

**Endurance Resources LLC**

**DRILLING & OPERATIONS PROGRAM**

**Moonlight Buttress 26 Fed 1H**

**SHL: 90' FSL & 660' FWL (M)**

**Sec 26-25S-35E**

**BHL: 330' FNL & 660' FWL (D)**

**Sec 26-25S-35E**

**Lea Co, NM**

1. Geological Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geological Markers

Fresh Water	600'
Rustler	885'
Top of Salt	1,380'
Base of Salt	5,100'
Lamar Limestone	5,201'
Delaware	5,255' Oil
Brushy Canyon	7,688'
TVD: 9,916' ; MD: 13,533'	

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: 311'. Minimum depth: 255'. Max: 430'. As reported from the New Mexico Office of the State Engineer website.

Oil & Gas: 5,255' – 10,500' (Delaware through Bone Spring)

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

JAN 04 2016

M

Tinlee Tilton <tinlee@enduranceresourcesllc.com>  
to me

9:04 AM (6 minutes ago)

Size	9 5/8"	7"	4 1/2"
WT (lb/ft)	40	29	13.5
Grade	N-80	HCP-110	HCP-110
Thread	LT&C	BTC	BTC
P <sub>col</sub> (psi)	3090	9200	11250
Y <sub>int</sub> (psi)	5750	11220	12410
Y <sub>joint</sub> (Kips)	737	955	443

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#### 4. Proposed Casing Program:

Hole  
12 1/4  
8 3/4  
6 1/8

Size	Depth	#/ft	Grade	Collapse	Burst	Tension
9-5/8"	1,175'	40	N-80	5.62	10.47	15.68
7"	9,250'	29	HCP-110	2.14	2.6	3.56
4-1/2"	8,000-13,533'	13.5	HCP-110	2.73	3.01	2.42

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. 9-5/8" Surface

Lead: 305 sks ExtendaCem Class C (13.7 ppg / 1.694 cuft/sk)

Tail: 155 sks HalCem Class C (14.80ppg / 1.326cuft/sk)

\*\*Calculated w/ 100% excess on OH volume

##### b. 7" Intermediate

Lead: 485 sks Tuned Light Class C (9 ppg / 3.566 cuft/sk)

Tail: 245 sks VersaCem Class C + 0.2% Halad-9 + 0.2% HR-800 + 0.3% Super CBL (14.40 ppg / 1.247cuft/sk)

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

##### c. 4-1/2" Production

Tail: 250 sks Class H + 0.8% HR-601 + 0.25 lbm/sk D-AIR 5000 (15 ppg/ 2.625 cuft/sk)

\*\*Calculated w/ 20% excess in lateral OH & 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.

#### 6. Minimum Specifications for Pressure Control:

See COA

\* 13-3/8 (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. A KC 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.





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 9-5/8" csg through running of production casing, the well will be equipped with a 5M BOP system. Below the 7" 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 9-5/8" surface casing, BOP will be tested by an independent surface company to 250 psi low & 2500 psi high. Hydril will be tested to 250 psi low and 1500 psi high. Before drilling out the 7" 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:

4012 psi @ 8,916' 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 – 1,1750'	Fresh	8.4	29-32	NC
1,750' – 9,250'	OBM	8.8	15-25	<8
9,250' – 13,533'	Cut Brine	8.5 – 9.2	28-32	NC-12

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:

- a. A KC will be in the drill string at all times.



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- 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 9-5/8" casing shoe until the 4-1/2" casing is cemented.



10. Testing, Logging & Coring Program:

See COA

- a. No drill stem tests are planned.
- b. GR/N well log ran from KOP to surface.
- c. No coring is planned.



11. Potential Hazards:

See COA

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 9-5/8" 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.





Project: Lea County, NM (NAD 83)  
Site: Moonlight Buttruss 26 Fed 1H  
Well: Moonlight Buttruss 26 Fed 1H  
Plan: Wellbore #1  
Plan: Plan #5  
Rig: Noram 23

**SURFACE LOCATION**  
US State Plane 1983  
New Mexico Eastern Zone  
Elevation: GL 3187.6' + KB 29.0' @ 3216.60usft (Noram 23)  
Northing 399451.77 Easting 847485.72  
Latitude 32° 5' 39.532 N Longitude 103° 20' 41.023 W

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Eastng	Latitude	Longitude
Moonlight Buttruss 26 Fed 1H BHL	8816.00	4860.83	-46.12	404312.59	847439.60	32° 6' 27.633 N	103° 20' 41.041 W

To convert a Magnetic Direction to a Grid Direction, Add 6.56°

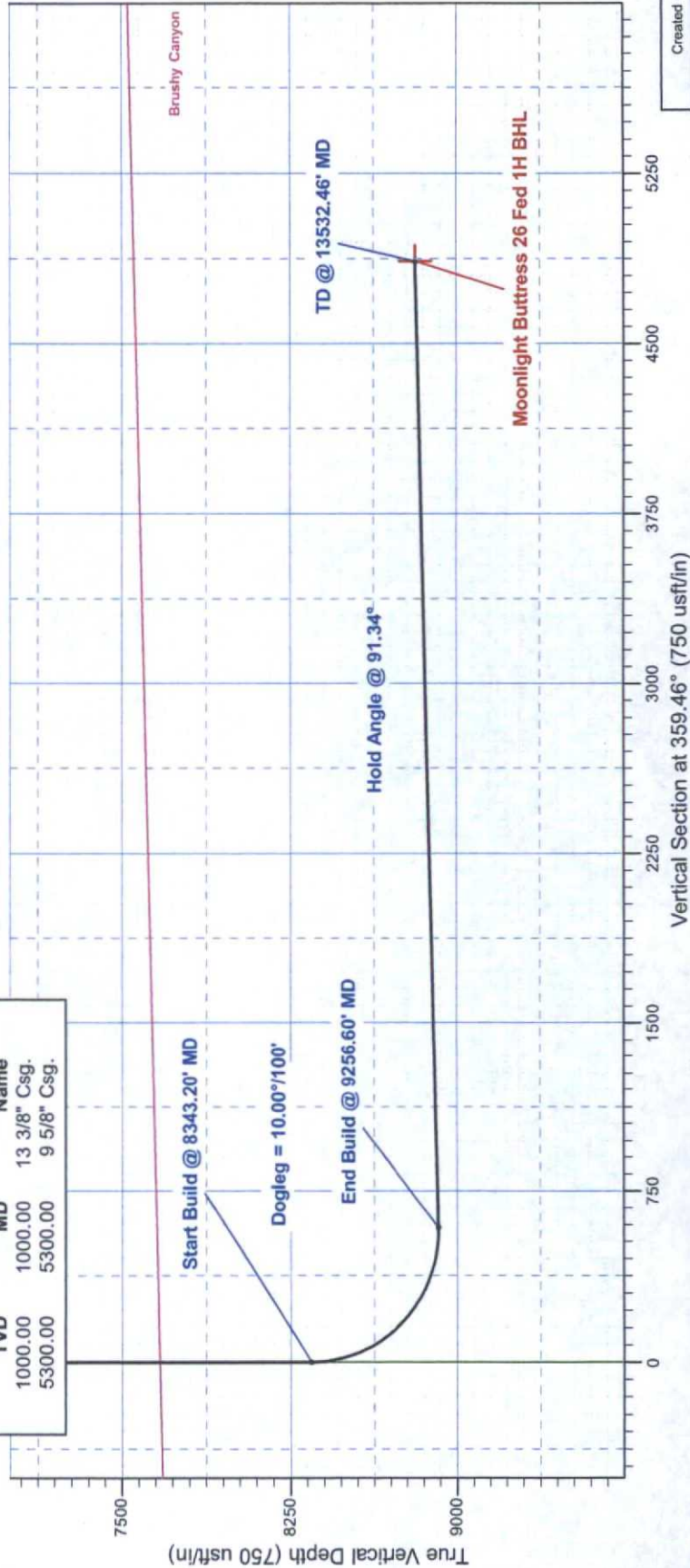
Magnetic Model: BGGM2015 Date: 10-Dec-15  
Azimuths to Grid North

### CASING DETAILS

TVD	MD	Name
1000.00	1000.00	13 3/8" Csg.
5300.00	5300.00	9 5/8" Csg.

### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8343.20	0.00	0.00	8343.20	0.00	0.00	0.00	0.00	0.00	Start Build
9256.60	91.34	359.46	8916.00	586.33	-5.56	10.00	359.46	586.36	End Build
13532.46	91.34	359.46	8816.00	4860.83	-46.12	0.00	0.00	4861.05	TD





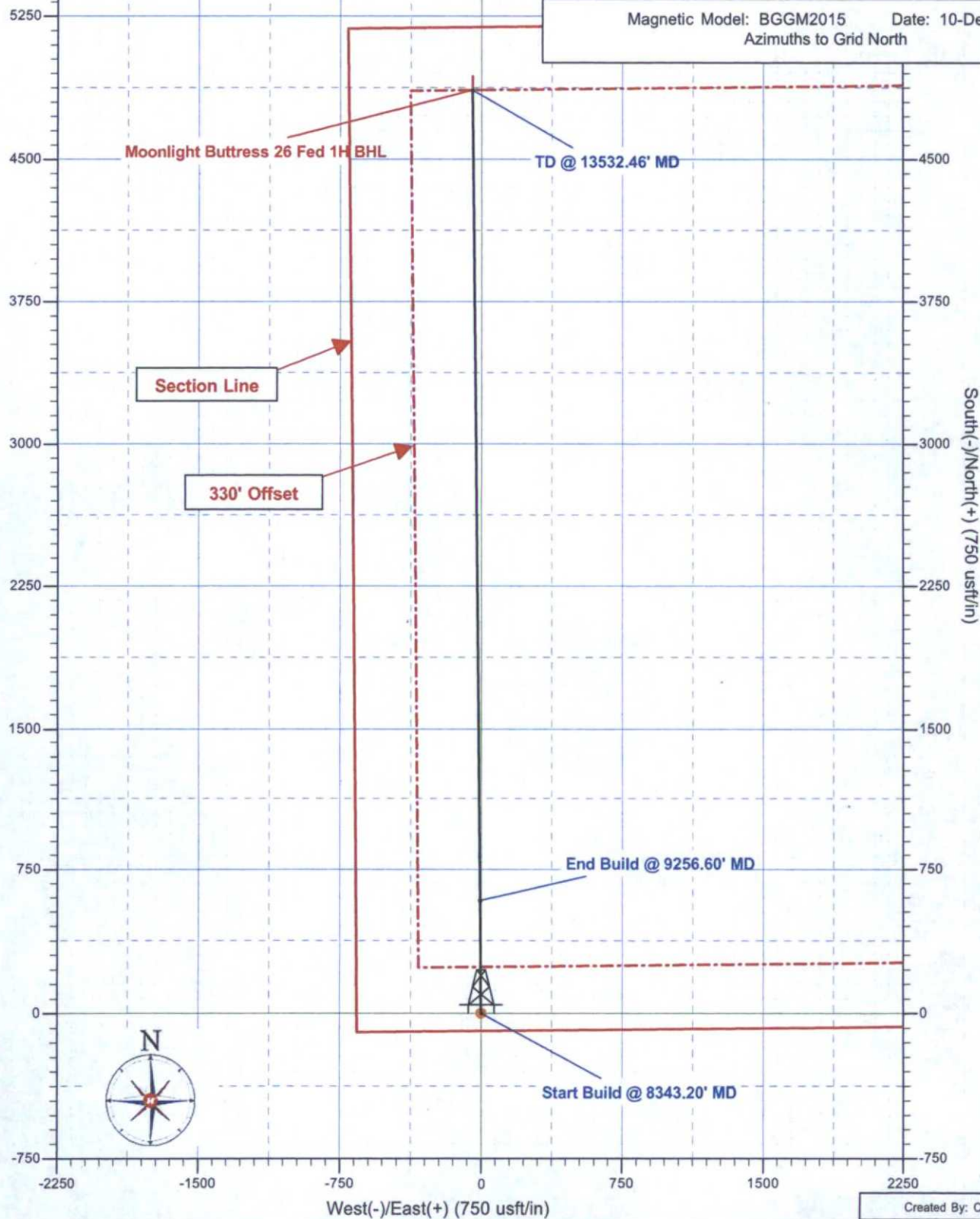
**Project:** Lea County, NM (NAD 83)  
**Site:** Moonlight Butress  
**Well:** Moonlight Butress 26 Fed 1H  
**Wellbore:** Wellbore #1  
**Plan:** Plan #5  
**Rig:** Noram 23

#### SURFACE LOCATION

US State Plane 1983  
 New Mexico Eastern Zone  
 Elevation: GL 3187.6' + KB 29.0' @ 3216.60usft (Noram 23)  
 Northing: 399451.77 Easting: 847485.72 Latitude: 32° 5' 39.532 N Longitude: 103° 20' 41.023 W

To convert a Magnetic Direction to a Grid Direction, Add 6.56°

Magnetic Model: BGGM2015 Date: 10-Dec-15  
 Azimuths to Grid North





# Endurance Resources LLC

Lea County, NM (NAD 83)

Moonlight Buttress

Moonlight Buttress 26 Fed 1H

Wellbore #1

Plan: Plan #5

## Sperry Drilling Services Proposal Report

17 December, 2015

Well Coordinates: 399,451.77 N, 847,485.72 E (32° 05' 39.53" N, 103° 20' 41.02" W)  
Ground Level: 3,187.60 usft

Local Coordinate Origin:	Centered on Well Moonlight Buttress 26 Fed 1H
Viewing Datum:	GL 3187.6' + KB 29.0' @ 3216.60usft (Noram 23)
TVDs to System:	N
North Reference:	Grid
Unit System:	API - US Survey Feet

Version: 5000.1 Build: 76

**HALLIBURTON**



## Plan Report for Moonlight Buttress 26 Fed 1H - Plan #5

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)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
875.00	0.00	0.00	875.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Rustler</b>										
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>13 3/8" Csg.</b>										
1,468.00	0.00	0.00	1,468.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Top of Salt</b>										
5,181.00	0.00	0.00	5,181.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Lamar</b>										
5,206.00	0.00	0.00	5,206.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Bell Canyon</b>										
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8" Csg.</b>										
6,241.00	0.00	0.00	6,241.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Cherry Canyon</b>										
7,669.00	0.00	0.00	7,669.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Brushy Canyon</b>										
8,343.20	0.00	0.00	8,343.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build @ 8343.20' MD - Dogleg = 10.00°/100'</b>										
8,400.00	5.68	359.46	8,399.91	2.81	-0.03	2.81	10.00	10.00	0.00	359.46
8,500.00	15.68	359.46	8,498.05	21.32	-0.20	21.32	10.00	10.00	0.00	0.00
8,600.00	25.68	359.46	8,591.49	56.59	-0.54	56.59	10.00	10.00	0.00	0.00
8,700.00	35.68	359.46	8,677.38	107.55	-1.02	107.55	10.00	10.00	0.00	0.00
8,800.00	45.68	359.46	8,753.12	172.65	-1.64	172.65	10.00	10.00	0.00	0.00
8,900.00	55.68	359.46	8,816.41	249.91	-2.37	249.92	10.00	10.00	0.00	0.00
9,000.00	65.68	359.46	8,865.31	336.98	-3.20	337.00	10.00	10.00	0.00	0.00
9,100.00	75.68	359.46	8,898.35	431.23	-4.09	431.25	10.00	10.00	0.00	0.00
9,200.00	85.68	359.46	8,914.53	529.78	-5.03	529.80	10.00	10.00	0.00	0.00
9,256.60	91.34	359.46	8,916.00	586.33	-5.56	586.36	10.00	10.00	0.00	0.00
<b>End Build @ 9256.60' MD - Hold Angle @ 91.34°</b>										
9,300.00	91.34	359.46	8,914.98	629.72	-5.98	629.75	0.00	0.00	0.00	0.00
9,400.00	91.34	359.46	8,912.65	729.69	-6.92	729.72	0.00	0.00	0.00	0.00
9,500.00	91.34	359.46	8,910.31	829.65	-7.87	829.69	0.00	0.00	0.00	0.00
9,600.00	91.34	359.46	8,907.97	929.62	-8.82	929.66	0.00	0.00	0.00	0.00
9,700.00	91.34	359.46	8,905.63	1,029.59	-9.77	1,029.64	0.00	0.00	0.00	0.00
9,800.00	91.34	359.46	8,903.29	1,129.56	-10.72	1,129.61	0.00	0.00	0.00	0.00
9,900.00	91.34	359.46	8,900.95	1,229.53	-11.67	1,229.58	0.00	0.00	0.00	0.00
10,000.00	91.34	359.46	8,898.61	1,329.49	-12.62	1,329.55	0.00	0.00	0.00	0.00
10,100.00	91.34	359.46	8,896.27	1,429.46	-13.56	1,429.53	0.00	0.00	0.00	0.00
10,200.00	91.34	359.46	8,893.94	1,529.43	-14.51	1,529.50	0.00	0.00	0.00	0.00
10,300.00	91.34	359.46	8,891.60	1,629.40	-15.46	1,629.47	0.00	0.00	0.00	0.00
10,400.00	91.34	359.46	8,889.26	1,729.37	-16.41	1,729.45	0.00	0.00	0.00	0.00
10,500.00	91.34	359.46	8,886.92	1,829.34	-17.36	1,829.42	0.00	0.00	0.00	0.00
10,600.00	91.34	359.46	8,884.58	1,929.30	-18.31	1,929.39	0.00	0.00	0.00	0.00
10,700.00	91.34	359.46	8,882.24	2,029.27	-19.26	2,029.36	0.00	0.00	0.00	0.00
10,800.00	91.34	359.46	8,879.90	2,129.24	-20.20	2,129.34	0.00	0.00	0.00	0.00
10,900.00	91.34	359.46	8,877.57	2,229.21	-21.15	2,229.31	0.00	0.00	0.00	0.00
11,000.00	91.34	359.46	8,875.23	2,329.18	-22.10	2,329.28	0.00	0.00	0.00	0.00
11,100.00	91.34	359.46	8,872.89	2,429.14	-23.05	2,429.25	0.00	0.00	0.00	0.00
11,200.00	91.34	359.46	8,870.55	2,529.11	-24.00	2,529.23	0.00	0.00	0.00	0.00
11,300.00	91.34	359.46	8,868.21	2,629.08	-24.95	2,629.20	0.00	0.00	0.00	0.00
11,400.00	91.34	359.46	8,865.87	2,729.05	-25.90	2,729.17	0.00	0.00	0.00	0.00
11,500.00	91.34	359.46	8,863.53	2,829.02	-26.84	2,829.14	0.00	0.00	0.00	0.00
11,600.00	91.34	359.46	8,861.19	2,928.99	-27.79	2,929.12	0.00	0.00	0.00	0.00
11,700.00	91.34	359.46	8,858.86	3,028.95	-28.74	3,029.09	0.00	0.00	0.00	0.00
11,800.00	91.34	359.46	8,856.52	3,128.92	-29.69	3,129.06	0.00	0.00	0.00	0.00
11,900.00	91.34	359.46	8,854.18	3,228.89	-30.64	3,229.04	0.00	0.00	0.00	0.00

## Plan Report for Moonlight Buttress 26 Fed 1H - Plan #5

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)	Toolface Azimuth (°)
12,000.00	91.34	359.46	8,851.84	3,328.86	-31.59	3,329.01	0.00	0.00	0.00	0.00
12,100.00	91.34	359.46	8,849.50	3,428.83	-32.54	3,428.98	0.00	0.00	0.00	0.00
12,200.00	91.34	359.46	8,847.16	3,528.79	-33.48	3,528.95	0.00	0.00	0.00	0.00
12,300.00	91.34	359.46	8,844.82	3,628.76	-34.43	3,628.93	0.00	0.00	0.00	0.00
12,400.00	91.34	359.46	8,842.48	3,728.73	-35.38	3,728.90	0.00	0.00	0.00	0.00
12,500.00	91.34	359.46	8,840.15	3,828.70	-36.33	3,828.87	0.00	0.00	0.00	0.00
12,600.00	91.34	359.46	8,837.81	3,928.67	-37.28	3,928.84	0.00	0.00	0.00	0.00
12,700.00	91.34	359.46	8,835.47	4,028.63	-38.23	4,028.82	0.00	0.00	0.00	0.00
12,800.00	91.34	359.46	8,833.13	4,128.60	-39.17	4,128.79	0.00	0.00	0.00	0.00
12,900.00	91.34	359.46	8,830.79	4,228.57	-40.12	4,228.76	0.00	0.00	0.00	0.00
13,000.00	91.34	359.46	8,828.45	4,328.54	-41.07	4,328.73	0.00	0.00	0.00	0.00
13,100.00	91.34	359.46	8,826.11	4,428.51	-42.02	4,428.71	0.00	0.00	0.00	0.00
13,200.00	91.34	359.46	8,823.78	4,528.48	-42.97	4,528.68	0.00	0.00	0.00	0.00
13,300.00	91.34	359.46	8,821.44	4,628.44	-43.92	4,628.65	0.00	0.00	0.00	0.00
13,400.00	91.34	359.46	8,819.10	4,728.41	-44.87	4,728.62	0.00	0.00	0.00	0.00
13,500.00	91.34	359.46	8,816.76	4,828.38	-45.81	4,828.60	0.00	0.00	0.00	0.00
13,532.46	91.34	359.46	8,816.00	4,860.83	-46.12	4,861.05	0.00	0.00	0.00	0.00

TD @ 13532.46' MD - Moonlight Buttress 26 Fed 1H BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,343.20	8,343.20	0.00	0.00	Start Build @ 8343.20' MD
8,343.20	8,343.20	0.00	0.00	Dogleg = 10.00°/100'
9,256.60	8,916.00	586.33	-5.56	End Build @ 9256.60' MD
9,256.60	8,916.00	586.33	-5.56	Hold Angle @ 91.34°
13,532.46	8,816.00	4,860.83	-46.12	TD @ 13532.46' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (usft)	+E/-W (usft)	Start TVD (usft)
TD	No Target (Freehand)	359.46	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	13,532.46	Plan #5	MWD+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.00	1,000.00	13 3/8" Csg.	13-3/8	17-1/2
5,300.00	5,300.00	9 5/8" Csg.	9-5/8	12-1/4



## Plan Report for Moonlight Butress 26 Fed 1H - Plan #5

### Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
875.00	875.00	Rustler		-1.34	359.46
1,468.00	1,468.00	Top of Salt		-1.34	359.46
5,181.00	5,181.00	Lamar		-1.34	359.46
5,206.00	5,206.00	Bell Canyon		-1.34	359.46
6,241.00	6,241.00	Cherry Canyon		-1.34	359.46
7,669.00	7,669.00	Brushy Canyon		-1.34	359.46

### *Targets associated with this wellbore*

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Moonlight Butress 26 Fed 1H BHL	8,816.00	4,860.83	-46.12	Point

## North Reference Sheet for Moonlight Buttress - Moonlight Buttress 26 Fed 1H - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GL 3187.6' + KB 29.0' @ 3216.60usft (Noram 23). Northing and Easting are relative to Moonlight Buttress 26 Fed 1H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -104.33°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°

False Easting: 541,337.50usft, False Northing: 0.00usft, Scale Reduction: 1.00001644

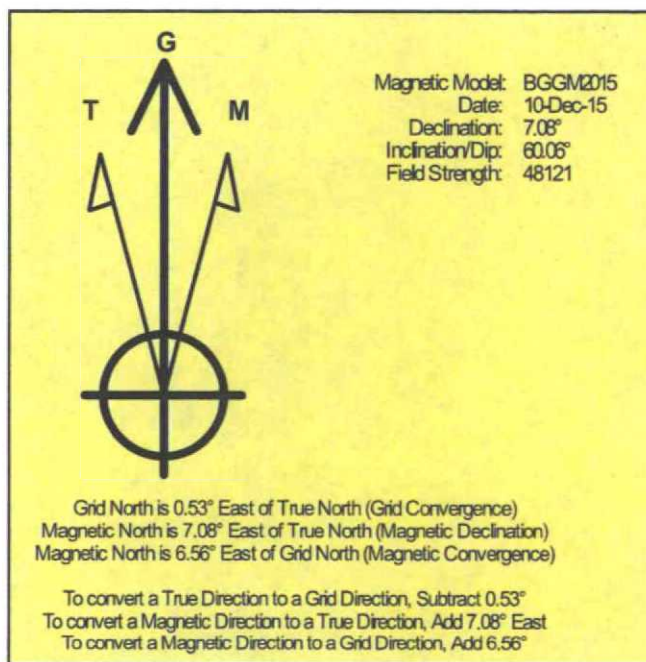
Grid Coordinates of Well: 399,451.77 usft N, 847,485.72 usft E

Geographical Coordinates of Well: 32° 05' 39.53" N, 103° 20' 41.02" W

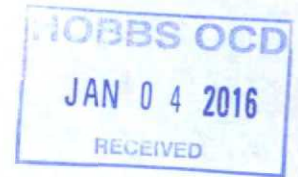
Grid Convergence at Surface is: 0.53°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,532.46usft the Bottom Hole Displacement is 4,861.05usft in the Direction of 359.46° (Grid).

Magnetic Convergence at surface is: -6.56° (10 December 2015, , BGGM2015)







**ENDURANCE RESOURCES LLC**

**MULTIPOINT SURFACE USE AND OPERATIONS PLAN**

**Moonlight Buttress 26 Fed 1H**

**SHL: 90' FSL & 660' FWL (M)**

**Sec 26-25S-35E**

**BHL: 330' FNL & 660' FWL (D)**

**Sec 26-25S-35E**

**Lea Co, NM**

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above mentioned well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of surface disturbance involved and the procedures to be followed in rehabilitating the surface after the completion of operations, so that a complete appraisal can be made of the environment effect associated with these operations.

**Directions:**

From the intersection of CR 21 and (Delaware Basin) and CD 21-B (Adobe) go south on 21-B for approx. 2.9 miles. Go west on caliche lease road for approx. 0.75 of a mile. Location is approx. 610' south.

**1. Existing Roads:**

- The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102, page 1. This well was staked by Madron Surveying Inc. from Carlsbad, NM.
- Page 4 of the C-102 packet contains is a Vicinity map showing the well and roads in the vicinity of the proposed location. The proposed well site and the access route is labeled in orange & blue (page 3). The proposed well site and the access route to location are indicated on the Site map (page 2) of C-102 packet. ROW using this existing route is being requested if necessary.
- Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.



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## **2. Planned Access Road:**

- Endurance Resources LLC will be using the existing access road that turns off CR 21. A 200' access road from the existing caliche road that turns off CR 21 to the SW corner of the Starcaster 4H planned wellsite is being requested for ROW.
- This planned access road will have a maximum width of 14 feet of driving surface. The road will be crowned & ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 3ft wide with 3:1 slopes. The driving surface will be made of 6" rolled & compacted caliche.
- This existing road will be rebladed & caliche will be placed into existing holes which will be watered and compacted to prevent surface erosion. The average grade will be approx. 1%. Surface material will be of native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location.
- No cattle guards, gates, or fence cuts will be required. No turnouts are planned.

## **3. Location of Existing Wells:**

- A one mile radius map shows all existing/proposed wells within a one-mile radius of the proposed location. See attached radius plat for more details.

## **4. Location of Existing and/or Proposed Facilities:**

- This location will require "cut & fill" from the south to the north. Well site will be constructed by way of a 420'x350' location. Topsoil pile will be placed on the north side of location. V-door will be facing east.
- In the event this well is found productive, a tank battery will be constructed with (4) 500 bbl oil tanks, (2) 500 bbl water tanks, a separator, a heater treater, a free water knockout, and a gas sales meter on this site. Necessary production equipment is subject to change once offsetting horizontal production is analyzed. Tank battery equipment will be placed on the north side of location, while treating facility equipment will be placed on the west side of location. Note: a distance of 100' is required between fired vessels and any combustibles for safety purposes. This battery will potential handle one more additional horizontal well if area is successful.
- All flow lines will adhere to API standards. Working on ROW for gas takeaway at battery site.
- Power will be supplied by way of existing electrical line running along CR 21. This is an Xcel owned power line. A strip of land 30' wide in Sec 18 will go .45 miles along the existing caliche road to the Starcaster 18 Fed 4H location. A multi-use ROW for this electrical line is being requested to follow the proposed access road into location.

## **5. Location and Types of Water Supply:**

- This location will be drilled using a combination of water mud systems (outlined in the Drilling program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using existing roads. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drilling rig. In these cases where a poly line is used to transport water for drilling or completion purposes, the existing and proposed road into location will be utilized.





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#### **6. Construction Materials:**

- All caliche utilized for the drilling pad and access road will be obtained from an existing BLM approved pit or from prevailing deposits found under the location. If deposits are found underneath the proposed location, topsoil will be pushed back from the drill site & existing caliche will be ripped and compacted. Then topsoil will be stockpiled on location as depicted on the rig layout. All roads will be constructed of 6" rolled and compacted caliche. Will use BLM recommended use of extra caliche from other locations close by for roads, if available.

#### **7. Methods of Handling Waste Material:**

- All trash, junk, & other material will be removed from the well site within 30 days after finishing drilling/completion operations. All waste material will be contained in trash bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.
- The supplier, including broken sacks, will pick up slats remaining after completion of the well.
- A porto-john will be utilized for handling all gray water/waste material. The equipment will be properly maintained during the drilling and completion operations, and will be removed when all operations are completed. Contents will be removed and disposed of in an approved sanitary landfill. Sewage from living quarters will drain into holding tanks & be cleaned out periodically and hauled to a waste disposal facility.
- Drill cuttings will be separated by a series of solids removal equipment and stored in steel containment pits and then hauled to a state approved disposal facility.
- Drilling fluids will be contained in steel pits in a closed loop circulating system. Fluids will be cleaned and reused. Water produced during testing will be contained in the steel pits & disposed of at a state approved disposal facility. Any oil or condensate produced will be stored in test tanks until sold & hauled from site.

#### **8. Ancillary Facilities:**

- No campsites or other facilities will be constructed as a result of this well.

#### **9. Wellsite Layout:**

- Attached is the proposed well site layout with dimensions of the pad layout & topsoil pile.
- Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.
- This location will require "cut & fill" from the south to the north. Well site will be constructed by way of a 475'x300' pad. Topsoil pile will be placed on the south side of location. V-door will be facing east.
- If the well is a producer, those areas of the location not essential to production facilities will be reclaimed & seeded per BLM requirements.

#### **10. Plans for Surface Reclamation:**

- After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations or roads. The road will be reclaimed as directed by the BLM. The well site



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will be properly contoured, as close as possible, to the original topography. Topsoil from the spoil pile will be placed over the distributed area. Revegetation procedures will comply with BLM standards.

- The location and road will be rehabilitated as recommended by the BLM.
- If the well is deemed commercially productive, caliche from areas of the drill pad not required for *safe* operations, will be removed. These unused areas of the drill pad will be contoured as close as possible to match the original topography. The original topsoil will be returned to the area of the drilling pad not necessary to operate the well. These areas will then be seeded per BLM requirements.
- See attached site reclamation diagram for more details.

#### **11. Surface Ownership:**

- The surface is owned by Limestone Livestock, LLC and we are currently in negotiations for a surface use agreement. The surface is multiple use with primary uses of the region for the grazing of livestock, as well as oil & gas production.

#### **12. Other Information:**

- The area surrounding the well site is made up of grassland & mesquite trees. The topsoil is packed soils and sand. No wildlife was observed, but free range cattle, deer, dove/quail, & small rodents are likely to traverse the area.
- There is no permanent or live water in the general proximity of this location.
- There are no dwellings within 1 mile of this location.
- A two well pad for the SG 12 Fed #1H & 2H was determined by onsite with Trish Badbear 7/31/13. Due to a dunal complex to the north, it was determined that this well site would be properly placed as to not disturb the existing dunal complex in this area.