MAY 0 9 2016

OCD Hobbs

UNITED STATES

5. Lease Serial No.	
NM-84652, NM-129733	MOYOUDI

RECEAPLICATION FOR PERMIT TO DRILL OR REENTER 12. Type of work: DIBITL 13. Type of work: DIBITL 14. Type of work: DIBITL 15. Type of Well: Oil Well Gas Well Other 15. Single Zone Multiple Zone 16. Nume of Operation LEGACY RESERVES OPERATING, L. P. 240977P 16. Nume of Operation LEGACY RESERVES OPERATING, L. P. 240977P 17. Nume of Operation LEGACY RESERVES OPERATING, L. P. 240977P 18. Address P. O. BOX 10948 18. Phone No. fordular area could 19. Address P. O. BOX 10948 19. Phone No. fordular area could 10. Held and froz, or Explanatory 11. Sec. T. R. M. or Bill. and Story 11. Sec. T. R. M. or Bill. and Story 11. Sec. T. R. M. or Bill. and Story 11. Sec. T. R. M. or Bill. and Story 11. Sec. T. R. M. or Bill. and Story 11. Sec. T. R. M. or Bill. and Story 12. Composed prod. zone 330 FSL & 2380 FEL Section 7 (Last take) 13. Distance from proposed; Sec. 2380 FEL Section 7 (Last take) 14. Distance from reprosed: Sec. 10. B. H. 3307 15. Distance from proposed prod. in a sec. 10. B. H. 3307 16. No. of acres in leese 17. Specing Unit deficiated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to this well 18. Distance from proposed begin in the self-indicated to t	MAY DEPARTMENT OF LA			POTACH	5. Lease Serial No. NM-84652, NM-129	9733 NY	40404
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b. Type of Well:	la. Type of work: 🗸 DRILL [7. If Unit or CA Agre	ement, Nam	ne and No.			
Address P. O. BOX 10848 MIDLAND. 17X. 78702 1. Location of Well (Report location clearly) and in accordance with any Sale reporters of the State reporters of t	b. Type of Well: 🔽 Oil Well 🔲 Gas Well 🔲	Other	✓ Single Zone Mu	ltiple Zone			702
In Address P. O. BOX 10848 3b. Phone N. frontale area cooks 432-689-5200 (Steve Owen) 10. Field and Pool, or Exploratory TEAS; BONE SPRING EAST 96.	Name of Operator LEGACY RESERVES OPER	RATING, L. P.	24097K)			43	230
At surface 605 FSL & 1998 FEL Section 6 (First Take: 330 FNL & 2380 FEL, Section 7) At proposed mod. zone: 330 FSL & 2380 FEL Section 7 (Last take) 1. Distance in miles and direction from nearest cown or post office: 2. MILES SOUTHWEST OF HOBBS, NM 1. Distance from proposed: 2. SHL: SECTION 6, T. 20 S., R. 34 E. 3. His in Section 7, T. 20 S., R. 34 E. 3. Shade from proposed: 3. Distance from proposed: 3. SHL: 605 control from tends velid. 4. Both or nearest velid. 5. Distance from proposed: 5. Section 10 years of the control of the velid of the	a. Address P. O. BOX 10848 MIDLAND, TX. 79702	I		1)		-	T (96
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All proposed prior 2001 230 FSL & 2380 FEL & 2380 FEL Section 7 (Last take) Distance in mile and direction from merets town or post office* 12 County or Parish 13 State 15 No. of scress in lease 16 No. of scress in lease 17 Spacing Unit dedicated to this well 18 Distance from proposed section, and the List 30' property or lease line, and the List 30' property will start* 24 Attachments 25 Apparational data by the MB001015 modern and the List 30' property of the List 30' property or lease line, and the List 30' prop	At surface 605 FSL & 1998 FEL Section 6 (Fi	rst Take: 330 FN	L & 2380 FEL, Section	7)			
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APPLICATION TO DRILL

HAMON FED COM A 5H

LEGACY RESERVES OPERATING LP

SHL: Unit O, Section 6 BHL: Unit O, Section 7

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:

605' FSL & 1998' FEL, Sec. 6, T20S-R34E (First Take: 330 FNL & 2380 FEL Sec. 7)

BHL: 330' FSL & 2380' FEL, Sec. 7, T20S-R34E (Last Take)

2. Elevations:

3,610' 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:

14,420' MD

9,435' TVD

6. Estimated Tops of Geological Markers:

Rustler	1,499'	Queen	4,750°
Top Salt	1,860'	Delaware/Base of Capitan Reef	5,400'
Bottom Salt	3,500'	1 st. Bone Spring	8,368'
Yates	3,350′	TVD	9,435'
Top of Capitan Reef	3,793'		
Seven Rivers	3,875′		

7. Possible mineral bearing formations:

Primary: Bone Spring (oil); Secondary: Delaware (oil), Queen (oil), Seven Rivers (oil), Yates (oil or gas); fresh water (~125')

8. Proposed Mud System:

Depth	Mud Wt.	Visc	Fluid Loss	Type Mud
0' to 1600'	8.4-8.6	30-32	May lose circ.	Fresh water gel spud mud
1600' to 5400'	10.0-10.1	28-29	May lose circ.	Brine water
5400' to 9435'	8.7-8.8	28-29	No control	Fresh water/brine, use hi-viscosity sweeps to clean hole
9435' to 14,420'	8.7-8.8	28-29	10-12	Fresh water/brine

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. Visual mud monitoring equipment will be in place to detect pit volume changes indicating loss or gain of

* circulating mud fluids. 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" hole to 9,435', kick off and drill 8-3/4" hole to TD of ~14,420'. Set 5-1/2" casing from surface to TD (~ 14,420'). Cement 5-1/2" production casing back to surface.

10. Casing Information:

String	Hole size	Depth	Casing OD	Collar	Weight	Grade
Surface	17-1/2"	1600' MD	New 13-3/8"	STC	54.5#	J-55
Intermediate	12-1/4"	4000' 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"	14,420' MD	New 5-1/2"	BTC	20#	P-110
•						
5-1/2", P-110:			9-5/8", HCK-55			
Collapse Facto	r: 1.55		Collapse Factor:	1.28		
Burst Factor:	1.29		Burst Factor:	2.03		
Tension Factor	: 3.06		Tension Factor:	3.33		
<u>9-5/8, J-55</u>			<u>13-3/8, J-55</u>			
Collapse Facto	r: 1.24		Collapse Factor:	3.08		
Burst Factor:	st Factor: 1.82		Burst Factor:	3.54		
Tension Factor	: 3.12		Tension Factor:	5.66		

11. Cementing Information:

Surface Casing (100% excess on lead & 100% excess on tail to design for cement top at surface):

Lead: 1100 sxs class C cement + 4% bentonite + 0.25 pps celloflakes + 0.005 gps FP-6L + 2% calcium chloride (13.50 ppg, 1.75 cfps, 9.16 gps wtr).

<u>Tail:</u> 400 sxs class C sement + 0.005 gps FP-6L + 0.5% calcium chloride (14-80 ppg, 1.33 cfps, 6.33 gps wtr).

Intermediate Casing (50% excess on lead & 50% excess on tail to design for cement top at surface):

Lead: 900 sxs (50:50) poz (fly ash) class C cement + 10% bentonite + 5% sodium chloride + 0.25 pps cello flakes + 0.1% FL-52A + 0.005 gps FP-6L (11.90 ppg, 2.37 ef/sx, 13.52 gps wtr).

Tail: 325 sxs class C cement + 0.2% R-3 + 0.005 gps FP-6L (14.80 ppg, 1.33 cfps, 6.31 gps wtr).

<u>Production Casing</u> (25% excess on lead & 25% excess on tail to design for cement top at surface):

<u>Lead:</u> 1000 sxs (50:50) poz (fly ash) class H cement + 6% bentonite + 5% sódium chloride + 5 pps LCM-1 + 0.7% sodium metasilicate + 0.5% R-21 + 0.45% FL-52A + 0.005 gps FP-6L (11.90 ppg, 2.31 cf/sx, 12.60 gps wtr).

Tail: 1300 sxs (15:61:11) poz (fly ash) class C cement CSE-2 + 4% sodium chloride + 3 pps LCM-1 + 0.6% FL-25 + 0.6 FL-52A + 0.2% sodium metasilicate + 0.15% R-21 + 0.005 gps FP-6L (13.20 ppg, 1.63 cf/sx, 7.98 gps wtr).

11. Cementing Information:

Suface Casing (100% excess on lead & 100% excess on tail to design for cement top at surface)

<u>Lead:</u> 1200 sx class C cement + 4% bwoc bentonite II + 2% bwoc calcium chloride + 0.25 lbs/sack cello flake + 0.005 gps FP-6L (13.50 ppg, 1.75 cfps, 9.13 gps wtr)

<u>Tail:</u> 200 sx class C cement + 1.5% bwoc calcium chloride + 0.005 lbs/sack defoamer + 0.005 gps FP-6L (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

Intermediate Casing

In the event that circulation is lost (> 50%) while drilling the 12-1/4" intermediate hole in the Capitan Reef at +/-4000', we will plan to install a DV tool and external casing packer within 200' of the top depth where lost circulation occurred and will pump a two-stage cement job. If there is no lost circulation a single stage cementing procedure will be followed. Legacy plans to cement to surface regardless of whether a single stage or 2-stage procedure.

No DV tool (80% excess on lead & 80% excess on tail to design for cement top at surface)

<u>Lead:</u> 1400 sx (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 defoamer + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

<u>Tail:</u> 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

With DV Tool (100% excess on lead & 100% excess on tail to design for cement top at surface) DV Tool عومه . 3800'

Stage 1

Lead: 400 sx (35:65) paz (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 defoamer + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride (12.5 ppg, 2.13 cfps, 8.81 gps wtr)

<u>Tail:</u> 200 sx class C cement (14.80 ppg, 1.33 cfps, 6.35 gps wtr)

Stage 2

<u>Lead</u>: 1100 sx (35:65) paz {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 cfps, 8.81 gps wtr)

<u>Tail:</u> 200 sx 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)

<u>Lead:</u> 1800 sx (50:50) paz (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 cfps, 13.22 gps wtr)

 $\frac{\text{Tail:}}{\text{LCM-1}} \quad 1200 \text{ sx Class H } (15.61.11) \text{ poz (fly ash) class H cement: CSE-2 + 4\% bwow sodium chloride+ 3 pps} \\ \text{LCM-1} \quad + 0.6\% \text{ bwoc FL-25 + 0.005 gps FP-6L + 0.005\% bwoc defoamer} \quad (13.20 \text{ ppg, 1.62 cfps, 9.45 gps wtr)}$

In the event that circulation is lost while drilling the 12-1/4" intermediate hole in the Capitan Reef at +/- 4000', we will plan to install a DV tool and external casing packer within 200' of the top depth where lost circulation occurred and will pump a two-stage cement job using the same lead and tail cement slurries as specified in the single stage cement job. The cement volumes for the two-stage job will be calculated using 100% excess above normal hole volume.

There will be lead and tail slurries for each of the two stages of the 2-stage cementing jobs on the 9 5/8" intermediate casing. Legacy only plans to pump a 2-stage cementing procedure on the 9 5/8" intermediate casing if we lose circulation in the Capitan Reef. If there is no lost circulation a single stage cementing procedure will be followed. Legacy plans to cement to surface regardless of whether a single stage or 2-stage procedure.

12. Pressure Control Egpt/BOP: See COA

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 (~1600') 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 the intermediate casing.
- B. No open hole logs, DST's or cores are planned.

14. Potential Hazards

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: 4151 psi, estimated BHT: 170°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.



Project: Lea County, NM (NAD-27 2015)
Site: Hamon Fed Com A #5H
Well: Hamon Fed Com A #5H
Wellbore: Lateral #1
Plan: Design #1 (Hamon Fed Com A #5H/Lateral #1)

WELL DETAILS: Hamon Fed Com A #5H

Ground Elevation:: 3610.00 RKB Elevation: KB @ 3628.00usft (McVay 4) Rig Name: McVay 4

Easting 726776.50 Latittude 32° 35′ 47.173 N

Northing 581480.40

True Vertical Depth (200 usft/in)

1.1

KOP - Start DLS 10.00 TFO -42.28

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-350 300 250 200

HOLD

Start 3028.65 hold at 5938.00 MD

Longitude 103° 35' 49.149 W

200 180

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Section Details

Target

2400

-2100 -1800 -1500 -1200 -900 -600

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

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LTP/BHL (HFCA #5H/L1)

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Start 3028,65 hold at 5938.00 MD

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Imuths to Grid North True North: -0,40° Magnetic North: 6.80°

Magnetic Field Strength: 48353.6snT Dip Angle: 60.43° Date: 7/18/2016 Model: IGRF2016

PROJECT DETAILS: Lea County, NM (NAD-27 2015)
Geodetic System: US State Plane 1927 (Exact solution)
Deturn: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

Plan: Design #1 (Harnon Fed Corn A #5H/Lateral #1) ated By: Well Planner Date: 17:22, September 26 2015

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

2400 2800 3200 3800 Vertical Section at 183.69° (200 usft/in)

8

4400

TD at 14420.23 A #5H/L1)

Terra Directional Services

800 (HRCA #8H/L1 Design #1) Start 4618.61 hold at 9801.61 MD 400 800 1200 1600

30.

Fed Con

EDC (HFCA #5#/L1 Design #1).

' A #SH/Design #1

700

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L-0300

6000 5700 6400 -600

-850

76100 4800 500

(20 nstrin)

550

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