

**STATE OF UTAH**  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT 

<b>APPLICATION FOR PERMIT TO DRILL</b>						<b>1. WELL NAME and NUMBER</b> Cedar Ridge 17-1	
<b>2. TYPE OF WORK</b> DRILL NEW WELL <input checked="" type="checkbox"/> REENTER P&A WELL <input type="checkbox"/> DEEPEN WELL <input type="checkbox"/>						<b>3. FIELD OR WILDCAT</b> WILDCAT	
<b>4. TYPE OF WELL</b> Oil Well Coalbed Methane Well: NO						<b>5. UNIT or COMMUNITIZATION AGREEMENT NAME</b>	
<b>6. NAME OF OPERATOR</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC						<b>7. OPERATOR PHONE</b> 435 896-1943	
<b>8. ADDRESS OF OPERATOR</b> 1140 N. Centennial Park Dr., Richfield, UT, 84701						<b>9. OPERATOR E-MAIL</b> ciron@s@wolvgas.com	
<b>10. MINERAL LEASE NUMBER (FEDERAL, INDIAN, OR STATE)</b> Patented			<b>11. MINERAL OWNERSHIP</b> FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>			<b>12. SURFACE OWNERSHIP</b> FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>	
<b>13. NAME OF SURFACE OWNER (if box 12 = 'fee')</b> The Bobbie Sorenson Family Trust						<b>14. SURFACE OWNER PHONE (if box 12 = 'fee')</b> 435-528-3816	
<b>15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee')</b> P.O Box 563, Gunnison, UT 84634						<b>16. SURFACE OWNER E-MAIL (if box 12 = 'fee')</b>	
<b>17. INDIAN ALLOTTEE OR TRIBE NAME (if box 12 = 'INDIAN')</b>			<b>18. INTEND TO COMMINGLE PRODUCTION FROM MULTIPLE FORMATIONS</b> YES <input type="checkbox"/> (Submit Commingling Application) NO <input checked="" type="checkbox"/>			<b>19. SLANT</b> VERTICAL <input type="checkbox"/> DIRECTIONAL <input checked="" type="checkbox"/> HORIZONTAL <input type="checkbox"/>	
<b>20. LOCATION OF WELL</b>	<b>FOOTAGES</b>	<b>QTR-QTR</b>	<b>SECTION</b>	<b>TOWNSHIP</b>	<b>RANGE</b>	<b>MERIDIAN</b>	
<b>LOCATION AT SURFACE</b>	159 FSL 1718 FWL	SESW	17	19.0 S	1.0 E	S	
<b>Top of Uppermost Producing Zone</b>	660 FSL 1830 FWL	SESW	17	19.0 S	1.0 E	S	
<b>At Total Depth</b>	660 FSL 1830 FWL	SESW	17	19.0 S	1.0 E	S	
<b>21. COUNTY</b> SANPETE			<b>22. DISTANCE TO NEAREST LEASE LINE (Feet)</b> 360			<b>23. NUMBER OF ACRES IN DRILLING UNIT</b> 40	
			<b>25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed)</b> 0			<b>26. PROPOSED DEPTH</b> MD: 13600 TVD: 13500	
<b>27. ELEVATION - GROUND LEVEL</b> 5090			<b>28. BOND NUMBER</b>			<b>29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE</b> 63-3159	
<b>ATTACHMENTS</b>							
<b>VERIFY THE FOLLOWING ARE ATTACHED IN ACCORCANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES</b>							
<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER				<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN			
<input checked="" type="checkbox"/> AFFIDAVIT OF STATUS OF SURFACE OWNER AGREEMENT (IF FEE SURFACE)				<input type="checkbox"/> FORM 5. IF OPERATOR IS OTHER THAN THE LEASE OWNER			
<input checked="" type="checkbox"/> DIRECTIONAL SURVEY PLAN (IF DIRECTIONALLY OR HORIZONTALLY DRILLED)				<input checked="" type="checkbox"/> TOPOGRAPHICAL MAP			
<b>NAME</b> Charles Irons			<b>TITLE</b> Senior Landman			<b>PHONE</b> 435 896-1943	
<b>SIGNATURE</b>			<b>DATE</b> 10/01/2009			<b>EMAIL</b> ciron@s@wolvgas.com	
<b>API NUMBER ASSIGNED</b> 43039500010000			<b>APPROVAL</b>  Permit Manager				

**Proposed Hole, Casing, and Cement**

<b>String</b>	<b>Hole Size</b>	<b>Casing Size</b>	<b>Top (MD)</b>	<b>Bottom (MD)</b>		
I1	14.75	10.75	0	4000		
<b>Pipe</b>	<b>Grade</b>	<b>Length</b>	<b>Weight</b>			
	Grade J-55 ST&C	4000	40.5			

CONFIDENTIAL

**Proposed Hole, Casing, and Cement**

<b>String</b>	<b>Hole Size</b>	<b>Casing Size</b>	<b>Top (MD)</b>	<b>Bottom (MD)</b>		
Prod	9.875	5.5	0	13600		
<b>Pipe</b>	<b>Grade</b>	<b>Length</b>	<b>Weight</b>			
	Grade L-80 Buttress	6000	20.0			
	Grade P-110 LT&C	5500	23.0			
	Grade L-80 LT&C	2100	23.0			

CONFIDENTIAL

<b>Proposed Hole, Casing, and Cement</b>						
<b>String</b>	<b>Hole Size</b>	<b>Casing Size</b>	<b>Top (MD)</b>	<b>Bottom (MD)</b>		
Cond	28	24	0	350		
<b>Pipe</b>	<b>Grade</b>	<b>Length</b>	<b>Weight</b>			
	Unknown	350	94.62			

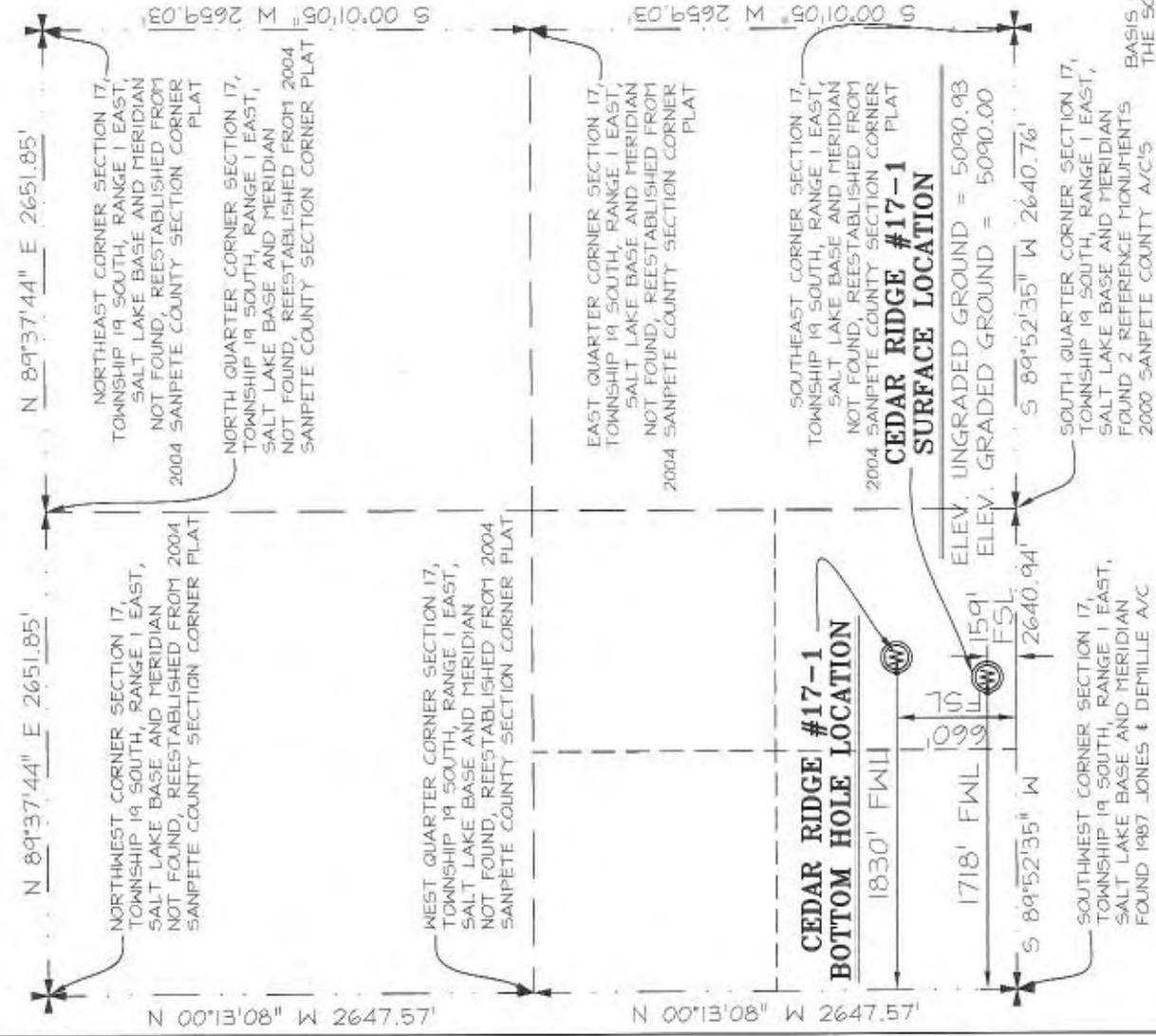
CONFIDENTIAL

**Proposed Hole, Casing, and Cement**

<b>String</b>	<b>Hole Size</b>	<b>Casing Size</b>	<b>Top (MD)</b>	<b>Bottom (MD)</b>		
Surf	19	16	0	2100		
<b>Pipe</b>	<b>Grade</b>	<b>Length</b>	<b>Weight</b>			
	Grade J-55 Buttress	2100	84.0			

CONFIDENTIAL

SECTION 17, T.19 S., R.1 E., S.L.B. & M.



PROJECT  
**WOLVERINE OPERATING COMPANY OF UTAH, LLC.**  
 WELL LOCATION, LOCATED AS SHOWN  
 IN THE SE 1/4 OF THE SW 1/4 OF  
 SECTION 17, T.19 S., R.1 E., S.L.B. & M.  
 SANPETE COUNTY, UTAH

**LEGEND**

- SECTION CORNER AS NOTED
- QUARTER CORNER AS NOTED
- PROPOSED WELL LOCATION

NOTE: THE PURPOSE OF THIS SURVEY WAS TO PLAT THE CEDAR RIDGE 17-1 WELL LOCATED IN THE SE 1/4 OF THE SW 1/4 OF SECTION 17, T.19 S., R.1 E., S.L.B. & M. SANPETE COUNTY, UTAH.

**BASIS OF ELEVATION**

ELEVATION BASED SOUTHWEST CORNER OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 1 EAST SALT LAKE BASE AND MERIDIAN ELEVATION USED 5086.81

**CERTIFICATE**

THIS IS TO CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPERVISION, AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



GRAPHIC SCALE  
 1000 500 0 500  
 1 inch = 1000 ft.

**BASIS OF BEARING**

BASIS OF BEARING USED WAS S89°52'35\"/>

**Savage Surveying, Inc.**



**WELL LATITUDE & LONGITUDE**

SURFACE WELL LATITUDE:	39°09'00.829\"/>
BOTTOM HOLE LATITUDE:	39°09'05.769\"/>
SURFACE WELL LONGITUDE:	111°49'46.996\"/>
BOTTOM HOLE LONGITUDE:	111°49'45.601\"/>

LOCATION PLAT FOR CEDAR RIDGE 17-1  
 WOLVERINE OPERATING COMPANY OF UTAH, LLC  
 DESIGN BY: R.J.S. A.S.A.  
 CHECKED BY: DRAWN BY: A.S.A.  
 SCALE: 1"=1000'  
 DATE: 07/24/09  
 PROJECT NUMBER: 0906-0065  
 SHEET NUMBER: 1 OF 1

# WOLVERINE OPERATING COMPANY OF UTAH, LLC

## DRILLING PLAN

### **Cedar Ridge 17-1** **SE/4 SW/4 Section 17, Township 19 South, Range 1 East, S.L.B & M.** **Sanpete County, Utah**

#### **Plan Summary:**

It is planned to drill this confidential exploratory well as a directional bore hole due to surface topography constraints and in accordance with the enclosed directional drilling plan. The well will be drilled to a measured depth of 13,600' (~13,500' TVD) to test the Twin Creek and Navajo formations. Well path deviation caused by subsurface geologic irregularities, plastic salts, and possible loss circulation are expected to be the primary drilling concerns in this area. No abnormal pressure is anticipated.

The planned location is as follows:

Surface Location:	159' FSL, 1718' FWL, Section 17, T19S, R1E, S.L.B. & M.
Bottom Hole Location @ Navajo 1 target	660' FSL, 1830' FWL, Section 17, T19S, R1E, S.L.B. & M.
Bottom Hole Location @ total depth	660' FSL, 1830' FWL, Section 17, T19S, R1E, S.L.B. & M.

Conductor will be set to 120 feet and then conductor/casing will be set at approximately 350 feet GL and cemented to surface. A 14-3/4" hole will be drilled vertically to approximately 4000' KB where 10-3/4" surface casing will be set and cemented to surface. A 9-7/8" hole will be drilled below the surface casing and deviation will be increased at 1.5 degrees per 100' to 14 degrees from vertical, beginning at a KOP of +/-8400'. The deviation will be held at +/-14 degrees to a depth of approximately 10,500' MD (10,456' TVD) and then allowed to drop to vertical before penetrating the Twin Creek and Navajo formations. The well is planned to a total depth of 13,600' (13,500' TVD) where electric logs will be run and 5-1/2" production casing will be set and cemented if justified by the drilling results.

Drilling activities at this well are expected to commence in September 2009. Construction of the well site will begin as soon as drilling permit is obtained.

Wolverine Operating Company of Utah, LLC  
 APD Drilling Program  
 Cedar Ridge 17-1

**Well Name:** Carter Peak Federal 13-1

**Surface Location:** 159' FSL, 1718' FWL, Section 17, T19S, R1E, S.L.B. & M  
 SE/4 SW/4 Section 17, T19S, R1E, S.L.B. & M.  
 Sanpete County, Utah

**TD Bottom-Hole Location:** 660' FSL, 1830' FWL, Section 17, T19S, R1E, S.L.B. & M  
 SE/4 SW/4 Section 17, T19S, R1E, S.L.B. & M

**Elevations:** 5090' GL, 5116' KB (est.)

**I. Geology:**

Tops of important geologic markers and anticipated water, oil, or gas, content are as follows:

<b>Formation</b>	<b>TVD Interval (KB)</b>	<b>MD Interval (KB)</b>	<b>Contents</b>	<b>Pressure Gradient</b>
Quaternary	0-100'	0-100'		
Crazy Hollow	100-300'	100-300'		
Green River	300-900'	300-900'		
Colton	900-1200'	900-1200'		
Flagstaff	1200-1500'	1200-1500'		
North Horn	1500-1827'	1500-1827'		
Indianola	1827-3250'	1827-3250'		
Cedar Mountain	3250-3962'	3250-3962'		
Arapien	3962-11378	3962-11,420'		
Twin Creek 1	11,378-11,911'	11,420-11,964'	Oil & water	0.44 psi/ft
Navajo 1	11,911-13,155'	11,964-13,208'	Oil & water	0.44 psi/ft
Kayenta	13,155-13,545'	13208-13,607		
Proposed TD	13,500'	13,600'		

**II. Well Control:**

The contracted drilling rig will have a minimum 5M BOP system. BOPE will be in place and tested as a 5M system prior to drilling out the surface casing shoe. See attached schematic of BOPE.

A. The BOPE will, as a minimum, include the following:

Wellhead Equipment (5M Min.):

<b>BOPE Item</b>	<b>Flange Size and Rating</b>
Annular Preventer	11" 5M
Double Rams (5" Pipe - top, Blind - bottom)	11" 5M
Drilling Spool w/ 2 side outlets (4" Choke Line, 4" Kill Line)	11" 5M x 11" 5M
Single Ram (Pipe)	11" 5M
DSA	11" 5M x 11" 5M
Casing Head (10.75" SOW w/ two 2-1/16" SSO's)	11" 5M

Auxiliary Equipment (5M Min.):

<b>BOPE Item</b>
Choke Line with 2 valves (3" minimum)
Kill Line with 2 valves and one check valve (2" Minimum)

2 Chokes with one remotely controlled at a location readily accessible to the driller
Upper and lower kelly cock valves with handles
Safety Valves to fit all drill string connections in use
Inside BOP or float sub
Pressure gauge on choke manifold
Fill-up line above the uppermost preventer
Wear bushing in casing head

- B. **Choke manifold** will be functionally equipped and sized at a minimum as shown on the attached diagram. All choke lines will be straight lines unless turns have tee blocks or are targeted with running tees, and all choke lines will be anchored. All valves (except chokes) in the kill line choke manifold and choke line will be full opening and allow straight through flow.
- C. **System accumulator** will have sufficient capacity to open the hydraulically-controlled gate valve and close all rams plus the annular preventer (3 ram system will have added 50 percent safety factor to compensate for any fluid loss in the control system or preventers) and retain a minimum pressure of 200 psi above pre-charge on the closing manifold without use of the closing unit pumps. The fluid reservoir capacity shall be double the usable fluid volume of the accumulator system capacity and the fluid level of the reservoir shall be maintained at the manufacturer's recommendations. The accumulator will have two (2) independent power sources available to close the preventers. Nitrogen bottles may be one of those sources, and if so, will have charge maintained per manufacturer's specifications.
- D. **Accumulator pre-charge pressure test** will be conducted prior to connecting the closing unit to the BOP stack and at least once every 6 months. The accumulator pressure will be corrected if the measured precharge pressure is found to be above or below the maximum or minimum specified limits. Only nitrogen gas will be used to precharge.
- E. **Power for the closing unit pumps** will be available to the unit at all times so that the pumps will automatically start when the closing valve manifold pressure has decreased to the pre-set level.
- F. **Accumulator pump capacity** will be such that, with the accumulator system isolated from service, the pumps will be capable of opening the hydraulically-operated gate valve (if so equipped), plus closing the annular preventer on the smallest size drill pipe to be used within 2 minutes, and retaining a minimum of 200 psi above the specified accumulator pre-charge pressure.
- G. **Locking devices**, either manual (i.e., hand wheels) or automatic, will be installed on the ram type preventers. A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative.
- H. **Remote controls** will be readily accessible to the driller and will be capable of both opening and closing all preventers. Master controls shall be at the accumulator and shall be capable of opening and closing all preventers and the choke line valve.
- I. **Well control equipment testing** will be performed using clear water when the equipment is initially installed, whenever any seal subject to test pressure is broken, following related repairs, and as a minimum, every 30-day interval. The tests will apply to all related well control equipment.

Ram type preventers and associated equipment will be isolated and tested to 5000 psi. The annular preventer will be tested to 2500 psi. Pressure shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer, for all tests. A casing head valve will be open below the test plug during testing of the BOP stack. Valves will be tested from the working pressure side with all down-stream valves open. Kill line valves will be tested with the check valve held open or the ball removed.

Pipe and blind rams will be activated each trip, but not more than once a day. The annular preventers will be functionally operated at least weekly. A pit level drill will be conducted weekly for each crew. All BOPE drills and tests will be recorded in the IADC driller's log.

Wolverine Operating Company of Utah, LLC  
 APD Drilling Program  
 Cedar Ridge 17-1

J. The conductor and surface casing will be installed by Boart Longyear rig. While installing conductor and surface casing, Boart-Longyear will be rigged up with a bolt on flange with a diverter head. The diverter head will be installed on the 24" conductor.

**III. Casing and Cementing:**

A. Casing Program (all new casing):

<u>Hole Size</u>	<u>Casing Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Connection</u>	<u>Coupling Diameter</u>	<u>Setting Depth</u>
36"	32"		Conductor	PE	NA	0' - 120' GL
28"	24"	94.62	Conductor	PE	NA	0' - 350' GL
19"	16"	84	J-55	BTC	17.00"	0-2100' KB
14.75"	10.75"	40.5	J-55	STC	11.75"	0' - 4000' KB
9.875"	5.500"	20	L-80	BTC& LTC	6.050"	0' - 6000' KB
9.875"	5.500"	23	P-110	LTC	6.050"	6000' - 11500' KB
9.875"	5.500"	23	L-80	LTC	6.050"	11500' - 13600' KB

	<u>Surface</u>	<u>Intermediate</u>	<u>Production</u>
Casing O. D. (in)	10.75		5.500
Casing Grade	J-55		L-80/P-110
Weight of Pipe (lbs/ft)	40.5		20/23
Connection	STC		BTC & LTC
Top Setting Depth - MD (ft)	0		0
Top Setting Depth - TVD (ft)	0		0
Bottom Setting Depth - MD (ft)	4000		13,600
Bottom Setting Depth - TVD (ft)	4000		13,500
Maximum Mud Weight - Inside (ppg)	9.2		10.5
Maximum Mud Weight - Outside (ppg)	9.2		10.5
Design Cement Top - MD (ft)	0		3500
Design Cement Top - TVD (ft)	0		3500
Max. Hydrostatic Inside w/ Dry Outside (psi)	2868**		7425
Casing Burst Rating (psi)	3130		9190
<b>Burst Safety Factor (1.00 Minimum)</b>	1.09		1.24
Max. Hydrostatic Outside w/ Dry Inside (psi)	1299**		7425
Collapse Rating	1580		8830
<b>Collapse Safety Factor (1.125 Minimum)</b>	1.216		1.189
Casing Weight in Air (kips)	162		248 <sup>1</sup>
Body Yield (kips)	629		466
Joint Strength (kips)	420		503
<b>Tension Safety Factor (1.80 Minimum)</b>	2.59		1.88

<sup>1</sup>

Bouyancy considered in production casing design. Maximum weight of production casing is based on buoyancy in 10.5 ppg mud or a buoyancy factor of 0.834, resulting in an effective weight of 248,000 lbs.

Wolverine Operating Company of Utah, LLC  
 APD Drilling Program  
 Cedar Ridge 17-1

\*\* The Burst and Collapse design basis and analysis for surface casing is summarized in Attachment 1, the narrative for conductor string and surface casing Design evaluation. Attachment also includes summary tables for the proposed casing, minimum casing performance characteristics, and cementing program summary for conductor strings and casing strings.

Casing with same or greater burst, collapse, and tension rating may be substituted for any of the planned casing sizes depending on availability and actual conditions. Well plan includes provisions for setting a 7-5/8/7-3/4" intermediate casing into the top of the Twin Creek at approximately 11,500' MD should hole conditions dictate its use.

B. Cementing Program (see also table in Attachment 1)

<b>Casing Size</b>	<b>Cement Slurry</b>	<b>Quantity (sks)</b>	<b>Density (ppg)</b>	<b>Yield (ft<sup>3</sup>/sk)</b>
32" cond.	Tail: Premium cement	50	15.8	1.165
24" cond.	Tail: Premium Cement	780	15.8	1.165
16" cond.	Lead: Varicment VI Cement	340	10.5	4.12
	Tail: Premium Cement	410	15.6	1.19
10.75"	Lead: Halco Tuned Light	600	10	3.39
	Tail: 50/50 Poz	550	13	1.57
5.500"	Lead: Varicem	850	10.5	4.12
	Tail: Premium Cement	832	14.4	1.19

Surface: 10-3/4" surface casing will be cemented from setting depth (4000' MD) to surface and topped out with premium cement if necessary. Minimum hardware will include a guide shoe, float collar, top plug, and a minimum of one centralizer per joint on the bottom three (3) casing joints. Water or other preflush fluid pumped ahead of the slurry will separate cement from the drilling fluids.

Intermediate: No intermediate casing in planned. However, 7-5/8 and 7-3/4" casing string is available is hole conditions warrant its use. If used, the contingency string will be cemented so top of cement is inside the surface casing.

Production: 5-1/2" production casing will be cemented in two stages from setting depth (13,500') to 3500' (into the 10.75" casing). A minimum of 20 percent silica will be added to the cement slurry if bottom-hole temperature exceeds 230 °F. Slurry volume will be based on calipered hole size plus 25% excess. Hardware will include a guide shoe, float collar, top plug, and centralizers as needed across any pay zones. Salt water and preflush fluid pumped ahead of the slurry will separate cement from the drilling fluids. If a drilling liner is required, cement volumes will need to be re-calculated.

- Other:
- The appropriate agencies will be notified at least twenty-four hours prior to running and cementing the surface and production casing strings.
  - Actual cement slurries for all casing will be based on final service company recommendations.

- The size, weight, grade, type of thread, number of joints, and footage of all casing run will be recorded in the driller's log. The amount and type of all cement pumped will be recorded in the driller's log.
- Adequate time will be allowed before drilling out for the cement at the casing shoe to achieve a minimum 500-psi compressive strength.
- All casing strings will be tested to 1500 psi before drilling out and if pressure declines by more than 10 percent in 30 minutes, corrective action will be taken.
- Before drilling more than 20 feet of new hole below each casing string, a pressure integrity test of the casing shoe will be performed to a minimum of the mud weight equivalent anticipated to control the pore pressure to the next casing depth or at total depth of the well.

**IV. Mud Program:**

<u>Depth</u>	<u>Mud Weight (ppg)</u>	<u>Mud Type</u>	<u>Viscosity, s/qt</u>	<u>Fluid Loss</u>
0 – 4000'	8.4 – 9.2	Fresh Water	35 – 50	N/C to 12 cc
4000' – 13,500'	9.2 – 10.5	Salt Mud	36 – 50	8 cc

- A. After mudding up, slow pump rates will be taken daily and recorded in the driller's log.
- B. Visual mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume.
- C. Abnormal pressures are not anticipated. In the event such pressures are to be anticipated, electronic/mechanical mud monitoring equipment will be in place and include as a minimum; pit volume totalizer (PVT); stroke counter; and flow sensor.
- D. A mud test will be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- E. The 10M BOPE system is not required for conditions on this well and use of the trip tank is not anticipated.
- F. Gas detecting equipment will be installed in the mud return system, and hydrocarbon gas shall be monitored for pore pressure changes. The presence of Hydrogen Sulfide gas is not expected but appropriate precautions will be taken in the event that it is encountered.
- G. The need to vent combustible or noncombustible gas is not expected. If needed, a flare system designed to gather and burn all gas will be available. The flare line discharge will be located at least 150 feet from the well head and it will be positioned downwind of the prevailing wind direction. The flare line will have straight lines unless turns are targeted with running tees and it will be anchored. The flare system will have an effective method for ignition.
- H. Abnormal pressure is not expected. If abnormal pressure is to be anticipated, a mud-gas separator (gas buster) will be installed and operable beginning at a point at least 500 feet above any anticipated hydrocarbon zone of interest.

**V. Evaluation:**

- A. Mud Log: A mud logging unit will be in operation from a depth of approximately 4000 feet to TD. Samples will be caught, cleaned, bagged, and marked as required.
- B. Drill Stem Tests: There are no DSTs planned.
- C. Coring: There are no cores planned.

Wolverine Operating Company of Utah, LLC  
APD Drilling Program  
Cedar Ridge 17-1

- D. Wireline Logs: Wireline logs will be run as hole conditions allow from total depth to surface casing to assist in determining lithology and potential for hydrocarbon recovery. The logging tools will at a minimum survey resistivity, gamma radiation, and sonic velocity.

**VI. Expected Bottom-Hole Pressure and Abnormal Conditions:**

- A. Hydrogen Sulfide: The presence of Hydrogen Sulfide (H<sub>2</sub>S) gas is unlikely but appropriate safety procedures are to be in place before penetrating the Twin Creek Formation because the possibility does exist.
- B. Pressure: No abnormally pressured zones are expected in this well. The pressure gradient for all potentially productive formations is expected to be approximately 0.44 psi/ft.
- C. Temperature: Bottom-hole temperature at TD is expected to be approximately 260 °F.

End

## **ATTACHMENT 1**

---

- *Surface Casing Design Narrative*
- *Table: Proposed Casing Program*
- *Table: Minimum Casing Performance Characteristics*
  - *Table: Cementing Program Summary*

CONFIDENTIAL

**Wolverine Operating Company of Utah, LLC  
Cedar Ridge 17-1  
Surface Casing Design Narrative**

Surface Casing: 10.75, 84 #/ft, J-55, BTC  
Casing set from surface to 4000 ft in 9.0 ppg mud  
Next String set at 13,600 MD in 10.2 mud

**GENERAL:**

The proposed conductor strings and proposed surface casing are designed to allow the upper sections of the well to be drilled through several potentially problematic zones in the Tertiary and Cretaceous sections and to set surface casing into the top of the Arapien formation at approximately 4000'. The Tertiary zones, from ~ 100 to 1827', include the Crazy Hollow (conglomerates/sand), Green River (mudstones/limestone), Colton (mudstones/limestone), and Flagstaff (limestone), and North Horn (conglomerates/sand/limestone). The Cretaceous, which extends from ~ 1827 to 3962', includes the Indianola and Cedar Mountain, both of which consist of conglomerates, sand and shale. Because of potential hole stability issues, it is critical that we set surface casing into the top of the Arapien, which begins at 3962'. To achieve this goal, conductor strings are proposed at 350' and then at ~2100, which will cover the Tertiary zones of concern. Then the 14-3/4" surface hole will be drilled through the Indianola and Cedar Mountain and into the top of the Arapien, where 10.75" surface casing will be set. Because this is a wildcat well, where well documented offset records are few, the exact hole conditions/potential problems cannot be accurately predicted. However, where records are available, the Indianola, in particular, has caused drilling problems, and it is felt the proposed program is prudent and will allow us to set surface casing where needed and reach proposed TD for this well.

The conductor rig will set and cement 32" conductor to facilitate the deeper conductor strings. Twenty-four inch conductor will then be set and cemented from surface to 350', which should cover the upper conglomerates in the Tertiary. Then the rig will drill a 19" hole and set 16" conductor to approximately 2100', or into the top of the Indianola. The conductor will be cemented to surface prior to drilling the 14-3/4" surface hole to 4000'. The conductors and surface casing will be set with a rig provided by Boart-Longyear, if available.

The 24" conductor represents a size change from that submitted with the original permit, although proposed setting depth of 350' has not changed. The proposed size was increased so 16" conductor can be set to 2100' prior to drilling the Indianola formation.

The following narrative addresses the design considerations for the 10.75" surface casing.

**BURST DESIGN**

Maximum possible pressures must be established. Maximum surface pressure is controlled by the fracture pressure at casing setting depth. Maximum surface pressure occurs during a kick when the wellbore is occupied with the lightest influx fluid which

extends from the casing shoe to the surface. Casing setting depth ( $d$ , feet) is 4000 feet.

Maximum pressure at casing setting depth, injection pressure ( $P_i$ , psi), is set equal to formation fracture gradient ( $G_f$ , ppg) of 15.0 ppg (15.0 ppg is an estimate) plus an arbitrary margin of safety ( $G_s$ , ppg) of 1.0 ppg.

$$P_i = 0.052(G_f + G_s)d$$

$$P_i = 0.052(15.0 + 1.0)4000$$

$$P_i = 3328 \text{ psi}$$

Maximum possible surface pressure ( $PS_{max}$ , psi) is the shoe breakdown pressure less the hydrostatic pressure of a 4000 ft column of gas. Assumed gas gradient ( $G_g$ , ppg) is 0.115 psi/ft.

$$PS_{max} = P_i - G_g \times d$$

$$PS_{max} = 3328 - 0.115 \times 4000$$

$$PS_{max} = 3328 - 460$$

$$PS_{max} = 2868 \text{ psi, this determines the burst load line which is linear from 2868 psi at the surface to 3328 psi at 4000 feet.}$$

Formation fluid pressure ( $P_{bu}$ , psi) outside the casing resists burst. Assume a full column of fresh water with a gradient ( $G_{ff}$ , psi/ft) of 0.433 psi/ft extends from surface to casing setting depth.

$$P_{bu} = G_{ff} \times d$$

$$P_{bu} = 0.433 \times 4000$$

$$P_{bu} = 1732 \text{ psi, this determines the burst resistance line which is linear from zero at the surface to 1732 psi at 4000 feet.}$$

The resultant burst load pressure ( $P_{res}$ , psi) is determined by subtracting the burst resistance pressure from the burst load pressure.

At surface,  $P_{res} = PS_{max} - P_{bu}$

$$P_{res} = 2868 - 0 = 2868 \text{ psi}$$

At 4000 ft,  $P_{res} = P_i - P_{bu}$

$$P_{res} = 3328 - 1732$$

$$P_{res} = 1596 \text{ psi, this determines the resultant burst pressure line which is linear from 2868 psi at surface to 1596 psi at 4000 feet.}$$

The burst design line ( $P_{dl}$ , psi) is determined by applying a design factor ( $DF_b$ , unitless) of 1.0 to the resultant burst load pressures.

$$P_{dl} = P_{res} \times DF_b$$

At surface,  $P_{dl} = 2868 \times 1.0 = 2868$  psi

At 4000 ft,  $P_{dl} = 1596 \times 1.0 = 1596$  psi, this determines the burst design line which is linear from 2868 psi at surface to 1596 psi at 4000 feet.

Determination of crossover depth between J-55 and H-40 is accomplished by interpolation by the following interpolation table where 1844 ft is the depth that was the unknown in the table.

Depth	Pressure
0	2865
1844	2280
4000	1596

CONFIDENTIAL

Tentative selections from the casing catalog of casing weight(s) and grade(s) may now be made. Lengths of casing sections are determined by the intersection with the burst design line. These selections are only tentative since collapse considerations usually govern surface casing design.

Table 1. – 10¾ casing design satisfying burst requirements alone

Weight (ppf)	Grade	Burst (psi)	Interval (feet)
40.5	J-55	3130	0-1844
40.5	H-40	2280	1844-4000

Assuming that further design work will result in the culling of the H-40 burst selected pipe, the burst design factor,  $DF_b$ , at the surface (0 ft) is:

$$DF_b = \frac{3130}{2868} = 1.09, 1.09 > 1.00 \therefore \text{OK}$$

### BURST DISCUSSION

The 40.5 ppg J-55 surface casing burst strength at ground level would be reached if the well took a kick and became gas filled with a 0.115 psi/ft gradient gas from surface to 10,824 feet (neglecting compressibility of gas). Below 10,824 feet the hole is filled with 10.5 ppg mud (see below).

Bottomhole pressure is estimated to be:  $P_{13600} = 0.433 \times 13600 = 5889$  psi

$$3130 = 5889 - \frac{10.5}{19.25}(13600 - L) - 0.115L$$

$$3130 = 5889 - 0.54545(13600 - L) - 0.115L$$

$$3130 = 5889 - 7418 + 0.54545L - 0.115L$$

$$(0.54545 - 0.115)L = 3130 - 5889 + 7418$$

$$0.43045L = 4659$$

$$L = \frac{4659}{.43045} = 10,824 \text{ ft, } L \text{ is the distance from the surface to the top of the mud column.}$$

The casing shoe, assuming 15 ppg EMW breakdown pressure, would break down if the well took a kick and became gas filled from surface to 9742 feet.

$$\frac{15}{19.25}(4000) = 5889 - \frac{10.5}{19.25}(13600 - 4000 - L) - 0.115L$$

$$3117 = 5889 - 0.54545(9600 - L) - 0.115L$$

$$3117 = 5889 - 5236 + 0.54545L - 0.115L$$

$$(0.54545 - 0.115)L = 3117 - 5889 + 5236$$

$$0.43045L = 2464$$

$$L = \frac{2464}{.43045} = 5742 \text{ ft,}$$

$L$  here is the distance below the shoe at 4000 feet to the top of the mud column.

The previous calculations related to burst illustrate two points. First, the strength of the casing does not control the design. The shoe strength controls. There is no need to design for burst beyond the capability of the formation at the casing shoe. Second, to experience a shut in pressure that approaches leakoff strength at the shoe would require a substantial influx of formation gas. This projected influx is far beyond any that have been taken in Saline or Sanpete counties. We keep a close watch on our pit levels and flow show devices. We have no intention of ever allowing such an influx. Our operations personnel are alerted to the slightest increase in background gas. We have increased mud weight to control background but no kick requiring shut in has ever been taken. One reason the wells are controlled so well is that the zones are typically subnormal pressured. Saturated salt water drilling fluid is two pounds per gallon overbalance on the formation. The casing design is adequate for the shoe strength. It is a conservative design tailored to operating conditions in the area.

## COLLAPSE

This surface casing collapse design was performed assuming that the backup fluid, the drilling mud inside the casing, would under no circumstances fall deeper than 3000 feet. In other words, we are not assuming full evacuation for collapse design. Designing for less than full evacuation on surface and intermediate casing strings is common practice across the oilfield and is taught in casing design educational settings. The design strategy is to produce minimum cost designs that take into account load scenarios that have a

probability of occurring. One might refer to "Advanced Casing Design" by Charles Prentice for confirmation.

This string of casing was designed to be set into the Arapien, covering a potentially troublesome sequence of tertiary zones. The lowermost tertiary zone, sitting on top of the Arapien is the Indianola. It is thought that these tertiary zones could be problematic exhibiting a tendency to sluff and/or cave into the borehole. Our normal 2000 foot surface casing string was extended to cover and stabilize those zones.

Western USA practice which includes Utah is to set surface casing strings of minimal length when compared to the total depth of the well. Our experience and that of other operators in Saline and Sanpete counties has been that loss of circulation problems while drilling the production/intermediate holes under surface casing do not result in full evacuation of the surface casing. We are aware of fluid level drops due to lost circulation of a few hundred feet at most. For that reason we considered the 2000 feet surface casing string designs used in previous wells very conservative in terms of collapse design, never expecting full evacuation. This well, with its 4000 feet surface casing string, was designed for a 3000 feet drop in fluid level when no more than a few hundred feet fluid drop would be our worst case expectation. The design, then, is sufficiently conservative to be a prudent, economical design that will serve the needs of the well in terms of collapse.

Maximum collapse load that would be imposed results from partial evacuation of the casing, lost circulation resulting in a drop of fluid level inside the casing to a depth of 3000 feet, with full hydrostatic formation pressure on the outside of the casing. The mud weight inside the casing is assumed to be 10.5 ppg density. External pressure results from an assumed fresh water head, 0.433 psi/ft, extending from the ground surface (0 feet) to 4000 feet. The hydrostatic pressure applied by the pore fluid ( $P_e$ , psi) may now be calculated.

At surface,  $P_e = 0$

At 3000 ft,  $P_e = 3000 \times 0.433$

$$P_e = 1299 \text{ psi}$$

At 4000 ft,  $P_e = 4000 \times 0.433$

$$P_e = 1732 \text{ psi}$$

No internal fluid backup is applied from 0 to 3000 feet since while drilling the production hole, loss of circulation may cause the fluid level to fall to 3000 feet. 10.5 ppg mud backs up the casing from 3000 to 4000 feet. The hydrostatic pressure applied to the inside of the casing ( $P_i$ , psi) is calculated as follows.

At surface,  $P_i = 0$

At 3000 ft,  $P_i = 0$

$$\text{At 4000 ft, } P_i = 0 \times 3000 + \frac{10.5}{19.25}(4000 - 3000) = 545 \text{ psi}$$

The resultant collapse pressure ( $P_r$ , psi) may now be calculated.

At surface,  $P_r = 0 - 0 = 0$

At 3000 ft,  $P_r = 1299 - 0 = 1299$  psi

At 4000 ft,  $P_r = 1732 - 545 = 1187$  psi

A design factor ( $DF_c$ , unitless) of 1.125 has been chosen to allow for casing wear. The collapse load ( $P_c$ , psi) that must be resisted by the casing may now be calculated.

At surface,  $P_c = 0$

At 3000 ft,  $P_c = 1299 \times 1.125 = 1461$  psi

At 4000 ft,  $P_c = 1187 \times 1.125 = 1335$  psi

40.5# J-55 casing has published collapse strength of 1580 psi. The H-40 material specified in the burst design must be discarded in the design. Required collapse strength is less than 1580 all up and down the casing string. 40.5 #/ft J-55 casing may be used for the entire string.

Table 2 illustrates the design. This selection satisfies both burst and collapse requirements.

Table 2. – 10¾ casing design satisfying burst and collapse requirements

Length (feet)	Weight (ppf)	Grade	Collapse Strength (psi)	Interval (feet)
4000	40.5	J-55	1580	0-4000

Collapse design factor(s) follow:

At 3000 feet the 40.5 # J-55 casing,  $DF_c = \frac{1580}{1299} = 1.216 \geq 1.125 \therefore \text{OK}$

The collapse design factor at 3000 feet represents the minimum collapse design factor.

**TENSILE**

Maximum tensile load is expected at the top of the casing string. The maximum tensile load, assuming the casing is hanging in air (most conservative) is calculated as 4000' x 40.5 lb/ft = 162,000 lbs. A design factor of 1.80 has been chosen for tensile load.

The tensile rating for 10.75" 40.5# J-55 STC casing is 629,000 lbs for the pipe body and 420,000 lbs for the STC connection, which makes the connection the limiting parameter.

$DF_t = 420,000 \text{ lbs} \div 162,000 \text{ lbs} = 2.59 > 1.80 \therefore \text{OK}$

**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1**  
**Proposed Casing Program**

CONFIDENTIAL

Type	Setting Depth	Hole Size	OD	Casing					
				weight, #/ft	Grade	Connection	Cplg OD	ID	Drift
Conductor	0-20'	36"	32"	126.6 <sup>(1)</sup>		PE	NA	31.250"	
Conductor	0-350'	28"	24"	94.62 <sup>(2)</sup>		PE	NA	23.250"	
Conductor	0-2100'	19"	16"	84	J-55	BTC	17.00"	15.010"	14.822"
Surface Casing	0-4000'	14-3/4"	10-3/4"	40.5	J-55	STC	11.75"	10.05"	9.894"
Production Casing	0-6000'	9.875"	5.50"	20	L-80	BTC & LTC	6.050"	4.778	4.653
	6000-11,500'	9.875"	5.50"	23	P-110	LTC	6.050"	4.670"	4.545"
	11,500-13,600'	9.875"	5.50"	23	L-80	LTC	6.050"	4.670"	4.545"

Notes:

- (1) Approximate weight of 32", 0.375" wall, plain end pipe is 126.6 #/ft
- (2) Approximate weight of 24", 0.375" wall, plain end pipe is 94.62 #/ft

**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1**  
**Proposed Casing Program**

CONFIDENTIAL

**Minimum Performance Characteristics**

<b>Casing</b>	<b>Collapse</b>	<b>Burst</b>	<b>Tensile, body</b>	<b>Tensile, cplg</b>
10.75", 40.5#, J-55, BTC	1580 psi	3130 psi	629,000 lbs	420,000 lbs
5.5", 20#, L-80, BTC & LTC	8830 psi	8990 psi	466,000 lbs	503,000 lbs
5.5", 23#, P-110, LTC	14,540 psi	13,580 psi	729,000 lbs	643,000 lbs
5.5", 23#, L-80, LTC	11,160 psi	9,880 psi	530,000 lbs	489,000 lbs

CONFIDENTIAL

**Wolverine Operating Company of Utah, LLC  
Cedar Ridge 17-1  
Cementing Program Summary**

Type	Setting Depth	Hole Size	Casing OD	Cement Slurry	Quantity (sks)	Density (ppg)	Yield (ft3/sk)
Conductor	0-20'	36"	32"	Tail: Premium Cement	50	15.8	1.165
Conductor	0-350'	28"	24"	Tail: Premium Cement	780	15.8	1.165
Conductor	0-2100'	19"	16"	Lead: Varicem VI Cement	340	10.5	4.12
				Tail: Premium Cement	410	15.6	1.19
Surface Casing	0-4000'	14-3/4"	10-3/4"	Lead: Tuned Light System	600	10	3.39
				Tail: 50/50 Poz Premium	550	13	1.57
Production Casing	0-6000'	9.875"	5.50"	Lead: Varicem Cement	850	10.5	4.12
				Tail: Premium Cement	832	14.4	1.19

## ***ATTACHMENT 2***

---

- *H<sub>2</sub>S Drilling Operations Plan*

CONFIDENTIAL

**H2S Drilling Operations Plan**

***Wolverine Operating Company of Utah, LLC***

***Cedar Ridge 17-1***

**Section 17  
Township 19S - Range 01E  
Sanpete County, Utah**

**GL Elevation: 5090 feet**

**One Riverfront Plaza  
55 Campau, NW  
Grand Rapids, Michigan 49503-2616**

## Table of Contents

Introduction and directions

I. Responsibilities and Duties

- A. All personnel
- B. Wellsite Supervisor (Drilling Foreman)
- C. Rig Supervisor/Toolpusher
- D. Safety Consultant
- E. Drilling Manager

II. Well Location Layout

- A. Location

III. Safety Procedures

- A. Training
- B. Operating Conditions
- C. Warning System Response and Evacuation Plan
- D. Emergency Rescue Procedures
- E. Planning with Local Officials

IV. H2S Safety Equipment on Well Location

V. Operating Procedures and Equipment

VI. Well Ignition Procedures

- A. Ignition Equipment
- B. Ignition Procedures

VII. Residents - Public in Radius of Exposure

- A. Map of area around location

VIII. Emergency Phone Directory

- A. Wolverine
- B. Emergency Services Phone List

IX. Reference Material for Hydrogen Sulfide and Sulfur Dioxide

X. Attachments-Maps, Diagrams

## **Introduction**

This H<sub>2</sub>S contingency plan has been prepared for the Cedar Ridge 17-1 well, which will be located on a fee lease in Section 17, T19S-R01E, Sanpete County. This Plan is intended as a guide for personnel working at the well site should an accidental release of natural gas containing hydrogen sulfide occur during drilling or completion operations. Operational requirements included installation of gas monitors and safety equipment on the drill site, personnel training, and response procedures. All personnel, including anyone who may travel to location on an unscheduled basis, must review and be familiar with onsite duties as well as the safety equipment involved. For the plan to be effective, the cooperation and participation of all personnel working at the well site is required.

Hydrocarbon gas with low concentrations of H<sub>2</sub>S has been detected in the some wells drilled in the area. At Wolverine Cedar Ridge 18-1, a 2006 dry hole located 1.4 miles to the northwest of the proposed well, no indications of H<sub>2</sub>S were encountered. At the Wolverine Arapien Valley 24-1, located 7.4 miles to the southeast of the proposed well, H<sub>2</sub>S was detected in gas samples from the upper Navajo at concentrations of approximately 35 ppm (0.000035 mole volume) and in the lower Navajo at approximately 900 ppm (0.0009 mole volume).

Exposure to H<sub>2</sub>S by the general public is very unlikely during drilling or completion operations. The prevailing wind direction is from the west. The lands adjacent to the well site include cultivated farm land to the west and south, undeveloped land to the east used for hay/farm equipment storage, and undeveloped land and then the San Pitch River to the north. Farmer's Fwy (aka, West 100 South) is located along the north side of San Pitch River, approximately 1200 feet north of the well site. A cultivated field is located to the southeast of the well site. Residences are located along both the north and south sides of Farmers Fwy. A single residence is located approximately 900 feet south of the well site along South 300 West.

Even assuming a release of 2,000,000 cubic feet/day with a concentration of 0.009 mole volume, the 100 ppm radius of exposure (as calculated in accordance with BLM Onshore Order No. 6) is 155' and the 500 ppm radius of exposure is 72', both of which would fall within the actual well pad site; the well pad will be fenced and have controlled access during drilling.

## **Directions**

### **Driving directions to location:**

From the town of Salina in Sanpete County, go north toward Gunnison on US 89 to 500 South Street. Turn west on 500 South and travel approximately 0.5 miles, and turn north on 300 West Street; go north 0.32 miles to drill site access road.

## **I. Duties & Responsibilities**

In order to assure proper execution of the contingency plan, it is essential that one person be responsible for and requisite authority for implementing the procedures outlined in this plan. The order of responsibility will be as follows:

1. Wolverine supervisor on location - if unable to perform his/ her duties;
2. Alternate Wolverine representative - if unable to perform his/ her duties;
3. Rig Supervisor/Toolpusher - if unable to perform his/her duties;
4. Safety consultant representative - if available.

## **A. All Personnel**

1. Always be alert for possible H2S alarms - both audible and visual.
2. Be familiar with location of Safe Briefing Areas (SBA) and protective breathing equipment.
3. Develop "wind awareness". Be aware of prevailing wind direction as well as nearby uphill areas should there be no wind.
4. Familiarize yourself with nearest escape routes for safe evacuation.
5. Should H2S alarm sound, DON'T PANIC - remain calm and follow instructions of person in charge.
6. If the H2S alarms sound:
  - a. Essential personnel shall don the appropriate respiratory protective equipment and follow safety procedures. They will continue to wear respiratory protective equipment until the area is deemed safe (H2S concentration less than 10 PPM).
  - b. Non-essential personnel shall evacuate to the appropriate safe briefing area using escape-breathing systems. They are to wait there for further instructions from the Wolverine foreman or the designated person in charge.
  - c. Initiate rescue protocol if necessary and following training procedures.

## **B. Wellsite Supervisor**

1. The Wellsite Supervisor will confirm that all personnel on location at any time are trained in H2S safety and aware of above list of duties.
2. The Wellsite Supervisor will ensure that all personnel observe all safety and emergency procedures.
3. The Wellsite Supervisor will make an effort to keep the number of personnel on location to a minimum and to ensure that only essential personnel are on location during critical operations.
4. Should an extreme danger condition exist, the Wellsite Supervisor will:
  - a. Assess the situation and advise all personnel by appropriate means of communication.
  - b. Be responsible for determining that the extreme danger condition is warranted and have the red flag posted at location entrance.
  - c. Go to safe briefing area. Give clear instructions relative to hazard on location and actions for personnel to follow.
  - d. Notify company and regulatory groups of current situation as required per company policy and regulatory protocol. Follow appropriate procedures for emergency services notification.
  - e. Proceed to well and supervise operations with rig supervisor. Take action to control and reduce the H2S hazard.
  - f. Ensure that essential personnel are properly protected with supplied air breathing equipment and that non-essential personnel are in a "poison gas free" area.
  - g. Authorize evacuation of any persons/residents in area surrounding the well location.
  - h. Commence any ignition procedures if ignition criteria are met.

## **C. Rig Supervisor/Toolpusher**

1. If the Wellsite Supervisor is unable to perform his/her duties and an alternate Wolverine representative is also unable or unavailable to perform his/her duties, the rig supervisor will assume command of wellsite operations and all responsibilities listed above for Wellsite Supervisor.
2. The Rig Supervisor will ensure that all rig personnel are properly trained to work in H2S environment, fully understand the purpose of H2S alarms, and know actions to take when alarms activate. He/She will ensure that all crew personnel understand

the buddy system, safe briefing areas, and individual duties as well as emergency evacuation procedures.

3. Should any extreme danger operational condition arise, the Rig Supervisor shall assist the Wellsite Supervisor by:
  - a. Proceeding to the rig floor and assist in supervising rig operations.
  - b. Ensuring that only essential working personnel remain in hazardous areas.
  - c. Ensuring that all crewmembers that remain in hazardous area, wear respiratory protective equipment until notified that area is "clear" of any toxic gases.
  - d. Assigning rig crewmember or other service representative to block entrance to location. No unauthorized personnel are to be allowed entry to location.
  - e. Helping to determine hazardous "danger zones" on location using portable detection equipment, and positioning electric fans to move gas in any high concentration areas.

#### **D. Safety Consultant**

1. During normal operations (no H2S present), the safety consultant will be responsible for the following:
  - a. Ensuring that all wellsite safety equipment is in place and operational.
  - b. Ensuring that all wellsite personnel are familiar with location safety layout and operation of all safety equipment.
  - c. Assisting the Wellsite Supervisor in performing weekly H2S drills for location personnel.
2. When an operational condition is classified as extreme danger, the safety consultant will be responsible for the following:
  - a. Accounting for all wellsite personnel.
  - b. Assessing any injuries and directing first aid measures.
  - c. Ensuring that all safety and monitoring equipment are functioning properly and available.
  - d. Monitoring the safety of wellsite personnel.
  - e. Maintaining close communication with the Wellsite Supervisor.
  - f. Being prepared to assist Wellsite Supervisor with support for rig crew or other personnel using breathing equipment.
  - g. Being prepared to assist the Wellsite Supervisor with emergency procedures including possible well ignition.
  - h. Being prepared to assist with evacuation of any area residents or other personnel in the immediate area.

## **E. Drilling Manager**

1. The Wolverine Drilling Manager will be responsible for notifying and maintaining contact with the company Production Manager and/or other company supervisory personnel as required.
2. Maintaining communication with the Wellsite Supervisor and providing any other assistance that might be required.
3. Travelling to wellsite if appropriate
4. Assisting Wellsite Supervisor with all other notifications – including both company and regulatory.

## **II. Well Location Layout**

### **A. Location**

1. An attached well site diagram depict location and rig orientation, prevailing wind direction, terrain of surrounding area, location of briefing areas, access roads, location of flare lines and pits, location of caution/danger signs, and location of wind indicators.
2. If practical, the drilling rig will be situated to allow for the prevailing winds to blow across the rig toward the circulation tanks or at right angles to the lines from the BOP stack to the circulation tanks or as near this configuration as possible.
3. If practical, there will be 2 roads from location with one at each end of location or as dictated by prevailing winds and terrain. If an alternate road is not practical, a clearly marked footpath to a safe area will be provided. The auxiliary escape route will be kept available and passable at all times so that a shift in wind direction will not prevent escape from the location if an emergency should occur. An auxiliary foot path is available near the southwest corner of the location.
4. The entrance(s) to the location will be designed to be barricaded if necessary because of a hydrogen sulfide emergency condition.
5. A minimum of 2 safe briefing areas (SBA) will be designated for assembly of personnel during emergency conditions. These will be located at least 200 feet from the wellbore and in such a location that at least one area will be upwind of the well at all times. Upon recognition of an emergency situation, all personnel will be trained to assemble at the designated briefing area for instructions.
6. Smoking areas will be established and smoking will be allowed only at those established smoking areas.
7. Reliable 24-hour telephone communications will be available at the wellsite supervisor's office.

8. The drilling rig will have a continuous electronic H<sub>2</sub>S detection system that will be located to detect the presence of hydrogen sulfide in areas where it is most likely to appear on site. The sensor head locations will be: 1) rig floor by driller's console, 2) substructure area near the bell nipple, 3) the shale shaker, 4) the mud mixing area. Additional sensors will be positioned at the discretion of the drilling foreman. At least 1 light and 1 siren will be placed on the rig to indicate the presence of hydrogen sulfide. The light and siren will be strategically placed to be visible to all personnel on the drill site.
9. Equipment to indicate wind direction will be installed at prominent locations and will be visible at all times during drilling operations. At least 2 wind direction indicators (i.e. windsocks) will be placed at separate elevations (i.e. near ground level and rig floor height). At least 1 wind direction indicator will be clearly visible from all principal working areas at all times so that wind direction can be easily determined. In addition, a wind direction indicator will be provided at each of the two briefing areas if the other wind direction indicators on location are not visible from the briefing areas.
10. Operational danger or caution sign(s) will be displayed along all controlled accesses to the site. The sign(s) will legible and large enough to be read by all persons entering the wellsite and be placed a minimum of 200 feet but not more than 500 feet from the wellsite and at a location which allows vehicles to turn around at a safe distance prior to reaching the site.
11. Protective safety equipment will be available for all essential personnel. There will be five 30-minute SCBA and five air line breathing units with emergency escape cylinders located at the drilling floor or dog house, one SCBA and air line unit will be located in the derrick (for derrick man), one 30-minute SCBA per person will be located by the quarters of all personnel on location, and 30-minute SCBA and escape units will be distributed as needed near the shaker, mud tanks, and any other area where escape from an H<sub>2</sub>S contaminated area could be difficult. A safety trailer containing the compressed breathing air will be located near the well site and air lines will be run from the safety trailer to where the air line breathing units are located.

### **III. Safety Procedures**

#### **A. Training**

When this plan is in effect, all personnel who come onto the location must be properly trained in hydrogen sulfide, nitrogen, and oxygen deficient atmospheres safety. The personnel shall carry documentation with them indicating that the training has occurred within the previous 12 months. All training will comply with federal and state regulatory guidelines. There will be a training session that reviews this site specific H<sub>2</sub>S plan and the H<sub>2</sub>S PPP (if applicable) for all personnel in each work crew on location. Training will also include weekly H<sub>2</sub>S and well control drills. All training sessions and drills are to be recorded in the driller's log, as well as in the safety trailer logbook.

Training topics shall include at a minimum:

1. Hazards and characteristics of hydrogen sulfide, nitrogen, and oxygen deficient atmospheres and symptoms of exposure to these gases.
2. Proper use, care and limitations of respiratory protective equipment with hands-on practice.
3. Use of both fixed and portable toxic gas detection equipment.
4. Work practices to reduce chances for toxic gas exposure and procedures for confined space.
5. First aid for toxic gas exposure and resuscitation equipment.
6. The buddy system.
7. Emergency evacuation procedures.
8. A review of the contingency plan for the well.

### **B. Operating Conditions**

A three color- flag warning system will be used to notify personnel approaching the drill site as to operating conditions on the wellsite. This system is in compliance with BLM Onshore Order 6 and follows industry standards.

Green Flag - Potential Danger

Yellow Flag - Moderate Danger

Red Flag- Extreme Danger - Do not approach if red flag is flying.

A red warning flag will be displayed when H<sub>2</sub>S is detected in excess of 10 ppm at any detection point.

The operational danger or caution signs located near the entrance to the location will be painted a high visibility red, black and white, or yellow with black lettering. They will be legible and large enough to be read by all persons entering the wellsite and will read "DANGER – POISON GAS – HYDROGEN SULFIDE" and in small lettering "Do not approach if Red Flag is Flying".

All sign(s) and, when appropriate, flag(s) will be visible to all personnel approaching the location under normal lighting and weather conditions.

Location access will be monitored and controlled during "non-routine" operations such as perforating, pressurized pumping, and well testing of potential H<sub>2</sub>S bearing formations. The number of personnel on location will be restricted to "essential" personnel only

### **C. Warning System Response and Evacuation Plan**

When H<sub>2</sub>S is detected in excess of 10 ppm at any detection point indicating that an extreme danger condition exists, all non-essential personnel will be moved to a safe area and essential personnel (i.e., those necessary to maintain control of the well) shall don a pressure-demand type protective breathing apparatus. Once accomplished, operations may proceed.

The prevailing wind is from the west-southwest. The lands adjacent to the well site include cultivated farm land to the west and south, farm storage area to the east, undeveloped land, San Pitch River to the north. Farmers Road is located approximately 1000 feet north of the well site. Residences are located along the north side of Farmers Road.

If an H<sub>2</sub>S emergency situation arises, the Wellsite Supervisor will contact local authorities to authorize and work in coordination with them to evacuate and restrict non-essential personnel from areas near the wellsite where H<sub>2</sub>S concentration levels could potentially exceed 10 ppm. All associated regulatory agencies will then be notified as soon as possible.

#### **D. Emergency Rescue Procedures**

Well site personnel should not attempt emergency rescues unless they have been properly trained. A trained person who discovers another person overcome by hydrogen sulfide **should not attempt to rescue without donning the proper breathing equipment**. When making an emergency rescue always use the following procedures:

1. Don rescue breathing equipment before attempting to rescue someone.
2. Remove the victim from the contaminated area to an area free of gas by traveling upwind or cross wind. Be certain that you are in a safe area before removing your breathing equipment.
3. If the victim is not breathing, initiate mouth-to-mouth resuscitation immediately. Follow CPR guidelines and replace mouth-to-mouth with a bag mask resuscitator if available.
4. Treat the victim for shock, keeping the victim warm and calm. Never leave the victim alone.
5. Any personnel who experience hydrogen sulfide exposure must be taken to a hospital for examination and their supervisor notified of the incident.
6. Their supervisor shall follow the company Emergency Preparedness plan.

#### **E. Planning with Local Officials**

Wolverine representatives will meet with local officials and review this H<sub>2</sub>S Drilling Operations Plan.

**IV. H2S Safety Equipment on Well Location Procedures**

<b><u>Item</u></b>	<b><u>Amount</u></b>	<b><u>Description</u></b>
1.	1	Safety trailer with a cascade system of 10-300 cu. ft bottles of compressed breathing air complete with high-pressure regulators.
2.	At least 1000 ft.	Low-pressure airline equipped with Hanson locking fittings. This airline will be rigged up with manifolds to supply breathing air to the rig floor, substructure, derrick, shale shaker area, and mud mixing areas. Three high-pressure refill hoses will be attached to cascade systems for cylinder refill.
3.	Twelve (12)	Scott 30-minute self-contained breathing apparatuses (SCBA).
4.	Twelve (12)	Scott airline units with emergency escape cylinders.
5.	One (1)	4-channel continuous electronic H2S monitors with audible and visual alarms. The set points for these alarms are 10 ppm for the low alarm and 15 ppm for the high alarm.
6.	Two (2)	Sensidyne portable hand operated pump type detection units with tubes for hydrogen sulfide and sulfur dioxide.
7.	One (1)	Oxygen resuscitator with spare oxygen cylinder.
8.	One (1)	Trauma first aid kit.
9.	One (1)	Stokes stretcher and one (1) KED
10.	Four (4)	Windssocks.
11.	At least one (1)	Well condition sign with 3 flag system.
12.	Two (2)	Safe Briefing Area (SBA) signs.
13.	One (1)	Fire blanket.
14.	One (1)	Set air splints.
15.	Two (2)	Electric explosion proof fans.
16.	One (1)	Bullhorn and chalk board.
17.	Three (3)	300 cu. ft. air bottles for the safe briefing area.
18.	Two (2)	30# fire extinguishers.
19.	Six (6)	Battery powered voice microphones for communication when wearing air masks.
20.	One (1)	Battery powered combustible gas meter.

## **V. Operating Procedures and Equipment**

1. If zones containing in excess of 100 ppm of H<sub>2</sub>S gas are encountered while drilling with air, gas, mist, other non-mud circulating mediums for aerated mud, the well will be killed with a water-based mud and mud will be used thereafter as the circulating medium for continued drilling.
2. A flare system will be designed and installed to safely gather and burn H<sub>2</sub>S-bearing gas and it will be equipped with a suitable and safe means of ignition. If noncombustible gas is to be flared, the system will have a supplemental fuel to maintain ignition.
3. Flare lines will be located as far from the operating site as feasible and in a manner to compensate for wind changes. The flare line(s) mouth(s) will be located not less than 150 feet from the wellbore. Flare lines will be straight unless targeted with running tees.
4. If SO<sub>2</sub> is to be released as a result of flaring of H<sub>2</sub>S, portable SO<sub>2</sub> detection equipment will be available for checking the SO<sub>2</sub> level in the flare impact area. If the flare impact area reaches a sustained ambient threshold level of 2 ppm or greater of SO<sub>2</sub> in air and includes any occupied residence, school, church, park, or place of business, or other area where the public could reasonably be expected to frequent, the PPP will be implemented.
5. The choke manifold included as a component of the well control system will have at least one remote controlled choke with controls readily accessible to the drilling or other authorized personnel.
6. A rotating head will be installed and operable.
7. A mud-gas separator will be rigged up and manifolded to the choke and flare system.
8. The drilling mud will be a water-based system maintained with a pH of 10 or greater. Corrosion inhibitor additives will be in the mud. Sufficient scavenger chemicals will be available on location and will be used to scavenge or neutralize any H<sub>2</sub>S in the drilling fluid. Mud weight will be maintained as needed to control pressure in any formations encountered.
9. All equipment that has potential for exposure to H<sub>2</sub>S will be suitable for H<sub>2</sub>S service. The casing head and spools, blowout preventer assembly, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separator and other related equipment will have metallurgical standards conforming to NACE MR0175/ISO 15156. Elastomers, packing, and similar inner parts exposed to H<sub>2</sub>S will be resistant at the maximum anticipated temperature of exposure. Drill strings, surface casing, intermediate casing, and BOP shear rams are exempt from these requirements.
10. All respiratory protective, H<sub>2</sub>S detection, and other needed safety equipment will be in place and ready for use, and all rig crews and other service personnel will be trained in its use when this plan is effective.

11. There will be a continuous electronic H<sub>2</sub>S detection system that will automatically activate visible and audible alarms if hydrogen sulfide is detected. The visible light will activate if 10 ppm H<sub>2</sub>S is present. The audible siren will activate if 15 ppm H<sub>2</sub>S or higher concentration is present. There will be at least four H<sub>2</sub>S sensors in place on the drilling rig. Additional alarm lights & sirens may be added to ensure that all personnel on the drill site are able to notice the alarms at any time. All H<sub>2</sub>S detection equipment will be calibrated as recommended by the manufacturer and calibration records will be maintained on location.
12. Both 30-minute self-contained breathing apparatuses (SCBA) and workline units with escape cylinders will be available on location. There will be sufficient numbers of this supplied air breathing equipment on location to ensure that all personnel on location have equipment available to them. All respiratory protective equipment will use nose cups to prevent fogging in temperatures below 32°F. Spectacle kits will be available for personnel that require corrective lenses when working under mask.
13. Electronic voice-microphones will be available for essential personnel to use when working under mask to facilitate communication.
14. Additional breathing equipment will be provided for non routine operations that require additional service personnel on the well location to ensure that all personnel on the well location have a dedicated supplied air respirator.
15. Electric explosion-proof ventilating fans (bug blowers) will be available to provide air movement in enclosed areas where gas might accumulate.
16. Any drill stem test performed on any formation potentially containing H<sub>2</sub>S will be done with a minimal number of personnel at the drilling site as necessary to safely operate the test equipment. Any such drill-stem test will be conducted only during daylight hours and will be a closed chamber test with no fluids allowed to flow from surface.
17. Any production testing of an H<sub>2</sub>S bearing formation will be done with proper wellhead and other equipment in place to allow a controlled test through separation equipment and flare as needed. Any such test would be conducted with monitoring and warning devices in place and proper safety equipment available.

## **VI. Well Ignition Procedures**

If it should become apparent that an uncontrolled release of hydrogen sulfide to the atmosphere might endanger the health and safety of the public or well site personnel, the Wolverine Wellsite Supervisor will make a decision to ignite the well. The following procedure should be followed before attempting to ignite the well.

- A. Ignition equipment - The following equipment will be available for on-site for use by the ignition team.
  1. Two 12 gauge flare guns with flare shells
  2. Two 500 ft. Fire resistant retrieval ropes

3. One portable combustible gas meter
4. Self contained breathing apparatus (SCBA) for each member of the ignition team.
5. One backup vehicle with communication equipment

#### B. Ignition Procedures

1. The Wellsite Supervisor will ensure that well site personnel are evacuated to a safe area upwind of the well bore prior to any ignition action.
2. The Wellsite Supervisor and a designated partner "buddy" backed up by well site safety personnel will comprise the ignition team. All team members will be wearing 30 minute SCBAs.
3. The backup crew will be positioned near a radio-equipped vehicle at a safe distance from the sour gas release. They will standby to rescue the actual team igniting the well.
4. The partner of the ignition team will carry a combustible gas/ hydrogen sulfide meter to continuously monitor the area in which they are working and define the perimeter of the gas cloud.
5. The Wellsite Supervisor will carry the flare gun and shells.
6. The ignition team will determine the hazardous area and establish safe working perimeters. Once this is identified the team will proceed upwind of the leak and fire into the area with flare gun. If trouble is encountered in trying to light the leak, retry to ignite by firing the flare shells at 45 and 90 angles to the gas source, but DO NOT approach closer to the leak.
7. After ignition, monitor for sulfur dioxide and work with the support group to restrict access to the contaminated area.

#### VII. Residents – Public in Radius of Exposure

Exposure to H<sub>2</sub>S by the general public is very unlikely during drilling or completion operations. The prevailing wind direction is from the west. The lands adjacent to the well site include cultivated farm land to the west and south, undeveloped land to the east used for hay/farm equipment storage, and undeveloped land and then the San Pitch River to the north. Farmer's Fwy (aka, West 100 South) is located along the north side of San Pitch River, approximately 1200 feet north of the well site. A cultivated field is located to the southeast of the well site. Residences are located along both the north and south sides of Farmers Fwy. A single residence is located approximately 900 feet south of the well site along South 300 West.

Even assuming a release of 2,000,000 cubic feet/day with a concentration of 0.009 mole volume, the 100 ppm radius of exposure (as calculated in accordance with BLM Onshore Order No. 6) is 155' and the 500 ppm radius of exposure is 72', both of which would fall within the actual well pad site; the well pad will be fenced and have controlled access during drilling.

**VIII. Emergency Phone Directory**

**A. Wolverine Gas and Oil Company of Utah, LLC**

Chuck Emerson (Drilling Wellsite Supervisor – Wolverine)	cell	970-381-6233
Jack Magill (Drilling Engineer Consultant)	office	308-848-3279
	Cell	303-868-6408
Tony Cook (Production Forman – Wolverine)	office	435-896-2956
	cell	435-201-1622
	truck	435-201-2871
Ed Higuera (Operations Manager – Wolverine)	office	616-458-1150
	Cell	616-690-0023

CONFIDENTIAL

**B. Emergency Services Phone List**

1. Sevier Valley Medical Center - Richfield, UT ..... 435 - 896-8271
2. Gunnison Valley Hospital, Sanpete County ..... 435 - 528-7246
3. Ambulance Services – Sevier County, UT ..... 911 or 435-896-6471
4. Ambulance Services – Sanpete County, UT ..... 911 or 435-835-2191
5. Sheriff Department - Sevier County, UT..... 911 or 435-896-6471
6. Sheriff Department – Sanpete County, UT ..... 911 or 435-835-2191
7. Highway Patrol - Utah ..... 800 - 222-0038
8. Fire Department - Sevier County..... 911 or 435-896-6471
9. Al McKee, BLM – Salt Lake City, UT (cell phone) ..... 801- 828-7498
10. Utah Division Oil, Gas & Mining - Salt Lake City, UT ..... 801- 538-5277
11. Medical Helicopter - Air Med- Salt Lake City, UT ..... 800 - 453-0120
12. Utah OSHA (Mark LeBlanc) ..... 801- 530-6862
13. Sevier Valley Medical Center - Richfield, UT..... 435-896-8271

**C. Nearest Hospital**

The nearest hospital to the site is the Gunnison Valley Hospital, located at 64 E 100 N, Gunnison, UT. A map and directions to the hospital can be found in Section X-Attachments.

**IX. Reference Material for Hydrogen Sulfide and Sulfur Dioxide**

If gas should be produced, it could be a mixture of Carbon Dioxide, Hydrogen Sulfide, and Methane.

**TOXICITY OF VARIOUS GASES**

<u>Common Name</u>	<u>Chemical Formula</u>	<u>Specific Gravity of Air=1</u>	<u>1 Threshold Limit</u>	<u>2 Hazardous Limit</u>	<u>3 Lethal Concern</u>
Hydrogen Cyanide	HCN	0.94	10 ppm	150 ppm/hr	300 ppm
Hydrogen Sulfide	H <sub>2</sub> S	1.18	10 ppm	250 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21	2 ppm	-----	1,000 ppm
Chloride	CL <sub>1</sub>	2.45	1 ppm	4 ppm/hr	1,000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/hr	1,000 ppm
Carbon Dioxide	CO <sub>2</sub>	1.52	5,000 ppm	5%	10%
Methane	CH <sub>4</sub>	0.55	90,000 ppm	Combustible Above 5% in Air	-----

1. **Threshold** = Concentration at which it is believed that all workers may repeatedly be exposed, day after day, without adverse side effects.

2. **Hazardous** = Concentration that may cause death.

3. **Lethal** = Concentration that will cause death with short-term exposure.

# HYDROGEN SULFIDE

## GENERAL PROPERTIES

Hydrogen Sulfide itself is a colorless and transparent gas and is flammable. It is heavier than air and, hence, may accumulate in low places.

Although the slightest presence of H<sub>2</sub>S in the air is normally detectable by its characteristic "Rotten Egg" odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of Hydrogen Sulfide, which is more toxic than Carbon Monoxide.

**COMMON NAMES:** Sour Gas, Rotten Egg Gas, Sulphurated Hydrogen, Hydrogen sulfide, Stink Damp, H<sub>2</sub>S, Acid Gas, Sweet Gas\*

## PHYSICAL-CHEMICAL PROPERTIES

- Chemical Formula..... H<sub>2</sub>S
- 1. Specific Gravity (Air = 1.000)..... 1.193 (@ 77°F)
- 2. Color ..... None
- 3. Odor..... Compared to Rotten Eggs
- 4. Odor Threshold ..... 0.13 part of 1 ppm
- 5. Corrosivity ..... Reacts with metals, plastics, tissues and nerves.
- 6. Solubility in Water ..... 4.0 to 1 in H<sub>2</sub>O @ 32°F  
2.6 to 1 in H<sub>2</sub>O @ 68°F
- 7. Effects on Humans..... Olfactory nerves, respiratory nerves, irritates sensitive membranes in eyes, nose, and throat.
- 8. Vapor Pressure ..... 19.6 atmospheres at 25°C
- 9. Explosive Limits ..... 4.3% to 46% by volume in air.  
\* H<sub>2</sub>S is a sweet tasting Gas, but often the word "tasting" is left out.
- 10. Ignition Temperature.....18°F (Burns with a pale blue flame)
- 11. Molecular Weight.....34.08
- 12. Conversion Factors..... 1 mg/1 of air = 717 ppm (at 25°C and 760 mm HG). 1 ppm = 0.00139 mg/1 of air.
- 13. pH.....3 in water

## **INDUSTRIAL OCCURRENCES**

Hydrogen Sulfide exposures occur in certain processes in the petroleum industry, chemical plants, chemical laboratories, sulfur and gypsum mines, viscose rayon and rubber industries, tanneries, and in the manufacture of some chemicals, dyes, and pigments. It may be encountered in excavations in the swampy or filled ground. It is produced when sulfur-containing organic matter decomposes, and it can therefore be found in sewage or organic-waste treatment plants. A common sewer gas, it may find its way into utility manhole, particularly dangerous when encountered in tanks, vessels, and other enclosed spaces.

## **TOXIC PROPERTIES**

Hydrogen Sulfide is an extremely toxic and irritating gas. Free Hydrogen Sulfide in the blood reduces its oxygen carrying capacity, thereby depressing the nervous system. Sufficiently high concentrations can cause blockage of the phrenic nerve, resulting in immediate collapse and death due to respiratory failure and asphyxiation.

Because Hydrogen Sulfide is oxidized quite rapidly to sulfates in the body, no permanent after effects occur in cases of recovery from acute exposures unless oxygen deprivation of the nervous system is prolonged. However, in cases of acute exposures, there is always the possibility that pulmonary edema may develop. It is also reported that symptoms such as nervousness, dry nonproductive coughing, nausea, headache, and insomnia, lasting up to about 3 days have occurred after acute exposures to Hydrogen Sulfide.

At low concentrations the predominant effect of Hydrogen Sulfide is on the eyes and respiratory tract. Eye irritation, conjunctivitis, pain, lacrimation, keratitis, and photophobia may persist for several days. Respiratory tract symptoms include coughing, painful breathing, and pain in the nose and throat.

There is no evidence that repeated exposures to Hydrogen Sulfide results in accumulative or systemic poisoning. Effects such as eye irritation, respiratory tract irritation, slow pulse rate, lassitude, digestive disturbances, and cold sweats may occur, but these symptoms disappear in a relatively short time after removal from the exposure. Repeated exposure to Hydrogen Sulfide does not appear to cause any increase or decrease in susceptibility to this gas.

The paralytic effect of Hydrogen Sulfide on the olfactory nerve is probably the most significant property of the gas. This paralysis may create a false sense of security. A worker can be overcome after the typical rotten-egg odor has disappeared. Rather than the characteristic Hydrogen Sulfide odor, some victims of sudden acute overexposure have reported a brief sickeningly sweet odor just prior to unconsciousness.

Subjective olfactory responses to various concentrations of Hydrogen Sulfide may be summarized as follows:

0.02 ppm	No odor
0.13 ppm	Minimal perceptible odor
0.77 ppm	Faint, but readily perceptible odor
4.60 ppm	Easily detectable, moderate odor
27.0 ppm	Strong, unpleasant odor, but not intolerable

Physiological responses to various concentrations of Hydrogen Sulfide have been reported as follows:

10 ppm	Beginning eye irritation
50-100 ppm	Slight conjunctivitis and respiratory tract irritation after 1 hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes, and drowsiness after 15-30 minutes, followed by throat irritation after 1 hour. Several hours <sup>1</sup> exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours
200-300 ppm	Marked conjunctivitis and respiratory tract irritation after 1 hour exposure
500-700 ppm	Loss of consciousness and possibly death in 30 minutes
700 ppm	Rapid unconsciousness, cessation of respiration, and death
1000-2000 ppm	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

## **ACCEPTABLE CONCENTRATIONS**

### **ACCEPTABLE EIGHT-HOUR TIME-WEIGHTED AVERAGE**

To avoid discomfort, the Time-Weighted average concentration of Hydrogen Sulfide shall not exceed 10 ppm.

### **ACCEPTABLE CEILING CONCENTRATION**

The acceptable concentration for protection of health for an eight-hour, five-day week shall be 20 ppm. Fluctuations are to occur below this concentration.

**ACCEPTABLE MAXIMUM FOR PEAKS ABOVE ACCEPTABLE  
BASE LINE FOR CONTINUOUS EXPOSURE**

A single-peak concentration not exceeding 50 ppm for a maximum of 10 minutes is allowable provided that the daily time-weighted average is not exceeded.

**H<sub>2</sub>S EQUIVALENTS**

<b>Parts per Million</b>	<b>Percents</b>	<b>Grains per 100 cu. Ft.</b>
1	0.0001	0.055
10	0.001	0.55
18	0.0018	1.0
100	0.01	5.5
1000	0.1	55.5
10000	1.0	555.5

Grains per 100 cu. Ft. = % by volume Mole 636.4  
1% by volume = 10,000 ppm

**SULFUR DIOXIDE**

Sulfur Dioxide (SO<sub>2</sub>) is a colorless, transparent gas and is non-flammable.

Sulfur Dioxide is produced during the burning of H<sub>2</sub>S. Although SO<sub>2</sub> is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures. While Sulfur Dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect.

**CONCENTRATIONS**

**EFFECTS**

**%SO<sub>2</sub>**                      **ppm**

**0.0002**                              **2**

Safe for eight (8) hour exposure

**0.0005**                              **5**

Pungent odor - normally a person can detect SO<sub>2</sub> in this range.

**0.0012**                              **12**

Throat irritation, coughing, constriction of the chest, tearing and smarting of the eyes.

**0.015**                                **150**

So irritating that it can only be endured for a few minutes.

**0.05**                                 **500**

Causes a sense of suffocation, even with the first breath.

## PHYSICAL PROPERTIES AND CHARACTERISTICS

Chemical Formula.....	SO <sub>2</sub>
1. Specific Gravity .....	2.212
2. Color .....	None
3. Flammable.....	No
4. Odor.....	Characteristic, pungent, gives ample warning of its presence.
5. Corrosivity .....	Dry---not corrosive to ordinary metals. Wet--corrosive to most common metals.
6. Allowable Concentrations.....	2 ppm (ACGIH and OSHA)
7. Effects on Humans.....	Irritates eyes, throat and upper respiratory system

## TOXIC PROPERTIES

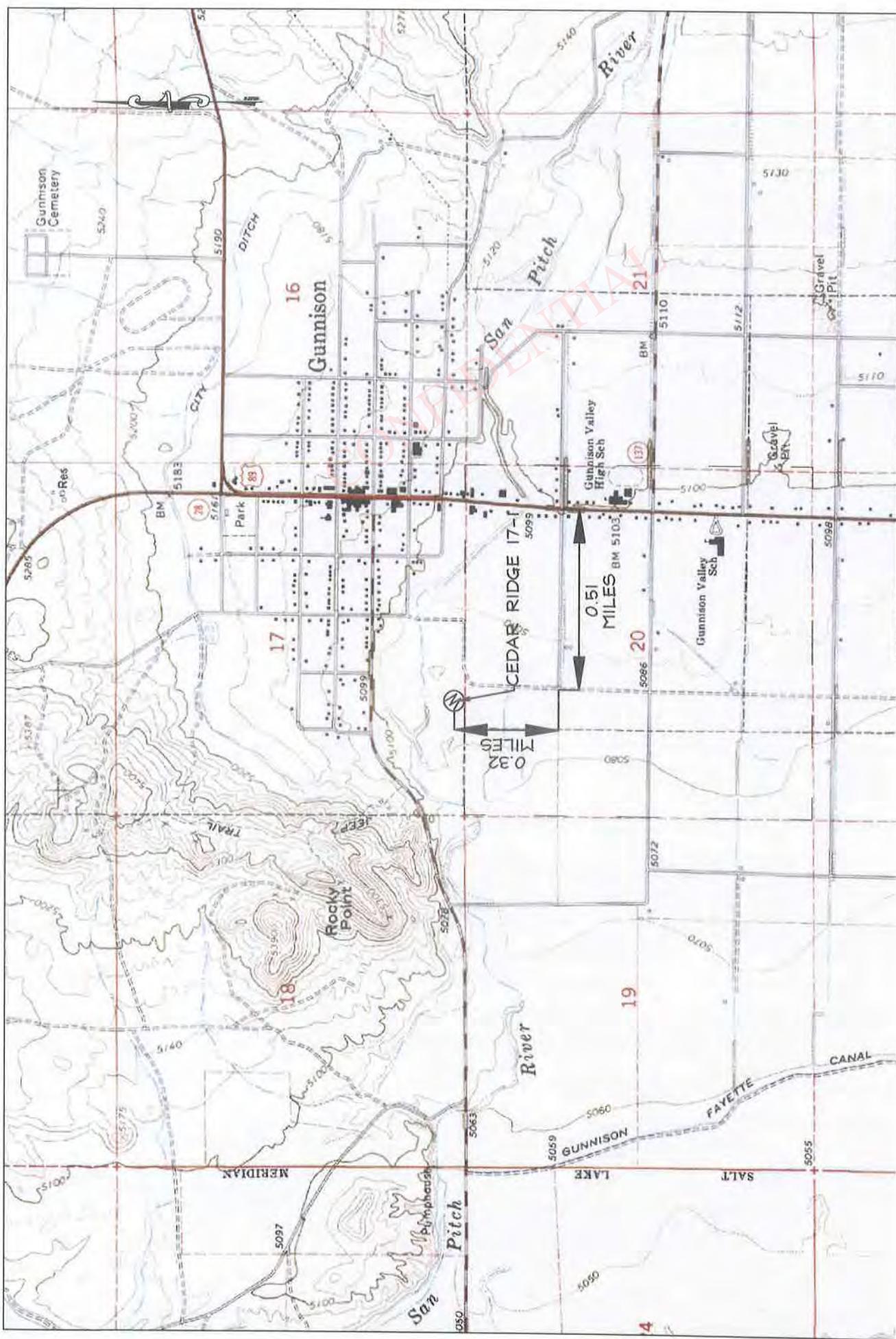
Sulfur Dioxide is an irritating gas in its vapor form and the odor is so intensely irritating that concentrations of 3 to 5 parts per million in the air are readily detectable by the normal person. In higher concentrations, the severely irritating effect of the gas makes it unlikely that any person would be able to remain in a Sulfur Dioxide contaminated atmosphere unless they were unconscious or trapped.

Sulfur Dioxide gas is intensely irritating to the eyes, throat, and upper respiratory system. Inhalation of this gas in concentrations of 8 to 12 parts per million in air causes throat irritation, coughing, constriction of the chest, tearing and smarting of the eyes. 150 parts per million is so extremely irritating that it can be endured only for a few minutes. 500 parts per million is so acutely irritating to the upper respiratory tract that it causes a sense of suffocation, even with the first breath.

Out of numerous reported exposures to Sulfur Dioxide, there are few references that would indicate pneumonia as an after effect.

**X. Attachments-Maps, Diagrams**

CONFIDENTIAL



**Savage Surveying, Inc.**

11228 South Woodland Park Rd.  
 Provo, UT 84601  
 (801) 734-8888  
 Fax: (801) 734-8889

**WOLVERINE OPERATING COMPANY OF UTAH, LLC.**

**CEDAR RIDGE 17-1**

DESIGN BY:	CHECKED BY:	DATE	PROJECT NUMBER	SHEET NUMBER
		07/30/09	0906-0065	0906-0065
SURVEY BY:		SCALE	DRAWN BY:	
E.G.		1" = 2000'	R.M.S.	
			A.S.A.	
			COVER	





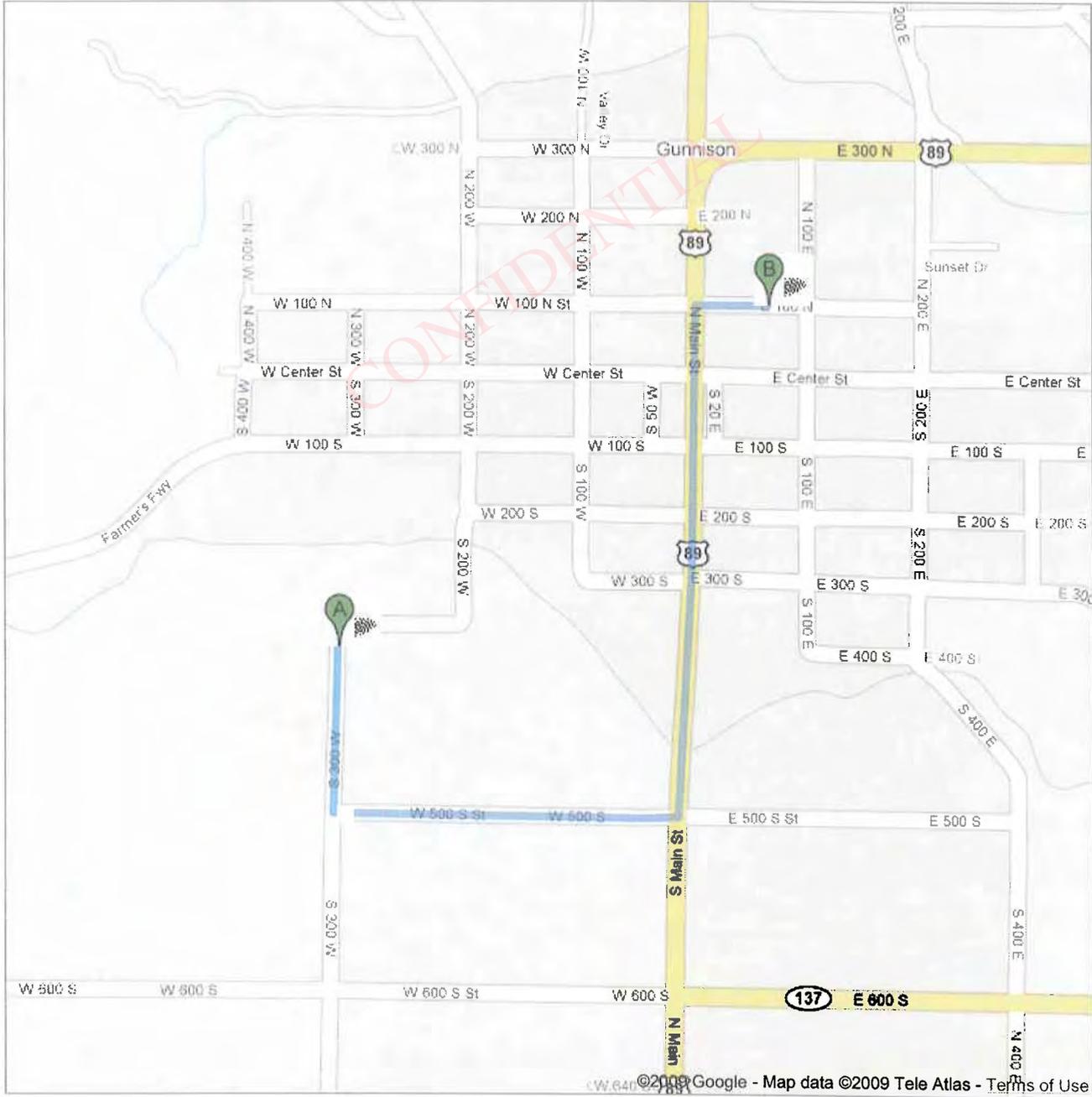
**Directions to Gunnison Valley Hospital**

64 E 100 N, Gunnison, UT 84634 - (435) 528-7246

1.6 mi – about 4 mins

**Save trees. Go green!**

Download Google Maps on your phone at [google.com/gmm](http://google.com/gmm)



©2009 Google - Map data ©2009 Tele Atlas - Terms of Use



S 300 W & S 200 W, Gunnison, Sanpete, Utah 84634

- 
- |   |                           |
|---|---------------------------|
| 1. Head <b>south</b> on <b>S 300 W</b> toward <b>W 500 S</b>  | go 0.2 mi<br>total 0.2 mi |
| 2. Turn <b>left</b> at <b>W 500 S</b><br>About 1 min          | go 0.5 mi<br>total 0.8 mi |
| 3. Turn <b>left</b> at <b>S Main St/US-89</b><br>About 2 mins | go 0.8 mi<br>total 1.5 mi |
| 4. Turn <b>right</b> at <b>E 100 N</b>                        | go 0.1 mi<br>total 1.6 mi |

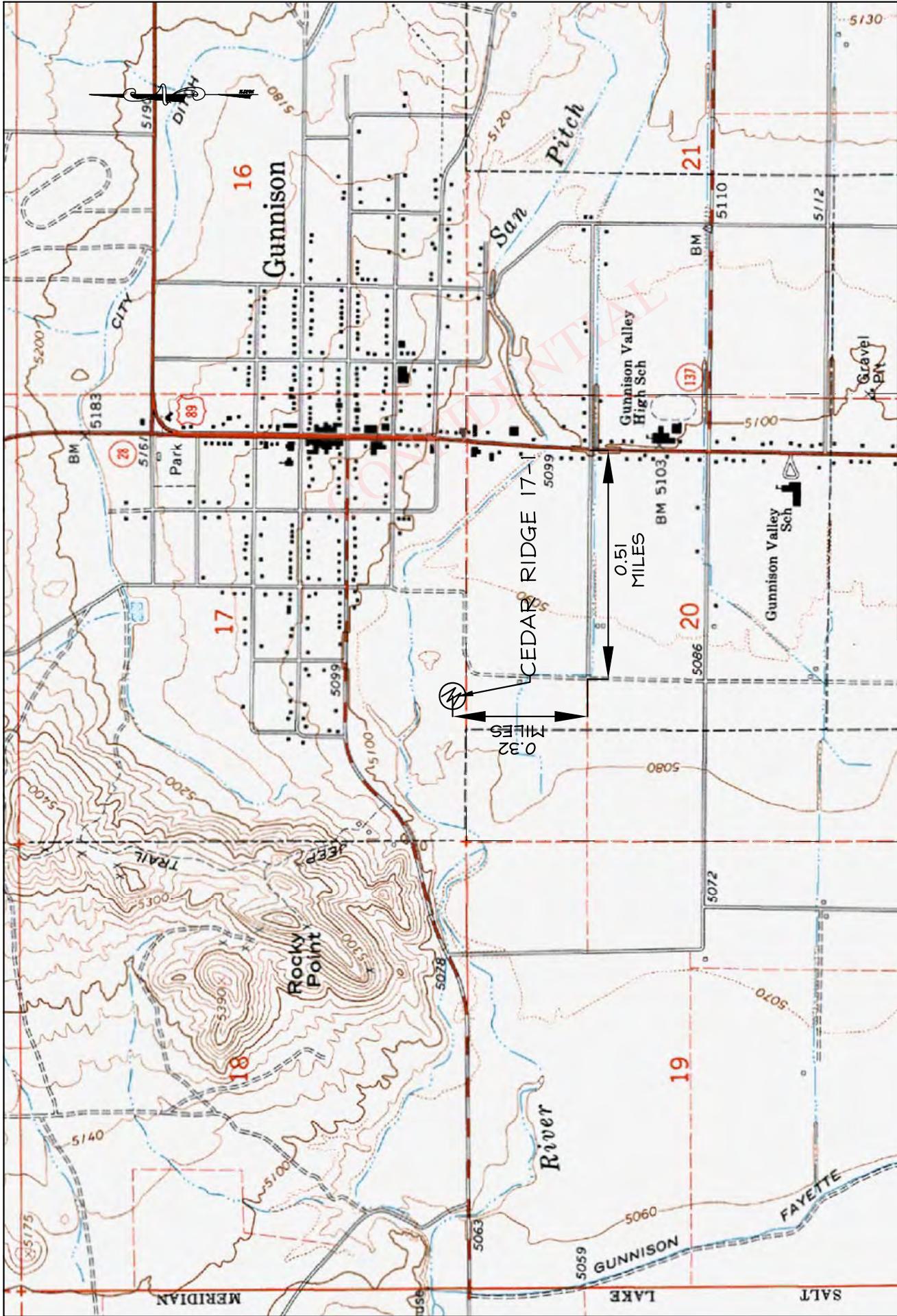


**Gunnison Valley Hospital**  
64 E 100 N, Gunnison, UT 84634 - (435) 528-7246

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

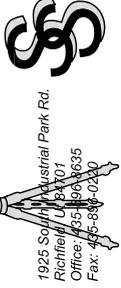
Map data ©2009 , Tele Atlas

CONFIDENTIAL



Savage Surveying, Inc.

1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-880-8635  
 Fax: 435-880-0280



CEDAR RIDGE 17-1

WOLVERINE OPERATING COMPANY OF UTAH, LLC.

DESIGN BY:	---	CHECKED BY:	R.J.S.	DATE	07/22/09	PROJECT NUMBER	0906-006S	SHEET NUMBER	COVER
DWG NAME	SCALE	SURVEY BY:		DRAWN BY:		PROJECT NUMBER		SHEET NUMBER	
0906-006S	1"= 2000'	E.G.		A.S.A.		0906-006S		COVER	

AFFIDAVIT

STATE OF UTAH  
COUNTY OF SEVIER

-In the matter of the proposed Cedar Ridge 17-1 well, to be situated on the following described lands in Sanpete County, Utah:

Township 19 South-Range 1 East, SLM

Section 17: Beginning 861.12 feet East of the Southwest corner of the Southeast ¼ of the Southwest ¼ of Section 17; thence North 300 feet, thence West 2,181.12 feet to the West line of Section 17, thence South 300 feet to the Southwest corner of Section 17, thence East 33.05 chains, more or less, to the point of beginning. **Serial #2631X1.**

Section 20: That portion of the following description lying in the NE4NW4 Section 20: Beginning at the NW corner of said section; thence South 12.5 chains, thence S89°30'E 10 chains, thence South 49.5 feet, thence S89°15'E 19.25 chains, thence N2°15'E 13.5 chains, thence West 29.7 chains to point of beginning. **Serial #2683.**

I, Charlie Irons, a resident of Sevier County, Utah, and an employee of Wolverine Gas and Oil Corporation in its Richfield Field Office, do hereby depose and say that I prepared and negotiated the terms of a Surface Damage and Access Agreement that was executed in my presence on July 23, 2009, by Bobbie Sorenson and Verda Mae Sorenson, Trustees of the Bobbie Sorenson Family Trust, the owner of the surface of the above captioned lands. The agreement provides compensation for anticipated damages by Wolverine's operations, and numerous other provisions regarding restoration and accommodation for both short term and long term activities, to the mutual benefit of both parties.

Subscribed and sworn this 31<sup>st</sup> day of July, 2009

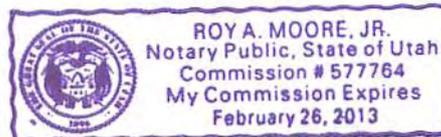
*Charlie Irons*

Charlie Irons

STATE OF UTAH )  
 ) ss: ACKNOWLEDGMENT  
COUNTY OF SEVIER )

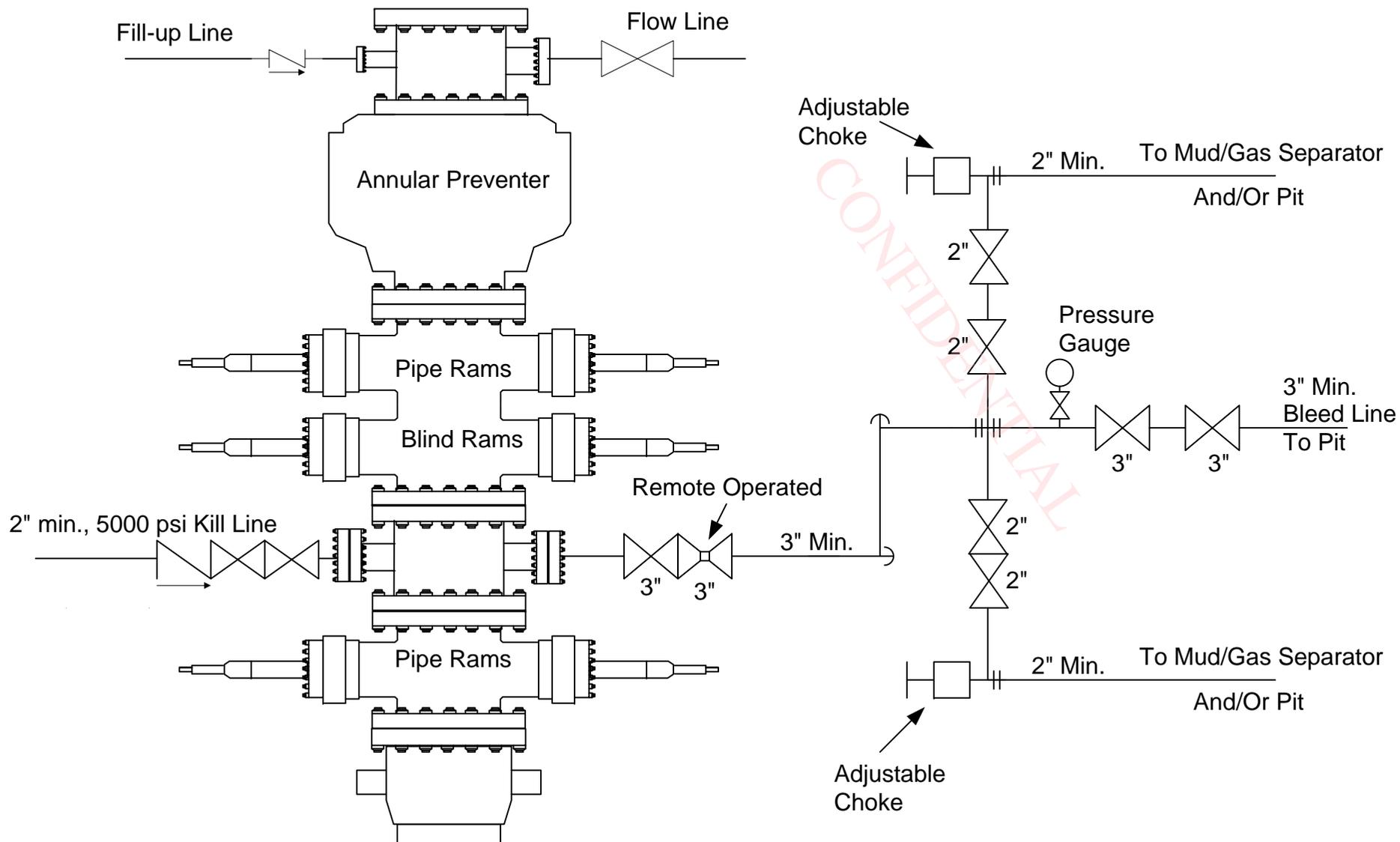
The foregoing instrument was acknowledged before me this 31<sup>st</sup> day of July, 2009, by Charlie Irons, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

*Roy A. Moore, Jr.*  
Roy A. Moore, Jr., Notary Public



# 5k BOPE Schematic

(Not to Scale)





# WOLVERINE GAS & OIL COMPANY

Location: UTAH Slot: Slot #01 Cedar Ridge 17-1 159FSL & 1718FWL  
 Field: SANPETE COUNTY Well: Cedar Ridge 17-1  
 Facility: SEC.17-T19S-R1E Wellbore: Cedar Ridge 17-1 PWB

True vertical depths are referenced to SST 68 (RT)		Grid System: NAD83 / Lambert Utah State Planes, Central Zone (4302), US feet	
Measured depths are referenced to SST 68 (RT)		North Reference: True north	
SST 68 (RT) to Mean Sea Level: 5116 feet		Scale: True distance	
Mean Sea Level to Mud line (Facility: SEC.17-T19S-R1E): 0 feet		Depths are in feet	
Coordinates are in feet referenced to Slot		Created by: thomsuzz on 7/28/2009	

### Location Information

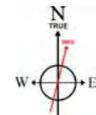
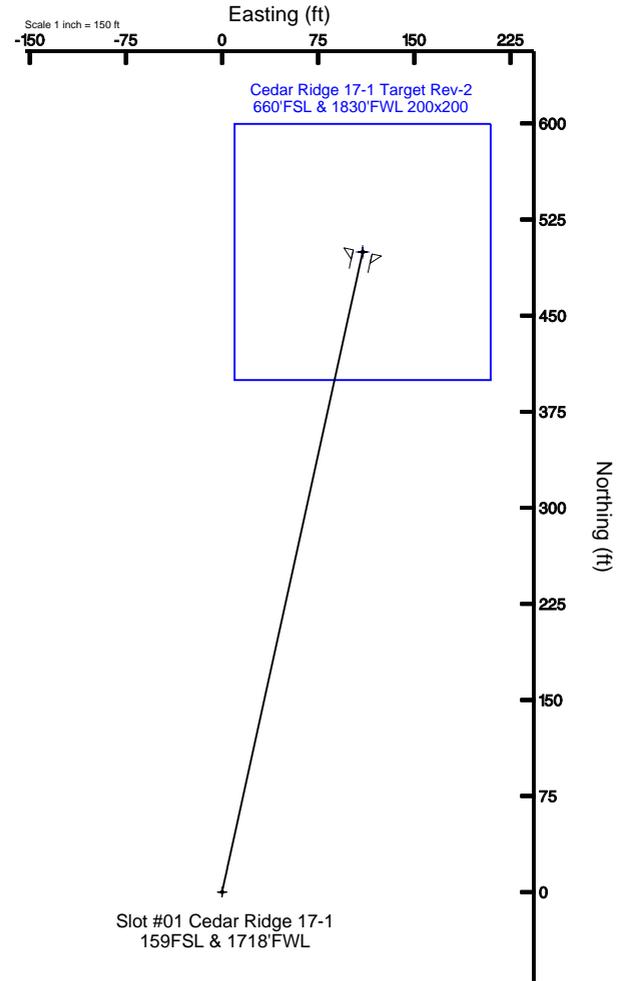
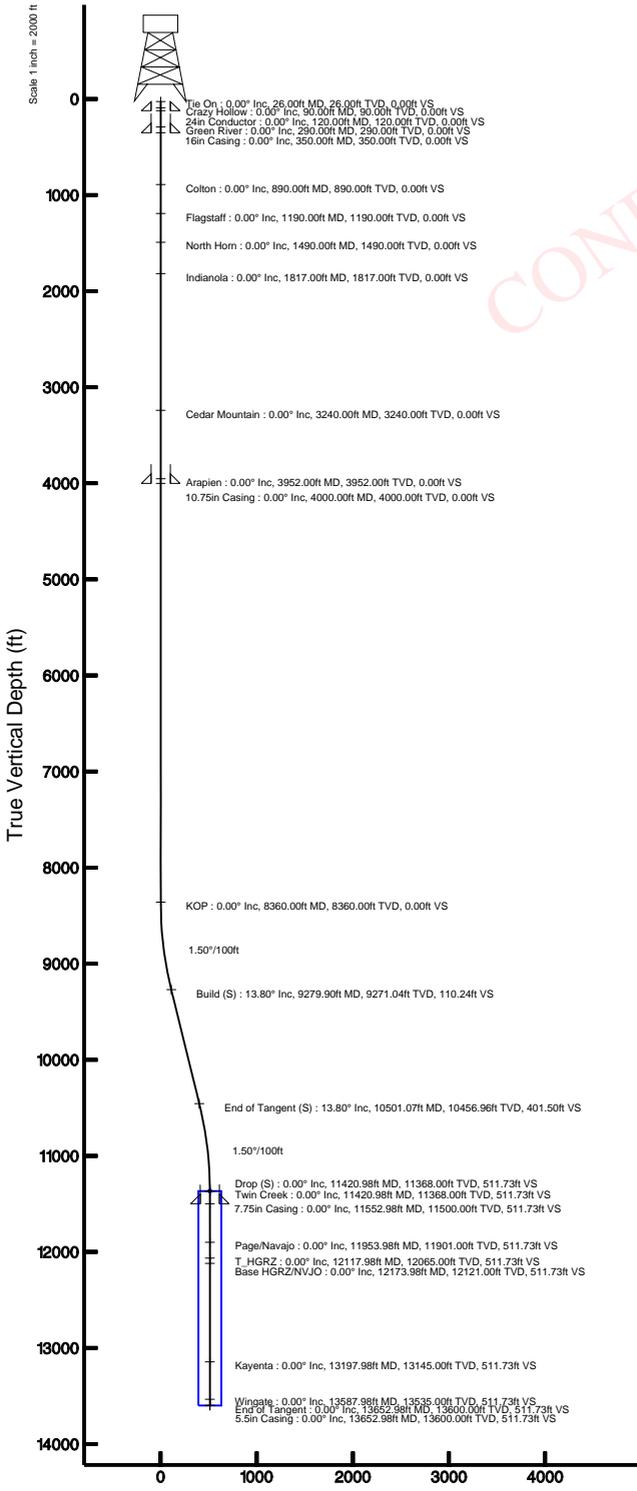
Facility Name	Grid East (USft)	Grid North (USft)	Latitude	Longitude		
SEC.17-T19S-R1E	1546909.295	6859384.754	39°09'00.829"N	111°49'46.995"W		
Slot	Local N (ft)	Local E (ft)	Grid East (USft)	Grid North (USft)	Latitude	Longitude
Slot #01 Cedar Ridge 17-1 159FSL & 1718FWL	0.00	0.00	1546909.295	6859384.754	39°09'00.829"N	111°49'46.995"W
SST 68 (RT) to Mud line (Facility: SEC.17-T19S-R1E)						5116ft
Mean Sea Level to Mud line (Facility: SEC.17-T19S-R1E)						0ft
SST 68 (RT) to Mean Sea Level						5116ft

### Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (USft)	Grid North (USft)	Latitude	Longitude
Cedar Ridge 17-1 Target Rev-2 660FSL & 1830FWL 200x200	11420.98	11368.00	499.81	109.82	1547020.95	6859884.14	39°09'05.769"N	111°49'45.601"W

### Well Profile Data

Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	26.00	0.000	12.392	26.00	0.00	0.00	0.00	0.00
KOP	8360.00	0.000	12.392	8360.00	0.00	0.00	0.00	0.00
Build (S)	9279.90	13.799	12.392	9271.04	107.67	23.66	1.50	110.24
End of Tangent (S)	10501.07	13.799	12.392	10456.96	392.14	86.16	0.00	401.50
Drop (S)	11420.98	0.000	12.392	11368.00	499.81	109.82	1.50	511.73
End of Tangent	13652.98	0.000	12.392	13600.00	499.81	109.82	0.00	511.73



BGGM (1945.0 to 2011.0) Dip: 64.77° Field: 51734.2 nT  
 Magnetic North is 12.12 degrees East of True North (at 7/28/2009)

To correct azimuth from Magnetic to True add 12.12 degrees  
 For example: if the Magnetic North Azimuth = 90 deg, then the Grid North Azimuth = 90 + 12.12 = 102.12

Azimuth 12.39° with reference 0.00 N, 0.00 E



# Planned Wellpath Report

Cedar Ridge 17-1 PWP Rev-C.0

Page 1 of 6



**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

Operator	<b>WOLVERINE GAS &amp; OIL COMPANY</b>	Slot	<b>Slot #01 Cedar Ridge 17-1 159FSL &amp; 1718'FWL</b>
Area	<b>UTAH</b>	Well	<b>Cedar Ridge 17-1</b>
Field	<b>SANPETE COUNTY</b>	Wellbore	<b>Cedar Ridge 17-1 PWB</b>
Facility	<b>SEC.17-T19S-R1E</b>		

## REPORT SETUP INFORMATION

Projection System	<b>NAD83 / Lambert Utah State Planes, Central Zone (4302), US feet</b>	Software System	<b>WellArchitect® 2.0</b>
North Reference	<b>True</b>	User	<b>Thomsuzc</b>
Scale	<b>0.99997</b>	Report Generated	<b>7/28/2009 at 3:05:52 PM</b>
Convergence at slot	<b>0.21° West</b>	Database/Source file	<b>Denver/Cedar_Ridge_17-1_PWB.xml</b>

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	<b>0.00</b>	<b>0.00</b>	1546909.30	6859384.75	39°09'00.829"N	111°49'46.995"W
Facility Reference Pt			1546909.30	6859384.75	<b>39°09'00.829"N</b>	<b>111°49'46.995"W</b>
Field Reference Pt			1546909.30	6859384.75	<b>39°09'00.829"N</b>	<b>111°49'46.995"W</b>

## WELLPATH DATUM

Calculation method	<b>Minimum curvature</b>	SST 68 (RT) to Facility Vertical Datum	<b>5116.00ft</b>
Horizontal Reference Pt	<b>Slot</b>	SST 68 (RT) to Mean Sea Level	<b>5116.00ft</b>
Vertical Reference Pt	<b>SST 68 (RT)</b>	Facility Vertical Datum to Mud Line (Facility)	<b>0.00ft</b>
MD Reference Pt	<b>SST 68 (RT)</b>	Section Origin	<b>N 0.00, E 0.00 ft</b>
Field Vertical Reference	<b>Mean Sea Level</b>	Section Azimuth	<b>12.39°</b>



# Planned Wellpath Report

Cedar Ridge 17-1 PWP Rev-C.0

Page 2 of 6



INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 159FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 PWB
Facility	SEC.17-T19S-R1E		

## WELLPATH DATA (143 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
0.00†	0.000	12.392	0.00	0.00	0.00	0.00	0.00
26.00	0.000	12.392	26.00	0.00	0.00	0.00	0.00
126.00†	0.000	12.392	126.00	0.00	0.00	0.00	0.00
226.00†	0.000	12.392	226.00	0.00	0.00	0.00	0.00
326.00†	0.000	12.392	326.00	0.00	0.00	0.00	0.00
426.00†	0.000	12.392	426.00	0.00	0.00	0.00	0.00
526.00†	0.000	12.392	526.00	0.00	0.00	0.00	0.00
626.00†	0.000	12.392	626.00	0.00	0.00	0.00	0.00
726.00†	0.000	12.392	726.00	0.00	0.00	0.00	0.00
826.00†	0.000	12.392	826.00	0.00	0.00	0.00	0.00
926.00†	0.000	12.392	926.00	0.00	0.00	0.00	0.00
1026.00†	0.000	12.392	1026.00	0.00	0.00	0.00	0.00
1126.00†	0.000	12.392	1126.00	0.00	0.00	0.00	0.00
1226.00†	0.000	12.392	1226.00	0.00	0.00	0.00	0.00
1326.00†	0.000	12.392	1326.00	0.00	0.00	0.00	0.00
1426.00†	0.000	12.392	1426.00	0.00	0.00	0.00	0.00
1526.00†	0.000	12.392	1526.00	0.00	0.00	0.00	0.00
1626.00†	0.000	12.392	1626.00	0.00	0.00	0.00	0.00
1726.00†	0.000	12.392	1726.00	0.00	0.00	0.00	0.00
1826.00†	0.000	12.392	1826.00	0.00	0.00	0.00	0.00
1926.00†	0.000	12.392	1926.00	0.00	0.00	0.00	0.00
2026.00†	0.000	12.392	2026.00	0.00	0.00	0.00	0.00
2126.00†	0.000	12.392	2126.00	0.00	0.00	0.00	0.00
2226.00†	0.000	12.392	2226.00	0.00	0.00	0.00	0.00
2326.00†	0.000	12.392	2326.00	0.00	0.00	0.00	0.00
2426.00†	0.000	12.392	2426.00	0.00	0.00	0.00	0.00
2526.00†	0.000	12.392	2526.00	0.00	0.00	0.00	0.00
2626.00†	0.000	12.392	2626.00	0.00	0.00	0.00	0.00
2726.00†	0.000	12.392	2726.00	0.00	0.00	0.00	0.00
2826.00†	0.000	12.392	2826.00	0.00	0.00	0.00	0.00
2926.00†	0.000	12.392	2926.00	0.00	0.00	0.00	0.00
3026.00†	0.000	12.392	3026.00	0.00	0.00	0.00	0.00
3126.00†	0.000	12.392	3126.00	0.00	0.00	0.00	0.00
3226.00†	0.000	12.392	3226.00	0.00	0.00	0.00	0.00
3326.00†	0.000	12.392	3326.00	0.00	0.00	0.00	0.00
3426.00†	0.000	12.392	3426.00	0.00	0.00	0.00	0.00
3526.00†	0.000	12.392	3526.00	0.00	0.00	0.00	0.00
3626.00†	0.000	12.392	3626.00	0.00	0.00	0.00	0.00
3726.00†	0.000	12.392	3726.00	0.00	0.00	0.00	0.00
3826.00†	0.000	12.392	3826.00	0.00	0.00	0.00	0.00
3926.00†	0.000	12.392	3926.00	0.00	0.00	0.00	0.00
4026.00†	0.000	12.392	4026.00	0.00	0.00	0.00	0.00
4126.00†	0.000	12.392	4126.00	0.00	0.00	0.00	0.00
4226.00†	0.000	12.392	4226.00	0.00	0.00	0.00	0.00
4326.00†	0.000	12.392	4326.00	0.00	0.00	0.00	0.00



# Planned Wellpath Report

Cedar Ridge 17-1 PWP Rev-C.0

Page 3 of 6



INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 159FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 PWB
Facility	SEC.17-T19S-R1E		

## WELLPATH DATA (143 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
4426.00†	0.000	12.392	4426.00	0.00	0.00	0.00	0.00
4526.00†	0.000	12.392	4526.00	0.00	0.00	0.00	0.00
4626.00†	0.000	12.392	4626.00	0.00	0.00	0.00	0.00
4726.00†	0.000	12.392	4726.00	0.00	0.00	0.00	0.00
4826.00†	0.000	12.392	4826.00	0.00	0.00	0.00	0.00
4926.00†	0.000	12.392	4926.00	0.00	0.00	0.00	0.00
5026.00†	0.000	12.392	5026.00	0.00	0.00	0.00	0.00
5126.00†	0.000	12.392	5126.00	0.00	0.00	0.00	0.00
5226.00†	0.000	12.392	5226.00	0.00	0.00	0.00	0.00
5326.00†	0.000	12.392	5326.00	0.00	0.00	0.00	0.00
5426.00†	0.000	12.392	5426.00	0.00	0.00	0.00	0.00
5526.00†	0.000	12.392	5526.00	0.00	0.00	0.00	0.00
5626.00†	0.000	12.392	5626.00	0.00	0.00	0.00	0.00
5726.00†	0.000	12.392	5726.00	0.00	0.00	0.00	0.00
5826.00†	0.000	12.392	5826.00	0.00	0.00	0.00	0.00
5926.00†	0.000	12.392	5926.00	0.00	0.00	0.00	0.00
6026.00†	0.000	12.392	6026.00	0.00	0.00	0.00	0.00
6126.00†	0.000	12.392	6126.00	0.00	0.00	0.00	0.00
6226.00†	0.000	12.392	6226.00	0.00	0.00	0.00	0.00
6326.00†	0.000	12.392	6326.00	0.00	0.00	0.00	0.00
6426.00†	0.000	12.392	6426.00	0.00	0.00	0.00	0.00
6526.00†	0.000	12.392	6526.00	0.00	0.00	0.00	0.00
6626.00†	0.000	12.392	6626.00	0.00	0.00	0.00	0.00
6726.00†	0.000	12.392	6726.00	0.00	0.00	0.00	0.00
6826.00†	0.000	12.392	6826.00	0.00	0.00	0.00	0.00
6926.00†	0.000	12.392	6926.00	0.00	0.00	0.00	0.00
7026.00†	0.000	12.392	7026.00	0.00	0.00	0.00	0.00
7126.00†	0.000	12.392	7126.00	0.00	0.00	0.00	0.00
7226.00†	0.000	12.392	7226.00	0.00	0.00	0.00	0.00
7326.00†	0.000	12.392	7326.00	0.00	0.00	0.00	0.00
7426.00†	0.000	12.392	7426.00	0.00	0.00	0.00	0.00
7526.00†	0.000	12.392	7526.00	0.00	0.00	0.00	0.00
7626.00†	0.000	12.392	7626.00	0.00	0.00	0.00	0.00
7726.00†	0.000	12.392	7726.00	0.00	0.00	0.00	0.00
7826.00†	0.000	12.392	7826.00	0.00	0.00	0.00	0.00
7926.00†	0.000	12.392	7926.00	0.00	0.00	0.00	0.00
8026.00†	0.000	12.392	8026.00	0.00	0.00	0.00	0.00
8126.00†	0.000	12.392	8126.00	0.00	0.00	0.00	0.00
8226.00†	0.000	12.392	8226.00	0.00	0.00	0.00	0.00
8326.00†	0.000	12.392	8326.00	0.00	0.00	0.00	0.00
8360.00	0.000	12.392	8360.00	0.00	0.00	0.00	0.00
8426.00†	0.990	12.392	8426.00	0.57	0.56	0.12	1.50
8526.00†	2.490	12.392	8525.95	3.61	3.52	0.77	1.50
8626.00†	3.990	12.392	8625.79	9.26	9.04	1.99	1.50
8726.00†	5.490	12.392	8725.44	17.52	17.11	3.76	1.50



# Planned Wellpath Report

Cedar Ridge 17-1 PWP Rev-C.0

Page 4 of 6



INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 159FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 PWB
Facility	SEC.17-T19S-R1E		

## WELLPATH DATA (143 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
8826.00†	6.990	12.392	8824.84	28.39	27.73	6.09	1.50
8926.00†	8.490	12.392	8923.93	41.86	40.88	8.98	1.50
9026.00†	9.990	12.392	9022.63	57.91	56.57	12.43	1.50
9126.00†	11.490	12.392	9120.88	76.55	74.77	16.43	1.50
9226.00†	12.990	12.392	9218.60	97.75	95.47	20.98	1.50
9279.90	13.799	12.392	9271.04	110.24	107.67	23.66	1.50
9326.00†	13.799	12.392	9315.80	121.23	118.41	26.02	0.00
9426.00†	13.799	12.392	9412.92	145.08	141.70	31.13	0.00
9526.00†	13.799	12.392	9510.03	168.93	165.00	36.25	0.00
9626.00†	13.799	12.392	9607.15	192.78	188.29	41.37	0.00
9726.00†	13.799	12.392	9704.26	216.63	211.59	46.49	0.00
9826.00†	13.799	12.392	9801.37	240.48	234.88	51.61	0.00
9926.00†	13.799	12.392	9898.49	264.34	258.18	56.73	0.00
10026.00†	13.799	12.392	9995.60	288.19	281.47	61.84	0.00
10126.00†	13.799	12.392	10092.72	312.04	304.77	66.96	0.00
10226.00†	13.799	12.392	10189.83	335.89	328.06	72.08	0.00
10326.00†	13.799	12.392	10286.94	359.74	351.36	77.20	0.00
10426.00†	13.799	12.392	10384.06	383.59	374.65	82.32	0.00
10501.07	13.799	12.392	10456.96	401.50	392.14	86.16	0.00
10526.00†	13.425	12.392	10481.19	407.36	397.87	87.42	1.50
10626.00†	11.925	12.392	10578.75	429.30	419.30	92.13	1.50
10726.00†	10.425	12.392	10676.85	448.68	438.23	96.29	1.50
10826.00†	8.925	12.392	10775.43	465.49	454.64	99.89	1.50
10926.00†	7.425	12.392	10874.41	479.71	468.53	102.94	1.50
11026.00†	5.925	12.392	10973.73	491.33	479.88	105.44	1.50
11126.00†	4.425	12.392	11073.32	500.35	488.69	107.37	1.50
11226.00†	2.925	12.392	11173.11	506.76	494.95	108.75	1.50
11326.00†	1.425	12.392	11273.03	510.55	498.66	109.56	1.50
11420.98	0.000	12.392	11368.00 <sup>1</sup>	511.73	499.81	109.82	1.50
11426.00†	0.000	12.392	11373.02	511.73	499.81	109.82	0.00
11526.00†	0.000	12.392	11473.02	511.73	499.81	109.82	0.00
11626.00†	0.000	12.392	11573.02	511.73	499.81	109.82	0.00
11726.00†	0.000	12.392	11673.02	511.73	499.81	109.82	0.00
11826.00†	0.000	12.392	11773.02	511.73	499.81	109.82	0.00
11926.00†	0.000	12.392	11873.02	511.73	499.81	109.82	0.00
12026.00†	0.000	12.392	11973.02	511.73	499.81	109.82	0.00
12126.00†	0.000	12.392	12073.02	511.73	499.81	109.82	0.00
12226.00†	0.000	12.392	12173.02	511.73	499.81	109.82	0.00
12326.00†	0.000	12.392	12273.02	511.73	499.81	109.82	0.00
12426.00†	0.000	12.392	12373.02	511.73	499.81	109.82	0.00
12526.00†	0.000	12.392	12473.02	511.73	499.81	109.82	0.00
12626.00†	0.000	12.392	12573.02	511.73	499.81	109.82	0.00
12726.00†	0.000	12.392	12673.02	511.73	499.81	109.82	0.00
12826.00†	0.000	12.392	12773.02	511.73	499.81	109.82	0.00
12926.00†	0.000	12.392	12873.02	511.73	499.81	109.82	0.00



# Planned Wellpath Report

Cedar Ridge 17-1 PWP Rev-C.0

Page 5 of 6



INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 159FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 PWB
Facility	SEC.17-T19S-R1E		

## WELLPATH DATA (143 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
13026.00†	0.000	12.392	12973.02	511.73	499.81	109.82	0.00
13126.00†	0.000	12.392	13073.02	511.73	499.81	109.82	0.00
13226.00†	0.000	12.392	13173.02	511.73	499.81	109.82	0.00
13326.00†	0.000	12.392	13273.02	511.73	499.81	109.82	0.00
13426.00†	0.000	12.392	13373.02	511.73	499.81	109.82	0.00
13526.00†	0.000	12.392	13473.02	511.73	499.81	109.82	0.00
13626.00†	0.000	12.392	13573.02	511.73	499.81	109.82	0.00
13652.98	0.000	12.392	13600.00	511.73	499.81	109.82	0.00

## HOLE & CASING SECTIONS

Ref Wellbore: Cedar Ridge 17-1 PWB Ref Wellpath: Cedar Ridge 17-1 PWP Rev-C.0

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
24in Conductor	26.00	120.00	94.00	26.00	120.00	0.00	0.00	0.00	0.00
17.5in Open Hole	120.00	350.00	230.00	120.00	350.00	0.00	0.00	0.00	0.00
16in Casing	26.00	350.00	324.00	26.00	350.00	0.00	0.00	0.00	0.00
14.75in Open Hole	350.00	4000.00	3650.00	350.00	4000.00	0.00	0.00	0.00	0.00
10.75in Casing	260.00	4000.00	3740.00	260.00	4000.00	0.00	0.00	0.00	0.00
9.625in Open Hole	4000.00	11552.98	7552.98	4000.00	11500.00	0.00	0.00	499.81	109.82
7.75in Casing	26.00	11552.98	11526.98	26.00	11500.00	0.00	0.00	499.81	109.82
6.5in Open Hole	11552.98	13652.98	2100.00	11500.00	13600.00	499.81	109.82	499.81	109.82
5.5in Casing	26.00	13652.98	13626.98	26.00	13600.00	0.00	0.00	499.81	109.82

## TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) Cedar Ridge 17-1 Target Rev-2 660'FSL & 1830'FWL 200x200	11420.98	11368.00	499.81	109.82	1547020.95	6859884.14	39°09'05.769"N	111°49'45.601"W	square

## SURVEY PROGRAM Ref Wellbore: Cedar Ridge 17-1 PWB Ref Wellpath: Cedar Ridge 17-1 PWP Rev-C.0

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	13652.98	MTC (Collar, post-2000) (Standard)		Cedar Ridge 17-1 PWB



# Planned Wellpath Report

Cedar Ridge 17-1 PWP Rev-C.0

Page 6 of 6



**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 159FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 PWB
Facility	SEC.17-T19S-R1E		

## WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
90.00	0.000	12.392	90.00	Crazy Hollow
290.00	0.000	12.392	290.00	Green River
890.00	0.000	12.392	890.00	Colton
1190.00	0.000	12.392	1190.00	Flagstaff
1490.00	0.000	12.392	1490.00	North Horn
1817.00	0.000	12.392	1817.00	Indianola
3240.00	0.000	12.392	3240.00	Cedar Mountain
3952.00	0.000	12.392	3952.00	Arapien
11420.98	0.000	12.392	11368.00	Twin Creek
11953.98	0.000	12.392	11901.00	Page/Navajo
12117.98	0.000	12.392	12065.00	T_HGRZ
12173.98	0.000	12.392	12121.00	Base HGRZ/NVJO
13197.98	0.000	12.392	13145.00	Kayenta
13587.98	0.000	12.392	13535.00	Wingate

**WOLVERINE OPERATING COMPANY OF UTAH, LLC**

Energy Exploration in Partnership with the Environment



July 31, 2009

Diana Mason  
Permitting—Petroleum Technician  
Utah Division of Oil, Gas and Mining  
P.O. Box 145801  
Salt Lake City, Utah 84114-5801

Re: Application for Permit to Drill (Utah ePermit #1844)  
Wolverine Operating Company of Utah, LLC  
**Cedar Ridge 17-1**  
**Directional Drilling Letter**

Dear Mrs. Mason:

Wolverine Operating Company of Utah, LLC (Wolverine) hereby submits this letter in addition to the previously submitted plats, as part of the *Application for Permit to Drill (APD)* for the referenced well:

- R649-3-11 Directional Drilling Application Plat showing proposed BHL;

The Gunnison Fayette Canal (Water Right #63-3159) will be the source for water during drilling and completion operations on this proposed well. The surface at the planned drill site is fee ownership.

This letter and the accompanying plat is intended to serve as an application for directionally drilling the well per R649-3-11. Wolverine is the owner of all oil and gas within 460 feet from all points along the intended wellbore for the well. Information relating to R649-3-11 is as follows:

Operator: Wolverine Operating Company of Utah, LLC

Address: 1140 N Centennial Park Drive  
Richfield, Utah 84701

Wolverine Operating Company of Utah, LLC  
1140 N Centennial Park Drive. Richfield, Utah 84701. Phone: 435-896-1943, Fax: 435-893-2134

Well: Cedar Ridge 17-1

Field: NA (Wildcat)

Reservoir: NA (Wildcat)

County: Sanpete

Reason: Restrictive topography and to minimize surface impact

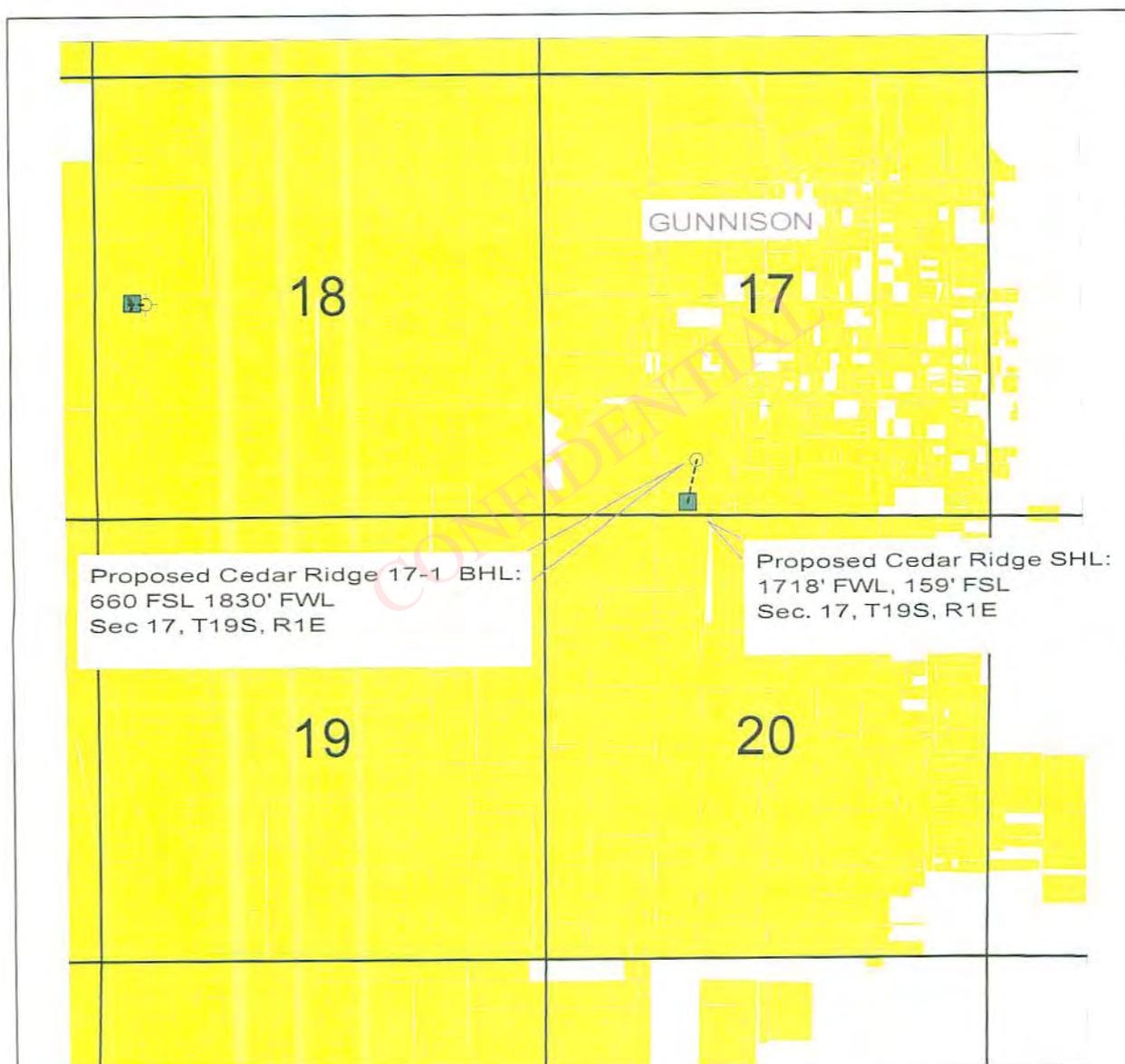
Please accept this letter as Wolverine's written request for confidential treatment of all information contained in and relating to this application and proposed well.

Thank you for consideration of this application. Please feel free to contact me or Paul Spiering of this office if you have any questions or need additional information.

Sincerely,

A handwritten signature in blue ink that reads "Charlie Irons". The signature is written in a cursive style and is positioned above the printed name and title.

Charlie Irons  
Senior Landman



## Cedar Ridge 17-1 Well Location

SHL: 1718' FWL, 159' FSL, SE/4 SW/4, Sec. 17, T19S, R1E, Sanpete County, UT  
 BHL: 660' FSL, 1830' FWL, SE/4 SW/4, Sec. 17, T19S, R1E, Sanpete County, UT

 Wolverine Lease



	<p><b>WOLVERINE GAS &amp; OIL</b> Company of Utah, LLC        (Operator)  <i>Energy Exploration in Partnership with the Environment</i></p> <p>ONE RIVERFRONT PLAZA        55 CAMPAU, N.W.        GRAND RAPIDS, MI 49503-2616        (616) 458-1150</p>
<p>Directional Drilling Application Plat (R649-3-11)</p>	
<p>Date: 3/3/2009</p>	<p>Author: Mark Lutz        Filename: Document in Cedar Ridge Directional Drilling App Plat.gmp</p>

API Number: 4303950001

Well Name: Cedar Ridge 17-1

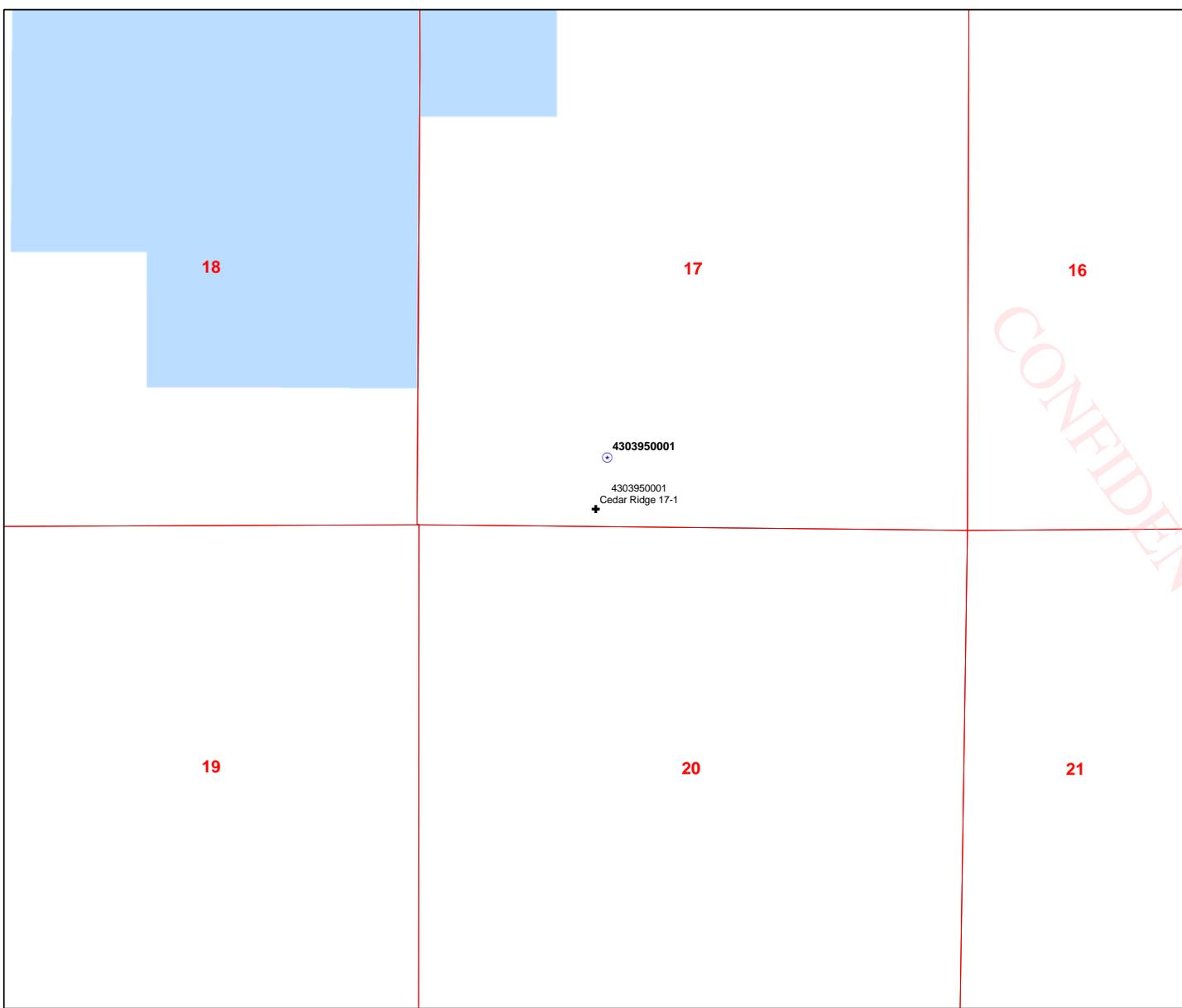
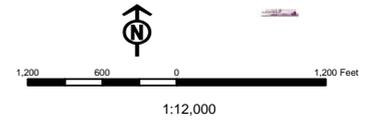
Township 19.0 S Range 01.0 E Section 17

Meridian: SLBM

Operator: WOLVERINE OPERATING COMPANY OF UTAH, LLC

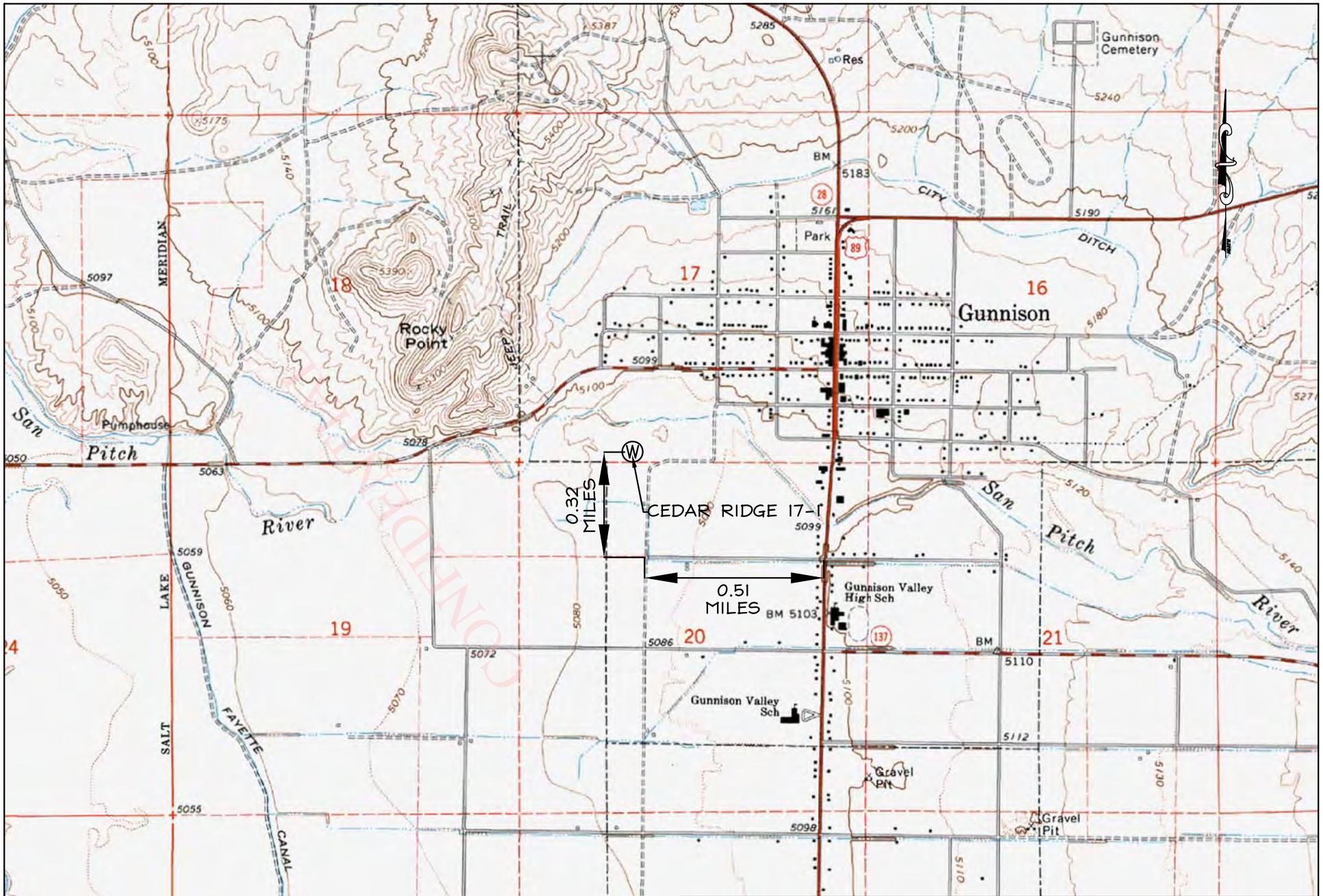
Map Prepared:  
Map Produced by Diana Mason

- |               |                           |
|---------------|---------------------------|
| <b>Units</b>  | <b>Wells Query Events</b> |
| <b>STATUS</b> | <-all other values->      |
| ACTIVE        | <Null>                    |
| EXPLORATORY   | APD                       |
| GAS STORAGE   | DRL                       |
| NF PP OIL     | GI                        |
| NF SECONDARY  | GS                        |
| PI OIL        | LA                        |
| PP GAS        | NEW                       |
| PP GEOTHERML  | OPS                       |
| PP OIL        | PA                        |
| SECONDARY     | PGW                       |
| TERMINATED    | POW                       |
| <b>Fields</b> | RET                       |
| <b>STATUS</b> | SGW                       |
| ACTIVE        | SOW                       |
| COMBINED      | TA                        |
| Sections      | TW                        |
|               | WD                        |
|               | WI                        |
|               | WS                        |



CONFIDENTIAL

'APIWellNo:43039500010000'



Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-896-8635  
Fax: 435-896-0200



CEDAR RIDGE 17-1

WOLVERINE OPERATING COMPANY OF UTAH, LLC.

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-006S	1" = 2000'	08/28/2009	0906-006S	COVER
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	A.S.A.		

WOLVERINE OPERATING COMPANY OF UTAH, LLC.  
 CEDAR RIDGE 17-1  
 SECTION 17, T.19 S., R.1 E., S.L.B. # M.

ELEV. UNGRADED GROUND AT WELL = 5090.93  
 ELEV. GRADED GROUND AT WELL = 5090.00

APPROXIMATE YARDAGE

(6") TOPSOIL STRIPPING = 3,104 CU. YDS.  
 REMAINING LOCATION = 7,960 CU. YDS.  
 TOTAL CUT = 11,064 CU. YDS.  
 TOTAL FILL = 687 CU. YDS.

\*FILL IS UNADJUSTED

TOTAL PIT CAP. WITH 2' FREEBOARD = 33,989 bbls  
 TOTAL PIT VOLUME = 7,068 CU. YDS.

DISTURBANCE AREAS:

PAD AREA = 5.28 ACRES

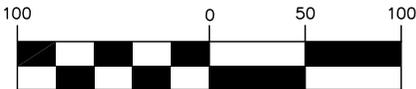
FIELD FENCE

TOTAL LINEAR FEET = 1932'  
 GATES = 2

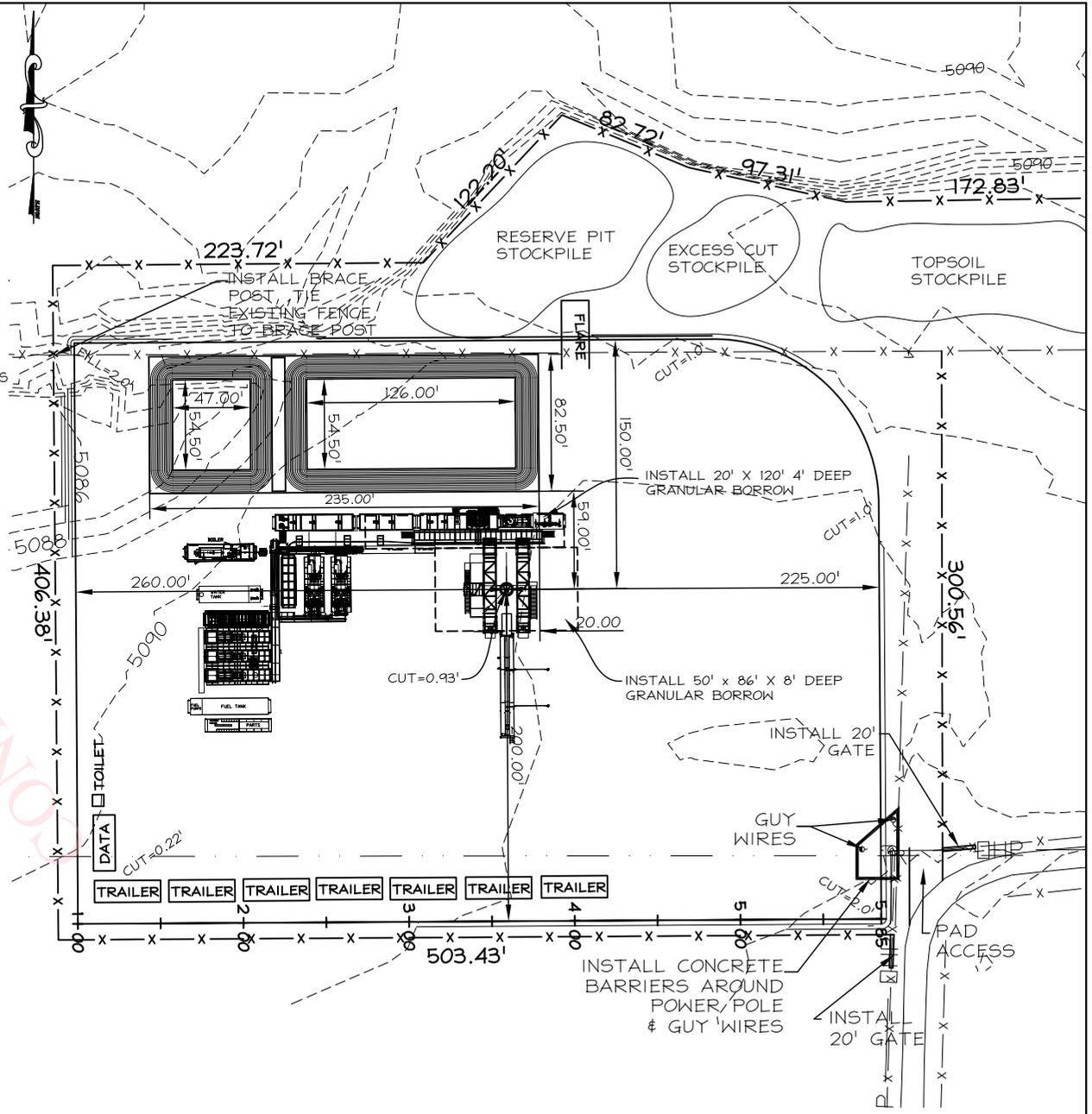
**LEGEND**

- — — SECTION LINE
- 5090 — MAJOR CONTOUR PRO
- - - 5090 - - - MAJOR CONTOUR EG
- x - x - x - PROPOSED FENCE
- x - x - x - EXISTING FENCE
- □ HP — OVERHEAD POWER LINE

**GRAPHIC SCALE**



( IN FEET )  
 1 inch = 100 ft.



Savage Surveying, Inc.

1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-896-8635  
 Fax: 435-896-0200



CEDAR RIDGE 17-1

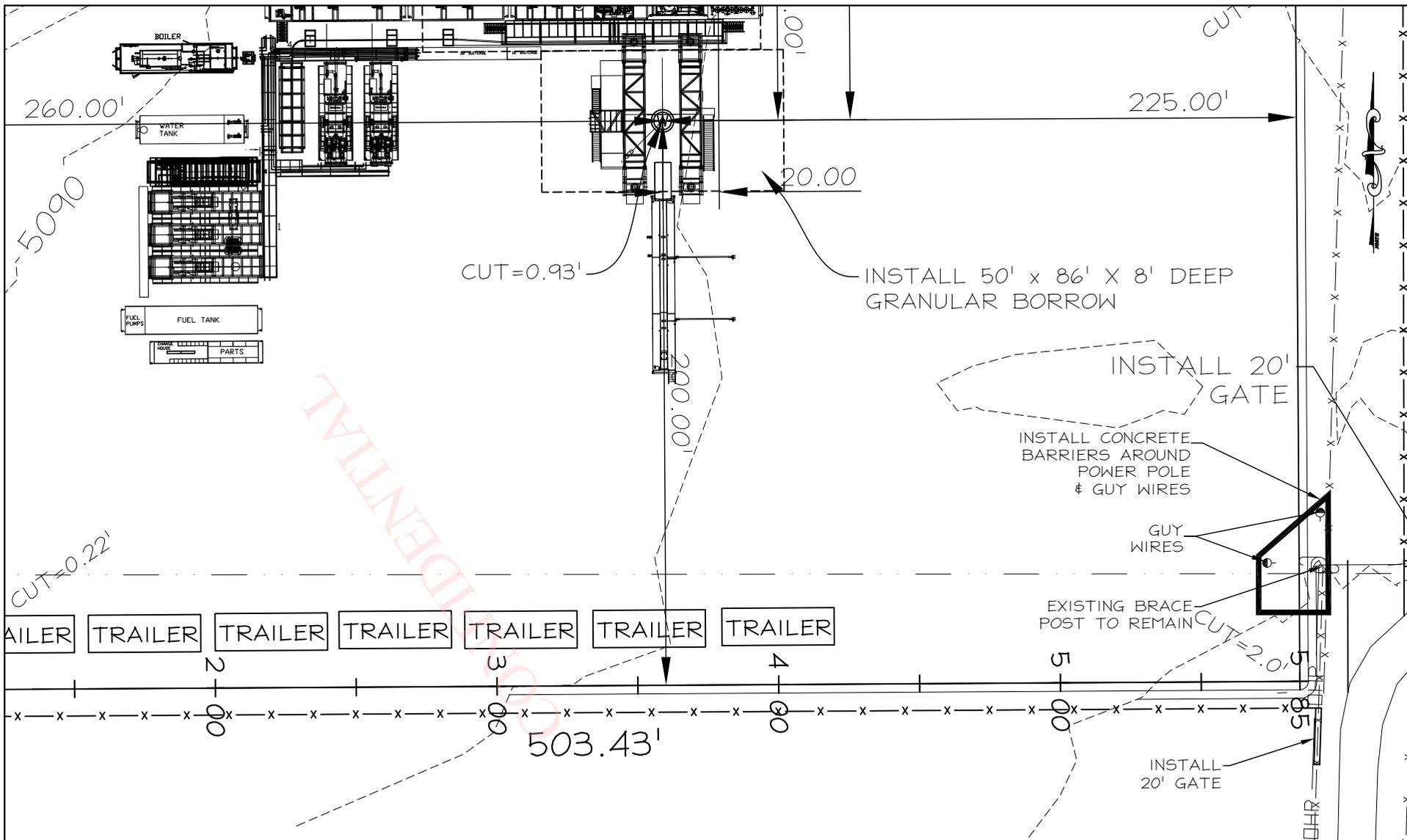
WOLVERINE OPERATING COMPANY OF UTAH, LLC.

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-0065	1" = 100'	08/28/2009	0906-0065	1 OF 7
---	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: A.S.A.		

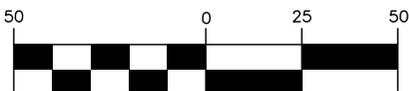
APIWellNo:43039500010000

CONFIDENTIAL

'APIWElNo:43039500010000'



### GRAPHIC SCALE



( IN FEET )  
 1 inch = 50 ft.

### Savage Surveying, Inc.

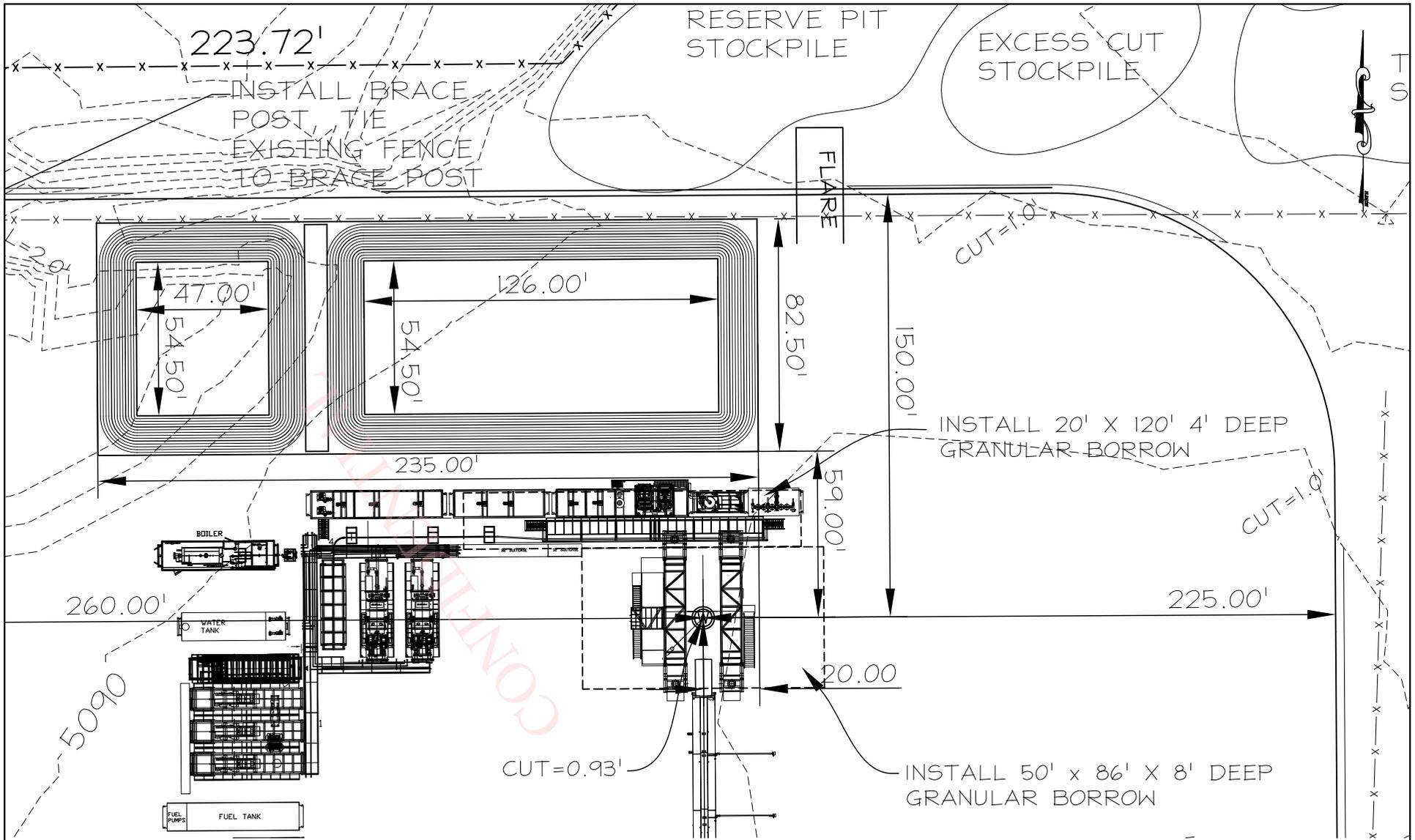
1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-896-8635  
 Fax: 435-896-0220



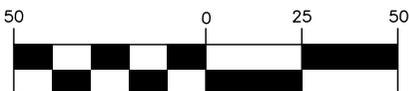
### CEDAR RIDGE 17-1

### WOLVERINE OPERATING COMPANY OF UTAH, LLC.

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-006S	1" = 50'	08/28/2009	0906-006S	2 OF 7
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	A.S.A.		



GRAPHIC SCALE



( IN FEET )  
1 inch = 50 ft.

Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-896-8635  
Fax: 435-896-0200



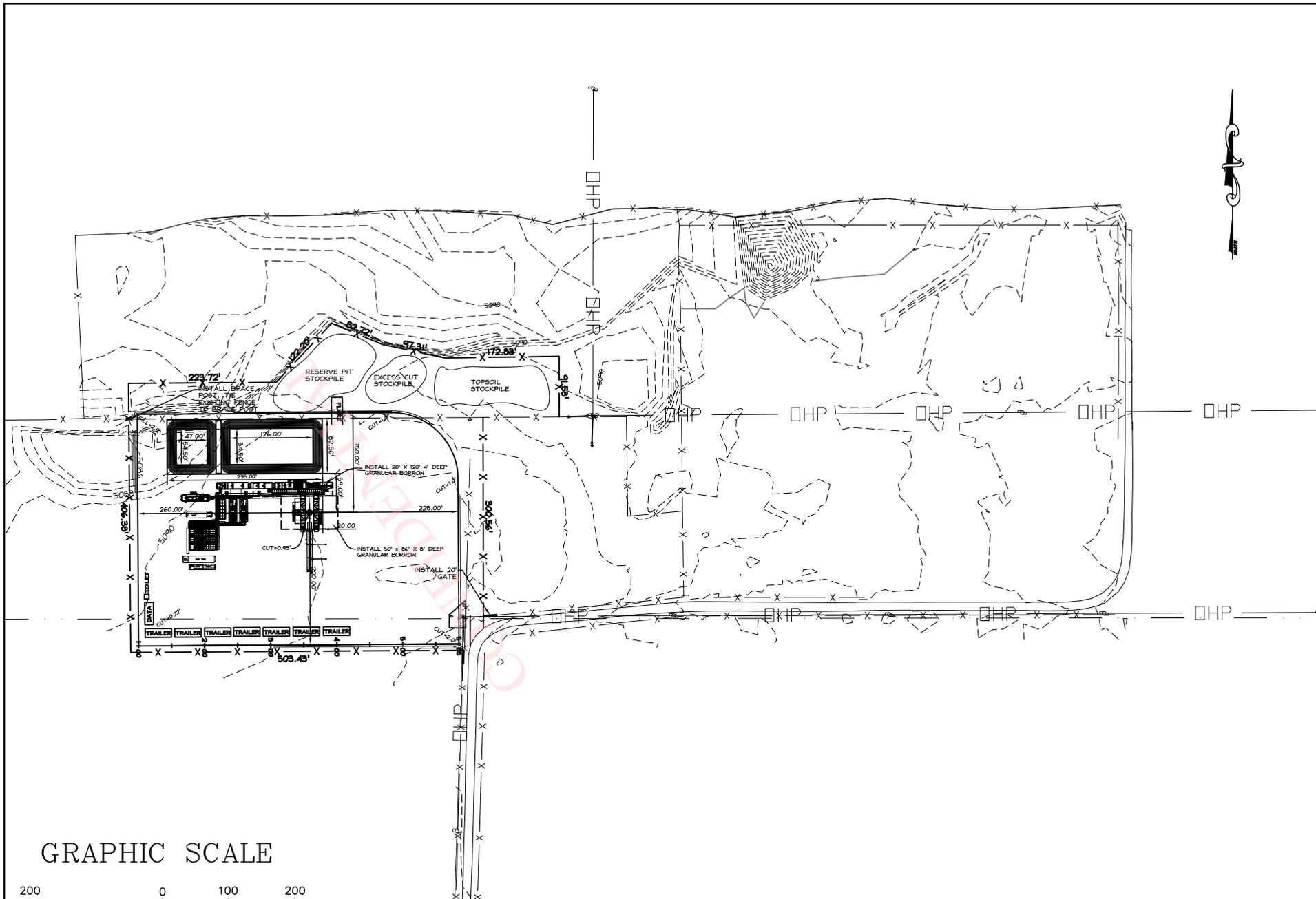
CEDAR RIDGE 17-1

WOLVERINE OPERATION COMPANY OF UTAH, LLC.

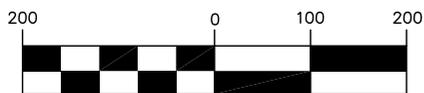
DESIGN BY:	SURVEY BY:	CHECKED BY:	DATE	PROJECT NUMBER	SHEET NUMBER
---	E.G.	R.W.S.	08/28/2009	0906-0065	3 OF 7
			A.S.A.		

APIWellNo:43039500010000'

'APIWellNo:43039500010000'



### GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.

### Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-896-8635  
Fax: 435-896-0200

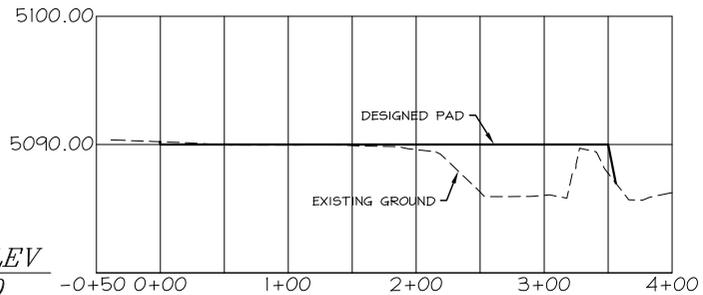


### CEDAR RIDGE 17-1

### WOLVERINE OPERATING COMPANY OF UTAH, LLC.

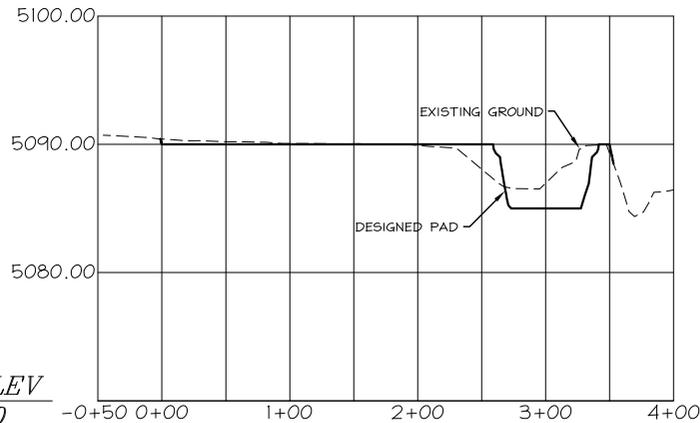
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-006S	1" = 200'	08/28/2009	0906-006S	4 OF 7
	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: A.S.A.		

'APIWellNo:43039500010000'



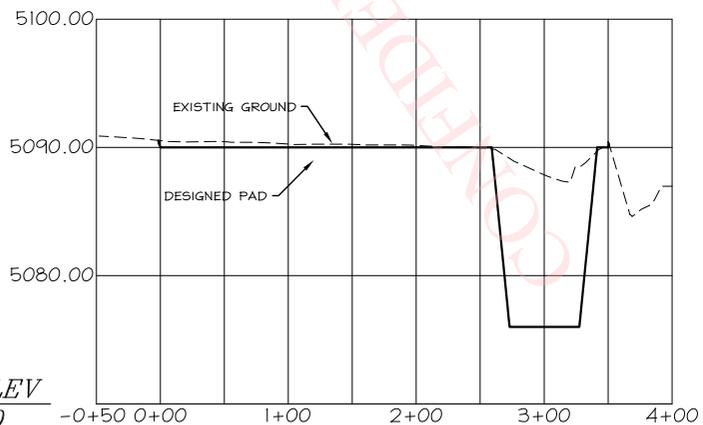
DATUM ELEV  
5080.00

GROUP PAD SECTIONS  
SECTION 1+00



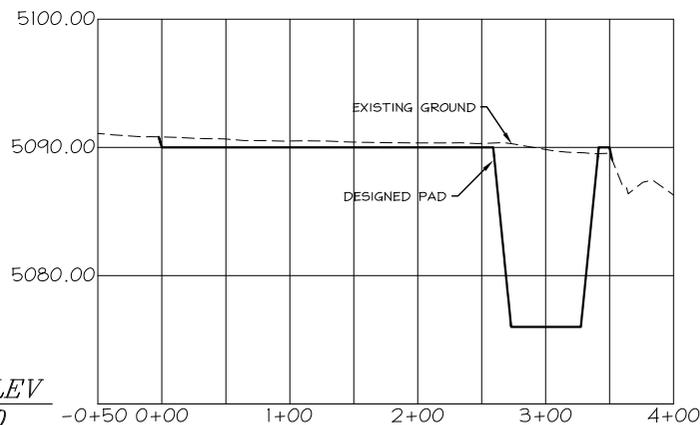
DATUM ELEV  
5070.00

GROUP PAD SECTIONS  
SECTION 1+50



DATUM ELEV  
5070.00

GROUP PAD SECTIONS  
SECTION 2+00



DATUM ELEV  
5070.00

GROUP PAD SECTIONS  
SECTION 2+50

Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-896-8635  
Fax: 435-896-0200

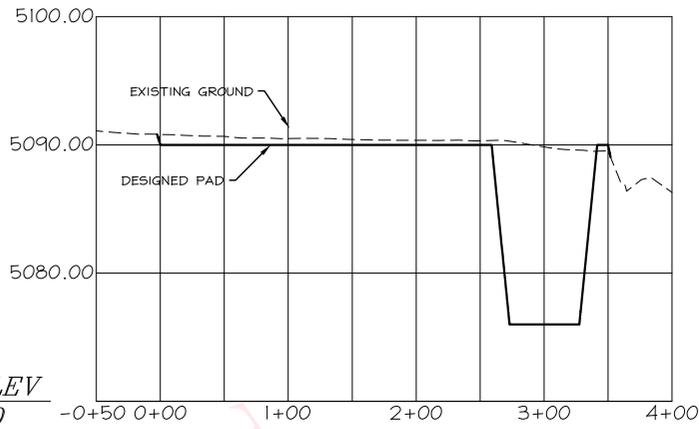


CEDAR RIDGE 17-1

WOLVERINE OPERATING COMPANY OF UTAH, LLC.

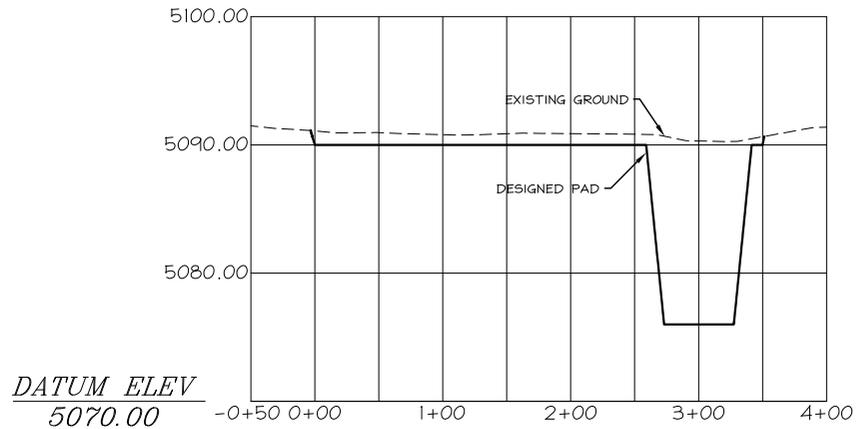
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-006S	N.T.S.	08/28/2009	0906-006S	5 OF 7
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	A.S.A.		

'APIWellNo:43039500010000'



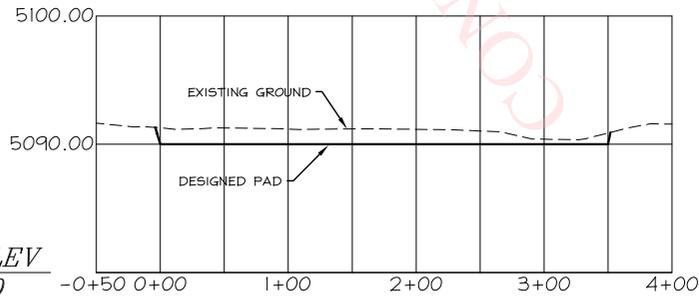
DATUM ELEV  
5070.00

GROUP PAD SECTIONS  
SECTION 3+00



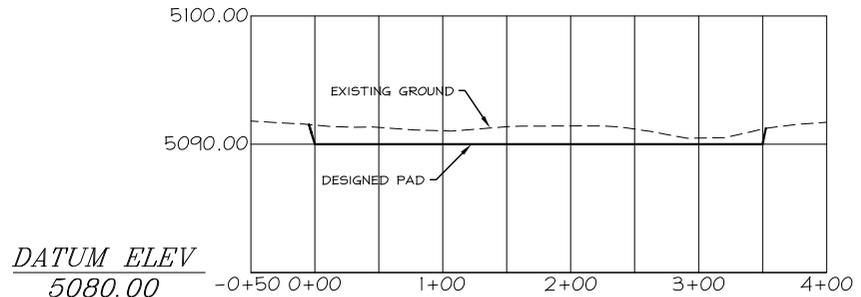
DATUM ELEV  
5070.00

GROUP PAD SECTIONS  
SECTION 3+50



DATUM ELEV  
5080.00

GROUP PAD SECTIONS  
SECTION 4+00



DATUM ELEV  
5080.00

GROUP PAD SECTIONS  
SECTION 4+50

Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-896-8635  
Fax: 435-896-0200

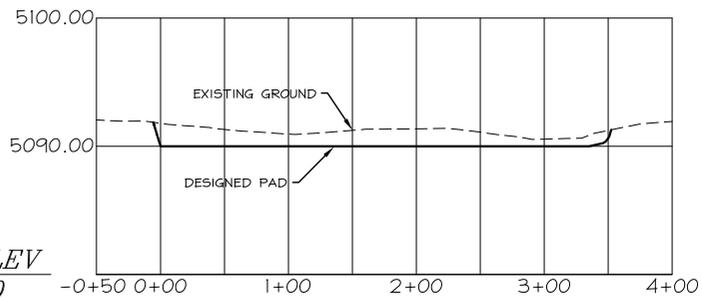


CEDAR RIDGE 17-1

WOLVERINE OPERATING COMPANY OF UTAH, LLC.

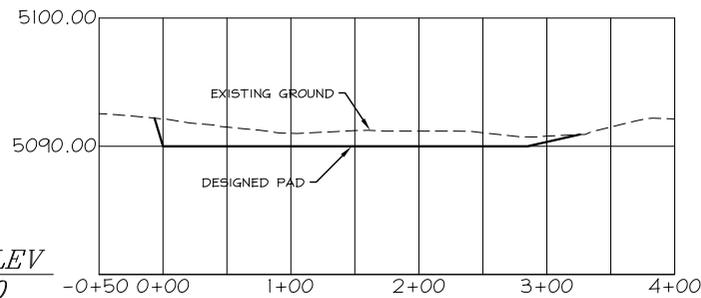
DESIGN BY:	SURVEY BY:	CHECKED BY:	DATE	PROJECT NUMBER	SHEET NUMBER
---	E.G.	R.W.S.	08/28/2009 N.T.S.	0906-006S	6 OF 7

'APIWellNo:43039500010000'



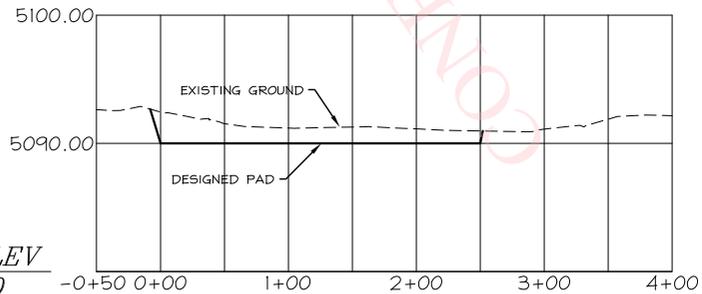
DATUM ELEV  
5080.00

GROUP PAD SECTIONS  
SECTION 5+00



DATUM ELEV  
5080.00

GROUP PAD SECTIONS  
SECTION 5+50



DATUM ELEV  
5080.00

GROUP PAD SECTIONS  
SECTION 5+85

CONFIDENTIAL

Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-896-8635  
Fax: 435-896-0220



CEDAR RIDGE 17-1

WOLVERINE OPERATING COMPANY OF UTAH, LLC.

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-006S	N.T.S.	08/28/2009	0906-006S	7 OF 7
	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: A.S.A.		

1844



Office of the Governor  
PUBLIC LANDS POLICY COORDINATION

JOHN HARJA  
Director

State of Utah

GARY R. HERBERT  
Governor

GREG BELL  
Lieutenant Governor

September 14, 2009

Gil Hunt  
Director  
Utah Department of Natural Resources  
Division of Oil, Gas and Mining  
1594 West North Temple Suite 1210  
Salt Lake City, UT 84114-5801

CONFIDENTIAL

Subject: Application for Permit to Drill  
RDCC Project No. 10749

Dear Mr. Hunt:

The State of Utah, through the Public Lands Policy Coordination Office (PLPCO), has reviewed this project. PLPCO makes use of the Resource Development Coordinating Committee (RDCC) for state agency review of activities affecting state and public lands throughout Utah. The RDCC includes representatives from the state agencies that are generally involved or impacted by public lands management. Utah Code (63J-4-501 *et seq.*) instructs the RDCC to coordinate the review of technical and policy actions that may affect the physical resources of the state and facilitate the exchange of information on those actions among federal, state, and local government agencies. The Division of Air Quality provides the following comments:

**Division of Air Quality**

The proposed well drilling project may require a permit, known as an Approval Order, from the Executive Secretary of the Air Quality Board. If any compressor or pump stations are constructed at the site a permit application, known as a Notice of Intent (NOI), should be submitted to the Executive Secretary at the Utah Division of Air Quality at 150 N. 1950 West, Salt Lake City, Utah, 84116 for review according to R307-401: Permit: Notice of Intent and Approval Order, of the Utah Air Quality Rules. A copy of the rules may be found at [www.rules.utah.gov/publicat/code/r307/r307.htm](http://www.rules.utah.gov/publicat/code/r307/r307.htm).

**RECEIVED**

**SEP 15 2009**

**DIV. OF OIL, GAS & MINING**

The State of Utah appreciates the opportunity to review this proposal and we look forward to working with you on future projects. Please direct any other written questions regarding this correspondence to the Resource Development Coordinating Committee at the address below, or call Judy Edwards at (801) 537-9023.

Sincerely,



John Harja  
Director

cc: Kimberly Kreykes, Division of Air Quality

CONFIDENTIAL



[Search all of Utah.gov »](#)

## Utah Division of Water Rights



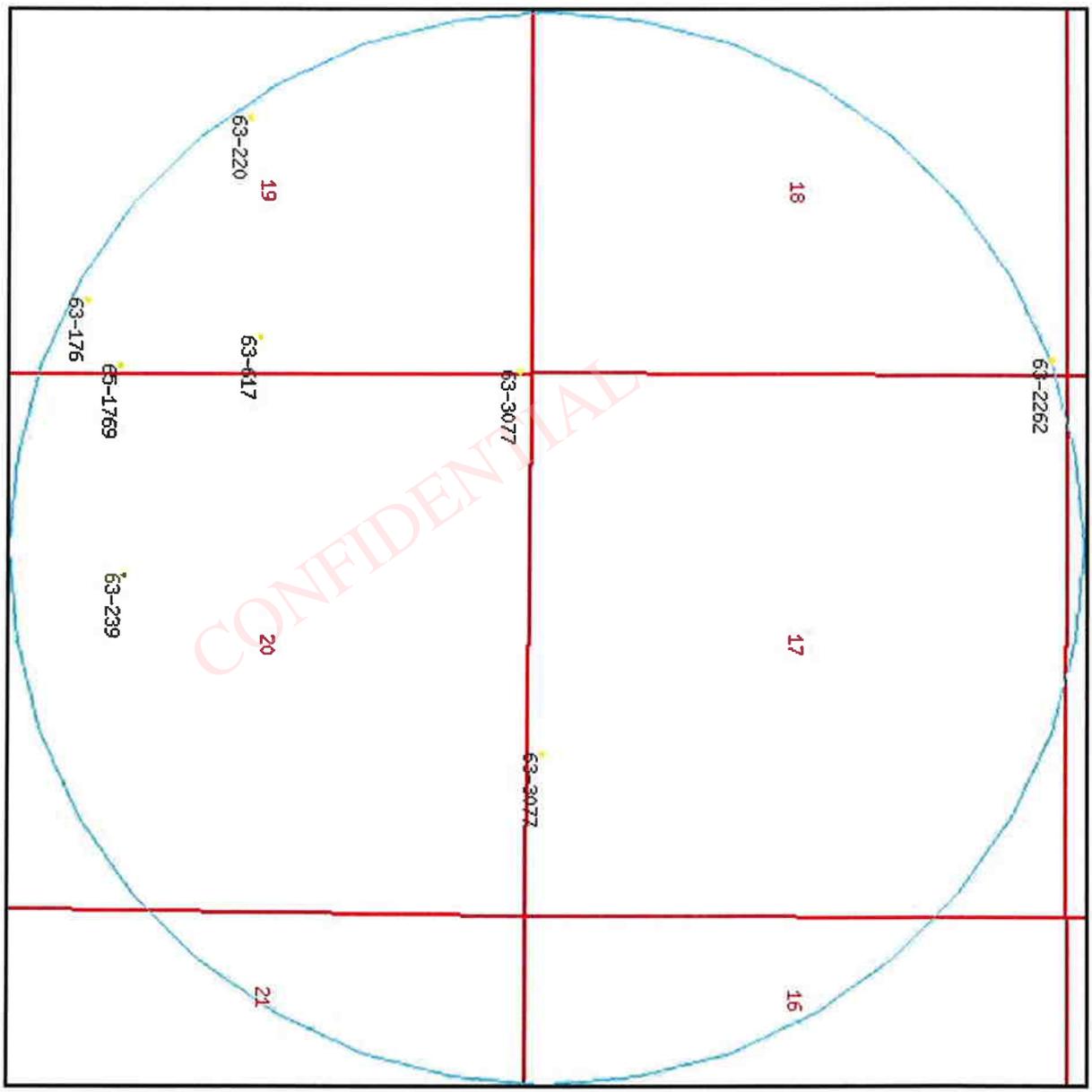
### Output Listing

Version: 2009.05.06.00

Rundate: 09/23/2009 03:06 PM

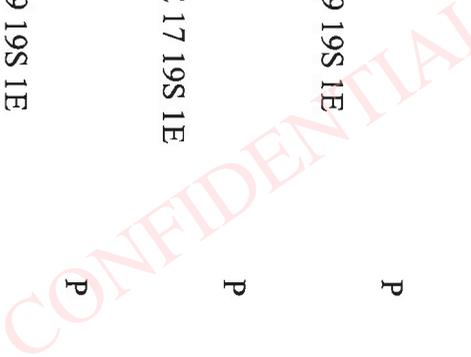
Radius search of 5280 feet from a point N159 E1718 from the SW corner, section 17, Township 19S, Range 1E, SL b&m  
Criteria:wrtypes=W,C,E podtypes=S,U,Sp status=U,A,P usetypes=all

CONFIDENTIAL



**Water Rights**

WR Number	Diversion Type/Location	Well Log	Status	Priority	Uses	CFS	ACFT	Owner Name
<u>63-176</u>	Underground N992 W739 SE 19 19S 1E SL		P	19490524 S	0.015	0.000		IRVEN L. HENRIE GUNNISON UT 84634
<u>63-220</u>	Underground S75 W2540 E4 19 19S 1E SL		P	19510414 S	0.015	0.000		J. B. GRIBBLE GUNNISON UT 84634
<u>63-2262</u>	Underground S150 W150 NE 18 19S 1E SL		A	19780720 DIS	0.015	0.000		KIRBY E. PICKETT P.O.BOX 813
<u>63-239</u>	Underground N1325 W660 S4 20 19S 1E SL		P	19511213 S	0.015	0.000		EARL PICKETT GUNNISON UT 84634
<u>63-3072</u>	Surface S100 W40 NE 19 19S 1E SL		P	1864	I	1.250	0.000	GUNNISON IRRIGATION COMPANY GUNNISON UT
<u>63-3072</u>	Surface N180 W1610 SE 17 19S 1E SL		P	1864	I	1.250	0.000	GUNNISON IRRIGATION COMPANY GUNNISON UT
<u>63-3077</u>	Surface S100 W40 NE 19 19S 1E SL		P	1864	I	1.250	0.000	GUNNISON IRRIGATION COMPANY GUNNISON UT
<u>63-3077</u>	Surface N180 W1610 SE 17 19S 1E SL		P	1864	I	1.250	0.000	GUNNISON IRRIGATION COMPANY GUNNISON UT
<u>63-617</u>	Underground N2665 E4910 SW 19 19S 1E SL		P	19320000 DIS	0.067	0.000		GEORGE W. PICKETT GUNNISON UT 84634
<u>65-1769</u>	Underground		P	19410405 S	0.015	0.000		H. M. GRIBBLE



N1320 W99 SE 19 19S 1E  
SL

GUNNISON UT 84634

Utah Division of Water Rights | 1594 West North Temple Suite 220, P.O. Box 146300, Salt Lake City, Utah 84114-6300 | 801-538-7240  
[Natural Resources](#) | [Contact](#) | [Disclaimer](#) | [Privacy Policy](#) | [Accessibility Policy](#)

CONFIDENTIAL

Well Name	WOLVERINE OPERATING COMPANY OF UTAH, LLC Cedar Ridge 17-1 4:			
String	Cond	Surf	Int	Prod
Casing Size(")	24.000	16.000	10.750	5.500
Setting Depth (TVD)	350	2100	4000	13547
Previous Shoe Setting Depth (TVD)	0	350	2100	4000
Max Mud Weight (ppg)	9.2	9.2	9.2	10.5
BOPE Proposed (psi)	0	500	500	5000
Casing Internal Yield (psi)	2550	2980	3130	8990
Operators Max Anticipated Pressure (psi)	5940			8.4

Calculations	Cond String	24.000	"
Max BHP (psi)	$.052 * \text{Setting Depth} * \text{MW} =$	167	
			<b>BOPE Adequate For Drilling And Setting Casing at Depth?</b>
MASP (Gas) (psi)	$\text{Max BHP} - (0.12 * \text{Setting Depth}) =$	125	NO diverter head
MASP (Gas/Mud) (psi)	$\text{Max BHP} - (0.22 * \text{Setting Depth}) =$	90	NO
			<b>*Can Full Expected Pressure Be Held At Previous Shoe?</b>
Pressure At Previous Shoe	$\text{Max BHP} - .22 * (\text{Setting Depth} - \text{Previous Shoe Depth}) =$	90	NO OK
Required Casing/BOPE Test Pressure=		350	psi
*Max Pressure Allowed @ Previous Casing Shoe=		0	psi *Assumes 1psi/ft frac gradient

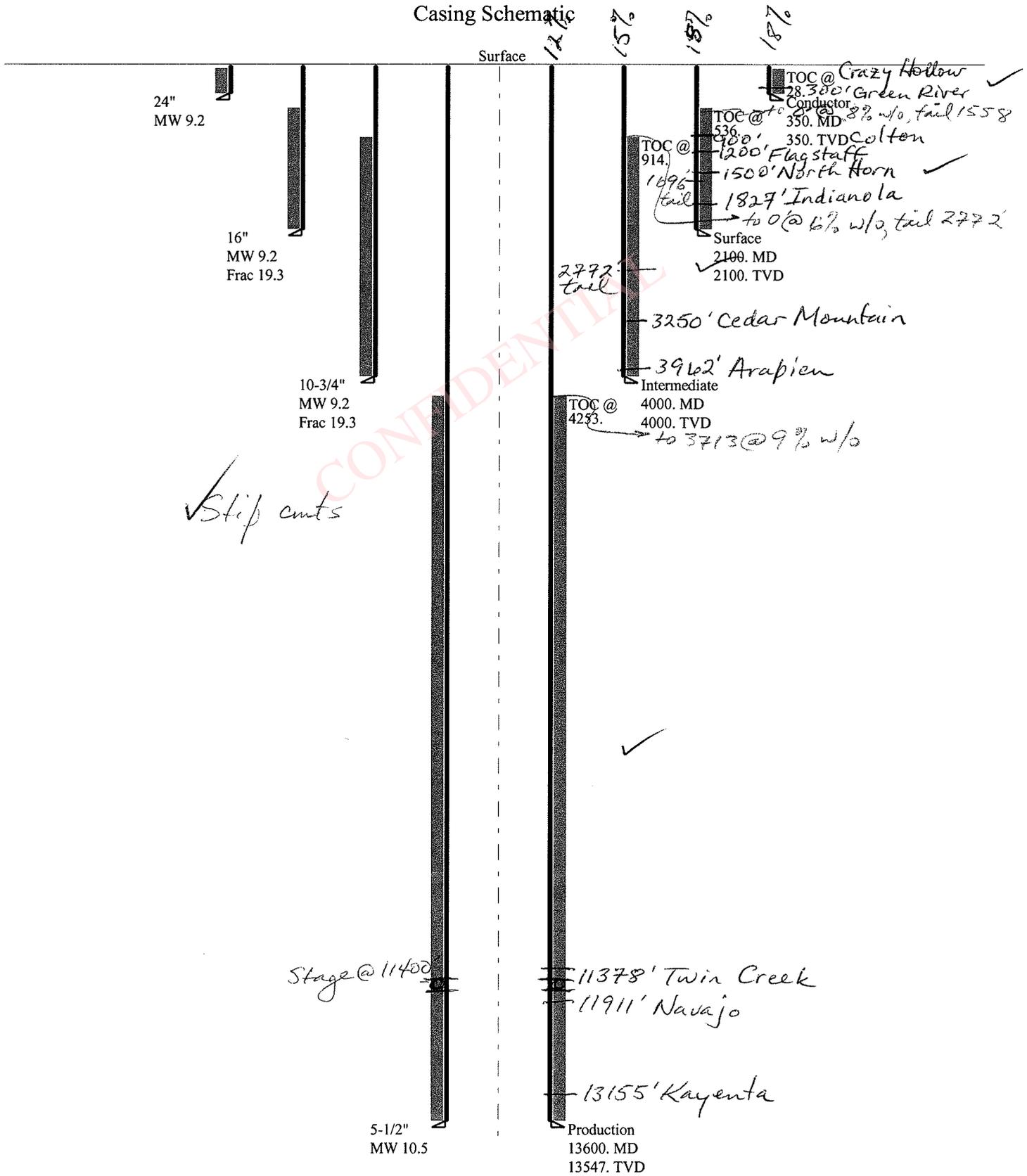
Calculations	Surf String	16.000	"
Max BHP (psi)	$.052 * \text{Setting Depth} * \text{MW} =$	1005	
			<b>BOPE Adequate For Drilling And Setting Casing at Depth?</b>
MASP (Gas) (psi)	$\text{Max BHP} - (0.12 * \text{Setting Depth}) =$	753	NO diverter head
MASP (Gas/Mud) (psi)	$\text{Max BHP} - (0.22 * \text{Setting Depth}) =$	543	NO Reasonable depth, no expected pressure
			<b>*Can Full Expected Pressure Be Held At Previous Shoe?</b>
Pressure At Previous Shoe	$\text{Max BHP} - .22 * (\text{Setting Depth} - \text{Previous Shoe Depth}) =$	620	NO Reasonable
Required Casing/BOPE Test Pressure=		500	psi
*Max Pressure Allowed @ Previous Casing Shoe=		350	psi *Assumes 1psi/ft frac gradient

Calculations	Int String	10.750	"
Max BHP (psi)	$.052 * \text{Setting Depth} * \text{MW} =$	1914	
			<b>BOPE Adequate For Drilling And Setting Casing at Depth?</b>
MASP (Gas) (psi)	$\text{Max BHP} - (0.12 * \text{Setting Depth}) =$	1434	NO diverter head
MASP (Gas/Mud) (psi)	$\text{Max BHP} - (0.22 * \text{Setting Depth}) =$	1034	NO Reasonable depth, no expected pressure
			<b>*Can Full Expected Pressure Be Held At Previous Shoe?</b>
Pressure At Previous Shoe	$\text{Max BHP} - .22 * (\text{Setting Depth} - \text{Previous Shoe Depth}) =$	1496	YES OK
Required Casing/BOPE Test Pressure=		2191	psi
*Max Pressure Allowed @ Previous Casing Shoe=		2100	psi *Assumes 1psi/ft frac gradient

Calculations	Prod String	5.500	"
Max BHP (psi)	$.052 * \text{Setting Depth} * \text{MW} =$	7397	
			<b>BOPE Adequate For Drilling And Setting Casing at Depth?</b>
MASP (Gas) (psi)	$\text{Max BHP} - (0.12 * \text{Setting Depth}) =$	5771	NO
MASP (Gas/Mud) (psi)	$\text{Max BHP} - (0.22 * \text{Setting Depth}) =$	4417	YES OK
			<b>*Can Full Expected Pressure Be Held At Previous Shoe?</b>
Pressure At Previous Shoe	$\text{Max BHP} - .22 * (\text{Setting Depth} - \text{Previous Shoe Depth}) =$	5297	NO Expect 8.4 ppg equivalent pore pressure per drilling history in over.
Required Casing/BOPE Test Pressure=		5000	psi
*Max Pressure Allowed @ Previous Casing Shoe=		3130	psi *Assumes 1psi/ft frac gradient

# 43039500010000 Cedar Ridge 17-1

## Casing Schematic



Well name:	<b>43039500010000 Cedar Ridge 17-1</b>		
Operator:	<b>WOLVERINE OPERATING COMPANY OF UTAH, LLC</b>		
String type:	Conductor	Project ID:	43-039-50001
Location:	SANPETE COUNTY		

**Design parameters:**

**Collapse**

Mud weight: 9.200 ppg  
 Design is based on evacuated pipe.

**Minimum design factors:**

**Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No  
 Surface temperature: 74 °F  
 Bottom hole temperature: 79 °F  
 Temperature gradient: 1.40 °F/100ft  
 Minimum section length: 100 ft  
 Cement top: 28 ft

**Burst**

Max anticipated surface pressure: 125 psi  
 Internal gradient: 0.120 psi/ft  
 Calculated BHP 167 psi

No backup mud specified.

**Tension:**

8 Round STC: 1.80 (J)  
 8 Round LTC: 1.70 (J)  
 Buttress: 1.60 (J)  
 Premium: 1.50 (J)  
 Body yield: 1.50 (B)

**Non-directional string.**

Tension is based on air weight.  
 Neutral point: 302 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost (\$)
1	350	24	162.00	K-55	Big Omega	350	350	22.433	34650

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
1	167	920	5.500	167	2550	15.24	56.7	2315	40.83 J

Prepared by: Helen Sadik-Macdonald  
 Div of Oil, Gas & Mining

Phone: 801 538-5357  
 FAX: 801-359-3940

Date: September 28, 2009  
 Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 350 ft, a mud weight of 9.2 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Well name:	<b>43039500010000 Cedar Ridge 17-1</b>		
Operator:	<b>WOLVERINE OPERATING COMPANY OF UTAH, LLC</b>		
String type:	Surface	Project ID:	43-039-50001
Location:	SANPETE COUNTY		

**Design parameters:**

**Collapse**

Mud weight: 9.200 ppg  
Design is based on evacuated pipe.

**Minimum design factors:**

**Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No  
Surface temperature: 74 °F  
Bottom hole temperature: 103 °F  
Temperature gradient: 1.40 °F/100ft  
Minimum section length: 100 ft  
Cement top: 536 ft

**Burst**

Max anticipated surface pressure: 1,432 psi  
Internal gradient: 0.120 psi/ft  
Calculated BHP: 1,684 psi

No backup mud specified.

**Tension:**

8 Round STC: 1.80 (J)  
8 Round LTC: 1.70 (J)  
Buttress: 1.60 (J)  
Premium: 1.50 (J)  
Body yield: 1.50 (B)

Tension is based on air weight.  
Neutral point: 1,812 ft

**Non-directional string.**

**Re subsequent strings:**

Next setting depth: 4,000 ft  
Next mud weight: 9.200 ppg  
Next setting BHP: 1,912 psi  
Fracture mud wt: 19.250 ppg  
Fracture depth: 2,100 ft  
Injection pressure: 2,100 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost (\$)
1	2100	16	84.00	K-55	ST&C	2100	2100	14.885	46999
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
1	1004	1410	1.405	1684	2980	1.77	176.4	865	4.90 J

Prepared by: Helen Sadik-Macdonald  
Div of Oil, Gas & Mining

Phone: 801 538-5357  
FAX: 801-359-3940

Date: September 29, 2009  
Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 2100 ft, a mud weight of 9.2 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Well name:	<b>43039500010000 Cedar Ridge 17-1</b>	
Operator:	<b>WOLVERINE OPERATING COMPANY OF UTAH, LLC</b>	
String type:	Intermediate	Project ID: 43-039-50001
Location:	SANPETE COUNTY	

**Design parameters:**

**Collapse**

Mud weight: 8.330 ppg  
Internal fluid density: 2.330 ppg

**Minimum design factors:**

**Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No  
Surface temperature: 74 °F  
Bottom hole temperature: 130 °F  
Temperature gradient: 1.40 °F/100ft  
Minimum section length: 1,000 ft

Cement top: 915 ft

**Burst**

Max anticipated surface pressure: 2,237 psi  
Internal gradient: 0.220 psi/ft  
Calculated BHP: 3,117 psi

Annular backup: 2.33 ppg

**Tension:**

8 Round STC: 1.80 (J)  
8 Round LTC: 1.80 (J)  
Buttress: 1.60 (J)  
Premium: 1.50 (J)  
Body yield: 1.60 (B)

Tension is based on air weight.  
Neutral point: 3,511 ft

**Non-directional string.**

**Re subsequent strings:**

Next setting depth: 13,494 ft  
Next mud weight: 10.500 ppg  
Next setting BHP: 7,360 psi  
Fracture mud wt: 15.000 ppg  
Fracture depth: 4,000 ft  
Injection pressure: 3,117 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost (\$)
1	4000	10.75	40.50	J-55	ST&C	4000	4000	9.925	34742

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
1	1247	1580	1.267	2633	3130	1.19	162	420	2.59 J

Prepared by: Helen Sadik-Macdonald  
Div of Oil, Gas & Mining

Phone: 801 538-5357  
FAX: 801-359-3940

Date: September 29, 2009  
Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 4000 ft, a mud weight of 8.33 ppg. An internal gradient of .121 psi/ft was used for collapse from TD. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Well name:	<b>43039500010000 Cedar Ridge 17-1</b>	
Operator:	<b>WOLVERINE OPERATING COMPANY OF UTAH, LLC</b>	
String type:	Production	Project ID: 43-039-50001
Location:	SANPETE COUNTY	

**Design parameters:**

**Collapse**

Mud weight: 8.330 ppg  
Design is based on evacuated pipe.

**Minimum design factors:**

**Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No  
Surface temperature: 74 °F  
Bottom hole temperature: 264 °F  
Temperature gradient: 1.40 °F/100ft  
Minimum section length: 100 ft

Cement top: 4,253 ft

**Burst**

Max anticipated surface pressure: 2,882 psi  
Internal gradient: 0.220 psi/ft  
Calculated BHP 5,862 psi

No backup mud specified.

**Tension:**

8 Round STC: 1.80 (J)  
8 Round LTC: 1.80 (J)  
Buttress: 1.60 (J)  
Premium: 1.50 (J)  
Body yield: 1.60 (B)

Tension is based on air weight.  
Neutral point: 12,001 ft

**Directional well information:**

Kick-off point 8360 ft  
Departure at shoe: 512 ft  
Maximum dogleg: 1.5 °/100ft  
Inclination at shoe: 0 °

Estimated cost: 114,921 (\$)

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost (\$)
3	6000	5.5	20.00	L-80	Buttress	6000	6000	4.653	47876
2	5500	5.5	23.00	P-110	LT&C	11447	11500	4.545	49041
1	2100	5.5	23.00	L-80	LT&C	13547	13600	4.545	18004

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
3	2596	7389	2.846	4202	8990	2.14	293.6	466.3	1.59 B
2	4953	14260	2.879	5400	13580	2.51	173.6	643	3.70 J
1	5862	11160	1.904	5862	9880	1.69	48.3	489	10.12 J

Prepared by: Helen Sadik-Macdonald  
Div of Oil, Gas & Mining

Phone: 801 538-5357  
FAX: 801-359-3940

Date: September 29, 2009  
Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 13547 ft, a mud weight of 8.33 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

# ON-SITE PREDRILL EVALUATION

## Utah Division of Oil, Gas and Mining

**Operator** WOLVERINE OPERATING COMPANY OF UTAH, LLC  
**Well Name** Cedar Ridge 17-1  
**API Number** 43039500010000      **APD No** 1844      **Field/Unit** WILDCAT  
**Location: 1/4,1/4**      SESW      **Sec** 17      **Tw** 19.0S      **Rng** 1.0E      159      FSL 1718      FWL  
**GPS Coord (UTM)** 428421 4333569      **Surface Owner** The Bobbie Sorenson Family Trust

**Participants**

Mark Jones (UDOGM), Charles Irons, Paul Spiering (Wolverine), Ryan Savage (Savage Surveying), Chris Schaugaard (Brown Brothers), Bobbie Sorenson, and Larry Childs (surface owners).

**Regional/Local Setting & Topography**

West end of Gunnison, within city limits. Just south of the San Pitch River. Approximately .5 miles west of Highway 89. Location is staked within an existing alfalfa field.

**Surface Use Plan**

**Current Surface Use**  
 Agricultural

<b>New Road Miles</b>	<b>Well Pad</b>	<b>Src Const Material</b>	<b>Surface Formation</b>
0	<b>Width</b> 350 <b>Length</b> 485	Onsite	

**Ancillary Facilities** N

**Waste Management Plan Adequate?**

**Environmental Parameters**

**Affected Floodplains and/or Wetlands** Y

San Pitch river runs west to east just north of proposed location. This drainage is live only part of the year generally between October 15 and June 1.

**Flora / Fauna**

alfalfa field.

**Soil Type and Characteristics**

Gravelly clay.

**Erosion Issues** N

**Sedimentation Issues** N

**Site Stability Issues** N

**Drainage Diverson Required?** N

**Berm Required?** N

**Erosion Sedimentation Control Required?** N

Paleo Survey Run? N Paleo Potential Observed? N Cultural Survey Run? N Cultural Resources? N

**Reserve Pit**

<b>Site-Specific Factors</b>	<b>Site Ranking</b>	
<b>Distance to Groundwater (feet)</b>	75 to 100	10
<b>Distance to Surface Water (feet)</b>	100 to 200	15
<b>Dist. Nearest Municipal Well (ft)</b>	>5280	0
<b>Distance to Other Wells (feet)</b>	>1320	0
<b>Native Soil Type</b>	High permeability	20
<b>Fluid Type</b>	TDS>5000 and	10
<b>Drill Cuttings</b>	Salt or Detrimental	10
<b>Annual Precipitation (inches)</b>	10 to 20	5
<b>Affected Populations</b>	>50	>50
<b>Presence Nearby Utility Conduits</b>	Present	15
	<b>Final Score</b>	95
		1 Sensitivity Level

**Characteristics / Requirements**

Dugout earthen pit (235x83x14).

**Closed Loop Mud Required? N Liner Required? Y Liner Thickness 12 Pit Underlayment Required? N**

**Other Observations / Comments**

There are actually two different landowners involved in the surface location of this well pad. Bobbie Sorenson and Larry Childs. Just a small sliver of the north side of the pad is on Larry Childs along with all of the topsoil storage and pit spoils. The majority of the pad is on Bobbie Sorenson. Wolverine has met with Gunnison City and the city has issued Wolverine a temporary use permit. Also the city will be selling water to Wolverine for drilling and construction of the well via a fire hydrant just down the road from the well site. There will be some fencing that has to come out and some gates moved, then the entire location will be fenced off. I gave Wolverine verbal permission to build the location prior to receiving a permit to drill if the landowners were to give their consent.

Mark Jones  
**Evaluator**

9/2/2009  
**Date / Time**

# Application for Permit to Drill Statement of Basis

10/1/2009

**Utah Division of Oil, Gas and Mining**

Page 1

<b>APD No</b>	1844	<b>API WellNo</b>	43039500010000	<b>Status</b>	LOCKED	<b>Well Type</b>	OW	<b>Surf Owner</b>	P	<b>CBM</b>	No
<b>Operator</b>	WOLVERINE OPERATING COMPANY OF UTAH, LLC				<b>Surface Owner-APD</b>	The Bobbie Sorenson Family Trust					
<b>Well Name</b>	Cedar Ridge 17-1				<b>Unit</b>						
<b>Field</b>	WILDCAT				<b>Type of Work</b>	DRILL					
<b>Location</b>	SESW 17 19S 1E S 159 FSL 1718 FWL				<b>GPS Coord (UTM)</b>	428417E 4333565N					

**Geologic Statement of Basis**

This location is situated at the southern extreme of the Gunnison Plateau and on the extreme western edge of the Colorado Plateau physiographic province in western central Utah. Some people have characterized this area as being in the Basin and Range - Colorado Plateau transition zone. It is otherwise characterized as being astride the Sevier Overthrust Belt. The location is on fee land within the city limits of Gunnison, Utah, and just south of the San Pitch river. A well at this location well spud into a soil developed on Quaternary/Tertiary Coalesced Alluvial Fan deposits most likely the Tertiary age Crazy Hollow Formation. Aquifers with significant volumes of high quality ground water are expected to be encountered in the Coalesced Fan deposits and in the permeable strata present below the Coalesced Alluvial Fan deposits. The hole will be drilled with a fresh water/gel mud system into the top of the Arapien Shale after which the mud will be converted to a salt mud system to handle the Arapien Shale evaporites. Any water encountered during drilling of the Arapien Shale or below is likely to be of poor quality. A Division of Water Rights publication notes that aquifers in close proximity to the Arapien Shale are also likely to contain ground water with elevated TDS levels. The proposed casing, cementing and mud programs should be sufficient to protect the high quality ground water expected in the upper part of the hole at this location. Six subsurface water rights have been filed within a mile of this location.

Chris Kierst  
**APD Evaluator**

9/22/2009  
**Date / Time**

**Surface Statement of Basis**

On-site evaluation conducted September 2, 2009. Present: Mark Jones (UDOGM), Charles Irons, Paul Spiering (Wolverine), Ryan Savage (Savage Surveying), Chris Schaugaard (Brown Brothers), Bobbie Sorenson, and Larry Childs (surface owners).

DOGM recommends that a 12 mil (minimum) synthetic liner be used to line the reserve pit. DOGM also recommends barricading the power pole and guy wires at the southeast corner of the pad to protect it from truck and equipment traffic during the construction, drilling, completion, and production phases of the well.

It is also recommended that the well pad be fenced off to keep livestock off the pad.

Mark Jones  
**Onsite Evaluator**

9/2/2009  
**Date / Time**

**Conditions of Approval / Application for Permit to Drill**

<b>Category</b>	<b>Condition</b>
Pits	A synthetic liner with a minimum thickness of 12 mils shall be properly installed and maintained in the reserve pit.
Surface	The power pole and guy wires in southeast corner will be barricaded off to adequately protect them from traffic.
Surface	The well pad shall be fenced upon completion of construction operations.

**WORKSHEET  
APPLICATION FOR PERMIT TO DRILL**

**APD RECEIVED:** 8/3/2009

**API NO. ASSIGNED:** 43039500010000

**WELL NAME:** Cedar Ridge 17-1

**OPERATOR:** WOLVERINE OPERATING COMPANY OF UTAH, LLC (N3035)

**PHONE NUMBER:** 435 896-1943

**CONTACT:** Charles Irons

**PROPOSED LOCATION:** SESW 17 190S 010E

**Permit Tech Review:**

**SURFACE:** 0159 FSL 1718 FWL

**Engineering Review:**

**BOTTOM:** 0660 FSL 1830 FWL

**Geology Review:**

**COUNTY:** SANPETE

**LATITUDE:** 39.15022

**LONGITUDE:** -111.82840

**UTM SURF EASTINGS:** 428417.00

**NORTHINGS:** 4333565.00

**FIELD NAME:** WILDCAT

**LEASE TYPE:** 4 - Fee

**LEASE NUMBER:** Patented

**PROPOSED PRODUCING FORMATION(S):** NAVAJO

**SURFACE OWNER:** 4 - Fee

**COALBED METHANE:** NO

**RECEIVED AND/OR REVIEWED:**

- PLAT**
- Bond:** STATE/FEE - B001849R12-22-05
- Potash**
- Oil Shale 190-5**
- Oil Shale 190-3**
- Oil Shale 190-13**
- Water Permit:** 63-3159
- RDCC Review:**
- Fee Surface Agreement**
- Intent to Commingle**

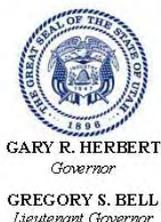
**Commingling Approved**

**LOCATION AND SITING:**

- R649-2-3.**
- Unit:**
- R649-3-2. General**
- R649-3-3. Exception**
- Drilling Unit**
- Board Cause No:** R649-3-3
- Effective Date:**
- Siting:**
- R649-3-11. Directional Drill**

**Comments:** Presite Completed

**Stipulations:**  
5 - Statement of Basis - bhill  
8 - Cement to Surface -- 2 strings - ddoucet  
12 - Cement Volume (3) - ddoucet  
15 - Directional - dmason  
23 - Spacing - dmason



# State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
*Executive Director*

Division of Oil, Gas and Mining

JOHN R. BAZA  
*Division Director*

## Permit To Drill

\*\*\*\*\*

**Well Name:** Cedar Ridge 17-1  
**API Well Number:** 43039500010000  
**Lease Number:** Patented  
**Surface Owner:** FEE (PRIVATE)  
**Approval Date:** 10/1/2009

### Issued to:

WOLVERINE OPERATING COMPANY OF UTAH, LLC, 1140 N. Centennial Park Dr., Richfield, UT 84701

### Authority:

Pursuant to Utah Code Ann. §40-6-1 et seq., and Utah Administrative Code R649-3-1 et seq., the Utah Division of Oil, Gas and Mining issues conditions of approval, and permit to drill the listed well. This permit is issued in accordance with the requirements of R649-3-3. The expected producing formation or pool is the NAVAJO Formation(s), completion into any other zones will require filing a Sundry Notice (Form 9). Completion and commingling of more than one pool will require approval in accordance with R649-3-22.

### Duration:

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date

### General:

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

### Conditions of Approval:

In accordance with Utah Admin. R.649-3-11, Directional Drilling, the operator shall submit a complete angular deviation and directional survey report to the Division within 30 days following completion of the well.

This proposed well is located in an area for which drilling units (well spacing patterns) have not been established through an order of the Board of Oil, Gas and Mining (the "Board"). In order to avoid the possibility of waste or injury to correlative rights, the operator is requested, once the well has been drilled, completed, and has produced, to analyze geological and engineering data generated therefrom, as well as any similar data from surrounding areas if available. As soon as is practicable after completion of its analysis, and if the analysis suggests an area larger than the quarter-quarter section upon which the well is located is being drained, the operator is requested to seek an appropriate order from the Board establishing drilling and spacing units in conformance with such analysis by filing a Request for Agency Action with the Board.

Cement volumes for 24" and 16" casing strings shall be determined from actual hole diameters in order to place cement from the pipe setting depths back to the surface.

Cement volume for the 5 1/2 production string shall be determined from actual hole diameter in order to place cement from the pipe setting depth back to 3500' MD as indicated in the submitted drilling plan.

Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis (copy attached).

**Additional Approvals:**

The operator is required to obtain approval from the Division of Oil, Gas and mining before performing any of the following actions during the drilling of this well:

- Any changes to the approved drilling plan – contact Dustin Doucet
- Significant plug back of the well – contact Dustin Doucet
- Plug and abandonment of the well – contact Dustin Doucet

**Notification Requirements:**

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- Within 24 hours following the spudding of the well – contact Carol Daniels  
OR  
submit an electronic sundry notice (pre-registration required) via the Utah Oil & Gas website at <https://oilgas.ogm.utah.gov>
- 24 hours prior to testing blowout prevention equipment - contact Dan Jarvis
- 24 hours prior to cementing or testing casing – contact Dan Jarvis
- Within 24 hours of making any emergency changes to the approved drilling program – contact Dustin Doucet
- 24 hours prior to commencing operations to plug and abandon the well – contact Dan Jarvis

**Contact Information:**

The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voicemail message if the person is not available to take the call):

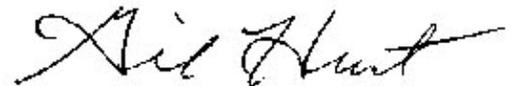
- Carol Daniels 801-538-5284 - office
- Dustin Doucet 801-538-5281 - office  
801-733-0983 - after office hours
- Dan Jarvis 801-538-5338 - office  
801-942-0871 - after office hours

**Reporting Requirements:**

All reports, forms and submittals as required by the Utah Oil and Gas Conservation General Rules will be promptly filed with the Division of Oil, Gas and Mining, including but not limited to:

- Entity Action Form (Form 6) – due within 5 days of spudding the well
- Monthly Status Report (Form 9) – due by 5th day of the following calendar month
- Requests to Change Plans (Form 9) – due prior to implementation
- Written Notice of Emergency Changes (Form 9) – due within 5 days
- Notice of Operations Suspension or Resumption (Form 9) – due prior to implementation
- Report of Water Encountered (Form 7) – due within 30 days after completion
- Well Completion Report (Form 8) – due within 30 days after completion or plugging

**Approved By:**



Gil Hunt  
Associate Director, Oil & Gas

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>  <b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>  <b>7. UNIT or CA AGREEMENT NAME:</b>
<b>1. TYPE OF WELL</b> Oil Well	<b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1
<b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC	<b>9. API NUMBER:</b> 43039500010000
<b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503	<b>PHONE NUMBER:</b> 616 458-1150 Ext
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0159 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S	<b>9. FIELD and POOL or WILDCAT:</b> WILDCAT  <b>COUNTY:</b> SANPETE  <b>STATE:</b> UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input checked="" type="checkbox"/> <b>SPUD REPORT</b> Date of Spud: 10/6/2009	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

**Accepted by the**  
**Utah Division of**  
**Oil, Gas and Mining**  
**FOR RECORD ONLY**  
 October 07, 2009

<b>NAME (PLEASE PRINT)</b> Paul Spiering	<b>PHONE NUMBER</b> 435 896-1943	<b>TITLE</b> District Land Manager
<b>SIGNATURE</b> N/A	<b>DATE</b> 10/7/2009	

Carol Daniels - Cedar Ridge 17-1 T19S R01E S-17 4303950001

**From:** "Wolverine Exploration Rig"

**To:** "Nelson, Pam"

**Date:** 10/21/2009 3:30 PM

**Subject:** Cedar Ridge 17-1

**CC:** "Charlie Irons " , "Paul Spiering" , "Cook, Tony" , "Arlan Burchett" , "Carpenter, Melinda" , "Cecil, Tom" , "Childers, Charlie" , "Daniels, Carol" , "Dellit Chris" , "Doucet, Dustin" , "Geoff Allen " , "Gerrard, Jason" , "Harwick, Emily" , "Hendricks, Marvin" , "Holt, Jon" , "Jones, Mark" , "Knight, Randy" , "McKee, Al" , "Novotny Justin" , "Treybig, Jerry" , "Vrona, John" , "Willis, Walton" , "Willis, Walton Home" , "Winkler Matt" , "Wright, Brian" , "Edward Higuera" , "Jack Magill" , "Donovan, Bill" , "Emerson, Chuck" , "Zupan, Tom"

**CONFIDENTIAL**

**Attachments:** "Charlie Irons " , "Paul Spiering" , "Cook, Tony" , "Arlan Burchett" , "Carpenter, Melinda" , "Cecil, Tom" , "Childers, Charlie" , "Daniels, Carol" , "Dellit Chris" , "Doucet, Dustin" , "Geoff Allen " , "Gerrard, Jason" , "Harwick, Emily" , "Hendricks, Marvin" , "Holt, Jon" , "Jones, Mark" , "Knight, Randy" , "McKee, Al" , "Novotny Justin" , "Treybig, Jerry" , "Vrona, John" , "Willis, Walton" , "Willis, Walton Home" , "Winkler Matt" , "Wright, Brian" , "Edward Higuera" , "Jack Magill" , "Donovan, Bill" , "Emerson, Chuck" , "Zupan, Tom"

Corrected Directions to Well Site.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Carter Peak Federal 13-1**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**RECEIVED**

**OCT 21 2009**

**DIV. OF OIL, GAS & MINING**



T195 ROIE S-17  
4303950001

# WOLVERINE GAS & OIL CO.

## CEDAR RIDGE 17-1 BOART-LONGYEAR DRILLING

### **DIRECTIONS From I-15 Going South:**

At Nephi Take Exit #222 to UT Hyw 28. Go 30 Miles South to Gunnison, UT on US 89.

In Downtown Gunnison Turn Right on 500 North @ Gunnison Market.

Go West 0.5 Miles on 500 South.

Turn Right @ Tee in Road Onto 300 West

Go 0.3 Miles North to Location

### **DIRECTIONS From I-70 Going West:**

Take Salina US 89 Exit # 56 North to Salina. Go 12 Miles to Gunnison, UT.

In Downtown Gunnison Turn Left on 500 South @ Gunnison Market.

Go West 0.5 Miles on 500 South.

Turn Right @ Tee in Road Onto 300 West

Go 0.3 Miles North to Location

**RECEIVED**

**OCT 21 2009**

DIV. OF OIL, GAS & MINING

**Do Not Drive Or Park Off Lease Roads Or Locations For Any Reason.**

**All Personnel Must Wear Hard Hat, Hard Toes & Safety Glasses.**

**Do Not Litter - You Pack It In - You Pack It Out!!!! Clean Up Your Own Mess.**

**Questions Or Problems Pease Call:**

**Chuck Emerson (970) 812-0023**

**Bill Donovan (435) 528-3188**

**Tom Zupan (435) 528-3188**

**Carol Daniels - Cedar Ridge 17-1 Rig Move** T19S R01E S17 43-039-5000

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Arlan Burchett" , "Brent, Steve" , "Cecil, Tom" , "Childers, Charlie" , "Chris, Dellit" , "Daniels, Carol" , "De la Torre, Juan C" , "Doucet, Dustin" , "Gerrard, Jason" , "Graves, Don" , "Hartwick, Emily" , "Hendricks, Marvin" , "Holt, Jon" , "Howard, Art" , "Hutcinson, Clayton" , "Irons, Charlie" , "Jones, Mark" , "Kallen, Kimzey" , "Kleb, Richard" , "Knight, Randy" , "McKee, Al" , "Moulton, Shawn" , "Novotny Justin" , "Shawn Moulton" , "Sorenson, Debbie" , "Sparks, Jim" , "Spiering, Paul" , "Treybig, Jerry" , "Troy Murray" , "Ufford, Aubree" , "Vrona, John" , "Willis, Walton" , "Willis, Walton Home" , "Winkler Matt" , "Wright, Brian" , "Denton, Derek" , "Graves, Don" , "Steve Brent" , "Wendy Norton" , "Griffiths, Syd" , "Stewart, Randy" , "Mitchell, Dave" , "Tujillo, Chris" , "Moehlenbrock, David" , "Tabet, Pat" , "Gabriel, Joe" , "Zimmerman, Bill" , "Toner, Troy" , "George Zamantakis" , "Kulow, Kyle" , "Hecker, DelRay" , "Juckes, Daniel" , "Berg, Ron" , "Thomas, Todd" , "Hacker, Lonnie" , "Oldson, Rick" , "Arthurs, Shane" , "Wayne Henline" , "Childers, Eli" , "Stewart, Kenny" , "Allen, Geoff" , "Costelloe Creagh" , "Jessi Elder" , "Taylor, Johnny" , "Edward Higuera" , "Jack Magill" , "Donovan, Bill" , "Emerson, Chuck" , "Zupan, Tom"  
**Date:** 11/4/2009 6:45 AM  
**Subject:** Cedar Ridge 17-1 Rig Move  
**Attachments:**

The rig move for the Cedar Ridge 17-1 has been changed from Thursday, 11-5-09 to Friday 11-6-09. Please adjust plans accordingly.  
 The Pre-Spud meeting will take place as scheduled @ 1100hrs Thursday 11-5-09 at the Covenant Field Office. Directions to both attached.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Carter Peak Federal 13-1**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED**  
**NOV 04 2009**  
 DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 T 199 ROIE S-17 4303950001

**From:** "Wolverine Exploration Rig"  
**To:** "Daniels, Carol" , "Jones, Mark" , "Medina, Rachael"  
**Date:** 11/6/2009 7:31 AM  
**Subject:** Cedar Ridge 17-1  
**CC:** "Edward Higuera" , "Jack Magill" , , "Donovan, Bill" , "Emerson, Chuck" , "Zupan, Tom"

This will notify UDOGM that Wolverine's Contractor, Patterson-UTI Rig #304 will commence rig move beginning today and we will provide daily updates.  
Thank you,

Chuck Emerson  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

NOV 06 2009

DIV. OF OIL, GAS & MINING

**CONFIDENTIAL****Carol Daniels - Cedar Ridge 17-1 Spud Notification** T193 ROIE S-17 4303950061

**From:** "Wolverine Exploration Rig"  
**To:** "Daniels, Carol" , "Doucet, Dustin" , "Jones, Mark" , "Medina, Rachael"  
**Date:** 11/10/2009 11:05 AM  
**Subject:** Cedar Ridge 17-1 Spud Notification  
**CC:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"

---

This email is to provide notification of Spud by Patterson-UTI Rig #304.  
We should be continuing to drill our 14 ¾" Hole section tomorrow 11-11-09.  
We will be setting 10 ¾" Casing to 4,000' shortly thereafter.  
Should you have any questions, do not hesitate to call.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED****NOV 10 2009****DIV. OF OIL, GAS & MINING**

Carol Daniels - Cedar Ridge 17-1 Update *T/RS ROLE S-M 43 6395 0001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Gerrard, Jason" , "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" ,  
"Medina, Rachael" , "Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" ,  
"Wright, Brian"  
**Date:** 11/17/2009 7:47 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0745hrs: Trip f/ New Bit @ 3825'

Chuck Emerson  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

NOV 17 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17- 1 Update**

T193 ROLF S-17 43-039 50001

**From:** "Wolverine Exploration Rig"

**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Gerrard, Jason" , "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" ,  
"Medina, Rachael" , "Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" ,  
"Wright, Brian"

**Date:** 11/18/2009 7:05 AM

**Subject:** Cedar Ridge 17- 1 Update

Status @ 0700hrs: Drilling @ 4,100'.

Chuck Emerson

**Drilling Supervisor**

Wolverine Gas & Oil Co.

Rig (970) 812-0022

Cell (970) 381-6233

Fax (435) 304-1222

wolvexpl@drillmail.net

RECEIVED

NOV 18 2009

DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Notification of 10 3/4" Cementing.

T19S ROLF S-17  
43 039 5 0001

**From:** "Wolverine Exploration Rig"  
**To:** "Daniels, Carol" , "Doucet, Dustin" , "Jones, Mark" , "Medina, Rachael"  
**Date:** 11/18/2009 11:07 AM  
**Subject:** Cedar Ridge 17-1 Notification of 10 3/4" Cementing.  
**CC:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"

This email is to provide Notice of Cementing  
of the 10 3/4" Surface Casing on the Cedar Ridge 17-1.  
We should be cementing sometime tomorrow afternoon Nov 19<sup>th</sup>.  
Please call if you have questions.

Chuck Emerson  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED  
NOV 18 2009  
DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Surface Update *T199 R01E 5-17 43-039-5001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Gerrard, Jason" , "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" ,  
"Medina, Rachael" , "Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" ,  
"Wright, Brian"  
**Date:** 11/18/2009 5:15 PM  
**Subject:** Cedar Ridge 17-1 Surface Update  
**CC:** "Edward Higuera" , "Jack Magill" ,

Status @ 1700hrs: Drilling @ 4,330'. Ave ROP is 25fph. Should reach Proposed TD of 4,565'  
in 7-9hours. Cement is being loaded & Casers are ready!

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**RECEIVED**

**NOV 18 2009**

**DIV. OF OIL, GAS & MINING**

Carol Daniels - Cedar Ridge 17-1 Update T19S R01E S-19 43 03950001

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Gerrard, Jason" , "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" ,  
"Medina, Rachael" , "Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" ,  
"Wright, Brian"  
**Date:** 11/19/2009 6:58 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0700: TD 14 ¾" Hole. C&C f/ Short Trip prior to running 10 ¾" Surface Casing.

Chuck Emerson  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

Carol Daniels - Cedar Ridge 17-1 Update T 195 R 01E S-17 4303950001

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 11/19/2009 4:13 PM  
**Subject:** Cedar Ridge 17-1 Update  
**CC:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Gerrard, Jason" , "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" ,  
"Medina, Rachael" , "Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" ,  
"Wright, Brian"

Status @ 1600hours: TOO H to run Dip Log, then run Surface casing.

Chuck Emerson  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED  
NOV 19 2009  
DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Update *T 199 ROLF 5-17 430395000*

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 11/20/2009 5:13 AM  
**Subject:** Cedar Ridge 17-1 Update  
**CC:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Gerrard, Jason" , "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" ,  
"Medina, Rachael" , "Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" ,  
"Wright, Brian"

Status @ 0500hrs: Dip Log Complete. Logger TD 4,532'. Rigging up Kimzey Casers to Run 10 3/4" Surface Casing. Cementers on Location.

Chuck Emerson  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED  
NOV 20 2009  
DIV. OF OIL, GAS & MINING

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>
<b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented	

<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>
Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>7. UNIT or CA AGREEMENT NAME:</b>

<b>1. TYPE OF WELL</b> Oil Well	<b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1
------------------------------------	---

<b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC	<b>9. API NUMBER:</b> 43039500010000
---	---

<b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503	<b>PHONE NUMBER:</b> 616 458-1150 Ext	<b>9. FIELD and POOL or WILDCAT:</b> WILDCAT
--	--	---

<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0153 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S	<b>COUNTY:</b> SANPETE
<b>STATE:</b> UTAH	

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start: 11/20/2009	<input type="checkbox"/> ACIDIZE <input checked="" type="checkbox"/> <b>CHANGE TO PREVIOUS PLANS</b> <input type="checkbox"/> CHANGE WELL STATUS <input type="checkbox"/> DEEPEN <input type="checkbox"/> OPERATOR CHANGE <input type="checkbox"/> PRODUCTION START OR RESUME <input type="checkbox"/> REPERFORATE CURRENT FORMATION <input type="checkbox"/> TUBING REPAIR <input type="checkbox"/> WATER SHUTOFF <input type="checkbox"/> WILDCAT WELL DETERMINATION	<input checked="" type="checkbox"/> <b>ALTER CASING</b> <input type="checkbox"/> CHANGE TUBING <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS <input type="checkbox"/> FRACTURE TREAT <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> RECLAMATION OF WELL SITE <input type="checkbox"/> SIDETRACK TO REPAIR WELL <input type="checkbox"/> VENT OR FLARE <input type="checkbox"/> SI TA STATUS EXTENSION <input type="checkbox"/> OTHER	<input type="checkbox"/> CASING REPAIR <input type="checkbox"/> CHANGE WELL NAME <input type="checkbox"/> CONVERT WELL TYPE <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> PLUG BACK <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION <input type="checkbox"/> TEMPORARY ABANDON <input type="checkbox"/> WATER DISPOSAL <input type="checkbox"/> APD EXTENSION OTHER:
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:			
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:			
<input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:			

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Surface Casing Setting Depth Change: Wolverine is drilling the Cedar Ridge 17-1 with a 14.75" bit in anticipation of setting 10.75" casing. The original setting depth of this casing was 4000' based on pre-drill geologic prognosis of finding the Arapien formation at ~3948. We are drilling at ~4200' and have not encountered the Arapien section. We plan to continue drilling to a maximum depth of 4576' and then set 10.75" casing. If the Arapein formation is encountered prior to this depth, casing will be set. Verbal approval for this course of action was granted by Dustin Doucet, UDOGM, Wolverine's drilling engineer, Jack Magill, on November 18, 2009.

**Approved by the Utah Division of Oil, Gas and Mining**

**Date:** November 23, 2009

**By:** *Dustin Doucet*

<b>NAME (PLEASE PRINT)</b> Helene Bardolph	<b>PHONE NUMBER</b> 616 458-1150	<b>TITLE</b> Engineering Administrative Assistant
<b>SIGNATURE</b> N/A	<b>DATE</b> 11/18/2009	

Carol Daniels - Cedar Ridge 17-1 Update T 19S R 01E S-19 4303950001

---

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 11/21/2009 6:21 AM  
**Subject:** Cedar Ridge 17-1 Update  
**CC:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Stewart, Kenny" , "Vrona, John" , "Wright, Brian"

---

Status @ 0615hrs: Tag @ 4,535'DF. Circulate & Condition Hole While RD Casers. RU  
Howco & Prep to Cement 10 3/4" Surface Casing.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

NOV 21 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S R01E S17 430395 0001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 11/23/2009 8:23 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status 0830hrs: Drilling @ 4,665'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

NOV 23 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T/9S ROLE S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 11/24/2009 7:11 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0700hrs: Drilling @ 5,677

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

NOV 24 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T193 ROIE S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/2/2009 8:34 AM  
**Subject:** Cedar Ridge 17-1 Update  
**CC:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"

---

Status @ 0830hrs: Reaming @ 6,955'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 01 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S ROIE 5-17 430395001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/4/2009 7:29 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0730: TIH w/ TruTrak & Bit #9. Change Out Saver Sub.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED  
DEC 04 2009  
DIV. OF OIL GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T19G R01E S-19 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/5/2009 7:15 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0715hrs: Drilling @ 8,293'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 05 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T 195 ROLF S-17 43-039-500d*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
 "Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
 "Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/7/2009 8:10 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0800hrs: Drilling @ 8,741'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

DEC 07 2009

DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Update *T19S ROLES-17 43 0395 0001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/8/2009 7:19 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status 0715hrs: Drilling @ 8,895'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 08 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** T19S ROLF S-17 43-039-50001

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/9/2009 7:31 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0730hrs: Working Tight Hole @ 9,066'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 09 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S R01E S-11 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Daniels, Carol" ,  
"Irons, Charlie" , "James, Aaron" , "Jones, Mark" , "Kruger, Rob" , "Medina, Rachael" ,  
"Sparks, Jim" , "Spencer, Weston" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/13/2009 12:24 PM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 1200hrs: WOC – Cut & Slip Drill Line – Repair Shale Shaker – Strap BHA

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S ROIE S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 12/14/2009 8:14 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0800hrs: Circulating @ Shoe & WOC

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED  
DEC 14 2009  
DIV. OF OIL, GAS & MINING

<p><b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING</p>	<p><b>FORM 9</b></p>
<p><b>SUNDRY NOTICES AND REPORTS ON WELLS</b></p> <p>Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.</p>	<p><b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented</p>
	<p><b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b></p>
	<p><b>7. UNIT or CA AGREEMENT NAME:</b></p>
<p><b>1. TYPE OF WELL</b> Oil Well</p>	<p><b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1</p>
<p><b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC</p>	<p><b>9. API NUMBER:</b> 43039500010000</p>
<p><b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503</p>	<p><b>PHONE NUMBER:</b> 616 458-1150 Ext</p>
<p><b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0153 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S</p>	<p><b>9. FIELD and POOL or WILDCAT:</b> WILDCAT</p>
	<p><b>COUNTY:</b> SANPETE</p>
	<p><b>STATE:</b> UTAH</p>

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 12/15/2009	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.  
Please see attached addendum for details on sidetracking of this well.

**Approved by the  
Utah Division of  
Oil, Gas and Mining**

**Date:** December 17, 2009  
**By:** 

<p><b>NAME (PLEASE PRINT)</b> Helene Bardolph</p>	<p><b>PHONE NUMBER</b> 616 458-1150</p>	<p><b>TITLE</b> Engineering Administrative Assistant</p>
<p><b>SIGNATURE</b> N/A</p>	<p><b>DATE</b> 12/15/2009</p>	

## **Addendum to Sidetrack Sundry Cedar Ridge 17-1**

While drilling a difficult section of the Arapien formation in the Cedar Ridge 17-1, the drill string became stuck. The ability to circulate was lost and jarring operations did not result in any success. The free-point indicated the string was stuck at ~8710', which is across a salt/silt matrix. This zone was problematic when it was initially drilled. The drill pipe was perforated in three different attempts to regain circulation. Circulation could not be established after perforating the drill pipe at the first two intervals (8940', and then 8800'), although circulation was established after perforating the third interval at 8750'. The drill string was worked while circulating but no progress was made to free the pipe. A second free-point indicated the string was still stuck at 8710', even after regaining circulation and working the pipe. A back-off was attempted at 8680', although the retrieved string indicated the back-off occurred at 8280'. Fishing operations were terminated because of the anticipated expense for continued fishing operations and the very low probability for success. The bottom-hole assembly left in hole includes: 9.875" bit, Baker directional motor, and 23 joints heavy weight drill pipe. Top of fish is ~8280'. Spotted cement plug from ~7750'-8250' to facilitate sidetrack of this well. We are currently waiting on cement before drilling out. The intended bottom-hole location has not changed from the original permitted BHL.



**Carol Daniels - Cedar Ridge 17-1 Update** *T 19S R01ES-19 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 12/16/2009 7:40 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0730: Circulating Bottoms Up @ 7,800' to Check Cement. Drilled 77' Hard Cement. Prep To Kick Off.

**Chuck Emerson**  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED  
DEC <sup>16</sup>~~15~~ 2009  
DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T 19S R 01E S-17 4303950001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 12/17/2009 7:23 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0715hrs: Time Drilling To Build Angle @ 7,882'

**Chuck Emerson**  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

DEC 17 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T193 ROIE S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 12/18/2009 7:02 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0700hrs: Time Drilling @ 7,965' – Building Angle

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 18 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *TIPS R OIE S-17 436395001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Butterfield, Pat" , "Cecil, Tom" , "Dan Jarvis" ,  
"Daniels, Carol" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Mark Sauter" , "Patrick  
Zimmer" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Spencer, Weston" , "Vrona,  
John" , "Wright, Brian"  
**Date:** 12/19/2009 2:44 PM  
**Subject:** Cedar Ridge 17-1 Update

---

12/19/2009 2:13 PM

This e-mail is to written to update you about Wolverine's plans for the Cedar Ridge 17-1 well. Currently we are drilling at 8,033'. Next casing point is at 11,400'. 7 5/8" casing will be run. In the next 2-4 days during a trip the BOP will need to be retested.

If you are not involved or assigned to this well, let me know and I will remove you from the update list.

If you are working on this well, send me your current contact information. A MS Outlook .vcf formatted card would be great.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 19 2009

DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Update *T19S R01E S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Dan Jarvis" , "Daniels, Carol" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Mark Sauter" , "Patrick Zimmer" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/22/2009 9:09 AM  
**Subject:** Cedar Ridge 17-1 Update

---

12/22/2009 9:06 AM

Drilling at 8,477'. ROP 10-20 FPH. Casing point is at about 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

DEC 22 2009

DIV OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Update *T 193 ROLES-17 4303950001*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Dan Jarvis" , "Daniels, Carol" ,  
"Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" ,  
"Jered Brady" , "John Trout" , "Jones, Mark" , "Mark Sauter" , "Patrick Zimmer" ,  
"Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/25/2009 12:32 PM  
**Subject:** Cedar Ridge 17-1 Update  
**Attachments:**

12/25/2009 12:14 PM

Drilling at 8,905'. Drilling at 240' per day, Casing point 11,500'?

Below is the planed casing string and attached is information on the casing.

7,050'-11,350' 7 3/4", 46.10#/ft, TN110SS, Hydril 523  
6,000'-7,050' 7 5/8" 39# P-110 LT&C Casing  
0'-6,000' 7 5/8" 39# L-80 SLIJ-II VAM Casing

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

DEC 25 2009

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T 19S R01E 5-17 43 039 5 0001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Dan Jarvis" , "Daniels, Carol" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Larimore, Mark" , "Mark Sauter" , "Patrick Zimmer" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Vrona, John" , "Wright, Brian"  
**Date:** 12/29/2009 8:48 PM  
**Subject:** Cedar Ridge 17-1 Update

---

12/29/2009 8:44 PM

Hi,

We are having problems at 8,970'. These updates will be suspended until we get closer to casing point.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

DEC 29 2009

DIV. OF OIL, GAS & MINING

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>  <b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>  <b>7. UNIT or CA AGREEMENT NAME:</b>
<b>1. TYPE OF WELL</b> Oil Well	<b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1
<b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC	<b>9. API NUMBER:</b> 43039500010000
<b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503	<b>PHONE NUMBER:</b> 616 458-1150 Ext
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0153 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S	<b>9. FIELD and POOL or WILDCAT:</b> WILDCAT  <b>COUNTY:</b> SANPETE  <b>STATE:</b> UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start: 1/15/2010	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input checked="" type="checkbox"/> <b>CHANGE TO PREVIOUS PLANS</b>	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

After experiencing significant drilling problems on the Cedar Ridge 17-1, including losing the BHA in the hole twice, Wolverine has decided that an oil-based mud (OBM) is required to successfully reach the next casing point. Verbal approval has been granted by Dustin Doucet, UDOGM. This sundry documents Wolverine's Notice of Intent to switch over to an OBM. The drill cuttings for the section drilled with the OBM will be contained in a separate lined pit which will be constructed immediately west of the existing reserve pit. Appropriate measures are being instituted to minimize any impact from handling the OBM. Upon completion of drilling activities and removal of the rig, the cuttings will be managed in accordance with UDOGM requirements.

**Approved by the  
Utah Division of  
Oil, Gas and Mining**

Date: January 14, 2010  
By: Dustin Doucet

<b>NAME (PLEASE PRINT)</b> Helene Bardolph	<b>PHONE NUMBER</b> 616 458-1150	<b>TITLE</b> Engineering Administrative Assistant
<b>SIGNATURE</b> N/A	<b>DATE</b> 1/13/2010	

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>  <b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>  <b>7. UNIT or CA AGREEMENT NAME:</b>
<b>1. TYPE OF WELL</b> Oil Well	<b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1
<b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC	<b>9. API NUMBER:</b> 43039500010000
<b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503	<b>PHONE NUMBER:</b> 616 458-1150 Ext
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0153 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S	<b>9. FIELD and POOL or WILDCAT:</b> WILDCAT  <b>COUNTY:</b> SANPETE  <b>STATE:</b> UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 12/31/2009	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Please see the attached December 2009 Drilling Summary

**Accepted by the**  
**Utah Division of**  
**Oil, Gas and Mining**  
**FOR RECORD ONLY**  
 January 19, 2010

<b>NAME (PLEASE PRINT)</b> Helene Bardolph	<b>PHONE NUMBER</b> 616 458-1150	<b>TITLE</b> Engineering Administrative Assistant
<b>SIGNATURE</b> N/A	<b>DATE</b> 1/13/2010	

Wolverine Gas and Oil Company of Utah, LLC  
Cedar Ridge 17-1  
SESW, Section 17, T19S, R1E  
Sanpete County, Utah

December 2009 - Drilling Update:

December 1, 2009

Depth 7811', TIH, ream to 6103', 10 ¾" casing at 4,533' GL, MW 10.45 lb/gal., Vis. 53 sec., FL 3.1 cc. Surveys: 0.26 degrees at 7352'

December 2, 2009

Depth 7811', rig service, cut & slip drill line, replace rotating head rubber, hydraulic repairs, TIH, wash & ream to 6830, MW 10.45 lb/gal., Vis 53 sec., FL 3.5cc. Surveys: 0.26 degrees at 7352'

December 3, 2009

Depth 7831', wash & ream to 7811, drill to 7831'. MW 10.5 lb/gal., Vis. 53 sec., FL 3.3 cc. Surveys: 0.26 degrees at 7352'

December 4, 2009

Depth 7831', TIH to 7666', wash & ream to 7831', Pull up BHA #6. MW 11.00 lb/gal., Vis. 52 sec., FL 3.1 cc. Surveys: 0.26 degrees at 7352'

December 5, 2009

Depth 8265', TIH, wash & ream to bottom, Drilling to 8265'. MW 11.1 lb/gal., Vis. 53 sec., FL 3.1 cc. Surveys: 0.26 degrees at 7352'

December 6, 2009

Depth 8695', Drill to 8695'. MW 11.10 lb/gal., Vis. 52 sec., FL 4.1 cc. Surveys 5.8 degrees at 8598'

December 7, 2009

Depth 8742', bit stuck at 8695' and 8705' - freed, pipe stuck – worked free, wash and ream tight hole, drilling to 8742'. MW 11.40 lb/gal., Vis 51 sec., FL 3.7 cc. Surveys: 5.52 degrees at 8791'

December 8, 2009

Depth 8890', work tight hole and drill to 8890'. MW 11.70 lb/gal., Vis. 54 sec., FL 3.2 cc. Surveys: 6.59 degrees at 8788'

December 9, 2009

Depth 9066', work tight hole and drill to 9066, work stuck pipe. MW 11.70 lb/gal, Vis. 51 sec., FL 3.8 cc. Surveys 9.09 degrees at 8979'

December 10, 2009

Depth 9066', jarring stuck pipe @ 300,000 lbs – no movement, service rig. MW 11.70 lb/gal, Vis. 52 sec., FL 3.8 cc. Surveys: 9.09 degrees at 8979'

December 11, 2009

Depth 9066', RIH w/ strip gun, perforate @ 8940', 8800', 8750', 25 bbl FW Pill-circulate to surface, jarring on pipe, RU back off shot. MW 11.90 lb/gal, Vis 52 sec., FL 4.4 cc. Surveys: 9.09 degrees at 8979'

December 12, 2009

Depth 9066', Back-off shot @ 8680', TOO H Jars & 7 jts HWDP, left top of fish @8280', test BOP, Service Rig, TIH to 8259', waiting on cementers. MW 12.00 lb/gal, Vis. 52 sec., FL 5.2 cc. Surveys: 9.09 degrees at 8979'

December 13, 2009

Depth 9066', Waiting on cement, safety meeting, set side track plug from 7750'-8250', circulate clean, TOO H, LD HWDP. MW 12 lb/gal, Vis 48 sec., FL 4.2 cc. Surveys: 9.09 degrees at 8979'

December 14, 2009

Depth 7750', WOC, repair shale shaker #1, cut & slip drill line, remove corrosion rings, change out saver sub, finish strapping side track BHA & TIH to casing shoe @ 4,550', WOC. MW 12.10 lb/gal, Vis. 57 sec., FL 4.6 cc. Surveys 9.09 degrees at 8979'

December 15, 2009

Depth 8210', WOC, Rig service, TIH to 8210' soft cement, circulate & cond hole, TOO H and stand back BHA, TIH to Shoe w/ cement stinger joint, circulate & condition mud. MW 11.9 lb/gal, Vis. 51 sec., FL 5.8 cc., Surveys: none

December 16, 2009

Depth 7773', TIH w/ cement string to 8170', circ & cond hole, safety meeting w/ cementers, pump cement – circulate clean, TOO H, PU KO BHA & TIH to shoe, WOC, TIH & tag hard cement @7723', Drilling@ 7773'. MW 11.90 lb/gal., Vis. 54 sec., FL 6.2 cc. Surveys: none

December 17, 2009

Depth 7880', Drilling to 7850', build angle from KOP @ 7850' Drill to 7880', clean screens. MW 11.80 lb/gal, Vis 48 sec, FL 6.3. Surveys: none

December 18, 2009

Depth 7964', drilling to 7940', rotating, sidetrack unsuccessful, service Rig, dilling to 7964'. MW 11.40 lb/gal., Vis. 54 sec., FL 4.2 cc. Surveys: none

December 19, 2009

Depth 8004', Drilling to 8004', MW 11.50 lb/gal., Vis. 56 sec., FL 3.4 cc. Surveys: none

December 20, 2009

Depth 8101', Drilling to 8101', MW 11.40 lb/gal., Vis. 50 sec., FL 3 cc., Surveys: 1.60 degrees at 8,008'

December 21, 2009

Depth 8150', Drilling to 8150', TOH for NB #11, Test BOP to 5,000 psi and annular to 2500 psi, replace swivel packing. MW 11.40 lb/gal., Vis 50 sec., FL 3.3 cc. Surveys: 2.91 degrees at 8091'

December 22, 2009

Depth 8422', Test BOP, install wear bushing and corrosion ring, TIH test MWD tool, slide to 8214', clean screens, Drill to 8422'. MW 11.40 lb/gal., Vis. 53 sec., FL 3.0 cc. Surveys: 8.53 degrees at 8295'

December 23, 2009

Depth 8631', Drill to 8631', Rig service, TOH for new bit #12 and BHA, PU new motor w/ 1.5 AKO, Pilot bit #12. MW 11.30 lb/gal., Vis 52 sec., FL 4.2 cc. Surveys: 10.7 degrees at 8486'

December 24, 2009

Depth 8667', TIH with NB #12, set down 40K KOP 7,940', ream & wash to 8631', ream to 8638', slide to 8667'. MW 11.40 lb/gal., Vis. 56 sec., FL 3.9 cc. Surveys: 11.16 degrees at 8585'

December 25, 2009

Depth 8847', Drill and slide to 8847', MW 11.40 lb/gal., Vis. 54 sec., FL 4.4 cc. Surveys: 14.5 degrees at 8779'

December 26, 2009

Depth 8970', Drill and slide to 8925', service, short trip 5 stands, slide to 8970, working stuck pipe at 8936'. MW 11.40 lb/gal., Vis. 56 sec., FL 4.8 cc. Surveys: 14.50 degrees at 8874'

December 27, 2009

Depth 8970', work stuck pipe, jarring, RIH with string shot, shot HWDP collar at 8616', POH drill pipe, left 6 HWDP, MWD, motor fish, TOH to 4,457'. MW 11.40 lb/gal., Vis 62 sec., FL 4.4 cc., Surveys: 14.50 degrees at 8874'

December 28, 2009

Depth 8970', TOH from 4457' to surface, PU fishing tools, SIS, LBS and 3 collars, TIH to 4523' slip and cut drilling line. TIH from 4523' to top of fish at 8618', Perf 4 holes at 8829' in BHA item #6, jar down – no movement. MW 11.40 lb/gal., Vis. 65 sec., FL 4.3 cc. Surveys: 14.5 degrees at 8874'

December 29, 2009

Depth 8970', Perf 4 holes @8795', working pipe, jarring – no movement, jar on fish – no movement. MW 11.50 lb/gal., Vis. 53 sec., FL 6.0 cc., Surveys: 14.50 degrees at 8874'

December 30, 2009

Depth 8970', RU single shot & RIH w/ Back-off shot, backed off @top of screw in sub @8630, TOOH & LD jars, PU 3 jts 8 1/8" x 7 1/4" wash pipe w/ wavy shoe (102.36'). TIH to 8300', washover fish from 8686' to 8701'. MW 11.5 lb/gal., Vis. 54 sec., FL 4.8 cc. Surveys: 14.5 degrees at 8874'

December 31, 2009

Depth 8970', Washover fish to 8725', TOOH w/ wash pipe & stand back, PU screw in sub & Fishing BHA, TIH to TOF @ 8623', Screw into fish, RU Singleshot Wireline & RIH w/ Free point tools, RIH with BackOff shot – failed, RIH with 2<sup>nd</sup> Shot a7 back off at 8745'. MW 11.50, Vis. 56 sec., FL 4.8 cc. Surveys: 14.5 degrees at 8874'

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S ROLES-17 43.03950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 1/13/2010 10:14 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 1000hrs: Drilling Sidetrack #2 @ 7,951'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED**

**JAN 13 2010**

**DIV. OF OIL, GAS & MINING**

Carol Daniels - Cedar Ridge 17-1 Update

*T19S ROIES-17 430395001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 1/15/2010 8:42 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0830hrs: Prep to change out to OBM.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

JAN 15 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar ridge 17-1 Update** *T19S R01E S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 1/17/2010 4:13 PM  
**Subject:** Cedar ridge 17-1 Update  
**CC:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Larimore,  
Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Spiering, Paul" ,  
"Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"

---

Status @ 1600hrs: Reaming to bottom on short trip @ 6000'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

JAN 17 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T/9S ROLE S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"

**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Larimore,  
Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Spiering, Paul" ,  
"Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"

**Date:** 1/18/2010 7:04 AM

**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0700hrs: TIH w/ GyroData RSS.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

JAN 18 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S R01E S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Larimore,  
Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Spiering, Paul" ,  
"Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/19/2010 9:45 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0945hrs: Drilling @ 8,229'

**Chuck Emerson**  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

JAN 19 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T 19S R01E S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Larimore,  
Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Spiering, Paul" ,  
"Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/22/2010 5:03 PM  
**Subject:** Cedar Ridge 17-1 Update

---

1/22/2010 5:00 PM

Tripping in hole at 7,750'. Hole depth is 8,500'.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED**

**JAN 22 2010**

**DIV. OF OIL, GAS & MINING**

CONFIDENTIAL

Page 1 of 1

Carol Daniels - Cedar Ridge 17-1, Update *T19S R01E S-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "John Trout" , "Jones, Mark" , "Larimore,  
Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" , "Spiering, Paul" ,  
"Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/23/2010 5:08 PM  
**Subject:** Cedar Ridge 17-1, Update

---

1/23/2010 5:04 PM

Drilling at 8,724', Drilling 10 FPH, Casing point 11,500'

**Bill Donovan**  
Drilling Supervisor  
Wolverine Operating Company of Utah, LLC  
Cedar Ridge 17-1; AFE 197  
Rig (970) 812-0022  
Cell (720) 351-7470  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

JAN 23 2010

DIV OF OIL & GAS

**Carol Daniels - Cedar Ridge 17-1 update**

*T 19S R01E 5-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/24/2010 2:25 PM  
**Subject:** Cedar Ridge 17-1 update

---

Drilling at 8,798', fph 10, casing point 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**RECEIVED**

**JAN 24 2010**

**DIV. OF OIL, GAS & MINING**

**CONFIDENTIAL****Carol Daniels - Cedar Ridge 17-1 BOP test notification** T19S R01E S-17 43039.5001

**From:** "Wolverine Exploration Rig"  
**To:** ""Daniels, Carol"" , "Doucet, Dustin" , "Jarvis, Dan" , "Jones, Mark" , "Medina, Rachael" , "Wright, Brian"  
**Date:** 1/24/2010 6:47 PM  
**Subject:** Cedar Ridge 17-1 BOP test notification  
**CC:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" , "Treybig, Jerry"  
**Attachments:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" , "Treybig, Jerry"

---

1/24/2010 6:43 PM

The plan is to drill until early next morning, then trip out of the hole to switch MWD tools and test the BOP

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED****JAN 24 2010**

DIV. OF OIL, GAS &amp; MINING

Carol Daniels - Cedar Ridge 17-1 Update *T199 ROLF 5-17 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/27/2010 8:26 AM  
**Subject:** Cedar Ridge 17-1 Update

---

1/27/2010 8:24 AM

Drilling at 8,948', FPH = 4, casing point at 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

JAN 27 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T195 ROLES-17 43-03950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/28/2010 4:33 AM  
**Subject:** Cedar Ridge 17-1 Update

---

1/28/2010 4:31 AM

Short trip at 9,024' casing point is at 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED**

**JAN 28 2010**

**DIV. OF OIL, GAS & MINING**

**CONFIDENTIAL****Carol Daniels - Cedar Ridge 17-1 Update** *T199 R01E S-19 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/30/2010 7:11 AM  
**Subject:** Cedar Ridge 17-1 Update

---

1/30/2010 7:07 AM

Trip at 9,089'. Casing point 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**RECEIVED****JAN 30 2010****DIV. OF OIL, GAS & MINING**

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S R01E S-17 43-039-5 0001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 1/31/2010 3:32 PM  
**Subject:** Cedar Ridge 17-1 Update

---

1/31/2010 3:30 PM

Conditioning mud at 9,089'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**RECEIVED**

**JAN 31 2010**

**DIV. OF OIL, GAS & MINING**

Carol Daniels - Cedar Ridge 17-1 update *T 19S R01E S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/4/2010 8:38 AM  
**Subject:** Cedar Ridge 17-1 update

---

2/4/2010 8:36 AM

Drlg @ 9,137', FPH 7, Casing point 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 04 2010

DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Update *TIPS ROLE S-17* *43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Howard, Art" , "Irons, Charlie" ,  
"James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones,  
Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/7/2010 8:24 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0830hrs: Drilling @ 9,166'. Replace Swivel Packing

**Chuck Emerson**  
Drilling Supervisor  
Wolverine Gas & Oil Co.  
Rig (970) 812-0022  
Cell (970) 381-6233  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)

RECEIVED

FEB 07 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T19S R01E S-17 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/9/2010 7:07 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0700hrs: Trip f/ Directional Tools @ 9,473'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 09 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*TI9S R01E 5-17 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/10/2010 8:12 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0800hrs: TIH w/ New BHA @ 9,473'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 10 2010

DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 Update

T 19S R01E S-17 43-039-5000

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/13/2010 4:16 PM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 1600hrs: Drilling @ 10,155'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 13 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T199 ROIF 5-17 43-039-50001*

RECEIVED

FEB 14 2010

DEPT. OF OIL, GAS & MINING

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/14/2010 7:03 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0630hrs: Wiper Trip @ 10,156'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**Carol Daniels - Cedar Ridge 17-1 update**

*T199 PGE 5-17 43-639-5001*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" ,  
"Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" ,  
"John Trout" , "Jones, Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun  
Burns" , "Sparks, Jim" , "Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer,  
Patrick"  
**Date:** 2/15/2010 2:26 AM  
**Subject:** Cedar Ridge 17-1 update

---

2/15/2010 2:24 AM

Drilling at 10,325', FPH 8, Casing point 11,500'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 15 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T 195 P 01E 5-17 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/15/2010 7:21 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0720hrs: Short Trip @. 10,346'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 15 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T/193 R01E S-17 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" ,  
"Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" ,  
"John Trout" , "Jones, Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun  
Burns" , "Sparks, Jim" , "Spiering, Paul" , "Vrona, John" , "Wright, Brian" , "Zimmer,  
Patrick"  
**Date:** 2/16/2010 7:30 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0730hrs: Drilling @ 10,579'.

This is also to notify all personnel that we will be under H2S Rules from this point forward. Please take all appropriate actions to see that everyone, including any vendors we call, are in compliance with these rules. Total Safety will be on site at all times to monitor and assist us in providing a safe environment as possible in the event we would encounter H2S gas while drilling. Only individuals with current H2S Certified Training Cards will be admitted to the site. Total Safety will be scheduling training classes, so contact them for the times and we will try to work around everyone's schedule.

It is the responsibility of each to notify anyone we request to come to the site of these rules.

Thank you for your help in keeping everyone safe.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

FEB 16 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T195 ROIE S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/17/2010 7:20 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0720hrs: Drilling @ 10,788'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 17 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S R01E S-17 43-039-5000*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/18/2010 7:04 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0700hrs: Drilling Depth: 10,910'. TOOH f/ BHA @ 3,460'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 18 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar ridge 17-1 Update**

*T195 ROLF S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 2/19/2010 7:05 AM  
**Subject:** Cedar ridge 17-1 Update

---

Status @ 0700hrs: Drilling @ 10,968'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 19 2010

DEPT. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

T195 R01E 5-17 43-039-50001

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" ,  
"Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" ,  
"John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Revert,  
Scott" , "Shaun Burns" , "Sparks, Jim" , "Spiering, Paul" , "Vrona, John" , "Wright, Brian" ,  
"Zimmer, Patrick"  
**Date:** 2/20/2010 10:18 AM  
**Subject:** Cedar Ridge 17-1 Update

---

2/20/2010 10:08 AM

Short tripping at 11,134', Drilling at 7-8 FPH. Casing point at 11,500'

**Bill Donovan**  
**Drilling Supervisor**

**Wolverine Operating Company of Utah, LLC**

**Cedar Ridge 17-1; AFE 197**

**The well name must be in the e-mail "Subject:" for delivery**

**To enter this location you must have a valid H2S card and be clean shaven**

**Rig (970) 812-0022**

**Cell (720) 351-7470**

**Fax (435) 304-1222**

**wolvexpl@drillmail.net**

RECEIVED

FEB 20 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 update**

*T 195 R 01E 5-17 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" ,  
"Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" ,  
"John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Revert,  
Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/21/2010 5:23 AM  
**Subject:** Cedar Ridge 17-1 update

---

2/21/2010 5:21 AM

Drilling at 11,255', PR 7 FPH, CP 11,500'?

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

FEB 21 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T195 ROLF S-17 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Daniels, Carol" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" ,  
"Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" ,  
"John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Revert,  
Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" ,  
"Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/22/2010 6:33 AM  
**Subject:** Cedar Ridge 17-1 Update

---

2/22/2010 6:30 AM

Drilling at 11,395', PR 7 FPH, Casing point 11,500?-12,000?

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**

**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 22 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 update** *T 195 R 01E S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/23/2010 7:01 AM  
**Subject:** Cedar Ridge 17-1 update

---

2/23/2010 6:54 AM

Depth 11,553', ROP 8 FPH, CP 11,500???-12,000?

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**

**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 23 2010

DIV. OF OIL, GAS & MINING

<p><b>STATE OF UTAH</b>                  DEPARTMENT OF NATURAL RESOURCES                  DIVISION OF OIL, GAS, AND MINING</p>	<p><b>FORM 9</b></p>
<p><b>SUNDRY NOTICES AND REPORTS ON WELLS</b></p> <p>Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.</p>	<p><b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented</p>
<p><b>1. TYPE OF WELL</b> Oil Well</p>	<p><b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b></p>
<p><b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC</p>	<p><b>7. UNIT or CA AGREEMENT NAME:</b></p>
<p><b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503</p>	<p><b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1</p>
<p><b>4. LOCATION OF WELL</b>                  FOOTAGES AT SURFACE:                  0153 FSL 1718 FWL                  QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:                  Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S</p>	<p><b>9. API NUMBER:</b> 43039500010000</p>
<p><b>PHONE NUMBER:</b> 616 458-1150 Ext</p>	<p><b>9. FIELD and POOL or WILDCAT:</b> WILDCAT</p>
	<p><b>COUNTY:</b> SANPETE</p>
	<p><b>STATE:</b> UTAH</p>

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 2/19/2010	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Please see attached drilling summary

**Accepted by the**  
**Utah Division of**  
**Oil, Gas and Mining**  
**FOR RECORD ONLY**  
 February 24, 2010

<p><b>NAME (PLEASE PRINT)</b> Helene Bardolph</p>	<p><b>PHONE NUMBER</b> 616 458-1150</p>	<p><b>TITLE</b> Engineering Administrative Assistant</p>
<p><b>SIGNATURE</b> N/A</p>	<p><b>DATE</b> 2/19/2010</p>	

Wolverine Gas and Oil Company of Utah, LLC  
Cedar Ridge 17-1  
API #43039500010000  
SESW, Section 17, T19S, R1E  
Sanpete County, Utah

January 2010 - Drilling Update:

January 1, 2010

Depth 8,970', fishing, working stuck pipe, no drilling progress made. MW 13.9 lb/gal., Vis 62 sec., FL 6.6cc, Surveys: 14.5 at 8874'

January 2, 2010

Depth 8,970', circulate & condition hole, no drilling progress made. MW 14.5 lb/gal, Vis 67 sec, FL 5.5cc, Surveys: same

January 3, 2010

Depth 8,970, fishing, no drilling progress made, MW 15.10 lb/gal, Vis 62 sec, FL 8.5 cc, Surveys: same

January 4, 2010

Depth 8,970', fishing and jarring activities, no drilling progress made, MW 15.10 lb/gal, Vis 56 sec, FL 5.4 cc., Surveys: same

January 5, 2010

Depth 8,970', working stuck pipe, no drilling progress made, MW 15.10 lb/gal., Vis 66 sec., FL 5.8 cc, Surveys: same

January 6, 2010

Depth 8,970, attempt BackOff at 8,807, no drilling progress made, MW 15.00 lb/gal., Vis 58 sec, FL 6.4 cc., Surveys: same

January 7, 2010

Depth 8,970', jarring & fishing operations, no drilling progress made, MW 15.00 lb/gal., Vis 60 sec., Fl 4.0 cc., Surveys: same

January 8, 2010

Depth 8,970, jarring, BackOff attempt, logging, no drilling progress made, MW 15.00 lb/gal, Vis. 58 sec., FL 3.8cc, Surveys: same

January 9, 2010

Depth 8,970' Plug set at 8,181'-7,681', no drilling progress made, MW 15 lb/gal, Vis 68 sec, FL 4.4 cc., Surveys: same

**RECEIVED** February 19, 2010

January 10, 2010

Depth 7,775. Cementing – TOC @7,750, KOP 7,775', MW 15 lb/gal, Vis 62 sec, FL 3.8 cc, Surveys: not reported

January 11, 2010

Depth 7,794. Drilling. MW 15 lb/gal, Vis 55 sec, FL 3.0 cc, Surveys: .29 at 7,696.80'

January 12, 2010

Depth, 7,820. Drilling. MW 15 lb/gal, Vis 58 sec, FL 3.0cc, Surveys: same

January 13, 2010

Depth 7,935. Drilling. MW 15 lb./gal, Vis 58 sec, FL 3.0 cc; Surveys: 3.25 at 7850'

January 14, 2010

Depth 7,991. Drilling, TIH to replace MWD tools, MW 15 lb/gal, Vis 60 sec, FL 4.2 cc, Surveys: 4.92 at 7,944'

January 15, 2010

Depth 8,041. Drilling. MW 15 lb/gal, Vis 58 sec, FL 4.1 cc, Surveys: 5.80 at 7,993.00'

January 16, 2010

Depth 8,041, pump out water based mud – preparing to change to oil based mud. MW 14.70 lb/gal, Vis 60 sec.,. Surveys: same

January 17, 2010

Depth 8,041, Oil based mud is added to pits and hole, MW 14.80 lb/gal, Vis 76 sec, FL 6.0 cc, Surveys: same

January 18, 2010

Depth 8,041, Conditioning hole. MW 14.90 lb/gal, Vis 51 sec, FL 6.0 cc. Surveys: same

January 19, 2010

Depth 8,186, Drilling. MW 15.00, Vis 54 sec, FL 5.8 cc, Surveys: 5.80 at 8,053.00'

January 20, 2010

Depth 8,416', Drilling. MW 15.00 lb/gal, Vis 50 sec, FL 2.5 cc, Surveys: 6.0 at 8,283.00'

January 21, 2010

Depth 8500', Drilling, rig repair, MW 15.00 lb/gal, Vis 51 sec., FL 2.5 cc. Surveys: 5.8 at 8,403.00'

January 22, 2010

Depth 8,500', Rig repair. MW 15.10 lb/gal, Vis 54 sec, FL 2.0 cc, Surveys: same

January 23, 2010

Depth 8,607' Rig Repair, drilling, MW 15.00 lb/gal, Vis 54 sec, FL 1`.0 cc. Surveys: 6.1 at 8466.00'

January 24, 2010

Depth 8765', Drilling; MW 15.02, Vis 49 sec, FL 2.0 cc. Surveys: 6.1 at 8594.00'

January 25, 2010

Depth 8,884', Drilling, MW 15.1, Vis 49 sec, FL 1.5 cc. Surveys: 6.0 at 8785.00'

January 26, 2010

Depth 8,884', BOP test , Test MWD tool. MW 15.10 lb/gal, Vis 53 sec., FL 1.5 cc, Surveys: same

January 27, 2010

Depth 8,934, Drilling. MW 15.60 lb/gal, Vis 53 sec, FL 1.5 cc, Surveys: same

January 28, 2010

Depth 9,024', Drilling, MW 15.50 lb/gal, Vis 54, FL 2.0 cc, Surveys: 6.4 at 8,912'

January 29, 2010

Depth 9,089', Drilling, rig service, MW 15.65 lb/gal, Vis 54 sec, FL 1.5cc, Surveys: 6.1 at 8976'

January 30, 2010

Depth 9,089', Mud conditioning , MW 14.85 lb/gal, Vis 61 sec, FL 1.5 cc, Surveys: same

January 31, 2010

Depth 9,089', Mud conditioning – clean pits, MW 15.5 lb/gal, Vis 75 sec, FL 3.6 cc, Surveys: same

Depth 9,089', Mud conditioning – clean pits, MW 15.5 lb/gal, Vis 75 sec, FL 3.6 cc, Surveys: same

**Carol Daniels - Cedar Ridge 17-1 Update** *T195 R01E S-17 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Randy Morin" , "Revert, Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/24/2010 9:24 AM  
**Subject:** Cedar Ridge 17-1 Update

---

2/24/2010 9:20 AM

Slipping line while tripping in. Hole depth 11,553', ROP 7 FPH, Casing point 12,000'???

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 24 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T195 R01E S-19 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Randy Morin" , "Revert, Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/25/2010 7:38 AM  
**Subject:** Cedar Ridge 17-1 Update

---

2/25/2010 7:35 AM

Drilling at 11,615', ROP 2-5 FPH, CP 11,750'-12,000'?

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

FEB 25 2010

DIV. OF OIL, GAS & MINING

43-039-50001

# IPS / dba Double Jack Testing



FIELD TICKET  
27445

Accounting Office: PO Drawer 2080 • Riverton, WY 82501 • (307) 857-0076  
 Field Operations: Riverton, WY (307) 857-0077  
 Evanston, WY (307) 789-9213  
 Rock Springs, WY (307) 382-4020  
 Big Piney, WY (307) 276-5265  
 Vernal, UT (435) 781-0448

DATE 1-25-10  
 OPERATOR WOLVERINE GAS  
 CONTRACTOR PATTERSON 304  
 WELL NAME LEOPARD RIDGE 17-1

COUNTY SAN JUAN STATE UT SECTION 17 TOWNSHIP T19S RANGE R1E

Items Tested:	LOW TEST PSI	TIME HELD MINUTES	HIGHEST PSI	TIME HELD MINUTES	
Top Pipe Rams	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Closing Unit PSI <u>2800</u>
Bottom Pipe Rams	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Closing Time of Rams <u>5 SEC</u>
Blind Rams	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Closing Time of Annular <u>18 SEC</u>
Annular B.O.P.	<u>250</u>	<u>5</u>	<u>2500</u>	<u>10</u>	Closed Casing Head Valve <u>YES</u>
Choke Manifold	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Set Wear Sleeve <u>RIG CROWN</u>
Choke Line	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	<b>COMMENTS</b>
Kill Line	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	
Super Choke					<u>ACCUMULATOR</u>
Upper Kelly <u>I-BOP</u>	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	<u>FUNCTION TEST</u>
Lower Kelly <u>I-BOP</u>	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	
Floor Valve	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	
Dart Valve	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	<u>WINTERIZED 50%</u>
Casing <u>STAND PIPE</u>	<u>250</u>	<u>5</u>	<u>4000</u>	<u>10</u>	<u>GLYCOL GOOD -24</u>

ADDITIONAL TESTS & COMMENTS DRILLING  COMPLETION

	TEST PLUG	TOP SUB.	KELLY SUB.	X-OVER SUB.	OTHER	CHARGES
	<u>4 1/2 IF 1-22 x 11"</u>	<u>4 1/2 IF</u>	<u>4 1/2 IF</u>	<u>CIRCULATING 4 1/2 IF</u>	<u>DAILY PERDIEM</u>	<u>182-</u>
						<u>72-</u>
						<u>72-</u>
						<u>30-</u>

QUANTITY	RATES	UNIT RATES	ADDITIONAL	MILEAGE	ANTIFREEZE	OTHER	
<u>1</u>	<u>SET UP CHARGE FIRST 7 HRS ON LOCATION</u>						<u>1375-</u>
<u>4</u>	<u>HRS TO COMPLETE TEST</u>						<u>440</u>
<u>460</u>	<u>ROUND TRIP MILES FROM GRAND JCT SHOP</u>						<u>1265-</u>
<u>133</u>	<u>GALLONS OF 50% GLYCOL MIX GOOD -24</u>						<u>1781.25</u>

John C. Magill 1/25/10 PURCHASE ORDER # HARRY J. MELNIKOFF IPS TESTED BY  
JOHN C. MAGILL #4485 THANK YOU! NO ACCIDENTS TAX  
 COMPANY REPRESENTATIVE DOUBLE JACK TESTING UNIT NUMBER TOTAL 4617.25

### NOTICE TO ALL CUSTOMERS

If this account shall not be paid when due and it is placed with an attorney for collection, or if suit be instituted for collection, the undersigned agree(s) to pay in either case, reasonable expense of collection including attorney's fees and court cost in compliance with TRUTH IN LENDING AND THE UNIFORM CONSUMER CREDIT CODE, the following information disclosure, under the terms of our regular accounts, all amounts for service due and payable within THIRTY (30) DAYS from the receipt of an invoice for such services. A LATE CHARGE will be assessed when accounts are not paid when due. THE LATE CHARGE is computed by a "periodic rate" 1-3/4% PER MONTH which is an ANNUAL PERCENTAGE RATE OF 21% to the previous balance in the account on the billing date. No further credit can be extended on unpaid delinquent accounts until the delinquent account is paid in full. The contractor will not be held liable for damages caused by acts of God, or unforeseen circumstances that could not be reasonably anticipated in performing the work done as set forth above.

1-25-10  
WOLVERINE GAS  
PATTERSON 304  
CEDAR RIDGE 17-1

# IPS/DOUBLE JACK TESTING

## Accumulator Function Tests

- 
- #1 WITH DRILL PIPE & TEST PLUG INSTALLED IN WELL HEAD.
  - #2 PLACE ALL FUNCTIONING ACCUMULATOR VALVES IN OPEN POSITION  
ALLOW ACCUMULATOR TO PRESSURE UP BEFORE SHUTTING OFF ALL PUMPS.
  - #3 CLOSE ANNULAR/ RECORD TIME & PRESSURE.

ANNULAR INTIAL PSI 2800 FINAL PSI 2270 TIME 18 sec

- #4 CLOSE PIPE RAMS/ RECORD TIME & PRESSURE.

PIPE RAMS INTIAL PSI 2270 FINAL PSI 2100 TIME 5 sec

- #5 OPEN PIPE RAMS TO SIMULATE BLIND RAMS/ RECORD TIME & PRESSURE.

INTIAL PSI 2100 FINAL PSI 2000 TIME 4 sec

- #6 CLOSE HCR (if applicable) RECORD TIME & PRESSURE.

HCR INTIAL PSI 2000 FINAL PSI 1800 TIME 1 sec

- #7 ON THREE RAM STACK CLOSE BOTTOM PIPE RAMS/ RECORD TIME & PRESSURE.

PIPE RAMS INTIAL PSI 1800 FINAL PSI 1850 TIME 4 sec

- #8 WHEN DONE WITH THE RECORDED TIMES & PRESSURES THERE SHOULD BE  
AT LEAST 200 PSI OVER PRECHARGE IN THE ACCUMULATOR ( 1200 PSI).

- #9 OPEN ANNULAR

---

### NITROGEN BOTTLES/ BLEED OFF TEST

- #1 FINISH BLEEDING OFF BOTTLES INTO ACCUMULATOR TANK/RESERVOIR.
- #2 WATCH & RECORD WHERE PRESSURE DROPS (accumulator psi)

PRESSURE DROP 900 PSI

- #3 ACCUMULATOR PSI SHOULD DROP AT 1100 PSI TO 900 PSI

---

### 2 MINUTE TIME TEST/ ACCUMULATOR PUMPS

- #1 SHUT VALVES TO NITROGEN BOTTLES.
- #2 PLACE HCR IN THE OPEN POSITION. (if applicable)
- #3 PLACE ANNULAR IN THE CLOSE POSITION.
- #4 TURN ON PUMPS & RECORD TIME TO PRESSURE UP MANFOLD ON ACCUMULATOR  
TO AT LEAST 200 PSI OVER PRECHARGE. WITHIN 2 MIN. OR LESS.

RECORDED TIME \_\_\_\_\_ MINUTE 44 SEC.

- #5 OPEN VALVES TO NITROGEN BOTTLES & PRESSURE THE ACCUMULATOR BACK  
TO SHUT OFF POINT. THEN OPEN ALL PIPE RAMS & ANNULAR BEFORE PULLING  
PLUG AND DRILL PIPE OUT OF BOP.

Date: 1-25-10

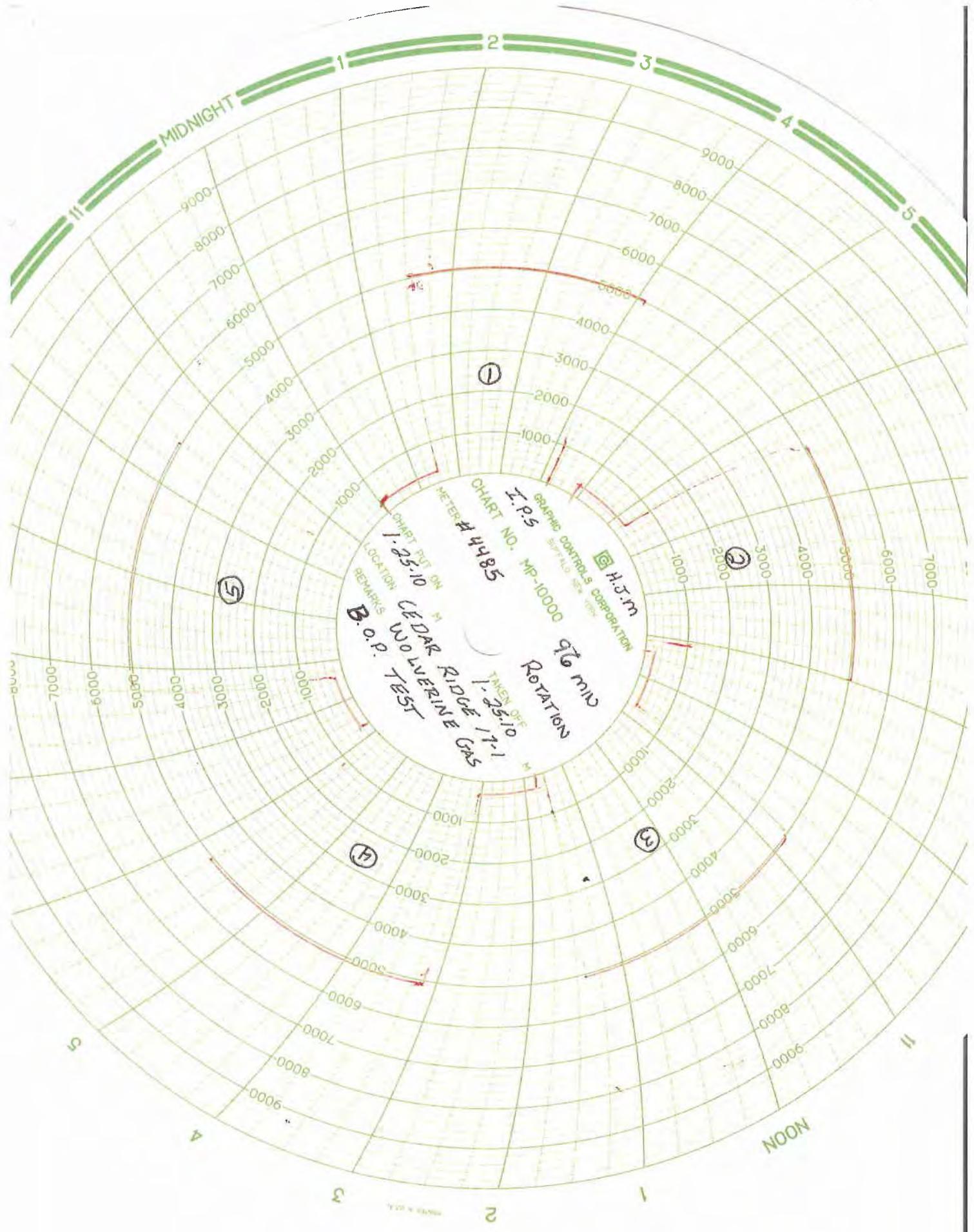
WOLVERINE

Contractor: PATTERSON 304

Location: CEDAR RIDGE (7-1)

~~WOLVERINE~~  
Testing

Test No.	Pm Time	Items Tested	P.S.I. / min.	
1.	3:12	DART VALVE	250	5
	3:18		5000	10
2.	4:42	LOWER PIPE RAMS, T.I.W VALVE	250	5
	4:47		5000	10
3.	5:04	UPPER PIPE RAMS, 1 <sup>ST</sup> KILL VALVE, 1 <sup>ST</sup>	250	5
	5:10	CHOKE VALVE, LOWER - I-BOP	5000	10
4.	5:55	UPPER PIPE RAMS, HCR CHOKE, 2 <sup>ND</sup> KILL	250	5
	6:01	VALVE, UPPER I-BOP	5000	10
5.	6:30	UPPER PIPE RAMS, CHOKE LINE RISER VALVE	250	5
	6:36	2 <sup>ND</sup> MANIFOLD VALVES, KILL CHECK.	5000	10
6.	6:55	A MUD LINE, BACK TO PUMPS, STAND PIPE	250	5
	7:07		4000	10
7.	7:24	ANNULAR	250	5
	7:30		2500	10
8.	8:00	BLINDS	250	5
	8:06		5000	10



MIDNIGHT

NOON

1 2 3 4 5

MIN

MINES & CO.

CHART NO. 4485  
METER # 4485  
I.P.S. MP-10000  
GRAPHIC CONTROLS CORPORATION  
H.J.M.  
TAKEN OFF 1-25-10  
ROTATION 976 MIN  
CEDAR RIDGE GAS  
WOLVERINE GAS  
B.O.P. TEST

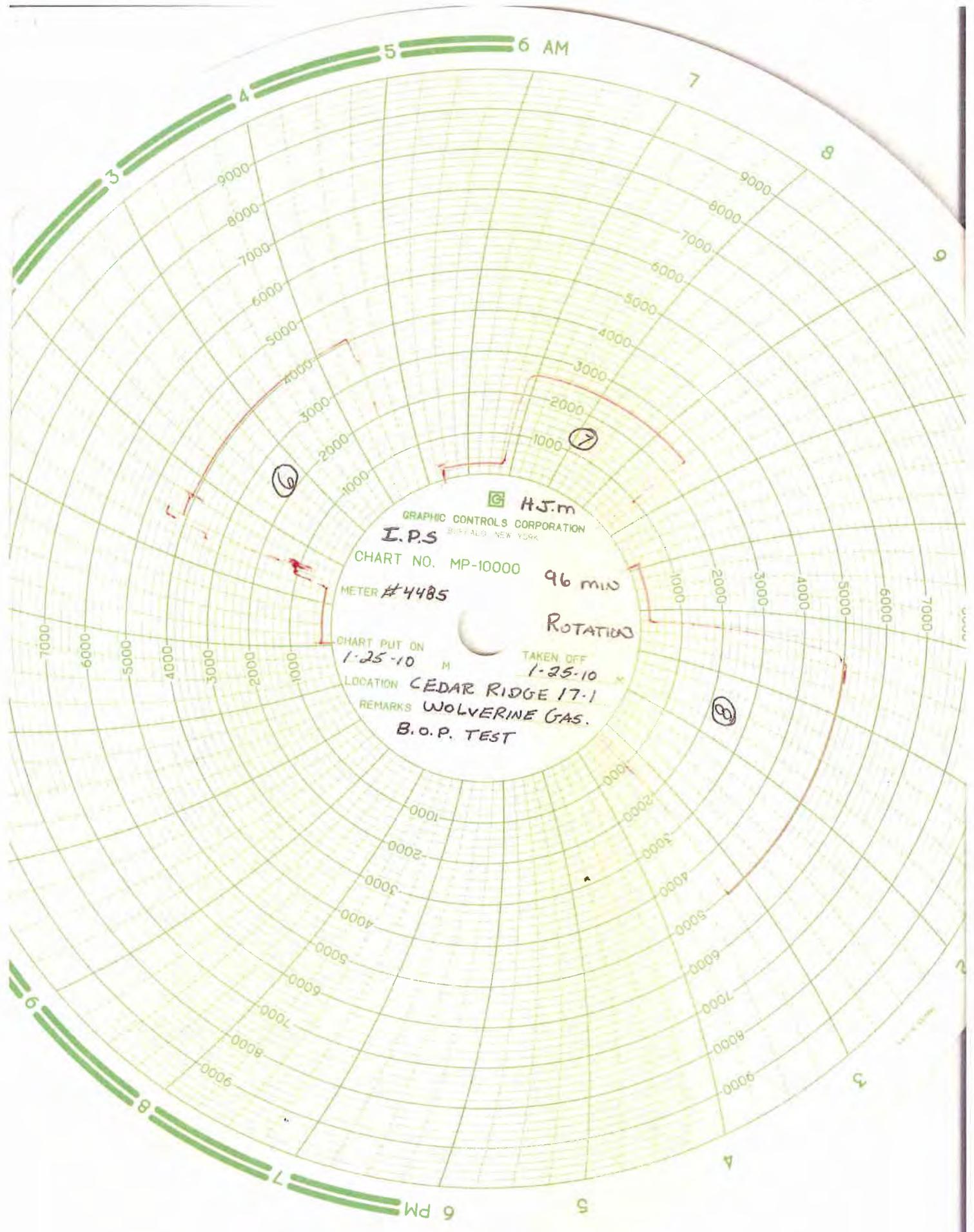
⑤

①

②

③

④



H.J.M

GRAPHIC CONTROLS CORPORATION  
BUFFALO, NEW YORK

I.P.S

CHART NO. MP-10000

METER #4485

96 MIN

ROTATION

CHART PUT ON  
1-25-10

TAKEN OFF  
1-25-10

LOCATION CEDAR RIDGE 17-1

REMARKS WOLVERINE GAS.

B.O.P. TEST

**Carol Daniels - Cedar Ridge 17-1 Update** T 19S R01E 5-19 43-039-50001

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Randy Morin" , "Revert, Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/26/2010 6:11 AM  
**Subject:** Cedar Ridge 17-1 Update

---

2/26/2010 6:08 AM

Short tripping at 11,689', PR 5 FPH, CP 11,850'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**

**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 26 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

T 19S R01E 5-19 43-039-50001

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" ,  
 "De la Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" ,  
 "Graves, Don" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" ,  
 "Jarvis, Dan" , "Jeff Melancon" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" ,  
 "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Randy Morin" ,  
 "Revert, Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks,  
 Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer,  
 Patrick"  
**Date:** 2/27/2010 4:01 PM  
**Subject:** Cedar Ridge 17-1 Update  
**Attachments:**

2/27/2010 3:50 PM

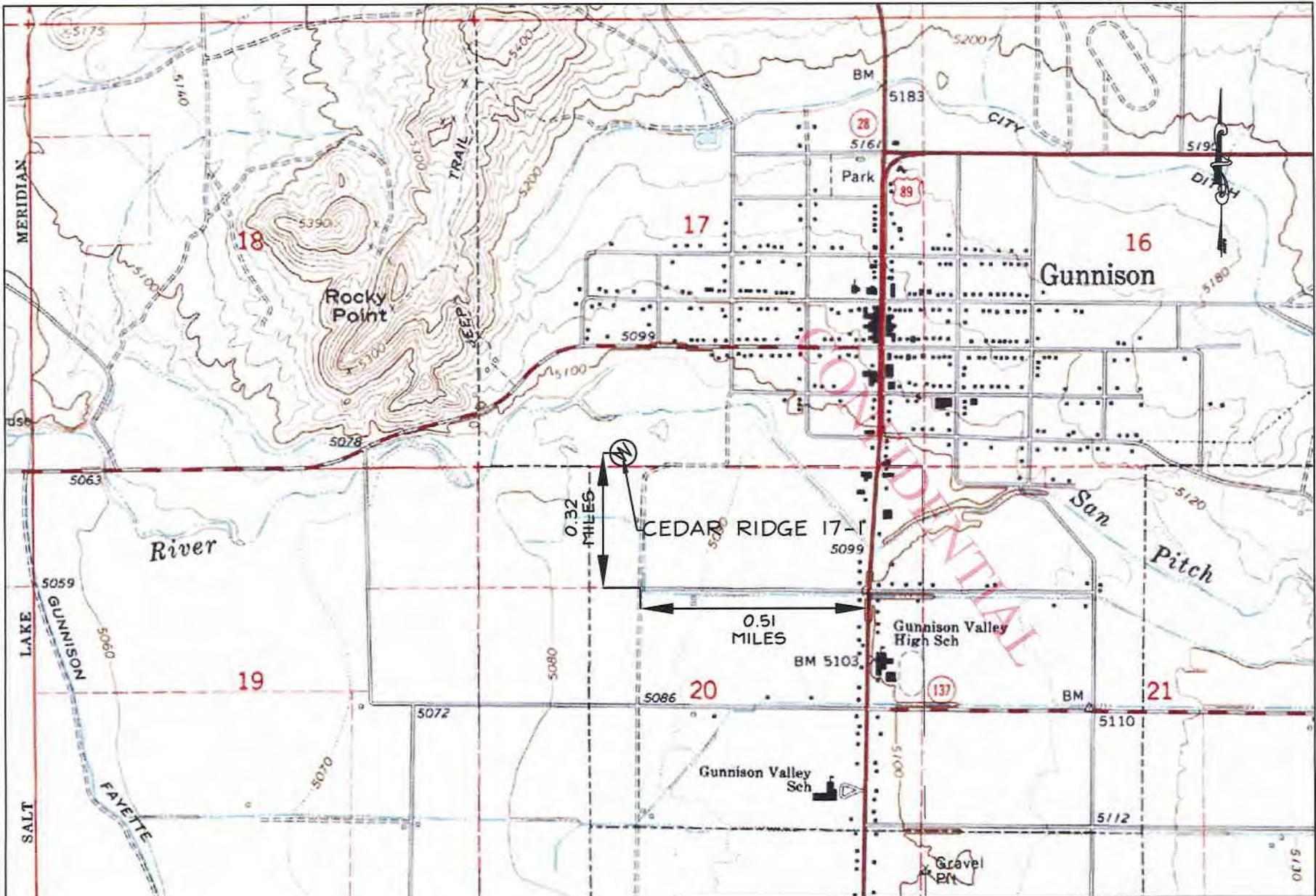
Short tripping at 11,945'. A marker has been found and an evaluation to determine our operations is underway. Maps are enclosed.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**  
**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

FEB 27 2010

DIV OF OIL GAS & MINING



Savage Surveying, Inc.

1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-886-8635  
 Fax: 435-886-0220



CEDAR RIDGE 17-1

WOLVERINE OPERATING COMPANY OF UTAH, LLC.

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0906-0065	1" = 2000'	07/22/09	0906-0065	COVER
	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: A.S.A.		

**Carol Daniels - Cedar Ridge 17-1 update** T19S R01E 5-19 4303950001

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore, Mark" , "Mark Sauter" , "Randy Morin" , "Revert, Scott" , "Shaun Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick"  
**Date:** 2/27/2010 6:07 AM  
**Subject:** Cedar Ridge 17-1 update

---

2/27/2010 6:04 AM

Drilling at 11,883', ROP 8.5 FPH, CP 12,000?

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Cedar Ridge 17-1; AFE 197**

**The well name must be in the e-mail "Subject:" for delivery**  
**To enter this location you must have a valid H2S card and be clean shaven**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED  
FEB 27 2010  
DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T 195 ROLE 5-19 43-037-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 2/28/2010 4:47 PM  
**Subject:** Cedar Ridge 17-1 Update  
**CC:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "De la  
Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Graves, Don" ,  
"Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jeff  
Melancon" , "Jered Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle  
Kohl" , "Larimore, Mark" , "Mark Sauter" , "Randy Morin" , "Revert, Scott" , "Shaun  
Burns" , "Smith Drilling Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance  
Barber" , "Vrona, John" , "Wright, Brian" , "Zimmer, Patrick" , "Johnson, Keith"

Status @ 1630hrs: Trip in hole to condition f/ Check Shot Survey. Currently @ 9,600'. No  
bridges.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

FEB 28 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar ridge 17-1 Update**

*T 195 POLE S-19 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 3/1/2010 6:23 AM  
**Subject:** Cedar ridge 17-1 Update  
**CC:** "Allen, Geoff" , "Burchett, Arlan" , "Cecil, Tom" , "Curt Bilbey" , "Daniels, Carol" , "De la  
Torre, Juan C" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "Hammell, Hank" ,  
"Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jeff Melancon" , "Jered  
Brady" , "Jeremy Talarovich" , "John Trout" , "Jones, Mark" , "Kyle Kohl" , "Larimore,  
Mark" , "Mark Sauter" , "Randy Morin" , "Revert, Scott" , "Shaun Burns" , "Smith Drilling  
Service (Authurs, Shane)" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona,  
John" , "Wright, Brian" , "Zimmer, Patrick" , "Johnson, Keith"

Status @ 0630hrs: Trip out f/ Check Shot Survey. Short Trip Slick. Loggers Dispatched.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED

MAR 01 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T199 ROLES-19 4303950001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 3/2/2010 7:56 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0800hrs: Running Open Hole Logs. Est Log time Remaining 12-18hrs.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

<p><b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING</p>	<p><b>FORM 9</b></p>
<p><b>SUNDRY NOTICES AND REPORTS ON WELLS</b></p> <p>Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.</p>	<p><b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented</p>
<p><b>1. TYPE OF WELL</b> Oil Well</p>	<p><b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b></p>
<p><b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC</p>	<p><b>7. UNIT or CA AGREEMENT NAME:</b></p>
<p><b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503</p>	<p><b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1</p>
<p><b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0153 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S</p>	<p><b>9. API NUMBER:</b> 43039500010000</p>
	<p><b>9. FIELD and POOL or WILDCAT:</b> WILDCAT</p>
	<p><b>COUNTY:</b> SANPETE</p>
	<p><b>STATE:</b> UTAH</p>

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 3/4/2010	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Please see attached document for drilling details.

**Accepted by the  
Utah Division of  
Oil, Gas and Mining  
FOR RECORD ONLY**  
 March 08, 2010

<p><b>NAME (PLEASE PRINT)</b> Helene Bardolph</p>	<p><b>PHONE NUMBER</b> 616 458-1150</p>	<p><b>TITLE</b> Engineering Administrative Assistant</p>
<p><b>SIGNATURE</b> N/A</p>	<p><b>DATE</b> 3/4/2010</p>	

Wolverine Gas and Oil Company of Utah, LLC  
Cedar Ridge 17-1  
API #43039500010000  
SESW, Section 17, T19S, R1E  
Sanpete County, Utah

February 2010 - Drilling Update:

February 1, 2010

Depth 9,089', New OBM delivered, no drilling progress made. MW 15.60 lb/gal., Vis 75 sec., FL 3.0 cc, Surveys: 6.10 at 8976'

February 2, 2010

Depth 9,089, OBM delivery, no drilling progress made. MW 15.60 lb/gal, Vis 75 sec, FL 3.0 cc.

February 3, 2010

Depth 9,090, circulate and condition hole. MW 15.50 lb/gal, Vis 55 sec, FL 1.0 cc.

February 4, 2010

Depth 9,123', circulate and condition, drilling, MW 15.50 lb/gal, Vis 57 sec, FL 1.5 cc

February 5, 2010

Depth 9,154', drilling, working stuck pipe. MW 16.00 lb/gal., Vis 60 sec., FL 1.5 cc, Surveys: 6.10 at 9,039'

February 6, 2010

Depth 9,154, Rig service, conditioning hole, no drilling progress made, MW 16.50 lb/gal., Vis 71 sec, FL 6.4 cc.

February 7, 2010

Depth 9,166', Rig service, drilling MW 16.70 lb/gal., Vis 73 sec., FL 1.0 cc.

February 8, 2010

Depth 9,350, Drilling, MW 16.80 lb/gal, Vis. 77 sec., FL .2 cc.

February 9, 2010

Depth 9,473', Drilling, MW 16.70 lb/gal, Vis 72 sec, FL .2 cc.

February 10, 2010

Depth 9,473'. No drilling progress made, MW 16.70 lb/gal, Vis 78 sec, FL .2 cc.

February 11, 2010

Depth 9,615'. Drilling. MW 16.08 lb/gas, Vis 75 sec, FL 1.0 cc, Surveys: 8.4 at 9445'

February 12, 2010

Depth, 9,816'. Drilling. MW 16.80 lb/gal, Vis 64 sec, FL 1.0 cc.

February 13, 2010

Depth 10,068'. Drilling. MW 16.70 lb./gal, Vis 63 sec, FL 1.0 cc; Surveys: 6.10 at 9,890'

February 14, 2010

Depth 10,156. Drilling, work stuck pipe. MW 16.70 lb/gal, Vis 59 sec, FL 1.0 cc, Surveys: 6.30 at 10,071'

February 15, 2010

Depth 10,346. Drilling. MW 16.70 lb/gal, Vis 61 sec, FL 1.0 cc, Surveys: 6.50 at 10,206'

February 16, 2010

Depth 10,571, Drilling. MW 16.70 lb/gal, Vis 59 sec, FL 1.0 cc. Surveys: 6.20 at 10,396'

February 17, 2010

Depth 10,782, Drilling. MW 16.70 lb/gal, Vis 62 sec, FL .8 cc, Surveys: 6.0 at 10,647'

February 18, 2010

Depth 10,910', Drilling. MW 16.70 lb/gal, Vis 56 sec, FL.8 cc. Surveys: 6.4 at 10,826'

February 19, 2010

Depth 10,959', Rig service, drilling. MW 16.70 lb/gal, Vis 73 sec, FL .8 cc.

February 20, 2010

Depth 11,134', Drilling, MW 16.70 lb/gal, Vis 63 sec, FL .5 cc, Surveys: 6.2 at 11,055'

February 21, 2010

Depth 11,262', Drilling, MW 16.70 lb/gal, Vis 63 sec, FL .5 cc, Surveys: 6.4 at 11,117'

February 22, 2010

Depth 11,395', Drilling, MW 16.70 lb/gal, Vis 67 sec, FL .5 cc., Surveys: 6.2 at 11,301'

February 23, 2010

Depth 11,553', Drilling, MW 16.70 lb/gal, Vis 63 sec, FL .5 cc, Surveys: 6.2 at 11,368'

February 24, 2010

Depth 11,553, Rig service, TIH, BHA change out, MW 16.70 lb/gal, Vis 69 sec, FL .5 cc, Surveys: 3.10 at 11,469'

February 25, 2010

Depth 11,611', Rig service, Drilling, MW 16.70 lb/gal, Vis 61 sec, FL .1 cc.

February 26, 2010

Depth 11,689', Rig service, Drilling, MW 16.70 lb/gal, Vis 60 sec, FL .1 cc, Surveys: 4.0 at 11,582'

February 27, 2010

Depth 11,883', Drilling, MW 16.70 lb/gal, Vis 60 sec, FL .2 cc, Surveys: 6.0 at 11,770'

February 28, 2010

Depth 11,945', Drilling, work stuck pipe, jarring, MW 16.70 lb/gal, Vis 59 sec, FL.2 cc, Surveys: 9.2 at 11,863'

**Carol Daniels - Cedar Ridge 17-1 Update**

*T 095 ROLF S-19 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 3/5/2010 7:30 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0730hrs: Laying Down DP. Will be running casing this afternoon & cementing in AM.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

MAR 05 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T195R01FS-19 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 3/5/2010 3:59 PM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 1600hrs: Laying down BHA. 450' to go.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

MAR 05 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** T199 R01E5-17 43 039-50001

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 3/6/2010 8:09 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0800hrs: Running Intermediate Casing. ETA on Bottom 2200hrs.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

MAR 06 2010

DIV. OF OIL, GAS & MINING

CONFIDENTIAL

**Carol Daniels - Cedar Ridge 17-1 Update**

*TAPS ROLES-19 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck" , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 3/6/2010 4:06 PM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 1600hrs: Running 7 5/8" Casing. Present Depth 4,000'. No Problems.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED  
MAR 06 2010  
DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T/RS ROIF S-19 43-039-50001*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 3/7/2010 6:46 AM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 0645hrs: Running Casing @ 9,300'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

MAR 07 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update**

*T 195 ROLF 9-19 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Donovan, Bill" , "Emerson, Chuck " , "Higuera, Ed" , "Magill, Jack" , "Tom, Zupan" ,  
"Treybig, Jerry"  
**Date:** 3/7/2010 9:33 PM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 2100hrs: Cementing Casing.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED  
MAR 07 2010  
DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T195 R01E S-19 43039 50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 3/8/2010 1:43 AM  
**Subject:** Cedar Ridge 17-1 Update

RECEIVED  
MAR 08 2010  
DIV. OF OIL, GAS & MINING

Status @ 0130hrs: Finished Cementing. Stripping OBM & LDDP.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED  
MAR 08 2010  
DIV. OF OIL, GAS & MINING

Carol Daniels - Cedar Ridge 17-1 update *TIPS ROIF 3-19 43-039-50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Burchett, Arlan" , "Curt Bilbey" , "Daniels, Carol" , "Doucet, Dustin" ,  
"Dustin Dunning" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" ,  
"Jarvis, Dan" , "Jones, James" , "Jones, Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert,  
Scott" , "Shaun Burns" , "Shelton, Shorty" , "Sparks, Jim" , "Spiering, Paul" , "Vance  
Barber" , "Vrona, John" , "Wright, Brian"  
**Date:** 3/8/2010 7:27 AM  
**Subject:** Cedar Ridge 17-1 update

---

3/8/2010 7:22 AM

Cement plug down at 1:00 AM 03/08/10.

WOC, LD 5" DP, stripping barite, cleaning tanks

**Bill Donovan**

**Drilling Supervisor**

**Wolverine Operating Company of Utah, LLC**

**Cedar Ridge 17-1; AFE 197**

**The well name must be in the e-mail "Subject:" for delivery**

**To enter this location you must have a valid H2S card and be clean shaven**

**Rig (970) 812-0022**

**Cell (720) 351-7470**

**Fax (435) 304-1222**

**wolvexpl@drillmail.net**

RECEIVED

MAR 08 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Cedar Ridge 17-1 Update** *T19S R01E S-19 43.039.50001*

---

**From:** "Wolverine Exploration Rig"  
**To:** ""Donovan, Bill"" , ""Emerson, Chuck "" , ""Higuera, Ed"" , ""Magill, Jack"" , ""Tom, Zupan"" ,  
"Treybig, Jerry"  
**Date:** 3/9/2010 4:22 PM  
**Subject:** Cedar Ridge 17-1 Update

---

Status @ 1615hrs: Removing 5M BOP from Sub & Cleaning OBM from Pits & SCE.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

RECEIVED

MAR 09 2010

DIV. OF OIL, GAS & MINING

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>  <b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> Patented
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>  <b>7. UNIT or CA AGREEMENT NAME:</b>
<b>1. TYPE OF WELL</b> Oil Well	<b>8. WELL NAME and NUMBER:</b> Cedar Ridge 17-1
<b>2. NAME OF OPERATOR:</b> WOLVERINE OPERATING COMPANY OF UTAH, LLC	<b>9. API NUMBER:</b> 43039500010000
<b>3. ADDRESS OF OPERATOR:</b> One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503	<b>PHONE NUMBER:</b> 616 458-1150 Ext
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0153 FSL 1718 FWL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: SESW Section: 17 Township: 19.0S Range: 01.0E Meridian: S	<b>9. FIELD and POOL or WILDCAT:</b> WILDCAT  <b>COUNTY:</b> SANPETE  <b>STATE:</b> UTAH

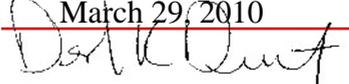
11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start: 3/26/2010	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input checked="" type="checkbox"/> <b>PLUG AND ABANDON</b>	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Sundry: Cedar Ridge 17-1 P&A Procedure Wolverine Operating Company of Utah, LLC intends to plug and abandon the Cedar Ridge 17-1, after encountering the Navajo and reaching a TD of 12,555. The well will be plugged in accordance with the attached procedure, which has been submitted to and approved by Dustin Doucet with UDOGM. Cement plugs will be set as follows: Plug #1: 350' balanced plug 12,250'-11,900' Plug #2: 100' balanced plug from 6300'-6200' Plug #3: 100 cement plug 4600'-4500' Plug #4: 2150' csg x csg annulus and 100' on top of cement retainer Plug #5: 100' balanced plug 120-20' See attached procedure.

**Approved by the  
Utah Division of  
Oil, Gas and Mining**

Date: March 29, 2010  


<b>NAME (PLEASE PRINT)</b> Helene Bardolph	<b>PHONE NUMBER</b> 616 458-1150	<b>TITLE</b> Engineering Administrative Assistant
<b>SIGNATURE</b> N/A	<b>DATE</b> 3/25/2010	



**The Utah Division of Oil, Gas, and Mining**

- State of Utah
  - Department of Natural Resources
- Electronic Permitting System - Sundry Notices

**Sundry Conditions of Approval Well Number 43039500010000**

**Conditions from email Approval:**

**>>> Dustin Doucet 3/25/2010 8:33 AM >>>**

**Tom,**

**Approval is granted to proceed with plan as submitted with the following conditions: Plug # 1 shall be tagged. Plug shall be inside 7 5/8" shoe. If Wolverine tests casing at this point and it is successful, remaining balanced plugs can be spotted and the tag can be skipped - assuming proper circulation while pumping plugs. Also note Plug # 5 should be spotted from 120' to 20', procedure erroneously states 4600' to 4500' - (fixed on current submittal 3/29/2010 DKD).**

**Please submit a sundry notice of intent with proposed plan noting my verbal approval. After work is complete a subsequent sundry should be submitted with information on the actual job details. Also a Well Completion Report (Form 8) will need to be submitted upon completion of work.**

**Dustin**

**Approved by the  
Utah Division of  
Oil, Gas and Mining**

**Date:** March 29, 2010  
**By:** Dustin Doucet

## Cedar Ridge 17-1 PLUG AND ABANDONMENT PROCEDURE

### PLUG #1 – 350' balanced plug 12,250-11,900'

1. Run in hole with open ended 4" XT39 dp to 12,250'.
2. Make up the top drive and circulate with rig pump at 70 spm bottoms up to condition mud for plugs. Rig up Halliburton cement lines while circulating.
3. Break off the top drive and make up the 4" XT39 pin x 2" 1502 thread half pump in sub. Install a lo-torq valve and the hook up the Halliburton cement line. Fill the line with water; close the lo-torq and pressure test same to 4000 psi/5 mins.
4. Open the valve and spot a balanced 350 foot plug from 12,250-11,900 as follows:
  - a. Pump 10 bbls of fresh water ahead.
  - b. M&P 53 sx (14.4 bbls) of 15.8 ppg G with 35 % silica flour and adds.
  - c. Flush with 4.2 bbls of fresh water
  - d. Finish displacement with 123.5 bbls of 11.6 ppg mud.
  - e. Knock Halliburton line loose and pull out of hole slowly and rack 5 stands.
  - f. Screw in with the top drive and circulate 1 ½ circulations the long way to clean up the drill pipe.
  - g. Continue to POOH and rack back 10 stands of DP.
  - h. Wait on cement 8 hours or until surface samples are firm.
  - i. While WOC run in hole with 10 stands of 4" HWDP, pull out of hole and lay down same.
  - j. Trip in hole with DP and tag cement plug to verify TOC is inside casing.
  - k. Break circulation, shut down pumps, close in well and pressure test casing to 2000 psi/30mins with less than 10% loss.
  - l. Pooh and lay down excess drill pipe to 6,300'.

### PLUG #2 – 100' balanced plug 6,300-6,200'

1. Make up the top drive and circulate with rig pump at 70 spm bottoms up to condition mud for plugs. Rig up Halliburton cement lines while circulating.
2. Break off the top drive and make up the 4" XT39 pin x 2" 1502 thread half pump in sub. Install a lo-torq valve and the hook up the Halliburton cement line. Fill the line with water; close the lo-torq and pressure test same to 4000 psi/5 mins.
3. Open the valve and spot a balanced 100 foot plug from 6300-6200' as follows:
  - a. Pump 10 bbls of fresh water ahead.
  - b. M&P 21 sx (4.3 bbls) of 15.8 ppg G with adds.
  - c. Flush with 4.3 bbls of fresh water
  - d. Finish displacement with 63.1 bbls of 11.6 ppg mud.
  - e. Knock Halliburton line loose and pull out of hole slowly and rack 2 stands.
  - f. Screw in with the top drive and circulate 1 ½ circulations the long way to clean up the drill pipe.
  - g. Continue to POOH and lay down the 4" dp to 4,600'.

**PLUG #3 – 100' balanced plug 4,600-4,500'.**

1. Make up the top drive and circulate with rig pump at 70 spm bottoms up to condition mud for plugs. Rig up Halliburton cement lines while circulating.
2. Break off the top drive and make up the 4" XT39 pin x 2" 1502 thread half pump in sub. Install a lo-torq valve and the hook up the Halliburton cement line. Fill the line with water; close the lo-torq and pressure test same to 4000 psi/5 mins.
3. Open the valve and spot a balanced 100 foot plug from 4600-4500' as follows:
  - a. Pump 10 bbls of fresh water ahead.
  - b. M&P 21 sx (4.3 bbls) of 15.8 ppg G with adds.
  - c. Flush with 4.3 bbls of fresh water
  - d. Finish displacement with 44.7 bbls of 11.6 ppg mud.
  - e. Knock Halliburton line loose and pull out of hole slowly and rack 2 stands.
  - f. Screw in with the top drive and circulate 1 ½ circulations the long way to clean up the drill pipe.
  - g. Continue to POOH and lay down the 4" dp to 2120'.

**PLUG #4 – 2,150' csg x csg annulus and 100' on top of retainer.**

1. Rig up line from casing spool to frac tank.
2. Rig up wireline truck, install TIW valve on DP, and rig up lubricator on top of TIW, pressure test lubricator to 2000 psi.
3. Run in hole with 1 9/16" casing punch w/ 4 shots, 0.3 dia x 5/8" deep, magnetic decentralized and O phase low side, perforating gun and CCL to 2150'.
4. Close the upper pipe rams, pack off on wireline, pressure 7 5/8" casing up to 500 psi. Perforate casing. Watch for pressure increase on lubricator as indication of perforations.
5. Pull perf gun into lubricator, close the TIW below tools and bleed off lubricator pressure.
6. Rig down wireline and lubricator.
7. Displace OBM from 10 ¾ x 7 5/8" casing annulus to frac tank. Hole should be balanced.
8. Open up rams and rig down TIW and pull out and rack back 2120' of dp.
9. Make up setting tool/stinger on 4" dp, and 7 5/8", 39# cement retainer.
10. Run in hole and set retainer at 2120' just above perforations at 2150'.
11. Pressure test retainer set on the 4 x 7 5/8" annulus to 500 psi.
12. Make up the top drive and circulate with rig pump at 70 spm bottoms up to condition mud for plugs. Rig up Halliburton cement lines while circulating.
13. Break off the top drive and make up the 4" XT39 pin x 2" 1502 thread half pump in sub. Install a lo-torq valve and the hook up the Halliburton cement line. Fill the line with water, close the lo-torq and pressure test same to 4000 psi/5 mins.
14. Open the valve and fill the casing x casing annulus with cement as follows:
  - a. Pump 5 bbls of fresh water ahead.
  - b. M&P 464 sx (95.1 bbls) of 15.8 ppg G with adds.
  - c. Flush with 3 bbls of fresh water
  - d. Finish displacement with 16.4 bbls of 11.6 ppg mud.

- e. Sting out of retainer and dump the 4.3 barrels of cement from inside the dp on top of the retainer.
- f. Knock Halliburton line loose and pull out of hole slowly and rack 2 stands.
- g. Screw in the top drive and circulate 1 ½ circulations the long way to clean up drill string.
- h. Continue to POOH and lay down the HWDP and 4" dp to 120'.

#### **PLUG #5 - 100' balanced plug 120-20'**

1. Make up the top drive and circulate with rig pump at 70 spm bottoms up to condition mud for plugs. Rig up Halliburton cement lines while circulating.
2. Break off the top drive and make up the 4" XT39 pin x 2" 1502 thread half pump in sub. Install a lo-torq valve and the hook up the Halliburton cement line. Fill the line with water; close the lo-torq and pressure test same to 2000 psi/5 mins.
3. Open the valve and spot a balanced 100 foot plug from 120-20' as follows:
  - a. Pump 10 bbls of fresh water ahead.
  - b. M&P 21 sx (4.3 bbls) of 15.8 ppg G with adds.
  - c. Flush with 4.3 bbls of fresh water
  - d. Finish displacement with 44.7 bbls of 11.6 ppg mud.
  - e. Knock Halliburton line loose and pull out of hole slowly and rack 2 stands.
  - f. Screw in with the top drive and circulate 1 ½ circulations the long way to clean up the drill pipe.
  - g. Continue to POOH and lay down the 4" dp to 0'.

#### **CUT OFF AND RECOVER CASING HANGER AND BRADEN HEAD**

1. Nipple down the BOPE.
2. Cut window slots around the 10 ¾" casing.
3. Completely cut off the 7 5/8" though the window slots.
4. Cut off the remaining 10 ¾" all below 5'. Weld on placard.
5. Remove braden head from cellar and send to FMC to remove Dutchman and refurbish.

**Carol Daniels - Cedar Ridge 17-1 Update**

*TIPS ROLES-19 43-039-50001*

**From:** "Wolverine Exploration Rig"

**To:** "Allen, Geoff" , "Burchett, Arlan" , "Curt Bilbey" , "Daniels, Carol" , "Doucet, Dustin" , "Dustin Dunning" , "Hammell, Hank" , "Howard, Art" , "Irons, Charlie" , "James, Aaron" , "Jarvis, Dan" , "Jones, James" , "Jones, Mark" , "Larimore, Mark" , "Mark Sauter" , "Revert, Scott" , "Shaun Burns" , "Shelton, Shorty" , "Sparks, Jim" , "Spiering, Paul" , "Vance Barber" , "Vrona, John" , "Wright, Brian" ,

**Date:** 3/25/2010 12:25 PM

**Subject:** Cedar Ridge 17-1 Update

**3/25/2010 12:18 PM**

**Starting trip in hole open ended to spot P&A plugs. Halliburton scheduled on location at 7PM. Will WOC 4-8 hrs and tag plug #1, pressure test the casing, spot 4 additional plugs including perfing and squeezing laying down all drill pipe.**

**Tom Zupan  
Drilling Supervisor  
Wolverine Operating Company of Utah, LLC  
Cedar Ridge 17-1; AFE 197  
Rig (970) 812-0022  
Cell (970) 314-8219  
Fax (435) 304-1222  
[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED**

**MAR 25 2010**

**DIV. OF OIL, GAS & MINING**

43-039-50001  
**IPS / dba Double Jack Testing**



03/15/10  
**FIELD TICKET**  
**27463**

Accounting Office: PO Drawer 2080 • Riverton, WY 82501 • (307) 857-0076  
 Field Operations: Riverton, WY (307) 857-0077  
 Evanston, WY (307) 789-9213  
 Rock Springs, WY (307) 382-4020  
 Big Piney, WY (307) 276-5265  
 Vernal, UT (435) 781-0448

DATE 3-13-10 / 3-14-10  
 OPERATOR WOLVERINE  
 CONTRACTOR PATTERSON 304  
 WELL NAME CEDAR RIDGE 17-1

CONFIDENTIAL

COUNTY SAN PETE STATE UT SECTION 17 TOWNSHIP 19S RANGE 1E

Items Tested:	LOW TEST PSI	TIME HELD MINUTES	HIGHEST PSI	TIME HELD MINUTES	COMMENTS
Top Pipe Rams					Closing Unit PSI _____
Bottom Pipe Rams					Closing Time of Rams _____
Blind Rams					Closing Time of Annular _____
Annular B.O.P.					Closed Casing Head Valve <u>12 YES</u>
Choke Manifold					Set Wear Sleeve <u>RIG (REU)</u>
Choke Line					
Kill Line <u>A2</u>	<u>250</u>	<u>5</u>	<u>10'000</u>	<u>10</u>	
Super Choke					
Upper Kelly					
Lower Kelly					
Floor Valve					<u>WINTERIZE 40%</u>
Dart Valve					<u>Glycol GOOD - 6</u>
Casing			<u>5000</u>	<u>30</u>	<u>CHOKE LINE</u>

**ADDITIONAL TESTS & COMMENTS** DRILLING  COMPLETION

F.I.T TEST TO 3'000 PSI, 10 MIN.

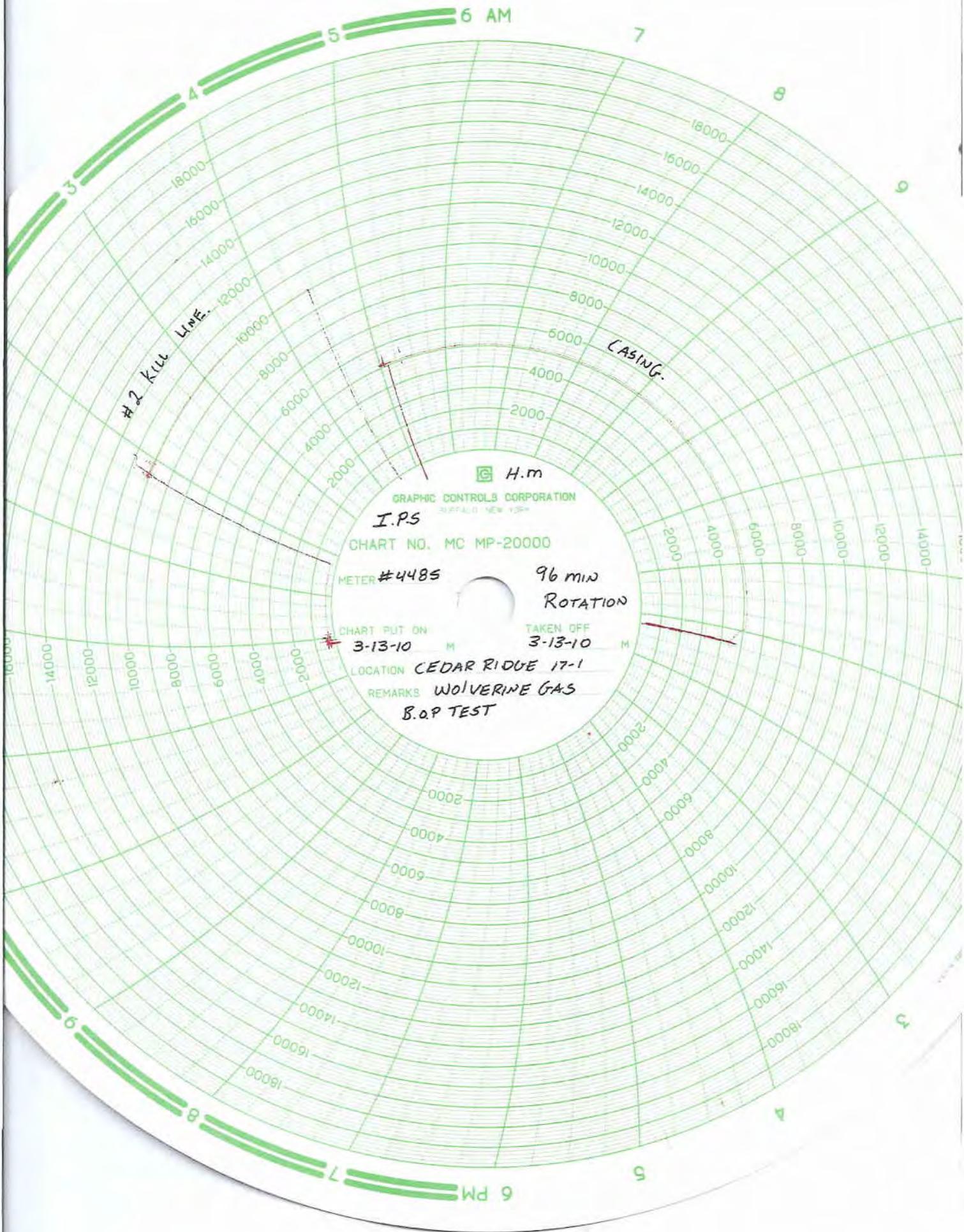
TEST PLUG	CHARGES
<u>AFE197 03/14/10</u>	
<u>MA 50000000</u>	
TEST PLUG	
TOP SUB.	
KELLY SUB.	
X-OVER SUB.	
OTHER <u>DAILY PERDIEM</u>	<u>75-</u>

QUANTITY	RATES	CHARGES
<u>1.</u>	UNIT RATES <u>SET UP CHARGE FIRST 7 HRS ON LOCATION</u>	<u>1900 -</u>
<u>24</u>	ADDITIONAL <u>HRS TO COMPLETE TEST AFTER SET UP</u>	<u>110/hr 2640 -</u>
<u>490</u>	MILEAGE <u>ROUND TRIP MILES FROM GRAND JCT SHOP</u>	<u>0.75/mi 1347.50</u>
<u>75</u>	ANTIFREEZE <u>GALLONS OF 40% GLYCOL MIX GOOD - 6°</u>	<u>7.15/gal 536.25</u>
<u>1.</u>	OTHER <u>HOTEL FEE</u>	<u>70 -</u>

PURCHASE ORDER # \_\_\_\_\_ HARRY J MELWIKOFF TESTED BY \_\_\_\_\_ SUBTOTAL 6'568<sup>75</sup>  
 NO ACCIDENTS #4495 THANK YOU! TAX \_\_\_\_\_  
 COMPANY REPRESENTATIVE \_\_\_\_\_ DOUBLE JACK TESTING UNIT NUMBER \_\_\_\_\_ TOTAL \_\_\_\_\_  
 Print Name

**NOTICE TO ALL CUSTOMERS**

If this account shall not be paid when due and it is placed with an attorney for collection, or if suit be instituted for collection, the undersigned agree(s) to pay in either case, reasonable expense of collection including attorney's fees and court cost in compliance with TRUTH IN LENDING AND THE UNIFORM CONSUMER CREDIT CODE, the following information disclosure, under the terms of our regular accounts, all amounts for service due and payable within THIRTY (30) DAYS from the receipt of an invoice for such services. A LATE CHARGE will be assessed when accounts are not paid when due. THE LATE CHARGE is computed by a "periodic rate" 1-3/4% PER MONTH which is an ANNUAL PERCENTAGE RATE OF 21% to the previous balance in the account on the billing date. No further credit can be extended on unpaid delinquent accounts until the delinquent account is paid in full. The contractor will not be held liable for damages caused by acts of God, or unforeseen circumstances that could not be reasonably anticipated in performing the work done as set forth above.



H.M

GRAPHIC CONTROLS CORPORATION  
BUFFALO NEW YORK

I.P.S

CHART NO. MC MP-20000

METER #4485

96 MIN

ROTATION

CHART PUT ON

3-13-10

TAKEN OFF

3-13-10

LOCATION

CEDAR RIDGE 17-1

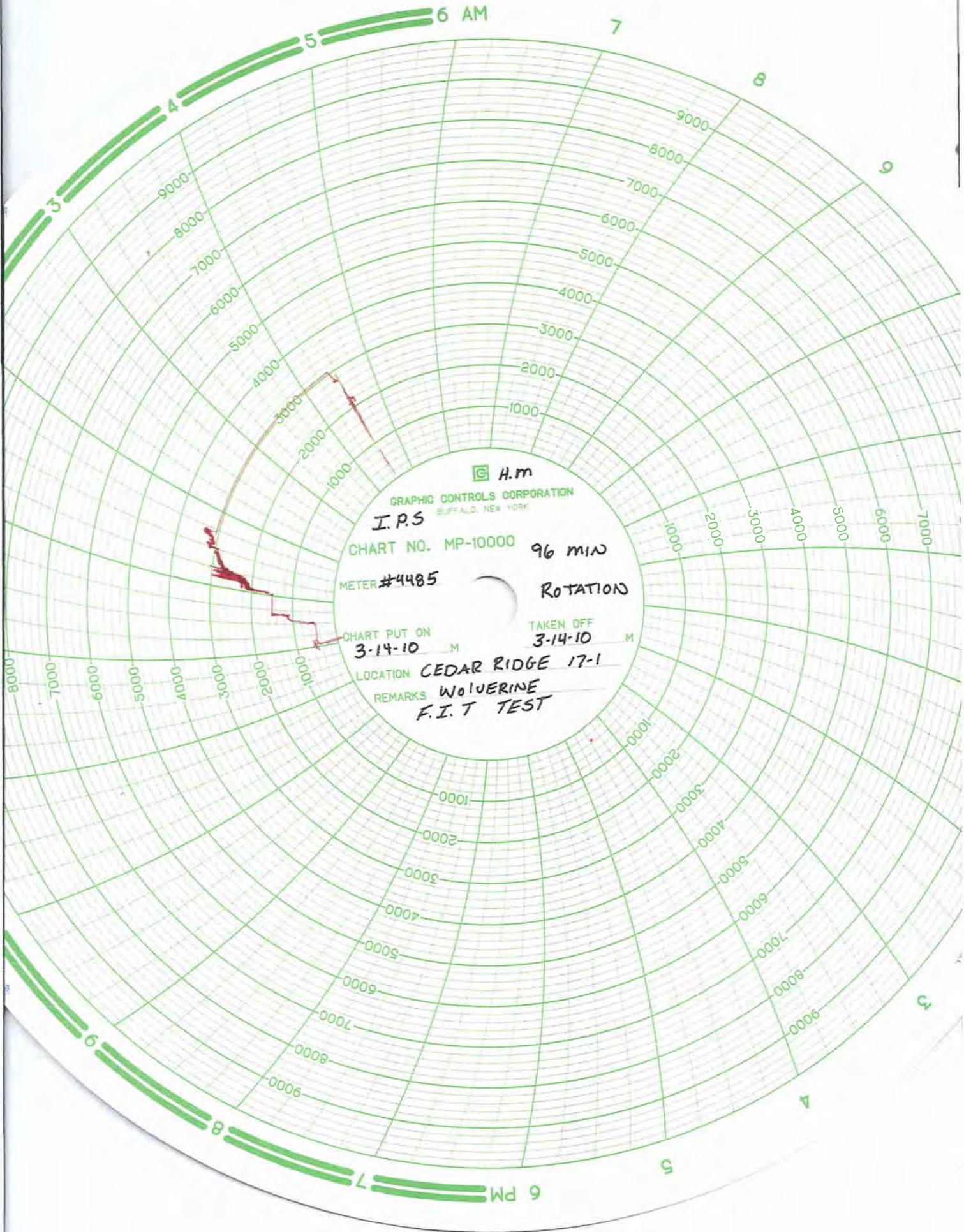
REMARKS

WOLVERINE GAS

B.O.P TEST

#2 KILL LINE

CASING



H.M

GRAPHIC CONTROLS CORPORATION  
BUFFALO, NEW YORK

I.P.S

CHART NO. MP-10000

96 MIN

METER #4485

ROTATION

CHART PUT ON  
3-14-10 M

TAKEN OFF  
3-14-10 M

LOCATION CEDAR RIDGE 17-1

REMARKS WOLVERINE  
F.I.T TEST





**WATER DISPOSAL TICKET**  
 RN INDUSTRIES/DALBO TRUCKING  
 BOX 98 • ROOSEVELT, UT 84066  
 OFFICE 435-722-2800

*03/18/10 Drilling - Bill.*



237593

**WATER DISPOSAL TICKET  
DISPOSAL SITES**

<input type="checkbox"/> PICEANCE	<input type="checkbox"/> SEEP RIDGE		#BBLs	PRICING/ BBL	TOTAL
<input type="checkbox"/> WONSIT	<input type="checkbox"/> DEBEQUE	<input checked="" type="checkbox"/> CHECK HERE IF PUT IN MUD PIT.	40		
<input type="checkbox"/> BLUEBELL	<input type="checkbox"/> PLEASANT VALLEY	<input type="checkbox"/> CATEGORY 1			
<input type="checkbox"/> GLEN BENCH-NORTH	<input type="checkbox"/> ACE	<input type="checkbox"/> PRODUCTION WATER			
<input type="checkbox"/> GLEN BENCH-SOUTH	<input type="checkbox"/> RANGELY	<input type="checkbox"/> PIT			
<input type="checkbox"/> CHAPITA		<input type="checkbox"/> OTHER			
DATE	3-11-10	<input type="checkbox"/> CATEGORY 2 - DRILLING MUD FLUSH, CEMENT FLUSH, GEL FLUSH, CELLARS, OTHER			
OIL COMPANY	Wolverine	<input checked="" type="checkbox"/> CATEGORY 3 - DRILLING MUD, CEMENT, GEL, TREATOR, CLEAN-OUTS, SALT WATER DISPOSAL TANK CLEAN-OUTS, TANK BOTTOMS, OTHER	40	15.00	600.00
LOCATION	Cedar Ridge 17-1	<input type="checkbox"/> CATEGORY 4 - CRUDE OIL SOLIDS, CRUDE OIL & DIRT MIXED, CRUDE OIL CONTAMINATED SOIL			
API #		<input type="checkbox"/> FRESH WATER PICKUP			
TRUCK COMPANY	TARGET				
DRIVER	Wesley				
TRUCK #	49				
TRUCK TICKET #					
				<b>TOTAL</b>	600.00

COMMENTS Jim S. Deaneon REF 197  
03/17/10

DRIVER SIGNATURE Wesley Pratt  
 CUSTOMER SIGNATURE \_\_\_\_\_

ROUTE OR RUN # \_\_\_\_\_  
 AFE# \_\_\_\_\_  
 USER# \_\_\_\_\_  
 CODE# \_\_\_\_\_

43-039-50001

Wolverine Gas and Oil Company of Utah, LLC  
Cedar Ridge 17-1  
API #43039500010000  
SESW, Section 17, T19S, R1E  
Sanpete County, Utah

March 2010 - Drilling Update:

March 1, 2010

Depth 11,945', Circulate and condition hole for logging. MW 17.00 lb/gal., Vis 73 sec., FL .2 cc, Surveys: 5.80 at 11,863'

March 2, 2010

Depth 11,945', Run service, logging. MW 17.10 lb/gal, Vis 82 sec, FL .2 cc. Surveys: 5.8 at 11,863'

March 3, 2010

Depth 11,945', logging, MW 17.20 lb/gal, Vis 105 sec, FL .2 cc. Surveys: 5.8 at 11,863'

March 4, 2010

Depth 11,945', logging, conditioning hole, MW 17.20 lb/gal, Vis 104 sec, FL .2 cc, Surveys: 5.8 at 11,863'

March 5, 2010

Depth 11,945', Rig service, conditioning hole, MW 17.10 lb/gal., Vis 89 sec., FL .2 cc, Surveys: 5.80 at 11,863'

March 6, 2010

Depth 11,945', Rig service, conditioning hole, MW 17.20 lb/gal., Vis 102 sec, FL .2 cc, Surveys: 5.8 at 11,863'.

March 7, 2010

Depth 11,945', Circulate out OBM, running intermediate casing, MW 17.2 lb/gal., Vis 107 sec., FL .2 cc. Surveys: 5.8 at 11,863'

March 8, 2010

Depth 11,945, Circulate out OBM, cementing intermediate casing MW 16.80 lb/gal, Vis. 77 sec., FL .2 cc. Surveys: 5.8 at 11,863'

March 9, 2010

Depth 11,945', Circulate out OBM. MW 17.10 lb/gal, Vis 70 sec, FL .2 cc. Surveys: 5.8 at 11,863'

March 10, 2010

Accepted by the  
Utah Division of  
Oil, Gas and Mining  
**FOR RECORD ONLY**

Depth 11,945'. Circulate out OBM. MW 11.00 lb/gal, Vis 51 sec, FL .2 cc., Surveys: 5.8 at 11,863'

March 11, 2010

Depth 11,945'. Circulate out OBM. MW 11.00 lb/gal, Vis 49 sec, FL 10.0 cc, Surveys: 5.8 at 11,863'

March 12, 2010

Depth, 11,945'. Circulate out OBM. MW 10.70 lb/gal, Vis 44 sec, Surveys: 5.8 at 11,863'

March 13, 2010

Depth 11,945. Circulate out OBM. MW 11.50 lb./gal, Vis 47 sec, FL 7.0 cc; Surveys: 5.80 at 11,863'

March 14, 2010

Depth 11,945'. Circulate out OBM. MW 11.90 lb./gal, Vis 47 sec, FL 5.2 cc; Surveys: 5.80 at 11,863'

March 15, 2010

Depth 11,972'. Drilling. MW 11.90 lb/gal, Vis 46 sec, FL 5.0 cc, Surveys: 5.80 at 11,863'.

March 16, 2010

Depth 12,085', Drilling. MW 11.90 lb/gal, Vis 43 sec, FL 4.5 cc. Surveys: 5.80 at 11,863'

March 17, 2010

Depth 12,249', Drilling. MW 12.10 lb/gal, Vis 45 sec, FL 4.5 cc, Surveys: .8 at 12,093'

March 18, 2010

Depth 12,261', Drilling. MW 12.10 lb/gal, Vis 47 sec, FL 3.6 cc. Surveys: .94 at 12,157'

March 19, 2010

Depth 12,294', Rig service, drilling. MW 12.10 lb/gal, Vis 65 sec, FL 3.2 cc.

March 20, 2010

Depth 12,330', Drilling, MW 11.80 lb/gal, Vis 53 sec, FL 3.4 cc, Surveys: .94 at 12,157', 2010

March 21, 2010

Depth 12,342', Drilling, MW 11.65 lb/gal, Vis 62 sec, FL 3.2 cc, Surveys: .94 at 12,157'

March 22, 2010

Depth 12,542', Drilling, MW 11.65 lb/gal, Vis 51 sec, FL 2.8 cc., Surveys: .94 at 12,157'

March 23, 2010

Depth 12,555', Drilling – TD 12,555', MW 11.65 lb/gal, Vis 50 sec, FL 3.0 cc, Surveys: .94 at 12,157'

Accepted by the  
Utah Division of  
Oil, Gas and Mining  
**FOR RECORD ONLY**

March 24, 2010

Depth 12,555', Service Rig, TIH – tool recovery operations, MW 11.65 lb/gal, Vis 70 sec, FL 2.8 cc, Surveys: .94 at 12,157'

March 25, 2010

Depth 12,555', TIH for fish, MW 11.70 lb/gal, Vis 69 sec, FL 2.4 cc, Surveys: .94 at 12,157'

March 26, 2010

Depth 12,555', Circulate and condition mud for cement plugs, MW 11.75 lb/gal, Vis 86 sec, FL 3.2 cc, Surveys: .94 at 12,157'

March 27, 2010

Depth 12,555', Set plug #1 from 12,004'-11,250', MW 11.60 lb/gal, Vis 68 sec, FL 3.1 cc, Surveys: .94 at 12,157'

March 28, 2010

Depth 12,555', Re-set plug #1, set plug #2 from 6305'-6155', MW 11.60 lb/gal, Vis 68 sec, FL 3.1 cc, Surveys: .94 at 12,157'

March 29, 2010

Depth 12,555', Set plug #3 from 4615'-4465'; set plug #4 from 2196'-1900', MW 11.60 lb/gal, Vis 68, FL 3.1 cc

March 30, 2010

Depth 12,555', Rig released

**Accepted by the  
Utah Division of  
Oil, Gas and Mining  
FOR RECORD ONLY**  
May 13, 2010

Wolverine Gas and Oil Company of Utah, LLC  
Cedar Ridge 17-1  
API #43039500010000  
SESW, Section 17, T19S, R1E  
Sanpete County, Utah

March 2010 - Drilling Update:

March 1, 2010

Depth 11,945', Circulate and condition hole for logging. MW 17.00 lb/gal., Vis 73 sec., FL .2 cc, Surveys: 5.80 at 11,863'

March 2, 2010

Depth 11,945', Run service, logging. MW 17.10 lb/gal, Vis 82 sec, FL .2 cc. Surveys: 5.8 at 11,863'

March 3, 2010

Depth 11,945', logging, MW 17.20 lb/gal, Vis 105 sec, FL .2 cc. Surveys: 5.8 at 11,863'

March 4, 2010

Depth 11,945', logging, conditioning hole, MW 17.20 lb/gal, Vis 104 sec, FL .2 cc, Surveys: 5.8 at 11,863'

March 5, 2010

Depth 11,945', Rig service, conditioning hole, MW 17.10 lb/gal., Vis 89 sec., FL .2 cc, Surveys: 5.80 at 11,863'

March 6, 2010

Depth 11,945', Rig service, conditioning hole, MW 17.20 lb/gal., Vis 102 sec, FL .2 cc. Surveys: 5.8 at 11,863'.

March 7, 2010

Depth 11,945', Circulate out OBM, running intermediate casing, MW 17.2 lb/gal., Vis 107 sec., FL .2 cc. Surveys: 5.8 at 11,863'

March 8, 2010

Depth 11,945', Circulate out OBM, cementing intermediate casing MW 16.80 lb/gal, Vis. 77 sec., FL .2 cc. Surveys: 5.8 at 11,863'

March 9, 2010

Depth 11,945', Circulate out OBM. MW 17.10 lb/gal, Vis 70 sec, FL .2 cc. Surveys: 5.8 at 11,863'

March 10, 2010

Depth 11,945'. Circulate out OBM. MW 11.00 lb/gal, Vis 51 sec, FL .2 cc., Surveys: 5.8 at 11,863'

March 11, 2010

Depth 11,945'. Circulate out OBM. MW 11.00 lb/gal, Vis 49 sec, FL 10.0 cc, Surveys: 5.8 at 11,863'

March 12, 2010

Depth, 11,945'. Circulate out OBM. MW 10.70 lb/gal, Vis 44 sec, Surveys: 5.8 at 11,863'

March 13, 2010

Depth 11,945. Circulate out OBM. MW 11.50 lb./gal, Vis 47 sec, FL 7.0 cc; Surveys: 5.80 at 11,863'

March 14, 2010

Depth 11,945'. Circulate out OBM. MW 11.90 lb./gal, Vis 47 sec, FL 5.2 cc; Surveys: 5.80 at 11,863'

March 15, 2010

Depth 11,972'. Drilling. MW 11.90 lb/gal, Vis 46 sec, FL 5.0 cc, Surveys: 5.80 at 11,863'.

March 16, 2010

Depth 12,085', Drilling. MW 11.90 lb/gal, Vis 43 sec, FL 4.5 cc. Surveys: 5.80 at 11,863'

March 17, 2010

Depth 12,249', Drilling. MW 12.10 lb/gal, Vis 45 sec, FL 4.5 cc, Surveys: .8 at 12,093'

March 18, 2010

Depth 12,261', Drilling. MW 12.10 lb/gal, Vis 47 sec, FL 3.6 cc. Surveys: .94 at 12,157'

March 19, 2010

Depth 12,294', Rig service, drilling. MW 12.10 lb/gal, Vis 65 sec, FL 3.2 cc.

March 20, 2010

Depth 12,330', Drilling, MW 11.80 lb/gal, Vis 53 sec, FL 3.4 cc, Surveys: .94 at 12,157'

March 21, 2010

Depth 12,342', Drilling, MW 11.65 lb/gal, Vis 62 sec, FL 3.2 cc, Surveys: .94 at 12,157'

March 22, 2010

Depth 12,542', Drilling, MW 11.65 lb/gal, Vis 51 sec, FL 2.8 cc., Surveys: .94 at 12,157'

March 23, 2010

Depth 12,555', Drilling – TD 12,555', MW 11.65 lb/gal, Vis 50 sec, FL 3.0 cc, Surveys: .94 at 12,157'

March 24, 2010

Depth 12,555', Service Rig, TIH – tool recovery operations, MW 11.65 lb/gal, Vis 70 sec, FL 2.8 cc, Surveys: .94 at 12,157'

March 25, 2010

Depth 12,555', TIH for fish, MW 11.70 lb/gal, Vis 69 sec, FL 2.4 cc, Surveys: .94 at 12,157'

March 26, 2010

Depth 12,555', Circulate and condition mud for cement plugs, MW 11.75 lb/gal, Vis 86 sec, FL 3.2 cc, Surveys: .94 at 12,157'

March 27, 2010

Depth 12,555', Set plug #1 from 12,004'-11,250', MW 11.60 lb/gal, Vis 68 sec, FL 3.1 cc, Surveys: .94 at 12,157'

March 28, 2010

Depth 12,555', Re-set plug #1, set plug #2 from 6305'-6155', MW 11.60 lb/gal, Vis 68 sec, FL 3.1 cc, Surveys: .94 at 12,157'

March 29, 2010

Depth 12,555', Set plug #3 from 4615'-4465'; set plug #4 from 2196'-1900', MW 11.60 lb/gal, Vis 68, FL 3.1 cc

March 30, 2010

Depth 12,555', Rig released

P&A

CONFIDENTIAL

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

AMENDED REPORT  FORM 8  
(highlight changes)

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. TYPE OF WELL: OIL WELL  GAS WELL  DRY  OTHER \_\_\_\_\_

b. TYPE OF WORK: NEW WELL  HORIZ. LATS.  DEEP-EN  RE-ENTRY  DIFF. RESVR.  OTHER \_\_\_\_\_

2. NAME OF OPERATOR:  
Wolverine Operating Company of Utah, LLC

3. ADDRESS OF OPERATOR: 55 Campau NW CITY Grand Rapids STATE MI ZIP 49503 PHONE NUMBER: (616) 458-1150

4. LOCATION OF WELL (FOOTAGES)  
AT SURFACE: 153' FSL, 1718' FWL, Sec 17, T19S, R1E  
AT TOP PRODUCING INTERVAL REPORTED BELOW: NA  
AT TOTAL DEPTH: 3 1728 510' FSL, 1229' FWL, Sec 17, T19S, R1E

*BHL Reviewed by Hsm*

5. LEASE DESIGNATION AND SERIAL NUMBER:  
Patented

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT or CA AGREEMENT NAME

8. WELL NAME and NUMBER:  
Cedar Ridge 17-1

9. API NUMBER:  
4303950001

10. FIELD AND POOL, OR WILDCAT  
Wildcat

11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:  
SESW 17 19S 1E S

12. COUNTY Sanpete 13. STATE UTAH

14. DATE SPUDDED: 10/7/2009 15. DATE T.D. REACHED: 3/23/2010 16. DATE COMPLETED: 3/30/2010 ABANDONED  READY TO PRODUCE  17. ELEVATIONS (DF, RKB, RT, GL): GL 5086.3

18. TOTAL DEPTH: MD 12,555 TVD 12,530 19. PLUG BACK T.D.: MD 0 TVD 0 20. IF MULTIPLE COMPLETIONS, HOW MANY? \* 21. DEPTH BRIDGE MD PLUG SET: TVD

22. TYPE ELECTRIC AND OTHER MECHANICAL LOGS RUN (Submit copy of each)  
XRMI, DLL, SD-DSN, FWS, BVP

23. WAS WELL CORED? NO  YES  (Submit analysis)  
WAS DST RUN? NO  YES  (Submit report)  
DIRECTIONAL SURVEY? NO  YES  (Submit copy)

24. CASING AND LINER RECORD (Report all strings set in well)

HOLE SIZE	SIZE/GRADE	WEIGHT (#/ft.)	TOP (MD)	BOTTOM (MD)	STAGE CEMENTER DEPTH	CEMENT TYPE & NO. OF SACKS	SLURRY VOLUME (BBL)	CEMENT TOP **	AMOUNT PULLED
38	30		0	69		cl. G 285	58	surface	
28	24		0	450		527	111	surface	
22	16 J55	84	0	2,100		1,515	693	surface	
14.75	10.75 J55	40.5	0	4,535		1,600	608	surface	
9.75	7.625 L-80	39-46	0	11,946		1,600	518	3770	

25. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
NA								

26. PRODUCING INTERVALS

FORMATION NAME	TOP (MD)	BOTTOM (MD)	TOP (TVD)	BOTTOM (TVD)	INTERVAL (Top/Bot - MD)	SIZE	NO. HOLES	PERFORATION STATUS
(A) NA								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(B)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(C)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(D)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>

28. ACID, FRACTURE, TREATMENT, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND TYPE OF MATERIAL

29. ENCLOSED ATTACHMENTS:  ELECTRICAL/MECHANICAL LOGS  GEOLOGIC REPORT  DST REPORT  DIRECTIONAL SURVEY  
 SUNDRY NOTICE FOR PLUGGING AND CEMENT VERIFICATION  CORE ANALYSIS  OTHER: \_\_\_\_\_

30. WELL STATUS:

RECEIVED

DEC 02 2010

31. INITIAL PRODUCTION

INTERVAL A (As shown in Item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU - GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATUS:

INTERVAL B (As shown in Item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU - GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATUS:

INTERVAL C (As shown in Item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU - GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATUS:

INTERVAL D (As shown in Item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU - GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATUS:

32. DISPOSITION OF GAS (Sold, Used for Fuel, Vented, Etc.)

33. SUMMARY OF POROUS ZONES (Include Aquifers):

Show all important zones of porosity and contents thereof. Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

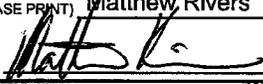
34. FORMATION (Log) MARKERS:

Formation	Top (MD)	Bottom (MD)	Descriptions, Contents, etc.	Name	Top (Measured Depth)
Navajo	12,357	12,555		Arapien Twin Creek Navajo	6,277 11,866 12,357

35. ADDITIONAL REMARKS (Include plugging procedure)

- see Plug and Abandon Sundry notice for additional details

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

NAME (PLEASE PRINT) Matthew Rivers TITLE Production Engineer  
 SIGNATURE  DATE 10/8/2010

This report must be submitted within 30 days of

- completing or plugging a new well
- drilling horizontal laterals from an existing well bore
- recompleting to a different producing formation
- reentering a previously plugged and abandoned well
- significantly deepening an existing well bore below the previous bottom-hole depth
- drilling hydrocarbon exploratory holes, such as core samples and stratigraphic tests

\* ITEM 20: Show the number of completions if production is measured separately from two or more formations.

\*\* ITEM 24: Cement Top - Show how reported top(s) of cement were determined (circulated (CIR), calculated (CAL), cement bond log (CBL), temperature survey (TS)).

Send to: Utah Division of Oil, Gas and Mining  
 1594 West North Temple, Suite 1210  
 Box 145801  
 Salt Lake City, Utah 84114-5801

Phone: 801-538-5340  
 Fax: 801-359-3940

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

AMENDED REPORT  FORM 8  
(highlight changes)

**CONFIDENTIAL**

**WELL COMPLETION OR RECOMPLETION REPORT AND LOG**

1. TYPE OF WELL: OIL WELL  GAS WELL  DRY  OTHER \_\_\_\_\_

b. TYPE OF WORK: NEW WELL  HORIZ. LATS.  DEEP-EN  RE-ENTRY  DIFF. RESVR.  OTHER \_\_\_\_\_

2. NAME OF OPERATOR: Wolverine Operating Company of Utah, LLC

3. ADDRESS OF OPERATOR: 55 Campau NW CITY Grand Rapids STATE MI ZIP 49503 PHONE NUMBER: (616) 458-1150

4. LOCATION OF WELL (FOOTAGES):  
AT SURFACE: Sec 17, T19S, R1E, Sanpete Co., Utah  
AT TOP PRODUCING INTERVAL REPORTED BELOW: NA  
AT TOTAL DEPTH: Sec 17, T19S, R1E, Sanpete Co., Utah

5. LEASE DESIGNATION AND SERIAL NUMBER: Patented

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT or CA AGREEMENT NAME

8. WELL NAME and NUMBER: Cedar Ridge 17-1

9. API NUMBER: 4303950001

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SESW 17 19S 1E S

12. COUNTY: Sanpete 13. STATE: UTAH

14. DATE SPURRED: 10/7/2009 15. DATE T.D. REACHED: 3/23/2010 16. DATE COMPLETED: 3/30/2010 ABANDONED  READY TO PRODUCE

17. ELEVATIONS (DF, RKB, RT, GL): GL 5086.3

18. TOTAL DEPTH: MD 12,555 TVD 12,530 19. PLUG BACK T.D.: MD TVD 20. IF MULTIPLE COMPLETIONS, HOW MANY? \* 21. DEPTH BRIDGE MD PLUG SET: TVD

22. TYPE ELECTRIC AND OTHER MECHANICAL LOGS RUN (Submit copy of each): XRMI, DLL, SD-DSN, FWS, BVP

23. WAS WELL CORED? NO  YES  (Submit analysis)  
WAS DST RUN? NO  YES  (Submit report)  
DIRECTIONAL SURVEY? NO  YES  (Submit copy)

24. CASING AND LINER RECORD (Report all strings set in well)

HOLE SIZE	SIZE/GRADE	WEIGHT (#/ft.)	TOP (MD)	BOTTOM (MD)	STAGE CEMENTER DEPTH	CEMENT TYPE & NO. OF SACKS	SLURRY VOLUME (BBL)	CEMENT TOP **	AMOUNT PULLED
38	30		0	69		cl. G 285	58	surface	
28	24		0	450		527	111	surface	
22	16 J55	84	0	2,100		1,515	693	surface	
14.75	10.75 J55	40.5	0	4,535		1,609	608	surface	
9.75	7.625 L-80	39-46	0	11,946		1,609	518	3770	

25. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
NA								

26. PRODUCING INTERVALS

FORMATION NAME	TOP (MD)	BOTTOM (MD)	TOP (TVD)	BOTTOM (TVD)	INTERVAL (Top/Bot - MD)	SIZE	NO. HOLES	PERFORATION STATUS
(A) NA								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(B)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(C)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(D)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>

28. ACID, FRACTURE, TREATMENT, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND TYPE OF MATERIAL

29. ENCLOSED ATTACHMENTS:  ELECTRICAL/MECHANICAL LOGS  GEOLOGIC REPORT  DST REPORT  DIRECTIONAL SURVEY  
 SUNDRY NOTICE FOR PLUGGING AND CEMENT VERIFICATION  CORE ANALYSIS  OTHER: \_\_\_\_\_

30. WELL STATUS:

**RECEIVED**

OCT 19 2010

DIV. OF OIL, GAS & MINING **CONFIDENTIAL**

31. INITIAL PRODUCTION

INTERVAL A (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL B (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL C (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL D (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

32. DISPOSITION OF GAS (Sold, Used for Fuel, Vented, Etc.)

33. SUMMARY OF POROUS ZONES (Include Aquifers):

Show all important zones of porosity and contents thereof. Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

34. FORMATION (Log) MARKERS:

Formation	Top (MD)	Bottom (MD)	Descriptions, Contents, etc.	Name	Top (Measured Depth)
Navajo	12,357	12,555		Arapien Twin Creek Navajo	6,277 11,866 12,357

35. ADDITIONAL REMARKS (Include plugging procedure)

- see Plug and Abandon Sundry notice for additional details

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

NAME (PLEASE PRINT) Matthew Rivers TITLE Production Engineer  
 SIGNATURE  DATE 10/8/2010

This report must be submitted within 30 days of

- completing or plugging a new well
- drilling horizontal laterals from an existing well bore
- recompleting to a different producing formation
- reentering a previously plugged and abandoned well
- significantly deepening an existing well bore below the previous bottom-hole depth
- drilling hydrocarbon exploratory holes, such as core samples and stratigraphic tests

\* ITEM 20: Show the number of completions if production is measured separately from two or more formations.

\*\* ITEM 24: Cement Top – Show how reported top(s) of cement were determined (circulated (CIR), calculated (CAL), cement bond log (CBL), temperature survey (TS)).

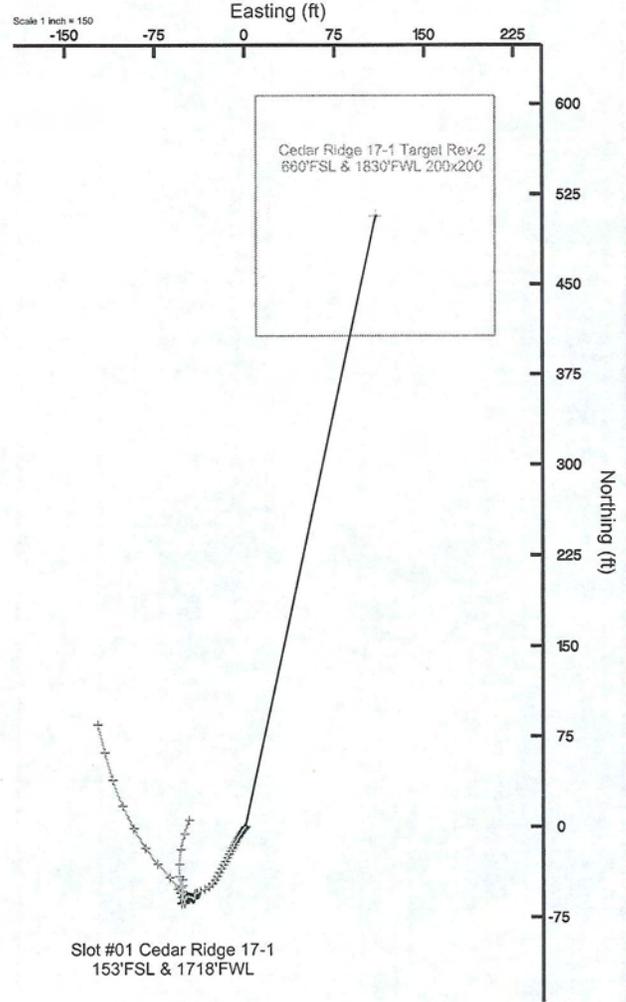
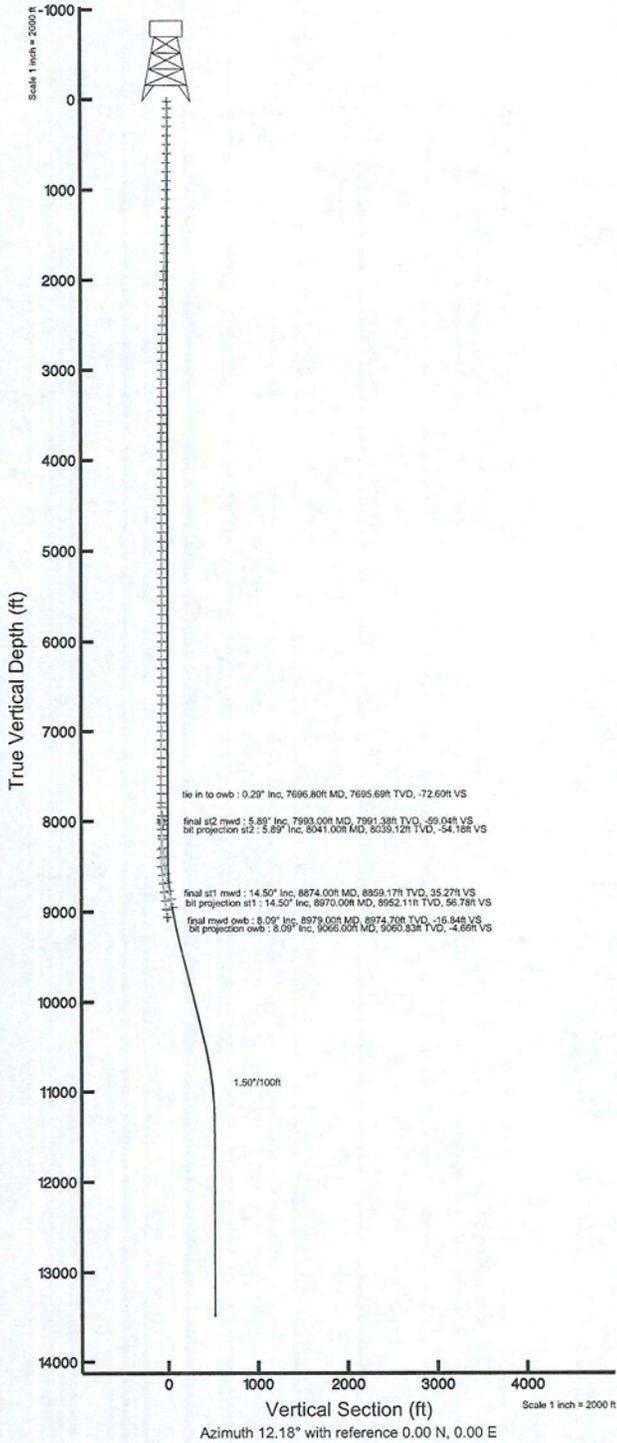
Send to: Utah Division of Oil, Gas and Mining Phone: 801-538-5340  
 1594 West North Temple, Suite 1210  
 Box 145801 Fax: 801-359-3940  
 Salt Lake City, Utah 84114-5801



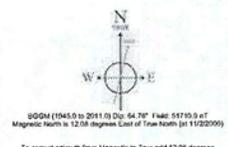
# WOLVERINE GAS & OIL COMPANY

Location: UTAH Slot: Slot #01 Cedar Ridge 17-1 153'FSL & 1718'FWL  
 Field: SANPETE COUNTY Well: Cedar Ridge 17-1  
 Facility: SEC.17-T19S-R1E Wellbore: Cedar Ridge 17-1 PWB

Plot reference wellpath is Cedar Ridge 17-1 PWP Rev-F.0	
True vertical depths are referenced to Patterson 304 (RT)	Grid System: NAD83 / Lambert Utah State Planes, Central Zone (4302), US feet
Measured depths are referenced to Patterson 304 (RT)	North Reference: True north
Patterson 304 (RT) to Mean Sea Level: 5108 feet	Scale: True distance
Mean Sea Level to Mud line (Facility: SEC.17-T19S-R1E): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: thomsuzc on 4/6/2010



**RECEIVED**  
**OCT 19 2010**  
**DIV. OF OIL, GAS & MINING**



To correct azimuth from Magnetic to True add 12.08 degrees

**CONFIDENTIAL**



# Actual Wellpath Report

Cedar Ridge 17-1 AWP

Page 1 of 5



REFERENCE WELLPATH IDENTIFICATION			
Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 153'FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 AWB
Facility	SEC.17-T19S-R1E		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Utah State Planes, Central Zone (4302), US feet	Software System	WellArchitect® 2.0
North Reference	True	User	Thomsuzc
Scale	0.99997	Report Generated	4/6/2010 at 4:05:50 PM
Convergence at slot	0.21° West	Database/Source file	Denver/Cedar_Ridge_17-1_AWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	1547078.89	6859368.73	39°09'00.677"N	111°49'44.841"W
Facility Reference Pt			1547078.89	6859368.73	39°09'00.677"N	111°49'44.841"W
Field Reference Pt			1546909.30	6859384.75	39°09'00.829"N	111°49'46.995"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Patterson 304 (RT) to Facility Vertical Datum	5108.00ft
Horizontal Reference Pt	Slot	Patterson 304 (RT) to Mean Sea Level	5108.00ft
Vertical Reference Pt	Patterson 304 (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Patterson 304 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	12.18°



# Actual Wellpath Report

Cedar Ridge 17-1 AWP

Page 2 of 5



INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 153'FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 AWB
Facility	SEC.17-T19S-R1E		

WELLPATH DATA (90 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	
0.00†	0.000	217.280	0.00	0.00	0.00	0.00	0.00	0.00
22.00	0.000	217.280	22.00	0.00	0.00	0.00	0.00	0.00
100.00	0.450	217.280	100.00	-0.28	-0.24	-0.19		0.58
200.00	0.520	213.350	200.00	-1.06	-0.94	-0.67		0.08
300.00	0.490	210.050	299.99	-1.89	-1.68	-1.14		0.04
400.00	0.660	216.850	399.99	-2.82	-2.52	-1.70		0.18
500.00	0.670	226.200	499.98	-3.82	-3.38	-2.46		0.11
600.00	0.690	212.540	599.97	-4.87	-4.29	-3.21		0.16
700.00	0.700	212.710	699.97	-6.01	-5.31	-3.86		0.01
800.00	0.820	214.870	799.96	-7.24	-6.42	-4.60		0.12
900.00	0.760	207.060	899.95	-8.54	-7.59	-5.31		0.12
1000.00	0.780	214.310	999.94	-9.82	-8.75	-6.00		0.10
1100.00	1.030	211.040	1099.93	-11.30	-10.08	-6.85		0.26
1200.00	1.040	208.220	1199.91	-13.02	-11.65	-7.74		0.05
1300.00	1.150	207.070	1299.89	-14.86	-13.34	-8.62		0.11
1400.00	1.480	206.780	1399.86	-17.08	-15.39	-9.66		0.33
1500.00	1.710	210.230	1499.83	-19.75	-17.83	-11.00		0.25
1600.00	1.590	210.770	1599.78	-22.48	-20.31	-12.46		0.12
1700.00	1.840	206.630	1699.74	-25.35	-22.94	-13.89		0.28
1800.00	1.910	207.340	1799.69	-28.52	-25.85	-15.37		0.07
1900.00	1.900	208.070	1899.63	-31.72	-28.80	-16.92		0.03
2000.00	1.940	208.890	1999.57	-34.93	-31.74	-18.51		0.05
2100.00	2.070	211.180	2099.51	-38.26	-34.77	-20.27		0.15
2200.00	2.150	207.340	2199.45	-41.78	-37.98	-22.06		0.16
2300.00	2.000	208.370	2299.38	-45.27	-41.18	-23.75		0.15
2400.00	2.170	212.620	2399.31	-48.72	-44.31	-25.60		0.23
2500.00	2.080	219.980	2499.25	-52.10	-47.30	-27.79		0.29
2600.00	2.310	234.660	2599.17	-55.19	-49.85	-30.60		0.61
2700.00	2.260	243.410	2699.09	-57.91	-51.90	-34.01		0.35
2800.00	2.430	244.460	2799.01	-60.44	-53.70	-37.68		0.18
2900.00	1.430	246.970	2898.95	-62.46	-55.10	-40.74		1.00
3000.00	0.360	252.770	2998.94	-63.33	-55.68	-42.19		1.07
3100.00	0.050	251.820	3098.94	-63.51	-55.79	-42.53		0.31
3200.00	0.190	198.080	3198.94	-63.70	-55.96	-42.63		0.17
3300.00	0.060	213.050	3298.94	-63.91	-56.16	-42.71		0.13
3400.00	0.190	199.590	3398.94	-64.12	-56.36	-42.79		0.13
3500.00	0.190	152.840	3498.94	-64.42	-56.66	-42.77		0.15
3600.00	0.120	182.300	3598.94	-64.65	-56.92	-42.70		0.10
3700.00	0.170	154.410	3698.94	-64.87	-57.16	-42.64		0.09
3800.00	0.150	197.140	3798.94	-65.11	-57.41	-42.61		0.12
3900.00	0.040	124.810	3898.93	-65.26	-57.56	-42.62		0.14
4000.00	0.120	134.600	3998.93	-65.33	-57.65	-42.52		0.08
4100.00	0.140	216.680	4098.93	-65.50	-57.82	-42.52		0.17
4200.00	0.070	200.130	4198.93	-65.67	-57.98	-42.61		0.08
4300.00	0.170	160.760	4298.93	-65.85	-58.18	-42.59		0.12



# Actual Wellpath Report

Cedar Ridge 17-1 AWP

Page 3 of 5



INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 153'FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 AWB
Facility	SEC.17-T19S-RIE		

WELLPATH DATA (90 stations) † = interpolated/extrapolated station							
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
4400.00	0.190	184.100	4398.93	-66.15	-58.48	-42.55	0.08
4500.00	0.140	200.970	4498.93	-66.43	-58.76	-42.60	0.07
4600.00	0.100	239.100	4598.93	-66.61	-58.92	-42.72	0.09
4700.00	0.170	200.850	4698.93	-66.82	-59.10	-42.85	0.11
4800.00	0.070	226.620	4798.93	-67.01	-59.29	-42.95	0.11
4900.00	0.120	228.500	4898.93	-67.15	-59.40	-43.07	0.05
5000.00	0.170	237.910	4998.93	-67.34	-59.54	-43.28	0.06
5100.00	0.180	229.040	5098.93	-67.57	-59.73	-43.52	0.03
5200.00	0.070	233.010	5198.93	-67.74	-59.87	-43.69	0.11
5300.00	0.110	230.200	5298.93	-67.86	-59.96	-43.81	0.04
5400.00	0.120	281.630	5398.93	-67.94	-60.00	-43.99	0.10
5500.00	0.180	354.540	5498.93	-67.79	-59.83	-44.10	0.18
5600.00	0.310	336.460	5598.93	-67.42	-59.42	-44.23	0.15
5700.00	0.370	292.940	5698.93	-67.14	-59.05	-44.63	0.26
5800.00	0.380	296.250	5798.93	-67.00	-58.78	-45.23	0.02
5900.00	0.590	284.750	5898.92	-66.89	-58.50	-46.02	0.23
6000.00	0.470	295.100	5998.92	-66.78	-58.19	-46.89	0.15
6100.00	0.450	269.060	6098.92	-66.78	-58.03	-47.66	0.21
6200.00	0.320	286.340	6198.91	-66.85	-57.95	-48.32	0.17
6300.00	0.370	284.630	6298.91	-66.81	-57.79	-48.90	0.05
6400.00	0.190	260.890	6398.91	-66.86	-57.74	-49.37	0.21
6500.00	0.270	161.350	6498.91	-67.12	-57.99	-49.46	0.35
6600.00	0.240	169.440	6598.91	-67.52	-58.42	-49.35	0.05
6700.00	0.280	219.690	6698.91	-67.93	-58.81	-49.46	0.22
6800.00	0.030	270.240	6798.91	-68.15	-59.00	-49.65	0.26
6900.00	0.250	231.030	6898.91	-68.32	-59.14	-49.84	0.23
7000.00	0.330	205.040	6998.91	-68.77	-59.53	-50.13	0.15
7100.00	0.370	221.760	7098.90	-69.34	-60.04	-50.47	0.11
7200.00	0.280	227.660	7198.90	-69.82	-60.44	-50.87	0.10
7300.00	0.180	188.230	7298.90	-70.17	-60.76	-51.07	0.18
7400.00	0.300	170.910	7398.90	-70.57	-61.18	-51.05	0.14
7500.00	0.490	177.770	7498.90	-71.23	-61.86	-50.99	0.20
7600.00	0.460	175.820	7598.89	-72.03	-62.69	-50.95	0.03
7696.80	0.290	156.330	7695.69	-72.60	-63.30	-50.82	0.22
7800.00	0.090	157.640	7798.89	-72.88	-63.61	-50.68	0.19
8025.00	0.280	265.620	8023.89	-73.18	-63.82	-51.17	0.14
8311.00	0.630	255.190	8309.88	-74.09	-64.28	-53.38	0.13
8407.00	1.490	11.790	8405.87	-73.09	-63.19	-53.64	1.94
8502.00	4.070	2.680	8500.75	-68.52	-58.61	-53.23	2.75
8598.00	5.800	350.670	8596.39	-60.65	-50.42	-53.85	2.09
8691.00	5.500	352.760	8688.94	-52.08	-41.36	-55.18	0.39
8788.00	6.590	3.830	8785.41	-42.18	-31.20	-55.39	1.64
8884.00	7.980	9.160	8880.63	-30.08	-19.12	-53.96	1.61
8979.00	8.090	17.950	8974.70	-16.84	-6.25	-50.85	1.30
9066.00†	8.090	17.950	9060.83	-4.66	5.40	-47.08	0.00



# Actual Wellpath Report

Cedar Ridge 17-1 AWP

Page 4 of 5



INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 153'FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 AWB
Facility	SEC.17-T19S-R1E		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
Cedar Ridge 17-1 Target Rev-2 660'FSL & 1830'FWL 200x200		11360.00	506.94	109.45	1547190.21	6859875.25	39°09'05.687"N	111°49'43.452"W	square

WELLPATH COMPOSITION					Ref Wellbore: Cedar Ridge 17-1 AWB	Ref Wellpath: Cedar Ridge 17-1 AWP
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment		Wellbore	
22.00	7696.80	Gyrodata standard - Drop gyro or Multi-shot	wolverine provided gyro <100-7696>		Cedar Ridge 17-1 AWB	
7696.80	8979.00	MTC (Collar, post-2000) (Standard)	9-7/8 hole section after assume vertical <7800-8979>		Cedar Ridge 17-1 AWB	
8979.00	9066.00	Blind Drilling (std)	Projection to bit		Cedar Ridge 17-1 AWB	



# Actual Wellpath Report

Cedar Ridge 17-1 AWP

Page 5 of 5



**INTEQ**

REFERENCE WELLPATH IDENTIFICATION			
Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Cedar Ridge 17-1 153'FSL & 1718'FWL
Area	UTAH	Well	Cedar Ridge 17-1
Field	SANPETE COUNTY	Wellbore	Cedar Ridge 17-1 AWP
Facility	SEC.17-T19S-R1E		

WELLPATH COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
8979.00	8.090	17.950	8974.70	final mwd owb	
9066.00	8.090	17.950	9060.83	bit projection owb	

A Gyrodata Directional Survey

for

WOLVERINE OIL & GAS

Lease: Wildcat Well: Cedar Ridge 17-1, 9 7/8

Location: Patterson 304, San Pete County, Utah

Job Number: RM0110RSS126

Run Date: 1-15-10 to 2-28-10

Surveyor: Jim Johnson  
Travis Hendrix

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 39.150185 deg. N Longitude: 111.829123 deg. E

Declination Used: 12.01 deg

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Local Horizontal Reference

CONFIDENTIAL

## A Gyrodata Directional Survey

Wolverine

Lease: Wildcat Well: Cedar Ridge 17-1, 9-7/8" PDC

Location: Patterson #304

Job Number: RM0110RSS126

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. feet	AZIMUTH deg.	HORIZONTAL COORDINATES feet
7993.00	5.89	2.59	-57.4	0.00	7991.38	72.1	227.2	48.97 S 52.93 W

**8053-11863 FT MAGNETIC MULTISHOT SURVEY**

ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO PATTERSON #304 R.K.B. @ 22 FEET

TIE-IN SURVEY FROM BAKER HUGHES AT 7993FT

8053.00	5.80	6.70	-51.3	0.71	8051.07	67.7	230.7	42.88 S 52.44 W
8117.00	5.80	6.00	-44.9	0.11	8114.74	63.3	234.8	36.46 S 51.72 W
8181.00	6.00	5.20	-38.3	0.34	8178.40	59.2	239.7	29.91 S 51.08 W
8244.00	5.90	4.70	-31.8	0.18	8241.06	55.7	245.1	23.40 S 50.52 W
8283.00	6.00	6.60	-27.8	0.57	8279.85	53.7	248.9	19.38 S 50.12 W
8339.00	5.90	7.00	-22.0	0.19	8335.55	51.3	254.6	13.62 S 49.43 W
8403.00	5.80	8.90	-15.5	0.34	8399.22	49.1	261.6	7.16 S 48.53 W
8466.00	6.10	6.60	-8.9	0.61	8461.88	47.7	269.2	0.69 S 47.65 W
8530.00	5.90	5.50	-2.3	0.36	8525.53	47.3	277.2	5.97 N 46.95 W
8594.00	6.10	8.90	4.4	0.64	8589.18	47.8	285.3	12.60 N 46.11 W
8657.00	6.10	7.00	11.1	0.32	8651.82	49.1	293.1	19.23 N 45.18 W
8721.00	6.20	7.60	17.9	0.19	8715.45	51.4	300.4	26.03 N 44.31 W
8785.00	6.00	10.70	24.7	0.60	8779.09	54.2	307.1	32.74 N 43.23 W
8849.00	6.20	9.20	31.5	0.40	8842.73	57.7	313.2	39.44 N 42.06 W
8912.00	6.40	9.20	38.5	0.32	8905.35	61.8	318.5	46.27 N 40.95 W
8976.00	6.10	11.10	45.4	0.57	8968.97	66.3	323.2	53.12 N 39.73 W
9039.00	6.10	11.90	52.1	0.13	9031.61	71.0	327.2	59.68 N 38.39 W

## A Gyrodata Directional Survey

Wolverine

Lease: Wildcat Well: Cedar Ridge 17-1, 9-7/8" PDC

Location: Patterson #304

Job Number: RM0110RSS126

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
9125.00	6.00	10.10	61.2	0.25	9117.13	77.8 331.9	68.58 N 36.66 W
9221.00	6.50	8.50	71.6	0.55	9212.56	86.3 336.1	78.89 N 34.98 W
9316.00	7.50	0.20	83.1	1.49	9306.85	96.7 339.3	90.41 N 34.16 W
9380.00	8.60	1.60	92.0	1.75	9370.22	105.0 341.1	99.37 N 34.01 W
9445.00	8.40	349.10	101.2	2.85	9434.51	114.3 342.3	108.89 N 34.78 W
9508.00	8.20	333.90	109.1	3.49	9496.86	123.3 342.2	117.45 N 37.62 W
9565.00	7.30	345.00	115.7	3.06	9553.34	131.0 342.1	124.60 N 40.35 W
9636.00	6.50	355.20	123.7	2.06	9623.83	139.4 342.5	132.96 N 41.85 W
9699.00	6.10	5.20	130.4	1.85	9686.45	146.0 343.3	139.85 N 41.85 W
9763.00	5.90	11.90	137.1	1.14	9750.10	152.0 344.4	146.45 N 40.86 W
9826.00	6.00	12.20	143.7	0.17	9812.76	157.9 345.5	152.84 N 39.50 W
9890.00	6.10	8.70	150.4	0.60	9876.41	164.0 346.5	159.47 N 38.28 W
9954.00	6.10	7.90	157.2	0.13	9940.04	170.3 347.4	166.20 N 37.29 W
10017.00	6.30	7.40	164.0	0.33	10002.68	176.7 348.1	172.94 N 36.39 W
10071.00	6.30	6.60	169.9	0.16	10056.35	182.3 348.7	178.82 N 35.67 W
10139.00	6.20	7.30	177.3	0.18	10123.95	189.4 349.4	186.17 N 34.77 W
10206.00	6.50	7.50	184.7	0.45	10190.53	196.5 350.1	193.52 N 33.82 W
10271.00	5.90	7.50	191.7	0.92	10255.15	203.2 350.7	200.48 N 32.90 W
10334.00	6.20	9.90	198.4	0.62	10317.80	209.5 351.2	207.04 N 31.89 W
10396.00	6.20	6.80	205.1	0.54	10379.44	215.9 351.8	213.66 N 30.92 W
10459.00	6.30	8.70	211.9	0.36	10442.07	222.5 352.3	220.46 N 30.00 W
10544.00	6.20	5.90	221.1	0.38	10526.56	231.4 352.8	229.63 N 28.82 W

## A Gyrodata Directional Survey

Wolverine

Lease: Wildcat Well: Cedar Ridge 17-1, 9-7/8" PDC

Location: Patterson #304

Job Number: RM0110RSS126

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
10585.00	6.40	8.40	225.6	0.83	10567.31	235.8 353.1	234.10 N 28.26 W
10647.00	6.00	9.50	232.3	0.67	10628.95	242.2 353.5	240.71 N 27.22 W
10710.00	6.30	8.60	239.1	0.50	10691.59	248.8 354.0	247.38 N 26.16 W
10773.00	6.40	9.70	246.0	0.25	10754.20	255.5 354.4	254.26 N 25.05 W
10826.00	6.40	8.90	251.9	0.17	10806.87	261.2 354.7	260.09 N 24.09 W
10866.00	6.40	7.10	256.4	0.50	10846.62	265.5 354.9	264.50 N 23.47 W
10928.00	6.20	7.80	263.2	0.35	10908.25	272.2 355.2	271.25 N 22.59 W
10992.00	6.20	11.30	270.1	0.59	10971.87	278.9 355.6	278.06 N 21.45 W
11050.00	6.20	9.50	276.4	0.34	11029.53	284.9 355.9	284.22 N 20.31 W
11117.00	6.40	10.30	283.7	0.33	11096.13	292.1 356.3	291.46 N 19.05 W
11180.00	6.30	11.20	290.7	0.22	11158.74	298.8 356.6	298.31 N 17.75 W
11243.00	6.30	14.20	297.6	0.52	11221.36	305.5 357.0	305.05 N 16.23 W
11301.00	6.20	10.90	303.9	0.64	11279.02	311.6 357.3	311.21 N 14.86 W
11368.00	6.20	13.60	311.1	0.44	11345.63	318.6 357.6	318.28 N 13.32 W
11469.00	3.10	25.10	319.2	3.19	11446.28	326.2 358.1	326.06 N 10.88 W
11509.00	1.80	55.60	320.7	4.50	11486.25	327.5 358.3	327.39 N 9.90 W
11582.00	4.00	77.40	322.5	3.32	11559.15	328.7 358.9	328.59 N 6.47 W
11645.00	5.50	52.80	325.5	3.96	11621.94	330.9 359.7	330.90 N 1.92 W
11707.00	6.20	32.90	330.8	3.44	11683.62	335.5 0.4	335.51 N 2.26 E
11770.00	6.00	15.80	337.2	2.89	11746.27	341.6 0.8	341.53 N 5.01 E
11833.00	5.90	9.50	343.7	1.05	11808.93	348.0 1.1	347.89 N 6.44 E

A Gyrodata Directional Survey

Wolverine

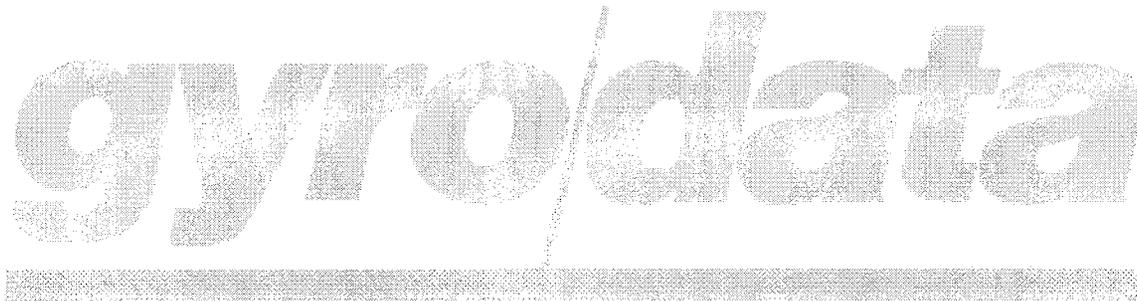
Lease: Wildcat Well: Cedar Ridge 17-1, 9-7/8" PDC

Location: Patterson #304

Job Number: RM0110RSS126

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
11863.00	5.80	9.20	346.8	0.35	11838.78	351.0 1.1	350.91 N 6.93 E

Final Station Closure: Distance: 350.98 ft Az: 1.13 deg.



# Schlumberger

9251 E 104th Ave.  
Commerce City, CO 80640  
(303) 439-5500

## SUB-SURFACE SURVEY CERTIFICATION REPORT

<u>Wolverine</u> Company		<u>April 1, 2010</u> Date
<u>Lease</u>	<u>Cedar Ridge 17-1 ST02</u>	<u>San Pete, UT</u> County/State
Survey Depths	<u>12093</u> to <u>12157</u> ft	
Type of Survey	<u>Measurements While Drilling (MWD)</u>	
Survey Depths	_____ ft	
Type of Survey	_____	
Survey Depths	_____ to _____ ft	
Type of Survey	_____	
Site Supervisor	<u>Chineme Eke</u>	

The data submitted in this report conforms to the standards and procedures as set forth by Schlumberger. This report represents a true and correct directional wellbore survey based on original survey data obtained at the well site.

Ed Moore  
Ed Moore  
DEC Engineer

This document has been subscribed and affirmed, or sworn before me in the county of Adams in the state of Colorado, this 12th day of Apr, 2010.

Louise Higgs

LOUISE HIGGS  
NOTARY PUBLIC  
STATE OF COLORADO  
MY COMMISSION EXPIRES 05/06/2013

CONFIDENTIAL

### Wolverine Cedar Ridge 17-1 ST2 12093' to 12157' Final Surveys

(Def Survey)

Report Date: April 12, 2010 - 12:14 PM  
 Client: Wolverine  
 Field: UT, San Pete County (NAD 83 CZ US Feet)  
 Structure / Slot: Cedar Ridge 17-1 ST2 Patterson 304 / Cedar Ridge 17-1 ST2  
 Well: Cedar Ridge 17-1 ST2  
 Borehole: ST2  
 UWI / API#: Borehole-3992083 / Unknown  
 Survey Name: Wolverine Cedar Ridge 17-1 ST2 11966' to 12261' Final Surveys  
 Survey Date: April 01, 2010  
 Tort / AHD / DDI / ERD Ratio: 65.194 % / 529.752 ft / 4.539 / 0.044  
 Grid Coordinate System: NAD83 Utah State Plane, Central Zone, US Feet  
 Location Lat / Long: N 39° 9' 0.67700", W 111° 49' 44.94100"  
 Location Grid N/E Y/D: N 6859368.761 NUS, E 1547078.923 HUS  
 Grid Convergence Angle: -0.21082883 °  
 Grid Scale Factor: 0.99936972

Survey / DLS Computation: Minimum Curvature / Lubinski  
 Vertical Section Azimuth: 1.960 ° (True North)  
 Vertical Section Origin: 0.000 ft, 0.000 ft  
 TVD Reference Datum: RKB  
 TVD Reference Elevation: 5112.000 ft above MSL  
 Seabed / Ground Elevation: 5090.000 ft above MSL  
 Magnetic Declination: 12.026 °  
 Total Field Strength: 51635.531 nT  
 Magnetic Dip Angle: 64.756 °  
 Declination Date: April 01, 2010  
 Magnetic Declination Model: IGGM 2009  
 North Reference: True North  
 Grid Correction: 0.000 °  
 Total Corr Mag North->True North: 12.026 °  
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azin True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/E/W)	Longitude (E/W)
Top Into Csg	11863.00	5.80	9.20	11838.77	350.88	350.85	6.92	0.35	6859719.56	1547087.14	N 39 9 4.14 W	111 49 44.75
7-5/8" Csg	11645.00	3.56	12.84	11920.50	357.49	357.43	8.15	2.75	6859726.13	1547089.39	N 39 9 4.21 W	111 49 44.74
Final MWD Survey	12093.00	0.80	136.92	12068.41	361.28	361.16	9.88	2.75	6859729.86	1547090.13	N 39 9 4.25 W	111 49 44.72
Last MWD Survey	12157.00	0.94	170.60	12132.40	360.45	360.31	10.27	0.81	6859729.01	1547090.52	N 39 9 4.24 W	111 49 44.71

132  
25

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7965 sigma

MD From (ft)	MD To (ft)	EDU Freq	Survey Tool Type	Borehole / Survey
0.000	22.000	Act Strs	SLB_BLIND-TREND-Depth Only	ST2 / Wolverine Cedar Ridge 17-1 ST2 11966' to 12261' Final Surveys
22.000	11863.000	Act Strs	SLB_NSG+MSHOT	ST2 / Wolverine Cedar Ridge 17-1 ST2 11966' to 12261' Final Surveys
11863.000	12157.000	Act Strs	SLB_MWD-STD	ST2 / Wolverine Cedar Ridge 17-1 ST2 11966' to 12261' Final Surveys