easting:	753,784.90 usft	Longitude: 103° 30' 34.732 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.44 °

Well	#51H			
Well Position	+N/-S	14,196.3 usft	Northing:	581,700.70 usft
	+E/-W	762.8 usft	Easting:	754,547.70 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level: 3,680.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/18/2015	7.16	60.44	48,363

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	181.93

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,083.8	0.00	0.00	10,083.8	0.0	0.0	0.00	0.00	0.00	0.00	
11,208.8	90.00	181.93	10,800.0	-715.8	-24.1	8.00	8.00	-15.83	181.93	
16,075.5	90.00	181.93	10,800.0	-5,579.7	-187.6	0.00	0.00	0.00	0.00	BHL (LU #51H/OH)

Database: EDM 5000.1 Single User Db
Company: Legacy Reserves
Project: Lea County, NM
Site: Lea Unit
Well: #51H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #51H
TVD Reference: KB @ 3698.0usft (McVay 4)
MD Reference: KB @ 3698.0usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00

Database: EDM 5000.1 Single User Db
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Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #51H
TVD Reference: KB @ 3698.0usft (McVay 4)
MD Reference: KB @ 3698.0usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,083.8	0.00	0.00	10,083.8	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start DLS 8.00 TFO 181.93									
10,100.0	1.30	181.93	10,100.0	-0.2	0.0	0.2	8.00	8.00	0.00
10,150.0	5.30	181.93	10,149.9	-3.1	-0.1	3.1	8.00	8.00	0.00
10,200.0	9.30	181.93	10,199.5	-9.4	-0.3	9.4	8.00	8.00	0.00
10,250.0	13.30	181.93	10,248.5	-19.2	-0.6	19.2	8.00	8.00	0.00

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Wellbore: OH
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MD Reference: KB @ 3698.0usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,300.0	17.30	181.93	10,296.7	-32.4	-1.1	32.4	8.00	8.00	0.00
10,350.0	21.30	181.93	10,343.9	-48.9	-1.6	48.9	8.00	8.00	0.00
10,400.0	25.30	181.93	10,389.8	-68.6	-2.3	68.7	8.00	8.00	0.00
10,450.0	29.30	181.93	10,434.3	-91.5	-3.1	91.6	8.00	8.00	0.00
10,500.0	33.30	181.93	10,477.0	-117.5	-4.0	117.6	8.00	8.00	0.00
10,550.0	37.30	181.93	10,517.8	-146.4	-4.9	146.5	8.00	8.00	0.00
10,600.0	41.30	181.93	10,556.5	-178.0	-6.0	178.1	8.00	8.00	0.00
10,650.0	45.30	181.93	10,592.8	-212.3	-7.1	212.4	8.00	8.00	0.00
10,700.0	49.30	181.93	10,626.7	-249.0	-8.4	249.1	8.00	8.00	0.00
10,750.0	53.30	181.93	10,658.0	-288.0	-9.7	288.1	8.00	8.00	0.00
10,800.0	57.30	181.93	10,686.5	-329.1	-11.1	329.2	8.00	8.00	0.00
10,850.0	61.30	181.93	10,712.0	-372.0	-12.5	372.2	8.00	8.00	0.00
10,900.0	65.30	181.93	10,734.5	-416.6	-14.0	416.9	8.00	8.00	0.00
10,950.0	69.30	181.93	10,753.7	-462.7	-15.6	463.0	8.00	8.00	0.00
11,000.0	73.30	181.93	10,769.8	-510.1	-17.1	510.3	8.00	8.00	0.00
11,050.0	77.30	181.93	10,782.5	-558.4	-18.8	558.7	8.00	8.00	0.00
11,100.0	81.30	181.93	10,791.7	-607.5	-20.4	607.8	8.00	8.00	0.00
11,150.0	85.30	181.93	10,797.6	-657.1	-22.1	657.5	8.00	8.00	0.00
11,200.0	89.30	181.93	10,799.9	-707.0	-23.8	707.4	8.00	8.00	0.00
11,208.8	90.00	181.93	10,800.0	-715.8	-24.1	716.2	8.00	8.00	0.00
EOC - Start 4866.7 hold at 11208.8 MD									
11,300.0	90.00	181.93	10,800.0	-806.9	-27.1	807.4	0.00	0.00	0.00
11,400.0	90.00	181.93	10,800.0	-906.9	-30.5	907.4	0.00	0.00	0.00
11,500.0	90.00	181.93	10,800.0	-1,006.8	-33.9	1,007.4	0.00	0.00	0.00
11,600.0	90.00	181.93	10,800.0	-1,106.8	-37.2	1,107.4	0.00	0.00	0.00
11,700.0	90.00	181.93	10,800.0	-1,206.7	-40.6	1,207.4	0.00	0.00	0.00
11,800.0	90.00	181.93	10,800.0	-1,306.7	-43.9	1,307.4	0.00	0.00	0.00
11,900.0	90.00	181.93	10,800.0	-1,406.6	-47.3	1,407.4	0.00	0.00	0.00
12,000.0	90.00	181.93	10,800.0	-1,506.5	-50.7	1,507.4	0.00	0.00	0.00
12,100.0	90.00	181.93	10,800.0	-1,606.5	-54.0	1,607.4	0.00	0.00	0.00
12,200.0	90.00	181.93	10,800.0	-1,706.4	-57.4	1,707.4	0.00	0.00	0.00
12,300.0	90.00	181.93	10,800.0	-1,806.4	-60.7	1,807.4	0.00	0.00	0.00
12,400.0	90.00	181.93	10,800.0	-1,906.3	-64.1	1,907.4	0.00	0.00	0.00
12,500.0	90.00	181.93	10,800.0	-2,006.3	-67.5	2,007.4	0.00	0.00	0.00
12,600.0	90.00	181.93	10,800.0	-2,106.2	-70.8	2,107.4	0.00	0.00	0.00
12,700.0	90.00	181.93	10,800.0	-2,206.2	-74.2	2,207.4	0.00	0.00	0.00
12,800.0	90.00	181.93	10,800.0	-2,306.1	-77.5	2,307.4	0.00	0.00	0.00
12,900.0	90.00	181.93	10,800.0	-2,406.0	-80.9	2,407.4	0.00	0.00	0.00
13,000.0	90.00	181.93	10,800.0	-2,506.0	-84.3	2,507.4	0.00	0.00	0.00
13,100.0	90.00	181.93	10,800.0	-2,605.9	-87.6	2,607.4	0.00	0.00	0.00
13,200.0	90.00	181.93	10,800.0	-2,705.9	-91.0	2,707.4	0.00	0.00	0.00
13,300.0	90.00	181.93	10,800.0	-2,805.8	-94.3	2,807.4	0.00	0.00	0.00
13,400.0	90.00	181.93	10,800.0	-2,905.8	-97.7	2,907.4	0.00	0.00	0.00
13,500.0	90.00	181.93	10,800.0	-3,005.7	-101.1	3,007.4	0.00	0.00	0.00
13,600.0	90.00	181.93	10,800.0	-3,105.6	-104.4	3,107.4	0.00	0.00	0.00
13,700.0	90.00	181.93	10,800.0	-3,205.6	-107.8	3,207.4	0.00	0.00	0.00
13,800.0	90.00	181.93	10,800.0	-3,305.5	-111.1	3,307.4	0.00	0.00	0.00
13,900.0	90.00	181.93	10,800.0	-3,405.5	-114.5	3,407.4	0.00	0.00	0.00
14,000.0	90.00	181.93	10,800.0	-3,505.4	-117.9	3,507.4	0.00	0.00	0.00
14,100.0	90.00	181.93	10,800.0	-3,605.4	-121.2	3,607.4	0.00	0.00	0.00
14,200.0	90.00	181.93	10,800.0	-3,705.3	-124.6	3,707.4	0.00	0.00	0.00
14,300.0	90.00	181.93	10,800.0	-3,805.2	-127.9	3,807.4	0.00	0.00	0.00
14,400.0	90.00	181.93	10,800.0	-3,905.2	-131.3	3,907.4	0.00	0.00	0.00
14,500.0	90.00	181.93	10,800.0	-4,005.1	-134.7	4,007.4	0.00	0.00	0.00

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,600.0	90.00	181.93	10,800.0	-4,105.1	-138.0	4,107.4	0.00	0.00	0.00
14,700.0	90.00	181.93	10,800.0	-4,205.0	-141.4	4,207.4	0.00	0.00	0.00
14,800.0	90.00	181.93	10,800.0	-4,305.0	-144.7	4,307.4	0.00	0.00	0.00
14,900.0	90.00	181.93	10,800.0	-4,404.9	-148.1	4,407.4	0.00	0.00	0.00
15,000.0	90.00	181.93	10,800.0	-4,504.9	-151.5	4,507.4	0.00	0.00	0.00
15,100.0	90.00	181.93	10,800.0	-4,604.8	-154.8	4,607.4	0.00	0.00	0.00
15,200.0	90.00	181.93	10,800.0	-4,704.7	-158.2	4,707.4	0.00	0.00	0.00
15,300.0	90.00	181.93	10,800.0	-4,804.7	-161.5	4,807.4	0.00	0.00	0.00
15,400.0	90.00	181.93	10,800.0	-4,904.6	-164.9	4,907.4	0.00	0.00	0.00
15,500.0	90.00	181.93	10,800.0	-5,004.6	-168.3	5,007.4	0.00	0.00	0.00
15,600.0	90.00	181.93	10,800.0	-5,104.5	-171.6	5,107.4	0.00	0.00	0.00
15,700.0	90.00	181.93	10,800.0	-5,204.5	-175.0	5,207.4	0.00	0.00	0.00
15,800.0	90.00	181.93	10,800.0	-5,304.4	-178.3	5,307.4	0.00	0.00	0.00
15,900.0	90.00	181.93	10,800.0	-5,404.3	-181.7	5,407.4	0.00	0.00	0.00
16,000.0	90.00	181.93	10,800.0	-5,504.3	-185.1	5,507.4	0.00	0.00	0.00
16,075.5	90.00	181.93	10,800.0	-5,579.7	-187.6	5,582.9	0.00	0.00	0.00

TD at 16075.5

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
EOC (LU #51H/OH Plan	0.00	0.00	10,800.0	-715.8	-24.1	580,984.91	754,523.63	32° 35' 40.252 N	103° 30' 24.878 W
- plan hits target center									
- Point									
Target Window (LU #51H	0.00	181.93	10,800.0	-715.8	-24.1	580,984.91	754,523.63	32° 35' 40.253 N	103° 30' 24.878 W
- plan hits target center									
- Rectangle (sides W100.0 H4,866.7 D30.0)									
BHL (LU #51H/OH)	0.00	0.00	10,800.0	-5,579.7	-187.6	576,121.00	754,360.10	32° 34' 52.138 N	103° 30' 27.231 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
10,083.8	10,083.8	0.0	0.0	KOP - Start DLS 8.00 TFO 181.93
11,208.8	10,800.0	-715.8	-24.1	EOC - Start 4866.7 hold at 11208.8 MD
16,075.5	10,800.0	-5,579.7	-187.6	TD at 16075.5

Legacy Reserves
#51H - Plan #1

Lea County, NM
Lea Unit
Your Ref:

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0	0	0	0	0	0	0	0
100	0	0	100	0	0	0	0
200	0	0	200	0	0	0	0
300	0	0	300	0	0	0	0
400	0	0	400	0	0	0	0
500	0	0	500	0	0	0	0
600	0	0	600	0	0	0	0
700	0	0	700	0	0	0	0
800	0	0	800	0	0	0	0
900	0	0	900	0	0	0	0
1000	0	0	1000	0	0	0	0
1100	0	0	1100	0	0	0	0
1200	0	0	1200	0	0	0	0
1300	0	0	1300	0	0	0	0
1400	0	0	1400	0	0	0	0
1500	0	0	1500	0	0	0	0
1600	0	0	1600	0	0	0	0
1700	0	0	1700	0	0	0	0
1800	0	0	1800	0	0	0	0
1900	0	0	1900	0	0	0	0
2000	0	0	2000	0	0	0	0
2100	0	0	2100	0	0	0	0
2200	0	0	2200	0	0	0	0
2300	0	0	2300	0	0	0	0
2400	0	0	2400	0	0	0	0
2500	0	0	2500	0	0	0	0
2600	0	0	2600	0	0	0	0
2700	0	0	2700	0	0	0	0
2800	0	0	2800	0	0	0	0
2900	0	0	2900	0	0	0	0
3000	0	0	3000	0	0	0	0
3100	0	0	3100	0	0	0	0

3200	0	0	3200	0	0	0	0
3300	0	0	3300	0	0	0	0
3400	0	0	3400	0	0	0	0
3500	0	0	3500	0	0	0	0
3600	0	0	3600	0	0	0	0
3700	0	0	3700	0	0	0	0
3800	0	0	3800	0	0	0	0
3900	0	0	3900	0	0	0	0
4000	0	0	4000	0	0	0	0
4100	0	0	4100	0	0	0	0
4200	0	0	4200	0	0	0	0
4300	0	0	4300	0	0	0	0
4400	0	0	4400	0	0	0	0
4500	0	0	4500	0	0	0	0
4600	0	0	4600	0	0	0	0
4700	0	0	4700	0	0	0	0
4800	0	0	4800	0	0	0	0
4900	0	0	4900	0	0	0	0
5000	0	0	5000	0	0	0	0
5100	0	0	5100	0	0	0	0
5200	0	0	5200	0	0	0	0
5300	0	0	5300	0	0	0	0
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6200	0	0	6200	0	0	0	0
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7000	0	0	7000	0	0	0	0
7100	0	0	7100	0	0	0	0
7200	0	0	7200	0	0	0	0
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9900	0	0	9900	0	0	0	0
10000	0	0	10000	0	0	0	0
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10100	1.296	181.926	10100	-0.18	-0.01	0.18	8
10150	5.296	181.926	10149.91	-3.06	-0.1	3.06	8
10200	9.296	181.926	10199.49	-9.4	-0.32	9.41	8
10250	13.296	181.926	10248.51	-19.19	-0.65	19.2	8
10300	17.296	181.926	10296.73	-32.37	-1.09	32.39	8
10350	21.296	181.926	10343.91	-48.88	-1.64	48.9	8
10400	25.296	181.926	10389.83	-68.64	-2.31	68.67	8
10450	29.296	181.926	10434.25	-91.55	-3.08	91.6	8
10500	33.296	181.926	10476.97	-117.5	-3.95	117.57	8
10550	37.296	181.926	10517.77	-146.37	-4.92	146.45	8
10600	41.296	181.926	10556.45	-178.01	-5.99	178.11	8
10650	45.296	181.926	10592.84	-212.27	-7.14	212.39	8
10700	49.296	181.926	10626.74	-248.99	-8.37	249.13	8
10750	53.296	181.926	10658	-287.98	-9.68	288.14	8
10800	57.296	181.926	10686.46	-329.05	-11.06	329.24	8
10850	61.296	181.926	10711.99	-372.01	-12.51	372.22	8
10900	65.296	181.926	10734.45	-416.64	-14.01	416.88	8
10950	69.296	181.926	10753.74	-462.73	-15.56	462.99	8
11000	73.296	181.926	10769.78	-510.05	-17.15	510.34	8
11050	77.296	181.926	10782.46	-558.38	-18.77	558.7	8
11100	81.296	181.926	10791.75	-607.47	-20.42	607.82	8
11150	85.296	181.926	10797.58	-657.09	-22.09	657.46	8
11200	89.296	181.926	10799.94	-707	-23.77	707.4	8
11208.8	90	181.926	10800	-715.79	-24.07	716.2	8

11300	90	181.926	10800	-806.94	-27.13	807.4	0
11400	90	181.926	10800	-906.88	-30.49	907.4	0
11500	90	181.926	10800	-1006.83	-33.85	1007.4	0
11600	90	181.926	10800	-1106.77	-37.21	1107.4	0
11700	90	181.926	10800	-1206.72	-40.57	1207.4	0
11800	90	181.926	10800	-1306.66	-43.93	1307.4	0
11900	90	181.926	10800	-1406.6	-47.29	1407.4	0
12000	90	181.926	10800	-1506.55	-50.65	1507.4	0
12100	90	181.926	10800	-1606.49	-54.01	1607.4	0
12200	90	181.926	10800	-1706.43	-57.37	1707.4	0
12300	90	181.926	10800	-1806.38	-60.73	1807.4	0
12400	90	181.926	10800	-1906.32	-64.09	1907.4	0
12500	90	181.926	10800	-2006.26	-67.45	2007.4	0
12600	90	181.926	10800	-2106.21	-70.81	2107.4	0
12700	90	181.926	10800	-2206.15	-74.17	2207.4	0
12800	90	181.926	10800	-2306.09	-77.54	2307.4	0
12900	90	181.926	10800	-2406.04	-80.9	2407.4	0
13000	90	181.926	10800	-2505.98	-84.26	2507.4	0
13100	90	181.926	10800	-2605.92	-87.62	2607.4	0
13200	90	181.926	10800	-2705.87	-90.98	2707.4	0
13300	90	181.926	10800	-2805.81	-94.34	2807.4	0
13400	90	181.926	10800	-2905.76	-97.7	2907.4	0
13500	90	181.926	10800	-3005.7	-101.06	3007.4	0
13600	90	181.926	10800	-3105.64	-104.42	3107.4	0
13700	90	181.926	10800	-3205.59	-107.78	3207.4	0
13800	90	181.926	10800	-3305.53	-111.14	3307.4	0
13900	90	181.926	10800	-3405.47	-114.5	3407.4	0
14000	90	181.926	10800	-3505.42	-117.86	3507.4	0
14100	90	181.926	10800	-3605.36	-121.22	3607.4	0
14200	90	181.926	10800	-3705.3	-124.58	3707.4	0
14300	90	181.926	10800	-3805.25	-127.94	3807.4	0
14400	90	181.926	10800	-3905.19	-131.3	3907.4	0
14500	90	181.926	10800	-4005.13	-134.66	4007.4	0
14600	90	181.926	10800	-4105.08	-138.02	4107.4	0
14700	90	181.926	10800	-4205.02	-141.38	4207.4	0
14800	90	181.926	10800	-4304.96	-144.74	4307.4	0
14900	90	181.926	10800	-4404.91	-148.1	4407.4	0
15000	90	181.926	10800	-4504.85	-151.46	4507.4	0
15100	90	181.926	10800	-4604.8	-154.82	4607.4	0
15200	90	181.926	10800	-4704.74	-158.18	4707.4	0
15300	90	181.926	10800	-4804.68	-161.54	4807.4	0
15400	90	181.926	10800	-4904.63	-164.9	4907.4	0
15500	90	181.926	10800	-5004.57	-168.26	5007.4	0
15600	90	181.926	10800	-5104.51	-171.62	5107.4	0
15700	90	181.926	10800	-5204.46	-174.98	5207.4	0
15800	90	181.926	10800	-5304.4	-178.34	5307.4	0
15900	90	181.926	10800	-5404.34	-181.7	5407.4	0

16000	90	181.926	10800	-5504.29	-185.06	5507.4	0
16075.46	90	181.926	10800	-5579.7	-187.6	5582.85	0

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to KB. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Slot and calculated along an Azimuth of 181.926° (Grid).

Coordinate System is NAD 1927 (NADCON CONUS) US State Plane 1927 (Exact solution), New Mexico East 3001.

Central meridian is -104.333°.

Grid Convergence at Surface is 0.445°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 16075.46ft.,
the Bottom Hole Displacement is 5582.85ft., in the Direction of 181.926° (Grid).



Legacy Reserves

Lea County, NM (NAD-27 2015)

Lea Unit #51H

Lea Unit #51H

OH

Plan #1

Anticollision Summary Report

12 November, 2015



Company:	Legacy Reserves	Local Co-ordinate Reference:	Well Lea Unit #51H
Project:	Lea County, NM (NAD-27 2015)	TVD Reference:	KB @ 3698.00usft (McVay 4)
Reference Site:	Lea Unit #51H	MD Reference:	KB @ 3698.00usft (McVay 4)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Lea Unit #51H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

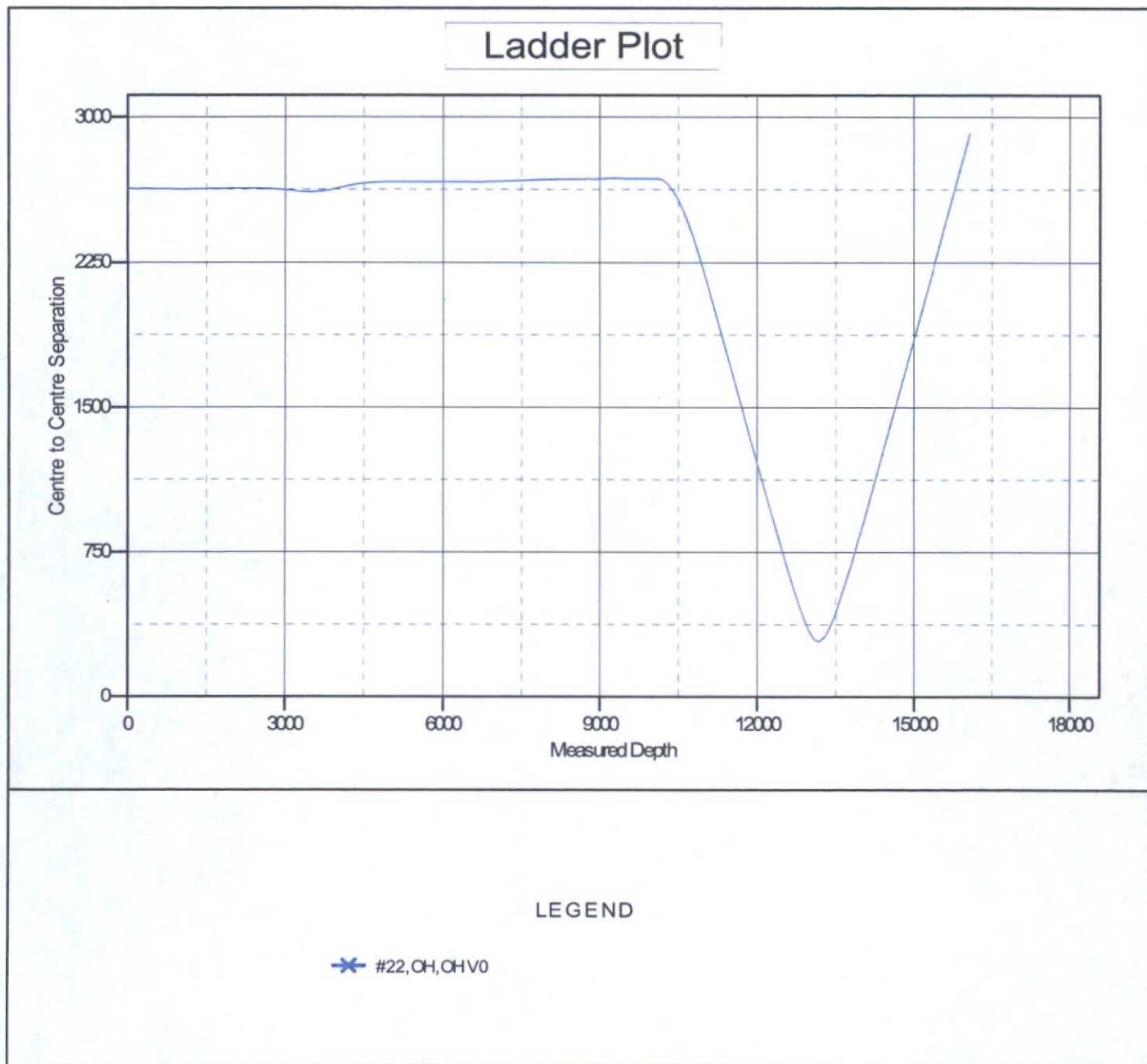
Survey Tool Program		Date	11/12/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	16,075.46	Plan #1 (OH)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Lea Unit						
#22 - OH - OH	13,175.81	10,784.51	288.38	215.88	3.978	CC, ES, SF

Company:	Legacy Reserves	Local Co-ordinate Reference:	Well Lea Unit #51H
Project:	Lea County, NM (NAD-27 2015)	TVD Reference:	KB @ 3698.00usft (McVay 4)
Reference Site:	Lea Unit #51H	MD Reference:	KB @ 3698.00usft (McVay 4)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Lea Unit #51H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3698.00usft (McVay 4)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Lea Unit #51H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.45°



Company:	Legacy Reserves	Local Co-ordinate Reference:	Well Lea Unit #51H
Project:	Lea County, NM (NAD-27 2015)	TVD Reference:	KB @ 3698.00usft (McVay 4)
Reference Site:	Lea Unit #51H	MD Reference:	KB @ 3698.00usft (McVay 4)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Lea Unit #51H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3698.00usft (McVay 4)

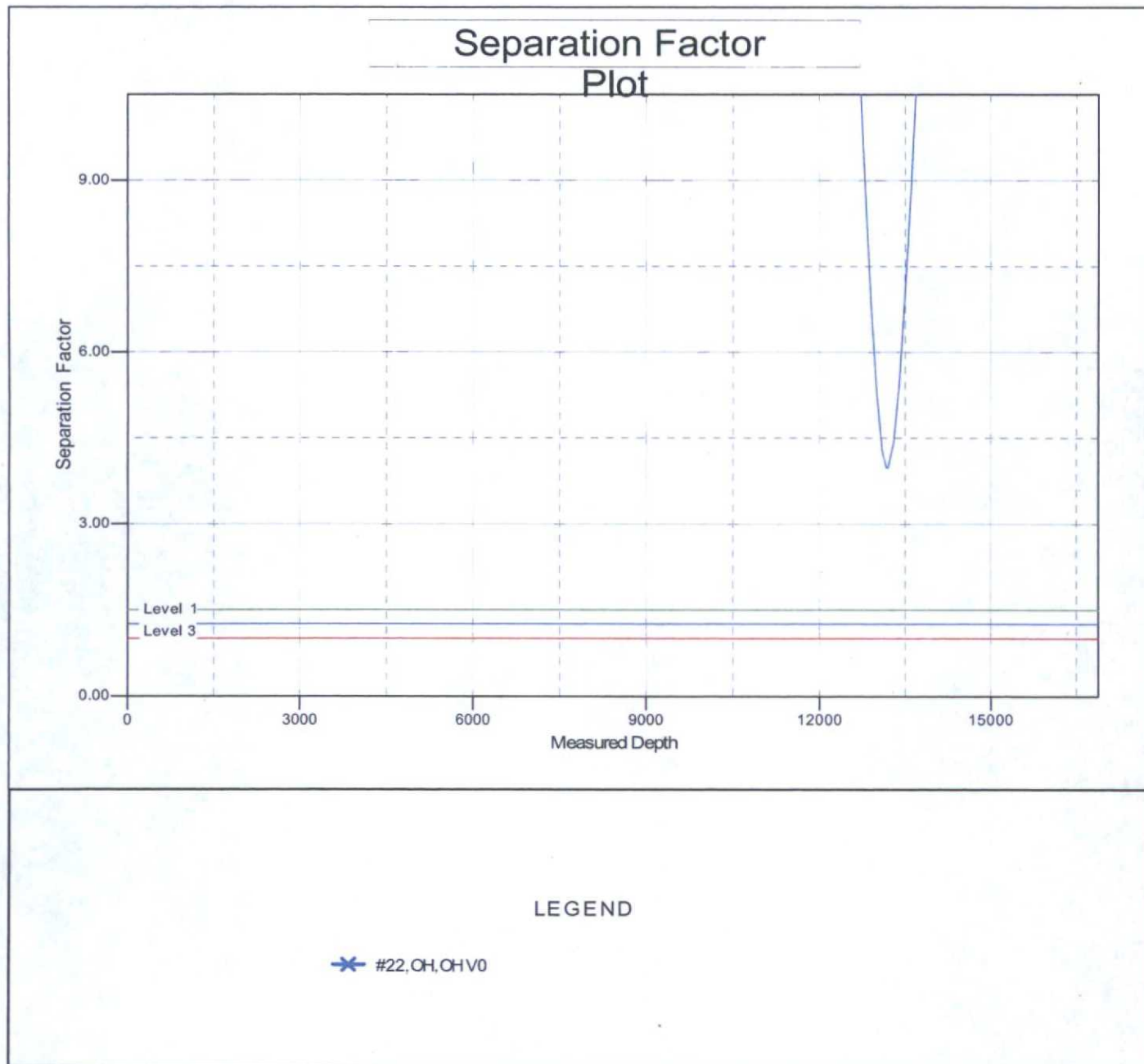
Offset Depths are relative to Offset Datum

Central Meridian is 104° 20' 0.000 W

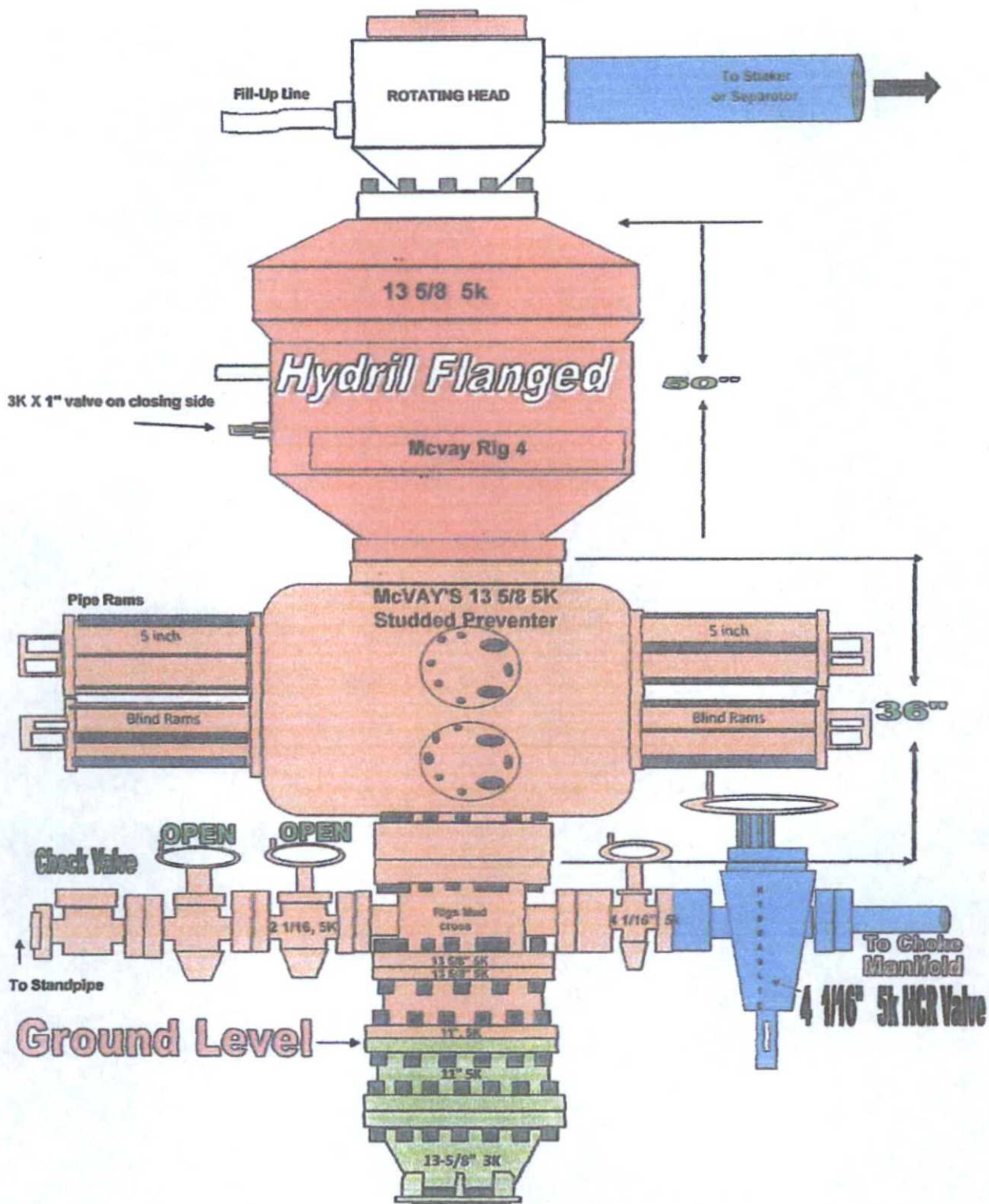
Coordinates are relative to: Lea Unit #51H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

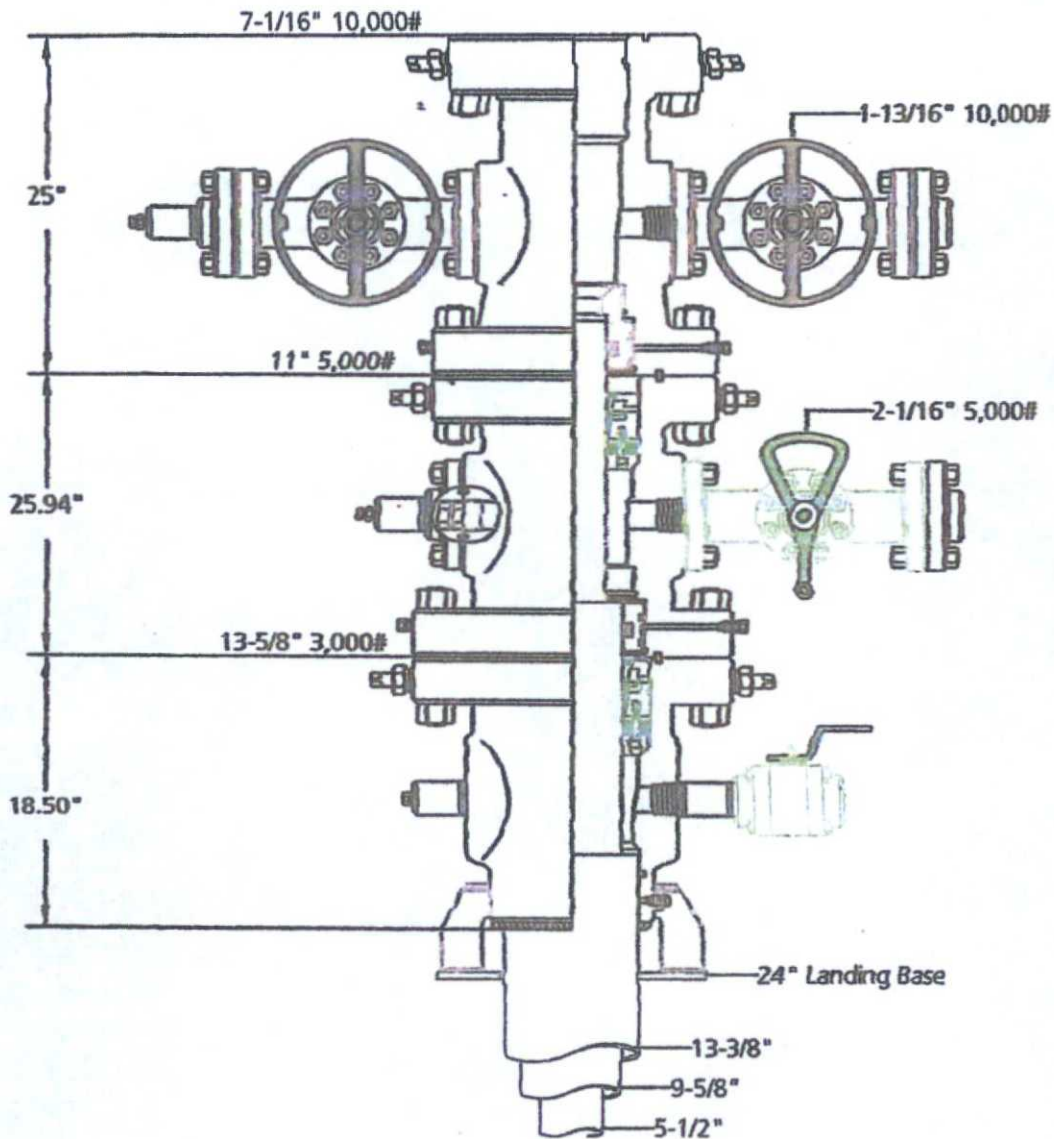
Grid Convergence at Surface is: 0.45°



McVay Rig 4



Note: Dimensional information reflected on this drawing are estimated measurements only.

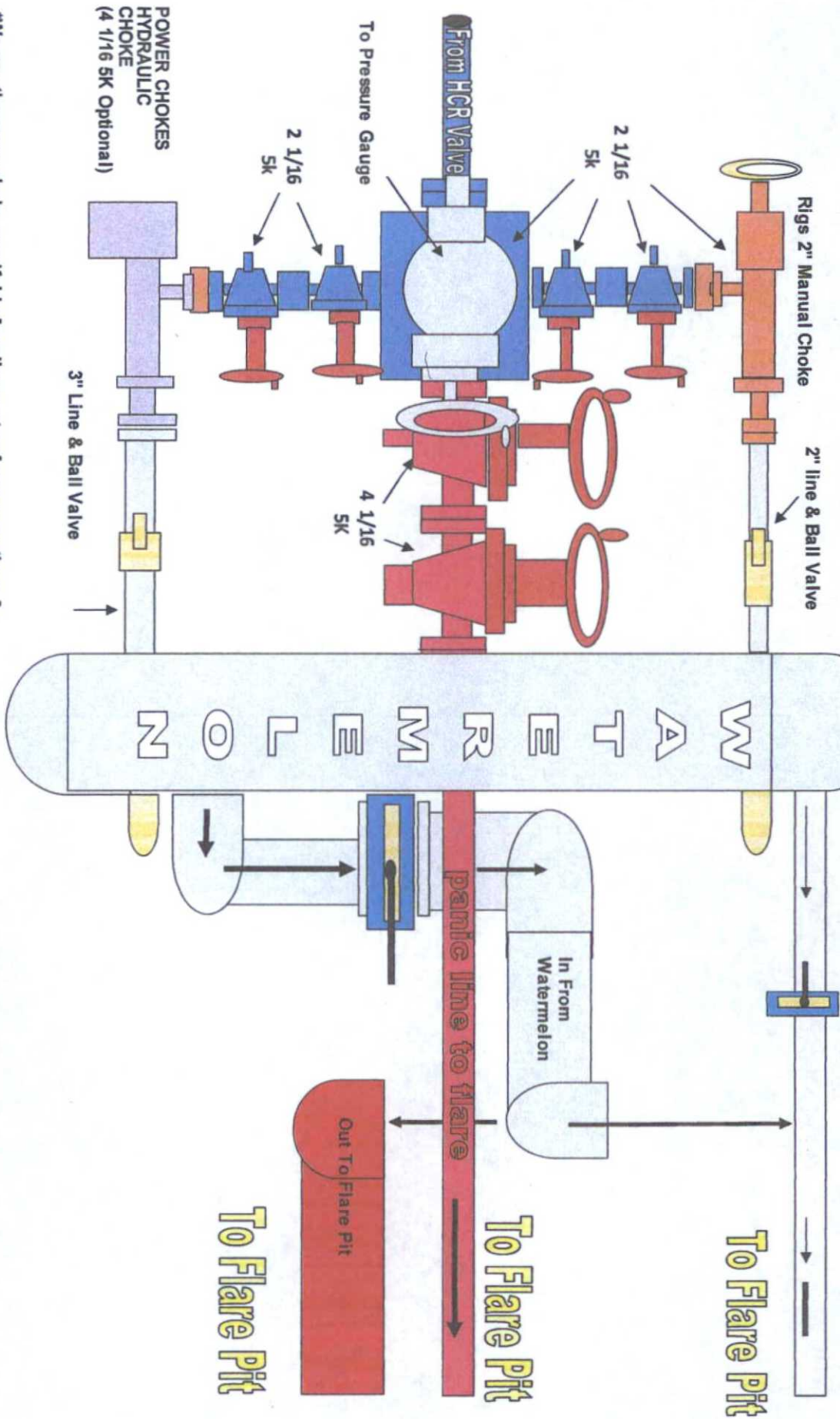


Legacy Reserves
Conventional 3-String



Name: Jeanette	Date: 7-15-15	Working Pressure: #	1274616
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McVay 4 Choke Manifold



*We use the same choke manifolds for all aspects of our operations & all are rated to 10K;

* All connections downstream from BOP thru chokes Are Flanged, All connections downstream from chokes are Flanged .

Design Plan, Operating & Maintenance Plan & Closure Plan for the OCD Form C-144

DESIGN PLAN:

Fluid & cuttings coming from drilling operations will pass over the Shale Shaker with the cuttings going to the CRI haul off bin and the cleaned fluid returning to the working steel pits.

Equipment includes:

- 2-500 bbl steel tanks (fresh water for drilling)
- 2-700 bbl steel working pits (1400 bbls total)
- 2-20 cu yards steel haul off bins
- 2-pumps (CE FB1300)
- 2-shale shakers
- 1-mud cleaner (if needed)
- 1-centrifuge (if needed)

OPERATING AND MAINTENANCE PLAN:

Inspection to occur every tour for proper operation of system and individual components. If any problems are found they will be repaired and/or corrected immediately.

CLOSURE PLAN:

All haul bins containing cuttings will be removed from location and hauled to Controlled Recovery, Inc. (NM-01-0006) disposal site located near mile marker 66 on Highway 62/180.



Blain K. Lewis

Senior Operations Engineer

Plat for Closed Loop System

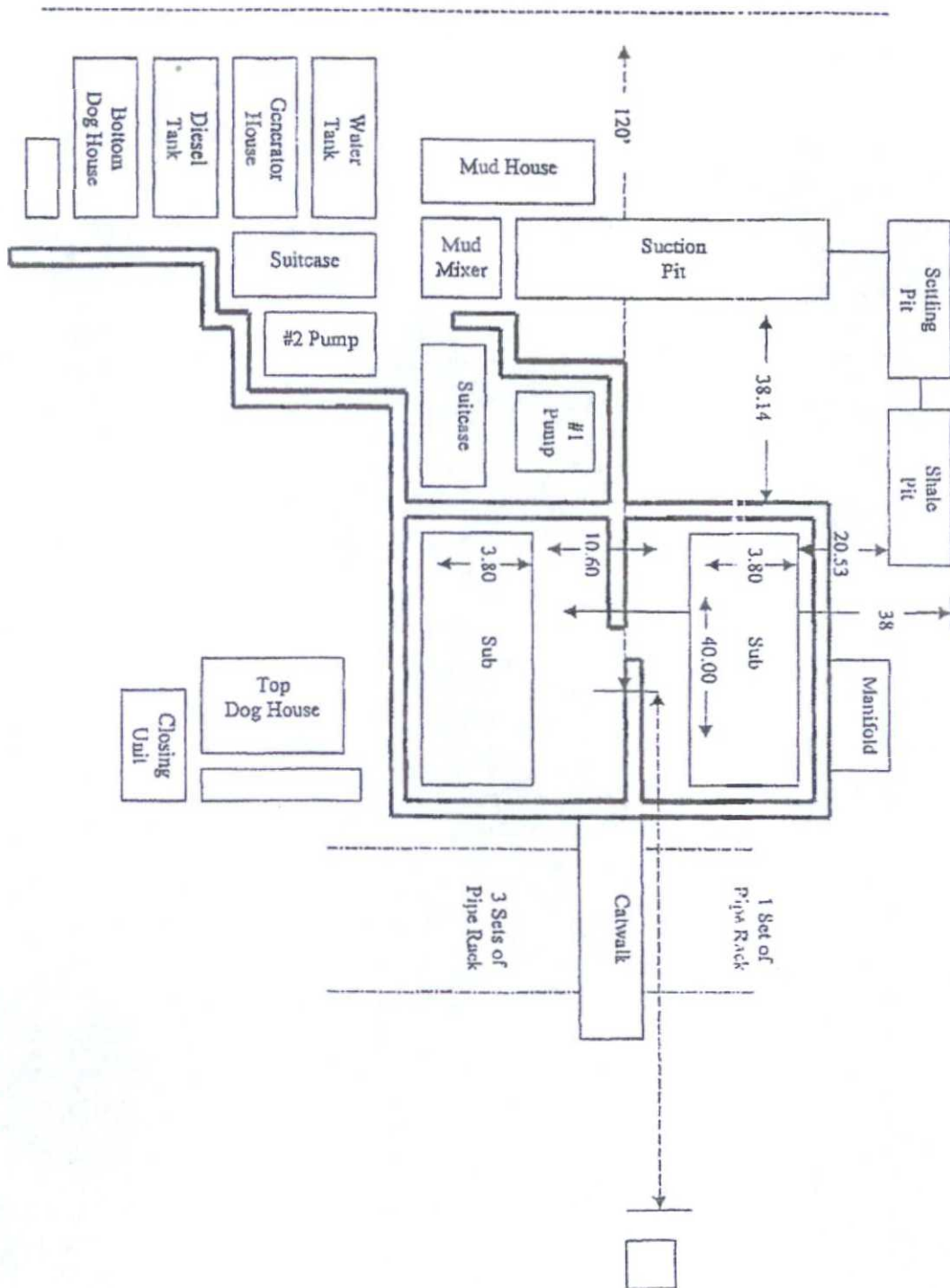


EXHIBIT D

Rig Plat Only
LEA UNIT 51H
V-DOOR EAST

NORTH

