

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

FORM 3

AMENDED REPORT **APPLICATION FOR PERMIT TO DRILL**

<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>1. WELL NAME and NUMBER</b> Mayfield 19-1									
<b>4. TYPE OF WELL</b> Oil Well Coalbed Methane Well: NO				<b>3. FIELD OR WILDCAT</b> WILDCAT									
<b>6. NAME OF OPERATOR</b> WOLVERINE GAS & OIL COMPANY OF UTAH, LLC				<b>5. UNIT or COMMUNITIZATION AGREEMENT NAME</b> WOLVERINE									
<b>8. ADDRESS OF OPERATOR</b> 1140 N. Centennial Park Dr., Richfield, UT, 84701				<b>7. OPERATOR PHONE</b> 435 896-1943									
<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>9. OPERATOR E-MAIL</b> ciron@wolvgas.com									
<b>13. NAME OF SURFACE OWNER (if box 12 = 'fee')</b> Linsi Properties, LLC				<b>12. SURFACE OWNERSHIP</b> FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>									
<b>15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee')</b> P.O. Box 82, Mayfield, UT 84643				<b>14. SURFACE OWNER PHONE (if box 12 = 'fee')</b> 435-528-3588									
<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>16. SURFACE OWNER E-MAIL (if box 12 = 'fee')</b>									
<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>		431 FNL 1422 FEL		NWNE		30		19.0 S		2.0 E		S	
<b>Top of Uppermost Producing Zone</b>		416 FSL 2490 FEL		SWSE		19		19.0 S		2.0 E		S	
<b>At Total Depth</b>		500 FSL 2607 FEL		SWSE		19		19.0 S		2.0 E		S	
<b>21. COUNTY</b> SANPETE				<b>22. DISTANCE TO NEAREST LEASE LINE (Feet)</b> 33				<b>23. NUMBER OF ACRES IN DRILLING UNIT</b> 160					
				<b>25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed)</b> 0				<b>26. PROPOSED DEPTH</b> MD: 12900 TVD: 12600					
<b>27. ELEVATION - GROUND LEVEL</b> 5440				<b>28. BOND NUMBER</b>				<b>29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE</b> Mayfield Irrigation Company #63-2598					

**ATTACHMENTS**

**VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES**

<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> 10/27/2009	<b>EMAIL</b> ciron@wolvgas.com
<b>API NUMBER ASSIGNED</b> 43039500020000	<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>		
Prod	9.875	5.5	0	12900		
<b>Pipe</b>	<b>Grade</b>	<b>Length</b>	<b>Weight</b>			
	Grade L-80 Buttress	6000	20.0			
	Grade P-110 LT&C	5700	23.0			
	Grade L-80 LT&C	1200	23.0			

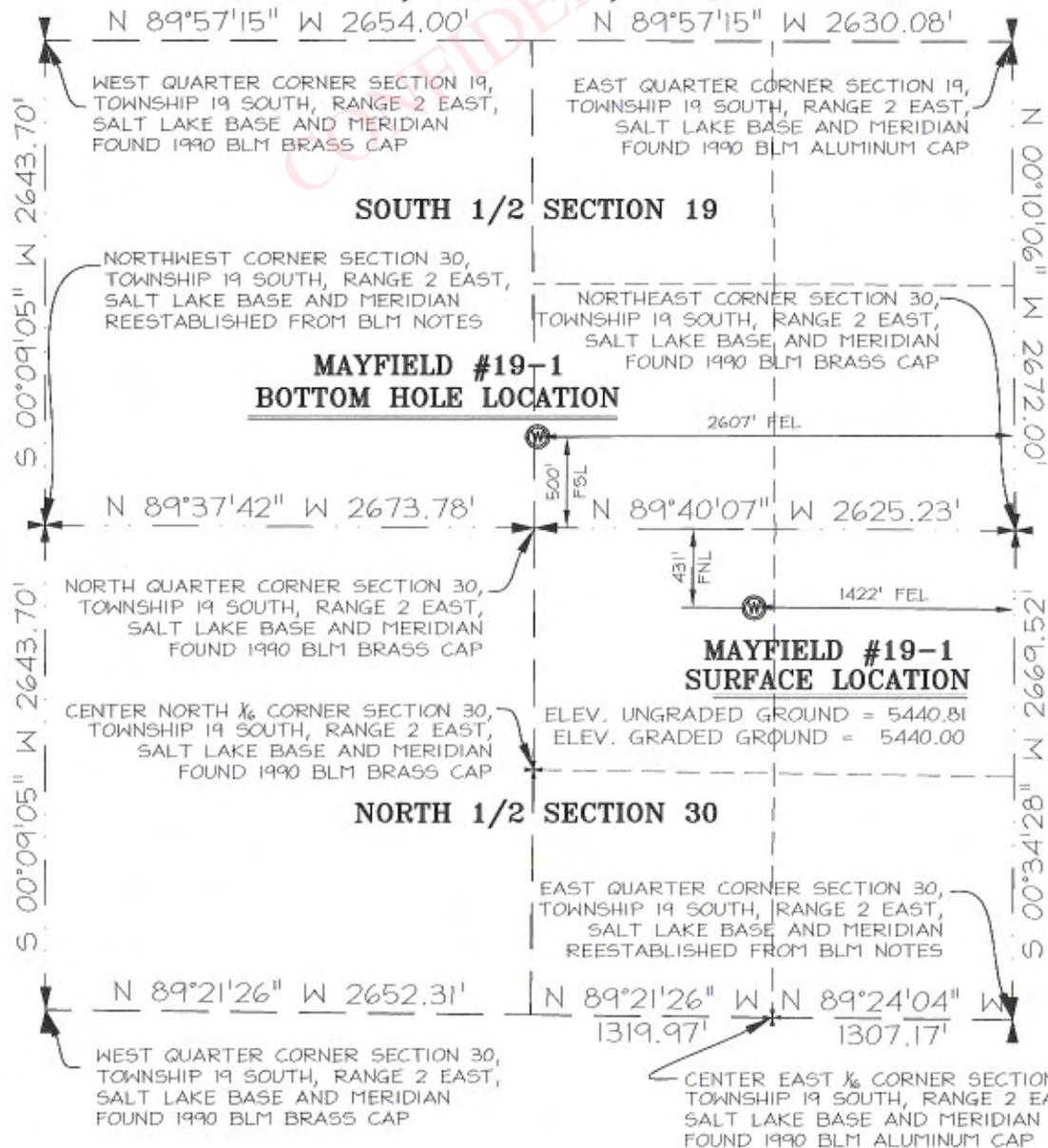
CONFIDENTIAL

**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	14.75	10.75	0	2000		
<b>Pipe</b>	<b>Grade</b>	<b>Length</b>	<b>Weight</b>			
	Grade HCK-55 ST&C	2000	40.5			

CONFIDENTIAL

**PART OF SECTIONS 19 & 30,  
T. 19 S., R. 2 E., S.L.B. & M.**



PROJECT  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.**  
 WELL LOCATION, LOCATED AS SHOWN  
 IN THE NW 1/4 OF THE NE 1/4 OF  
 SECTION 30, T.19 S., R.2 E., S.L.B. & M.  
 SANPETE COUNTY, UTAH

**LEGEND**



SECTION CORNER AS NOTED  
 QUARTER CORNER AS NOTED  
 PROPOSED WELL LOCATION

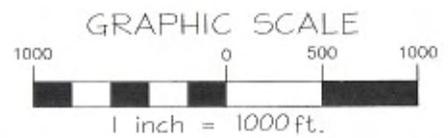
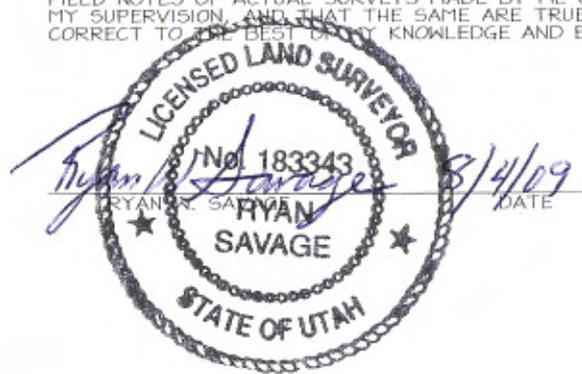
NOTE: THE PURPOSE OF THIS SURVEY WAS TO PLAT  
 MAYFIELD 19-1 WELL  
 LOCATED IN THE NW 1/4 OF THE NE 1/4 OF  
 SECTION 30, T.19 S., R.2 E., S.L.B. & M.  
 SANPETE COUNTY, UTAH.

**BASIS OF ELEVATION**

ELEVATION BASED ON USGS BENCH MARK #043  
 LOCATED IN THE NW 1/4 OF SECTION 24 T.19 S.,  
 R.2 E., S.L.B. & M.  
 ELEVATION USED 5227'

**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.



**BASIS OF BEARING**

BASIS OF BEARING USED WAS NORTH 89°40'07\"/>

SURFACE WELL LATITUDE:	39°08'03.753\"/>
SURFACE WELL LONGITUDE:	111°43'40.018\"/>
BOTTOM HOLE LATITUDE:	39°08'12.996\"/>
BOTTOM HOLE LONGITUDE:	111°43'55.050\"/>

**Savage Surveying, Inc.**

1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 801-896-8635  
 Fax: 801-896-0200



**LOCATION PLAT FOR MAYFIELD 19-1**

**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.**

DESIGN BY:	DATE	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	---	1\"/>			

AFFIDAVIT

STATE OF UTAH  
COUNTY OF SEVIER

-In the matter of the proposed Mayfield 19-1 well, to be situated on the following described lands in Sanpete County, Utah:

Township 19 South-Range 2 East. Salt Lake Meridian

-That portion of the following described lands lying in the N½NE¼ of Section 30:

Beginning N 46°30' W 11.7 chains from the SE corner of Section 19; thence S 72° W 7.5 chains, thence N 21°30' W 3.9 chains, thence N 57°30' W 1.5 chains, thence S 3°30'E 21.65 chains, thence S 65°30' E 2.24 chains, thence N 66°30' E 2.18 chains, thence S 4°30' W 29.25 chains, thence W 4.82 chains, thence N 20.2 chains, thence W 5.3 chains, thence N 25°15' W 11.05 chains, thence N 10 chains, thence E 2.8 chains, thence N 20°15' E 18.75 chains to Twelve Mile Creek, thence Southeasterly along the creek to point of beginning.

**Part of Serial #10535**

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 21, 2009, by Linsi Properties, LLC., 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.

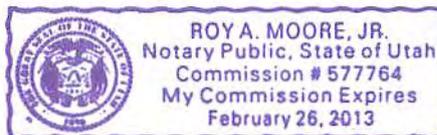
Subscribed and sworn this 31<sup>st</sup> day of July, 2009

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





# WOLVERINE GAS & OIL COMPANY

Location: UTAH Slot: Slot #01 Mayfield 19-1 431'FNL & 1422'FEL Section 30

Field: SANPETE COUNTY Well: Mayfield 19-1

Facility: SEC.30-T19S-R2E Wellbore: Mayfield 19-1 PWB

Plot reference wellpath is Mayfield 19-1 PWP Rev-F.0		Grid System: NAD83 / Lambert Utah State Planes, Central Zone (4302), US feet	
True vertical depths are referenced to SST 68 (RT)		North Reference: True north	
Measured depths are referenced to SST 68 (RT)		Scale: True distance	
SST 68 (RT) to Mean Sea Level: 5428 feet		Depths are in feet	
Mean Sea Level to Mud line (Facility: SEC.30-T19S-R2E): 0 feet		Created by: thomsuzo on 8/6/2009	
Coordinates are in feet referenced to Slot			

### Location Information

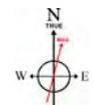
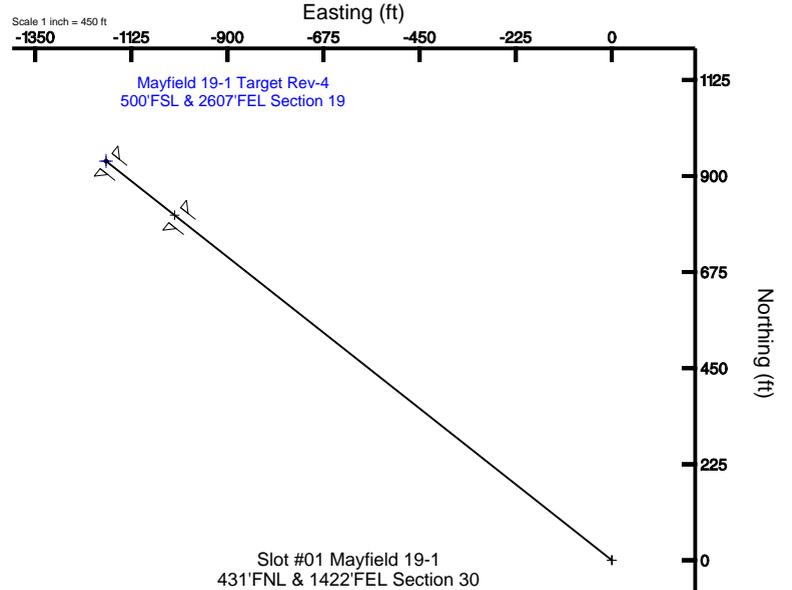
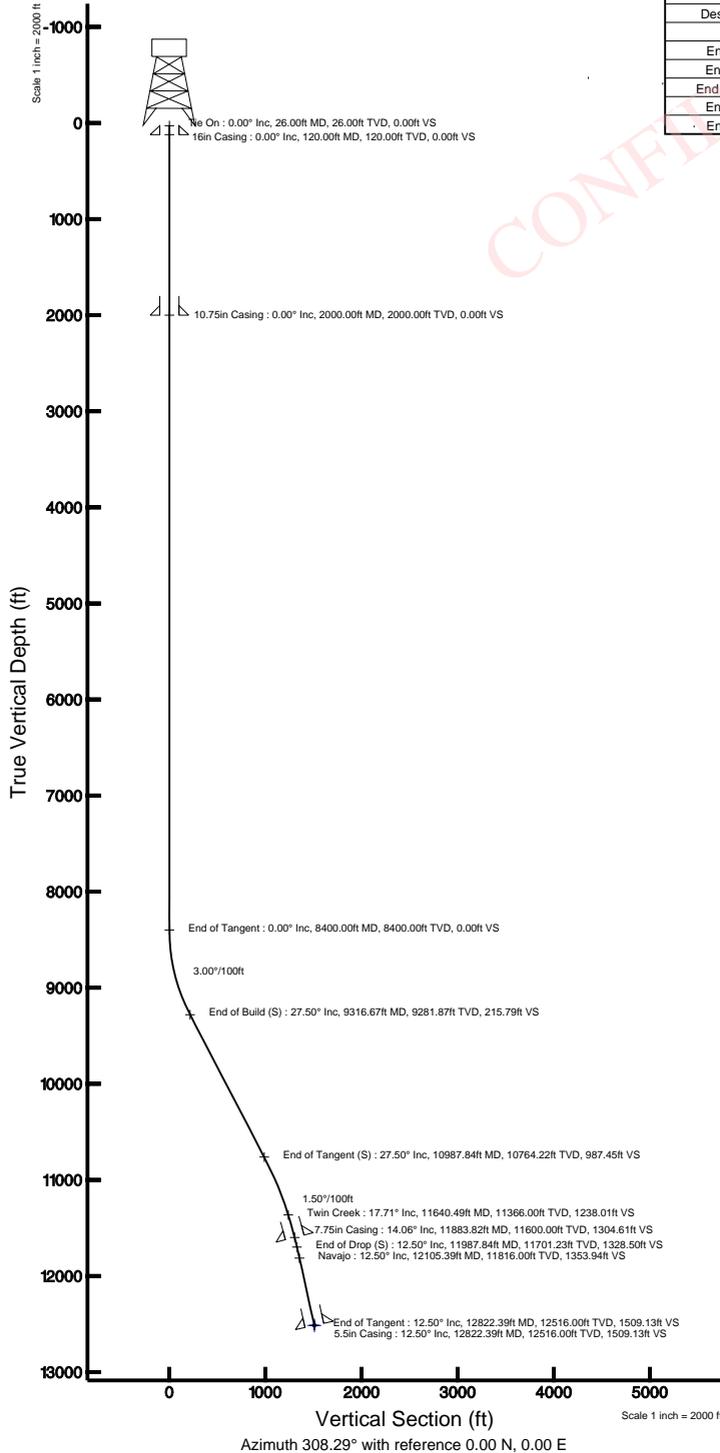
Facility Name		Grid East (USft)	Grid North (USft)	Latitude	Longitude		
SEC.30-T19S-R2E		1575803.695	6853520.143	39°08'03.753"N	111°43'40.018"W		
Slot		Local N (ft)	Local E (ft)	Grid East (USft)	Grid North (USft)	Latitude	Longitude
Slot #01 Mayfield 19-1 431'FNL & 1422'FEL Section 30		0.00	0.00	1575803.695	6853520.143	39°08'03.753"N	111°43'40.018"W
SST 68 (RT) to Mud line (Facility: SEC.30-T19S-R2E)				5428ft			
Mean Sea Level to Mud line (Facility: SEC.30-T19S-R2E)				0ft			
SST 68 (RT) to Mean Sea Level				5428ft			

### Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (USft)	Grid North (USft)	Latitude	Longitude
Mayfield 19-1 Target Rev-4 500'FSL & 2607'FEL Section 19	12822.39	12516.00	935.19	-1184.43	1574621.68	6854458.32	39°08'12.996"N	111°43'55.050"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	308.294	26.00	0.00	0.00	0.00	0.00
End of Tangent	8400.00	0.000	308.294	8400.00	0.00	0.00	0.00	0.00
End of Build (S)	9316.67	27.500	308.294	9281.87	133.73	-169.36	3.00	215.79
End of Tangent (S)	10987.84	27.500	308.294	10764.22	611.92	-775.00	0.00	987.45
End of Drop (S)	11987.84	12.500	308.294	11701.23	823.26	-1042.67	1.50	1328.50
End of Tangent	12822.39	12.500	308.294	12516.00	935.19	-1184.43	0.00	1509.13



BIGM (1945.0 to 2011.0) Dp: 64.78° Field: 51742 N  
Magnetic North is 12.08 degrees East of True North (at 7/28/2009)

To correct azimuth from Magnetic to True add 12.08 degrees  
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 12.08 = 102.08



# Planned Wellpath Report

Mayfield 19-1 PWP Rev-F.0

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**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

Operator	<b>WOLVERINE GAS &amp; OIL COMPANY</b>	Slot	<b>Slot #01 Mayfield 19-1 431'FNL &amp; 1422'FEL Section 30</b>
Area	<b>UTAH</b>	Well	<b>Mayfield 19-1</b>
Field	<b>SANPETE COUNTY</b>	Wellbore	<b>Mayfield 19-1 PWB</b>
Facility	<b>SEC.30-T19S-R2E</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>0.999973</b>	Report Generated	<b>8/6/2009 at 11:39:18 AM</b>
Convergence at slot	<b>0.15° West</b>	Database/Source file	<b>Denver/Mayfield_19-1_PWB.xml</b>

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	1575803.70	6853520.14	<b>39°08'03.753"N</b>	<b>111°43'40.018"W</b>
Facility Reference Pt			1575803.70	6853520.14	<b>39°08'03.753"N</b>	<b>111°43'40.018"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>5428.00ft</b>
Horizontal Reference Pt	<b>Slot</b>	SST 68 (RT) to Mean Sea Level	<b>5428.00ft</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>308.29°</b>



# Planned Wellpath Report

Mayfield 19-1 PWP Rev-F.0

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INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Mayfield 19-1 431'FNL & 1422'FEL Section 30
Area	UTAH	Well	Mayfield 19-1
Field	SANPETE COUNTY	Wellbore	Mayfield 19-1 PWB
Facility	SEC.30-T19S-R2E		

## WELLPATH DATA (134 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
0.00†	0.000	308.294	0.00	0.00	0.00	0.00	0.00
26.00	0.000	308.294	26.00	0.00	0.00	0.00	0.00
126.00†	0.000	308.294	126.00	0.00	0.00	0.00	0.00
226.00†	0.000	308.294	226.00	0.00	0.00	0.00	0.00
326.00†	0.000	308.294	326.00	0.00	0.00	0.00	0.00
426.00†	0.000	308.294	426.00	0.00	0.00	0.00	0.00
526.00†	0.000	308.294	526.00	0.00	0.00	0.00	0.00
626.00†	0.000	308.294	626.00	0.00	0.00	0.00	0.00
726.00†	0.000	308.294	726.00	0.00	0.00	0.00	0.00
826.00†	0.000	308.294	826.00	0.00	0.00	0.00	0.00
926.00†	0.000	308.294	926.00	0.00	0.00	0.00	0.00
1026.00†	0.000	308.294	1026.00	0.00	0.00	0.00	0.00
1126.00†	0.000	308.294	1126.00	0.00	0.00	0.00	0.00
1226.00†	0.000	308.294	1226.00	0.00	0.00	0.00	0.00
1326.00†	0.000	308.294	1326.00	0.00	0.00	0.00	0.00
1426.00†	0.000	308.294	1426.00	0.00	0.00	0.00	0.00
1526.00†	0.000	308.294	1526.00	0.00	0.00	0.00	0.00
1626.00†	0.000	308.294	1626.00	0.00	0.00	0.00	0.00
1726.00†	0.000	308.294	1726.00	0.00	0.00	0.00	0.00
1826.00†	0.000	308.294	1826.00	0.00	0.00	0.00	0.00
1926.00†	0.000	308.294	1926.00	0.00	0.00	0.00	0.00
2026.00†	0.000	308.294	2026.00	0.00	0.00	0.00	0.00
2126.00†	0.000	308.294	2126.00	0.00	0.00	0.00	0.00
2226.00†	0.000	308.294	2226.00	0.00	0.00	0.00	0.00
2326.00†	0.000	308.294	2326.00	0.00	0.00	0.00	0.00
2426.00†	0.000	308.294	2426.00	0.00	0.00	0.00	0.00
2526.00†	0.000	308.294	2526.00	0.00	0.00	0.00	0.00
2626.00†	0.000	308.294	2626.00	0.00	0.00	0.00	0.00
2726.00†	0.000	308.294	2726.00	0.00	0.00	0.00	0.00
2826.00†	0.000	308.294	2826.00	0.00	0.00	0.00	0.00
2926.00†	0.000	308.294	2926.00	0.00	0.00	0.00	0.00
3026.00†	0.000	308.294	3026.00	0.00	0.00	0.00	0.00
3126.00†	0.000	308.294	3126.00	0.00	0.00	0.00	0.00
3226.00†	0.000	308.294	3226.00	0.00	0.00	0.00	0.00
3326.00†	0.000	308.294	3326.00	0.00	0.00	0.00	0.00
3426.00†	0.000	308.294	3426.00	0.00	0.00	0.00	0.00
3526.00†	0.000	308.294	3526.00	0.00	0.00	0.00	0.00
3626.00†	0.000	308.294	3626.00	0.00	0.00	0.00	0.00
3726.00†	0.000	308.294	3726.00	0.00	0.00	0.00	0.00
3826.00†	0.000	308.294	3826.00	0.00	0.00	0.00	0.00
3926.00†	0.000	308.294	3926.00	0.00	0.00	0.00	0.00
4026.00†	0.000	308.294	4026.00	0.00	0.00	0.00	0.00
4126.00†	0.000	308.294	4126.00	0.00	0.00	0.00	0.00
4226.00†	0.000	308.294	4226.00	0.00	0.00	0.00	0.00
4326.00†	0.000	308.294	4326.00	0.00	0.00	0.00	0.00



# Planned Wellpath Report

Mayfield 19-1 PWP Rev-F.0

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INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Mayfield 19-1 431'FNL & 1422'FEL Section 30
Area	UTAH	Well	Mayfield 19-1
Field	SANPETE COUNTY	Wellbore	Mayfield 19-1 PWB
Facility	SEC.30-T19S-R2E		

## WELLPATH DATA (134 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
4426.00†	0.000	308.294	4426.00	0.00	0.00	0.00	0.00
4526.00†	0.000	308.294	4526.00	0.00	0.00	0.00	0.00
4626.00†	0.000	308.294	4626.00	0.00	0.00	0.00	0.00
4726.00†	0.000	308.294	4726.00	0.00	0.00	0.00	0.00
4826.00†	0.000	308.294	4826.00	0.00	0.00	0.00	0.00
4926.00†	0.000	308.294	4926.00	0.00	0.00	0.00	0.00
5026.00†	0.000	308.294	5026.00	0.00	0.00	0.00	0.00
5126.00†	0.000	308.294	5126.00	0.00	0.00	0.00	0.00
5226.00†	0.000	308.294	5226.00	0.00	0.00	0.00	0.00
5326.00†	0.000	308.294	5326.00	0.00	0.00	0.00	0.00
5426.00†	0.000	308.294	5426.00	0.00	0.00	0.00	0.00
5526.00†	0.000	308.294	5526.00	0.00	0.00	0.00	0.00
5626.00†	0.000	308.294	5626.00	0.00	0.00	0.00	0.00
5726.00†	0.000	308.294	5726.00	0.00	0.00	0.00	0.00
5826.00†	0.000	308.294	5826.00	0.00	0.00	0.00	0.00
5926.00†	0.000	308.294	5926.00	0.00	0.00	0.00	0.00
6026.00†	0.000	308.294	6026.00	0.00	0.00	0.00	0.00
6126.00†	0.000	308.294	6126.00	0.00	0.00	0.00	0.00
6226.00†	0.000	308.294	6226.00	0.00	0.00	0.00	0.00
6326.00†	0.000	308.294	6326.00	0.00	0.00	0.00	0.00
6426.00†	0.000	308.294	6426.00	0.00	0.00	0.00	0.00
6526.00†	0.000	308.294	6526.00	0.00	0.00	0.00	0.00
6626.00†	0.000	308.294	6626.00	0.00	0.00	0.00	0.00
6726.00†	0.000	308.294	6726.00	0.00	0.00	0.00	0.00
6826.00†	0.000	308.294	6826.00	0.00	0.00	0.00	0.00
6926.00†	0.000	308.294	6926.00	0.00	0.00	0.00	0.00
7026.00†	0.000	308.294	7026.00	0.00	0.00	0.00	0.00
7126.00†	0.000	308.294	7126.00	0.00	0.00	0.00	0.00
7226.00†	0.000	308.294	7226.00	0.00	0.00	0.00	0.00
7326.00†	0.000	308.294	7326.00	0.00	0.00	0.00	0.00
7426.00†	0.000	308.294	7426.00	0.00	0.00	0.00	0.00
7526.00†	0.000	308.294	7526.00	0.00	0.00	0.00	0.00
7626.00†	0.000	308.294	7626.00	0.00	0.00	0.00	0.00
7726.00†	0.000	308.294	7726.00	0.00	0.00	0.00	0.00
7826.00†	0.000	308.294	7826.00	0.00	0.00	0.00	0.00
7926.00†	0.000	308.294	7926.00	0.00	0.00	0.00	0.00
8026.00†	0.000	308.294	8026.00	0.00	0.00	0.00	0.00
8126.00†	0.000	308.294	8126.00	0.00	0.00	0.00	0.00
8226.00†	0.000	308.294	8226.00	0.00	0.00	0.00	0.00
8326.00†	0.000	308.294	8326.00	0.00	0.00	0.00	0.00
8400.00	0.000	308.294	8400.00	0.00	0.00	0.00	0.00
8426.00†	0.780	308.294	8426.00	0.18	0.11	-0.14	3.00
8526.00†	3.780	308.294	8525.91	4.15	2.57	-3.26	3.00
8626.00†	6.780	308.294	8625.47	13.36	8.28	-10.48	3.00
8726.00†	9.780	308.294	8724.42	27.76	17.20	-21.78	3.00



# Planned Wellpath Report

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INTEQ

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Mayfield 19-1 431'FNL & 1422'FEL Section 30
Area	UTAH	Well	Mayfield 19-1
Field	SANPETE COUNTY	Wellbore	Mayfield 19-1 PWB
Facility	SEC.30-T19S-R2E		

## WELLPATH DATA (134 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
8826.00†	12.780	308.294	8822.48	47.31	29.32	-37.13	3.00
8926.00†	15.780	308.294	8919.38	71.98	44.60	-56.49	3.00
9026.00†	18.780	308.294	9014.85	101.68	63.01	-79.80	3.00
9126.00†	21.780	308.294	9108.64	136.33	84.49	-107.00	3.00
9226.00†	24.780	308.294	9200.49	175.85	108.97	-138.02	3.00
9316.67	27.500	308.294	9281.87	215.79	133.73	-169.36	3.00
9326.00†	27.500	308.294	9290.15	220.10	136.40	-172.75	0.00
9426.00†	27.500	308.294	9378.85	266.28	165.01	-208.99	0.00
9526.00†	27.500	308.294	9467.56	312.45	193.62	-245.23	0.00
9626.00†	27.500	308.294	9556.26	358.63	222.24	-281.47	0.00
9726.00†	27.500	308.294	9644.96	404.80	250.85	-317.71	0.00
9826.00†	27.500	308.294	9733.66	450.98	279.47	-353.95	0.00
9926.00†	27.500	308.294	9822.36	497.15	308.08	-390.19	0.00
10026.00†	27.500	308.294	9911.06	543.33	336.70	-426.43	0.00
10126.00†	27.500	308.294	9999.76	589.50	365.31	-462.67	0.00
10226.00†	27.500	308.294	10088.46	635.68	393.92	-498.91	0.00
10326.00†	27.500	308.294	10177.16	681.85	422.54	-535.15	0.00
10426.00†	27.500	308.294	10265.87	728.03	451.15	-571.39	0.00
10526.00†	27.500	308.294	10354.57	774.20	479.77	-607.63	0.00
10626.00†	27.500	308.294	10443.27	820.38	508.38	-643.87	0.00
10726.00†	27.500	308.294	10531.97	866.55	536.99	-680.11	0.00
10826.00†	27.500	308.294	10620.67	912.73	565.61	-716.35	0.00
10926.00†	27.500	308.294	10709.37	958.90	594.22	-752.59	0.00
10987.84	27.500	308.294	10764.22	987.45	611.92	-775.00	0.00
11026.00†	26.928	308.294	10798.16	1004.91	622.73	-788.70	1.50
11126.00†	25.428	308.294	10887.90	1049.02	650.07	-823.32	1.50
11226.00†	23.928	308.294	10978.76	1090.77	675.94	-856.09	1.50
11326.00†	22.428	308.294	11070.69	1130.13	700.33	-886.98	1.50
11426.00†	20.928	308.294	11163.62	1167.06	723.22	-915.97	1.50
11526.00†	19.428	308.294	11257.48	1201.56	744.59	-943.04	1.50
11626.00†	17.928	308.294	11352.21	1233.58	764.44	-968.17	1.50
11726.00†	16.428	308.294	11447.74	1263.11	782.74	-991.35	1.50
11826.00†	14.928	308.294	11544.02	1290.13	799.49	-1012.56	1.50
11926.00†	13.428	308.294	11640.97	1314.63	814.66	-1031.78	1.50
11987.84	12.500	308.294	11701.23	1328.50	823.26	-1042.67	1.50
12026.00†	12.500	308.294	11738.49	1336.76	828.38	-1049.15	0.00
12126.00†	12.500	308.294	11836.12	1358.40	841.79	-1066.14	0.00
12226.00†	12.500	308.294	11933.75	1380.05	855.20	-1083.12	0.00
12326.00†	12.500	308.294	12031.38	1401.69	868.62	-1100.11	0.00
12426.00†	12.500	308.294	12129.01	1423.33	882.03	-1117.10	0.00
12526.00†	12.500	308.294	12226.64	1444.98	895.44	-1134.08	0.00
12626.00†	12.500	308.294	12324.27	1466.62	908.85	-1151.07	0.00
12726.00†	12.500	308.294	12421.90	1488.27	922.27	-1168.06	0.00
12822.39	12.500	308.294	12516.00 <sup>1</sup>	1509.13	935.19	-1184.43	0.00



# Planned Wellpath Report

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**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

Operator	WOLVERINE GAS & OIL COMPANY	Slot	Slot #01 Mayfield 19-1 431'FNL & 1422'FEL Section 30
Area	UTAH	Well	Mayfield 19-1
Field	SANPETE COUNTY	Wellbore	Mayfield 19-1 PWB
Facility	SEC.30-T19S-R2E		

## HOLE & CASING SECTIONS Ref Wellbore: Mayfield 19-1 PWB Ref Wellpath: Mayfield 19-1 PWP Rev-F.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]
16in Casing	26.00	120.00	94.00	26.00	120.00	0.00	0.00	0.00	0.00
14.75in Open Hole	120.00	2000.00	1880.00	120.00	2000.00	0.00	0.00	0.00	0.00
10.75in Casing	26.00	2000.00	1974.00	26.00	2000.00	0.00	0.00	0.00	0.00
9.875in Open Hole	2000.00	11883.82	9883.82	2000.00	11600.00	0.00	0.00	808.45	-1023.91
7.75in Casing	26.00	11883.82	11857.82	26.00	11600.00	0.00	0.00	808.45	-1023.91
6.5in Open Hole	11883.82	12822.39	938.57	11600.00	12516.00	808.45	-1023.91	935.19	-1184.43
5.5in Casing	26.00	12822.39	12796.39	26.00	12516.00	0.00	0.00	935.19	-1184.43

## TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) Mayfield 19-1 Target Rev-4 500'FSL & 2607'FEL Section 19	12822.39	12516.00	935.19	-1184.43	1574621.68	6854458.32	39°08'12.996"N	111°43'55.050"W	point

## SURVEY PROGRAM Ref Wellbore: Mayfield 19-1 PWB Ref Wellpath: Mayfield 19-1 PWP Rev-F.0

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	12822.39	MTC (Collar, post-2000) (Standard)		Mayfield 19-1 PWB



# Planned Wellpath Report

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**INTEQ**

## REFERENCE WELLPATH IDENTIFICATION

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Area	UTAH	Well	Mayfield 19-1
Field	SANPETE COUNTY	Wellbore	Mayfield 19-1 PWB
Facility	SEC.30-T19S-R2E		

## WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
11640.49	17.710	308.294	11366.00	Twin Creek
12105.39	12.500	308.294	11816.00	Navajo

CONFIDENTIAL

# WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

## DRILLING PLAN

### Mayfield 19-1 Township 19 South, Range 2 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 12,900' (~12,600' 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:	431 FNL, 1422' FEL, Section 30, T19S, R2E, S.L.B. & M.
Bottom Hole Location @ Navajo 1 target	416' FSL, 2490' FEL, Section 19, T19S, R2E, S.L.B. & M.
Bottom Hole Location @ total depth	500' FSL, 2607' FEL, Section 19, T19S, R1E, S.L.B. & M.

Conductor will be set to 120 feet and cemented to surface. A 14-3/4" hole will be drilled vertically to approximately 2000' KB where 10-3/4" surface casing will be set and cemented to surface. A 9-7/8" hole will be drilled vertically below the surface casing to approximately 8400' and then inclination will be increased at 3 degrees per 100' to final inclination of 27.5 degrees from vertical. The deviation will be held at 27.5 degrees to a depth of approximately 10,987' MD (10,764' TVD), then allowed to drop at 1.5 degrees/100' to a final TD of 12,900' MD (~12,600' TVD). At TD, electric logs will be run and 5-1/2" production casing will be set and cemented if justified by the drilling results.

Drilling activities, with the construction of the well site and setting of conductor, are expected to commence in early October 2009, or as soon as the permit is issued.

Wolverine Gas and Oil Company of Utah, LLC  
 APD Drilling Program  
 Mayfield 19-1

**Well Name:** Mayfield 19-1

**Surface Location:** 431' FNL, 1422' FEL, Section 30, T19S, R2E, S.L.B. & M  
 NW/4 of the NE/4 Section 30, T19S, R2E, S.L.B. & M.  
 Sanpete County, Utah

**TD Bottom-Hole Location:** 500' FSL, 2607' FEL, Section 19, T19S, R2E, S.L.B. & M  
 SW/4 of the SE/4 Section 17, T19S, R2E, S.L.B. & M

**Elevations:** 5440' GL (graded), 5467' 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	0-62'	0-62'		
Arapien	62-11,427	62-11,706'		
Twin Creek 1	11,427'-11877'	11,706'-12,171'	Oil & water	0.44 psi/ft
Navajo 1	11,877-12,577'	12,171-12,890'	Oil & water	0.44 psi/ft
Proposed TD	12,600'	12,900		

**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

Wolverine Gas and Oil Company of Utah, LLC  
APD Drilling Program  
Mayfield 19-1

- 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 Gas and Oil Company of Utah, LLC  
 APD Drilling Program  
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**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>
22"	16"	84	K-55	BTC	Conductor	0' - 120' GL
14.75"	10.75"	40.5	HCK-55	STC	11.75"	0' - 2000' 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' - 11,700' KB
9.875"	5.500"	23	L-80	LTC	6.050"	11700' - 12,900' KB

	<u>Surface</u>	<u>Intermediate</u>	<u>Production</u>
Casing O. D. (in)	10.75		5.500
Casing Grade	HCK-55		L-80/P-110
Weight of Pipe (lbs/ft)	40.5		20.0/23
Connection	STC		BTC/LTC
Top Setting Depth - MD (ft)	0		0
Top Setting Depth - TVD (ft)	0		0
Bottom Setting Depth - MD (ft)	2000		12900
Bottom Setting Depth - TVD (ft)	2000		12600
Maximum Mud Weight - Inside (ppg)	9.2		10.5
Maximum Mud Weight - Outside (ppg)	9.2		10.5
Design Cement Top - MD (ft)	0		1500
Design Cement Top - TVD (ft)	0		1500
Max. Hydrostatic Inside w/ Dry Outside (psi)	957		6880
Casing Burst Rating (psi)	3130		8990
<b>Burst Safety Factor (1.10 Minimum)</b>	3.27		1.31
Max. Hydrostatic Outside w/ Dry Inside (psi)	957		6880
Collapse Rating	2100		8830
<b>Collapse Safety Factor (1.125 Minimum)</b>	2.19		1.28
Casing Weight in Air (kips)	81		232
Body Yield (kips)	629		466
Joint Strength (kips)	562		503
<b>Tension Safety Factor (1.80 Minimum)</b>	6.93		2.00

<sup>1</sup>Buoyancy considered in production casing design. Maximum weight of casing based on buoyancy in 10.5 ppg mud or a buoyancy factor of 0.834, resulting in an effective weight of 232,000 lbs.

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 should hole conditions dictate its use.

Wolverine Gas and Oil Company of Utah, LLC  
 APD Drilling Program  
 Mayfield 19-1

B. Cementing Program

<u>Casing Size</u>	<u>Cement Slurry</u>	<u>Quantity (sks)</u>	<u>Density (ppg)</u>	<u>Yield (ft<sup>3</sup>/sk)</u>
16" Cond.	Class G Neat Cement	200	15.8	1.15
10.75"	Lead: Varicem	300	10.5	4.325
	Tail: Halcem	360	15.8	1.155
5.500"	Stage 1: Bondcem	440	14.35	1.252
	Stage2: Varicem	1070	10.5	4.325

Conductor: 16" conductor will be set to 120' GL and cemented with Class G neat cement, or as readily available by conductor rig companies. Volume assumes 50% excess.

Surface: 10-3/4" surface casing will be cemented from setting depth (2000' MD) to surface and topped out with premium cement if necessary. 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: Intermediate casing is not planned unless hole conditions warrant it. A 7-5/8 & 7-3/4" intermediate casing will be available should holes conditions warrant.

Production: 5-1/2" production casing will be cemented in two stages from setting depth (12,900') to 1500' (into the 10.75" casing) with a stage collar at approximately 11,700' (just below top of Twin Creek). 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 pre-flush fluid pumped ahead of the slurry will separate cement from the drilling fluids. If an intermediate casing is required, cement volumes will need to be re-calculated.

- Other:
- The BLM 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 – 2000'	8.4 – 9.2	Fresh Water	35 – 50	N/C to 12 cc
2000' – 12,900'	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 2000 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.
- 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:**

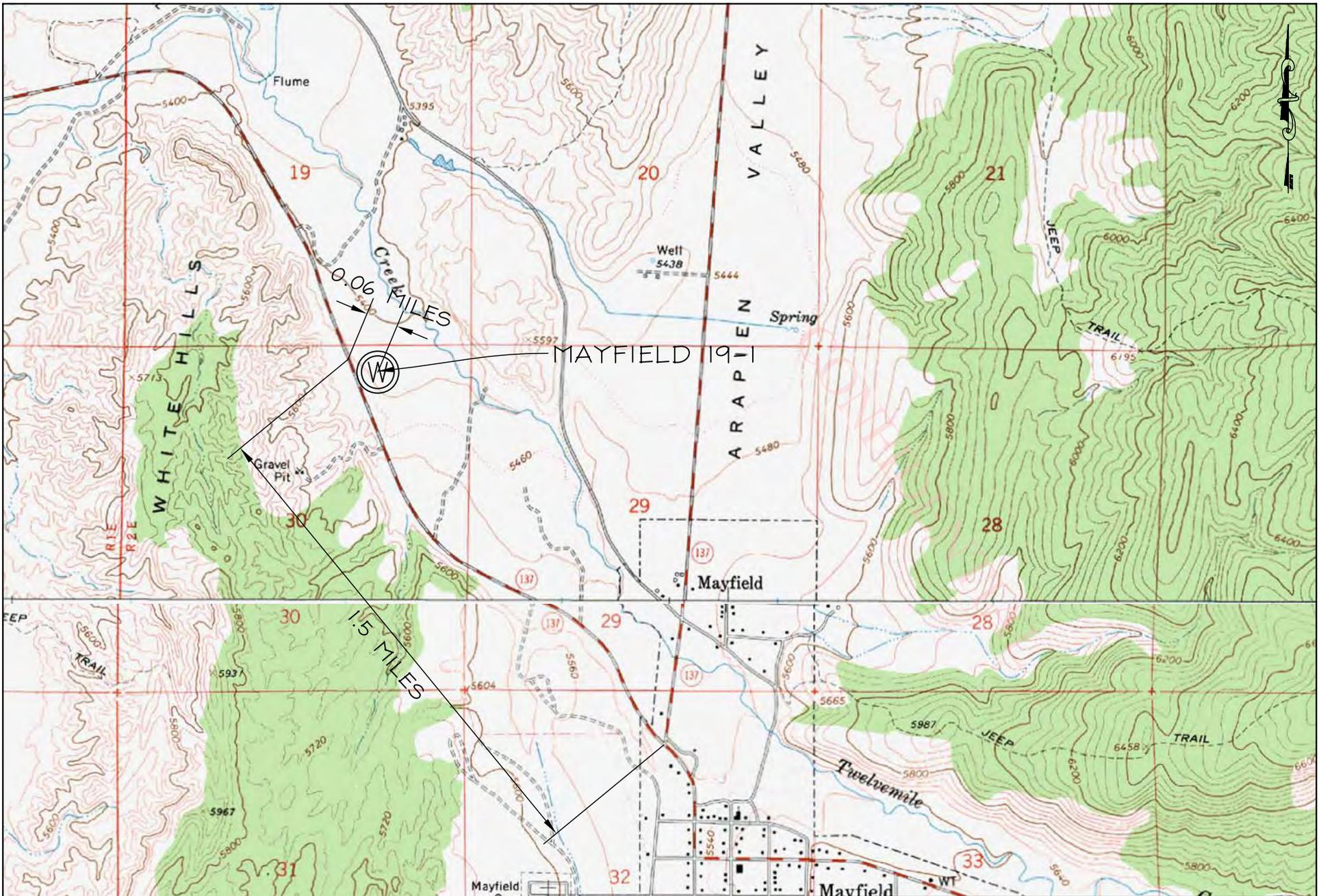
- A. Hydrogen Sulfide: The presence of Hydrogen Sulfide (H<sub>2</sub>S) gas is unlikely but appropriate safety procedures are to be in place before penetrating the Twin Creek Formation because the possibility does exist.

Wolverine Gas and Oil Company of Utah, LLC  
APD Drilling Program  
Mayfield 19-1

- 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 240 °F.

end

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Savage Surveying, Inc.

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



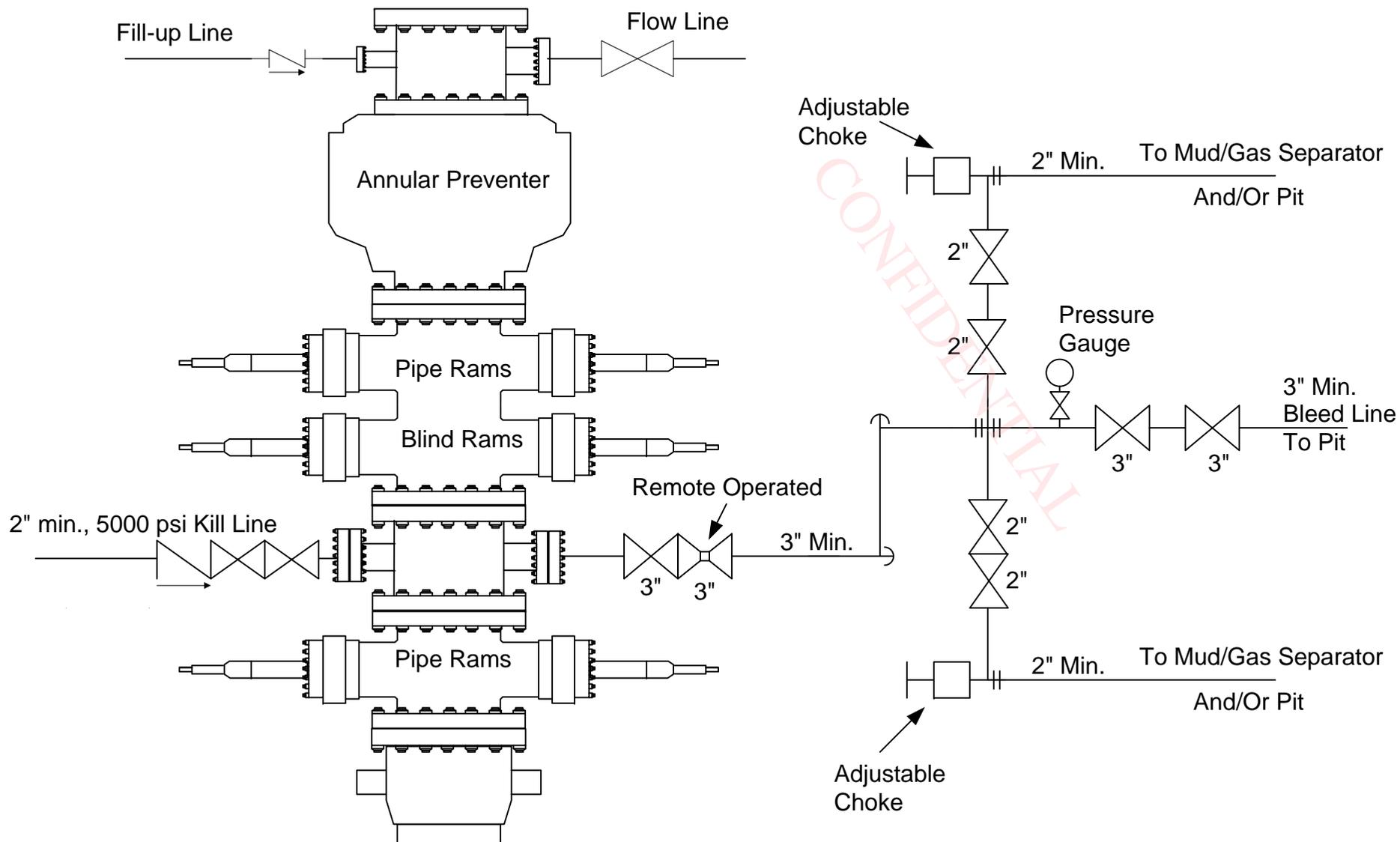
MAYFIELD 19-1

WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-0065R	1" = 2000'	07/27/2009	0902-0065	COVER
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	A.S.A.		

# 5k BOPE Schematic

(Not to Scale)



**H2S Drilling Operations Plan**

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

***Mayfield 19-1***

**Section 19  
Township 19S - Range 02E  
Sanpete County, Utah**

**GL Elevation: 5440 feet**

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

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## **Introduction**

This H2S contingency plan has been prepared for the Mayfield 19-1 well, which will be located on a fee lease in Section 19, T19S-R02E, 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 H2S has been detected in the some wells drilled in the area. At Wolverine Cedar Ridge 18-1, a 2006 dry hole located 8 miles to the west of the proposed well, no indications of H2S were encountered. At the Wolverine Arapien Valley 24-1, located ~6 miles to the southwest of the proposed well, H2S was detected in gas samples from the upper Navajo at concentrations less than approximately 35 ppm (0.000035 mole volume) and in the lower Navajo at approximately 900 ppm (0.0009 mole volume).

Exposure to H2S by the general public is very unlikely during drilling or completion operations. The prevailing wind direction is expected to be from the west-northwest when this well is drilled. The lands adjacent to the well site include cultivated farm land to the north, east and south. Further to the east approximately 3000' is Cristenberg Road. UT highway 137 is located to the west of the well site. West of the highway 137 is undeveloped, mountainous land. The city of Mayfield is approximately 1.5 miles to the southeast.

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; access to the well pad will be restricted to essential personnel during drilling.

## **Directions**

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

From the town of Gunnison, there are two routes to the location: 1) Head east out of Gunnison on E 300 N or Highway 89 for approximately 3.6 miles to Cristenburg Road. Turn right or south on Cristenburg Road and travel ~3.6 miles to State Street/UT137. Turn right or south toward Mayfield and go about 0.4 miles. Turn right and go northwest on UT 137 for approximately 1.5 miles to well site. 2) or from Gunnison, head south on

N Main Street/Highway 89 approximately 1 mile to E600S or UT-137. Take UT-137 east approximately 5.6 miles to well site.

## **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 H<sub>2</sub>S environment, fully understand the purpose of H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 footpath will be provided near the northeast corner of the location to provide an emergency egress off the pad.
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 apprise them of key elements of the H<sub>2</sub>S Drilling Operations Plan.

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

<u>Item</u>	<u>Amount</u>	<u>Description</u>
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-northwest. The lands adjacent to the well site include cultivated farm land to the north, east and south. Further to the east approximately 3000' is Cristenberg Road. UT highway 137 is located to the west

of the well site. West of the highway 137 is undeveloped, mountainous land. The city of Mayfield is approximately 1.5 miles to the southeast.

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

**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.

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**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:**

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

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

<b>10 ppm</b>	<b>Beginning eye irritation</b>
<b>50-100 ppm</b>	<b>Slight conjunctivitis and respiratory tract irritation after 1 hour exposure</b>
<b>100 ppm</b>	<b>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</b>
<b>200-300 ppm</b>	<b>Marked conjunctivitis and respiratory tract irritation after 1 hour exposure</b>
<b>500-700 ppm</b>	<b>Loss of consciousness and possibly death in 30 minutes</b>
<b>700 ppm</b>	<b>Rapid unconsciousness, cessation of respiration, and death</b>
<b>1000-2000 ppm</b>	<b>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.</b>

## **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**

<b><u>%SO<sub>2</sub></u></b>	<b><u>ppm</u></b>	
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

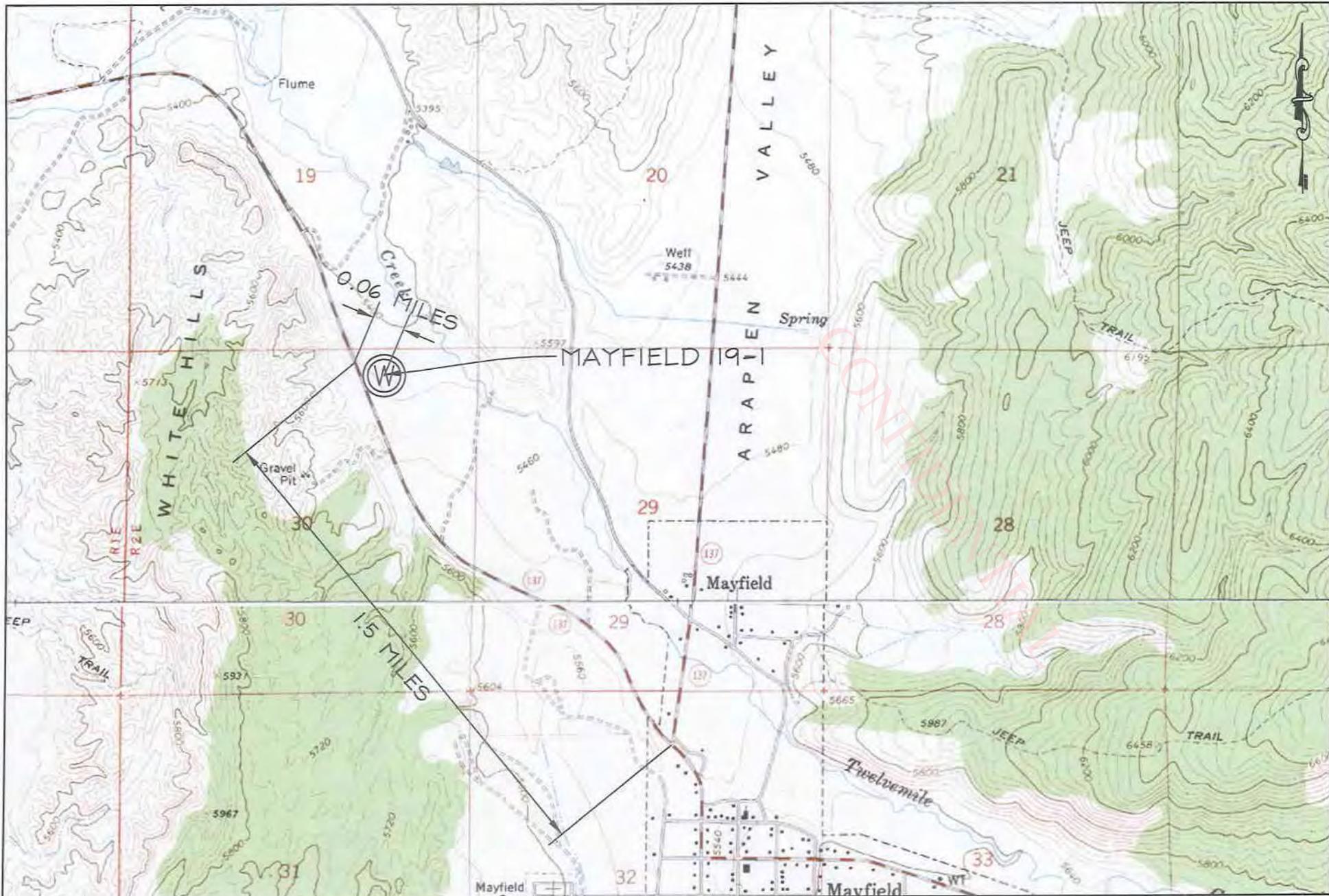
Sulfur Dioxide is an irritating gas in its vapor form and the odor is so intensely irritating that concentrations of 3 to 5 parts per million in the air are readily detectable by the normal person. In higher concentrations, the severely irritating effect of the gas makes it unlikely that any person would 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.

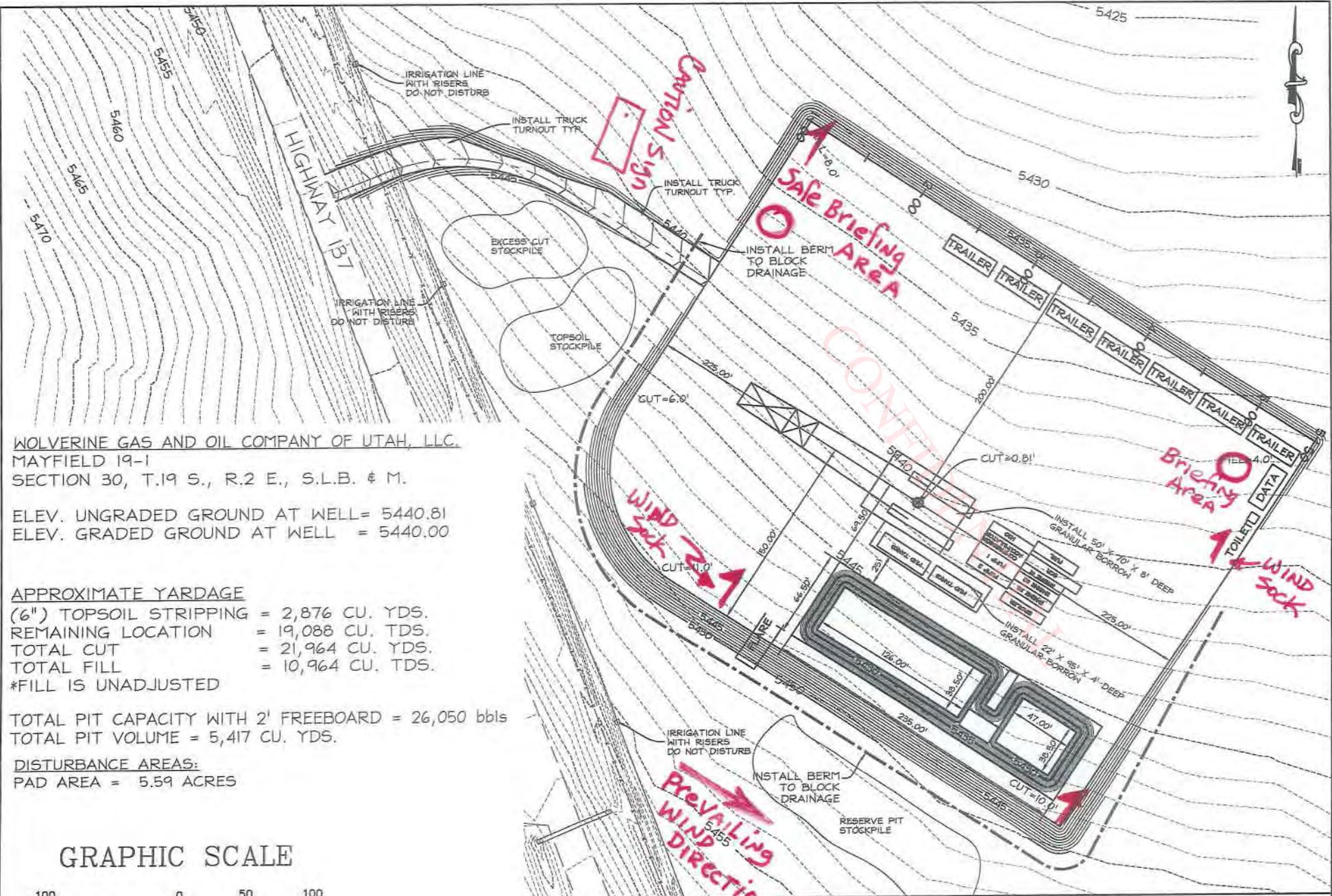
1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-896-1635  
 Fax: 435-896-0220



MAYFIELD 19-1

WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-006SR	1" = 2000'	07/27/2009	0902-0065	COVER
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	A.S.A.		



WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC  
 MAYFIELD 19-1  
 SECTION 30, T.19 S., R.2 E., S.L.B. # M.

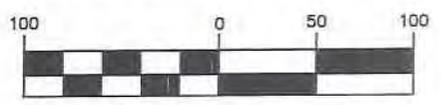
ELEV. UNGRADED GROUND AT WELL = 5440.81  
 ELEV. GRADED GROUND AT WELL = 5440.00

APPROXIMATE YARDAGE  
 (6") TOPSOIL STRIPPING = 2,876 CU. YDS.  
 REMAINING LOCATION = 19,088 CU. TDS.  
 TOTAL CUT = 21,964 CU. YDS.  
 TOTAL FILL = 10,964 CU. TDS.  
 \*FILL IS UNADJUSTED

TOTAL PIT CAPACITY WITH 2' FREEBOARD = 26,050 bbls  
 TOTAL PIT VOLUME = 5,417 CU. YDS.

DISTURBANCE AREAS:  
 PAD AREA = 5.59 ACRES

GRAPHIC SCALE



( IN FEET )  
 1 inch = 100 ft.

Savage Surveying, Inc.

1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-886-8835  
 Fax: 435-886-0220



MAYFIELD 19-1

WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-006SR	1" = 100'	07/27/2009	0902-0065	1 OF 7
---	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: A.S.A.		



**Directions to Gunnison Valley Hospital**

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

6.8 mi – about 13 mins

**Save trees. Go green!**

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



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1. Head **north** on **UT-137**  
About 11 mins

go 5.6 mi  
total 5.6 mi



2. Turn **right** at **S Main St/US-89**  
About 2 mins

go 1.0 mi  
total 6.6 mi



3. Turn **right** at **E 100 N**

go 0.1 mi  
total 6.8 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

## WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

Energy Exploration in Partnership with the Environment



August 3, 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 Gas and Oil Company of Utah, LLC  
**Mayfield 19-1**  
**Exception location letter**

Dear Mrs. Mason:

Wolverine Gas and Oil 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:

- R649-3-2 Exception Plat showing proposed BHL;
- R649-3-11 Directional Drilling Application Plat showing proposed BHL;

The Mayfield Irrigation Company (Water Right #63-2598) will be the source for water during drilling and completion operations on this proposed well. The surface at the planned drill site is owned in fee by Linsi Properties, LLC.

The proposed location is within 460' of a drilling unit boundary, so a request for exception to spacing (R649-3-2) is hereby requested for the well based on restrictive topography relative to and the need to drill at an optimum structural location. Wolverine is the only owner and operator within 460' of the proposed well location.

This letter and the accompanying plats are also 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:

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

Operator: Wolverine Gas and Oil Company of Utah, LLC

Address: 1140 N Centennial Park Drive  
Richfield, Utah 84701

Well: Mayfield 19-1

Field: NA (Wildcat)

Reservoir: NA (Wildcat)

County: Sanpete

Reason: Restrictive topography and to minimize surface impact

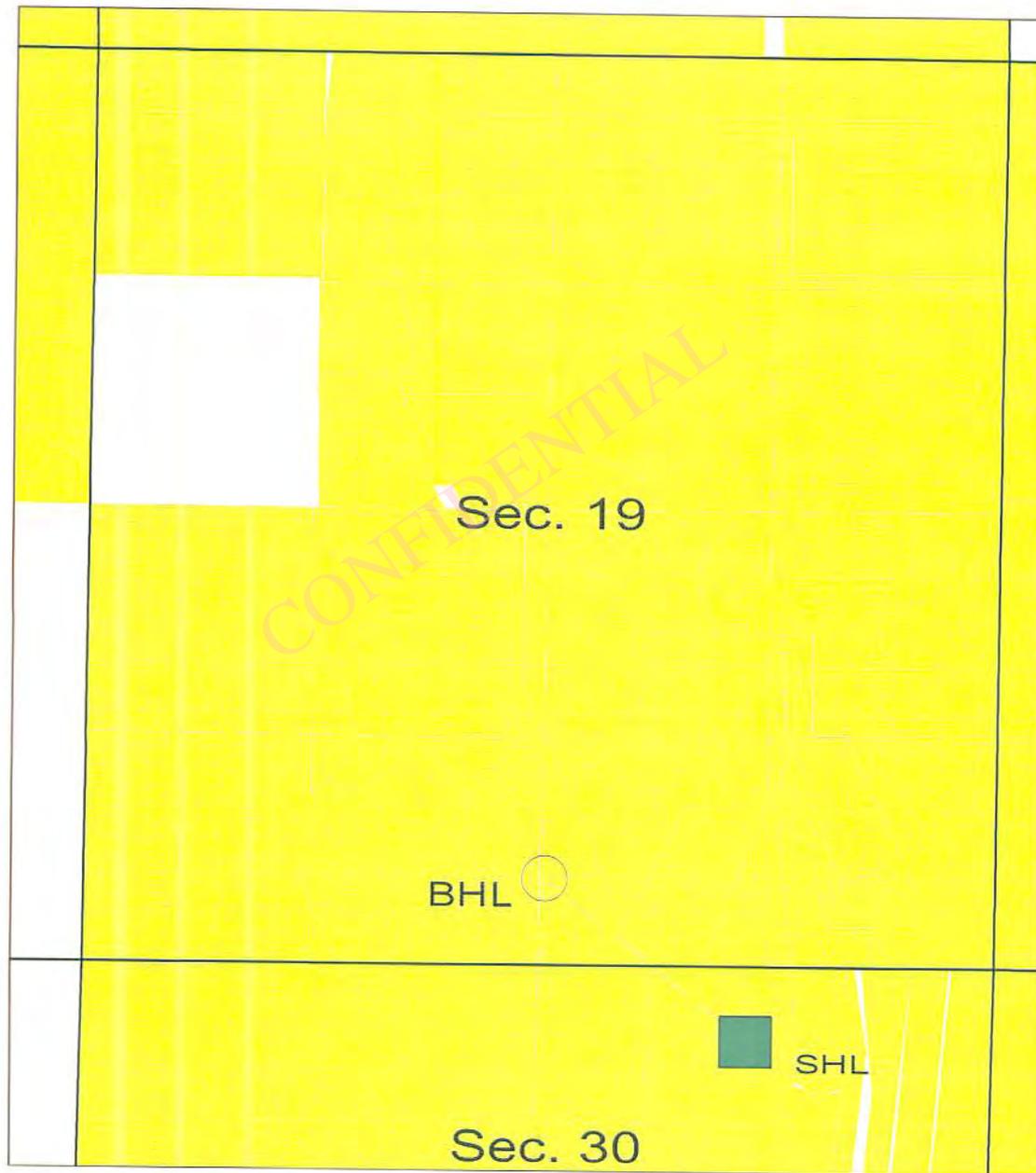
Please accept this letter as Wolverine's written request for confidential treatment of all information contained in and relating to this application and proposed well.

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,



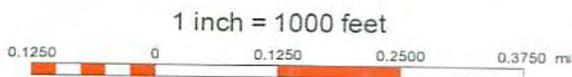
Charlie Irons  
Senior Landman



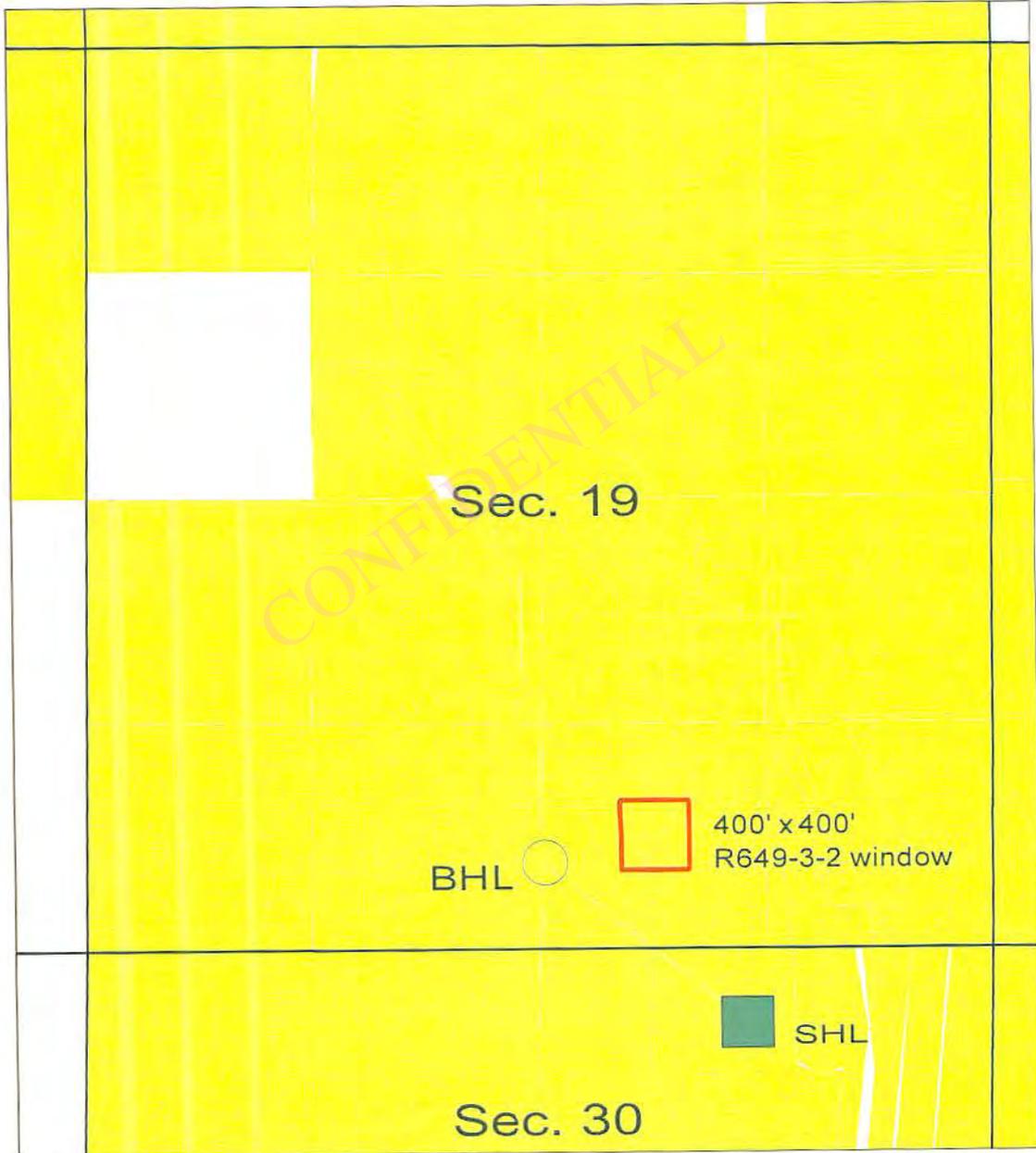
### Mayfield 19-1 Well Location

SHL: 1422' FEL, 431' FNL, NW/4 NE/4, Sec. 30, T19S, R2E, Sanpete County, UT  
 BHL: 2607' FEL, 500' FSL, SW/4 SE/4, Sec. 19, T19S, R2E, Sanpete County, UT

 Wolverine Lease



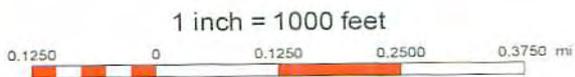
	<p><b>WOLVERINE GAS &amp; OIL Company of Utah, LLC</b>        (Operator)  <i>Energy Exploration in Partnership with the Environment</i></p> <p>ONE RIVERFRONT PLAZA        55 CAMP AU, N.W.        GRAND RAPIDS, MI 49503-2616        (616) 458-1150</p>
<p>Directional Drilling Application Plat        (R649-3-11)</p>	
<p>Date: 8/4/2009</p>	<p>Author: Mark Lutz        Filename: Document in Mayfield Directional Drilling App Plat.gmp</p>



### Mayfield 19-1 Well Location

SHL: 1422' FEL, 431' FNL, NW/4 NE/4, Sec. 30, T19S, R2E, Sanpete County, UT  
 BHL: 2607' FEL, 500' FSL, SW/4 SE/4, Sec. 19, T19S, R2E, 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>                  ONE RIVERFRONT PLAZA                  55 CAMPALU NW                  GRAND RAPIDS, MI 49503-2616                  (616) 458-1150</p>
<p>Exception Location and Ownership Plat                  (R649-3-2)</p>	
<p>Date: 8/4/2009</p>	<p>Author: Mark Lutz                  Filename: Document in Mayfield Directional Drilling App                  Plat.gmp</p>

API Number: 4303950002

Well Name: Mayfield 19-1

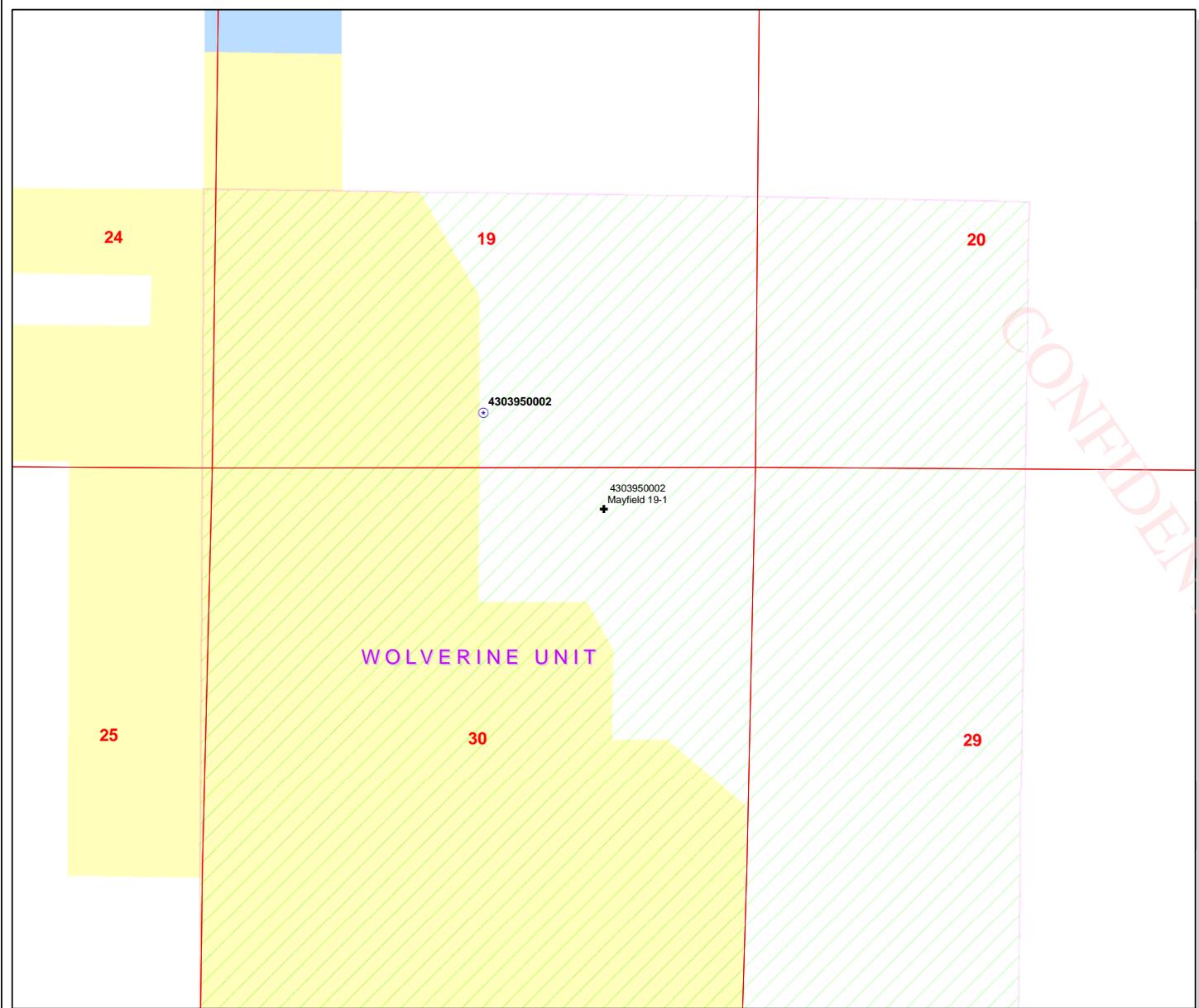
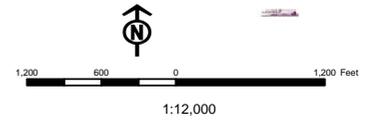
Township 19.0 S Range 02.0 E Section 30

Meridian: SLBM

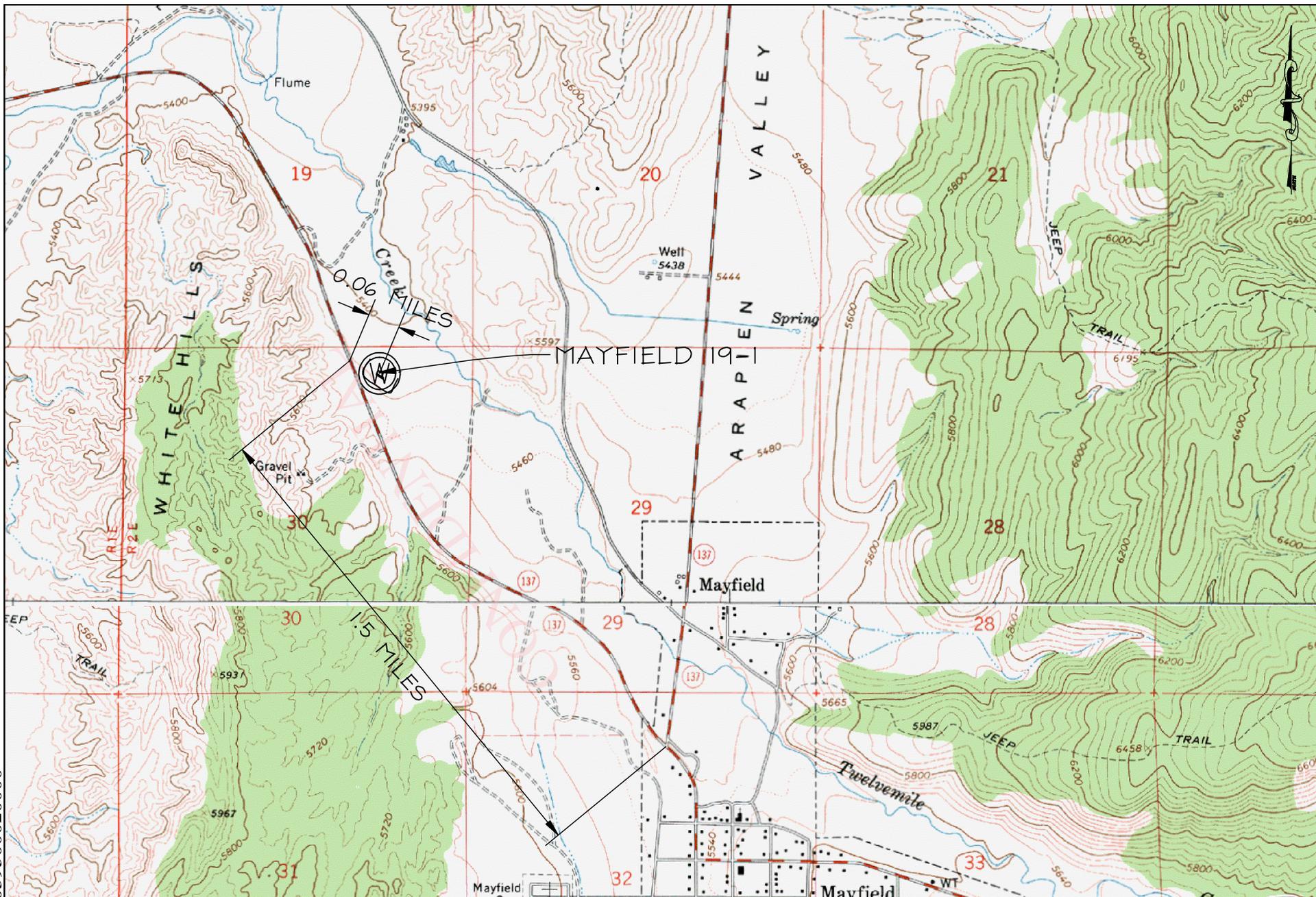
Operator: WOLVERINE GAS & OIL COMPANY OF UTAH, LLC

Map Prepared:  
Map Produced by Diana Mason

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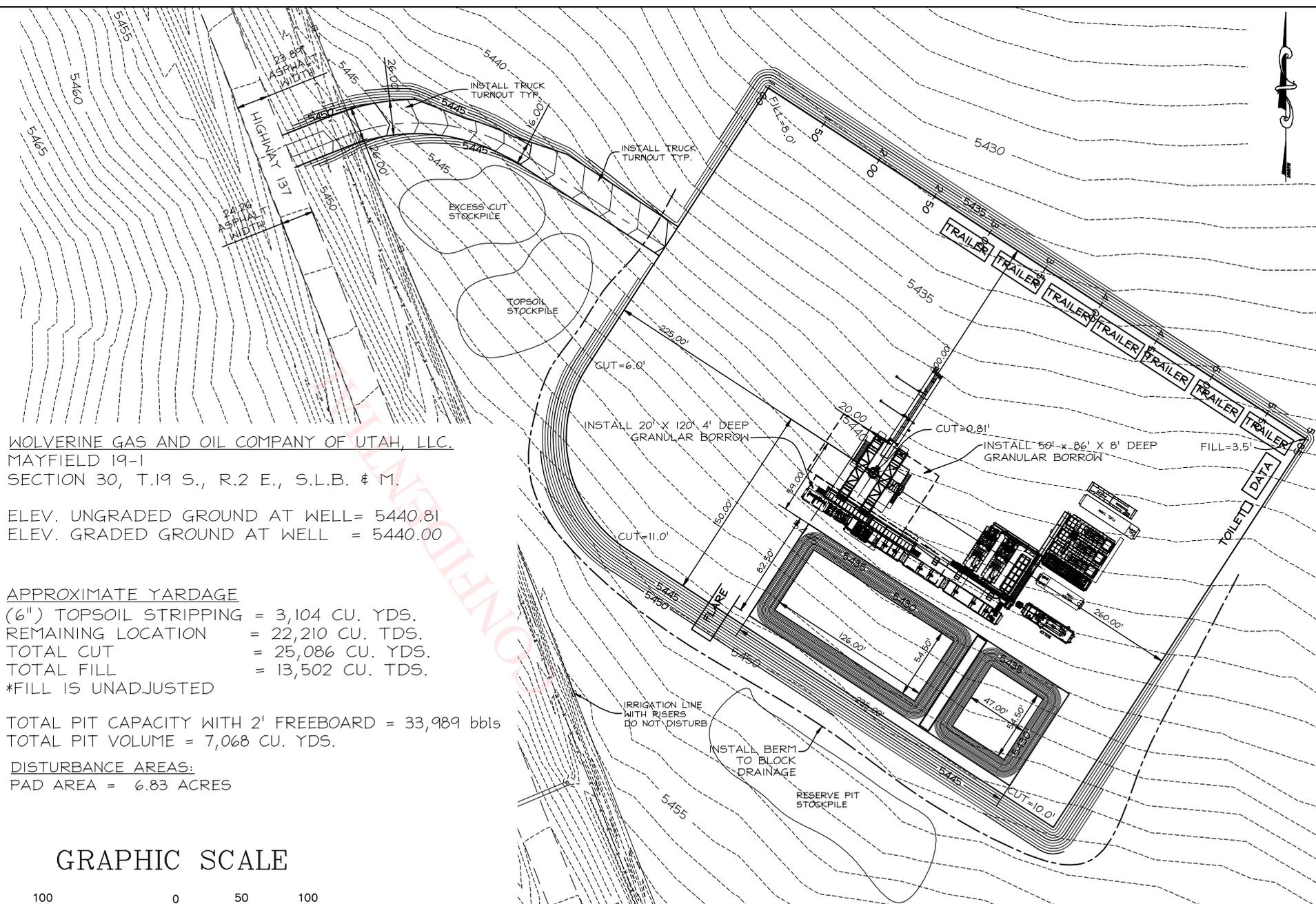


'APIWellNo:43039500020000'



**Savage Surveying, Inc.**  
 1825 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-636-6336  
 Fax: 435-636-0280

<b>MAYFIELD 19-1</b>					
<b>WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC</b>					
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-0065R	1" = 2000'	08/28/09	0902-0065	COVER
SURVEY BY:	CHECKED BY:	DRAWN BY:			
E.G.	R.W.S.	D.G.			



WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.  
 MAYFIELD 19-1  
 SECTION 30, T.19 S., R.2 E., S.L.B. & M.

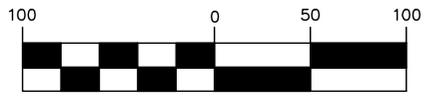
ELEV. UNGRADED GROUND AT WELL = 5440.81  
 ELEV. GRADED GROUND AT WELL = 5440.00

APPROXIMATE YARDAGE  
 (6") TOPSOIL STRIPPING = 3,104 CU. YDS.  
 REMAINING LOCATION = 22,210 CU. TDS.  
 TOTAL CUT = 25,086 CU. YDS.  
 TOTAL FILL = 13,502 CU. TDS.  
 \*FILL IS UNADJUSTED

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

DISTURBANCE AREAS:  
 PAD AREA = 6.83 ACRES

GRAPHIC SCALE



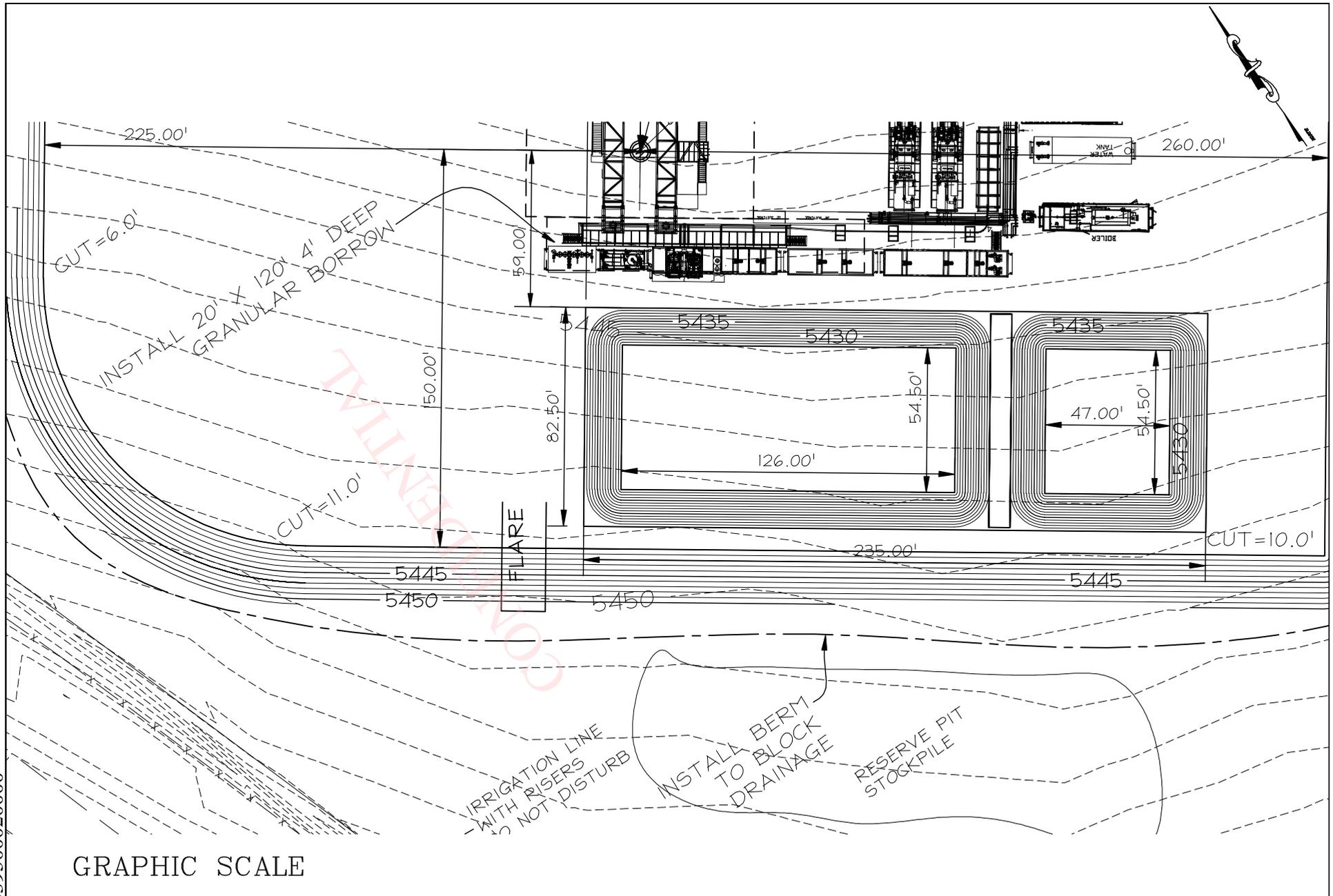
( IN FEET )  
 1 inch = 100 ft.

**Savage Surveying, Inc.**  
 1825 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-885-8835  
 Fax: 435-885-0280

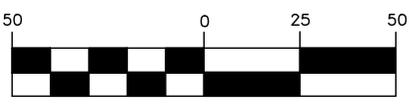
MAYFIELD 19-1					
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC					
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
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SURVEY BY:	CHECKED BY:	DRAWN BY:			
E.G.	R.W.S.	D.G.			

APIWellNo:43039500020000

'APIWellNo:43039500020000'



### GRAPHIC SCALE



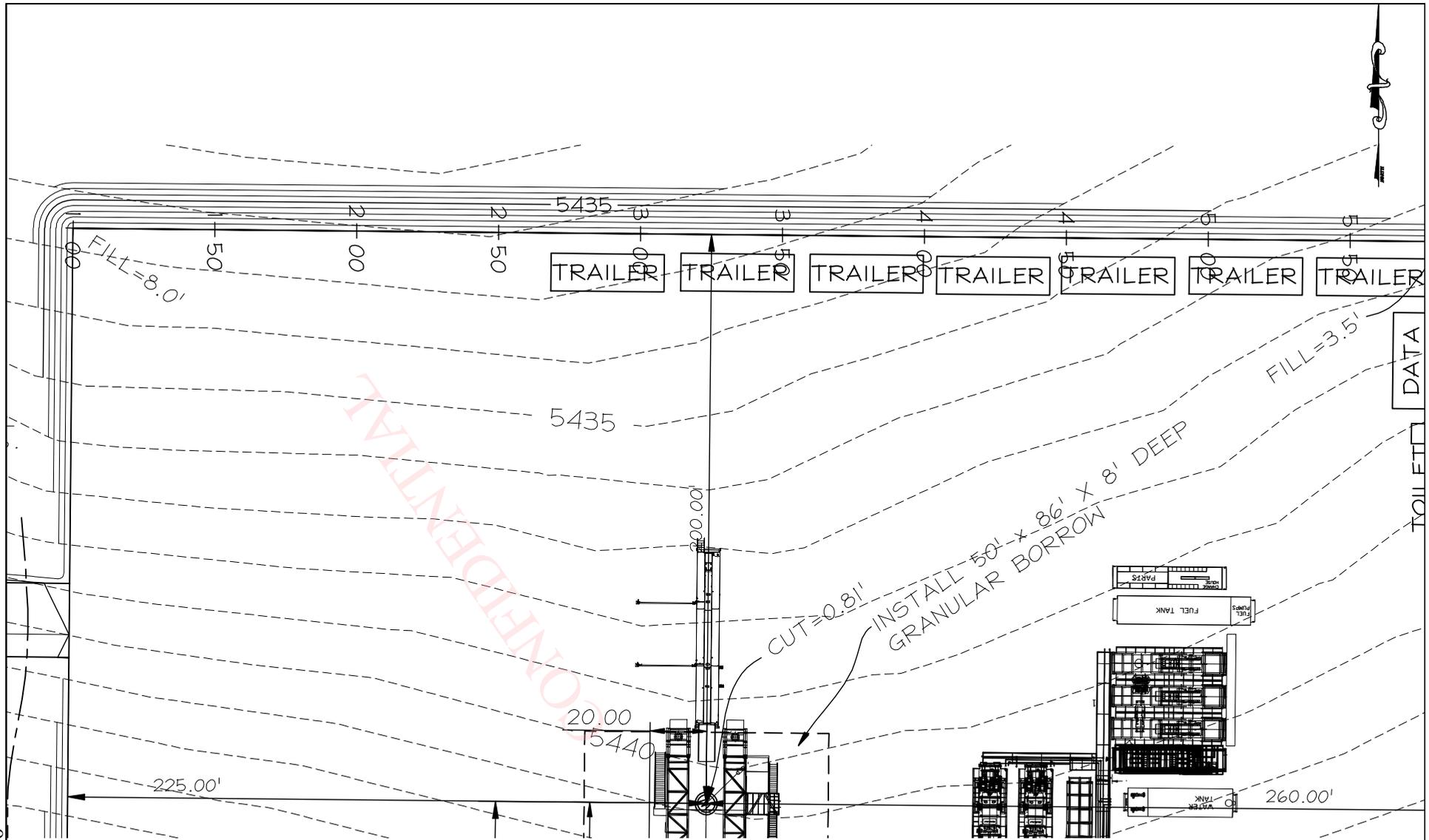
( IN FEET )  
1 inch = 50 ft.

**Savage Surveying, Inc.**

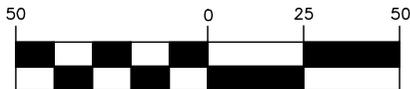
1825 South Industrial Park Rd.  
Richfield, UT 84701  
Office: 435-495-6335  
Fax: 435-495-0280

MAYFIELD 19-1					
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC					
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-0065R	1" = 50'	08/28/09	0902-0065	2 OF 7
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	D.G.		

'APIWellNo:43039500020000'



### GRAPHIC SCALE



( IN FEET )  
1 inch = 50 ft.

### Savage Surveying, Inc.

1825 South Industrial Park Rd.  
Richmond, UT 84701  
Office: 435-495-6335  
Fax: 435-495-0280

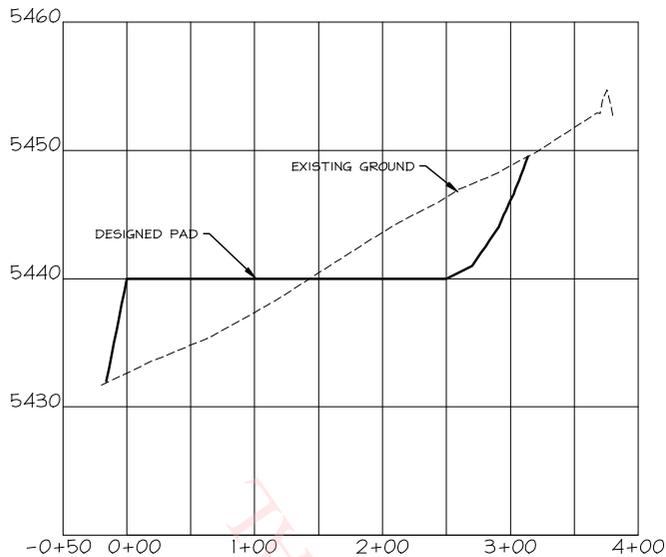


MAYFIELD 19-1

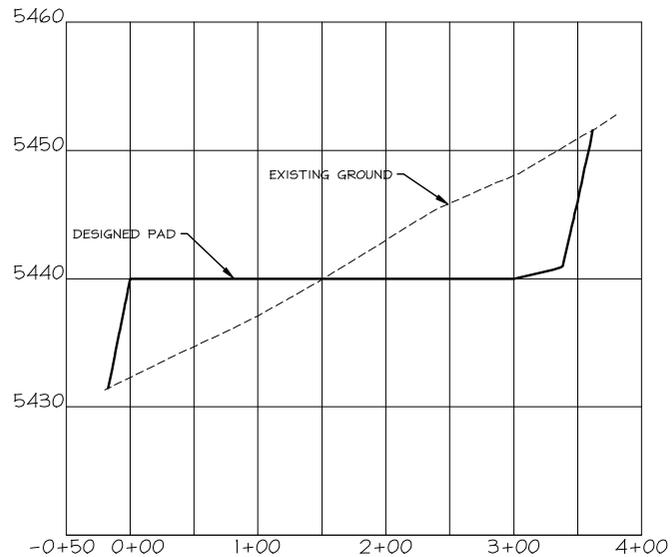
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-0065R	1= 50'	08/28/09	0902-0065	3 OF 7
---	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: D.G.		

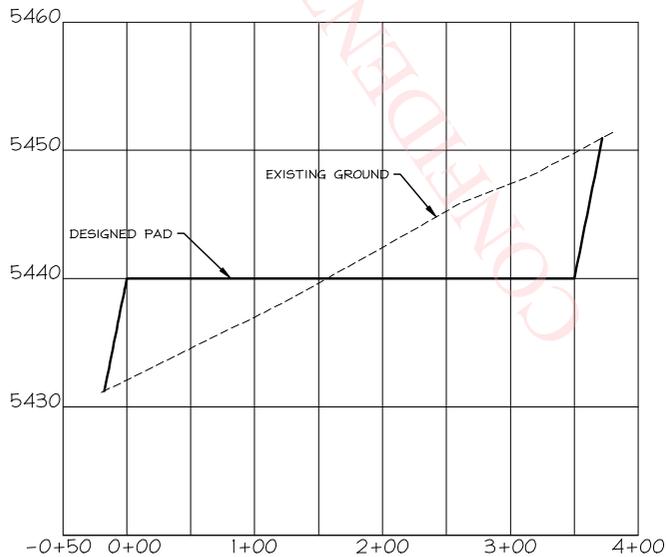




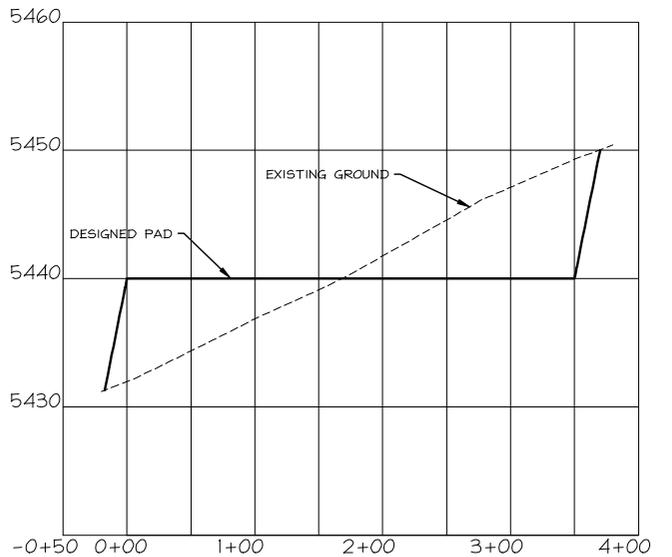
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5420.00  
GROUP PAD  
SECTION 1+00



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 1+50



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 2+00



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 2+50

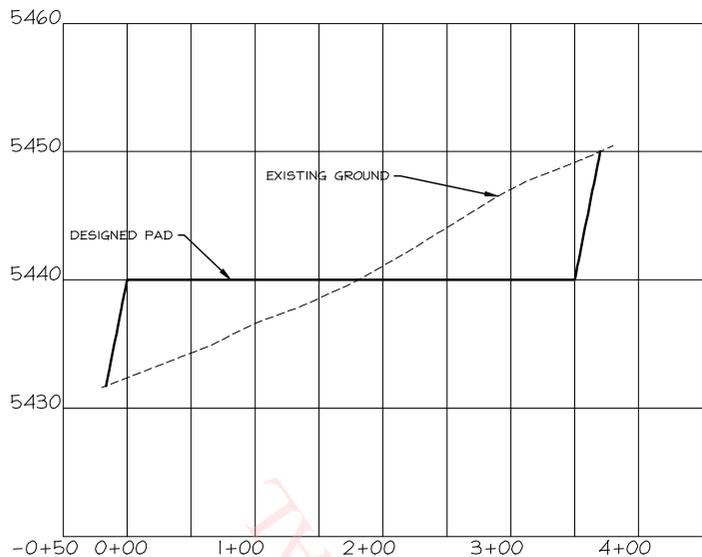
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CONFIDENTIAL

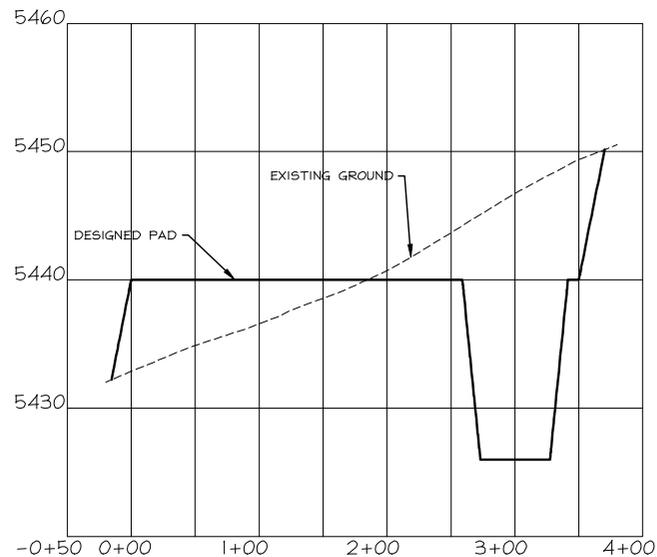
**Savage Surveying, Inc.**  
 1825 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-885-6335  
 Fax: 435-885-0280



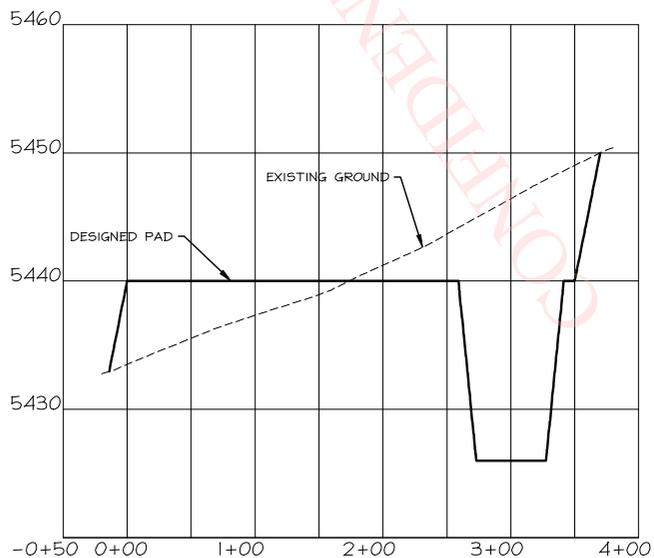

<b>MAYFIELD 19-1</b>					
<b>WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC</b>					
DESIGN BY: ---	DWG NAME 0902-0065R	SCALE N.T.S.	DATE 08/28/09	PROJECT NUMBER 0902-0065	SHEET NUMBER 5 OF 7
	SURVEY BY: E.G.	CHECKED BY: R.W.S.	DRAWN BY: D.G.		



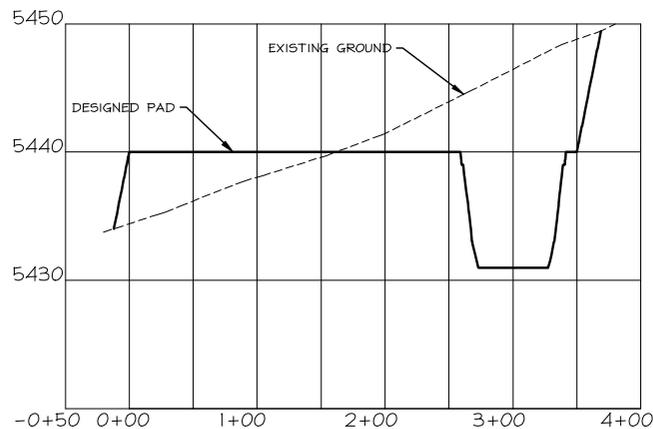
DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 3+00



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 3+50



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 4+00



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 4+50

'APIWellNo:43039500020000'

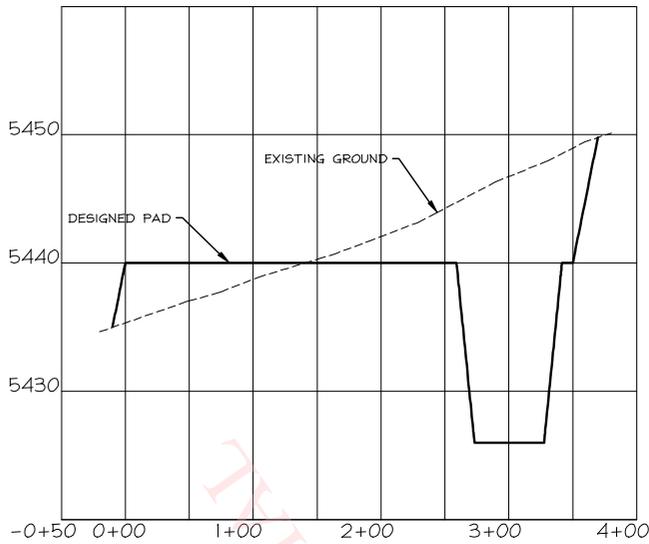
**Savage Surveying, Inc.**  
  
 1825 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-885-8335  
 Fax: 435-885-0280



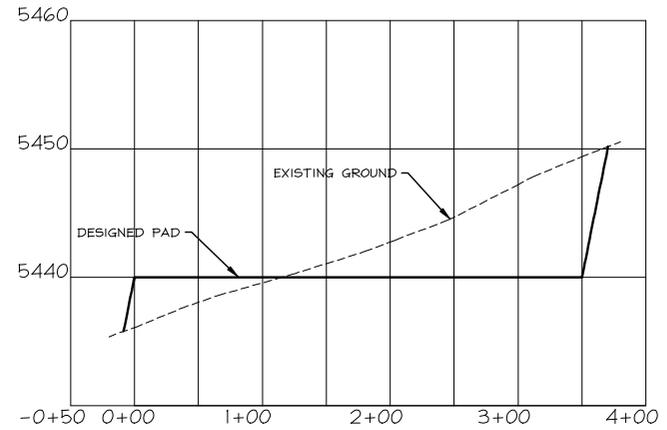
MAYFIELD 19-1

WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

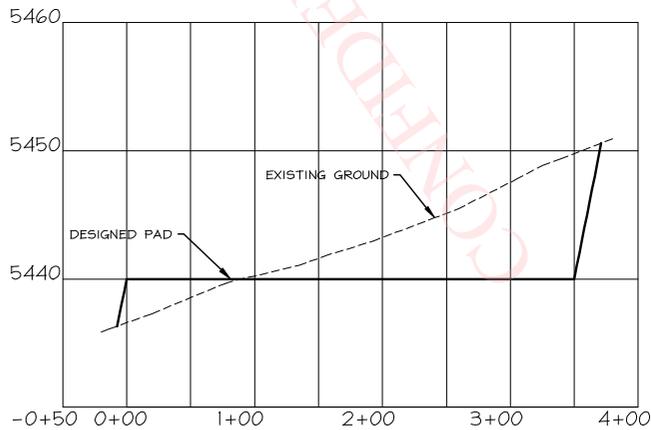
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-0065R	N.T.S.	08/28/09	0902-0065	6 OF 7
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	D.G.		



DATUM ELEV  
5420.00  
GROUP PAD  
SECTION 5+00



DATUM ELEV  
5430.00  
GROUP PAD  
SECTION 5+50



DATUM ELEV  
5430.00  
GROUP PAD  
SECTION 5+85

'APIWellNo:43039500020000'

**Savage Surveying, Inc.**  
  
 1825 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-885-6535  
 Fax: 435-885-0280

MAYFIELD 19-1					
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC					
DESIGN BY:	DWG NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	0902-0065R	N.T.S.	08/28/09	0902-0065	7 OF 7
	SURVEY BY:	CHECKED BY:	DRAWN BY:		
	E.G.	R.W.S.	D.G.		



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# Utah Division of Water Rights



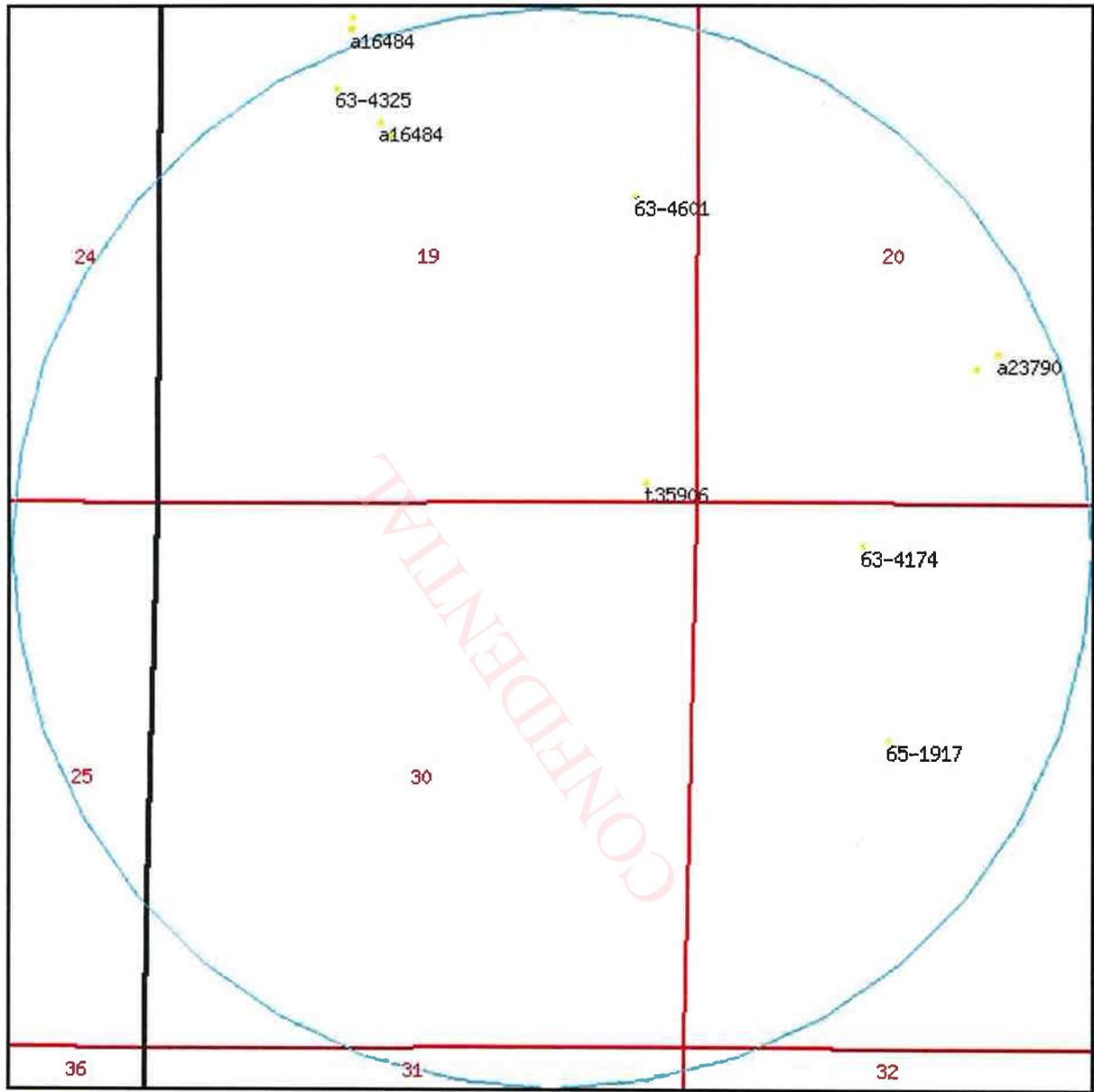
## Output Listing

Version: 2009.05.06.00      Rundate: 09/23/2009 05:09 PM

**Radius search of 5280 feet from a point S431 W1422 from the NE corner, section 30, Township 19S, Range 2E, SL b&m**  
**Criteria:wrtypes=W,C,E podtypes=S,U,Sp status=U,A,P usetypes=all**

CONFIDENTIAL

'APIWeIINo:43039500020000'



**Water Rights**

'APIWellNo:43039500020000'

WR Number	Diversions Type/Location	Well Log	Status	Priority	Uses	CFS	ACFT	Owner Name
<a href="#">63-3242</a>	Surface N3000 W600 SE 19 19S 2E SL		P	1881	I	0.560	0.000	HOWARD M. YARDLEY GUNNSION UT
<a href="#">63-3244</a>	Surface N3000 W600 SE 19 19S 2E SL		P	1881	I	2.283	163.500	VINCE BLIGHT 3356 CROWN STREET
<a href="#">63-3245</a>	Surface N3000 W600 SE 19 19S 2E SL		P	1881		0.250	0.000	TRYDALE FARMS CHRISTENBURG
<a href="#">63-3246</a>	Surface N3000 W600 SE 19 19S 2E SL		P	1881	I	1.660	0.000	TRYDALE FARMS CHRISTENBURG
<a href="#">63-3247</a>	Surface N3000 W600 SE 19 19S 2E SL		P	1881	DS	0.250	0.000	TRYDALE FARMS CHRISTENBURG
<a href="#">63-3251</a>	Surface N3000 W600 SE 19 19S 2E SL		P	1881	I	0.560	0.000	WALTER WILKINSON ORSON WILKINSON, ADMINISTRATOR OF ESTATE
<a href="#">63-3252</a>	Surface S634 E1843 NW 19 19S 2E SL		P	1878	I	32.000	0.000	GUNNISON IRRIGATION COMPANY GUNNISON UT 84634
<a href="#">63-3253</a>	Surface S6566 E1804 NW 18 19S 2E SL		P	1860	I	145.000	0.000	STATE OF UTAH BOARD OF WATER RESOURCES 1594 WEST NORTH TEMPLE, STE 310
<a href="#">63-3254</a>	Surface S6566 E1804 NW 18 19S 2E SL		P	1860	I	111.540	0.000	INC. GUNNISON IRRIGATION COMPANY GUNNISON UT 84634
<a href="#">63-3255</a>	Surface		P	1860	I	27.840	0.000	INC. GUNNISON IRRIGATION COMPANY

'APIWellNo:43039500020000'

	S6566 E1804 NW 18 19S 2E SL						GUNNISON UT 84634	
<a href="#">63-3256</a>	Surface	P	1860	DIS	0.490	206.530	INC. GUNNISON IRRIGATION COMPANY	
	S6566 E1804 NW 18 19S 2E SL						GUNNISON UT 84634	
<a href="#">63-3258</a>	Surface	P	1860	I	0.000	150.000	GUNNISON IRRIGATION COMPANY INC.	
	S1680 E2223 NW 19 19S 2E SL						P.O. BOX 228	
<a href="#">63-393</a>	Underground	<a href="#">well info</a>	P	19591001 S	0.015	0.000	BETTY HOWELL MCELROY	
	N1325 E90 S4 20 19S 2E SL						ROUTE 3 BOX E7	
<a href="#">63-4</a>	Surface	P	19130228	DIS	339.550	40976.283	GUNNISON IRRIGATION COMPANY	
	S518 E1855 NW 19 19S 2E SL						GUNNISON UT 84634	
<a href="#">63-4</a>	Surface	P	19130228	DIS	339.550	40976.283	STATE OF UTAH BOARD OF WATER RESOURCES	
	S1680 E2223 NW 19 19S 2E SL						1594 WEST NORTH TEMPLE, SUITE 310	
<a href="#">63-4174</a>	Underground	<a href="#">well info</a>	P	19960614	DIS	0.015	1.340	CHARLES L. ALLRED
	S421 E1627 NW 29 19S 2E SL						P.O. BOX 18	
<a href="#">63-4275</a>	Surface	P	1881	I	0.007	0.500	LESLIE T. AND ROSE M. FARRELL	
	N3000 W600 SE 19 19S 2E SL						P.O. BOX 3054	
<a href="#">63-4276</a>	Surface	P	1881	I	0.007	0.500	CLIFFORD GREEN	
	N3000 W600 SE 19 19S 2E SL						2087 BEAR MOUNTAIN DRIVE	
<a href="#">63-4325</a>	Surface	P	1860	I	0.510	210.000	STATE OF UTAH DIVISION OF PARKS & RECREATION	

	S6566 E1804 NW 18 19S 2E SL						P.O. BOX 650070
<a href="#">63-4336</a>	Surface	P	1881	I	0.014	1.000	BRYCE HAAS 200 S 331 E
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4371</a>	Surface	P	19130228 S		0.003	0.420	GUNNISON IRRIGATION COMPANY C/O MARDELL JENSEN
	S635 E1844 NW 19 19S 2E SL						
<a href="#">63-4371</a>	Surface	P	19130228 S		0.003	0.420	GUNNISON IRRIGATION COMPANY C/O MARDELL JENSEN
	S1565 E2111 NW 19 19S 2E SL						
<a href="#">63-4377</a>	Surface	P	1881	I	0.014	1.000	BRENT A. FUNK 16523 WEST 56TH DRIVE
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4395</a>	Surface	P	1881	I	0.014	1.000	HORSE BRAND RANCH P.O. BOX 534
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4408</a>	Surface	P	1881	I	0.007	0.500	JOSEPH STUDSTRUP P.O. BOX 113
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4421</a>	Surface	P	1881	I	0.000	1.000	KEITH V. AND CLAUDIA S. CHURCH 486 WEST 600 NORTH
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4459</a>	Surface	P	1881	I	0.014	1.000	JERRY JACOBSEN P.O. BOX 650101
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4460</a>	Surface	P	1881	I	0.054	4.000	CHARLES BARRY AND LINDA RAE JACOBSEN 459 SOUTH FIVE SISTERS DRIVE
	N3000 W600 SE 19 19S 2E SL						
<a href="#">63-4465</a>	Surface	P	1881	I	0.014	1.000	JENSEN FAMILY TRUST

	N3000 W600 SE 19 19S 2E SL						REDGE D. AND PAT M. TRUSTEES
<a href="#">63-4470</a>	Surface	P	1881	I	0.000	1.000	WILLIAM KAY CHRISTIANSEN TRUST
	N3000 W600 SE 19 19S 2E SL						P.O. BOX 82
<a href="#">63-4486</a>	Surface	P	1881	I	0.014	1.000	HARRIS FAMILY TRUST RONALD J. AND IRENE T. HARRIS TRUSTEES
	N3000 W600 SE 19 19S 2E SL						WAYNE AND CATHY CONNELLY
<a href="#">63-4516</a>	Surface	P	1881	I	0.014	1.000	P.O BOX 422
	N3000 W600 SE 19 19S 2E SL						ROBERT M. JOHNSON 1998 LIVING TRUST
<a href="#">63-4524</a>	Surface	P	1881	I	0.014	1.000	ROBERT M. AND CARMA F. JOHNSON, CO-TRUSTEES
	N3000 W600 SE 19 19S 2E SL						ROBERT M. JOHNSON 1998 LIVING TRUST
<a href="#">63-4525</a>	Surface	P	1881	I	0.014	1.000	ROBERT M. AND CARMA F. JOHNSON, CO-TRUSTEES
	N3000 W600 SE 19 19S 2E SL						ROBERT M. JOHNSON 1998 LIVING TRUST
<a href="#">63-4526</a>	Surface	P	1881	I	0.014	1.000	ROBERT M. AND CARMA F. JOHNSON, CO-TRUSTEES
	N3000 W600 SE 19 19S 2E SL						ROBERT M. JOHNSON 1998 LIVING TRUST
<a href="#">63-4545</a>	Surface	P	1881	I	0.028	2.000	ROBERT M. AND CARMA F. JOHNSON, CO-TRUSTEES
	N3000 W600 SE 19 19S 2E SL						PAUL D. AND MICHELLE BROWN
<a href="#">63-4566</a>	Surface	P	1881	I	0.014	1.000	4836 SOUTH HIGHLAND CIRCLE, #502
	N3000 W600 SE 19 19S 2E SL						OVERLY FAMILY DEVELOPMENTS, LLC
<a href="#">63-4581</a>	Surface	P	1881	I	0.000	3.000	PO BOX 133
	N3000 W600 SE 19 19S 2E SL						SHANE M. AND GLEN M. GOODRICH

	N3000 W600 SE 19 19S 2E SL						4615 SOUTH 2940 WEST
<a href="#">63-4601</a>	Surface	P	1881	I	0.014	1.000	KENNETH W AND BONNIE J SANDERSON
	N3000 W600 SE 19 19S 2E SL						430 EAST CANYON ROAD
<a href="#">65-1917</a>	Underground	P	19770514	DI	0.015	0.000	GLADE FAATZ
	N2985 E1995 SW 29 19S 2E SL						BOX 41
<a href="#">a16484</a>	Surface	A	19911202	DI	339.550	0.000	GUNNISON IRRIGATION COMPANY
	S635 E1844 NW 19 19S 2E SL						C/O EUGENE JENSEN
<a href="#">a16484</a>	Surface	A	19911202	DI	339.550	0.000	GUNNISON IRRIGATION COMPANY
	S1565 E2111 NW 19 19S 2E SL						C/O EUGENE JENSEN
<a href="#">a23790</a>	Underground	A	19991001	DS	0.000	4.200	BETTY HOWELL MCELROY
	N1471 E300 S4 20 19S 2E SL						ROUTE 3 BOX E7
<a href="#">t35906</a>	Surface	A	20090910	O	0.000	18.000	MAYFIELD IRRIGATION COMPANY
	N200 W500 SE 19 19S 2E SL						C/O CATHRYN BARTHOLOMEW

Well Name	WOLVERINE GAS & OIL COMPANY OF UTAH, LLC Mayfield 19-1 4303950		
String	Surf	Prod	
Casing Size(")	10.750	5.500	
Setting Depth (TVD)	2000	12900	
Previous Shoe Setting Depth (TVD)	0	2000	
Max Mud Weight (ppg)	9.2	10.5	
BOPE Proposed (psi)	500	5000	
Casing Internal Yield (psi)	2950	9880	
Operators Max Anticipated Pressure (psi)	5550	8.3	

Calculations	Surf String	10.750	"
Max BHP (psi)	$.052 * \text{Setting Depth} * \text{MW} =$	957	
			<b>BOPE Adequate For Drilling And Setting Casing at Depth?</b>
MASP (Gas) (psi)	$\text{Max BHP} - (0.12 * \text{Setting Depth}) =$	717	NO
MASP (Gas/Mud) (psi)	$\text{Max BHP} - (0.22 * \text{Setting Depth}) =$	517	NO Reasonable
			<b>*Can Full Expected Pressure Be Held At Previous Shoe?</b>
Pressure At Previous Shoe	$\text{Max BHP} - .22 * (\text{Setting Depth} - \text{Previous Shoe Depth}) =$	517	NO Reasonable depth, no expected pressures
Required Casing/BOPE Test Pressure=		2000	psi
*Max Pressure Allowed @ Previous Casing Shoe=		0	psi *Assumes 1psi/ft frac gradient

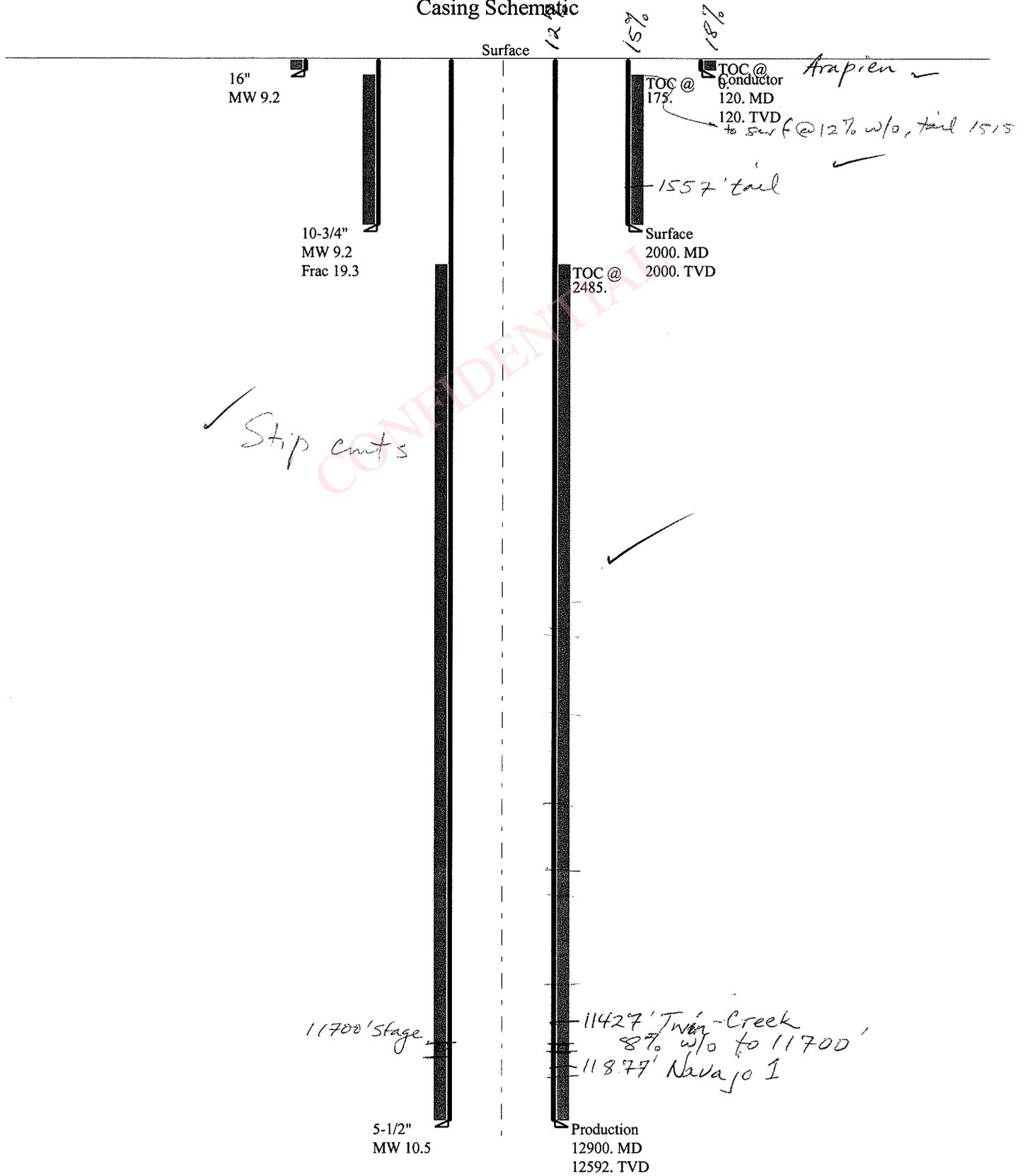
Calculations	Prod String	5.500	"
Max BHP (psi)	$.052 * \text{Setting Depth} * \text{MW} =$	7043	
			<b>BOPE Adequate For Drilling And Setting Casing at Depth?</b>
MASP (Gas) (psi)	$\text{Max BHP} - (0.12 * \text{Setting Depth}) =$	5495	NO
MASP (Gas/Mud) (psi)	$\text{Max BHP} - (0.22 * \text{Setting Depth}) =$	4205	YES OK
			<b>*Can Full Expected Pressure Be Held At Previous Shoe?</b>
Pressure At Previous Shoe	$\text{Max BHP} - .22 * (\text{Setting Depth} - \text{Previous Shoe Depth}) =$	4645	NO Expect 8.4 ppg equivalent pore pressure based on drilling in area,
Required Casing/BOPE Test Pressure=		5000	psi
*Max Pressure Allowed @ Previous Casing Shoe=		2000	psi *Assumes 1psi/ft frac gradient

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

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

# 43039500020000 Mayfield 19-1

## Casing Schematic



Well name:	<b>43039500020000 Mayfield 19-1</b>		
Operator:	<b>WOLVERINE GAS &amp; OIL COMPANY OF UTAH, LLC</b>		
String type:	Conductor	Project ID:	43-039-50002
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

**Environment:**

H2S considered? No  
 Surface temperature: 74 °F  
 Bottom hole temperature: 76 °F  
 Temperature gradient: 1.40 °F/100ft  
 Minimum section length: 100 ft

**Burst:**

Design factor 1.00

Cement top: Surface

**Burst**

Max anticipated surface pressure: 43 psi  
 Internal gradient: 0.120 psi/ft  
 Calculated BHP 57 psi

**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.**

No backup mud specified.

Tension is based on air weight.  
 Neutral point: 104 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	120	16	84.00	K-55	Buttress	120	120	14.885	2873

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	57	1410	24.586	57	2980	51.96	10.1	1326.1	99.99 B

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

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

Date: September 24, 2009  
 Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 120 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>43039500020000 Mayfield 19-1</b>		
Operator:	<b>WOLVERINE GAS &amp; OIL COMPANY OF UTAH, LLC</b>		
String type:	Surface	Project ID:	43-039-50002
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: 102 °F  
 Temperature gradient: 1.40 °F/100ft  
 Minimum section length: 100 ft  
 Cement top: 175 ft

**Burst**

Max anticipated surface pressure: 1,760 psi  
 Internal gradient: 0.120 psi/ft  
 Calculated BHP 2,000 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: 1,730 ft

**Non-directional string.**

**Re subsequent strings:**

Next setting depth: 12,900 ft  
 Next mud weight: 10.500 ppg  
 Next setting BHP: 7,036 psi  
 Fracture mud wt: 19.250 ppg  
 Fracture depth: 2,000 ft  
 Injection pressure: 2,000 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	2000	10.75	40.50	HCK-55	ST&C	2000	2000	9.925	22477
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	956	2100	2.197	2000	3130	1.57	81	562	6.94 J

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

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

Date: September 24, 2009  
 Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 2000 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>43039500020000 Mayfield 19-1</b>		
Operator:	<b>WOLVERINE GAS &amp; OIL COMPANY OF UTAH, LLC</b>		
String type:	Production	Project ID:	43-039-50002
Location:	SANPETE COUNTY		

**Design parameters:**

**Collapse**

Mud weight: 10.500 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: 250 °F  
 Temperature gradient: 1.40 °F/100ft  
 Minimum section length: 100 ft

Cement top: 2,485 ft

**Burst**

Max anticipated surface pressure: 4,098 psi  
 Internal gradient: 0.220 psi/ft  
 Calculated BHP 6,868 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)

**Directional Info - Build & Drop**

Kick-off point 8400 ft  
 Departure at shoe: 1526 ft  
 Maximum dogleg: 3 °/100ft  
 Inclination at shoe: 12.5 °

Tension is based on air weight.  
 Neutral point: 10,945 ft

Estimated cost: 108,988 (\$)

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	5700	5.5	23.00	P-110	LT&C	11423	11700	4.545	50825
1	1200	5.5	23.00	L-80	LT&C	12592	12900	4.545	10287

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	3273	7640	2.335	5418	8990	1.66	271.6	466.3	1.72 B
2	6231	14320	2.298	6611	13580	2.05	151.6	643	4.24 J
1	6868	11160	1.625	6868	9880	1.44	26.9	489	18.19 J

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

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

Date: September 24, 2009  
 Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 12592 ft, a mud weight of 10.5 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 GAS & OIL COMPANY OF UTAH, LLC  
**Well Name** Mayfield 19-1  
**API Number** 43039500020000      **APD No** 1854      **Field/Unit** WILDCAT  
**Location: 1/4,1/4** NWNE      **Sec** 30      **Tw** 19.0S      **Rng** 2.0E      431      **FNL** 1422      **FEL**  
**GPS Coord (UTM)**      **Surface Owner** Linsi Properties, LLC

**Participants**

Mark Jones (UDOGM), Charles Irons, Paul Spiering (Wolverine), Ryan Savage (Savage Surveying), Chris Schaugaard (Brown Brothers), Bill Christiansen (surface owner).

**Regional/Local Setting & Topography**

Proposed location is northwest of Mayfield, Utah approximately 1.5 miles. Location lies on north side of UT - 137 in an existing alfalfa field and is south of Twelvemile Creek and east of White Hills.

**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>
0.06	<b>Width</b> 350 <b>Length</b> 485	Onsite	

**Ancillary Facilities**

**Waste Management Plan Adequate?**

**Environmental Parameters**

**Affected Floodplains and/or Wetlands** N

**Flora / Fauna**

existing agriculture ground. Alfalfa hay field.

**Soil Type and Characteristics**

clay

**Erosion Issues** N

**Sedimentation Issues** N

**Site Stability Issues** N

**Drainage Diversion Required?** Y

divert drainage away from pad.

**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>	100 to 200	5	
<b>Distance to Surface Water (feet)</b>	300 to 1000	2	
<b>Dist. Nearest Municipal Well (ft)</b>	>5280	0	
<b>Distance to Other Wells (feet)</b>	>1320	0	
<b>Native Soil Type</b>	Mod permeability	10	
<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>			
<b>Presence Nearby Utility Conduits</b>	Not Present	0	
	<b>Final Score</b>	42	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**

Drilling water will be purchased from Mayfield Water Company out of Twelve Mile Creek. A highway right of way encroachment permit with UDOT has been obtained by Wolverine for the access off of UT - 137. Landowner Bill Christiansen is excited to have Wolverine on his property.

Mark Jones  
**Evaluator**

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

# Application for Permit to Drill Statement of Basis

10/22/2009

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

Page 1

<b>APD No</b>	API WellNo	Status	Well Type	Surf Owner	CBM
1854	43039500020000	LOCKED	OW	P	No
<b>Operator</b>	WOLVERINE GAS & OIL COMPANY OF UTAH, LLC		<b>Surface Owner-APD</b>	Linsi Properties, LLC	
<b>Well Name</b>	Mayfield 19-1		<b>Unit</b>	WOLVERINE	
<b>Field</b>	WILDCAT		<b>Type of Work</b>	DRILL	
<b>Location</b>	NWNE 30 19S 2E S 431 FNL 1422 FEL		<b>GPS Coord (UTM)</b>	437143E	4331754N

**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 about one mile northwest of Gunnison, Utah, and about 1,000' southwest of the Twelvemile Creek. A well at this location well spud into a soil developed on Quaternary Alluvial Fan deposits most likely overlying the Jurassic age Arapien Shale. Aquifers with significant volumes of high quality ground water can be encountered in the Alluvial Fan deposits. The hole will be drilled with a fresh water/gel mud system into the the Arapien Shale to a depth of 2,000' after which the mud will be converted to a salt mud system to handle the Arapien Shale evaporite intervals. 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 Alluvial Fan deposits at this location provided that the conductor casing be extended as needed to completely protect those deposits, in the event that they are thicker than prognosticated. The conductor casing should be set with sufficient clearance into the Arapien Shale (minimum of 50 feet). Four subsurface water rights have been filed within a mile of this location.

Chris Kierst  
**APD Evaluator**

9/23/2009  
**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), Bill Christiansen (surface owner).

DOGM recommends that a 12 mil (minimum) synthetic liner be used to line the reserve pit. It is also recommended that the reserve pit be fenced off once the drill rig is released.

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 reserve pit shall be fenced upon completion of drilling operations.

**WORKSHEET  
APPLICATION FOR PERMIT TO DRILL**

**APD RECEIVED:** 8/7/2009

**API NO. ASSIGNED:** 43039500020000

**WELL NAME:** Mayfield 19-1

**OPERATOR:** WOLVERINE GAS & OIL COMPANY OF UTAH, LLC (N1655)

**PHONE NUMBER:** 435 896-1943

**CONTACT:** Charles Irons

**PROPOSED LOCATION:** NWNE 30 190S 020E

**Permit Tech Review:**

**SURFACE:** 0431 FNL 1422 FEL

**Engineering Review:**

**BOTTOM:** 0500 FSL 2607 FEL

**Geology Review:**

**COUNTY:** SANPETE

**LATITUDE:** 39.13457

**LONGITUDE:** -111.72726

**UTM SURF EASTINGS:** 437143.00

**NORTHINGS:** 4331754.00

**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:** Mayfield Irrigation Company #63-2598
- RDCC Review:**
- Fee Surface Agreement**
- Intent to Commingle**

**Commingle Approved**

**LOCATION AND SITING:**

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

**Comments:** Presite Completed  
BHL SEC 19:APD IS IN UPOD:

**Stipulations:** 1 - Exception Location - dmason  
5 - Statement of Basis - bhill  
12 - Cement Volume (3) - ddoucet  
15 - Directional - bhill  
23 - Spacing - dmason  
25 - Surface Casing - hmadonald



# 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:** Mayfield 19-1  
**API Well Number:** 43039500020000  
**Lease Number:** Patented  
**Surface Owner:** FEE (PRIVATE)  
**Approval Date:** 10/27/2009

### Issued to:

WOLVERINE GAS & OIL 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 R649-3-11. 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

### Exception Location:

Appropriate information has been submitted to DOGM and administrative approval of the requested exception location is hereby granted.

### 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:

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.

Surface casing shall be cemented 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 1500' 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).

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.

**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

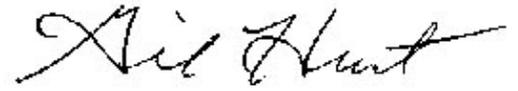
**Reporting Requirements:**

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:

Approved By:

A handwritten signature in black ink, appearing to read "Gil Hunt". The signature is written in a cursive style with a long horizontal stroke at the end.

Gil Hunt  
Associate Director, Oil & Gas

# DIVISION OF OIL, GAS AND MINING

## **SPUDDING INFORMATION**

Name of Company: WOLVERINE GAS & OIL COMPANY OF UTAH

Well Name: MAYFIELD 19-1

Api No: 43-039-50002 Lease Type: FEE

Section 30 Township 19S Range 02E County SANPETE

Drilling Contractor LANG RIG # LK-31

## **SPUDDED:**

Date 11/04/2009

Time 11:00 AM

How DRY

**Drilling will Commence:** \_\_\_\_\_

Reported by TOM ZUPAN

Telephone # (970) 314-8219

Date 11/05/2009 Signed CHD

<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> WOLVERINE
<b>1. TYPE OF WELL</b> Oil Well	<b>8. WELL NAME and NUMBER:</b> Mayfield 19-1
<b>2. NAME OF OPERATOR:</b> WOLVERINE GAS & OIL COMPANY OF UTAH, LLC	<b>9. API NUMBER:</b> 43039500020000
<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> 0431 FNL 1422 FEL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: NWNE Section: 30 Township: 19.0S Range: 02.0E 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: 11/4/2009	<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
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	<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.

Wolverine will spud the Mayfield 19-1 well with Rig Lang LK-31 in approximately the next 24 hrs. Tom Zupan will be the company man working on-site. His contact info is as follows: 970-314-8219 cell

**Accepted by the**  
**Utah Division of**  
**Oil, Gas and Mining**  
**FOR RECORD ONLY**  
 November 23, 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> 11/3/2009	

<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
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<input checked="" type="checkbox"/> <b>DRILLING REPORT</b> Report Date: 11/15/2009	<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
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	<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.

The Mayfield 19-1 well was spudded on 11/04/09 and drilled to a depth of 2,004' GL with Boart-Longyear rig. 10.75", 40#/ft J-55 surface casing was set at 2004' GL and cemented to surface on 11/14/09 with 350 sks, class A, 11.0#/gal, 3.50 cf/sx yield lead and 205 sacks, 14.2#/gal, 1.62 cf/sx tail. Fifteen bbls was circulated to surface. Released rig 11/14/09. Well operations have been temporarily suspended until drilling operations are completed on the Cedar Ridge 17-1 well and the Patterson drilling rig can be moved to the Mayfield 19-1 location.

**Accepted by the**  
**Utah Division of**  
**Oil, Gas and Mining**  
**FOR RECORD ONLY**  
 December 16, 2009

<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> 12/15/2009	

# IPS / dba Double Jack Testing



FIELD TICKET  
27464

Accounting Office:  
Field Operations:

PO Drawer 2080 • Riverton, WY 82501 • (307) 857-0076  
 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 4-8-10, 4-7-10, 4-9-10  
 OPERATOR WOLVERINE GAS  
 CONTRACTOR PATTERSON 304  
 WELL NAME MAYFIELD 19-1

**CONFIDENTIAL**

43 039 50002

COUNTY CANBY, UT STATE \_\_\_\_\_ SECTION 30 TOWNSHIP 19S RANGE 2E

Items Tested:	LOW TEST PSI	TIME HELD MINUTES	HIGHEST PSI	TIME HELD MINUTES	COMMENTS
Top Pipe Rams	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	<p><u>Wolverine;</u> <u>Mayfield 19-1</u></p> <p>Closing Unit PSI _____</p> <p>Closing Time of Rams _____</p> <p>Closing Time of Annular _____</p> <p>Closed Casing Head Valve _____</p> <p>Set Wear Sleeve _____</p> <p><b>COMMENTS</b></p> <p><u>RETEST UPPER PIPE RAMS. <del>REPLACED</del></u> <u>REPLACED SEAL IN B.O.P</u></p>
Bottom Pipe Rams	_____	_____	_____	_____	
Blind Rams	<u>250</u>	<u>5</u>	<u>5000</u>	_____	
Annular B.O.P.	_____	_____	_____	_____	
Choke Manifold	_____	_____	_____	_____	
Choke Line	_____	_____	_____	_____	
Kill Line	_____	_____	_____	_____	
Super Choke	_____	_____	_____	_____	
Upper Kelly	_____	_____	_____	_____	
Lower Kelly	_____	_____	_____	_____	
Floor Valve	_____	_____	_____	_____	
Dart Valve	_____	_____	_____	_____	
Casing	_____	_____	_____	_____	

ADDITIONAL TESTS & COMMENTS DRILLING  COMPLETION

FTT TEST - 640 PSI - 10 MIN.  
DE

QUANTITY	RATES	CHARGES
1	UNIT RATES	
23	ADDITIONAL HRS TO COMPLETE TEST	110/HR 2550
48	MILEAGE ROUND TRIP MILES FROM HOTEL TO LOCATION	2.75/mi 132
40	ANTIFREEZE GALLONS OF 40% CIVIL MIX	7.00/gal 280
26	OTHER STAND BY HRS AT HOTEL @ 90 PER HR (DAILY)	90 2340
	TEST PLUG <u>C 22 11'</u>	
	TOP SUB. <u>3 1/2 TE</u>	
	KELLY SUB. <u>4 1/2 TE</u>	
	X-OVER SUB. <u>CIRCULATION 4 1/2 TE</u>	
	OTHER <u>PER DIEM</u>	75
	<u>2 = HOTEL FEE</u>	150
	<u>SETUP CHARGE FIRST 7 HRS ON LOCATION</u>	135
		1375
		6998

A FE 228  
PURCHASE ORDER #  
[Signature]  
COMPANY REPRESENTATIVE  
Print Name

HARRY T MELNIKOFF TESTED BY  
 NO ACCIDENTS  
#4485 THANK YOU!  
 DOUBLE JACK TESTING UNIT NUMBER

SUBTOTAL 6998  
TAX \_\_\_\_\_  
TOTAL \_\_\_\_\_

**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.

# IPS / dba Double Jack Testing



FIELD TICKET  
27475

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 4/5/10

OPERATOR WOLFEINE CAS

CONTRACTOR PATTERSON 304

WELL NAME MANFIELD 191

COUNTY	STATE	SECTION	TOWNSHIP	RANGE
<u>SAN PETE</u>	<u>UT</u>			

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>3000</u>
Bottom Pipe Rams	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Closing Time of Rams <u>4 SEC</u>
Blind Rams	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Closing Time of Annular <u>17 SEC</u>
Annular B.O.P.	<u>250</u>	<u>5</u>	<u>2500</u>	<u>10</u>	Closed Casing Head Valve <u>TIME</u>
Choke Manifold	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	Set Wear Sleeve <u>RIP CRACK</u>
Choke Line	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	COMMENTS  <u>CRACK LINE TO PUMPS</u> <u>250 PSI - 5 MIN</u> <u>4000 P.S.T. - 10 MIN</u>
Kill Line	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	
Super Choke					
Upper Kelly I-50P	<u>250</u>	<u>5</u>	<u>5000</u>	<u>10</u>	
Lower Kelly I-50P	<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>	
Casing			<u>1500</u>	<u>30</u>	

**ADDITIONAL TESTS & COMMENTS**

DRILLING  COMPLETION

	TEST PLUG	TOP SUB.	KELLY SUB.	X-OVER SUB.	OTHER	CHARGES
	<u>1 1/2 4 1/2 IE</u>	<u>4 1/2 IE</u>	<u>4 1/2 IF</u>	<u>CIRCULATING 4 1/2 IE</u>	<u>DEC DIE W</u>	<u>182-</u>
						<u>72-</u>
						<u>72-</u>
						<u>43-</u>

QUANTITY	RATES	UNIT RATES	ADDITIONAL	MILEAGE	ANTIFREEZE	OTHER	CHARGES
<u>1</u>			<u>SET UP INCHABLE FIRST 7 HRS ON LOCATION</u>				<u>1375-</u>
<u>11</u>			<u>HRS TO COMPLETE TEST AFTER SETUP</u>				<u>1210-</u>
<u>462</u>			<u>ROUND TRIP MILES FROM GRAND JCT SHOP</u>				<u>1270.50</u>
<u>230</u>			<u>GALLONS OF 40% UNICOL M11</u>				<u>1573-</u>

SUBTOTAL 5,799.50

AFF # 228  
 PURCHASE ORDER #  
 COMPANY REPRESENTATIVE  
 Print Name

HARRY J MEINIKOFF TESTED BY  
 NO ACCIDENTS  
#4465 THANK YOU.  
 DOUBLE JACK TESTING UNIT NUMBER

TAX \_\_\_\_\_  
 TOTAL \_\_\_\_\_

**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. MP-10000 96 mm

METER #4485

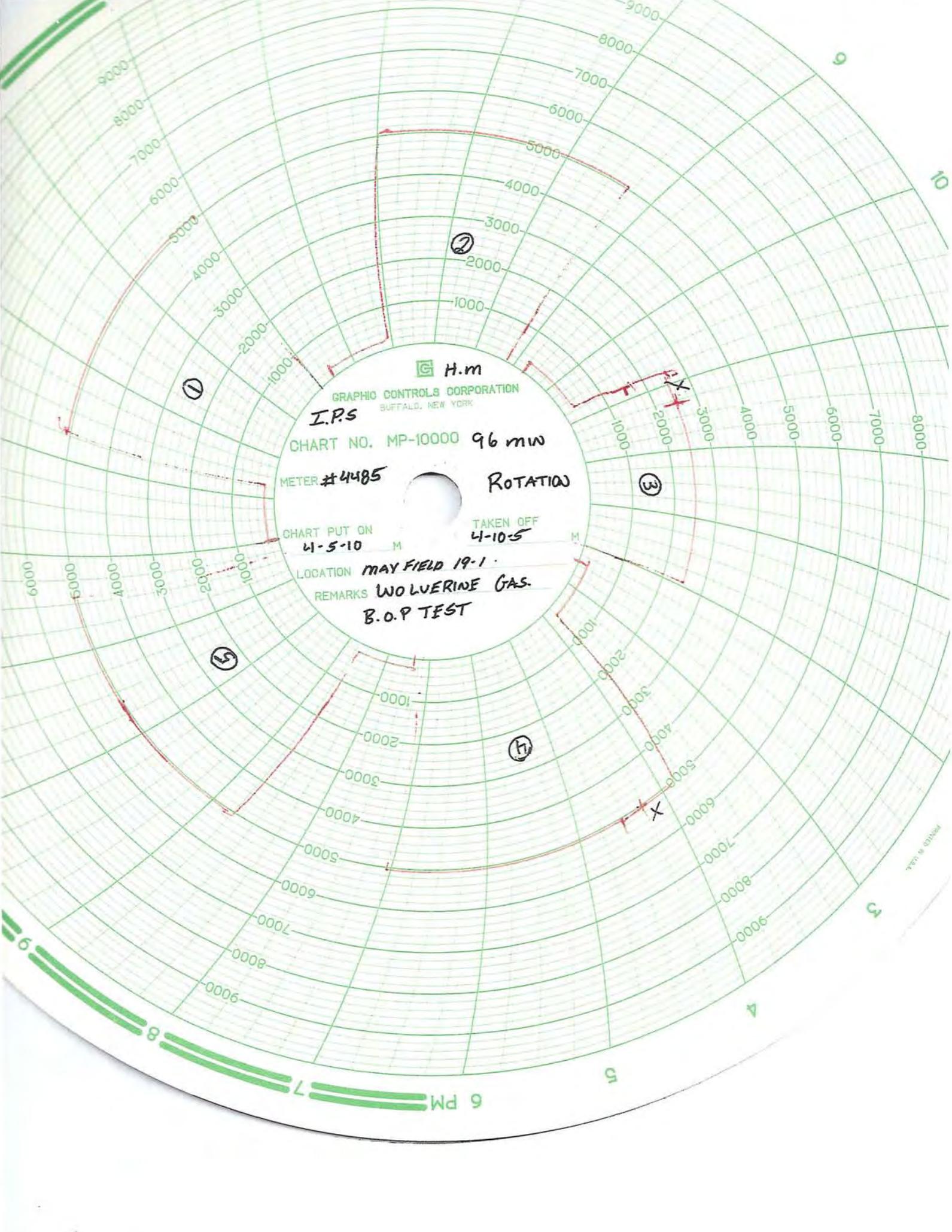
ROTATION

CHART PUT ON  
4-5-10 M

TAKEN OFF  
4-10-5 M

LOCATION MAY FIELD 19-1

REMARKS WOLVERINE GAS.  
B.O.P TEST



MADE IN U.S.A.

6 PM

G H.M

GRAPHIC CONTROLS CORPORATION  
BUFFALO, NEW YORK

I.P.S

CHART NO. MP-10000 96 min

METER #4485

ROTATION

CHART PUT ON  
4-5-10 M

TAKEN OFF  
4-5-10 M

LOCATION MAYFIELD 19-1

REMARKS WOLVERINE GAS  
B.O.P TEST

(6)

(7)

(8)

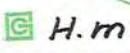
(9)

(10)

6 PM

GRAPHIC CONTROLS CORPORATION

RE TEST  
PIPE RAMS



H.M.  
GRAPHIC CONTROLS CORPORATION  
BUFFALO, NEW YORK

I.R.S

CHART NO. MP-10000 96 min

METER # 4485

ROTATION

CHART PUT ON  
4-7-10 M

TAKEN OFF  
4-8-10 M

LOCATION MAY FIELD 19-1

REMARKS WOLVERINE GAS  
B.O.P TEST  
F.I.T TEST

F.I.T TEST  
640 P.S.I.  
x 1000

# 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 3'000 FINAL PSI 2'450 TIME 17 sec

- #4 CLOSE PIPE RAMS/ RECORD TIME & PRESSURE.

PIPE RAMS INTIAL PSI 2'450 FINAL PSI 2'250 TIME 4 sec

- #5 OPEN PIPE RAMS TO SIMULATE BLIND RAMS/ RECORD TIME & PRESSURE.

INTIAL PSI 2'250 FINAL PSI 2'000 TIME 4 sec

- #6 CLOSE HCR (if applicable)/ RECORD TIME & PRESSURE.

HCR INTIAL PSI 2'000 FINAL PSI 1930 TIME 1 sec

- #7 ON THREE RAM STACK CLOSE BOTTOM PIPE RAMS/ RECORD TIME & PRESSURE.

PIPE RAMS INTIAL PSI 1975 FINAL PSI 1950 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 915 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 MANIFOLD ON ACCUMULATOR  
TO AT LEAST 200 PSI OVER PRECHARGE, WITHIN 2 MIN. OR LESS.

RECORDED TIME 1 <sup>ELECTRIC</sup> MINUTE 05 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.

AIR.

35 sec.

Date: 4-5-10

WOLVERINE GAS

Contractor: PATTERSON 304

Well: MAYFIELD 19-1

# Pressure Test Log

Test No.	Am Time	Notes	P.S.I.	MIN
			250	5
1.	3:35	DART VALVE	5000	10
	3:41		250	5
2.	4:00	LOWER PIPE RAMS, T.I.W VALVE	5000	10
	4:06		250	5
3.	4:50	ANNULAR	2500	10
	5:24		250	5
4.	11:09	UPPER PIPE RAMS, LOWER I-BOP 1ST CHOKE	5000	10
	11:18	VALVE, 1ST KILL VALVE.	250	5
5.	11:40	UPPER PIPE RAMS, HCR VALVE, CHOKE, 2ND KILL	5000	10
	11:46	VALVE.	250	5
6.	12:21 Pm	RISER VALVE, 2ND MANIFOLD VALVES.	5000	10
	12:27	CHOKE LINE, UPPER PIPE RAMS, KILL CHECK	500	10
7.	1:48	UPPER I-BOP	250	5
8.	2:23	STAND PIPE, MUD LINE BACK TO PUMPS	4000	10
	3:45		250	5
9.	4:26	BLUNDS 1ST MANIFOLD VALVES	5000	10
	4:33		1500	30
10.	5:00	CASING		

Carol Daniels - Mayfield 19-1 Update *T199 R02E S-30 43-039-50002*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/7/2010 12:35 PM  
**Subject:** Mayfield 19-1 Update

---

Status @ 1230hrs: Drilling in Arapian @ 9,345'

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

RECEIVED

MAY 07 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update**

T19S R20E S-30 43-039-50002

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" ,  
"Daniels, Carol" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" ,  
"George Punteney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" ,  
"Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" ,  
"Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/8/2010 5:04 AM  
**Subject:** Mayfield 19-1 Update

---

5/8/2010 5:00 AM

Drilling at 9,497', ROP 15 FPH, casing point 11,771', BOP test on next trip, trip expected in 1 or 2 days

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**You must be clean shaven and have a valid H2S card to enter this location**

**RECEIVED**

**MAY 08 2010**

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

Carol Daniels - Mayfield 19-1 Update *T 19S ROAES-30 43-039-50002*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" ,  
"Daniels, Carol" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" ,  
"George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" ,  
"Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" ,  
"Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/9/2010 7:39 AM  
**Subject:** Mayfield 19-1 Update

---

5/9/2010 7:36 AM

Drilling at 9,711', ROP 7.2 FPH

Casing point 11,700'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

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**RECEIVED**

**MAY 09 2010**

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

Carol Daniels - Mayfield 19-1 Update

T195 ROSES-30 43-039-50002

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" ,  
"Daniels, Carol" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" ,  
"George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" ,  
"Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" ,  
"Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/10/2010 8:51 AM  
**Subject:** Mayfield 19-1 Update

---

5/10/2010 8:44 AM

Drilling at 9,857', ROP 7 FPH,

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

**RECEIVED**

**MAY 10 2010**

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

**Carol Daniels - Mayfield 19-1 Update** *TIPS ROSES-30 43-039-50002*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" ,  
"Daniels, Carol" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" ,  
"George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" ,  
"Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" ,  
"Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/11/2010 7:29 AM  
**Subject:** Mayfield 19-1 Update

---

5/11/2010 7:26 AM

Circulating at 9,988' for trip out of hole.

Will test BOP stack when out of hole

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

**RECEIVED**

**MAY 11 2010**

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

**Carol Daniels - Mayfield 19-1 BOP test and change out MWD** T19S ROQE 5-30 43-039-5000

**From:** "Wolverine Exploration Rig"  
**To:** "Wright, Brian" , "Jones, Mark" , "Daniels, Carol" , "George Puntney" , "Tanner Rauk"  
**Date:** 5/11/2010 7:35 AM  
**Subject:** Mayfield 19-1 BOP test and change out MWD

---

5/11/2010 7:30 AM

The current depth is 9,988'

Circulating prior to TOH to test BOP and change out MWD

Mark Jones, Brian Wright and Tanner Rauk have been notified

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

**RECEIVED**

**MAY 11 2010**

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

Carol Daniels - Mayfield 19-1 Update *TIPS RO2E S-30 4303950002*

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" ,  
"Daniels, Carol" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" ,  
"George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" ,  
"Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" ,  
"Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/12/2010 7:13 AM  
**Subject:** Mayfield 19-1 Update

---

5/12/2010 7:10 AM

Tripping in hole at 4,880'

Hole depth 9,988'

Estimated casing point 11,700'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

# IPS / dba Double Jack Testing



FIELD TICKET  
27875

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 5-12-10

OPERATOR Wolverine gas & oil  
 CONTRACTOR Patterson #304  
 WELL NAME Mayfield #19-1

COUNTY San Pete STATE Utah SECTION 30 TOWNSHIP 19S RANGE 2E

Items Tested:	LOW TEST PSI	TIME HELD MINUTES	HIGHEST PSI	TIME HELD MINUTES	
Top Pipe Rams	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	<u>43 039 50002</u>
Bottom Pipe Rams	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	Closing Unit PSI <u>3000 Psi</u>
Blind Rams	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	Closing Time of Rams <u>4 sec</u>
Annular B.O.P.	<u>250 Psi</u>	<u>5 min</u>	<u>2500 Psi</u>	<u>10 min</u>	Closing Time of Annular <u>13 sec</u>
Choke Manifold	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	Closed Casing Head Valve <u>YES</u>
Choke Line	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	Set Wear Sleeve <u>NO (Packer)</u>
Kill Line	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	<b>COMMENTS</b> <u>Tested Back to pumps 2500 Psi 5 min @ 3500 Psi for 10 min</u>
Super Choke	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	
Upper Kelly	<u>—</u>	<u>—</u>	<u>500 Psi</u>	<u>10 min</u>	
Lower Kelly	<u>250</u>	<u>5 min</u>	<u>3500 Psi</u>	<u>10 min</u>	
Floor Valve	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	
Dart Valve	<u>250</u>	<u>5 min</u>	<u>5000 Psi</u>	<u>10 min</u>	
Casing	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	

ADDITIONAL TESTS & COMMENTS DRILLING  COMPLETION

	TEST PLUG	TOP SUB.	KELLY SUB.	X-OVER SUB.	OTHER	CHARGES
	<u>11" C22 4 1/2" IF</u>	<u>4 1/2" IF</u>	<u>4 1/2" IF</u>			<u>172.00</u>
						<u>72.00</u>
						<u>72.00</u>

QUANTITY	RATES		CHARGES
<u>1 unit</u>	UNIT RATES	<u>Setup charge to test BOP's 1st 7 hrs</u>	<u>1375.00</u>
<u>4 hrs</u>	ADDITIONAL	<u>hourly Rate Post Setup charge @ 110/hr</u>	<u>440.00</u>
<u>374</u>	MILEAGE	<u>Mileage Round trip From Evanston, WY @ 2.31/mi</u>	<u>1028.20</u>
	ANTIFREEZE	<u>used water to test with</u>	
<u>2 guys</u>	OTHER	<u>Per diem (For two guys)</u>	<u>120.00</u>

AFE 228  
 PURCHASE ORDER # 5/12/10  
 COMPANY REPRESENTATIVE Mike Fisher & Shane Wertz  
 Print Name  
 NO ACCIDENTS  
 TESTED BY #7544  
 SUBTOTAL 3289.20  
 TAX  
 TOTAL

DOUBLE JACK TESTING UNIT NUMBER

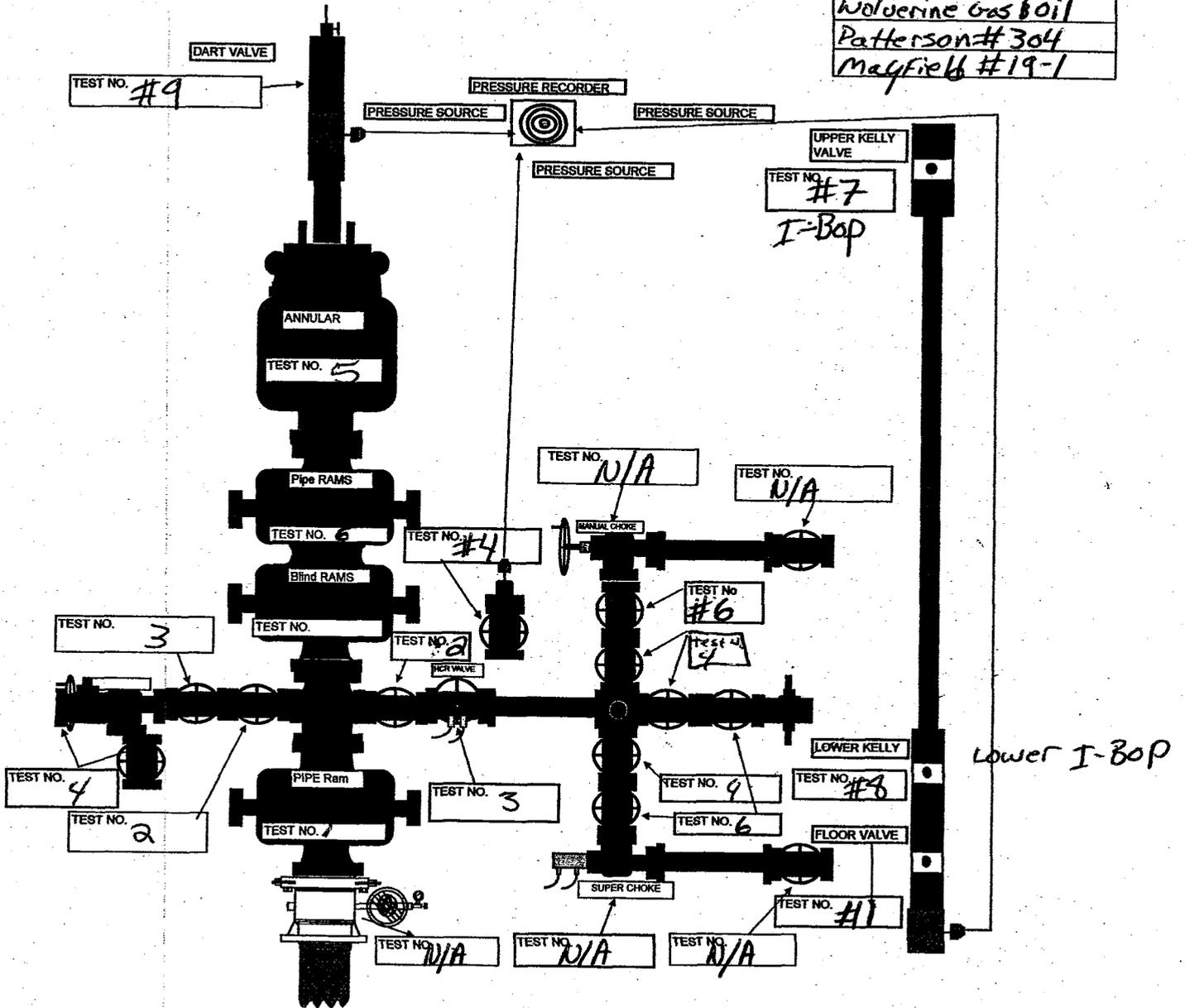
**NOTICE TO ALL CUSTOMERS**

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.



10000-15000-20000 PSI

5-12-10  
Wolverine Gas Boil  
Patterson # 304  
Mayfield # 19-1



# IPS PRESSURE TESTING

### IPS / Double Jack Testing Accumulator Function Tests

- # 1 RECORD INITIAL ACCUMULATOR PRESSURE 3000
- # 2 WITH DRILL PIPE & TEST PLUG INSTALLED IN WELL HEAD.
- # 3 PLACE ALL FUNCTIONING ACCUMULATOR VALVES IN OPEN POSITION  
ALLOW ACCUMULATOR TO PRESSURE UP BEFORE SHUTTING OFF ALL PUMPS
- # 4 CLOSE ANNULAR / RECORD TIME & PRESSURE.  
ANNULAR: INTIAL PSI 3000 FINAL PSI 2600 TIME 13 Sec.
- # 5 CLOSE PIPE RAMS / RECORD TIME & PRESSURE.  
PIPE RAMS: INTIAL PSI 2600 FINAL PSI 2100 TIME 4 Sec.
- # 6 OPEN PIPE RAMS TO SIMULATE BLIND RAMS / RECORD TIME & PRESSURE.  
INTIAL PSI 2100 FINAL PSI 2000 TIME 3 Sec.
- # 7 CLOSE HCR (if applicable) / RECORD TIME & PRESSURE.  
HCR: INTIAL PSI 2000 FINAL PSI 2000 TIME 2 Sec.
- # 8 ON THREE RAM STACK CLOSE BOTTOM PIPE RAM / RECORD TIME & PRESSURE.  
PIPE RAMS: INTIAL PSI 2000 FINAL PSI 1900 TIME 3. Sec
- # 9 IF YOU HAVE A 3 RAM STACK OPEN THE ANNULAR TO ACHIEVE THE 50+% SAFETY FACTOR FOR 5M AND GREATER SYSTEMS.
- # 10 WHEN DONE WITH RECORDED TIMES & PRESSURES THERE SHOULD BE AT LEAST 200 PSI OVER PRECHARGE IN THE ACCUMLATOR (1200 PSI)
- # 11 OPEN ANNULAR

#### NITROGEN BOTTLES / BLEED OFF TEST

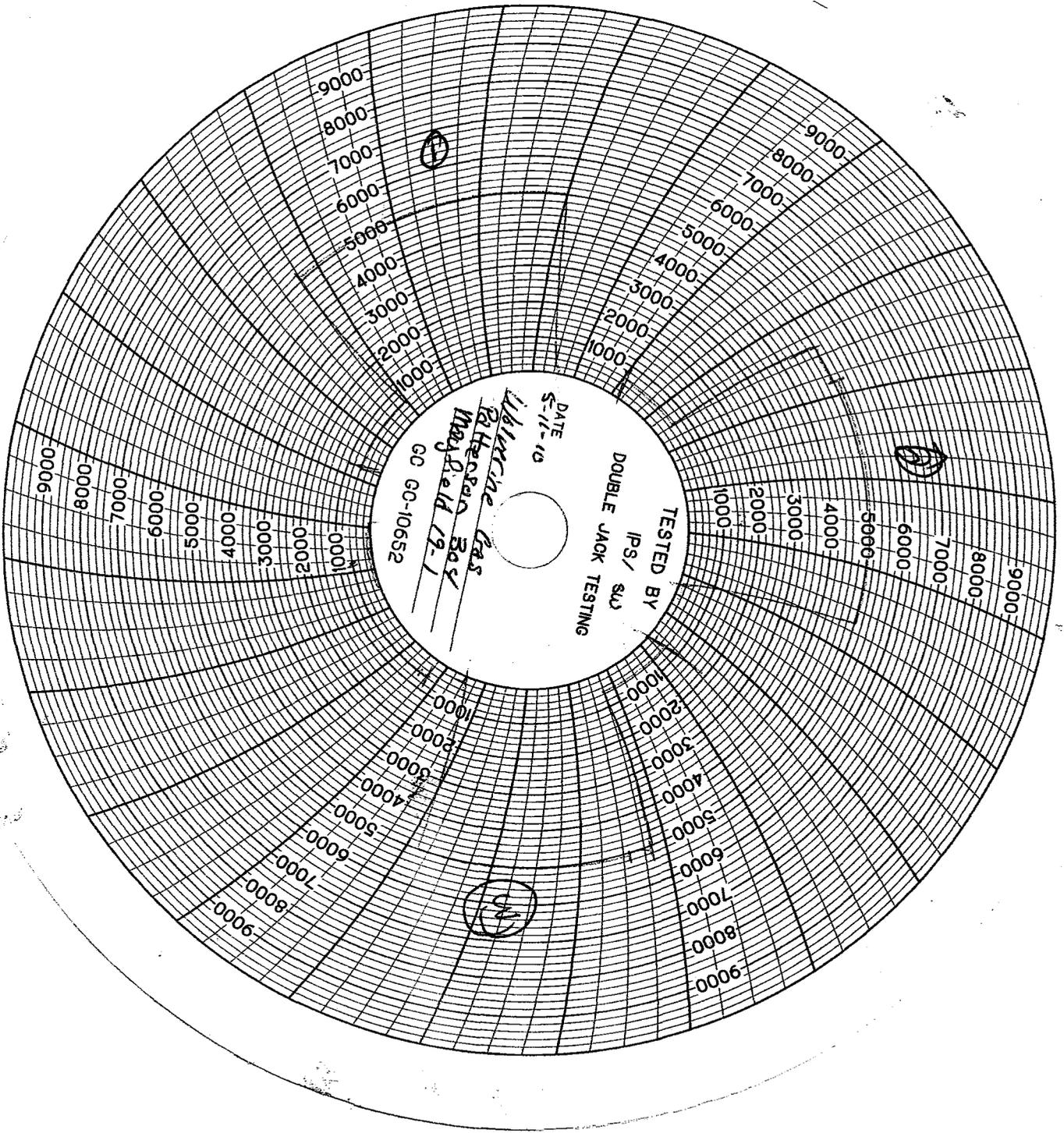
- #1 FINISH BLEEDING OFF BOTTLES INTO ACCUMLATOR TANK/RESERVOIR.
- #2 WATCH & RECORD WHERE PRESSURE DROPS (accumulator psi)  
  
PRESSURE DROP 910 PSI
- #3 ACCUMULATOR PSI SHOULD DROP AT 1100 PSI TO 900 PSI

#### 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 MANIFOLD ON ACCUMULATOR TO AT LEAST 200 PSI OVER PRECHARGE. WITHIN 2 MIN. OR LESS.

RECORDED TIME: 0 MINUTE 40 SECOND

# 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.

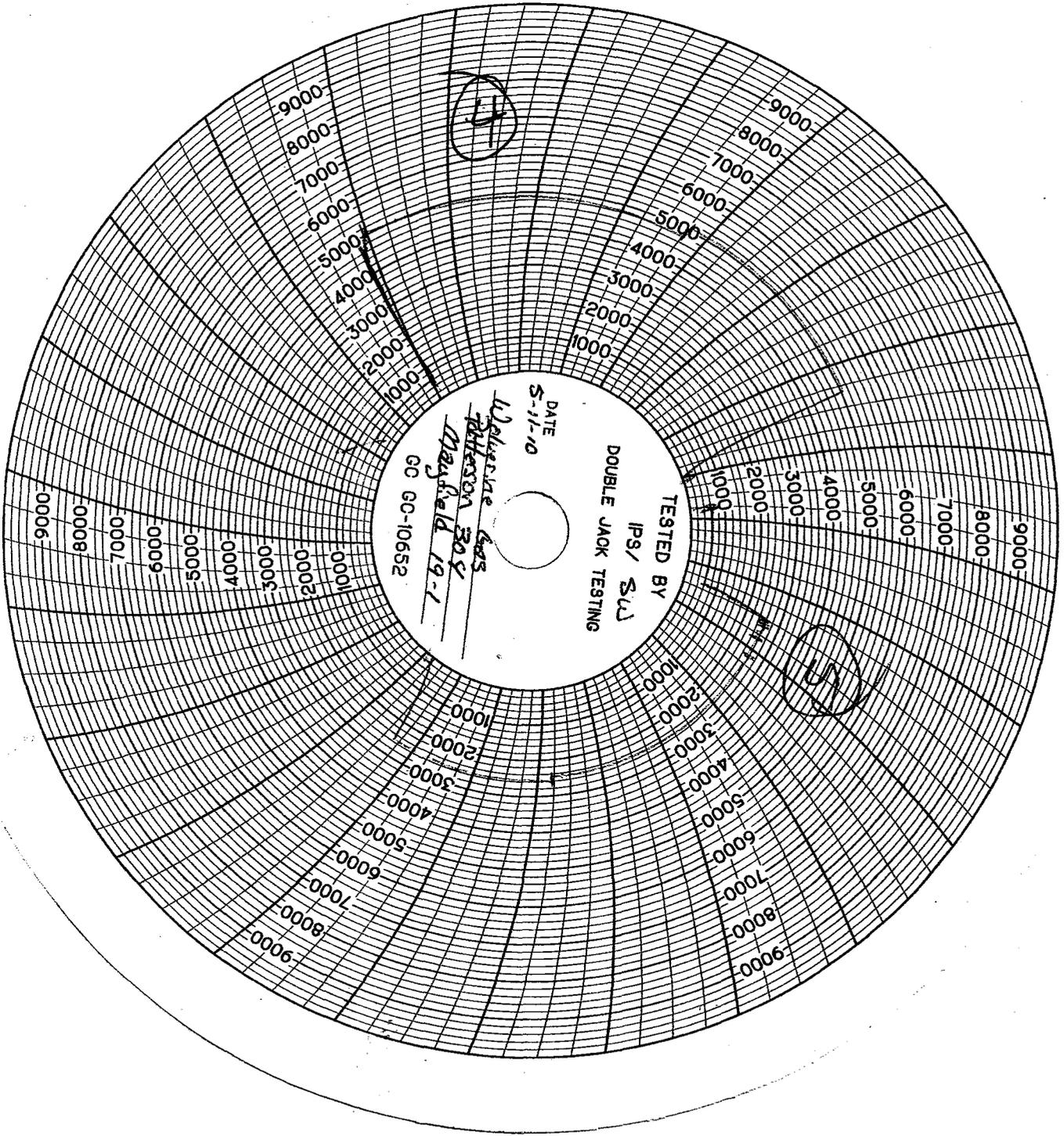


TESTED BY  
IPS/ SAJ  
DOUBLE JACK TESTING

DATE  
5-11-10

Waterline Gas  
RHESSON Gas  
Mayfield (9-1)

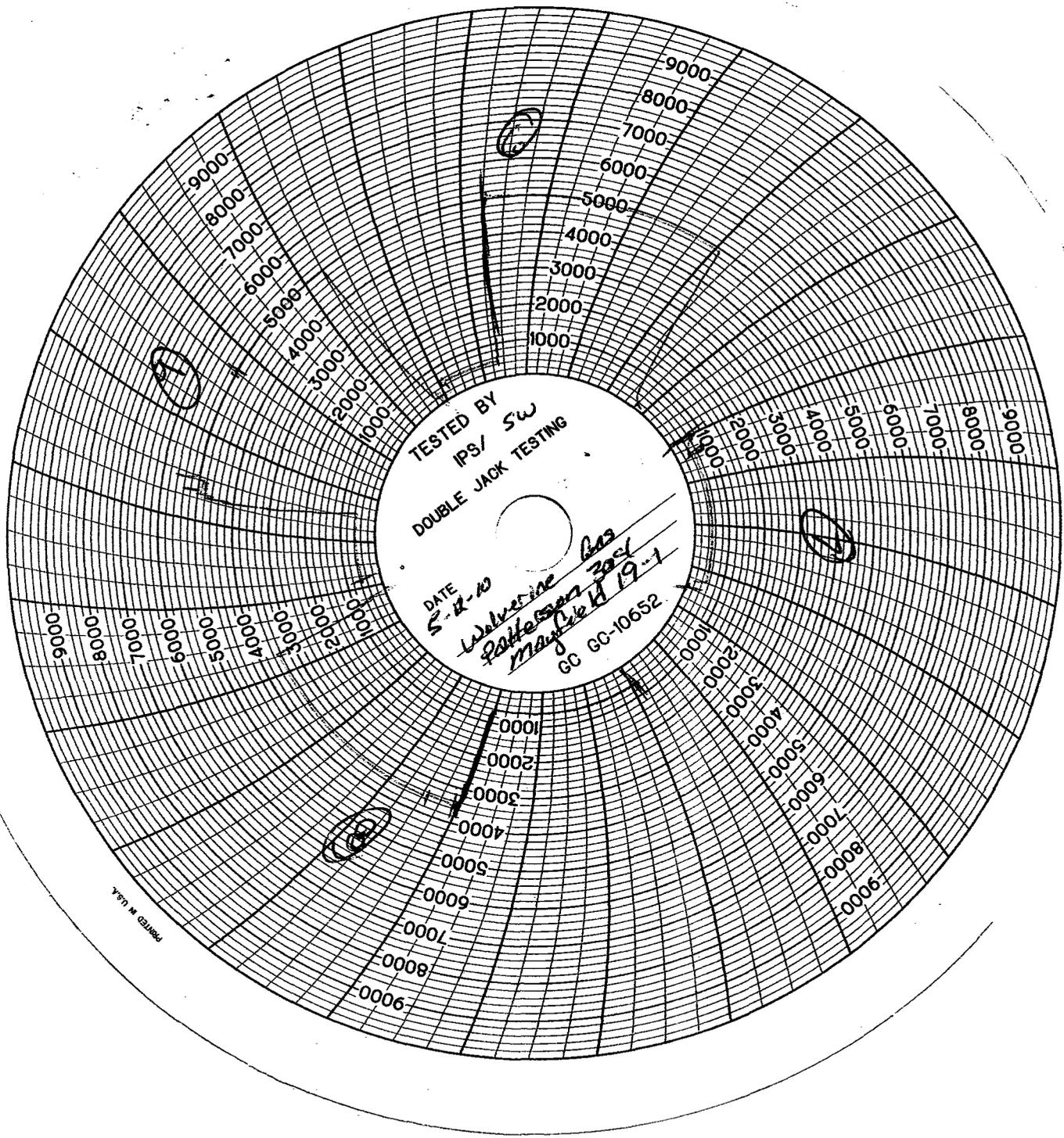
GC GC-10652



(7)

(5)

DATE 5-11-10  
TESTED BY PS/ S/LJ  
DOUBLE JACK TESTING  
Measure Gas  
Peterson 304  
Mayfield 19-1  
GC GC-10652



Carol Daniels - Mayfield 19-1 Update *T19S R02E S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"

**To:** "Allen, Geoff" , "Blair, Richard" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"

**Date:** 5/14/2010 7:51 AM

**Subject:** Mayfield 19-1 Update

5/14/2010 7:49 AM

Trip in hole at 5,040'

Hole depth 10,107'

Casing point 11,700'

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
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**Carol Daniels - Mayfield 19-1 Update** T19S R02E S-30 43-039-50002

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/15/2010 7:06 AM  
**Subject:** Mayfield 19-1 Update

Status @0700hrs: Short Trip @10,114'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update** *T 19S R02E S-30 43-039-50062*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/16/2010 8:02 AM  
**Subject:** Mayfield 19-1 Update

Status @ 0800hrs: Trip Out f/ Bent Motor & Baker MWD @ 4,360'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update** *T 19S R02E 9-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/18/2010 7:48 AM  
**Subject:** Mayfield 19-1 Update

Status @ 0745hrs: Slide Drilling @ 10,507'. Casing point is between 11,200' & 12,200'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update**

*T 19S R02E S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/19/2010 7:12 AM  
**Subject:** Mayfield 19-1 Update

---

Status @ 0700hrs: Rotating Drilling @ 10,735'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update**

*T19S Roof 5-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/20/2010 7:32 AM  
**Subject:** Mayfield 19-1 Update

---

Status @ 0730hrs: Drilling Ahead @ 10,990'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
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**Carol Daniels - Mayfield 19-1 Update** *T19S R02E S-30 43-039-50002*

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**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/21/2010 7:14 AM  
**Subject:** Mayfield 19-1 Update

---

Status @ 0715hrs: Drilling Arapian @ 11,285'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
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**Carol Daniels - Mayfield 19-1 Update**

*T 19S ROAF S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/22/2010 7:27 AM  
**Subject:** Mayfield 19-1 Update

Status @ 0730hrs: Trip f/ Bit @ 11,366'. Est TD 11,700 to 12,200'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update**

*T/19 ROZE S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/23/2010 7:39 AM  
**Subject:** Mayfield 19-1 Update

Status @ 0730hrs: Drilling Arapian @ 11,415'. Possible TD f/ 9 7/8" Hole: 11,700' to 12,200'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update**

*T19SRO2E S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/24/2010 7:07 AM  
**Subject:** Mayfield 19-1 Update

Status @ 0700hrs: Drilling Arapian @ 11,652'. Possible TD from now to 12,200'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update** *T19S R02E S-30 43-039-5002*

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**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/25/2010 7:07 AM  
**Subject:** Mayfield 19-1 Update

---

Status @ 0700hrs: Drilling Arapian @ 11,772'. Possible 9 7/8" TD: 12,000' to 12,200'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
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**Carol Daniels - Mayfield 19-1 Update**

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/26/2010 7:13 AM  
**Subject:** Mayfield 19-1 Update

*T19S ROAE S-30 43-039-50002*

Status @ 0700hrs: TIH Following Kelly Hose Repair @ 11,815'

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
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**Carol Daniels - Mayfield 19-1 Update**

*T19S R02E S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Wolverine Exploration Rig"  
**Date:** 5/27/2010 7:12 AM  
**Subject:** Mayfield 19-1 Update

---

Status @ 0700hrs: Drilling Arapian @ 11,926'. Possible TD within 200-300'.

**Chuck Emerson**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Co.**  
**Rig (970) 812-0022**  
**Cell (970) 381-6233**  
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Carol Daniels - Mayfield 19-1 Update

T 195 R<sup>03</sup> 20 E5-36 43 039-50002

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert (branch26@tiwtools.com)" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/28/2010 8:28 AM  
**Subject:** Mayfield 19-1 Update

5/28/2010 8:24 AM

Drilling and sliding at 12,047'. PR 3 FPH.

The casing point has not yet been determined.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
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Carol Daniels - Mayfield 19-1 Update *T19S R02E 530 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert (branch26@tiwtools.com)" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/29/2010 7:57 AM  
**Subject:** Mayfield 19-1 Update

5/29/2010 7:54 AM

Drilling at 12,173', Average daily drilling rate 100'/day.

The casing point has not been determined.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
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**Carol Daniels - Mayfield 19-1 Update** *TIPS ROZE S-30 4303950002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert (branch26@tiwtools.com)" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Punteney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/30/2010 10:15 AM  
**Subject:** Mayfield 19-1 Update

5/30/2010 10:13 AM

Drilling at 12,310', PR 5-6 FPH

Casing point has not been determined.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
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**MAY 30 2010**

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**Carol Daniels - Mayfield 19-1 Update** *T19S R02E S30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert (branch26@tiwtools.com)" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 5/31/2010 7:31 AM  
**Subject:** Mayfield 19-1 Update

5/31/2010 7:29 AM

Drilling at 12,383'

Casing point has not been determined.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
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**Carol Daniels - Mayfield 19-1 Update**

*T19S R02E S-30 43-039-50062*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert (branch26@tiwtools.com)" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/1/2010 7:46 AM  
**Subject:** Mayfield 19-1 Update

6/1/2010 7:44 AM

Drilling and sliding at 12,455'

Casing point has not been determined

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
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**Carol Daniels - Mayfield 19-1 Update**

*T19S R02E S30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
"Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/2/2010 8:22 AM  
**Subject:** Mayfield 19-1 Update

6/2/2010 8:20 AM

Tripping at 12,488'

Casing point has not been determined

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
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T19S R02E S-30  
43-039-50002

**CONFIDENTIAL**

**From:** "Wolverine Exploration Rig" <wolvexpl@drillmail.net>  
**To:** "Allen, Geoff" <geoff.allen@fmcti.com>, "Blair, Richard" <Richard.Blair2...>  
**Date:** 6/3/2010 7:25 AM  
**Subject:** Mayfield 19-1 Update

6/3/2010 7:22 AM

Hole depth 12,488'; preparing to Trip in Hole

Casing point has not been determined.

Bill Donovan  
Drilling Supervisor  
Wolverine Gas & Oil Company of Utah, LLC  
Mayfield 19-1 - AFE#228  
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Cell (720) 351-7470  
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**Carol Daniels - Mayfield 19-1 Update** *T195 RO2E S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
"Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "George Punteney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/4/2010 8:34 AM  
**Subject:** Mayfield 19-1 Update

6/4/2010 8:32 AM

Washing and reaming to bottom

Casing point has not been determined

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

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JUN 04 2010

DIV. OF OIL, GAS & MINING

Carol Daniels - Mayfield 19-1 Update *T 195 ROAD 5-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
" Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
" Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/5/2010 7:39 AM  
**Subject:** Mayfield 19-1 Update

6/5/2010 7:35 AM

Starting to drilling at 12,488'

Casing point has not been determined.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (720) 351-7470**  
**Fax (435) 304-1222**  
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**Carol Daniels - Mayfield 19-1 Update**

T19S R02E S-30 43-039-50002

**From:** "Wolverine Exploration Rig"

**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Punteney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"

**Date:** 6/6/2010 11:09 AM

**Subject:** Mayfield 19-1 Update

6/6/2010 11:06 AM

Drilling at 12,557'

Casing point has not been determined.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
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**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

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JUN 06 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update**

T 199 RO2E S-30 43-039-50002

**From:** "Wolverine Exploration Rig"

**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Punteney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"

**Date:** 6/8/2010 7:30 AM

**Subject:** Mayfield 19-1 Update

6/8/2010 7:27 AM

Drilling at 12,797'

Casing point has not been determined.

**Bill Donovan**

**Drilling Supervisor**

**Wolverine Gas & Oil Company of Utah, LLC**

**Mayfield 19-1 - AFE#228**

**Rig (970) 812-0022**

**Cell (720) 351-7470**

**Fax (435) 304-1222**

**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

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JUN 08 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update**

*T199 ROBE S-30 43-039-5 0002*

**From:** "Wolverine Exploration Rig"  
**To:** "Daniels, Carol" , "Doucet, Dustin" , "Jarvis, Dan" , "Jones, Mark" , "Medina, Rachael"  
**Date:** 6/9/2010 8:04 AM  
**Subject:** Mayfield 19-1 Update

---

6/9/2010 8:00 AM

Drilling at 12,932'

Casing point has not been determined. Casing point expected in the next 3-5 days.

**Bill Donovan**  
**Drilling Supervisor**  
**Wolverine Gas & Oil Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
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**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**You must be clean shaven and have a valid H2S card to enter this location**

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**JUN 09 2010**

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

**Carol Daniels - BOP Test Mayfield 19-1 Notification**

*T195 R02 ES-30 4303950002*

**From:** "Wolverine Exploration Rig"  
**To:** "Doucet, Dustin" , "Jones, Mark" , "Daniels, Carol"  
**Date:** 6/13/2010 2:55 PM  
**Subject:** BOP Test Mayfield 19-1 Notification

It was decided this am to trip for BHA which will give us the opportunity to test the BOPE on this well. It is anticipated that the test will commence this evening at about 7pm. I have not been able to contact anyone via phone today.

**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (970) 314-8219**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

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JUN 13 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update** *T19S RO2E S-30 4303950002*

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**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
"Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/17/2010 4:11 PM  
**Subject:** Mayfield 19-1 Update

---

6/17/2010 4:08 PM

Reaming 9 7/8" rotary steerable system toward TD of 13,300'.

**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
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**Cell (970) 314-8219**  
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**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

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JUN 17 2010

DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update** *T 199 ROAD S-30 43-039-50002*

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**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
"Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/19/2010 7:58 AM  
**Subject:** Mayfield 19-1 Update

---

6/19/2010 7:54 AM

Washing and reaming with packed reaming assembly at 10,638'. Will clean out to 13,300' and then log. After logging will trip in open ended and P&A. 7 5/8" casing will not be run.

**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (970) 314-8219**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

RECEIVED  
JUN 19 2010  
DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update** *T/9S RO2E5-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
" Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
" Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/19/2010 3:06 PM  
**Subject:** Mayfield 19-1 Update

6/19/2010 3:04 PM

Undergoing major rig repair which will put us off 1 ½ - 2 days.

~~~~~  
6/19/2010 7:54 AM

Washing and reaming with packed reaming assembly at 10,638'. Will clean out to 13,300' and then log. After logging will trip in open ended and P&A. 7 5/8" casing will not be run.

**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
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RECEIVED  
JUN 19 2010  
DIV. OF OIL, GAS & MINING

**Carol Daniels - Mayfield 19-1 Update**

---

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
"Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/21/2010 6:25 AM  
**Subject:** Mayfield 19-1 Update

---

6/21/2010 6:23 AM

Rig repairs should be complete mid day today, will resume reaming to TD for logging run and P/A.

~~~~~  
6/19/2010 3:04 PM

Undergoing major rig repair which will put us off 1 ½ - 2 days.

~~~~~  
6/19/2010 7:54 AM

Washing and reaming with packed reaming assembly at 10,638'. Will clean out to 13,300' and then log. After logging will trip in open ended and P&A. 7 5/8" casing will not be run.

**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (970) 314-8219**  
**Fax (435) 304-1222**  
**[wolvexpl@drillmail.net](mailto:wolvexpl@drillmail.net)**

**RECEIVED**

**JUN 21 2010**

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

**Carol Daniels - Mayfield 19-1 Update**

T19S RO2E S-30 43-039-50002

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" ,  
"Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" ,  
"Doucet, Dustin" , "Dustin Dunning" , "George Puntaney" , "Hall, Denise" , "Hammell,  
Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton,  
Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/22/2010 4:40 PM  
**Subject:** Mayfield 19-1 Update

6/22/2010 4:37 PM

Reaming to bottom, est. on bottom at 530 pm, will log mid day Wednesday, will set cement plug late Wednesday , early Thursday.

6/21/2010 6:23 AM

Rig repairs should be complete mid day today, will resume reaming to TD for logging run and P/A.

6/19/2010 3:04 PM

Undergoing major rig repair which will put us off 1 1/2 - 2 days.

6/19/2010 7:54 AM

Washing and reaming with packed reaming assembly at 10,638'. Will clean out to 13,300' and then log. After logging will trip in open ended and P&A. 7 5/8" casing will not be run.

**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
**Cell (970) 314-8219**  
**Fax (435) 304-1222**  
**wolvexpl@drillmail.net**

**RECEIVED**  
**JUN 22 2010**  
DIV. OF OIL, GAS & MINING

Carol Daniels - Mayfield 19-1 Update *T193 RO2E S-30 43-039-50002*

**From:** "Wolverine Exploration Rig"  
**To:** "Allen, Geoff" , "Blair, Richard" , "Bob Ebert" , "Bolding, Russell" , "Chamberlain, Don" , "Curt Bilbey" , "Daniels, Carol" , "De la Torre, Juan C" , "Dellit, Chris" , "Dieste, Bobby" , "Doucet, Dustin" , "Dustin Dunning" , "George Puntney" , "Hall, Denise" , "Hammell, Hank" , "Jones, Mark" , "Larimore, Mark" , "Revert, Scott" , "Shawn Moulton" , "Shelton, Shorty" , "Strickler, Nikole" , "Weimer, Jeff" , "Wright, Brian" , "Zimmerman, Bill"  
**Date:** 6/24/2010 6:12 AM  
**Subject:** Mayfield 19-1 Update

6/24/2010 6:10 AM

Ran Log #1 to TD, Log #2 sat down, POOH

~~~~~  
6/22/2010 4:37 PM

Reaming to bottom, est. on bottom at 530 pm, will log mid day Wednesday, will set cement plug late Wednesday , early Thursday.

~~~~~  
6/21/2010 6:23 AM

Rig repairs should be complete mid day today, will resume reaming to TD for logging run and P/A.

~~~~~  
6/19/2010 3:04 PM

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**Tom Zupan**  
**Drilling Supervisor**  
**Wolverine Operating Company of Utah, LLC**  
**Mayfield 19-1 - AFE#228**  
**Rig (970) 812-0022**  
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**RECEIVED**  
**JUN 24 2010**  
DIV. OF OIL, GAS & MINING

6-13-10  
 WOLVERINE GAS  
 PATTERSON 304  
 MAYFIELD 19-1

~~WOLVERINE GAS~~  
 TAILING

19S 2E 30 43 039 5000Z

| Test No. | Am Time | Items Tested                             | P.S.I. | MIN. |
|----------|---------|------------------------------------------|--------|------|
| 1.       | 12:40   | LOWER PIPE RAMS, T.I.W VALUE             | 250    | 5    |
|          |         |                                          | 5000   | 10   |
| 2.       | 12:46   | (NO TEST)                                | 250    | 5    |
|          |         | UPPER PIPE RAMS, LOWER T-BOP, 1ST KILL   | 5000   | 10   |
|          | 1:38    | VALUE, 1ST CHOKE VALVE                   | 500    | 10   |
| 3.       | 2:23    | UPPER PIPE RAMS, UPPER T-BOP             | 250    | 5    |
|          |         | UPPER PIPE RAMS, T.I.W VALUE, 1ST CHOKE  | 5000   | 10   |
| 4.       | 2:51    | VALUE, 2ND KILL VALVE                    | 250    | 5    |
|          | 2:56    | UPPER PIPE RAMS, T.I.W VALUE, CHOKE LINE | 5000   | 10   |
| 5.       | 3:25    | 2ND MANIFOLD VALVES, KILL CHECK          | 250    | 5    |
|          | 3:30    |                                          | 2500   | 10   |
| 6.       | 3:42    | ANNULAR                                  | 250    | 5    |
|          | 3:48    |                                          | 4000   | 10   |
| 7.       | 4:10    | MUD LINE BACK TO PUMP, STAND PIPE        | 250    | 5    |
|          | 4:17    |                                          | 5000   | 10   |
| 8.       | 5:07    | BUNDS, 1ST CHOKE MANIFOLD VALVES         | 250    | 5    |
|          | 5:12    |                                          | 5000   | 10   |
| 9.       | 8:11    | DART VALVE                               | 250    | 5    |
|          | 8:16    |                                          | 5000   | 10   |
| 10.      | 8:52    | RETEST LOWER T-BOP, HCR CHOKE,           | 250    | 5    |
|          | 8:57    | 1ST KILL VALVE, UPPER PIPE RAMS          | 5000   | 10   |

6-13-10  
WOLVERINE  
GAS  
PATTERSON 304  
MAY FIELD 19-1

# 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 INITIAL PSI 3000 FINAL PSI 2400 TIME 11 sec

- #4 CLOSE PIPE RAMS/ RECORD TIME & PRESSURE.

PIPE RAMS INITIAL PSI 2400 FINAL PSI 2200 TIME 5 sec

- #5 OPEN PIPE RAMS TO SIMULATE BLIND RAMS/ RECORD TIME & PRESSURE.

INITIAL PSI 2200 FINAL PSI 2000 TIME 5 sec

- #6 CLOSE HCR (if applicable) RECORD TIME & PRESSURE.

HCR INITIAL PSI 2000 FINAL PSI 2000 TIME 1 sec

- #7 ON THREE RAM STACK CLOSE BOTTOM PIPE RAMS/ RECORD TIME & PRESSURE.

PIPE RAMS INITIAL PSI 2000 FINAL PSI 1950 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 925 PSI

- #3 ACCUMULATOR PSI SHOULD DROP AT 1100 PSI TO 900 PSI 900

### 2 MINUTE TIME TEST/ ACCUMULATOR PUMPS

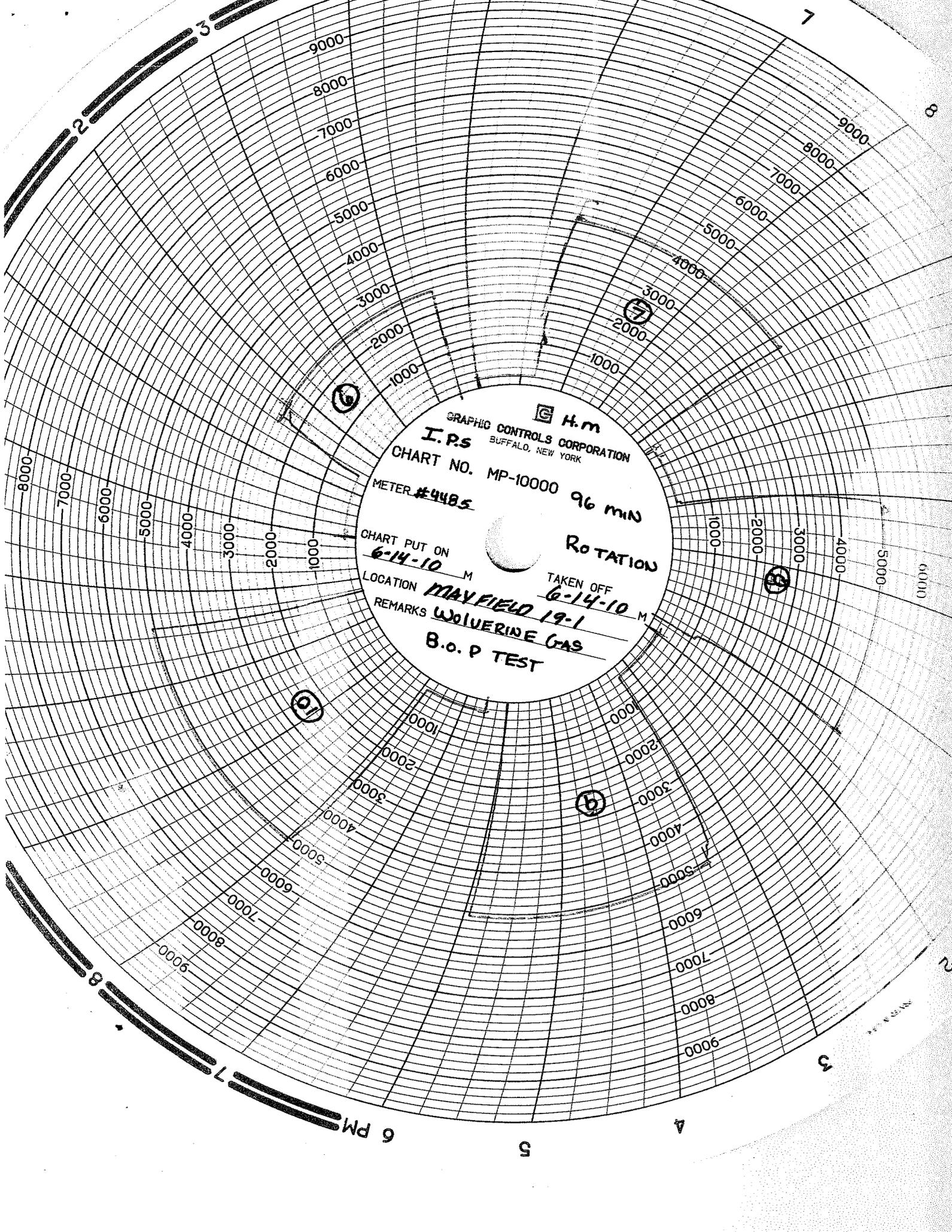
- #1 SHUT VALVES TO NITROGEN BOTTLES.  
#2 PLACE HCR IN THE OPEN POSITION. (if applicable)  
#3 PLACE ANNULAR IN THE CLOSE POSITION.  
#4 TURN ON PUMPS & RECORD TIME TO PRESSURE UP MANFOLD ON ACCUMULATOR TO AT LEAST 200 PSI OVER PRECHARGE. WITHIN 2 MIN. OR LESS.

AIR  
RECORDED TIME \_\_\_\_\_ MINUTE 24 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.

ELECTRIC

44 sec.



**G H. m**  
GRAPHIC CONTROLS CORPORATION  
BUFFALO, NEW YORK

**I. P. S**

CHART NO. MP-10000 96 min

METER #4485

CHART PUT ON 6-14-10 M

LOCATION MAYFIELD 19-1

TAKEN OFF 6-14-10 M

REMARKS WOLVERINE GAS

B.o. P TEST

6 PM

5

4

3

2

1000

6000

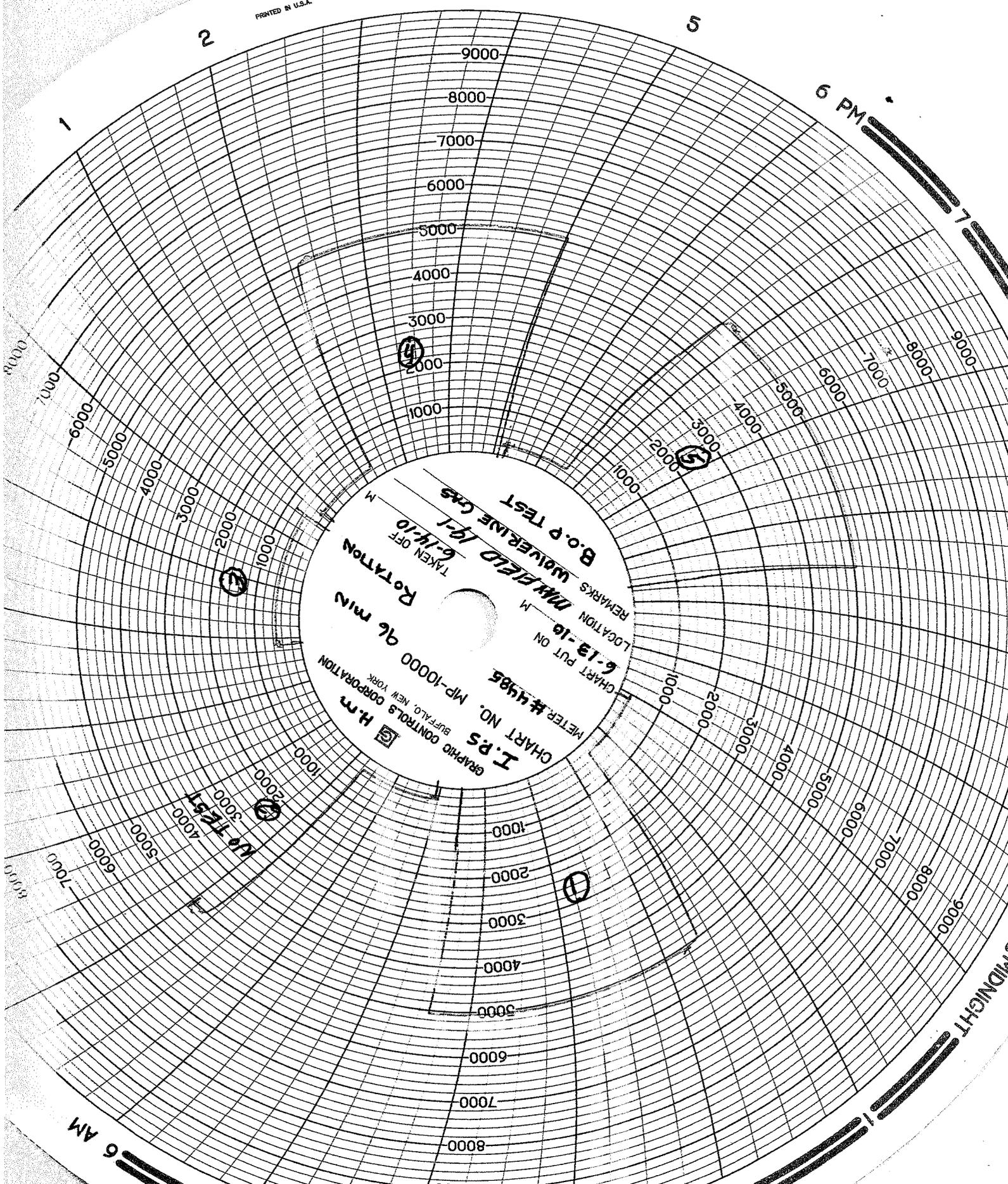
8

7

3

2

PRINTED IN U.S.A.



I.P.S. GRAPHIC CONTROLS CORPORATION  
BUFFALO, NEW YORK

METER # 4985

CHART NO. MP-10000

CHART PUT ON 6-13-10

LOCATION M

REMARKS B.O.P TEST WATERLINE GAS

TAKEN OFF 6-14-10

ROTATION 96 min

H.M.

1

2

3

4

5

6 PM

7

6 AM

MIDNIGHT

|                                                                                                                                                                                                                                                                                                    |                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>STATE OF UTAH</b><br>DEPARTMENT OF NATURAL RESOURCES<br>DIVISION OF OIL, GAS, AND MINING                                                                                                                                                                                                        | <b>FORM 9</b><br><br><b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b><br>Patented                               |
| <b>SUNDRY NOTICES AND REPORTS ON WELLS</b><br><br>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><br><br><b>7. UNIT or CA AGREEMENT NAME:</b><br>WOLVERINE         |
| <b>1. TYPE OF WELL</b><br>Oil Well                                                                                                                                                                                                                                                                 | <b>8. WELL NAME and NUMBER:</b><br>Mayfield 19-1                                                              |
| <b>2. NAME OF OPERATOR:</b><br>WOLVERINE GAS & OIL COMPANY OF UTAH, LLC                                                                                                                                                                                                                            | <b>9. API NUMBER:</b><br>43039500020000                                                                       |
| <b>3. ADDRESS OF OPERATOR:</b><br>One Riverfront Plaza 55 Campau NW, Grand Rapids, MI, 49503                                                                                                                                                                                                       | <b>PHONE NUMBER:</b><br>616 458-1150 Ext                                                                      |
| <b>4. LOCATION OF WELL</b><br><b>FOOTAGES AT SURFACE:</b><br>0431 FNL 1422 FEL<br><b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b><br>Qtr/Qtr: NWNE Section: 30 Township: 19.0S Range: 02.0E Meridian: S                                                                                        | <b>9. FIELD and POOL or WILDCAT:</b><br>WILDCAT<br><br><b>COUNTY:</b><br>SANPETE<br><br><b>STATE:</b><br>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><br>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><br>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><br>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><br>Report Date:<br>6/29/2010 | <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 refer to attached drilling summary.

**Accepted by the**  
**Utah Division of**  
**Oil, Gas and Mining**  
**FOR RECORD ONLY**  
 July 21, 2010

|                                               |                                     |                                                      |
|-----------------------------------------------|-------------------------------------|------------------------------------------------------|
| <b>NAME (PLEASE PRINT)</b><br>Helene Bardolph | <b>PHONE NUMBER</b><br>616 458-1150 | <b>TITLE</b><br>Engineering Administrative Assistant |
| <b>SIGNATURE</b><br>N/A                       | <b>DATE</b><br>7/21/2010            |                                                      |

Wolverine Gas and Oil Company of Utah, LLC  
Mayfield 19-1  
API #43039500020000  
SESW, Section 30, T19S, R2E  
Sanpete County, Utah

March – June 2009: Drilling Update:

March 31, 2010

Depth 2026', Rigging up

April 1, 2010

Depth 2026', Rigging up

April 2, 2010

Depth 2026', Rigging up

April 3, 2010

Depth 2026', Rigging up

April 4, 2010

Depth 2026', Rigging up

April 5, 2010

Depth 2026', Rigging up

April 6, 2010

Depth 2026', Rig repair

April 7, 2010

Depth 2026', Rig repair

April 8, 2010

Depth 2065', Spud, drill to 2065, MW 10.65 lb/gal, Vis 63 sec, FL .4 cc.

April 9, 2010

Depth 2683', Drill to 2683'. MW 10.50 lb/gal, Vis 50 sec, FL .4 cc. Surveys: .4 at 2481'

April 10, 2010

Depth 3630'. Drill to 3630'. MW 10.50 lb/gal, Vis 48 sec, FL .3 cc., Surveys: .3 at 3436'

April 11, 2010

Depth 4788'. Drill to 4788'. MW 10.50 lb/gas, Vis 45 sec, FL .5 cc, Surveys: .5 at 4579'

**RECEIVED** July 21, 2010

April 12, 2010

Depth, 5484'. Drill to 5484'. MW 10.45 lb/gal, Vis 45 sec, FL 1.2 cc Surveys: .3 at 5342'

April 13, 2010

Depth 5631'. Drill to 5631, work stuck pipe. MW 11.90 lb./gal, Vis 56 sec, FL .5 cc; Surveys: .5 at 5534'

April 14, 2010

Depth 5631'. TOH, Rig service, stuck pipe. MW 12.45 lb./gal, Vis 53 sec, FL 1.8 cc; Surveys: .50 at 5531'

April 15, 2010

Depth 5631'. Jarring. MW 14.05 lb/gal, Vis 75 sec, FL .5 cc, Surveys: .5 at 5531'.

April 16, 2010

Depth 5746', Short trip drilling. MW 15.10 lb/gal, Vis 78 sec, FL .8 cc. Surveys: .5 at 5618'

April 17, 2010

Depth 6361', Drilling. MW 15.00 lb/gal, Vis 67 sec, FL .1 cc, Surveys: .3 at 6201'

April 18, 2010

Depth 6732', Drilling. MW 15.00 lb/gal, Vis 61 sec, FL .1 cc. Surveys: .30 at 6488'

April 19, 2010

Depth 6995', Drilling. MW 15.30 lb/gal, Vis 65 sec, FL .3 cc.; Surveys .00 at 6774'

April 20, 2010

Depth 6995', Rig service, working tight areas, MW 15.50 lb/gal, Vis 67 sec, FL .4 cc, Surveys: .00 at 6774'

April 21, 2010

Depth 6995', Jarring, working stuck pipe, MW 15.45 lb/gal, Vis 92 sec, FL .2 cc, Surveys: .00 at 6774'

April 22, 2010

Depth 7320', Drilling, MW 15.80 lb/gal, Vis 82 sec, FL .1 cc., Surveys: .50 at 7122'

April 23, 2010

Depth 7363', Drilling, work stuck pipe, MW 16.4 lb/gal, Vis 92 sec, FL .1 cc, Surveys: 1.4 at 7247'

April 24, 2010

Depth 7488, Work stuck pipe, drilling. MW 16.30 lb/gal, Vis 90 sec, FL .1 cc, Surveys: 1.6 at 7312'

April 25, 2010

Depth 7806', Drilling, MW 16.30 lb/gal, Vis 71 sec, FL .1 cc, Surveys: 4.6 at 7598'

April 26, 2010

Depth 8022', Drilling, circulate and condition hole, MW 16.35 lb/gal, Vis 73 sec, FL 0.1 cc, Surveys: 5.1 at 7879'

April 27, 2010

Depth 8030', TOOH replace bit, drilling, MW 16.58 lb/gal, Vis 139 sec, FL .1 cc, Surveys: 5.1 at 7879'

April 28, 2010

Depth 8126', Drilling, MW 16.30 lb/gal, Vis 73 sec, FL .1 cc, Surveys: 3.7 at 7970'

April 29, 2010

Depth 8130', Drilling, tight spots, MW 16.4 lb/gal, Vis 110 sec, FL .2 cc; Surveys: 3.7 at 7970'

April 30, 2010

Depth 8420', Drilling, rig repair, MW 16.3 lb/gal, Vis 132 sec, FL .2 cc; Surveys: 11.4 at 8215'

May 1, 2010

Depth 8672', Drilling. MW 16.3 lb/gal, Vis 106 sec, FL. .1 cc; Surveys: 11.6 at 8501'

May 2, 2010

Depth 8791', Work tight areas, drilling, MW 16.3 lb/gal, Vis 125 sec, FL. .2cc; Surveys: 12.1 at 8588'

May 3, 2010

Depth 8811', Drilling tripping, MW 16.3 lb/gal, Vis 189 sec, FL. .1cc; Surveys: 12.7 at 8702'

May 4, 2010

Depth 8939', Drilling, MW 16.3 lb/gal, Vis 98 sec, FL. .1cc; Surveys: 12.7 at 8686'

May 5, 2010

Depth 8972', Drilling, MW 16.3 lb/gal, Vis 108 sec, FL. .1cc; Surveys: 11.9 at 8870'

May 6, 2010

Depth 9105', Drilling, MW 16.25 lb/gal, Vis 90 sec, FL. .1cc; Surveys: 13.1 at 8963'

May 7, 2010

Depth 8791', Work tight areas, drilling, MW 16.3 lb/gal, Vis 125 sec, FL. .2cc; Surveys: 12.1 at 8588'

May 8, 2010

Depth 9508', Drilling, MW 16.45 lb/gal, Vis 83 sec, FL .2 cc. Surveys: 14.9 at 9350'

**RECEIVED** July 21, 2010

May 9, 2010

Depth 9700', Drilling. MW 16.35 lb/gal, Vis 78 sec, FL .1 cc. Surveys: 15.8 at 9570'

May 10, 2010

Depth 9842'. Drilling. MW 16.35 lb/gal, Vis 76 sec, FL .2 cc., Surveys: 17.5 at 9714'

May 11, 2010

Depth 9986'. Drilling. MW 16.4 lb/gal, Vis 80 sec, FL .1 cc, Surveys: 17.5 at 9833'

May 12, 2010

Depth, 9988'. TIH. MW 16.5 lb/gal, Vis 218 sec, FL .1 cc Surveys: 17.9 at 9869'

May 13, 2010

Depth 10,074'. Rig work, drilling. MW 16.3 lb./gal, Vis 110 sec, FL .2 cc; Surveys: 18.1 at 9929'

May 14, 2010

Depth 10,107'. Drilling, TIH, MW 16.45 lb./gal, Vis 189 sec, FL .2 cc; Surveys: 18.1 at 9954'

May 15, 2010

Depth 10,114'. TIH, drilling. MW 16.35 lb/gal, Vis 120 sec, FL .2 cc, Surveys: 18.1 at 9954'.

May 16, 2010

Depth 10,241', TIH, drilling MW 16.30 lb/gal, Vis 80 sec, FL .2 cc. Surveys: 17.1 at 10,078'

May 17, 2010

Depth 10,241', Continue TIH. MW 16.45 lb/gal, Vis 154 sec, FL .2 cc, Surveys: 17.1 at 10,078'

May 18, 2010

Depth 10,496', Drilling. MW 16.30 lb/gal, Vis 74 sec, FL .2 cc. Surveys: 18.81 at 10,253'

May 19, 2010

Depth 10,724', Drilling. MW 16.30 lb/gal, Vis 65 sec, FL .2 cc.; Surveys 19.42 at 10,491'

May 20, 2010

Depth 10,975', Drilling, MW 16.30 lb/gal, Vis 61 sec, FL .4 cc, Surveys: 19.07 at 10,789'

May 21, 2010

Depth 11,259', Drilling, MW 16.40 lb/gal, Vis 66 sec, FL .4 cc, Surveys: 17.05 at 11,056'

May 22, 2010

Depth 11,366', Drilling and rig repair, MW 16.40 lb/gal, Vis 70 sec, FL .6 cc., Surveys: 16.44 at 11,178'

May 23, 2010

Depth 11,395', TIH, drilling, MW 16.4 lb/gal, Vis 64 sec, FL .4 cc, Surveys: 16.44 at 11,178'

May 24, 2010

Depth 11,648', Drilling, MW 16.40 lb/gal, Vis 91 sec, FL .2 cc, Surveys: 18.72 at 11,413'

May 25, 2010

Depth 11,763', Drilling, MW 16.35 lb/gal, Vis 76 sec, FL .2 cc, Surveys: 20.21 at 11,531'

May 26, 2010

Depth 11,815', Drilling, rig service, MW 16.40 lb/gal, Vis 86 sec, FL 0.2 cc, Surveys: 20.21 at 11,591'

May 27, 2010

Depth 11,921', Rig service, Drilling, MW 16.30 lb/gal, Vis 66 sec, FL .2 cc, Surveys: 20.39 at 11,651'

May 28, 2010

Depth 12,045', Drilling, MW 16.35 lb/gal, Vis 69 sec, FL .2 cc, Surveys: 16.26 at 11,798'

May 29, 2010

Depth 12,171', Drilling, MW 16.30 lb/gal, Vis 75 sec, FL .2 cc; Surveys: 15.12 at 11,916'

May 30, 2010

Depth 12,292', Drilling, MW 16.35 lb/gal, Vis 72, FL .2 cc; Surveys 14.85 at 12,036'

May 31, 2010

Depth 12,380', Drilling, MW 16.30 lb/gal, Vis 74, FL .2 cc; Surveys 14.85 at 12,301'

June 1, 2010

Depth 12,453', Drilling, MW 16.35 lb/gal, Vis 72sec, FL. .2 cc; Surveys: 14.24 at 12,188'

June 2, 2010

Depth 12,488', Drilling, rig repair, tripping, MW 16.35 lb/gal, Vis 70 sec, FL. .2cc; Surveys: 13.8 at 12,254'

June 3, 2010

Depth 12,488', Logging, MW 16.35 lb/gal, Vis 80sec, FL. .2cc.

June 4, 2010

Depth 12,488', Logging, TIH, MW 16.50 lb/gal, Vis 78 sec, FL. .2cc.

June 5, 2010

Depth 12,488', Drilling, MW 16.3 lb/gal, Vis 79sec, FL .2cc;

June 6, 2010

Depth 12,552', Drilling, MW 16.45 lb/gal, Vis 72 sec, FL .2cc; Surveys: 13.45 at 12,279'

June 7, 2010

Depth 12,619', Drilling, MW 16.4 lb/gal, Vis 72 sec, FL .3cc; Surveys: 12.83 at 12,344'

June 8, 2010

Depth 12,785', Drilling, MW 16.45 lb/gal, Vis 69 sec, FL .2 cc. Surveys: 11.16 at 12,501'

June 9, 2010

Depth 12,925', Drilling. MW 16.35 lb/gal, Vis 63 sec, FL .2 cc. Surveys: 11.78 at 12,625'

June 10, 2010

Depth 12,992'. Drilling. MW 16.30 lb/gal, Vis 65 sec, FL .2 cc., Surveys: 12.22 at 12,718'

June 11, 2010

Depth 13,015'. Drilling, TIH. MW 16.4 lb/gal, Vis 69 sec, FL .2 cc, Surveys: 11.34 at 12,776'

June 12, 2010

Depth, 13,137'. Drilling. MW 16.3 lb/gal, Vis 87 sec, FL .2 cc Surveys: 11.25 at 12,867.

June 13, 2010

Depth 13,300'. Drilling. MW 16.4 lb./gal, Vis 82 sec, FL .2 cc. Surveys 13.71 at 13,029'

June 14, 2010

Depth 13,298. Drilling, TIH, MW 16.50 lb./gal, Vis 87 sec, FL .2 cc. Surveys 14.59 at 13,052

June 15, 2010

Depth 13,298'. TIH, MW 16.60 lb/gal, Vis 92sec, FL .2 cc.

June 16, 2010

Depth 13,300, TIH, drilling MW 16.55 lb/gal, Vis 87 sec, FL .2 cc.

June 17, 2010

Depth 13,300', Continue TIH. MW 16.50 lb/gal, Vis 116 sec, FL .2 cc.

June 18, 2010

Depth 13,300'. Continue TIH. MW 16.65 lb/gal, Vis 78 sec, FL .2 cc.

June 19, 2010

Depth 13,300', Continue TIH. MW 16.30 lb/gal, Vis 65 sec, FL .2 cc.; Surveys 19.42 at 10,491'

June 20, 2010

Depth 13,300', Continue TIH, MW 16.60 lb/gal, Vis 91 sec, FL .2 cc,

June 21, 2010

Depth 13,300, Rig repair, MW 16.65 lb/gal, Vis 104 sec, FL .2 cc.

June 22, 2010

Depth, 13,300'. TIH. MW 16.7 lb/gal, Vis 97 sec, FL .2 cc Surveys: 14.59 at 13,052'

June 23, 2010

Depth 13,300'. Reaming, circulating & conditioning for TIH. MW 16.7 lb./gal, Vis 98 sec, FL .2 cc.

June 24, 2010

Depth 13,300'. Logging, TIH, MW 16.70 lb./gal, Vis 99 sec, FL .2 cc.

June 25, 2010

Depth 13,300'. TIH, MW 16.70 lb/gal, Vis 101sec, FL .2 cc.

June 26, 2010

Depth 13,300, Setting plugs, MW 16.50 lb/gal, Vis 96 sec, FL 0.2 cc.

June 27, 2010

Depth 13,300', Setting plugs, MW 16.50 lb/gal, Vis 96 sec, FL .2 cc,

June 28, 2010

Depth 13,300', Cleaning mud pits, MW 16.50 lb/gal, Vis 96 sec, FL .2 cc.

June 29, 2010

Depth 13,300', Rig released, MW 16.50 lb/gal, Vis 96 sec, FL .2 cc.

PLA

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

5. LEASE DESIGNATION AND SERIAL NUMBER:  
Patented

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT or CA AGREEMENT NAME  
Wolverine

8. WELL NAME and NUMBER:  
Mayfield 19-1

9. API NUMBER:  
4303950002

10. FIELD AND POOL, OR WILDCAT  
Wildcat

11. QTR/QTR, SECTION, TOWNSHIP, RANGE,  
MERIDIAN:  
NWNE 30 19S 2E

12. COUNTY  
SANPETE 13. STATE  
UTAH

1a. TYPE OF WELL: OIL WELL  GAS WELL  DRY  OTHER

1b. TYPE OF WORK: NEW WELL  RE-ENTRY  DIFF. RESVR.  OTHER

2. NAME OF OPERATOR:  
Wolverine Gas & Oil 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: 0431' FNL, 1422' FEL  
AT TOP PRODUCING INTERVAL REPORTED BELOW:  
AT TOTAL DEPTH: 491' FSL, 2504' FEL

*Bit Reviewed by HSM*

14. DATE SPUDDED: 11/4/2009 15. DATE T.D. REACHED: 6/16/2010 16. DATE COMPLETED: 6/28/2010 ABANDONED  READY TO PRODUCE

17. ELEVATIONS (DF, RKB, RT, GL):  
GL: 5440

18. TOTAL DEPTH: MD 13,300 TVD 13,102 19. PLUG BACK T.D.: MD 9 TVD 9 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)  
GR/Temp, Sonic/GR

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 |
|-----------|------------|----------------|----------|-------------|----------------------|----------------------------|---------------------|---------------|---------------|
| 28        | 20         |                | 0        | 125         |                      | 24                         | 5                   |               |               |
|           |            |                |          |             |                      | 320                        | 67                  | surface       |               |
| 14.75     | 10.75 J-55 | 40.5           | 0        | 2,026       |                      | A 350                      | 218                 |               |               |
|           |            |                |          |             |                      | G 205                      | 59                  | surface       |               |

25. TUBING RECORD

| SIZE | DEPTH SET (MD) | PACKER SET (MD) | SIZE | DEPTH SET (MD) | PACKER SET (MD) | SIZE | DEPTH SET (MD) | PACKER SET (MD) |
|------|----------------|-----------------|------|----------------|-----------------|------|----------------|-----------------|
|      |                |                 |      |                |                 |      |                |                 |

26. PRODUCING INTERVALS

27. PERFORATION RECORD

| FORMATION NAME | TOP (MD) | BOTTOM (MD) | TOP (TVD) | BOTTOM (TVD) | INTERVAL (Top/Bot - MD) | SIZE | NO. HOLES | PERFORATION STATUS                                              |
|----------------|----------|-------------|-----------|--------------|-------------------------|------|-----------|-----------------------------------------------------------------|
| (A)            |          |             |           |              |                         |      |           | 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):

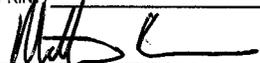
Show all important zones of porosity and contents thereof. Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

34. FORMATION (Log) MARKERS:

| Formation | Top (MD) | Bottom (MD) | Descriptions, Contents, etc. | Name    | Top (Measured Depth) |
|-----------|----------|-------------|------------------------------|---------|----------------------|
|           |          |             |                              | Arapien | 0                    |

35. ADDITIONAL REMARKS (Include plugging procedure)

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 10/6/2010

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

**CONFIDENTIAL**

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

FORM 9

5. LEASE DESIGNATION AND SERIAL NUMBER:  
**Patented**

**SUNDRY NOTICES AND REPORTS ON WELLS**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

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.

7. UNIT or CA AGREEMENT NAME:  
**Wolverine**

1. TYPE OF WELL      OIL WELL       GAS WELL       OTHER \_\_\_\_\_

8. WELL NAME and NUMBER:  
**Mayfield 19-1**

2. NAME OF OPERATOR:  
**Wolverine Gas & Oil Company of Utah, LLC**

9. API NUMBER:  
**4303950002**

3. ADDRESS OF OPERATOR:  
55 Campau NW      CITY **Grand Rapids**      STATE **MI**      ZIP **49503**

PHONE NUMBER:  
**(616) 458-1150**

10. FIELD AND POOL, OR WILDCAT:  
**Wildcat**

4. LOCATION OF WELL  
FOOTAGES AT SURFACE: **431' FNL, 1422' FEL**

COUNTY: **Sanpete**

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: **NWNE 30 19S 2E**

STATE: **UTAH**

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

| TYPE OF SUBMISSION                                                                                                                   | TYPE OF ACTION                                          |                                                           |                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> NOTICE OF INTENT<br>(Submit in Duplicate)<br>Approximate date work will start:<br>_____                     | <input type="checkbox"/> ACIDIZE                        | <input type="checkbox"/> DEEPEN                           | <input type="checkbox"/> REPERFORATE CURRENT FORMATION |
|                                                                                                                                      | <input type="checkbox"/> ALTER CASING                   | <input type="checkbox"/> FRACTURE TREAT                   | <input type="checkbox"/> SIDETRACK TO REPAIR WELL      |
|                                                                                                                                      | <input type="checkbox"/> CASING REPAIR                  | <input type="checkbox"/> NEW CONSTRUCTION                 | <input type="checkbox"/> TEMPORARILY ABANDON           |
|                                                                                                                                      | <input type="checkbox"/> CHANGE TO PREVIOUS PLANS       | <input type="checkbox"/> OPERATOR CHANGE                  | <input type="checkbox"/> TUBING REPAIR                 |
|                                                                                                                                      | <input type="checkbox"/> CHANGE TUBING                  | <input checked="" type="checkbox"/> PLUG AND ABANDON      | <input type="checkbox"/> VENT OR FLARE                 |
| <input checked="" type="checkbox"/> SUBSEQUENT REPORT<br>(Submit Original Form Only)<br>Date of work completion:<br><b>6/29/2010</b> | <input type="checkbox"/> CHANGE WELL NAME               | <input type="checkbox"/> PLUG BACK                        | <input type="checkbox"/> WATER DISPOSAL                |
|                                                                                                                                      | <input type="checkbox"/> CHANGE WELL STATUS             | <input type="checkbox"/> PRODUCTION (START/RESUME)        | <input type="checkbox"/> WATER SHUT-OFF                |
|                                                                                                                                      | <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS | <input type="checkbox"/> RECLAMATION OF WELL SITE         | <input type="checkbox"/> OTHER: _____                  |
|                                                                                                                                      | <input type="checkbox"/> CONVERT WELL TYPE              | <input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION |                                                        |

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

Mayfield19-1 Plug and Abandon Procedure: Wolverine Operating Company of Utah, LLC intends to plug and abandon the Mayfield 19-2 after reaching a TD of 13,300'.

The Mayfield 19-1 well was plugged and abandoned upon reaching a TD of 13,300. Cement plugs were set as follows:  
 Plug #1: 200' balanced plug 10,500'-10,300' with 71 sxs cement  
 Plug #2: 662' balanced plug set 2,260'-1,546' with 116 sxs Class G cement. TIH and tag Plug #2 at 1,564'  
 Plug #3: 188' balanced plug set 188' to surface with 95 sxs Class G cement.  
 Capped at 15:30 hrs. on 6/26/2010.

A 1/4" steel plate was welded to cap with inscription as follows  
 Wolverine Gas & Oil  
 Mayfield 19-1  
 API 43039500020000  
 S30, T19S, R2E, Sanpete Co., Utah

NAME (PLEASE PRINT) Matthew Rivers      TITLE Production Engineer  
 SIGNATURE *Matthew Rivers*      DATE 10/8/2010

(This space for State use only)

**RECEIVED**

**OCT 19 2010**

**CONFIDENTIAL**

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

FORM 9

**SUNDRY NOTICES AND REPORTS ON WELLS**

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.

5. LEASE DESIGNATION AND SERIAL NUMBER:  
**Patented**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT or CA AGREEMENT NAME:  
**Wolverine**

8. WELL NAME and NUMBER:  
**Mayfield 19-1**

9. API NUMBER:  
**4303950002**

10. FIELD AND POOL, OR WILDCAT:  
**Wildcat**

1. TYPE OF WELL  
OIL WELL  GAS WELL  OTHER \_\_\_\_\_

2. NAME OF OPERATOR:  
**Wolverine Gas & Oil 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: **431' FNL, 1422' FEL** COUNTY: **Sanpete**  
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: **NWNE 30 19S 2E** STATE: **UTAH**

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

| TYPE OF SUBMISSION                                                                                                                   | TYPE OF ACTION                                          |                                                           |                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> NOTICE OF INTENT<br>(Submit in Duplicate)<br>Approximate date work will start:<br>_____                     | <input type="checkbox"/> ACIDIZE                        | <input type="checkbox"/> DEEPEN                           | <input type="checkbox"/> REPERFORATE CURRENT FORMATION |
|                                                                                                                                      | <input type="checkbox"/> ALTER CASING                   | <input type="checkbox"/> FRACTURE TREAT                   | <input type="checkbox"/> SIDETRACK TO REPAIR WELL      |
|                                                                                                                                      | <input type="checkbox"/> CASING REPAIR                  | <input type="checkbox"/> NEW CONSTRUCTION                 | <input type="checkbox"/> TEMPORARILY ABANDON           |
|                                                                                                                                      | <input type="checkbox"/> CHANGE TO PREVIOUS PLANS       | <input type="checkbox"/> OPERATOR CHANGE                  | <input type="checkbox"/> TUBING REPAIR                 |
|                                                                                                                                      | <input type="checkbox"/> CHANGE TUBING                  | <input checked="" type="checkbox"/> PLUG AND ABANDON      | <input type="checkbox"/> VENT OR FLARE                 |
| <input checked="" type="checkbox"/> SUBSEQUENT REPORT<br>(Submit Original Form Only)<br>Date of work completion:<br><b>6/29/2010</b> | <input type="checkbox"/> CHANGE WELL NAME               | <input type="checkbox"/> PLUG BACK                        | <input type="checkbox"/> WATER DISPOSAL                |
|                                                                                                                                      | <input type="checkbox"/> CHANGE WELL STATUS             | <input type="checkbox"/> PRODUCTION (START/RESUME)        | <input type="checkbox"/> WATER SHUT-OFF                |
|                                                                                                                                      | <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS | <input type="checkbox"/> RECLAMATION OF WELL SITE         | <input type="checkbox"/> OTHER: _____                  |
|                                                                                                                                      | <input type="checkbox"/> CONVERT WELL TYPE              | <input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION |                                                        |

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 Capped at 15:30 hrs. on 6/26/2010.

A 1/4" steel plate was welded to cap with inscription as follows  
 Wolverine Gas & Oil  
 Mayfield 19-1  
 API 43039500020000  
 S30, T19S, R2E, Sanpete Co., Utah

NAME (PLEASE PRINT) Matthew Rivers TITLE Production Engineer  
 SIGNATURE *Matthew Rivers* DATE 10/8/2010

(This space for State use only)

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|             |                         |
|-------------|-------------------------|
| Oil Company | Wolverine Gas & Oil Co. |
| Well        | Mayfield 19-1           |
| Date        | 12 Oct 10               |
| Time        | 12:47                   |

|                     |                   |
|---------------------|-------------------|
| Surface Coordinates |                   |
| Reference Slot      |                   |
| Latitude            | 39° 09' 0.677"°   |
| Longitude           | 111° 49' 44.841"° |

|                  |            |
|------------------|------------|
| Section          | 9 7/8"     |
| TVD datum        |            |
| Vertical section | 308.29 deg |
| V sect datum     | 0 E 0 N    |

|           |       |
|-----------|-------|
| True/Grid | TRUE  |
| Decl      | 12.01 |
| Conv      |       |

| Survey No | Survey Depth | Inc  | Azi   | depth inc | dls       | BHT Temp | TVD    | north | east  | vertical section |
|-----------|--------------|------|-------|-----------|-----------|----------|--------|-------|-------|------------------|
|           | ft           | deg  | deg   | ft        | deg/100ft | deg      | ft     | ft    | ft    | ft               |
| Tie in    | 2039.0       | 4.81 | 209.4 |           |           | N/A      | 2037.5 | -58.0 | -20.9 | -19.6            |
| 1         | 2105.0       | 4.40 | 212.4 | 66.0      | 0.7       | N/A      | 2103.3 | -62.6 | -23.6 | -20.3            |
| 2         | 2200.0       | 3.40 | 235.1 | 95.0      | 1.9       | N/A      | 2198.1 | -67.2 | -27.8 | -19.8            |
| 3         | 2292.0       | 2.50 | 257.9 | 92.0      | 1.6       | N/A      | 2290.0 | -69.2 | -32.0 | -17.7            |
| 4         | 2393.0       | 0.70 | 281.8 | 101.0     | 1.9       | N/A      | 2390.9 | -69.6 | -34.8 | -15.8            |
| 5         | 2483.0       | 0.40 | 264.5 | 90.0      | 0.4       | N/A      | 2480.9 | -69.5 | -35.6 | -15.1            |
| 6         | 2581.0       | 0.40 | 305.1 | 98.0      | 0.3       | 110      | 2578.9 | -69.3 | -36.3 | -14.5            |
| 7         | 2676.0       | 0.50 | 318.4 | 95.0      | 0.2       | 117      | 2673.9 | -68.8 | -36.8 | -13.7            |
| 8         | 2772.0       | 0.50 | 318.9 | 96.0      | 0.0       | 117      | 2769.9 | -68.2 | -37.4 | -12.9            |
| 9         | 2867.0       | 0.40 | 49.7  | 95.0      | 0.7       | 127      | 2864.9 | -67.7 | -37.4 | -12.6            |
| 10        | 2962.0       | 0.40 | 338.8 | 95.0      | 0.5       | 122      | 2959.9 | -67.1 | -37.3 | -12.4            |
| 11        | 3057.0       | 1.20 | 302.2 | 95.0      | 1.0       | 127      | 3054.9 | -66.3 | -38.2 | -11.1            |
| 12        | 3152.0       | 1.50 | 299.1 | 95.0      | 0.3       | 165      | 3149.9 | -65.2 | -40.1 | -8.9             |
| 13        | 3246.0       | 0.40 | 18.1  | 94.0      | 1.6       | 136      | 3243.9 | -64.3 | -41.1 | -7.5             |
| 14        | 3343.0       | 0.30 | 352.2 | 97.0      | 0.2       | 136      | 3340.9 | -63.7 | -41.0 | -7.2             |
| 15        | 3438.0       | 0.30 | 13.3  | 95.0      | 0.1       | 136      | 3435.9 | -63.2 | -41.0 | -7.0             |
| 16        | 3535.0       | 0.10 | 247.2 | 97.0      | 0.4       | 133      | 3532.9 | -63.0 | -41.0 | -6.8             |
| 17        | 3629.0       | 0.60 | 305.4 | 94.0      | 0.6       | 138      | 3626.9 | -62.7 | -41.5 | -6.3             |
| 18        | 3724.0       | 0.80 | 301.1 | 95.0      | 0.2       | 134      | 3721.9 | -62.1 | -42.5 | -5.1             |
| 19        | 3819.0       | 0.20 | 295.5 | 95.0      | 0.6       | 140      | 3816.8 | -61.7 | -43.2 | -4.3             |
| 20        | 3914.0       | 0.50 | 6.6   | 95.0      | 0.5       | 140      | 3911.8 | -61.2 | -43.3 | -3.9             |
| 21        | 4010.0       | 0.30 | 342.8 | 96.0      | 0.3       | 143      | 4007.8 | -60.5 | -43.3 | -3.5             |
| 22        | 4105.0       | 0.40 | 320.3 | 95.0      | 0.2       | 145      | 4102.8 | -60.0 | -43.6 | -3.0             |
| 23        | 4201.0       | 0.20 | 3.8   | 96.0      | 0.3       | 145      | 4198.8 | -59.6 | -43.8 | -2.5             |
| 24        | 4295.0       | 0.30 | 339.8 | 94.0      | 0.2       | 136      | 4292.8 | -59.2 | -43.9 | -2.2             |
| 25        | 4391.0       | 0.40 | 325.4 | 96.0      | 0.1       | 146      | 4388.8 | -58.7 | -44.2 | -1.7             |
| 26        | 4486.0       | 0.30 | 19.0  | 95.0      | 0.3       | 147      | 4483.8 | -58.2 | -44.3 | -1.3             |
| 27        | 4581.0       | 0.50 | 2.8   | 95.0      | 0.2       | 147      | 4578.8 | -57.6 | -44.2 | -1.0             |
| 28        | 4677.0       | 0.40 | 351.1 | 96.0      | 0.1       | 159      | 4674.8 | -56.8 | -44.2 | -0.5             |
| 29        | 4772.0       | 0.20 | 16.7  | 95.0      | 0.2       | 146      | 4769.8 | -56.3 | -44.2 | -0.2             |
| 30        | 4868.0       | 0.20 | 326.1 | 96.0      | 0.2       | 144      | 4865.8 | -56.0 | -44.3 | 0.0              |
| 31        | 4963.0       | 0.40 | 291.0 | 95.0      | 0.3       | 148      | 4960.8 | -55.8 | -44.7 | 0.5              |
| 32        | 5059.0       | 0.30 | 345.2 | 96.0      | 0.3       | 146      | 5056.8 | -55.4 | -45.0 | 1.0              |
| 33        | 5154.0       | 0.30 | 303.1 | 95.0      | 0.2       | 150      | 5151.8 | -55.0 | -45.3 | 1.5              |
| 34        | 5249.0       | 0.90 | 280.5 | 95.0      | 0.7       | 155      | 5246.8 | -54.8 | -46.3 | 2.4              |
| 35        | 5344.0       | 0.30 | 41.3  | 95.0      | 1.1       | 154      | 5341.8 | -54.4 | -46.8 | 3.0              |
| 36        | 5440.0       | 0.3  | 355.9 | 96.0      | 0.2       | 150      | 5437.8 | -54.0 | -46.7 | 3.2              |
| 37        | 5534.0       | 0.50 | 270.4 | 94.0      | 0.6       | 167      | 5531.8 | -53.7 | -47.1 | 3.7              |
| 38        | 5620.0       | 0.50 | 299.6 | 86.0      | 0.3       | 164      | 5617.8 | -53.6 | -47.8 | 4.3              |
| 39        | 5723.0       | 0.10 | 159.8 | 103.0     | 0.6       | 166      | 5720.8 | -53.4 | -48.2 | 4.7              |
| 40        | 5822.0       | 0.20 | 250.6 | 99.0      | 0.2       | 172      | 5819.8 | -53.6 | -48.3 | 4.7              |
| 41        | 5918.0       | 0.20 | 296.3 | 96.0      | 0.2       | 178      | 5915.8 | -53.5 | -48.6 | 5.0              |
| 42        | 6013.0       | 0.20 | 122.2 | 95.0      | 0.4       | 179      | 6010.8 | -53.6 | -48.6 | 5.0              |
| 43        | 6108.0       | 0.20 | 169.2 | 95.0      | 0.2       | 184      | 6105.8 | -53.8 | -48.4 | 4.7              |
| 44        | 6203.0       | 0.30 | 254.8 | 95.0      | 0.4       | 40       | 6200.8 | -54.0 | -48.7 | 4.7              |
| 45        | 6305.0       | 0.40 | 6.1   | 102.0     | 0.6       | 182      | 6302.8 | -53.8 | -48.9 | 5.1              |
| 46        | 6402.0       | 0.10 | 237.5 | 97.0      | 0.5       | 184      | 6399.8 | -53.5 | -48.9 | 5.3              |
| 47        | 6490.0       | 0.30 | 311.9 | 88.0      | 0.3       | 189      | 6487.8 | -53.3 | -49.1 | 5.5              |
| 48        | 6616.0       | 0.30 | 326.0 | 126.0     | 0.1       | 189      | 6613.8 | -52.9 | -49.6 | 6.2              |
| 49        | 6681.0       | 0.20 | 306.2 | 65.0      | 0.2       | 189      | 6678.8 | -52.6 | -49.8 | 6.4              |
| 50        | 6776.0       | 0.00 | 280.3 | 95.0      | 0.2       | 191      | 6773.8 | -52.5 | -49.9 | 6.6              |

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Oil Company **Wolverine Gas & Oil Co.**  
 Well **Mayfield 19-1**  
 Date **12 Oct 10**  
 Time **12:47**

Surface Coordinates  
 Reference **TRUE**  
 Latitude **39° 09' 0.677"**  
 Longitude **111° 49' 44.841"**

Section **9 7/8"**  
 TVD datum  
 Vertical section **308.29 deg**  
 V sect datum **0 E 0 N**

True/Grid **TRUE**  
 Decl **12.01**  
 Conv **--**

| Survey No | Survey Depth<br>ft | Inc<br>deg | Azi<br>deg | depth inc<br>ft | dis<br>deg/30m | BHT Temp<br>deg | TVD<br>ft | north<br>ft | east<br>ft | vertical section<br>ft |
|-----------|--------------------|------------|------------|-----------------|----------------|-----------------|-----------|-------------|------------|------------------------|
| 51        | 6926.0             | 0.20       | 69.7       | 150.0           | 0.1            | 177             | 6923.8    | -52.5       | -49.7      | 6.4                    |
| 52        | 7028.0             | 0.70       | 41.2       | 102.0           | 0.5            | 184             | 7025.8    | -52.0       | -49.1      | 6.3                    |
| 53        | 7124.0             | 0.50       | 68.9       | 96.0            | 0.4            | 186             | 7121.8    | -51.4       | -48.3      | 6.1                    |
| 54        | 7220.0             | 1.10       | 64.1       | 96.0            | 0.6            | 187             | 7217.8    | -50.9       | -47.1      | 5.4                    |
| 55        | 7314.0             | 1.60       | 8.0        | 94.0            | 1.4            | 187             | 7311.8    | -49.2       | -46.1      | 5.7                    |
| 56        | 7405.0             | 0.10       | 78.2       | 91.0            | 1.7            | 177             | 7402.7    | -47.9       | -45.8      | 6.3                    |
| 57        | 7511.0             | 1.90       | 314.0      | 106.0           | 1.8            | 184             | 7508.7    | -46.6       | -47.0      | 8.0                    |
| 58        | 7600.0             | 4.60       | 311.6      | 89.0            | 3.0            | 190             | 7597.6    | -43.3       | -50.7      | 13.0                   |
| 59        | 7688.0             | 5.80       | 310.7      | 88.0            | 1.4            | 187             | 7685.2    | -37.9       | -56.7      | 21.0                   |
| 60        | 7788.0             | 5.00       | 306.9      | 100.0           | 0.9            | 191             | 7784.8    | -32.0       | -64.1      | 30.4                   |
| 61        | 7883.0             | 5.10       | 302.7      | 95.0            | 0.4            | 191             | 7879.4    | -27.3       | -70.9      | 38.8                   |
| 62        | 7974.0             | 3.70       | 297.9      | 91.0            | 1.6            | 189             | 7970.1    | -23.7       | -76.9      | 45.7                   |
| 63        | 8035.0             | 5.10       | 308.9      | 61.0            | 2.7            | 199             | 8031.0    | -21.1       | -80.8      | 50.3                   |
| 64        | 8132.0             | 9.70       | 321.0      | 97.0            | 5.0            | 183             | 8127.1    | -12.0       | -89.3      | 62.6                   |
| 65        | 8222.0             | 11.40      | 320.8      | 90.0            | 1.9            | 187             | 8215.6    | 0.8         | -99.7      | 78.7                   |
| 66        | 8323.0             | 10.20      | 317.9      | 101.0           | 1.3            | 189             | 8314.8    | 15.1        | -112.0     | 97.3                   |
| 67        | 8413.0             | 10.50      | 316.2      | 90.0            | 0.5            | 189             | 8403.3    | 27.0        | -123.0     | 113.3                  |
| 68        | 8512.0             | 11.60      | 319.3      | 99.0            | 1.3            | 194             | 8500.5    | 41.0        | -135.7     | 132.0                  |
| 69        | 8601.0             | 12.10      | 317.8      | 89.0            | 0.7            | 197             | 8587.6    | 54.7        | -147.8     | 149.9                  |
| 70        | 8702.0             | 12.70      | 320.6      | 101.0           | 0.8            | 187             | 8686.3    | 71.2        | -162.0     | 171.2                  |
| 71        | 8794.0             | 12.10      | 322.8      | 92.0            | 0.8            | 143             | 8776.1    | 86.6        | -174.2     | 190.4                  |
| 72        | 8890.0             | 11.90      | 320.5      | 96.0            | 0.5            | N/A             | 8870.0    | 102.3       | -186.6     | 209.9                  |
| 73        | 8985.0             | 13.10      | 316.2      | 95.0            | 1.6            | 187             | 8962.8    | 117.6       | -200.3     | 230.1                  |
| 74        | 9075.0             | 14.20      | 316.2      | 90.0            | 1.2            | 192             | 9050.2    | 133.0       | -215.0     | 251.1                  |
| 75        | 9110.0             | 14.10      | 315.5      | 35.0            | 0.6            | N/A             | 9084.2    | 139.1       | -221.0     | 259.6                  |
| 76        | 9141.0             | 14.30      | 315.6      | 31.0            | 0.6            | NA              | 9114.2    | 144.5       | -226.3     | 267.2                  |
| 77        | 9174.0             | 14.80      | 314.1      | 33.0            | 1.9            | 194             | 9146.1    | 150.4       | -232.2     | 275.4                  |
| 78        | 9195.0             | 14.80      | 312.6      | 21.0            | 1.8            | N/A             | 9166.5    | 154.1       | -236.1     | 280.7                  |
| 79        | 9236.0             | 15.10      | 311.9      | 41.0            | 0.9            | N/A             | 9206.1    | 161.2       | -243.9     | 291.3                  |
| 80        | 9264.0             | 15.00      | 312.0      | 28.0            | 0.4            | 165             | 9233.1    | 166.0       | -249.3     | 298.5                  |
| 81        | 9298.0             | 15.30      | 311.9      | 34.0            | 0.9            | NA              | 9265.9    | 172.0       | -255.9     | 307.4                  |
| 82        | 9328.0             | 15.20      | 310.3      | 30.0            | 1.4            | NA              | 9294.9    | 177.2       | -261.8     | 315.3                  |
| 83        | 9364.0             | 14.80      | 309.5      | 36.0            | 1.3            | 199             | 9329.6    | 183.1       | -269.0     | 324.6                  |
| 84        | 9385.0             | 14.90      | 308.6      | 21.0            | 1.2            | N/A             | 9349.9    | 186.5       | -273.2     | 330.0                  |
| 85        | 9425.0             | 15.00      | 308.0      | 40.0            | 0.5            | N/A             | 9388.6    | 192.9       | -281.3     | 340.3                  |
| 86        | 9449.0             | 15.10      | 308.6      | 24.0            | 0.8            | N/A             | 9411.8    | 196.8       | -286.2     | 346.5                  |
| 87        | 9487.0             | 15.30      | 308.9      | 38.0            | 0.6            | N/A             | 9448.4    | 203.0       | -293.9     | 356.5                  |
| 88        | 9518.0             | 15.40      | 309.9      | 31.0            | 0.9            | N/A             | 9478.3    | 208.2       | -300.3     | 364.7                  |
| 89        | 9560.0             | 15.40      | 310.3      | 42.0            | 0.3            | N/A             | 9518.8    | 215.4       | -308.8     | 375.9                  |
| 90        | 9575.0             | 15.40      | 308.7      | 15.0            | 2.8            | 200             | 9533.3    | 217.9       | -311.9     | 379.8                  |
| 91        | 9613.0             | 15.80      | 311.2      | 38.0            | 2.1            | 201             | 9569.9    | 224.5       | -319.7     | 390.0                  |
| 92        | 9637.0             | 16.20      | 311.2      | 24.0            | 1.7            | N/A             | 9593.0    | 228.9       | -324.7     | 396.7                  |
| 93        | 9682.0             | 16.70      | 311.5      | 45.0            | 1.1            | N/A             | 9636.1    | 237.3       | -334.3     | 409.4                  |
| 94        | 9711.0             | 17.10      | 311.2      | 29.0            | 1.4            | N/A             | 9663.9    | 242.8       | -340.6     | 417.8                  |
| 95        | 9738.0             | 17.30      | 311.1      | 27.0            | 0.7            | 203             | 9689.6    | 248.1       | -346.6     | 425.8                  |
| 96        | 9763.0             | 17.50      | 310.1      | 25.0            | 1.4            | N/A             | 9713.5    | 253.0       | -352.3     | 433.2                  |
| 97        | 9803.0             | 17.80      | 309.7      | 40.0            | 0.8            | N/A             | 9751.6    | 260.7       | -361.6     | 445.4                  |
| 98        | 9839.0             | 18.00      | 309.7      | 36.0            | 0.6            | N/A             | 9785.9    | 267.8       | -370.1     | 456.4                  |
| 99        | 9871.0             | 17.80      | 310.9      | 32.0            | 1.3            | 119             | 9816.3    | 274.2       | -377.6     | 466.3                  |
| 100       | 9888.0             | 17.50      | 311.2      | 17.0            | 1.8            | 163             | 9832.5    | 277.6       | -381.5     | 471.4                  |

CONFIDENTIAL



Oil Company Wolverine Gas & Oil co.  
 Well Mayfield 19-1  
 Date 4/3/2010  
 Time



Surface Coordinates  
 Reference TRUE  
 Latitude 55 47' 4.447" N  
 Longitude 120 51' 54.570" W

Section 8.5  
 TVD datum   
 Vertical section 0 deg  
 V sect datum 0 E 0 N

True/Grid True  
 Decl 19.71  
 Conv --

| Survey No | Survey Depth | Inc   | Azi   | depth inc | dis     | BHT Temp | TVD     | north | east   | vertical section |
|-----------|--------------|-------|-------|-----------|---------|----------|---------|-------|--------|------------------|
|           | ft           | deg   | deg   | ft        | deg/100 | deg      | ft      | ft    | ft     | ft               |
| 101       | 9926.0       | 17.90 | 311.9 | 38.0      | 1.2     | N/A      | 9868.7  | 285.2 | -390.1 | 482.9            |
| 102       | 9952.0       | 17.80 | 312.0 | 26.0      | 0.4     | N/A      | 9893.5  | 290.5 | -396.1 | 490.9            |
| 103       | 9989.0       | 18.10 | 311.2 | 37.0      | 1.0     | 203      | 9928.7  | 298.1 | -404.6 | 502.3            |
| 104       | 10016.0      | 18.10 | 311.1 | 27.0      | 0.1     | N/A      | 9954.3  | 303.6 | -410.9 | 510.7            |
| 105       | 10052.0      | 18.20 | 309.8 | 36.0      | 1.2     | 184      | 9988.6  | 310.9 | -419.4 | 521.9            |
| 106       | 10083.0      | 18.90 | 308.5 | 31.0      | 2.6     | 187      | 10017.9 | 317.1 | -427.1 | 531.7            |
| 107       | 10115.0      | 18.80 | 308.5 | 32.0      | 0.3     | 189      | 10048.2 | 323.6 | -435.2 | 542.1            |
| 108       | 10130.0      | 18.20 | 308.5 | 15.0      | 4.0     | N/A      | 10062.4 | 326.5 | -438.9 | 546.8            |
| 109       | 10146.0      | 17.10 | 307.4 | 16.0      | 7.2     | N/A      | 10077.7 | 329.5 | -442.7 | 551.7            |
| 110       | 10191.0      | 17.10 | 305.2 | 45.0      | 1.5     | 176      | 10120.7 | 337.4 | -453.4 | 564.9            |
| 111       | 10237.0      | 17.80 | 304.5 | 46.0      | 1.6     | 190      | 10164.6 | 345.2 | -464.7 | 578.7            |
| 112       | 10253.0      | 18.46 | 303.0 | 16.0      | 5.0     | 194      | 10179.8 | 348.0 | -468.8 | 583.6            |
| 113       | 10265.0      | 18.19 | 303.1 | 12.0      | 2.3     | 194      | 10191.2 | 350.0 | -472.0 | 587.4            |
| 114       | 10280.0      | 18.72 | 302.4 | 15.0      | 3.8     | 194      | 10205.4 | 352.6 | -476.0 | 592.1            |
| 115       | 10299.0      | 18.63 | 302.0 | 19.0      | 0.8     | N/A      | 10223.4 | 355.8 | -481.2 | 598.2            |
| 116       | 10330.0      | 18.81 | 301.7 | 31.0      | 0.7     | 198      | 10252.8 | 361.1 | -489.6 | 608.0            |
| 117       | 10363.0      | 18.63 | 300.6 | 33.0      | 1.2     | 198      | 10284.0 | 366.6 | -498.7 | 618.5            |
| 118       | 10394.0      | 19.16 | 302.0 | 31.0      | 2.3     | 202      | 10313.4 | 371.8 | -507.3 | 628.5            |
| 119       | 10409.0      | 19.51 | 302.4 | 15.0      | 2.5     | 202      | 10327.5 | 374.4 | -511.5 | 633.4            |
| 120       | 10426.0      | 19.69 | 303.1 | 17.0      | 1.7     | 202      | 10343.5 | 377.5 | -516.3 | 639.1            |
| 121       | 10445.0      | 19.69 | 302.7 | 19.0      | 0.6     | 202      | 10361.4 | 381.0 | -521.6 | 645.5            |
| 122       | 10459.0      | 20.04 | 302.4 | 14.0      | 2.6     | N/A      | 10374.6 | 383.5 | -525.6 | 650.2            |
| 123       | 10490.0      | 19.95 | 303.8 | 31.0      | 1.6     | 198      | 10403.7 | 389.3 | -534.5 | 660.8            |
| 124       | 10518.0      | 19.34 | 303.4 | 28.0      | 2.2     | N/A      | 10430.1 | 394.5 | -542.4 | 670.2            |
| 125       | 10537.0      | 19.42 | 303.4 | 19.0      | 0.4     | 202      | 10448.0 | 398.0 | -547.6 | 676.4            |
| 126       | 10564.0      | 19.51 | 304.5 | 27.0      | 1.3     | 202      | 10473.5 | 403.0 | -555.1 | 685.4            |
| 127       | 10583.0      | 19.42 | 303.8 | 19.0      | 1.3     | 204      | 10491.4 | 406.6 | -560.3 | 691.7            |
| 128       | 10614.0      | 19.69 | 303.1 | 31.0      | 1.2     | 204      | 10520.6 | 412.3 | -569.0 | 702.1            |
| 129       | 10644.0      | 19.78 | 303.4 | 30.0      | 0.5     | 204      | 10548.8 | 417.8 | -577.5 | 712.2            |
| 130       | 10675.0      | 19.60 | 304.1 | 31.0      | 1.0     | 208      | 10578.0 | 423.6 | -586.2 | 722.6            |
| 131       | 10708.0      | 18.98 | 304.1 | 33.0      | 1.9     | N/A      | 10609.2 | 429.8 | -595.2 | 733.4            |
| 132       | 10740.0      | 18.98 | 305.2 | 32.0      | 1.1     | 208      | 10639.4 | 435.7 | -603.7 | 743.8            |
| 133       | 10771.0      | 18.90 | 305.5 | 31.0      | 0.4     | 208      | 10668.7 | 441.5 | -612.0 | 753.9            |
| 134       | 10802.0      | 19.07 | 306.2 | 31.0      | 0.9     | N/A      | 10698.1 | 447.4 | -620.1 | 764.0            |
| 135       | 10833.0      | 18.90 | 307.6 | 31.0      | 1.6     | N/A      | 10727.4 | 453.5 | -628.2 | 774.0            |
| 136       | 10864.0      | 18.98 | 308.3 | 31.0      | 0.8     | 208      | 10756.7 | 459.6 | -636.1 | 784.1            |
| 137       | 10898.0      | 19.07 | 308.7 | 34.0      | 0.4     | 208      | 10788.8 | 466.5 | -644.8 | 795.2            |
| 138       | 10927.0      | 18.81 | 308.0 | 29.0      | 1.2     | 212      | 10816.3 | 472.4 | -652.2 | 804.6            |
| 139       | 10961.0      | 18.63 | 308.7 | 34.0      | 0.8     | 212      | 10848.5 | 479.1 | -660.7 | 815.5            |
| 140       | 10993.0      | 18.37 | 309.4 | 32.0      | 1.1     | 212      | 10878.8 | 485.5 | -668.6 | 825.7            |
| 141       | 11020.0      | 17.93 | 309.0 | 27.0      | 1.7     | 212      | 10904.5 | 490.9 | -675.1 | 834.1            |
| 142       | 11055.0      | 17.58 | 308.3 | 35.0      | 1.2     | 212      | 10937.8 | 497.5 | -683.5 | 844.7            |
| 143       | 11083.0      | 17.23 | 309.4 | 28.0      | 1.7     | N/A      | 10964.5 | 502.8 | -690.0 | 853.1            |
| 144       | 11115.0      | 17.40 | 309.4 | 32.0      | 0.5     | 212      | 10995.1 | 508.8 | -697.4 | 862.6            |
| 145       | 11145.0      | 17.14 | 310.4 | 30.0      | 1.4     | 212      | 11023.7 | 514.5 | -704.2 | 871.5            |
| 146       | 11179.0      | 17.05 | 311.5 | 34.0      | 0.9     | 212      | 11056.2 | 521.1 | -711.7 | 881.5            |
| 147       | 11207.0      | 16.96 | 312.6 | 28.0      | 1.2     | 212      | 11083.0 | 526.6 | -717.8 | 889.7            |
| 148       | 11243.0      | 16.70 | 313.6 | 36.0      | 1.1     | 212      | 11117.5 | 533.7 | -725.4 | 900.1            |
| 149       | 11275.0      | 16.52 | 314.7 | 32.0      | 1.1     | 212      | 11148.1 | 540.1 | -732.0 | 909.2            |
| 150       | 11306.0      | 16.44 | 315.4 | 31.0      | 0.7     | 208      | 11177.8 | 546.3 | -738.2 | 917.9            |

| Survey No |
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CONFIDENTIAL  
202



|             |                         |
|-------------|-------------------------|
| Oil Company | Wolverine Gas & Oil Co. |
| Well        | May 19 - 1              |
| Date        | 9-Jun-10                |
| Time        |                         |

|                     |                   |
|---------------------|-------------------|
| Surface Coordinates |                   |
| Reference           | TRUE              |
| Latitude            | 55 47' 4.447" N   |
| Longitude           | 120 51' 54.570" W |

|                  |         |
|------------------|---------|
| Section          | 8.5     |
| TVD datum        |         |
| Vertical section | 0 deg   |
| V sect datum     | 0 E 0 N |

|           |       |
|-----------|-------|
| True/Grid | True  |
| Decl      | 19.71 |
| Conv      | --    |

| Survey No | Survey Depth<br>ft | Inc<br>deg | Azi<br>deg | depth inc<br>ft | dls<br>deg/100 | BHT<br>Temp<br>deg | TVD<br>ft | north<br>ft | east<br>ft | vertical<br>section<br>ft |
|-----------|--------------------|------------|------------|-----------------|----------------|--------------------|-----------|-------------|------------|---------------------------|
| 151       | 11327.0            | 16.52      | 315.0      | 21.0            | 0.6            | 184                | 11198.0   | 550.5       | -742.4     | 923.8                     |
| 152       | 11364.0            | 16.61      | 313.6      | 37.0            | 1.1            | 196                | 11233.4   | 557.9       | -750.0     | 934.3                     |
| 153       | 11390.0            | 16.52      | 313.6      | 26.0            | 0.3            | 196                | 11258.4   | 563.0       | -755.3     | 941.7                     |
| 154       | 11429.0            | 16.70      | 314.0      | 39.0            | 0.5            | 198                | 11295.7   | 570.7       | -763.4     | 952.8                     |
| 155       | 11460.0            | 17.67      | 315.0      | 31.0            | 3.3            | 202                | 11325.4   | 577.1       | -769.9     | 961.9                     |
| 156       | 11517.0            | 18.11      | 315.0      | 57.0            | 0.8            | 202                | 11379.6   | 589.5       | -782.3     | 979.3                     |
| 157       | 11552.0            | 18.72      | 314.7      | 35.0            | 1.8            | 202                | 11412.8   | 597.3       | -790.1     | 990.3                     |
| 158       | 11579.0            | 18.90      | 315.0      | 27.0            | 0.8            | 204                | 11438.4   | 603.4       | -796.3     | 998.9                     |
| 159       | 11617.0            | 19.16      | 315.0      | 38.0            | 0.7            | 204                | 11474.3   | 612.2       | -805.1     | 1011.2                    |
| 160       | 11641.0            | 19.69      | 315.7      | 24.0            | 2.4            | 208                | 11496.9   | 617.9       | -810.7     | 1019.2                    |
| 161       | 11677.0            | 20.21      | 316.1      | 36.0            | 1.5            | 208                | 11530.8   | 626.7       | -819.2     | 1031.3                    |
| 162       | 11704.0            | 20.83      | 315.7      | 27.0            | 2.3            | 208                | 11556.0   | 633.5       | -825.8     | 1040.7                    |
| 163       | 11741.0            | 20.21      | 314.3      | 37.0            | 2.1            | 210                | 11590.7   | 642.7       | -835.0     | 1053.6                    |
| 164       | 11768.0            | 20.39      | 313.3      | 27.0            | 1.5            | 212                | 11616.0   | 649.1       | -841.7     | 1062.9                    |
| 165       | 11805.0            | 20.39      | 313.6      | 37.0            | 0.3            | 208                | 11650.7   | 658.0       | -851.1     | 1075.8                    |
| 166       | 11835.0            | 19.69      | 314.7      | 30.0            | 2.6            | 212                | 11678.9   | 665.2       | -858.5     | 1086.0                    |
| 167       | 11869.0            | 18.63      | 316.8      | 34.0            | 3.7            | 212                | 11711.0   | 673.1       | -866.3     | 1097.0                    |
| 168       | 11899.0            | 17.67      | 317.5      | 30.0            | 3.3            | 212                | 11739.5   | 680.0       | -872.6     | 1106.3                    |
| 169       | 11930.0            | 16.79      | 319.2      | 31.0            | 3.3            | 212                | 11769.1   | 686.8       | -878.8     | 1115.3                    |
| 170       | 11960.0            | 16.26      | 321.7      | 30.0            | 2.9            | 212                | 11797.9   | 693.4       | -884.2     | 1123.7                    |
| 171       | 11991.0            | 15.29      | 322.0      | 31.0            | 3.1            | 212                | 11827.7   | 700.1       | -889.4     | 1131.9                    |
| 172       | 12027.0            | 14.77      | 321.7      | 36.0            | 1.5            | 212                | 11862.5   | 707.4       | -895.2     | 1140.9                    |
| 173       | 12056.0            | 14.85      | 322.4      | 29.0            | 0.7            | 212                | 11890.5   | 713.2       | -899.7     | 1148.1                    |
| 174       | 12085.0            | 15.12      | 323.4      | 29.0            | 1.3            | 212                | 11918.5   | 719.2       | -904.2     | 1155.4                    |
| 175       | 12115.0            | 15.56      | 324.5      | 30.0            | 1.7            | 212                | 11947.5   | 725.6       | -908.9     | 1163.0                    |
| 176       | 12145.0            | 15.21      | 326.3      | 30.0            | 1.9            | 216                | 11976.4   | 732.2       | -913.4     | 1170.6                    |
| 177       | 12179.0            | 14.77      | 326.6      | 34.0            | 1.3            | 216                | 12009.2   | 739.5       | -918.3     | 1179.0                    |
| 178       | 12207.0            | 14.85      | 327.7      | 28.0            | 1.0            | 216                | 12036.3   | 745.5       | -922.2     | 1185.8                    |
| 179       | 12238.0            | 15.38      | 328.4      | 31.0            | 1.8            | 216                | 12066.2   | 752.4       | -926.5     | 1193.4                    |
| 180       | 12268.0            | 15.12      | 329.4      | 30.0            | 1.3            | 216                | 12095.2   | 759.1       | -930.5     | 1200.8                    |
| 181       | 12301.0            | 14.85      | 329.1      | 33.0            | 0.9            | 218                | 12127.1   | 766.5       | -934.9     | 1208.7                    |
| 182       | 12330.0            | 14.77      | 329.4      | 29.0            | 0.4            | 212                | 12155.1   | 772.8       | -938.7     | 1215.6                    |
| 183       | 12364.0            | 14.24      | 327.3      | 34.0            | 2.2            | 212                | 12188.0   | 780.1       | -943.1     | 1223.6                    |
| 184       | 12397.0            | 13.97      | 327.0      | 33.0            | 0.9            | 218                | 12220.0   | 786.8       | -947.5     | 1231.3                    |
| 185       | 12432.0            | 13.80      | 328.4      | 35.0            | 1.1            | 212                | 12254.0   | 793.9       | -952.0     | 1239.2                    |
| 186       | 12458.0            | 13.45      | 327.7      | 26.0            | 1.5            | 212                | 12279.3   | 799.1       | -955.2     | 1244.9                    |
| 187       | 12496.0            | 13.27      | 328.4      | 38.0            | 0.6            | 212                | 12316.2   | 806.6       | -959.9     | 1253.2                    |
| 188       | 12524.0            | 12.83      | 329.8      | 28.0            | 1.9            | 216                | 12343.5   | 812.0       | -963.1     | 1259.1                    |
| 189       | 12558.0            | 12.48      | 329.8      | 34.0            | 1.0            | 216                | 12376.7   | 818.4       | -966.9     | 1266.0                    |
| 190       | 12586.0            | 12.13      | 329.1      | 28.0            | 1.4            | 212                | 12404.0   | 823.6       | -969.9     | 1271.6                    |
| 191       | 12626.0            | 11.43      | 327.7      | 40.0            | 1.9            | 222                | 12443.2   | 830.5       | -974.2     | 1279.3                    |
| 192       | 12649.0            | 11.43      | 326.6      | 23.0            | 0.9            | 222                | 12465.7   | 834.4       | -976.7     | 1283.6                    |
| 193       | 12685.0            | 11.16      | 322.7      | 36.0            | 2.2            | 222                | 12501.0   | 840.1       | -980.8     | 1290.4                    |
| 194       | 12712.0            | 11.25      | 320.6      | 27.0            | 1.6            | 222                | 12527.5   | 844.2       | -984.0     | 1295.5                    |
| 195       | 12751.0            | 11.43      | 317.5      | 39.0            | 1.7            | 222                | 12565.8   | 850.0       | -989.0     | 1303.0                    |
| 196       | 12779.0            | 11.51      | 315.0      | 28.0            | 1.8            | 222                | 12593.2   | 854.0       | -992.9     | 1308.5                    |
| 197       | 12811.0            | 11.78      | 312.2      | 32.0            | 2.0            | 222                | 12624.5   | 858.5       | -997.6     | 1314.9                    |
| 198       | 12838.0            | 11.78      | 310.4      | 27.0            | 1.3            | 222                | 12651.0   | 862.1       | -1001.7    | 1320.4                    |
| 199       | 12874.0            | 11.95      | 309.4      | 36.0            | 0.8            | 226                | 12686.2   | 866.9       | -1007.4    | 1327.8                    |
| 200       | 12906.0            | 12.22      | 309.7      | 32.0            | 0.9            | 216                | 12717.5   | 871.1       | -1012.5    | 1334.5                    |
| 201       | 12933.0            | 11.87      | 309.4      | 27.0            | 1.3            | 216                | 12743.9   | 874.7       | -1016.9    | 1340.2                    |
| 202       | 12966.0            | 11.34      | 309.0      | 33.0            | 1.6            | 226                | 12776.2   | 878.9       | -1022.0    | 1346.8                    |

CONFIDENTIAL





# United States Department of the Interior



## BUREAU OF LAND MANAGEMENT

Utah State Office

P.O. Box 45155

Salt Lake City, UT 84145-0155

<http://www.blm.gov/ut/st/en.html>

IN REPLY REFER TO:

3160

UTU80800X

(UT922100)

**JUN 26 2012**

*Mayfield 19-1  
19S 2E 30*

RECEIVED

JUN 28 2012

DIV OF OIL, GAS & MINING

Mr. Richard Moritz  
One Riverfront Plaza  
55 Campau, N.W.  
Grand Rapids, MI 49503-2616

Re: Automatic Contraction  
Wolverine Unit  
Sanpete & Sevier Counties, Utah

Dear Mr. Moritz:

Your letter of June 20, 2012, describes the lands automatically eliminated effective March 16, 2012, from the Wolverine Unit Area, Sanpete & Sevier Counties, Utah, pursuant to Section 2(e) of the unit agreement and requests our concurrence. The lands you have described contain 68,062.645 acres, more or less, and contain all legal subdivisions, no parts of which are in the 7th Revision of the Navajo Participating Area "A" and the Initial Navajo 1 Formation - Carbon Sequestration a/k/a Providence Participating Area. As a result of the automatic elimination, the unit is reduced to 2,080.92 acres.

The following Federal Leases are entirely eliminated from the unit area.

|           |           |           |           |
|-----------|-----------|-----------|-----------|
| UTU 73155 | UTU 74851 | UTU 78183 | UTU 82687 |
| UTU 73157 | UTU 74852 | UTU 80587 | UTU 82690 |
| UTU 73158 | UTU 74853 | UTU 80906 | UTU 80951 |
| UTU 73160 | UTU 74854 | UTU 80908 |           |
| UTU 73529 | UTU 76453 | UTU 80909 |           |
| UTU 73530 | UTU 76454 | UTU 80910 |           |
| UTU 74370 | UTU 76455 | UTU 80911 |           |
| UTU 74850 | UTU 76456 | UTU 80955 |           |

The following Federal Leases are partially eliminated from the unit area.

|           |           |           |
|-----------|-----------|-----------|
| UTU 73156 | UTU 73528 | UTU 80907 |
|-----------|-----------|-----------|