

OCD Hobbs

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

HOBBS OCD

NOV 23 2015

5. Lease Serial No.
SHL: NM-06531, BHL: NM-080262

6. If Indian, Allottee or Tribe Name

1a. Type of work: ☒ DRILL ☐ REENTER

RECEIVED

7. If Unit or CA Agreement, Name and No.
LEA UNIT (NMNM-70976B)1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone8. Lease Name and Well No.
LEA UNIT 57H (302802)

2. Name of Operator LEGACY RESERVES OPERATING, L. P. (240974)

9. API Well No.
30-025 429593a. Address P. O. BOX 10848
MIDLAND, TX. 797023b. Phone No. (include area code)
432-221-6334 (Craig Sparkman)10. Field and Pool, or Exploratory
LEA; BONE SPRING (77570)

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

At surface 170 FNL & 1165 FEL Section 11 (First Take: 330 FNL & 660 FEL, Section 11)

At proposed prod. zone 2310 FNL & 660 FEL Section 14 (Last take)

11. Sec., T. R. M. or Blk. and Survey or Area
SHL: SECTION 11, T. 20 S., R. 34 E.
BHL: SECTION 14, T. 20 S., R. 34 E.14. Distance in miles and direction from nearest town or post office*
26 MILES SOUTHWEST OF HOBBS, NMUNORTHODOX
LOCATION12. County or Parish
LEA13. State
NM15. Distance from proposed* location to nearest property or lease line, ft.
SHL: 170'
BHL: 330'
(Also to nearest drig. unit line, if any)16. No. of acres in lease
SHL: 40
BHL: 12017. Spacing Unit dedicated to this well
24018. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
1090' #54H19. Proposed Depth
TVD: 10,600'
MD: 17,825'20. BLM/BIA Bond No. on file
NMB001014 & NMB00101521. Elevations (Show whether DF, KDB, RT, GL, etc.)
3663' GL22. Approximate date work will start*
ASAP23. 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

Name (Printed/Typed)
BARRY W. HUNT

Date

9/25/15

Title

PERMIT AGENT FOR LEGACY RESERVES OPERATING, L. P.

Approved by (Signature)

/s/Cody Layton

Name (Printed/Typed)

Date

NOV 17 2015

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

K2
11/24/15E-PERMITTING -- New Well _____
Comp _____ P&A _____ TA _____
CSNG _____ Loc Chng _____
ReComp _____ Add New Well Pm.
Cancl Well _____ Create Pool _____Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

NOV 30 2015

DRILLING PLAN
LEA UNIT 57H
LEGACY RESERVES OPERATING LP
SHL: Unit A, Section 11
BHL: Unit H, Section 14
T20S-R34E, Lea County, New Mexico

HOBBS OCD
NOV 23 2015
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To satisfy requirements of Onshore Oil and Gas Order No. 1, Legacy Reserves Operating LP submits the following for your consideration:

1. **Location:** SHL: 170' FNL & 1165' FEL, Sec. 11, T20S-R34E (First Take: 330 FNL & 660 FEL)
BHL: 2310' FNL & 660' FEL, Sec. 14, T20S-R34E (Last Take)

2. **Elevations:** 3,663' 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:** 17,825' MD 10,600' 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'		

Possible mineral bearing formations:

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

7. **Proposed Mud System:**

Depth	Mud Wt.	Visc	Fluid Loss	Type Mud
0' to 1800' 1750'	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 10,600'	8.4-8.6	28-29	NC	Fresh water/brine, use hi-viscosity Weeps to clean hole
10,600' to 17,825'	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.

8. Proposed Drilling Plan:

Set surface and intermediate casing and cement to surface. Drill 8-3/4" to ~10,600', Kick off and drill 8-3/4" hole to TD of ~17,825'. Set 5-1/2" casing from surface to TD (~ 17,825'). Cement 5-1/2" production casing back to surface.

9. Casing Information:

String	Hole size	Depth	Casing OD	Collar	Weight	Grade
Surface	17-1/2"	1800' ^{1750'} 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"	17,825' MD	New 5-1/2"	BTC	20#	P-110

5-1/2", P-110:

Collapse Factor:	1.55
Burst Factor:	1.29
Tension Factor:	3.06

9-5/8", HCK-55

Collapse Factor:	1.28
Burst Factor:	2.03
Tension Factor:	3.33

9-5/8, J-55

Collapse Factor:	1.24
Burst Factor:	1.82
Tension Factor:	3.12

13-3/8, J-55

Collapse Factor:	3.08
Burst Factor:	3.54
Tension Factor:	5.66

10. 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: 1700 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).

11. 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.

12. 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.

13. 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: 4664 psi, estimated BHT: 162°F.

14. **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.

15. **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: #57H

Wellbore: OH

Plan: Plan #1 (#57H/OH)

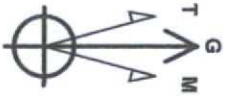
Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dlog	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10027.0	0.00	0.00	10027.0	0.0	0.0	0.00	0.00	0.0	
3	10927.0	90.00	169.80	10600.0	-537.7	197.8	10.00	169.80	561.1	
4	11624.8	90.00	177.74	10600.0	-1121.7	313.8	3.00	90.00	1142.2	
5	17825.3	90.00	177.74	10600.0	-7417.3	562.8	0.00	0.00	7438.6	BHL (LU #57H/OH)

WELL DETAILS: #57H

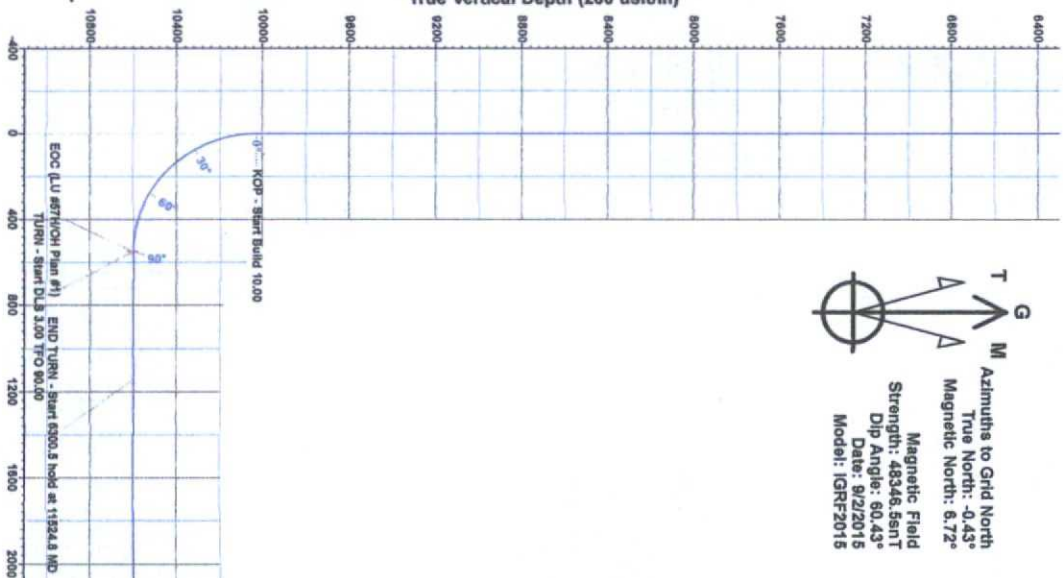
Ground Elevation: 3663.0
RKB Elevation: KB @ 3661.0usft (McVay 4)
Rig Name: McVay 4

Northing 580858.60
Easting 748761.40
Latitude 32° 36' 39.441 N
Longitude 103° 31' 32.238 W

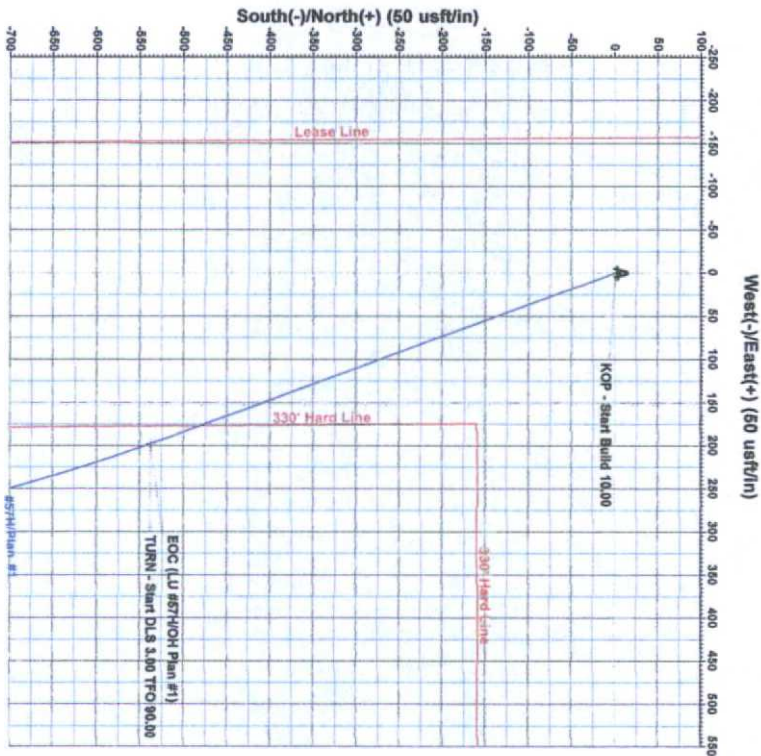


Azinuths to Grid North
True North: -0.43°
Magnetic North: 6.72°
Magnetic Field
Strength: 48348.5snt
Dip Angle: 60.43°
Date: 9/2/2015
Model: IGRF2015

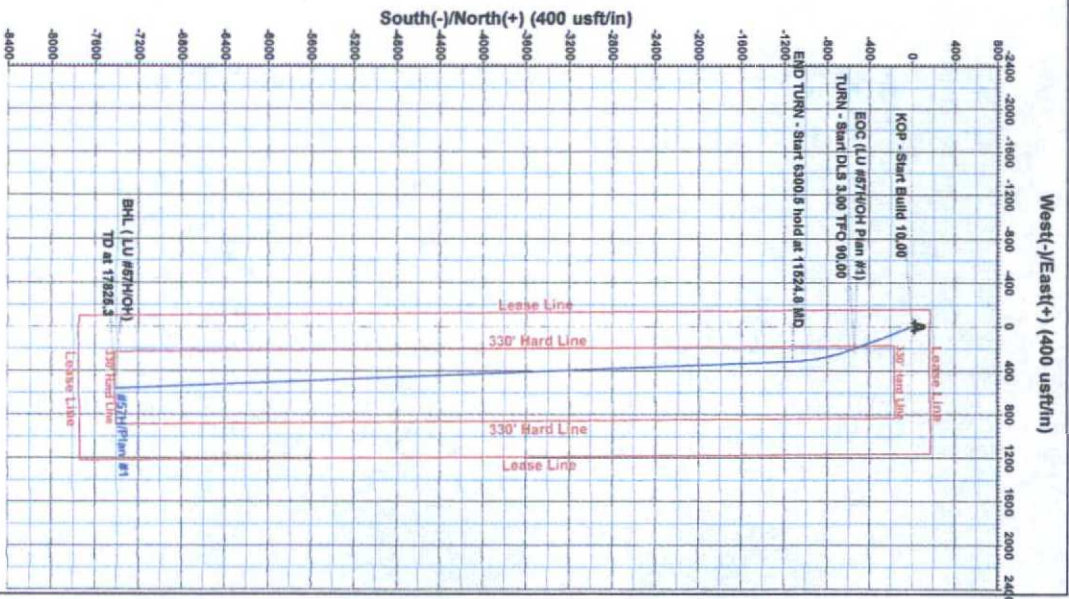
True Vertical Depth (200 usft/in)



South(-)/North(+) (50 usft/in)



South(-)/North(+) (400 usft/in)



Created By: Well Planner Date: 9:55, September 03 2015

Terra Directional Services
3705 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

#57H

OH

Plan: Plan #1

Standard Planning Report

03 September, 2015



Database: EDM 5000.1 Single User Db
Company: Legacy Reserves
Project: Lea County, NM
Site: Lea Unit
Well: #57H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #57H
TVD Reference: KB @ 3681.0usft (McVay 4)
MD Reference: KB @ 3681.0usft (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
From:	Map	Easting:	753,784.90 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 33' 26.922 N
		Longitude:	103° 30' 34.732 W
		Grid Convergence:	0.44 °

Well	#57H		
Well Position	+N/-S	13,354.2 usft	Northing:
	+E/-W	-5,023.5 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 35' 39.441 N
		Longitude:	103° 31' 32.238 W
		Ground Level:	3,663.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	9/2/2015	7.15
			Dip Angle
			(°)
			60.43
			Field Strength
			(nT)
			48,347

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			175.66

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	
10,027.0	0.00	0.00	10,027.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,927.0	90.00	159.80	10,600.0	-537.7	197.8	10.00	10.00	0.00	159.80	
11,524.8	90.00	177.74	10,600.0	-1,121.7	313.8	3.00	0.00	3.00	90.00	
17,825.3	90.00	177.74	10,600.0	-7,417.3	562.8	0.00	0.00	0.00	0.00	BHL (LU #57H/OH)

Database: EDM 5000.1 Single User Db
Company: Legacy Reserves
Project: Lea County, NM
Site: Lea Unit
Well: #57H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #57H
TVD Reference: KB @ 3681.0usft (McVay 4)
MD Reference: KB @ 3681.0usft (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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Project: Lea County, NM
Site: Lea Unit
Well: #57H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well #57H
KB @ 3681.0usft (McVay 4)
KB @ 3681.0usft (McVay 4)
Grid
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
10,027.0	0.00	0.00	10,027.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 10.00									
10,050.0	2.30	159.80	10,050.0	-0.4	0.2	0.4	10.00	10.00	0.00
10,100.0	7.30	159.80	10,099.8	-4.4	1.6	4.5	10.00	10.00	0.00
10,150.0	12.30	159.80	10,149.1	-12.3	4.5	12.7	10.00	10.00	0.00
10,200.0	17.30	159.80	10,197.4	-24.3	9.0	24.9	10.00	10.00	0.00

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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)
10,250.0	22.30	159.80	10,244.4	-40.2	14.8	41.2	10.00	10.00	0.00
10,300.0	27.30	159.80	10,289.8	-59.9	22.0	61.4	10.00	10.00	0.00
10,350.0	32.30	159.80	10,333.2	-83.2	30.6	85.3	10.00	10.00	0.00
10,400.0	37.30	159.80	10,374.2	-110.0	40.5	112.7	10.00	10.00	0.00
10,450.0	42.30	159.80	10,412.6	-140.0	51.5	143.5	10.00	10.00	0.00
10,500.0	47.30	159.80	10,448.1	-173.1	63.7	177.4	10.00	10.00	0.00
10,550.0	52.30	159.80	10,480.3	-208.9	76.9	214.1	10.00	10.00	0.00
10,600.0	57.30	159.80	10,509.2	-247.2	91.0	253.4	10.00	10.00	0.00
10,650.0	62.30	159.80	10,534.3	-287.8	105.9	294.9	10.00	10.00	0.00
10,700.0	67.30	159.80	10,555.6	-330.2	121.5	338.5	10.00	10.00	0.00
10,750.0	72.30	159.80	10,572.8	-374.2	137.7	383.6	10.00	10.00	0.00
10,800.0	77.30	159.80	10,585.9	-419.5	154.3	430.0	10.00	10.00	0.00
10,850.0	82.30	159.80	10,594.8	-465.7	171.3	477.3	10.00	10.00	0.00
10,900.0	87.30	159.80	10,599.3	-512.4	188.5	525.2	10.00	10.00	0.00
10,927.0	90.00	159.80	10,600.0	-537.7	197.8	551.1	10.00	10.00	0.00
EOC/TURN - Start DLS 3.00 TFO 90.00									
11,000.0	90.00	161.99	10,600.0	-606.7	221.7	621.7	3.00	0.00	3.00
11,100.0	90.00	164.99	10,600.0	-702.6	250.1	719.5	3.00	0.00	3.00
11,200.0	90.00	167.99	10,600.0	-799.8	273.5	818.2	3.00	0.00	3.00
11,300.0	90.00	170.99	10,600.0	-898.1	291.7	917.6	3.00	0.00	3.00
11,400.0	90.00	173.99	10,600.0	-997.2	304.8	1,017.4	3.00	0.00	3.00
11,500.0	90.00	176.99	10,600.0	-1,096.9	312.7	1,117.4	3.00	0.00	3.00
11,524.8	90.00	177.74	10,600.0	-1,121.7	313.8	1,142.2	3.00	0.00	3.00
END TURN - Start 6300.5 hold at 11524.8 MD									
11,600.0	90.00	177.74	10,600.0	-1,196.8	316.8	1,217.4	0.00	0.00	0.00
11,700.0	90.00	177.74	10,600.0	-1,296.7	320.7	1,317.3	0.00	0.00	0.00
11,800.0	90.00	177.74	10,600.0	-1,396.7	324.7	1,417.2	0.00	0.00	0.00
11,900.0	90.00	177.74	10,600.0	-1,496.6	328.6	1,517.2	0.00	0.00	0.00
12,000.0	90.00	177.74	10,600.0	-1,596.5	332.6	1,617.1	0.00	0.00	0.00
12,100.0	90.00	177.74	10,600.0	-1,696.4	336.5	1,717.0	0.00	0.00	0.00
12,200.0	90.00	177.74	10,600.0	-1,796.3	340.5	1,817.0	0.00	0.00	0.00
12,300.0	90.00	177.74	10,600.0	-1,896.3	344.5	1,916.9	0.00	0.00	0.00
12,400.0	90.00	177.74	10,600.0	-1,996.2	348.4	2,016.8	0.00	0.00	0.00
12,500.0	90.00	177.74	10,600.0	-2,096.1	352.4	2,116.8	0.00	0.00	0.00
12,600.0	90.00	177.74	10,600.0	-2,196.0	356.3	2,216.7	0.00	0.00	0.00
12,700.0	90.00	177.74	10,600.0	-2,296.0	360.3	2,316.6	0.00	0.00	0.00
12,800.0	90.00	177.74	10,600.0	-2,395.9	364.2	2,416.6	0.00	0.00	0.00
12,900.0	90.00	177.74	10,600.0	-2,495.8	368.2	2,516.5	0.00	0.00	0.00
13,000.0	90.00	177.74	10,600.0	-2,595.7	372.1	2,616.4	0.00	0.00	0.00
13,100.0	90.00	177.74	10,600.0	-2,695.6	376.1	2,716.4	0.00	0.00	0.00
13,200.0	90.00	177.74	10,600.0	-2,795.6	380.0	2,816.3	0.00	0.00	0.00
13,300.0	90.00	177.74	10,600.0	-2,895.5	384.0	2,916.2	0.00	0.00	0.00
13,400.0	90.00	177.74	10,600.0	-2,995.4	387.9	3,016.2	0.00	0.00	0.00
13,500.0	90.00	177.74	10,600.0	-3,095.3	391.9	3,116.1	0.00	0.00	0.00
13,600.0	90.00	177.74	10,600.0	-3,195.3	395.8	3,216.0	0.00	0.00	0.00
13,700.0	90.00	177.74	10,600.0	-3,295.2	399.8	3,316.0	0.00	0.00	0.00
13,800.0	90.00	177.74	10,600.0	-3,395.1	403.7	3,415.9	0.00	0.00	0.00
13,900.0	90.00	177.74	10,600.0	-3,495.0	407.7	3,515.8	0.00	0.00	0.00
14,000.0	90.00	177.74	10,600.0	-3,594.9	411.6	3,615.8	0.00	0.00	0.00
14,100.0	90.00	177.74	10,600.0	-3,694.9	415.6	3,715.7	0.00	0.00	0.00
14,200.0	90.00	177.74	10,600.0	-3,794.8	419.5	3,815.6	0.00	0.00	0.00
14,300.0	90.00	177.74	10,600.0	-3,894.7	423.5	3,915.6	0.00	0.00	0.00
14,400.0	90.00	177.74	10,600.0	-3,994.6	427.4	4,015.5	0.00	0.00	0.00
14,500.0	90.00	177.74	10,600.0	-4,094.6	431.4	4,115.5	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	177.74	10,600.0	-4,194.5	435.3	4,215.4	0.00	0.00	0.00
14,700.0	90.00	177.74	10,600.0	-4,294.4	439.3	4,315.3	0.00	0.00	0.00
14,800.0	90.00	177.74	10,600.0	-4,394.3	443.2	4,415.3	0.00	0.00	0.00
14,900.0	90.00	177.74	10,600.0	-4,494.2	447.2	4,515.2	0.00	0.00	0.00
15,000.0	90.00	177.74	10,600.0	-4,594.2	451.1	4,615.1	0.00	0.00	0.00
15,100.0	90.00	177.74	10,600.0	-4,694.1	455.1	4,715.1	0.00	0.00	0.00
15,200.0	90.00	177.74	10,600.0	-4,794.0	459.1	4,815.0	0.00	0.00	0.00
15,300.0	90.00	177.74	10,600.0	-4,893.9	463.0	4,914.9	0.00	0.00	0.00
15,400.0	90.00	177.74	10,600.0	-4,993.8	467.0	5,014.9	0.00	0.00	0.00
15,500.0	90.00	177.74	10,600.0	-5,093.8	470.9	5,114.8	0.00	0.00	0.00
15,600.0	90.00	177.74	10,600.0	-5,193.7	474.9	5,214.7	0.00	0.00	0.00
15,700.0	90.00	177.74	10,600.0	-5,293.6	478.8	5,314.7	0.00	0.00	0.00
15,800.0	90.00	177.74	10,600.0	-5,393.5	482.8	5,414.6	0.00	0.00	0.00
15,900.0	90.00	177.74	10,600.0	-5,493.5	486.7	5,514.5	0.00	0.00	0.00
16,000.0	90.00	177.74	10,600.0	-5,593.4	490.7	5,614.5	0.00	0.00	0.00
16,100.0	90.00	177.74	10,600.0	-5,693.3	494.6	5,714.4	0.00	0.00	0.00
16,200.0	90.00	177.74	10,600.0	-5,793.2	498.6	5,814.3	0.00	0.00	0.00
16,300.0	90.00	177.74	10,600.0	-5,893.1	502.5	5,914.3	0.00	0.00	0.00
16,400.0	90.00	177.74	10,600.0	-5,993.1	506.5	6,014.2	0.00	0.00	0.00
16,500.0	90.00	177.74	10,600.0	-6,093.0	510.4	6,114.1	0.00	0.00	0.00
16,600.0	90.00	177.74	10,600.0	-6,192.9	514.4	6,214.1	0.00	0.00	0.00
16,700.0	90.00	177.74	10,600.0	-6,292.8	518.3	6,314.0	0.00	0.00	0.00
16,800.0	90.00	177.74	10,600.0	-6,392.8	522.3	6,413.9	0.00	0.00	0.00
16,900.0	90.00	177.74	10,600.0	-6,492.7	526.2	6,513.9	0.00	0.00	0.00
17,000.0	90.00	177.74	10,600.0	-6,592.6	530.2	6,613.8	0.00	0.00	0.00
17,100.0	90.00	177.74	10,600.0	-6,692.5	534.1	6,713.7	0.00	0.00	0.00
17,200.0	90.00	177.74	10,600.0	-6,792.4	538.1	6,813.7	0.00	0.00	0.00
17,300.0	90.00	177.74	10,600.0	-6,892.4	542.0	6,913.6	0.00	0.00	0.00
17,400.0	90.00	177.74	10,600.0	-6,992.3	546.0	7,013.6	0.00	0.00	0.00
17,500.0	90.00	177.74	10,600.0	-7,092.2	549.9	7,113.5	0.00	0.00	0.00
17,600.0	90.00	177.74	10,600.0	-7,192.1	553.9	7,213.4	0.00	0.00	0.00
17,700.0	90.00	177.74	10,600.0	-7,292.1	557.8	7,313.4	0.00	0.00	0.00
17,800.0	90.00	177.74	10,600.0	-7,392.0	561.8	7,413.3	0.00	0.00	0.00
17,825.3	90.00	177.74	10,600.0	-7,417.3	562.8	7,438.6	0.00	0.00	0.00

TD at 17825.3

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 #57H/OH Plan	0.00	0.00	10,600.0	-537.7	197.8	580,320.89	748,959.24	32° 35' 34.105 N	103° 31' 29.974 W
- plan hits target center									
- Point									
BHL (LU #57H/OH)	0.00	0.00	10,600.0	-7,417.3	562.8	573,441.30	749,324.20	32° 34' 26.006 N	103° 31' 26.320 W
- plan hits target center									
- Point									

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Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,027.0	10,027.0	0.0	0.0	KOP - Start Build 10.00
10,927.0	10,600.0	-537.7	197.8	EOC/TURN - Start DLS 3.00 TFO 90.00
11,524.8	10,600.0	-1,121.7	313.8	END TURN - Start 6300.5 hold at 11524.8 MD
17,825.3	10,600.0	-7,417.3	562.8	TD at 17825.3

Legacy Reserves
#57H - 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
100		0	0	100	0	0	0
200		0	0	200	0	0	0
300		0	0	300	0	0	0
400		0	0	400	0	0	0
500		0	0	500	0	0	0
600		0	0	600	0	0	0
700		0	0	700	0	0	0
800		0	0	800	0	0	0
900		0	0	900	0	0	0
1000		0	0	1000	0	0	0
1100		0	0	1100	0	0	0
1200		0	0	1200	0	0	0
1300		0	0	1300	0	0	0
1400		0	0	1400	0	0	0
1500		0	0	1500	0	0	0
1600		0	0	1600	0	0	0
1700		0	0	1700	0	0	0
1800		0	0	1800	0	0	0
1900		0	0	1900	0	0	0
2000		0	0	2000	0	0	0
2100		0	0	2100	0	0	0
2200		0	0	2200	0	0	0
2300		0	0	2300	0	0	0
2400		0	0	2400	0	0	0
2500		0	0	2500	0	0	0
2600		0	0	2600	0	0	0
2700		0	0	2700	0	0	0
2800		0	0	2800	0	0	0
2900		0	0	2900	0	0	0
3000		0	0	3000	0	0	0
3100		0	0	3100	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
5400	0	0	5400	0	0	0	0
5500	0	0	5500	0	0	0	0
5600	0	0	5600	0	0	0	0
5700	0	0	5700	0	0	0	0
5800	0	0	5800	0	0	0	0
5900	0	0	5900	0	0	0	0
6000	0	0	6000	0	0	0	0
6100	0	0	6100	0	0	0	0
6200	0	0	6200	0	0	0	0
6300	0	0	6300	0	0	0	0
6400	0	0	6400	0	0	0	0
6500	0	0	6500	0	0	0	0
6600	0	0	6600	0	0	0	0
6700	0	0	6700	0	0	0	0
6800	0	0	6800	0	0	0	0
6900	0	0	6900	0	0	0	0
7000	0	0	7000	0	0	0	0
7100	0	0	7100	0	0	0	0
7200	0	0	7200	0	0	0	0
7300	0	0	7300	0	0	0	0
7400	0	0	7400	0	0	0	0
7500	0	0	7500	0	0	0	0
7600	0	0	7600	0	0	0	0
7700	0	0	7700	0	0	0	0
7800	0	0	7800	0	0	0	0

7900	0	0	7900	0	0	0	0
8000	0	0	8000	0	0	0	0
8100	0	0	8100	0	0	0	0
8200	0	0	8200	0	0	0	0
8300	0	0	8300	0	0	0	0
8400	0	0	8400	0	0	0	0
8500	0	0	8500	0	0	0	0
8600	0	0	8600	0	0	0	0
8700	0	0	8700	0	0	0	0
8800	0	0	8800	0	0	0	0
8900	0	0	8900	0	0	0	0
9000	0	0	9000	0	0	0	0
9100	0	0	9100	0	0	0	0
9200	0	0	9200	0	0	0	0
9300	0	0	9300	0	0	0	0
9400	0	0	9400	0	0	0	0
9500	0	0	9500	0	0	0	0
9600	0	0	9600	0	0	0	0
9700	0	0	9700	0	0	0	0
9800	0	0	9800	0	0	0	0
9900	0	0	9900	0	0	0	0
10000	0	0	10000	0	0	0	0
10027	0	0	10027	0	0	0	0
10050	2.3	159.8	10049.99	-0.43	0.16	0.44	10
10100	7.3	159.8	10099.8	-4.36	1.6	4.47	10
10150	12.3	159.8	10149.06	-12.34	4.54	12.65	10
10200	17.3	159.8	10197.38	-24.33	8.95	24.93	10
10250	22.3	159.8	10244.41	-40.22	14.8	41.22	10
10300	27.3	159.8	10289.79	-59.89	22.04	61.39	10
10350	32.3	159.8	10333.16	-83.21	30.61	85.28	10
10400	37.3	159.8	10374.21	-109.98	40.46	112.72	10
10450	42.3	159.8	10412.61	-140	51.51	143.5	10
10500	47.3	159.8	10448.08	-173.06	63.67	177.38	10
10550	52.3	159.8	10480.34	-208.89	76.86	214.1	10
10600	57.3	159.8	10509.15	-247.22	90.96	253.39	10
10650	62.3	159.8	10534.29	-287.76	105.88	294.95	10
10700	67.3	159.8	10555.58	-330.21	121.49	338.45	10
10750	72.3	159.8	10572.83	-374.23	137.69	383.58	10
10800	77.3	159.8	10585.94	-419.5	154.35	429.98	10
10850	82.3	159.8	10594.79	-465.67	171.33	477.3	10
10900	87.3	159.8	10599.32	-512.39	188.52	525.18	10
10927	90	159.8	10599.96	-537.72	197.84	551.14	10
11000	90	161.99	10599.96	-606.69	221.73	621.73	3
11100	90	164.99	10599.96	-702.56	250.15	719.47	3
11200	90	167.99	10599.96	-799.78	273.51	818.18	3
11300	90	170.99	10599.96	-898.09	291.75	917.59	3
11400	90	173.99	10599.96	-997.22	304.81	1017.42	3

11500	90	176.99	10599.96	-1096.9	312.68	1117.41	3
11524.84	90	177.735	10599.96	-1121.71	313.82	1142.24	3
11600	90	177.735	10599.96	-1196.82	316.79	1217.35	0
11700	90	177.735	10599.96	-1296.74	320.74	1317.29	0
11800	90	177.735	10599.96	-1396.66	324.69	1417.22	0
11900	90	177.735	10599.96	-1496.58	328.64	1517.16	0
12000	90	177.735	10599.96	-1596.5	332.6	1617.09	0
12100	90	177.735	10599.96	-1696.42	336.55	1717.03	0
12200	90	177.735	10599.96	-1796.35	340.5	1816.96	0
12300	90	177.735	10599.96	-1896.27	344.45	1916.89	0
12400	90	177.735	10599.97	-1996.19	348.4	2016.83	0
12500	90	177.735	10599.97	-2096.11	352.36	2116.76	0
12600	90	177.735	10599.97	-2196.03	356.31	2216.7	0
12700	90	177.735	10599.97	-2295.96	360.26	2316.63	0
12800	90	177.735	10599.97	-2395.88	364.21	2416.57	0
12900	90	177.735	10599.97	-2495.8	368.16	2516.5	0
13000	90	177.735	10599.97	-2595.72	372.11	2616.44	0
13100	90	177.735	10599.97	-2695.64	376.07	2716.37	0
13200	90	177.735	10599.97	-2795.57	380.02	2816.3	0
13300	90	177.735	10599.97	-2895.49	383.97	2916.24	0
13400	90	177.735	10599.97	-2995.41	387.92	3016.17	0
13500	90	177.735	10599.97	-3095.33	391.87	3116.11	0
13600	90	177.735	10599.97	-3195.25	395.82	3216.04	0
13700	90	177.735	10599.97	-3295.18	399.78	3315.98	0
13800	90	177.735	10599.97	-3395.1	403.73	3415.91	0
13900	90	177.735	10599.97	-3495.02	407.68	3515.85	0
14000	90	177.735	10599.98	-3594.94	411.63	3615.78	0
14100	90	177.735	10599.98	-3694.86	415.58	3715.71	0
14200	90	177.735	10599.98	-3794.78	419.53	3815.65	0
14300	90	177.735	10599.98	-3894.71	423.49	3915.58	0
14400	90	177.735	10599.98	-3994.63	427.44	4015.52	0
14500	90	177.735	10599.98	-4094.55	431.39	4115.45	0
14600	90	177.735	10599.98	-4194.47	435.34	4215.39	0
14700	90	177.735	10599.98	-4294.39	439.29	4315.32	0
14800	90	177.735	10599.98	-4394.32	443.25	4415.26	0
14900	90	177.735	10599.98	-4494.24	447.2	4515.19	0
15000	90	177.735	10599.98	-4594.16	451.15	4615.12	0
15100	90	177.735	10599.98	-4694.08	455.1	4715.06	0
15200	90	177.735	10599.98	-4794	459.05	4814.99	0
15300	90	177.735	10599.98	-4893.93	463	4914.93	0
15400	90	177.735	10599.98	-4993.85	466.96	5014.86	0
15500	90	177.735	10599.99	-5093.77	470.91	5114.8	0
15600	90	177.735	10599.99	-5193.69	474.86	5214.73	0
15700	90	177.735	10599.99	-5293.61	478.81	5314.67	0
15800	90	177.735	10599.99	-5393.53	482.76	5414.6	0
15900	90	177.735	10599.99	-5493.46	486.71	5514.54	0
16000	90	177.735	10599.99	-5593.38	490.67	5614.47	0

16100	90	177.735	10599.99	-5693.3	494.62	5714.4	0
16200	90	177.735	10599.99	-5793.22	498.57	5814.34	0
16300	90	177.735	10599.99	-5893.14	502.52	5914.27	0
16400	90	177.735	10599.99	-5993.07	506.47	6014.21	0
16500	90	177.735	10599.99	-6092.99	510.43	6114.14	0
16600	90	177.735	10599.99	-6192.91	514.38	6214.08	0
16700	90	177.735	10599.99	-6292.83	518.33	6314.01	0
16800	90	177.735	10599.99	-6392.75	522.28	6413.95	0
16900	90	177.735	10599.99	-6492.68	526.23	6513.88	0
17000	90	177.735	10599.99	-6592.6	530.18	6613.81	0
17100	90	177.735	10600	-6692.52	534.14	6713.75	0
17200	90	177.735	10600	-6792.44	538.09	6813.68	0
17300	90	177.735	10600	-6892.36	542.04	6913.62	0
17400	90	177.735	10600	-6992.28	545.99	7013.55	0
17500	90	177.735	10600	-7092.21	549.94	7113.49	0
17600	90	177.735	10600	-7192.13	553.89	7213.42	0
17700	90	177.735	10600	-7292.05	557.85	7313.36	0
17800	90	177.735	10600	-7391.97	561.8	7413.29	0
17825.35	90	177.735	10600	-7417.3	562.8	7438.62	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 175.661° (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 0.435°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 17825.35ft.,
the Bottom Hole Displacement is 7438.62ft., in the Direction of 175.661° (Grid).



EXTRA COPY

Legacy Reserves

Lea County, NM (NAD-27 2015)

Lea Unit #57H

Lea Unit #57H

OH

Plan #1

Anticollision Summary Report

12 November, 2015



Company: Legacy Reserves
Project: Lea County, NM (NAD-27 2015)
Reference Site: Lea Unit #57H
Site Error: 0.00 usft
Reference Well: Lea Unit #57H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lea Unit #57H
TVD Reference: KB @ 3681.00usft (McVay 4)
MD Reference: KB @ 3681.00usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
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	17,825.35	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 Federal						
#14 - OH - OH	3,891.70	3,860.17	682.36	667.00	44.420	CC
#14 - OH - OH	4,000.00	3,963.72	682.73	666.95	43.280	ES
#14 - OH - OH	7,900.00	7,803.00	725.91	694.82	23.354	SF
Lea Unit						
#4H - OH - OH	12,148.55	10,598.47	205.23	147.07	3.529	CC, ES, SF

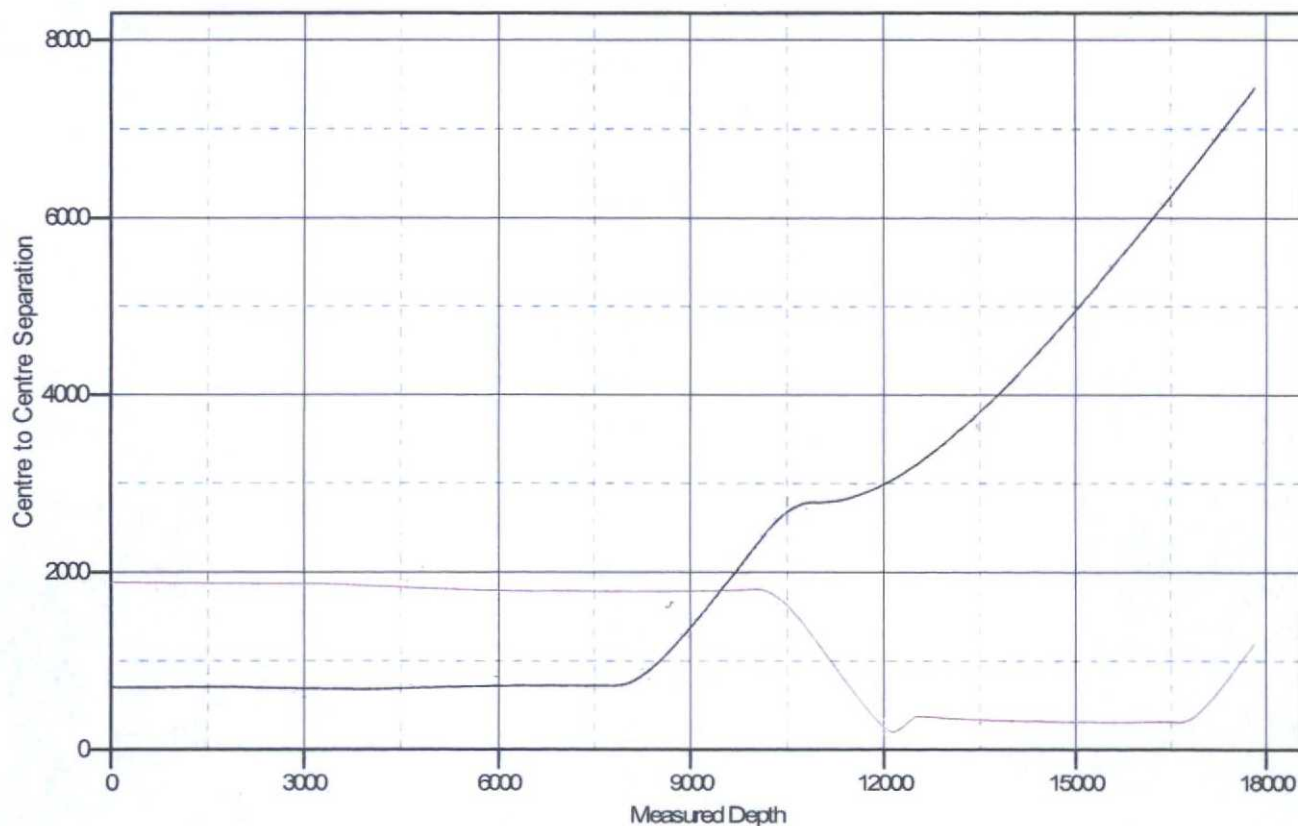
Company: Legacy Reserves
Project: Lea County, NM (NAD-27 2015)
Reference Site: Lea Unit #57H
Site Error: 0.00 usft
Reference Well: Lea Unit #57H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lea Unit #57H
TVD Reference: KB @ 3681.00usft (McVay 4)
MD Reference: KB @ 3681.00usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3681.00usft (McVay 4)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Lea Unit #57H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.44°

Ladder Plot



LEGEND

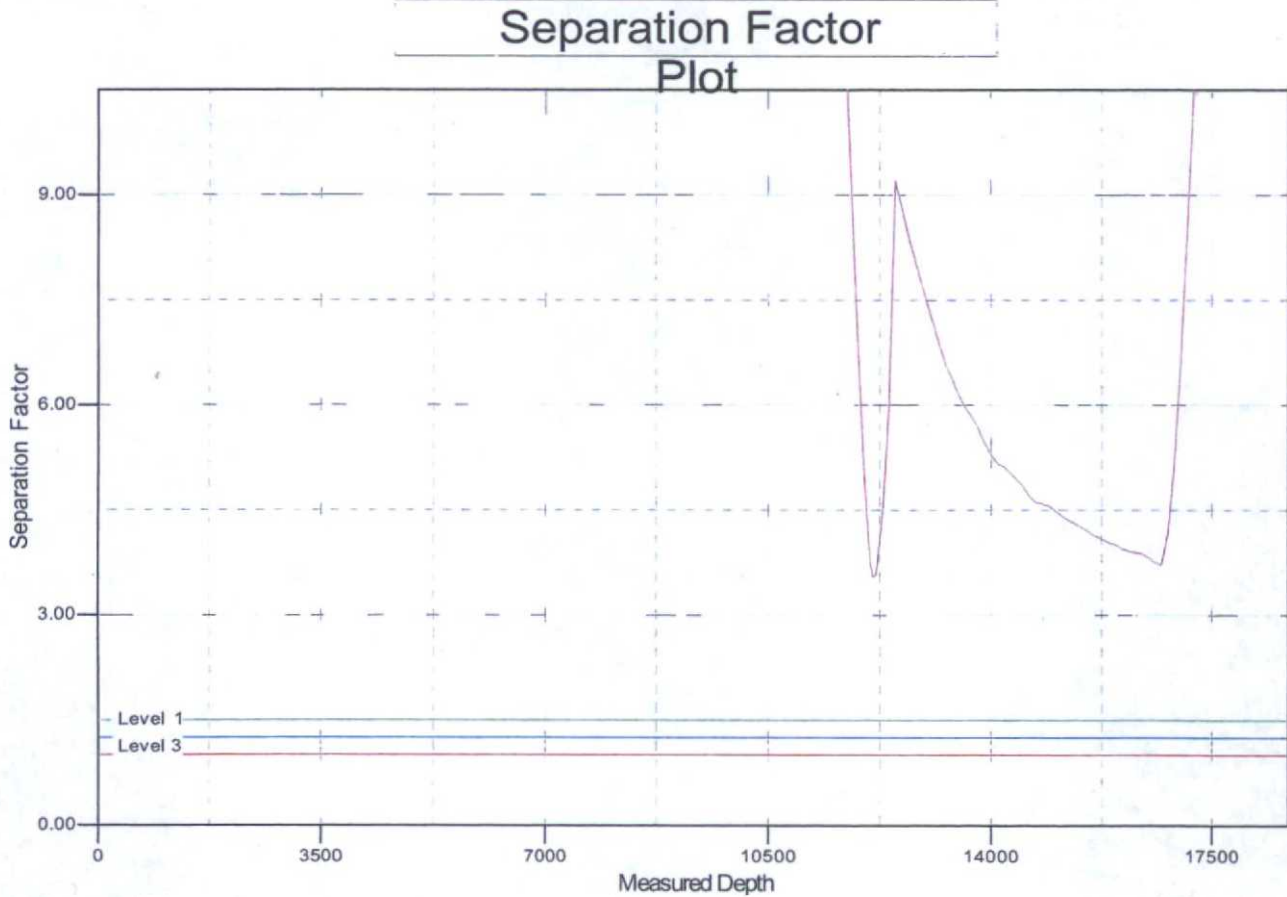
—■— #14, OH, OH V0 —■— #4H, OH, OH V0

Company: Legacy Reserves
Project: Lea County, NM (NAD-27 2015)
Reference Site: Lea Unit #57H
Site Error: 0.00 usft
Reference Well: Lea Unit #57H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lea Unit #57H
TVD Reference: KB @ 3681.00usft (McVay 4)
MD Reference: KB @ 3681.00usft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3681.00usft (McVay 4)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

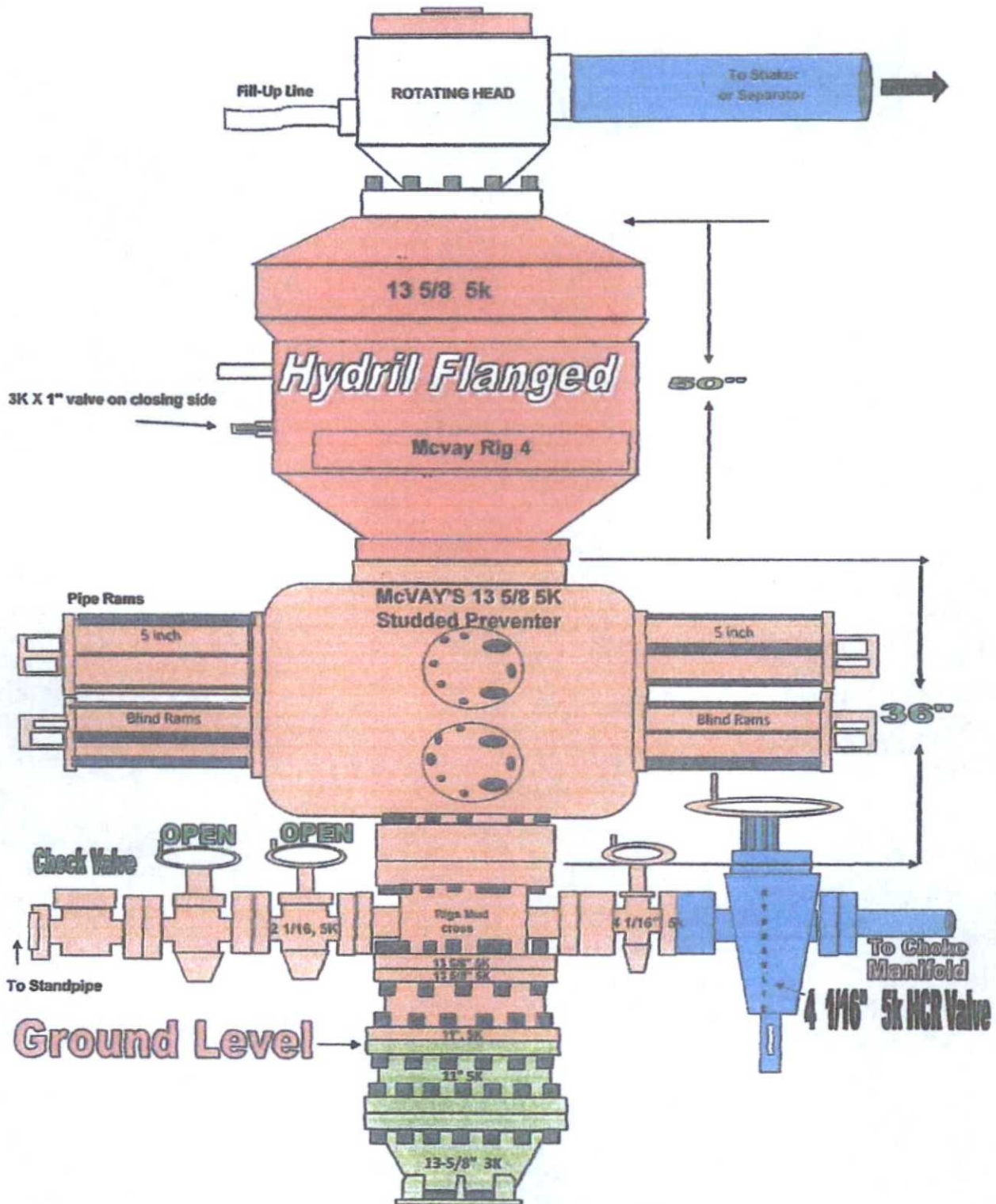
Coordinates are relative to: Lea Unit #57H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.44°



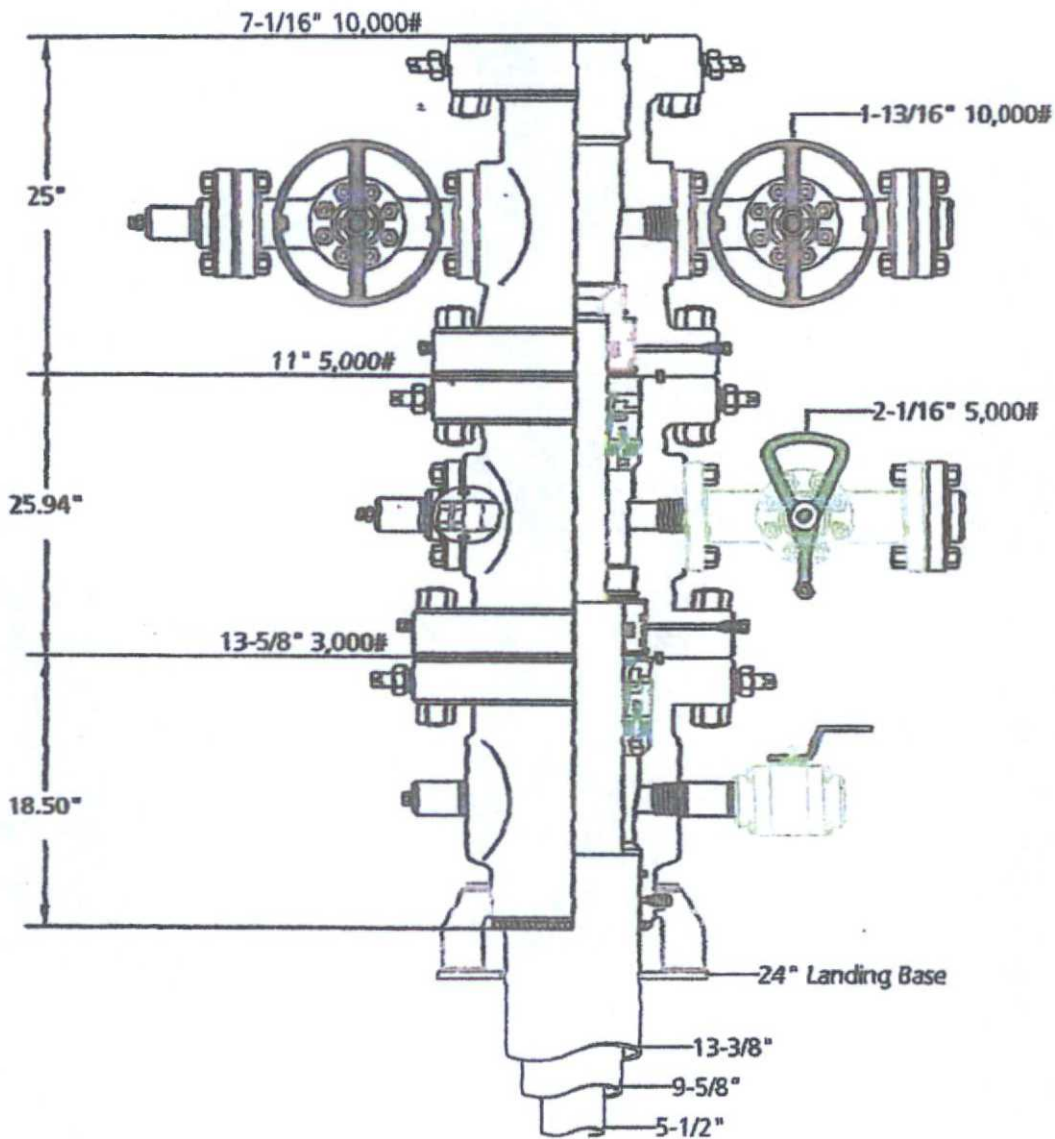
LEGEND

— #14, OH, OH V0 — #4H, OH, OH V0

McVay Rig 4



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

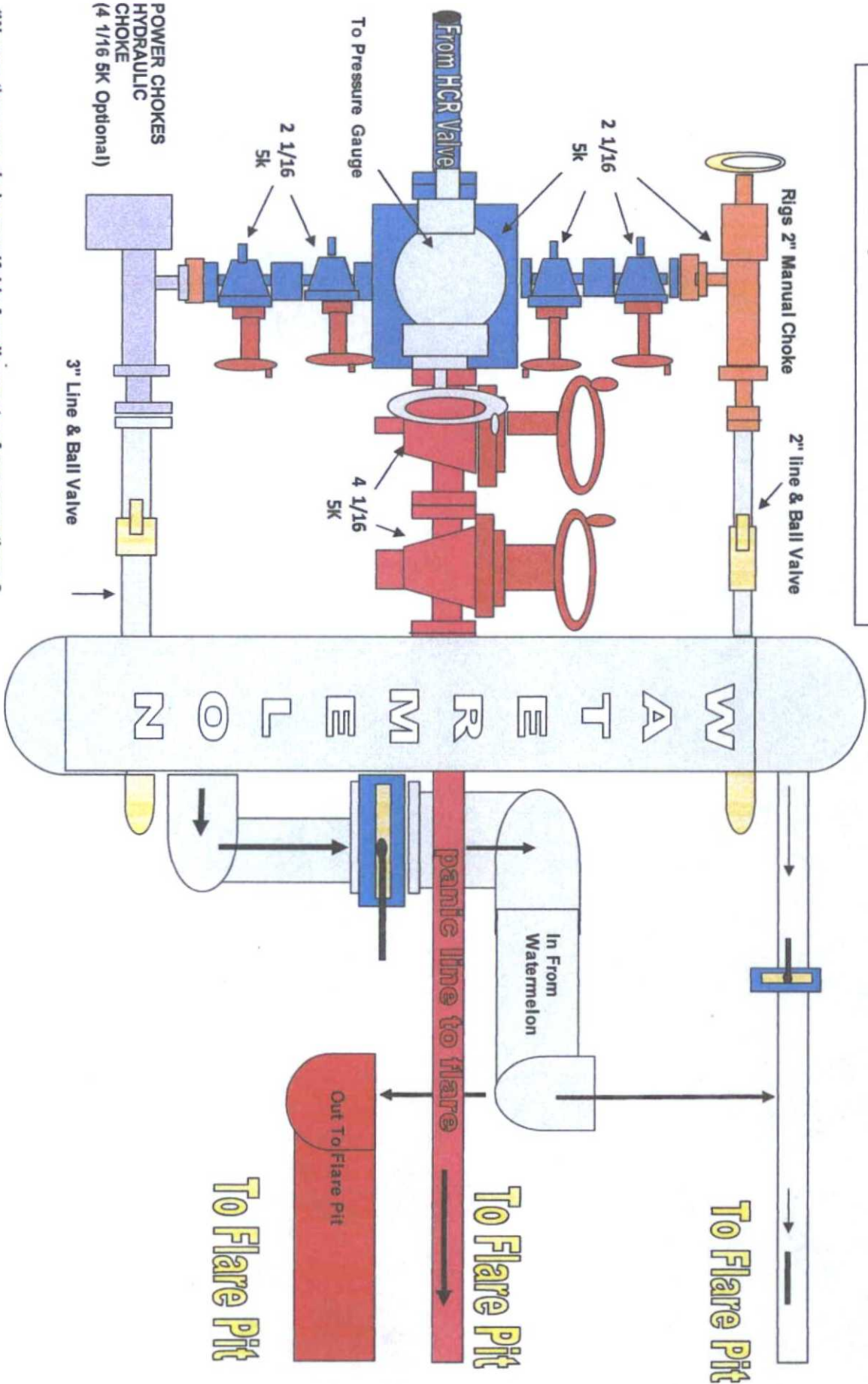


Legacy Reserves
Conventional 3-String



NAME	Jeanette	DATE	7-15-15	DRAWING NUMBER	#	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

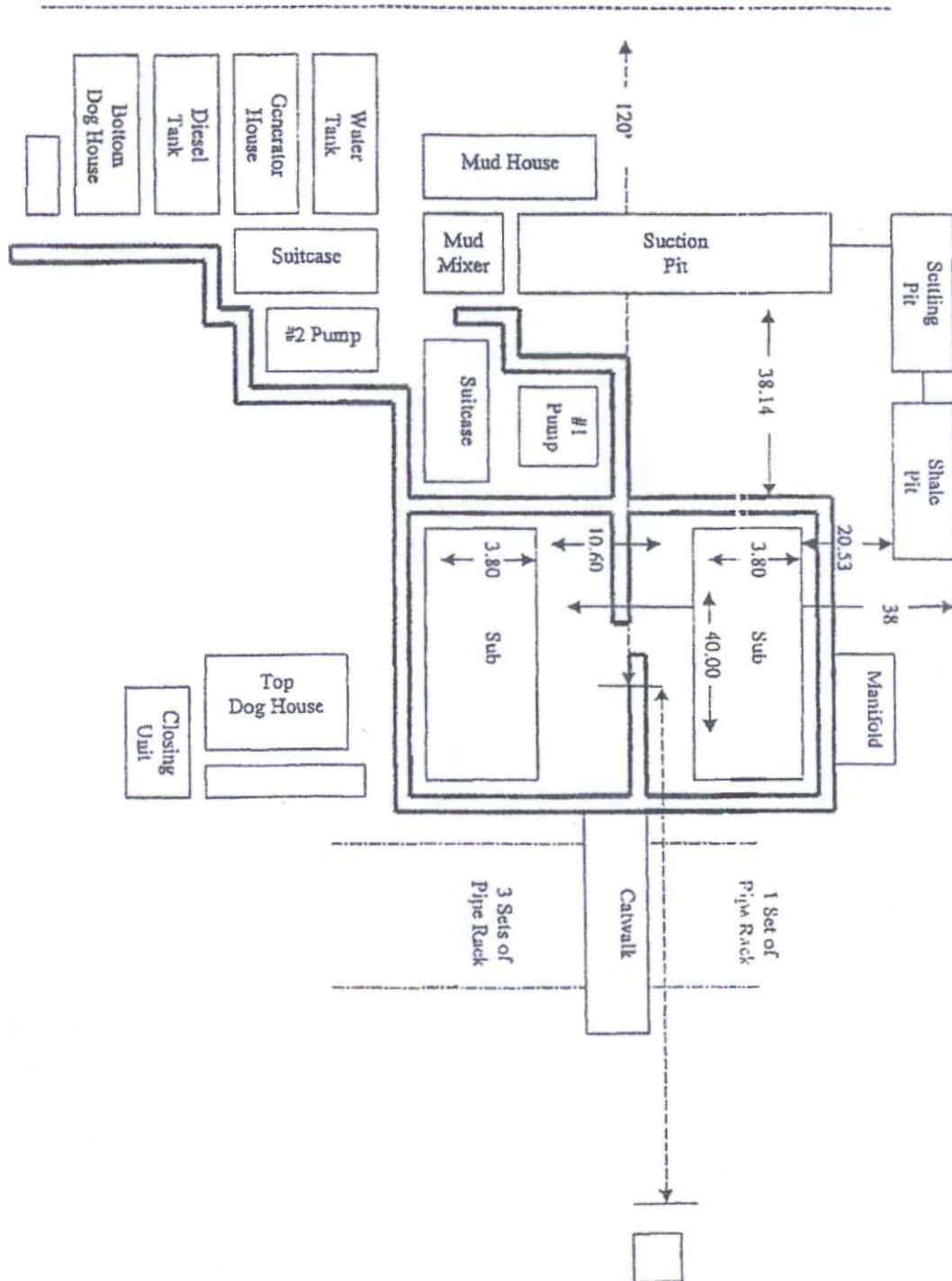
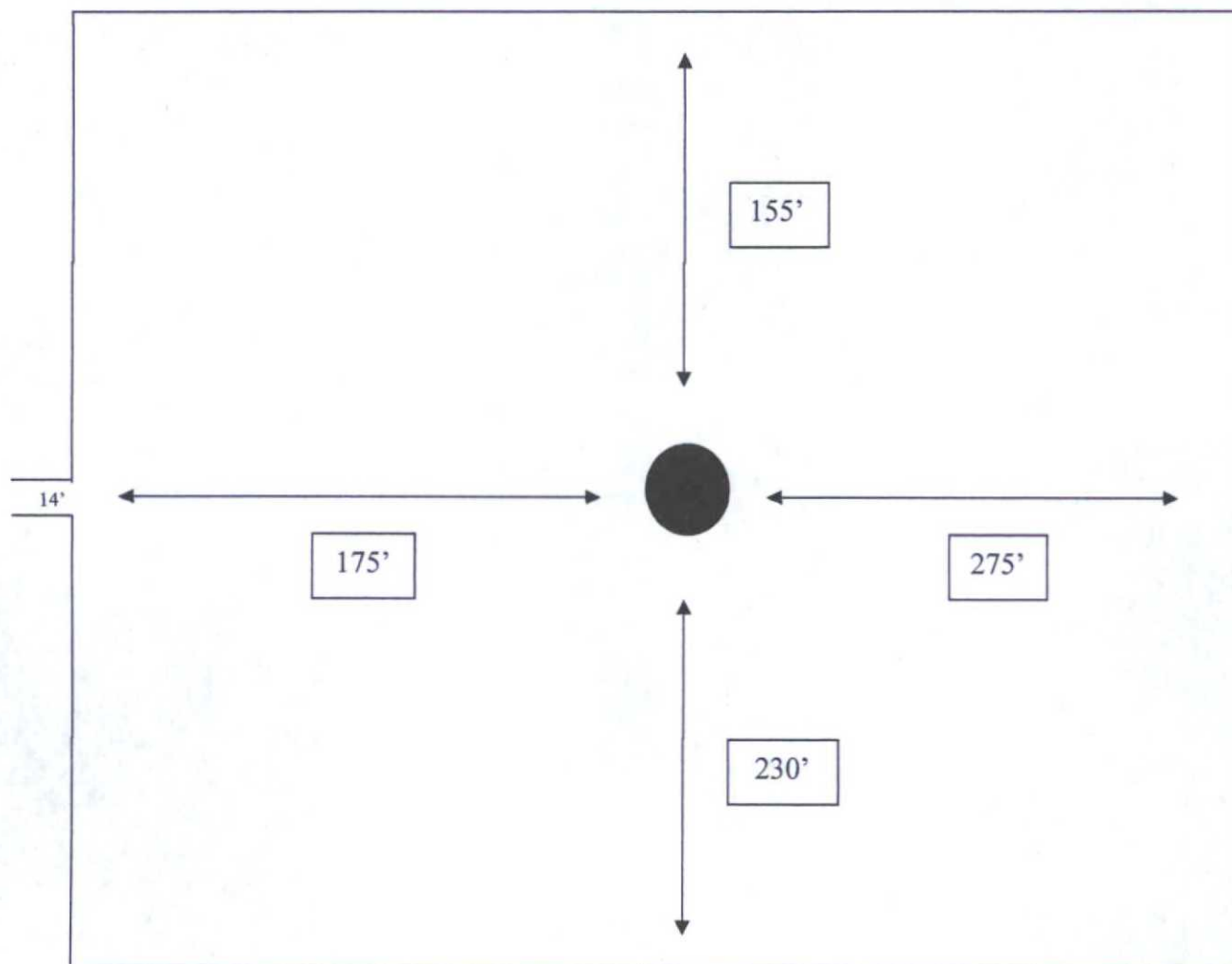


EXHIBIT D

Rig Plat Only
LEA UNIT 57H
V-DOOR EAST

NORTH



N
O
R
T
H