

MAY 23 2018

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010MIN F
SURF FUNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. (317726) Stratocaster 20 Fed #8H (39925)
2. Name of Operator Endurance Resources, LLC (270329) COG OPERATING LLC (229137)		9. API Well No. 70025-44977
3a. Address 203 West Wall Suite 1000 Midland, Tx 79701	3b. Phone No. (include area code) 432-242-4680	10. Field and Pool, or Exploratory Antelope Ridge West, 2209
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 330' FNL & 1650' FEL - SEC 20 At proposed prod. zone 330' FSL & 660' FEL - SEC 20		11. Sec., T. R. M. or Blk. and Survey or Area Sec 20-23s-34e
14. Distance in miles and direction from nearest town or post office* 25 miles Northwest of Jal, New Mexico		12. County or Parish Lea
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'		13. State NM
16. No. of acres in lease 640 ac		17. Spacing Unit dedicated to this well 160 ac
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 4000'		20. BLM/BIA Bond No. on file NMB001200
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3485.4' GL		22. Approximate date work will start* 09/01/2016
		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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature <i>Tinlee Tilton</i>	Name (Printed/Typed) Tinlee Tilton	Date 04/25/2016
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Title

Engineer

Approved by (Signature) <i>/s/Cody Layton</i>	Name (Printed/Typed)	Date MAY 21 2018
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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) *OCD Rec 07/13/18*APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

*(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL*KZ*
07/16/18

WITNESS SURFACE CASING

CARLSBAD CONTROLLED WATER BASIN



Endurance Resources LLC

DRILLING & OPERATIONS PROGRAM

Stratocaster 20 Fed 8H

SHL: 330' FNL & 1650' FEL (B)

BHL: 330' FSL & 660' FEL (P)

Sec 20-23S-34E

Lea Co, NM

1. Geological Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geological Markers

Fresh Water	300'
Rustler	980'
Top of Salt	1,472'
Lamar Limestone	5,015'
Delaware	5,058' Oil
Bone Spring	8,593'
1 st Bone Spring	9,679' Oil
2 nd Bone Spring	10,224' Oil
TVD: 10,460' ; MD: 14,939'	

3. Estimated Depths of Anticipated Fresh Water, Oil or Gas

The estimated depths at which water, oil and gas will be encountered are as follows:

Water: Average depth to water: 300'. Minimum depth: 255'. Max: 430'. As reported from the New Mexico Office of the State Engineer website.

Oil & Gas: 5,150' – 10,900' (Delaware through Bone Spring)

No other formations are expected to give up oil, gas, or fresh water in measurable quantities.



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4. Proposed Casing Program:

See
CA

Hole Size	Interval	CSG OD	CSG Interval	Weight	Collar	Grade
17.5"	0' - 1080' 1100'	13.375"	0 - 1080'	54.5#	BTC	J-55
12.25"	0 - 5030'	9.625"	0 - 5030'	40#	LTC	HCL-80
8.75"	0 - 5030' - TD	5.5"	0 - 14,939'	20#	BTC	HCP-110

SD 30 OK

Casing Size	Collapse Design Factor	Burst Design Factor	Tension Design Factor
13.375"	2.24	5.43	15.44
9.625"	1.59	2.37	3.61
5.5"	2.41	2.50	2.23

NOTE: ALL CASING IS NEW & API APPROVED. WHILE RUNNING CASING, PIPE WILL BE KEPT A MINIMUM OF 1/3 FULL AT ALL TIMES TO AVOID APPROACHING COLLAPSE PRESSURE OF THE CASING. SURFACE CASING WILL BE WATCHED & NECESSARY ADJUSTMENTS MADE TO ENSURE PIPE IS FULL DUE TO LOST CIRCULATION ZONES THAT MAY OCCUR. CENTRALIZERS WILL BE USED ON SURFACE CASING

5. Proposed Cement Program:

a. 13-3/8" Surface – TOC at Surface

Lead: 400 sks ExtendaCem Class C (13.7 ppg / 1.694 cuft/sk)

Tail: 570 sks HalCem Class C (14.8 ppg / 1.326 cuft/sk)

**Calculated w/ 100% excess on OH volume

b. 9-5/8" Intermediate – TOC at Surface

Lead: 1200 sks EconoCem Class C + 0.4% HR-800 Retarder + 0.125

lbm/sk Poly-E-Flake Lost Circulation Additive (12.9 ppg / 1.789 cuft/sk)

Tail: 300sks HalCem C (14.8 ppg / 1.326 cuft/sk)

**Calculated w/ 50% excess on OH volumes & 10% in CH

c. 5-1/2" Production – TOC at Surface

Lead: 800 sks 50/50 Poz Class H + 5% Cal-Seal 60 Lost Circulation

Additive + 8% Bentonite + 0.1% FE-2 + 0.25 lbm/sk D-Air 5000 Defoamer
(11.5 ppg / 2.672 cuft/sk)

Tail: 1100 sks Class H + 0.5% Halad R-344 Low Fluid Loss Control + 0.4%
Halad R-322 + 0.4% HR-800 Retarder (14.5 ppg / 1.227 cuft/sk)

**Calculated w/ 15% excess in vertical OH, 15% excess on OH volumes &
10% in CH

NOTE: THE ABOVE CEMENT VOLUMES COULD BE REVISED PENDING FLUID CALIPER & CALIPER LOG DATA. ALL VOLUMES ARE DESIGNED TO CIRCULATE TO SURFACE.



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6. Minimum Specifications for Pressure Control:

13-5/8 (5M) working pressure BOP system consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer (please see BOP schematic). A 5M choke manifold & 120 gallon accumulator with floor and remote operating stations & auxiliary power system. Rotating head as needed. AKC will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Upper
Lower

BOP unit will be hydraulically operated. BOP will be NU and operated at least once a day while drilling and the blind rams will be operated when out of the hole during trips. From the base of the 13-3/8" csg through running of production casing, the well will be equipped with a 5M BOP system. Below the 9-5/8 csg shoe, this 5M system will be equipped with a HCR valve, remote kill line, & annular to match. The remote kill line will be installed prior to testing the system & tested to stack pressure.

Before drilling out of the 13-3/8 surface casing, BOP will be tested by an independent ^{Service} surface company to 250 psi low & 5000 psi high. Hydril will be tested to 250 psi low and ~~1500~~ ²⁵⁰⁰ psi high. Before drilling out the 9-5/8 intermediate shoe BOP will be tested by an independent service company to 250psi low and 5000 psi high. Hydril will be tested to 250 psi low and 2500 psi high. These low pressure tests from 250 to 300 psi will be held a minimum of 10 minutes if test is done with a test plug & 30 minutes without a test plug.

7. Estimated BHP:

4707 psi @ 10,460' TVD

8. Mud Program: The applicable depths & properties of this system are as follows:

Depth	Type of System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0 - 1080' ^{1/2"}	Fresh	8.4 - 9.4	32-34	NC
1080' - 5030'	Brine	10.0	28-39	NC

See
com



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5030' - TD	Cut Brine	8.3 – 9.3	28-32	NC-12
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NOTE: NECESSARY MUD PRODUCTS FOR WEIGHT ADDITION & FLUID LOSS WILL BE ON LOCATION AT ALL TIMES. VISUAL MUD MONITORING EQUIPMENT (I.E. TRIP TANK) WILL BE IN PLACE TO DETECT VOLUME CHANGES INDICATING LOSS OR GAIN OF CIRCULATION VOLUME WITH ALARMS.

9. Auxiliary Well Control & Monitoring Equipment:

upper
&
lower

- a. AKC will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times
- c. H₂S detection equipment will be in operation & breathing apparatuses will be on location after the drill out of the 13-3/8" casing shoe until the 5-1/2" casing is cemented.

10. Testing, Logging & Coring Program:

- a. No drill stem tests are planned.
- b. Neutron Porosity well log ran from KOP to 200'.
- c. No coring is planned.
- d. A triple combo will be run from KOP to the intermediate casing depth.

11. Potential Hazards:

No abnormal pressures or temperatures are expected. If H₂S is encountered, Endurance Resources LLC will comply with Onshore Order #6. Regardless, all personnel will be trained & qualified with H₂S safety. Rig safety equipment will all also be checked daily once drill out of the 13-3/8" casing shoe to TD. It has been noted that H₂S has been encountered in the salt section. If H₂S is encountered, measurements & formations will be reported to the BLM.

12. Anticipated starting date & Duration of Operations:

Road & location construction will begin after the BLM has approved the APD. Anticipated spud date will begin after BLM approval & after a drilling rig is secured. Move in operations & drilling is expected to take no more than 45 days. An additional 30-50 days will be needed to complete this well & construct surface facilities and/or lay flow lines in order to place well on production.