ATS-15-1029

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

HOBBS OCD
JAN 25 2016
RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. LC-065375-A, LC-066147-A
	6. If Indian, Allotee or Tribe Name
	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 Zone	8. Lease Name and Well No. LEA UNIT 59H (302802)
2. Name of Operator LEGACY RESERVES OPERATING, L. P. (240974)	9. API Well No. 30-025-43035
3a. Address P. O. BOX 10848 MIDLAND, TX. 79702	3b. Phone No. (include area code) 432-221-6334 (Craig Sparkman)
	10. Field and Pool, or Exploratory (97983) WC-025 G-08 S203506D; BS
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface 2270 FSL & 660 FWL Section 19 (First Take: 2310 FNL & 660 FWL Sec. 19) At proposed prod. zone 330 FNL & 660 FWL Section 18 (Last take)	11. Sec., T. R. M. or Blk. and Survey or Area SHL: SECTION 19, T. 20 S., R. 35 E. BHL: SECTION 18, T. 20 S., R. 35 E.
14. Distance in miles and direction from nearest town or post office* 26 MILES SOUTHWEST OF HOBBS, NM	12. County or Parish LEA / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) SHL: 370' BHL: 330'	16. No. of acres in lease BHL: 240 LC-065375-A SHL: State (160) / 17. Spacing Unit dedicated to this well 240
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1470' - #28	19. Proposed Depth TVD: 10,900' MD: 18,608' / 20. BLM/BIA Bond No. on file ~~NMB001814~~ & NMB001015
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3676' GL	22. Approximate date work will start* ASAP / 23. Estimated duration 45 DAYS

UNORTHODOX LOCATION

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 Barry W. Hunt	Name (Printed/Typed) BARRY W. HUNT	Date 9/25/15
Title PERMIT AGENT FOR LEGACY RESERVES OPERATING, L. P.		
Approved by (Signature) /s/ STEPHEN J. CAFFEY	Name (Printed/Typed)	Date JAN 19 2016
Title FIELD MANAGER	Office BLM-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)

KZ 01/26/2016

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Capitan Controlled Water Basin

Witness Surface Casing

JAN 27 2016

DRILLING PLAN

LEA UNIT 59H

LEGACY RESERVES OPERATING LP

SHL: Unit L, Section 19

BHL: Unit D, Section 18

T20S-R35E, 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: 2270' FSL & 660' FWL, Sec. 19, T20S-R35E (First Take: 2310 FNL & 660 FWL)
   BHL: 330' FNL & 660' FWL, Sec. 18, T20S-R35E (Last Take)

2. ***Elevations:*** 3,676' 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:*** 18,608' MD 10,900' 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'	1st. Bone Spring	9,501'
Capitan Reef Bottom	4,710'	2nd Bone Spring	10,034'
San Andres	4,710'	3rd. 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~~'	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 10,900'	8.4-8.6	28-29	NC	Fresh water/brine, use hi-viscosity Weeps to clean hole
10,900' to 18,608'	8.9-9.1	28-29	18-20	Fresh water/brine

1875

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 ~10,900', Kick off and drill 8-3/4" hole to TD of ~18,608'. Set 5-1/2" casing from surface to TD (~ 18,608'). 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"	1875 ~~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"	18,608' 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% 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).

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).

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: 4796 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

Legacy Reserves
Project: Lea County, NM
Site: Lea Unit
Well: #59H
Wellbore: OH
Plan: Plan #1 (#59H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10327.0	0.00	0.00	10327.0	0.0	0.0	0.00	0.00	0.0	
3	11227.0	90.00	359.57	10900.0	572.9	-4.3	10.00	359.57	573.0	
4	18607.7	90.00	359.57	10900.0	7953.4	-59.9	0.00	0.00	7953.6	BHL (LU #59H/OH)

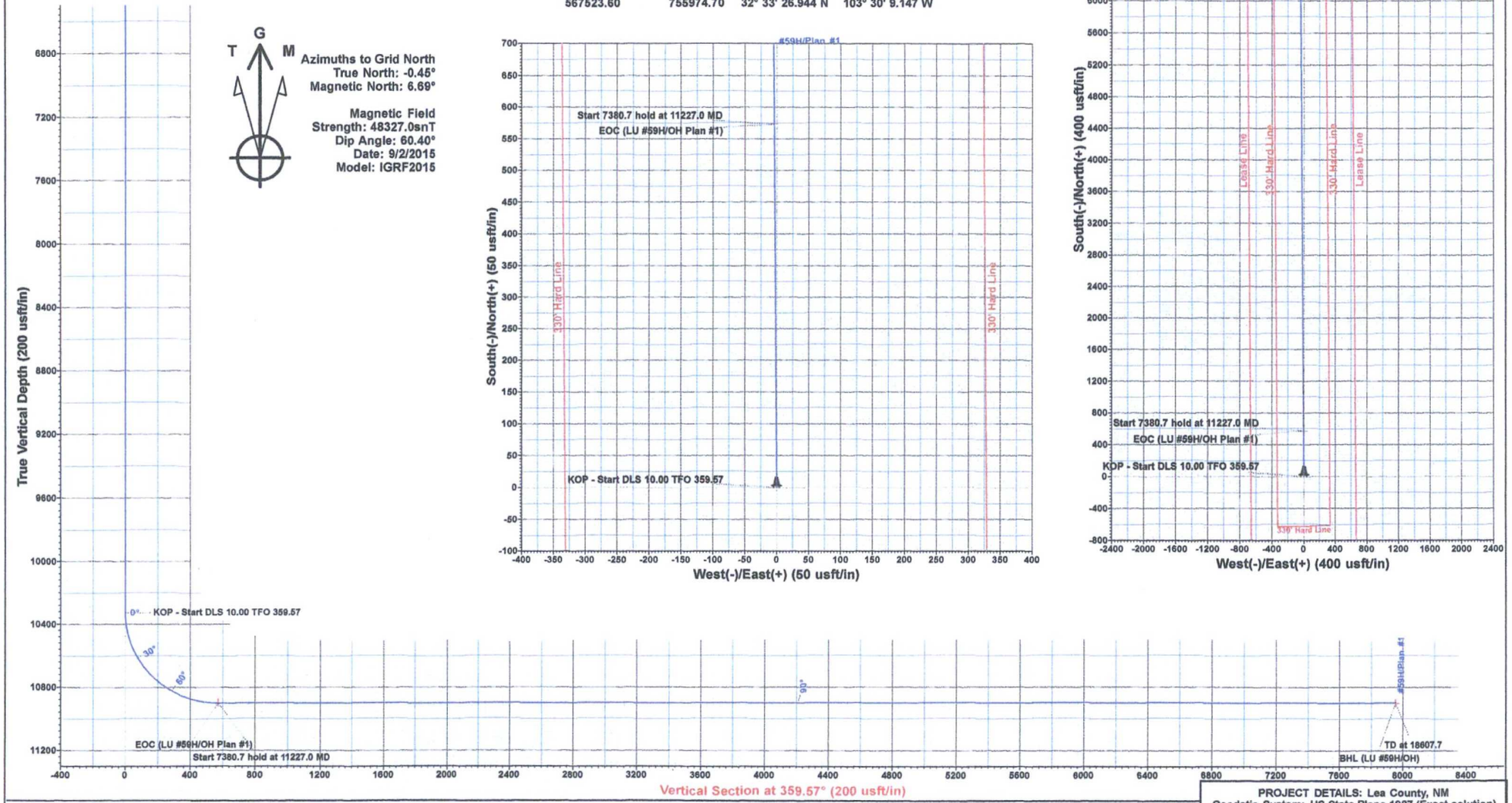
WELL DETAILS: #59H

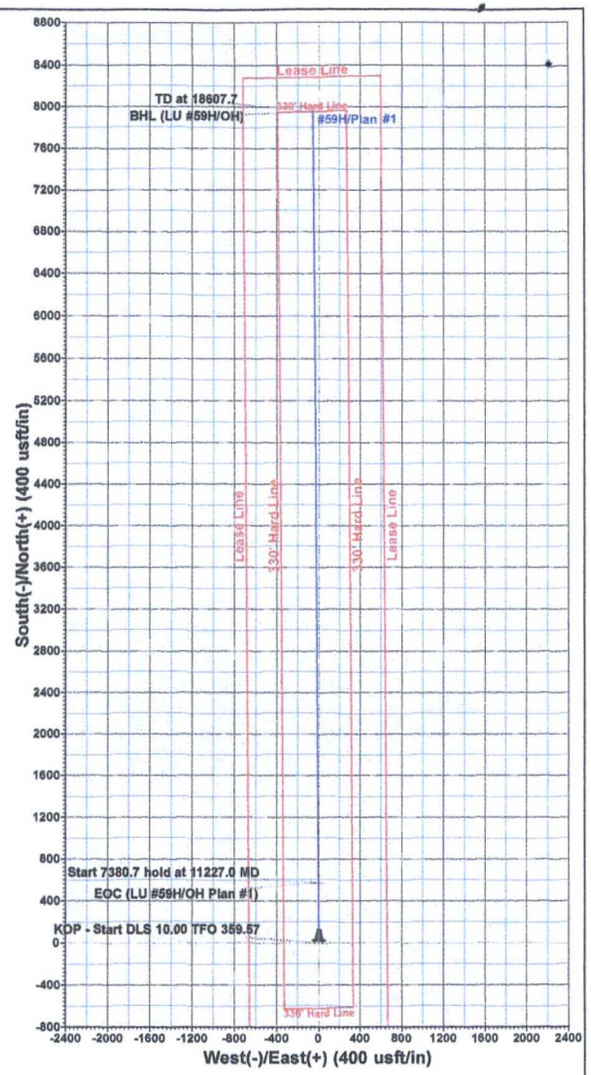
Ground Elevation:: 3676.0
RKB Elevation: KB @ 3694.0usft (McVay 4)
Rig Name: McVay 4

Northing	Easting	Latittude	Longitude
567523.60	755974.70	32° 33' 26.944 N	103° 30' 9.147 W

Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.69°

Magnetic Field
Strength: 48327.0snT
Dip Angle: 60.40°
Date: 9/2/2015
Model: IGRF2015





Terra Directional Services
3705 South County Road 1210, Midland, TX 79706
Office: (432) 618-1210

Plan: Plan #1 (#59H/OH)
Created By: Well Planner Date: 18:12, September 02 2015

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