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**State of New Mexico**  
**Energy Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 South St. Francis Dr.**  
**Santa Fe, NM 87505**

Form C-101  
Revised July 18, 2013

AMENDED REPORT

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

<sup>1</sup> Operator Name and Address Endurance Resources, LLC, 15455 Dallas Parkway, Addison, TX 75234		<sup>2</sup> OGRID Number 270329
		<sup>3</sup> API Number 30-025-37517
<sup>4</sup> Property Code 314209	<sup>5</sup> Property Name Momentum 36 State	<sup>6</sup> Well No. 1

<sup>7</sup> Surface Location									
UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
K	36	25-S	35-E		1650	FSL	2310	FWL	Lea

<sup>8</sup> Proposed Bottom Hole Location									
UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County

<sup>9</sup> Pool Information	
Pool Name	Pool Code
SWD; Cherry Canyon - Brushy Canyon	97996

<sup>10</sup> Additional Well Information				
<sup>11</sup> Work Type	<sup>12</sup> Well Type	<sup>13</sup> Cable/Rotary	<sup>14</sup> Lease Type	<sup>15</sup> Ground Level Elevation
E	S	R	S	3072'
<sup>16</sup> Multiple	<sup>17</sup> Proposed Depth	<sup>18</sup> Formation	<sup>19</sup> Contractor	<sup>20</sup> Spud Date
S	8300'	Brushy Canyon	Patriot	2/19/2015
Depth to Ground water 240'		Distance from nearest fresh water well > 1 mile		Distance to nearest surface water n/a

We will be using a closed-loop system in lieu of lined pits

SWD-1519

<sup>21</sup> Proposed Casing and Cement Program						
Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	17.5"	13.375"	48.0# J-55	549'	475 'C'	Circ. to Surf.
Intermediate	12.25"	9.625"	40.0# J-55	5028'	1850 'C'	Circ. to Surf.
Long String	8.75"	5.5"	17.0# J-55	8600'	1100 'H' + excess	Circ. to Surf.

**Casing/Cement Program: Additional Comments**

Surf / Int existing - New 5.5" casing to 8600' and set CIBP @ 7650' per SWD-1519. (Gives option to amend SWD depth in future if

<sup>22</sup> Proposed Blowout Prevention Program			
Type	Working Pressure	Test Pressure	Manufacturer
Double Blind Ram - Hydraulic	3000 psi	5000 psi	TBD (Schaffer/Hydril Equiv.)

<sup>23</sup> I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that I have complied with 19.15.14.9 (A) NMAC <input type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input type="checkbox"/> , if applicable. Signature:	<b>OIL CONSERVATION DIVISION</b>	
	Approved By: 	
	Printed name: Ben Stone 	Title: Petroleum Engineer
	Title: Partner, SOS Consulting agent for Endurance Resources, LLC	Approved Date: 02/18/15   Expiration Date: 02/18/17
	E-mail Address: ben@sosconsulting.us	Conditions of Approval Attached 
Date: 2/18/2015	Phone: 903-488-9850	

MAY NOT DISPOSE OF WATER  
UNTIL MIT IS APPROVED

FEB 19 2015

**Endurance Resources, LLC  
Momentum 36 State Well No.1 SWD  
1650' FSL & 2310' FWL  
Section 36, Twp 25-S, Rng 35-E  
Lea County, New Mexico**

**Well Program – Reentry**

**Objective: Reenter well & set new 5.5" long string for private salt water disposal into the Cherry Canyon and Brushy Canyon formations on state land, state minerals.**

**I. Geologic Information - Delaware Formation – Cherry Canyon and Brushy Canyon portions.**

The Delaware is composed predominately of sandstones and shales. All the Delaware members are interbedded, poorly consolidated, light gray sandstones and shales with occasional dense dolomite horizons. The lateral transmissivities of the sandstone beds are highly variable and often forms elective barriers to the movement of hydrocarbons while allowing down-gradient movement of water. The transmissivity variations are fundamentally due to the very-fine grained nature of the sands and the local percentage of silt and clay. The Delaware sandstone members are typically overlain and underlain by bounding shale, dolomite and/or silty shale horizons.

**Estimated Formation Tops:**

FORMATION	DEPTH	PRODUCTION / HISTORICAL
T/Fresh Water	200	Fresh Water
T/Rustler	757	
B/Salt	3355	
Delaware	5066	Minimal play in area - in advanced decline & SWD
Bell Canyon	5066	Not significant in area
Cherry Canyon	7050	Some historical miles away - most converted to SWD
Brushy Canyon	7390	Few tried - now SWD
TOTAL DEPTH	8600	Terminate hole above Bone Spring
Bone Spring	8742	Most significant oil development in area – horizontal and conventional completions

**2. Drilling Procedure**

- a. MIRU drilling rig and associated equipment. Set up H<sub>2</sub>S wind direction indicators; brief all personnel on Emergency Evacuation Routes.
- b. All contractors conduct safety meeting prior to current task. All equipment inspected daily. Repair / replace as required.
- c. Well spud / reentry operations commence; D/O & C/O all plugs in existing hole to 8600'.
- d. Reverse operator monitoring returns; cuttings & waste hauled to specified facility.  
Sundance – Lea County
- e. If H<sub>2</sub>S levels >20ppm detected, implement H<sub>2</sub>S Plan accordingly. (e.g., cease operations, shut in well, employ H<sub>2</sub>S safety trailer & personnel safety devices, install flare line, etc. - refer to plan.)
- f. Spills contained & cleaned up immediately. Repair or otherwise correct the situation within 48 hours before resuming operations. Notify OCD within 24 hours. Remediation started ASAP if required. Operator shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.
- g. Sundry forms filed as needed - casing, cement, etc. - operations continue to completion.

**Well Program - New Drill (cont.)**

**3. Casing program - Casing designed as follows:**

STRING	HOLE SZ	DPTH	CSG SZ	COND	WT/GRD	CLLPS/BURS	TENSN
Surface	17.5" hole	549'	13.375"	New	54.5# J-55 STC	1.125/1.125	1.4
Intermediate	12.25" hole	0'-5028'	9.625"	New	36.0/40.0# J-55 STC	1.125/1.125	1.4
NEW Long String	8.75" hole	0'-8600'	5.5"	New	17.0# J-55 LTC	1.125/1.125	1.4

**Notes:**

- ✓ Well is P&A'd – 8.25" hole already drilled to a DTD of 9700'. Will drill out all plugs to maximum depth of 8600'.
- ✓ While running new 5.5" casing, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

**4. Cementing Program:**

**Surface** – Existing – 475 sx - circulated to surface.

**Intermediate** – Existing – 1300 sx - circulated to surface.

**Long String NEW**

**Disposal** – 2 Stage w/ DV tool approximately 5050'; LEAD 300 sx (11.8#; 2.65 ft<sup>3</sup>/sk) Class H 50/50/10 Blend; TAIL 300 sx (13.0#; 1.7 ft<sup>3</sup>/sk) Super H Blend; 2<sup>nd</sup> LEAD 300 sx / TAIL 200 sx - 30% excess; circulated to surface.

- ✓ Cement volumes may be revised based on caliper measurement.

**5. Pressure Control** - BOP diagram is attached to this application. All BOP and related equipment shall comply with well control requirements as described NMOCD rules and regulations. Minimum working pressure of the BOP and related equipment required for drilling operations shall be 5000 psi. The NMOCD Hobbs office shall be notified a minimum of 4 hours in advance for a representative to witness BOP pressure tests. The test shall be performed by an independent service company utilizing a test plug (no cup or J-packer). The results of the test shall be recorded on a calibrated test chart submitted to the NMOCD Hobbs office. The BOP test(s) will be conducted at:

- a) Installation;
- b) after equipment or configuration changes;
- c) at 30 days from any previous test, and;
- d) anytime operations warrant, such as well conditions

**6. Mud Program & Monitoring** - Mud will be balanced for all operations as follows:

DEPTH	MUD TYPE	WEIGHT	VISC.	Ph
0'-8600'	FW/Gel	8.7-9.0	28-32	9.5-10.5

**6. Mud Program & Monitoring (cont.)** - Mud and all cuttings monitored w/ cuttings recovered for disposal. Returns shall be visually and electronically monitored. In the event of H<sub>2</sub>S, mud shall be adjusted appropriately by weight and H<sub>2</sub>S scavengers.

**7. Auxiliary Well Control and Monitoring** - Not Applicable

## **Well Program - New Drill (cont.)**

8. **H<sub>2</sub>S Safety** - There is a low risk of H<sub>2</sub>S in this area. The operator will comply with the provisions of 19.15.11 NMAC. All personnel will wear monitoring devices and a wind direction sock will be placed on location.

9. **Logging, Coring and Testing** – Endurance Resources, LLC expects to utilize existing logs but may run a standard porosity log (CNL or better) from TD to approximately 5000'. A bond log (CBL or CET) may be run on the long string. No corings or drill tests will be conducted. (The well may potentially be step-rate tested in the future if additional injection pressures are required.)

10. **Potential Hazards** - No abnormal pressures or temperatures are expected.

No loss of circulation is expected to occur with the exception of drilling into the target disposal zone. All personnel will be familiar with the safe operation of the equipment being used to drill this well.

The maximum anticipated bottom hole pressure is 3950 psi and the maximum anticipated bottom hole temperature is 150° F.

11. **Waste Management** - All drill cuttings and other wastes associated with and drilling operations will be transported to a facility permitted by the Environmental Bureau of the New Mexico Oil Conservation Division.

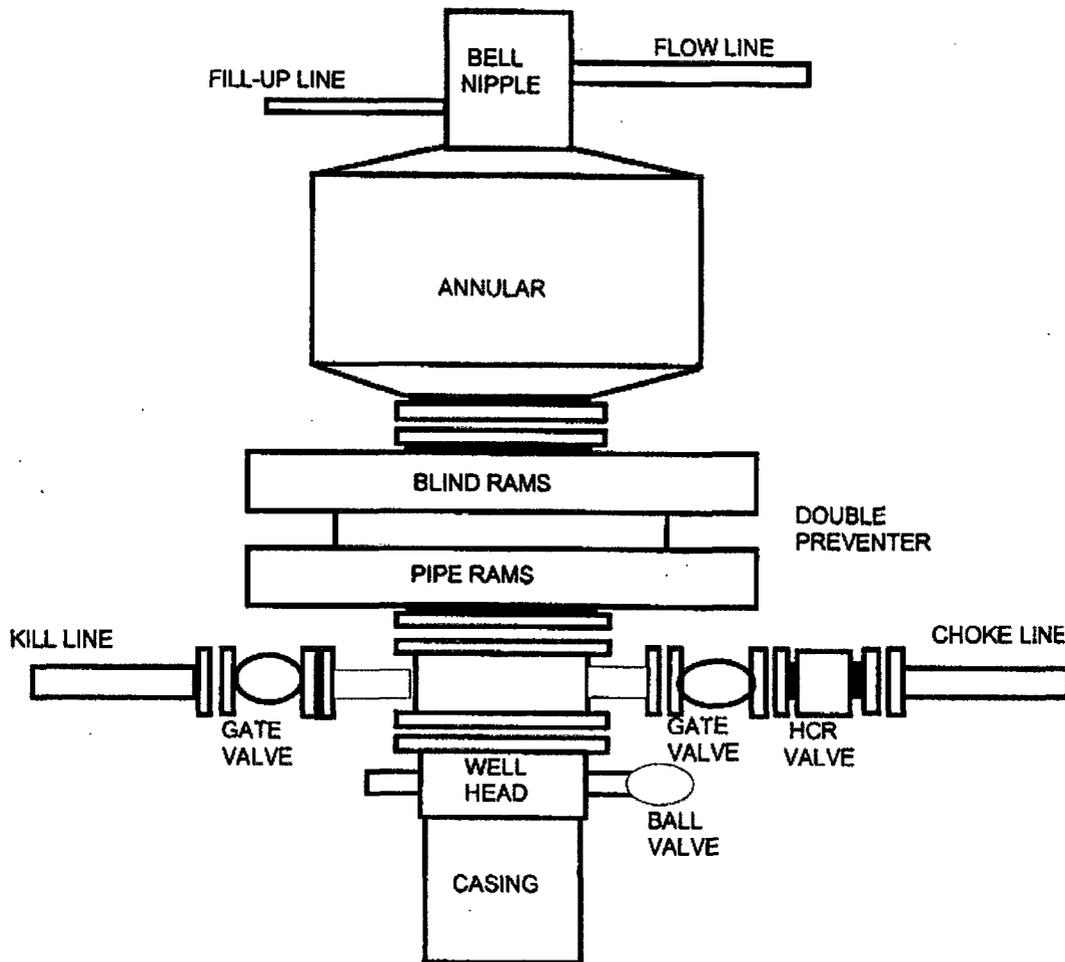
12. **Anticipated Start Date** – SWD-1519 issued 1/13/2015. Operations will begin immediately upon approval. Completion of the well operations will take two to four weeks. Installation of the tank battery, berms, plumbing and other and associated equipment would be occurring during the same interval. In any event, it is not expected for the construction phase of the project to last more than 60 days, depending on availability of contractors and equipment. At the time of this submittal, and subject to the availability of the drilling contractor, the anticipated start date is:

**February 19, 2015.**

13. **Configure for Salt Water Disposal** - Prior to commencing any work, an NOI sundry(ies) will be submitted to configure the well for SWD and will detail the completion workover including all work otherwise described above, any change to the procedure noted herein and to perform mechanical integrity pressure test per OCD test procedures. (Notify NMOCD 24 hours prior.) The casing/tubing annulus will be monitored for communication with injection fluid or loss of casing integrity. Anticipated daily maximum volume is 10,000 bpd and average of 7,500 bpd at a maximum surface injection pressure of 1410 psi. If satisfactory disposals rates cannot be achieved at default pressure of .2 psi/ft, Endurance Resources, LLC will conduct a step-rate test and apply for an injection pressure increase 50 psi below parting pressure.

# Blow Out Preventer Diagram

3000 PSI WORKING PRESSURE

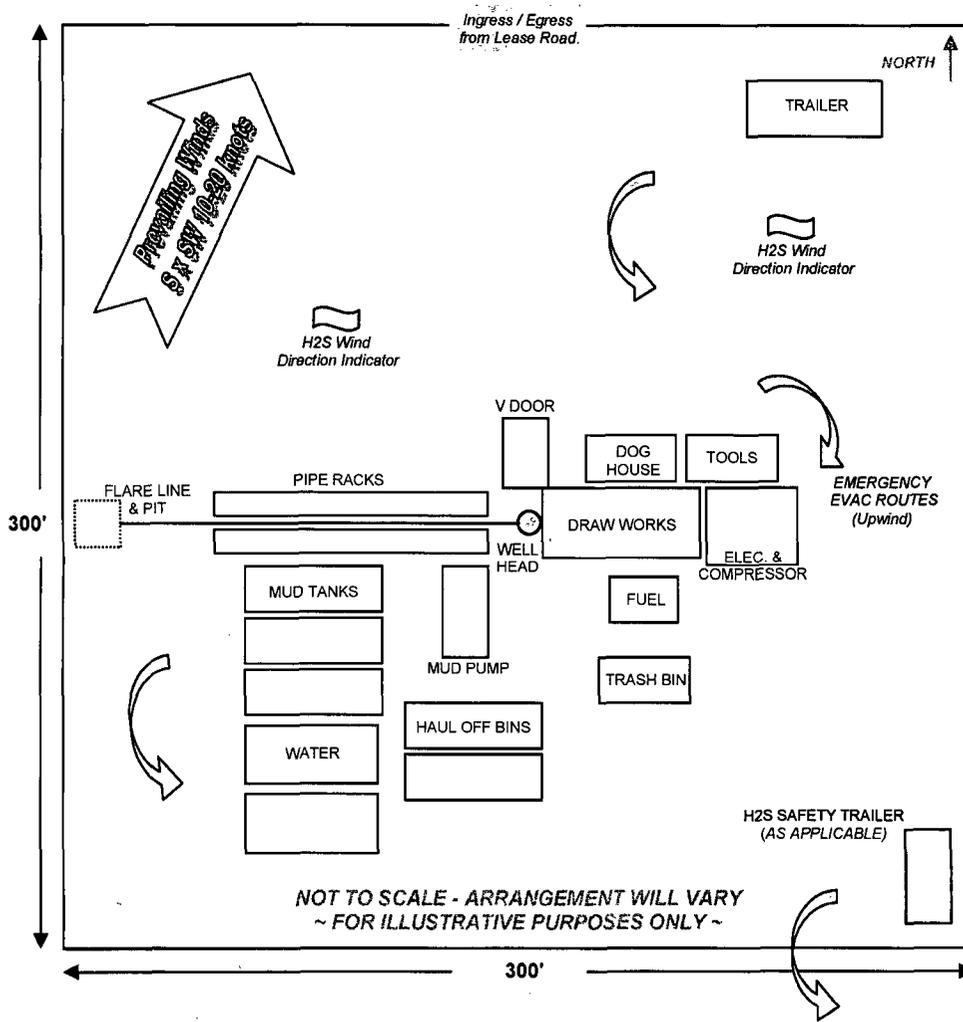


# Standard Drill - Operating Procedure & Site Setup

ALL OPERATIONS CONDUCTED WITHIN EXISTING PAD SITE  
NOT EXCEEDING SURVEYED SITE. ORIENTATION PER BEST FIT.

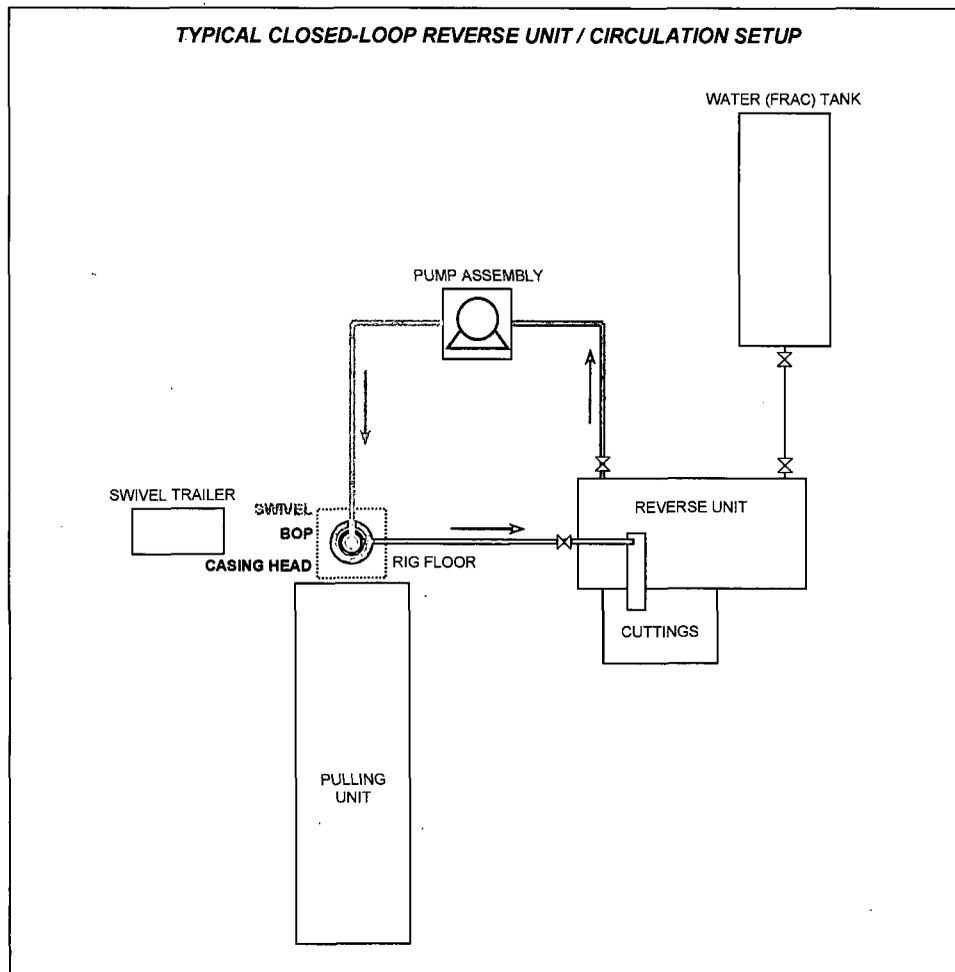
1. MIRU Drilling and drilling support contractors / equipment.
2. Set up H2S wind direction indicators; brief all personnel on Emergency Evacuation Routes.
3. All contractors conduct safety meeting prior to current task.
4. If H2S levels >20ppm detected, implement H2S Plan *accordingly*. (e.g., cease operations, shut in well, employ H2S safety trailer & personnel safety devices, install flare line, etc. - refer to plan.)
5. All equipment inspected daily. Repair / replace as required.
6. Mud logger monitoring returns; cuttings & waste hauled to specified facility. CRI - LEA COUNTY
7. Spills contained & cleaned up immediately. Repair or otherwise correct the situation within 48 hours before resuming operations. Notify OCD within 24 hours. Remediation started ASAP if required. Operator shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.
8. Sundry forms filed as needed - casing, cement, etc. - operations continue to completion.

**TYPICAL LOCATION SETUP (V Door North)**



## Standard Operating Procedure - Re-entry Closed-Loop Reverse Unit Diagram

1. Blow Out Preventer tested prior to any operations. Notify OCD at least 4 hours prior.
2. Visual monitoring maintained on returns. Proceed with drillout operations accordingly.
3. Cuttings / waste hauled to specified facility. Sundance – Lea County
4. Spills contained & cleaned up immediately. Repair or otherwise correct the situation within 48 hours before resuming operations. Notify OCD within 24 hours. Remediation started ASAP if required. Operator shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.
5. Subsequent sundry / forms filed as needed - well returned to service.



# Reverse / Circulation Tank for Workovers & Drillouts

