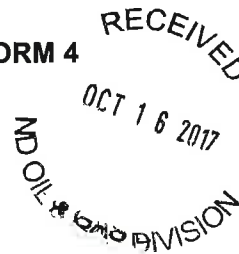


**SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4**

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No.

**22731**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input type="checkbox"/> Notice of Intent	Approximate Start Date	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input checked="" type="checkbox"/> Report of Work Done	Date Work Completed <b>March 25, 2013</b>	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input checked="" type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	

Well Name and Number <b>Magnum 3-36-25H</b>							
Footages		Qtr-Qtr	Section	Township	Range		
<b>205 F S</b>	<b>L 265 F E L</b>	<b>SESE</b>	<b>36</b>	<b>153 N</b>	<b>101 W</b>		
Field <b>Baker</b>		Pool <b>Bakken</b>		County <b>McKenzie</b>			

24-HOUR PRODUCTION RATE			
Before		After	
Oil	<b>476</b> Bbls	Oil	<b>530</b> Bbls
Water	<b>0</b> Bbls	Water	<b>130</b> Bbls
Gas	<b>0</b> MCF	Gas	<b>0</b> MCF

Name of Contractor(s) <b>Magna Energy Services</b>			
Address <b>13886 Commercial Dr.</b>	City <b>Williston</b>	State <b>ND</b>	Zip Code <b>58801</b>

**DETAILS OF WORK**

PREHEATED & WARMED UP EQUIPMENT. CHECKED PRESSURE 20/80, BLEW DOWN TBG, LET CASING FLOW, FINISHED PREP RODS, PU PUMP LOADED & TESTED (GOOD). RIH OFF TRAILER, 2.5X1.5X26' RHBM, 10-1.5 K-BAR W/ 36" CENTRA, 100 3/4 RODS, 126 7/8 RODS, 1231" RODS, STRIP TABLE, CHANGED OVER STUFFING BOX TO ENVIRO BOX. PU PR, SEATED PUMP, LOADED WITH PUMP, PRESSURED UP TO 500 PSI (GOOD). PU HEAD, CLEANED HEAD & UNIT FROM PREVIOUS OIL. HUNG WELL OFF, MADE ADJUSTMENTS, LOC WAS TRASHED OUT FORM PREVIOUS. OPERATIONS. RDMO.

Company <b>Slawson Exploration Company, Inc.</b>		Telephone Number <b>(720) 457-9820</b>	
Address <b>1675 Broadway, Suite 1600</b>			
City <b>Denver</b>		State <b>CO</b>	Zip Code <b>80202</b>
Signature <i>Toni S. Domenico</i>	Printed Name <b>Toni S. Domenico</b>		
Title <b>Production &amp; Regulatory Tech</b>	Date <b>October 11, 2017</b>		
Email Address <b>tdomenico@slawsoncompanies.com</b>			

FOR STATE USE ONLY	
<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date <b>10-19-2017</b>	
By <i>Jared Thune</i>	
Title <b>JARED THUNE</b> Engineering Technician	



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

[www.dmr.nd.gov/oilgas/](http://www.dmr.nd.gov/oilgas/)

October 5, 2017

SLAWSON EXPLORATION  
ATTENTION: KHEM SUTHIWAN  
1675 BROADWAY, STE 1600  
DENVER, CO 80202

RE:

GABRIEL 3-36-25H  
SWSE 36-153N-101W  
MCKENZIE COUNTY  
WELL FILE NO.: 21250

THOR 1-31-30H  
SWSE 31-151N-99W  
MCKENZIE COUNTY  
WELL FILE NO.: 21909

MAGNUM 1-36-25H  
SWSW 36-153N-101W  
MCKENZIE COUNTY  
WELL FILE NO.: 22247

MAGNUM 2-36-25H  
SESE 36-153N-101W  
MCKENZIE COUNTY  
WELL FILE NO.: 22249

MAGNUM 3-36-25H  
SESE 36-153N-101W  
MCKENZIE COUNTY  
WELL FILE NO.: 22731

GABRIEL 2-36-25H  
SESE 36-153N-101W  
MCKENZIE COUNTY  
WELL FILE NO.: 23536

Dear Khem Suthiwan:

A Sundry notice (Form 4) is needed for the above wells, detailing the changeover from flowing to well now on rod pump. If you have any questions, feel free to contact our office.

Sincerely,


  
Tom Delling  
Petroleum Engineer - Field Inspector

TKD/RSD/RLR

# North Dakota Industrial Commission Follow-up Spill Report

Received

APR 11 2016

API Number <b>33 - -</b>					Well File or Facility No. <b>22731</b>				
Operator <b>Slawson Exploration Co., Inc.</b>								Telephone Number <b>303-592-8880</b>	
Address <b>1675 Broadway, #1600</b>						City <b>Denver</b>		State <b>CO</b>	Zip Code <b>80202</b>
Well Name and Number or Facility Name <b>MAGNUM 3-36-25H</b>						Field <b>BAKER</b>			
Location of Well or Facility		Footages F L F L		Qtr-Qtr <b>SESE</b>	Section <b>36</b>	Township <b>153 N</b>	Range <b>101 W</b>	County <b>McKENZIE</b>	
Description of Spill Location if not on Well or Facility Site and/or Distance and Direction from Well or Facility									
Directions to Site									
Release Discovered By		Date Release Discovered <b>June 2, 2013</b>		Time Release Discovered :		Date Release Controlled <b>June 2, 2013</b>		Time Release Controlled :	
Company Personnel Notified		How Notified				Date Notified <b>June 3, 2013</b>		Time Notified :	
Type of Incident <b>Treater Popoff</b>			Root Cause of Release <b>Equipment Failure/Malfunction</b>			Date Clean up Activities Concluded <b>June 3, 2013</b>			
Distance to Nearest Residence or Occupied Building				Distance to Nearest Fresh Water Well					
Piping Specifics (If Applicable)		Size (Decimal Format) "		Type		Location of Piping			
Volume of Release		Oil <b>10.00 Barrels</b>		Saltwater <b>2.00 Barrels</b>		Other			
Volume of Release Recovered		Oil <b>10.00 Barrels</b>		Saltwater <b>2.00 Barrels</b>		Other			
Was Release Contained Within Dike <b>No</b>		If No, Was Release Contained on Well Site <b>Yes</b>			If No, Was Release Contained on Facility Site or Pipeline ROW				
Areal Extent of Release if not Within Dike				Affected Medium <b>Well/Facility Soil</b>			General Land Use		
Describe Cause of Release or Fire and Other Type of Incidents, Root Causes of Release, Land Uses, and Released Substances. <b>Heater Tube blew out, sprayed oil and Produced water on pad.</b>									
Action Taken to Control Release and Clean Up Action Undertaken <b>Vacuum truck called in. Oily soil removed.</b>									
Potential Environmental Impacts <b>Spill did not reach any surface or groundwater receptors.</b>									
Planned Future Action and/or Action Taken to Prevent Reoccurrence <b>Better monitoring of heater tubes.</b>									
Where Were Recovered Liquids Disposed <b>Indian Hills</b>					Where Were Recovered Solids Disposed <b>Indian Hills</b>				
Weather Conditions	Wind Speed <b>MPH</b>	Wind Direction	Temperature ° F	Skies		Estimated Cleanup Cost \$		Damage Value \$	
Regulatory Agencies/Others Notified <b>NDIC/NDDH</b>		Person Notified		Date Notified		Time Notified :		Notified By	
Fee Surface Owner						:			
						:			
Federal Agency Lease Number						:			
<b>BLM</b>						:			
<b>USFS</b>						:			
Report Originator <b>Kay Gorka</b>				Title <b>Environmental/Regulatory Analyst</b>			Date <b>April 8, 2016</b>		
Signature 							Date <b>April 8, 2016</b>		

Industrial Commission of North Dakota  
Oil and Gas Division  
Spill / Incident Report

Date/Time Reported : Jun 3 2013 / 10:40  
State Agency person :  
Responsible Party : Slawson  
Well Operator : SLAWSON EXPLORATION COMPANY, INC.  
Date/Time of Incident : 6/1/2013 12:00:00 AM  
NDIC File Number : 22731  
Facility Number :  
Well or Facility Name : MAGNUM 3-36-25H  
Type of Incident : Treater Popoff  
Field Name : BAKER  
County : MCKENZIE  
Section : 36  
Township : 153  
Range : 101  
Quarter-Quarter : SE  
Quarter : SE  
Distance to nearest residence : 3380 Feet  
Distance to nearest water well : 3380 Feet  
Release Oil : 10 barrels  
Release Brine : 2 barrels  
Release Other : 0 barrels  
Recovered Oil : 8.5 barrels  
Recovered Brine : 1.5 barrels  
Recovered Other : 0 barrels  
Has/Will the incident be reported to the NRC? : No  
Was release contained : Yes - On Constructed Well Site  
Description of other released substance : -----

Immediate risk evaluation : none  
Followup Report Requested Y/N : Y

**SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4**

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No.

**22731**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date <b>November 15, 2012</b>
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input checked="" type="checkbox"/> Reclamation
<input checked="" type="checkbox"/> Other	<b>Pit &amp; surface Reclamation</b>

Well Name and Number <b>MAGNUM 3-36-25H</b>					
Footages <b>205 F S L 265 F E L</b>		Qtr-Qtr <b>SESE</b>	Section <b>36</b>	Township <b>153 N</b>	Range <b>101 W</b>
Field <b>BAKER</b>		Pool <b>Bakken</b>		County <b>McKenzie</b>	

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s) <b>See Below</b>			
Address	City	State	Zip Code

**DETAILS OF WORK**

Slawson Exploration Company, Inc. is panning to begin reclamation work on the reserve pit of this well. The surface owner is the State of North Dakota. Any oil in the pit will be skimmed off and used in Invert Mud for drilling other wells. The water will be disposed of by Slawson at various licensed Slawson injection facilities, such as the Sanish 1-9SWD. Once the fluids are removed the cuttings were dried and mixed with fly ash for stabilization. The liner will then be folded over the stabilized cuttings in the pit and buried approximately 6 ft. deep with back fill and topsoil. The site will then re-seeded. This construction will be completed by one of the three following contractors pending availability.

1. Gold Star Production Services, LLC, 6219, 39th Street NW, Plaza, ND, 58771
2. FMR Services Inc., 3767 County Road 99W, Orland, CA, 95963
3. W.L. Neu Construction, Inc., PO Box 461, Fairview, MT, 59221

Company <b>Slawson Exploration Company, Inc.</b>		Telephone Number <b>720-457-9820</b>	
Address <b>1675 Broadway, Suite 1600</b>			
City <b>Denver</b>		State <b>CO</b>	Zip Code <b>80202</b>
Signature 	Printed Name <b>Matt Glenn</b>		
Title <b>Engineering Technician</b>	Date <b>November 8, 2012</b>		
Email Address <b>mglenn@slawsoncompanies.com</b>			

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>11-14-12</b>	
By 	
Title 	



# WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

INDUSTRIAL COMMISSION NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 2468 (04-2010)



Well File No.  
**22731**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Designate Type of Completion			
<input checked="" type="checkbox"/> Oil Well	<input type="checkbox"/> EOR Well	<input type="checkbox"/> Recompletion	<input type="checkbox"/> Deepened Well
<input type="checkbox"/> Gas Well	<input type="checkbox"/> SWD Well	<input type="checkbox"/> Water Supply Well	<input type="checkbox"/> Other:
Well Name and Number <b>MAGNUM 3-36-25H</b>		Spacing Unit Description <b>All of Sect 36 &amp; 25 T153N R101W</b>	
Operator <b>Slawson Exploration Company, Inc.</b>		Telephone Number <b>720-457-9820</b>	
Address <b>1675 Broadway Suite 1600</b>		Field <b>BAKER</b>	
City <b>Denver</b>		State <b>CO</b>	Zip Code <b>80202</b>
		Permit Type <input type="checkbox"/> Wildcat <input checked="" type="checkbox"/> Development <input type="checkbox"/> Extension	

## LOCATION OF WELL

At Surface <b>205 F S L</b>	<b>265 F E L</b>	Qtr-Qtr <b>SESE</b>	Section <b>36</b>	Township <b>153 N</b>	Range <b>101 W</b>	County <b>McKenzie</b>
Spud Date <b>5/7/2012</b>	Date TD Reached <b>6/11/2012</b>	Drilling Contractor and Rig Number <b>Nabors #419</b>		KB Elevation (Ft) <b>2182</b>	Graded Elevation (Ft) <b>2156</b>	
Type of Electric and Other Logs Run (See Instructions) <b>OH Log Waiver - CBL w/ GR and CCL from KOP to 100' above the TOC &amp; GR to surface</b>						

## CASING & TUBULARS RECORD (Report all strings set in well)

Well Bore	String Type	Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	9 5/8	0	2192	13 1/2	36			841	
Vertical Hole	Intermediate	7	0	11126	8 3/4	29 & 32			928	2200
Lateral1	Liner	4 1/2	9292	21145	6	11.6		9292		

## PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft)		Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
			Top	Bottom						
Lateral1	21175	Other	11126	21145	9522	11126	6/11/2012	6/13/2012	PKR	

## PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) <b>11126' to 21145'</b>						Name of Zone (If Different from Pool Name) <b>Middle Bakken</b>			
Date Well Completed (SEE INSTRUCTIONS) <b>7/15/2012</b>		Producing Method <b>Flowing</b>		Pumping-Size & Type of Pump		Well Status (Producing or Shut-In) <b>Producing up a 7" Casing</b>			
Date of Test <b>7/16/2012</b>	Hours Tested <b>24</b>	Choke Size <b>20 /64</b>	Production for Test	Oil (Bbls) <b>496</b>	Gas (MCF) <b>396.8</b>	Water (Bbls) <b>318</b>	Oil Gravity-API (Corr.) <b>42.0 °</b>	Disposition of Gas <b>Flared</b>	
Flowing Tubing Pressure (PSI) <b>810</b>		Flowing Casing Pressure (PSI)		Calculated 24-Hour Rate	Oil (Bbls) <b>496</b>	Gas (MCF) <b>396.8</b>	Water (Bbls) <b>318</b>	Gas-Oil Ratio <b>800</b>	

*orig.*

[illegible]

CORES CUT					
Top (Ft)	Bottom (Ft)	Formation	Top (Ft)	Bottom (Ft)	Formation

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recovery								
Sample Chamber Recovery								
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recovery								
Sample Chamber Recovery								
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recovery								
Sample Chamber Recovery								
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recovery								
Sample Chamber Recovery								
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recovery								
Sample Chamber Recovery								
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recovery								
Sample Chamber Recovery								

### Well Specific Stimulations

Date Stimulated <b>7/7/2012</b>	Stimulated Formation <b>Middle Bakken</b>	Top (Ft) <b>11126</b>	Bottom (Ft) <b>21145</b>	Stimulation Stages <b>35</b>	Volume <b>40332</b>	Volume Units <b>Barrels</b>
Type Treatment <b>Sand Frac</b>	Acid %	Lbs Proppant <b>3630945</b>	Maximum Treatment Pressure (PSI) <b>7548</b>		Maximum Treatment Rate (BBLS/Min) <b>34.0</b>	
Details Fractured the Middle Bakken with 35, stages using fracturing sleeves and packers, with 320087# of 100 Mesh Sand, 3310858# of 20/40 White Sand, and 40332 bbls of clean water.						

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)		Maximum Treatment Rate (BBLS/Min)	
Details						

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)		Maximum Treatment Rate (BBLS/Min)	
Details						

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)		Maximum Treatment Rate (BBLS/Min)	
Details						

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)		Maximum Treatment Rate (BBLS/Min)	
Details						

### ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

Attached are the Certified well location plat and a well bore diagram. The directional surveys, Open hole logs and CBL logs will be sent directly to you from the contractors.

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address mglenn@slawsoncompanies.com		Date 8/9/2012
	Signature 	Printed Name <b>Matthew Glenn</b>	Title <b>Engineering Technician</b>

# WELL LOCATION PLAT

Slawson Exploration Company, Inc.  
1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

205 feet from the south line and 265 feet from the east line (surface location)

Section 36, T. 153 N., R. 101 W., 5th P.M.

250 feet from the north line and 1700 feet from the east line (bottom location)

Section 25, T. 153 N., R. 101 W., 5th P.M.

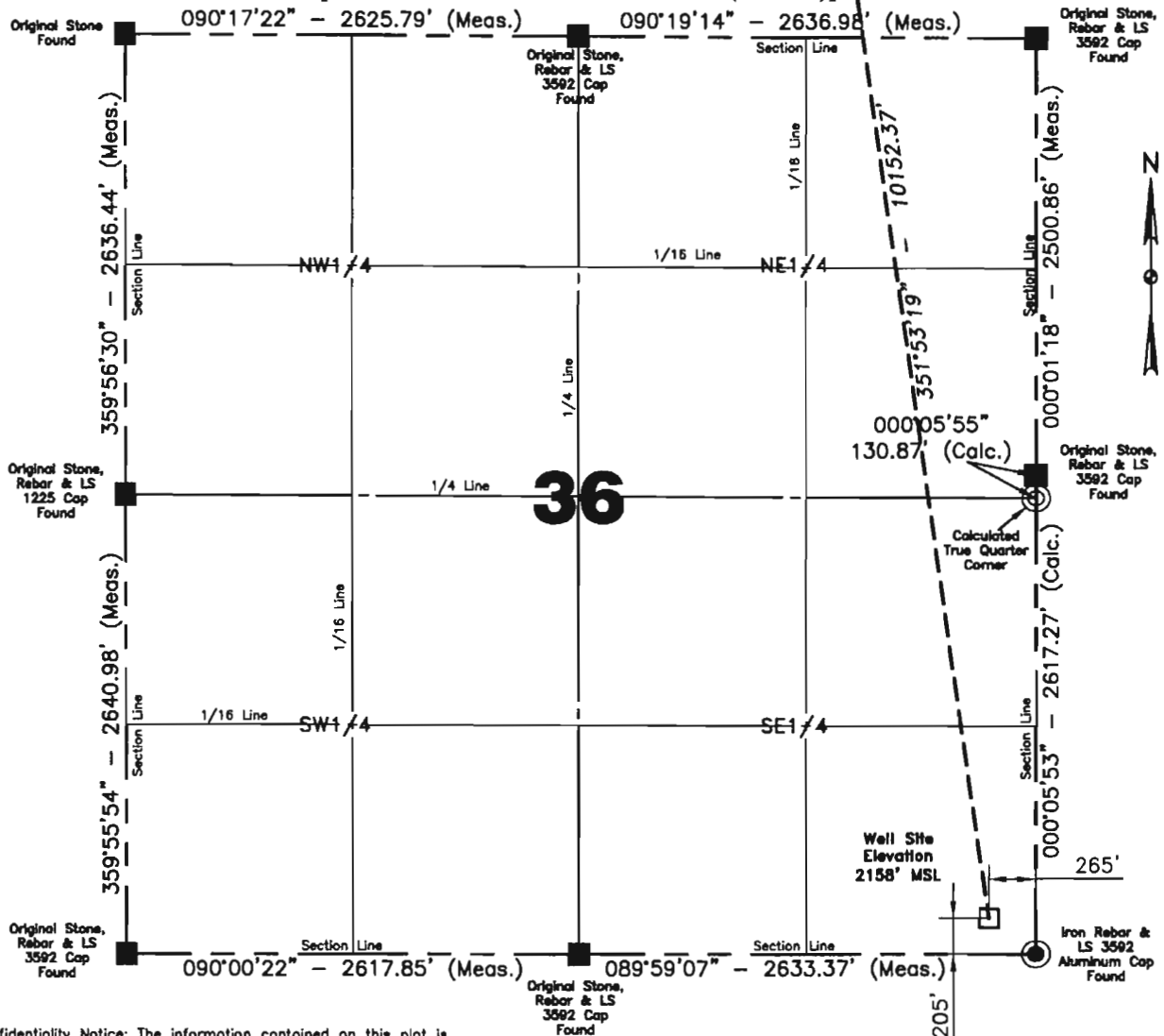
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

Latitude 48°01'29.869" North; Longitude 103°36'18.972" West (surface location)

Latitude 48°03'09.063" North; Longitude 103°36'39.969" West (bottom location)

[Derived from OPUS Solution NAD-83(CORS96)]



Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

NOTE: All land corners are assumed unless otherwise noted. The well location shown hereon is not an as-built location.

Scale 1"=1000'

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

Brian L. Schmalz 8/26/2011  
Surveyed By N.D.P.L.S. # 6809 Date

Vertical Control Datum Used  
Sea-Level Datum of NAVD 88  
Based on elevation derived from OPUS Solution on CP\*KLJ 15-152-10 (Iron rebar) Located a distance of 6192.72' on an azimuth of 270°16'47" from the SW corner of Section 36, T.153N., R.101W., 5th P.M. being at 2134.39' Elevation MSL.

Project No. 3712480

Book OW-257 Pg. 47-50 Staking

Professional Consulting Engineers and Surveyors  
Registered in  
North Dakota, South Dakota  
Montana, Wyoming & Minnesota  
Tele-Fax No. 701-483-2795  
Bus. Phone No. 701-483-1284  
P.O. Box 290  
677 27th Ave. E.  
Dickinson, North Dakota 58602  
Certificate of Authorization #C-061



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

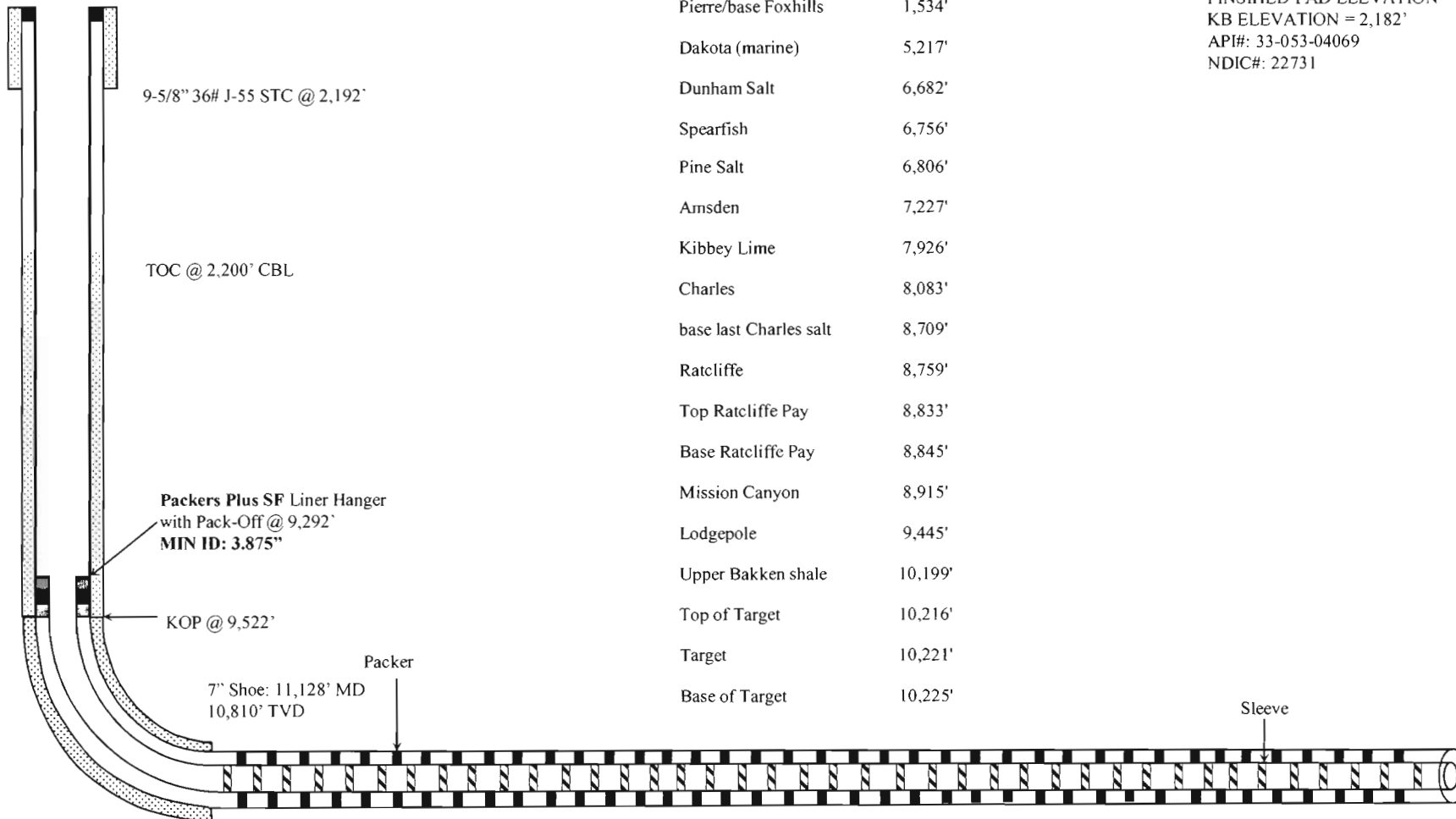
Updated By:  
On:

**WELLBORE DIAGRAM**  
**Magnum 3-36-25H**

Location: 205' FSL and 265' FEL  
SESE Sec 36, T153N-R101W  
McKenzie County, North Dakota

ORIGINAL GL ELEVATION = 2,158'  
FINISHED PAD ELEVATION = 2,156'  
KB ELEVATION = 2,182'  
API#: 33-053-04069  
NDIC#: 22731

Formation	TVD
Pierre/base Foxhills	1,534'
Dakota (marine)	5,217'
Dunham Salt	6,682'
Spearfish	6,756'
Pine Salt	6,806'
Amsden	7,227'
Kibbey Lime	7,926'
Charles	8,083'
base last Charles salt	8,709'
Ratliffe	8,759'
Top Ratcliffe Pay	8,833'
Base Ratcliffe Pay	8,845'
Mission Canyon	8,915'
Lodgepole	9,445'
Upper Bakken shale	10,199'
Top of Target	10,216'
Target	10,221'
Base of Target	10,225'



7" 32# HCP110 from	Surface	to	239'
7" 29# HCP110 from	239'	to	6,609'
7" 32# HCP110 from	6,609'	to	9,421'
7" 29# HCP110 from	9,421'	to	11,126'

**Packers Plus Completion System:**

10,969' of 4-1/2" 11.6# P-110 BTC liner  
with 40 packers, 39 sleeves and a liner  
hanger with pack-off (884' of tools). Set  
Liner at 21,145'

Lateral TD @ 21,175' MD,  
10,784' TVD  
10,047' of Open Hole

**AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8**

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5698 (03-2000)



Well File No.	22731
NDIC CTB No.	122731

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND FOUR COPIES.

Well Name and Number <b>Magnum 3-36-25H</b>	Qtr-Qtr <b>SESE</b>	Section <b>36</b>	Township <b>153 N</b>	Range <b>101 W</b>	County <b>McKenzie</b>
Operator <b>Slawson Exploration Company, Inc.</b>	Telephone Number <b>720-457-9820</b>	Field <b>Baker</b>			
Address <b>1675 Broadway, Suite 1600</b>	City <b>Denver</b>	State <b>CO</b>	Zip Code <b>80202</b>		

Name of First Purchaser <b>Tesoro Corporation Refining &amp; Mktg.</b>	Telephone Number <b>720-258-0604</b>	% Purchased <b>100</b>	Date Effective <b>July 1, 2012</b>
Principal Place of Business <b>1225 17th Street Plaza, Suite 1575</b>	City <b>Denver</b>	State <b>CO</b>	Zip Code <b>80202</b>
Field Address	City	State	Zip Code

Name of Transporter <b>Tesoro Logistics Operations LLC</b>	Telephone Number <b>701-260-8400</b>	% Transported <b>100</b>	Date Effective <b>July 1, 2012</b>
Address <b>1225 17th Street Plaza, Suite 1575</b>	City <b>Denver</b>	State <b>CO</b>	Zip Code <b>80202</b>

The above named producer authorizes the above named purchaser to purchase the percentage of oil stated above which is produced from the lease designated above until further notice. The oil will be transported by the above named transporter.

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments <b>The Magnum 3-36-25H has just been completed. We will request a verbal request to sell 8,000 barrels to allow time for the completion report to be submitted.</b>
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I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.		Date <b>July 20, 2012</b>
Signature 	Printed Name <b>Matt Glenn</b>	Title <b>Engineering Technician</b>
Above Signature Witnessed By Witness Signature 	Witness Printed Name <b>Ashley Berens</b>	Witness Title <b>Accountant</b>

**FOR STATE USE ONLY**

Date Approved <b>JUL 24 2012</b>
By 
Title <b>Oil &amp; Gas Production Analyst</b>

Industrial Commission of North Dakota  
Oil and Gas Division

Well or Facility No  
**22731**

Verbal Approval To Purchase and Transport Oil Tight Hole **Yes**

**OPERATOR**

Operator <b>SLAWSON EXPLORATION COMPANY, INC.</b>	Representative <b>Matt glenn</b>	Rep Phone <b>(720) 457-9820</b>
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**WELL INFORMATION**

Well Name <b>MAGNUM 3-36-25H</b>	Inspector <b>Richard Dunn</b>
Well Location    QQ            Sec            Twp            Rng <b>SESE            36            153 N            101 W</b>	County <b>MCKENZIE</b>
Footages <b>205</b> Feet From the S    Line	Field <b>BAKER</b>
<b>265</b> Feet From the E    Line	Pool <b>BAKKEN</b>
Date of First Production Through Permanent Wellhead	<b>This Is Not The First Sales</b>

**PURCHASER / TRANSPORTER**

Purchaser <b>TESORO REFINING &amp; MKTG.</b>	Transporter <b>TESORO HIGH PLAINS PIPELINE COMPANY LLC</b>
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**TANK BATTERY**

Unit Tank Battery Number :
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**SALES INFORMATION**    This Is Not The First Sales

ESTIMATED BARRELS TO BE SOLD		ACTUAL BARRELS SOLD	DATE
8000	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	
	BBLS	BBLS	

**DETAILS**

Move up to 8000 bbls pending filing of completion report.
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Start Date        **7/20/2012**  
Date Approved   **7/20/2012**  
Approved By     **Robert Garbe**

**EXTREME**  
ENGINEERING

<u>Slawson</u>	<u>Magnum 3-36-25H</u>	<u>May 17, 2012</u>
Company	Well Name	Final Report Date
<u>ND-SLW-0038</u>	<u>McKenzie County, ND</u>	<u>33-053-04069</u>
Job Number	County/State	API Number
<u>N 48 1' 29.71560"</u>	<u>W 103 36' 16.88040"</u>	<u>36-153-101</u>
Surface Latitude	Surface Longitude	Sec. - TWP - Range
<u>NAD83 ND State Plane, Northern Zone, US Feet</u>	<u>Nabors 419</u>	<u>22</u>
Datum	Rig Contractor/ Name	RKB Height
Survey Depths	<u>0</u> to <u>9319</u> ft	
Type of Survey	<u>Measurements While Drilling (MWD)</u>	
Survey Depths	<u>                                </u> ft	
Type of Survey	<u>                                </u>	
Site Supervisor	<u>Jeromy Haggerty</u>	

Jeromy Haggerty  
Basin - FSM

5/17/2012  
Date

This document has been subscribed and affirmed, or sworn before me in the county of Adams in the state of Colorado, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

# Magnum 3-36-25H MWD 0' to 9319' Survey Report

(Def Survey)

Report Date: May 17, 2012 - 09:00 AM  
 Client: Slawson  
 Field: ND, McKenzie County (NAD 83 NZ) 2011  
 Structure / Slot: Slawson (Magnum 3-36-25H) Nabors 419 / Magnum 3-36-25H  
 Well: Magnum 3-36-25H  
 Borehole: Original Hole  
 UWI / API#: ND-SLW-0038 / 33-053-04069  
 Survey Name: Magnum 3-36-25H MWD 0' to 9319'  
 Survey Date: May 17, 2012  
 Tort / AHD / DDI / ERD Ratio: 23.485' / 95.117' ft / 3.349 / 0.010  
 Coordinate Reference System: NAD83 North Dakota State Plane, Northern Zone, US Feet  
 Location Lat / Long: N 48° 1' 29.71560", W 103° 36' 16.88040"  
 Location Grid N/E Y/X: N 389170.274 RUS, E 1208988.946 RUS  
 CRS Grid Convergence Angle: -2.31030280 °  
 Grid Scale Factor: 0.99993638

Survey / DLS Computation: Minimum Curvature / Lubinski  
 Vertical Section Azimuth: 351.880 ° (True North)  
 Vertical Section Origin: 0.000 ft, 0.000 ft  
 TVD Reference Datum: RKB  
 TVD Reference Elevation: 2178.000 ft above MSL  
 Seabed / Ground Elevation: 2156.000 ft above MSL  
 Magnetic Declination: 8.650 °  
 Total Field Strength: 56558.441 nT  
 Magnetic Dip Angle: 73.017 °  
 Declination Date: May 17, 2012  
 Magnetic Declination Model: BGGM 2011  
 North Reference: True North  
 Grid Convergence Used: 0.000 °  
 Total Corr Mag North→True North: 8.650 °  
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	389170.27	1208988.95	N 48° 1' 29.72"	W 103° 36' 16.88"
Assumed Vertical	2192.00	0.00	0.00	2192.00	0.00	0.00	0.00	0.00	389170.27	1208988.95	N 48° 1' 29.72"	W 103° 36' 16.88"
Start MWD Survey	2196.00	1.14	201.83	2196.00	-0.03	-0.04	-0.01	28.50	389170.24	1208988.93	N 48° 1' 29.72"	W 103° 36' 16.88"
	2207.00	1.14	209.57	2207.00	-0.22	-0.23	-0.11	1.40	389170.05	1208988.83	N 48° 1' 29.71"	W 103° 36' 16.88"
	2255.00	1.32	252.46	2254.99	-0.58	-0.82	-0.87	1.91	389169.49	1208988.04	N 48° 1' 29.71"	W 103° 36' 16.89"
	2296.00	2.46	266.26	2297.96	-0.69	-1.03	-2.27	2.84	389169.34	1208986.54	N 48° 1' 29.71"	W 103° 36' 16.91"
	2350.00	2.61	271.36	2349.91	-0.40	-1.07	-4.65	0.81	389169.40	1208984.25	N 48° 1' 29.71"	W 103° 36' 16.95"
	2446.00	2.81	272.67	2445.79	0.43	-0.90	-9.36	0.07	389169.75	1208979.56	N 48° 1' 29.71"	W 103° 36' 17.02"
	2541.00	2.64	270.39	2540.69	1.19	-0.78	-13.87	0.21	389170.06	1208975.06	N 48° 1' 29.71"	W 103° 36' 17.06"
	2637.00	2.46	269.51	2636.59	1.80	-0.78	-18.14	0.19	389170.22	1208970.79	N 48° 1' 29.71"	W 103° 36' 17.15"
	2732.00	2.11	269.07	2731.51	2.29	-0.83	-21.93	0.37	389170.33	1208967.00	N 48° 1' 29.71"	W 103° 36' 17.20"
	2828.00	2.11	268.37	2827.45	2.71	-0.91	-25.48	0.03	389170.40	1208963.47	N 48° 1' 29.71"	W 103° 36' 17.25"
	2923.00	2.11	270.83	2922.39	3.18	-0.93	-28.96	0.10	389170.51	1208959.97	N 48° 1' 29.71"	W 103° 36' 17.31"
	3019.00	1.93	263.53	3018.33	3.50	-1.09	-32.33	0.33	389170.49	1208956.60	N 48° 1' 29.70"	W 103° 36' 17.36"
	3113.00	2.02	268.28	3112.27	3.73	-1.32	-35.56	0.20	389170.39	1208953.36	N 48° 1' 29.70"	W 103° 36' 17.40"
	3209.00	1.67	270.48	3208.22	4.13	-1.35	-38.65	0.37	389170.48	1208950.27	N 48° 1' 29.70"	W 103° 36' 17.45"
	3305.00	0.62	271.18	3304.20	4.43	-1.33	-40.57	1.09	389170.58	1208948.36	N 48° 1' 29.70"	W 103° 36' 17.48"
	3401.00	0.62	261.86	3400.19	4.51	-1.39	-41.60	0.10	389170.58	1208947.32	N 48° 1' 29.70"	W 103° 36' 17.49"
	3496.00	0.70	268.52	3495.19	4.56	-1.50	-42.69	0.10	389170.49	1208946.23	N 48° 1' 29.70"	W 103° 36' 17.51"
	3591.00	0.62	244.72	3590.16	4.45	-1.76	-43.73	0.28	389170.28	1208945.18	N 48° 1' 29.70"	W 103° 36' 17.52"
	3688.00	0.53	281.02	3687.18	4.45	-1.90	-44.65	0.38	389170.18	1208944.26	N 48° 1' 29.70"	W 103° 36' 17.54"
	3784.00	0.26	263.36	3783.17	4.60	-1.84	-45.30	0.31	389170.27	1208943.61	N 48° 1' 29.70"	W 103° 36' 17.55"
	3880.00	0.16	242.53	3879.17	4.55	-1.93	-45.65	0.12	389170.19	1208943.26	N 48° 1' 29.70"	W 103° 36' 17.55"
	3974.00	0.00	50.13	3973.17	4.50	-2.00	-45.78	0.19	389170.12	1208943.12	N 48° 1' 29.70"	W 103° 36' 17.55"
	4070.00	0.26	241.56	4069.17	4.43	-2.10	-45.97	0.27	389170.03	1208942.93	N 48° 1' 29.69"	W 103° 36' 17.56"
	4165.00	0.26	196.47	4164.17	4.16	-2.41	-46.23	0.21	389169.73	1208942.66	N 48° 1' 29.69"	W 103° 36' 17.56"
	4261.00	0.18	145.06	4260.17	3.82	-2.74	-46.20	0.21	389169.39	1208942.67	N 48° 1' 29.69"	W 103° 36' 17.56"
	4356.00	0.44	144.27	4355.17	3.37	-3.16	-45.90	0.27	389168.96	1208942.96	N 48° 1' 29.68"	W 103° 36' 17.56"
	4452.00	0.18	171.34	4451.17	2.89	-3.61	-45.66	0.30	389168.51	1208943.18	N 48° 1' 29.68"	W 103° 36' 17.55"
	4547.00	0.09	57.52	4546.17	2.77	-3.72	-45.58	0.24	389168.40	1208943.26	N 48° 1' 29.68"	W 103° 36' 17.55"
	4642.00	0.16	14.01	4641.17	2.94	-3.53	-45.46	0.14	389168.58	1208943.36	N 48° 1' 29.68"	W 103° 36' 17.55"
	4737.00	0.00	118.51	4736.17	3.08	-3.39	-45.44	0.19	389168.72	1208943.41	N 48° 1' 29.68"	W 103° 36' 17.55"
	4833.00	0.09	102.52	4832.17	3.05	-3.41	-45.37	0.09	389168.70	1208943.48	N 48° 1' 29.68"	W 103° 36' 17.55"
	4929.00	0.18	118.95	4928.17	2.94	-3.49	-45.16	0.10	389168.60	1208943.66	N 48° 1' 29.68"	W 103° 36' 17.54"
	5024.00	0.18	121.24	5023.17	2.75	-3.64	-44.91	0.01	389168.44	1208943.93	N 48° 1' 29.68"	W 103° 36' 17.54"
	5119.00	0.26	81.51	5118.17	2.66	-3.69	-44.57	0.16	389168.38	1208944.27	N 48° 1' 29.68"	W 103° 36' 17.54"
	5215.00	0.53	125.98	5214.16	2.35	-3.92	-43.99	0.41	389168.13	1208944.64	N 48° 1' 29.68"	W 103° 36' 17.53"
	5310.00	0.70	69.38	5309.16	2.17	-3.97	-43.09	0.63	389168.04	1208945.73	N 48° 1' 29.68"	W 103° 36' 17.51"
	5406.00	0.79	96.28	5405.15	2.13	-3.64	-41.89	0.37	389168.13	1208946.94	N 48° 1' 29.68"	W 103° 36' 17.50"
	5501.00	0.88	98.65	5500.14	1.76	-4.02	-40.51	0.10	389167.89	1208948.31	N 48° 1' 29.68"	W 103° 36' 17.48"
	5596.00	0.44	246.57	5595.14	1.45	-4.27	-40.13	1.34	389167.62	1208948.68	N 48° 1' 29.67"	W 103° 36' 17.47"
	5691.00	0.44	246.92	5690.14	1.26	-4.56	-40.80	0.00	389167.36	1208948.00	N 48° 1' 29.67"	W 103° 36' 17.48"
	5786.00	0.79	256.41	5785.13	1.10	-4.86	-41.77	0.38	389167.10	1208947.02	N 48° 1' 29.67"	W 103° 36' 17.49"
	5882.00	1.23	247.36	5881.12	0.78	-5.41	-43.36	0.49	389166.62	1208945.40	N 48° 1' 29.66"	W 103° 36' 17.52"
	5977.00	0.53	252.46	5976.10	0.46	-5.94	-44.72	0.74	389166.15	1208944.02	N 48° 1' 29.66"	W 103° 36' 17.54"
	6072.00	0.26	309.94	6071.10	0.54	-5.93	-45.31	0.47	389166.18	1208943.44	N 48° 1' 29.66"	W 103° 36' 17.55"
	6167.00	0.82	27.99	6166.10	1.12	-5.34	-45.23	0.85	389166.76	1208943.54	N 48° 1' 29.66"	W 103° 36' 17.55"
	6263.00	0.70	15.59	6262.09	2.08	-4.31	-44.83	0.17	389167.77	1208943.98	N 48° 1' 29.67"	W 103° 36' 17.54"
	6359.00	0.70	16.47	6358.09	3.15	-3.19	-44.51	0.01	389168.88	1208944.35	N 48° 1' 29.68"	W 103° 36' 17.54"
	6454.00	0.79	26.14	6453.08	4.22	-2.04	-44.05	0.16	389170.01	1208944.85	N 48° 1' 29.70"	W 103° 36' 17.53"
	6550.00	0.44	17.53	6549.07	5.09	-1.10	-43.65	0.38	389170.94	1208945.29	N 48° 1' 29.70"	W 103° 36' 17.52"
	6644.00	0.53	19.02	6643.07	5.81	-0.34	-43.40	0.10	389171.68	1208945.57	N 48° 1' 29.71"	W 103° 36' 17.52"
	6740.00	0.62	29.13	6739.06	6.61	0.53	-43.00	0.14	389172.54	1208946.00	N 48° 1' 29.72"	W 103° 36' 17.51"
	6835.00	0.26	39.94	6834.06	7.17	1.15	-42.61	0.39	389173.14	1208946.41	N 48° 1' 29.73"	W 103° 36' 17.51"
	6930.00	0.09	119.39	6929.06	7.27	1.27	-42.41	0.27	389173.26	1208946.62	N 48° 1' 29.73"	W 103° 36' 17.50"
	7026.00	0.00	99.53	7025.06	7.22	1.24	-42.35	0.09	389173.22	1208946.69	N 48° 1' 29.73"	W 103° 36' 17.50"
	7122.00	0.26	129.94	7121.06	7.09	1.10	-42.18	0.27	389173.07	1208946.85	N 48° 1' 29.73"	W 103° 36' 17.50"
	7218.00	0.62	131.61	7217.06	6.50	0.61	-41.62	0.38	389172.56	1208947.38	N 48° 1' 29.72"	W 103° 36' 17.49"
	7314.00	0.26	120.89	7313.05	5.97	0.16	-41.05	0.38	389172.08	1208947.94	N 48° 1' 29.72"	W 103° 36' 17.48"
	7409.00	0.44	108.85	7408.05	5.66	-0.07	-40.52	0.20	389171.83	1208948.46	N 48° 1' 29.71"	W 103° 36' 17.48"
	7503.00	0.53	142.68	7502.05	5.12	-0.54	-39.91	0.31	389171.35	1208949.05	N 48° 1' 29.71"	W 103° 36' 17.47"
	7599.00	0.82	161.03	7598.04	4.22	-1.38	-39.47	0.21	389170.48	1208949.45	N 48° 1' 29.70"	W 103° 36' 17.46"
	7695.00	0.62	164.83	7694.04	3.20	-2.37	-39.17	0.04	389169.48	1208949.71	N 48° 1' 29.69"	W 103° 36' 17.46"
	7790.00	0.53	174.94	7789.03	2.25	-3.31	-39.00	0.14	389168.54	1208949.85	N 48° 1' 29.68"	W 103° 36' 17.45"
	7886.00	0.70	164.04	7885.03	1.22	-4.31	-38.80	0.21	389167.53	1208950.01	N 48° 1' 29.67"	W 103° 36' 17.45"
	7982.00	1.23	168.79	7981.01	-0.39	-5.89	-38.43	0.56	389165.94	1208950.31	N 48° 1' 29.66"	W 103° 36' 17.45"

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS ("/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	8077.00	0.79	224.86	8076.00	-1.80	-7.35	-38.70	1.08	389164.49	1208949.98	N 48 1 29.64	W 103 36 17.45
	8173.00	0.79	196.47	8171.99	-2.80	-8.45	-39.35	0.40	389163.41	1208948.29	N 48 1 29.63	W 103 36 17.46
	8268.00	0.88	197.97	8266.98	-4.05	-9.78	-39.76	0.10	389162.11	1208948.82	N 48 1 29.62	W 103 36 17.47
	8364.00	0.88	192.17	8362.97	-5.40	-11.20	-40.15	0.09	389160.70	1208948.38	N 48 1 29.61	W 103 36 17.47
	8460.00	0.88	204.73	8458.96	-6.71	-12.59	-40.61	0.20	389159.33	1208947.86	N 48 1 29.59	W 103 36 17.48
	8556.00	0.97	191.64	8554.95	-8.10	-14.05	-41.08	0.24	389157.89	1208947.33	N 48 1 29.58	W 103 36 17.48
	8652.00	0.97	204.21	8650.93	-9.55	-15.59	-41.58	0.22	389156.37	1208946.77	N 48 1 29.56	W 103 36 17.49
	8746.00	1.14	198.05	8744.92	-11.06	-17.21	-42.20	0.22	389154.78	1208946.09	N 48 1 29.55	W 103 36 17.50
	8842.00	0.70	203.88	8840.91	-12.41	-18.65	-42.73	0.47	389153.36	1208945.50	N 48 1 29.53	W 103 36 17.51
	8936.00	0.53	208.51	8934.90	-13.25	-19.56	-43.17	0.19	389152.47	1208945.03	N 48 1 29.52	W 103 36 17.52
	9032.00	0.53	229.26	9030.90	-13.85	-20.24	-43.71	0.20	389151.82	1208944.45	N 48 1 29.52	W 103 36 17.52
	9127.00	0.44	221.52	9125.89	-14.32	-20.80	-44.29	0.12	389151.28	1208943.86	N 48 1 29.51	W 103 36 17.53
	9222.00	0.70	210.71	9220.89	-15.01	-21.57	-44.83	0.29	389150.53	1208943.29	N 48 1 29.50	W 103 36 17.54
End MWD Survey	9319.00	0.62	213.26	9317.88	-15.86	-22.52	-45.42	0.09	389149.81	1208942.66	N 48 1 29.49	W 103 36 17.55

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma  
Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Survey Tool Type	Borehole / Survey
	0.000	22.000	1/22.000	SLB_BLIND+TREND-Depth Only	Original Hole / Magnum 3-36-25H MWD 0' to 9319'
	22.000	2192.000	1/98.425	SLB_BLIND+TREND	Original Hole / Magnum 3-36-25H MWD 0' to 9319'
	2192.000	2192.000	Act Strs	SLB_BLIND+TREND	Original Hole / Magnum 3-36-25H MWD 0' to 9319'
	2192.000	9319.000	1/7127.000	SLB_MWD-STD	Original Hole / Magnum 3-36-25H MWD 0' to 9319'



**Weatherford®**

## **Survey Certification Sheet**

**Company Name:** Slawson Exploration Company, INC.

**Well Name:** Magnum 3-36-25H

**Lease:** Sec36, T153N, R101W

**API#:**33-053-04069

**County and State:** McKenzie, ND

**Date:** 7-27-12

**Survey from a depth of:**2250 to a depth of 10290 MD

**Type of survey:**Magnometer

These Surveys are true to the best of our knowledge given the information received on location in regards to longitude and latitude and magnetic declaration at the time of the surveys. The surveys were checked by me and conform and meet all Weatherford International standards and procedures. This log represents a true and correct directional survey of this well based on original data obtained at well site.

**Wireline Engineer:** Jacob Lee

Weatherford International Ltd.

13988 West Front St.

Williston, ND 58801

# HALLIBURTON

6360 EAST YELLOWSTONE HWY • EVANSVILLE, WY 82636

TEL: 307-472-5757 • FAX: 307-232-2097

## Certified Survey Sheet

Customer: Slawson Exploration  
Well: Magnum 3-36-25H  
Legal: Sec. 36-T153N-R101W  
County: McKenzie County  
State: North Dakota  
Calculation Method: Minimum Curvature

I certify that the attached survey is true and correct to the best of my knowledge.



---

Bridget Brennecke  
Well Planner

# Slawson Exploration Company, Inc.

McKenzie County, ND

Sec. 36-T153N-R101W

Magnum 3-36-25H

Plan A

Survey: Sperry MWD Surveys

## Sperry Drilling Services

## Standard Report

18 June, 2012

Well Coordinates: 389,191.53 N, 1,208,847.52 E (48° 01' 29.87" N, 103° 36' 18.97" W)

Ground Level: 2,156.00 ft

Local Coordinate Origin:

Centered on Well Magnum 3-36-25H

Viewing Datum:

RKB (22') @ 2178.00ft (Nabors 419)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

**HALLIBURTON**

**Survey Report for Magnum 3-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
10,260.00	0.30	208.70	10,258.85	-28.20	-51.04	-20.69	0.00
<b>Tie-On to Weatherford Gyro Surveys @ 10260.00 ft.</b>							
10,306.00	1.62	296.19	10,304.84	-28.02	-51.68	-20.42	3.55
<b>First Sperry MWD Survey @ 10306.00 ft.</b>							
10,338.00	7.05	305.96	10,336.74	-26.67	-53.68	-18.80	17.06
10,370.00	13.00	307.32	10,368.23	-23.33	-58.13	-14.86	18.61
10,401.00	17.32	308.65	10,398.15	-18.33	-64.51	-9.01	13.98
10,433.00	20.84	307.38	10,428.39	-11.90	-72.76	-1.48	11.08
10,465.00	24.02	307.63	10,457.96	-4.47	-82.44	7.25	9.94
10,497.00	27.23	307.09	10,486.81	3.93	-93.44	17.12	10.06
10,528.00	30.57	305.72	10,513.95	12.81	-105.51	27.62	10.98
10,560.00	33.88	306.47	10,541.01	22.87	-119.29	39.53	10.42
10,592.00	36.67	306.55	10,567.13	33.86	-134.14	52.51	8.72
10,624.00	39.47	307.55	10,592.32	45.75	-149.88	66.51	8.96
10,656.00	42.26	307.40	10,616.52	58.49	-166.50	81.47	8.72
10,688.00	45.33	307.94	10,639.62	72.02	-184.02	97.35	9.66
10,719.00	47.56	307.66	10,660.98	85.79	-201.78	113.50	7.22
10,751.00	49.90	307.17	10,682.08	100.40	-220.88	130.66	7.40
10,783.00	52.81	306.78	10,702.06	115.43	-240.84	148.37	9.14
10,815.00	55.97	306.97	10,720.69	131.04	-261.65	166.77	9.89
10,847.00	59.31	307.01	10,737.82	147.30	-283.24	185.92	10.44
10,878.00	62.99	306.48	10,752.78	163.54	-304.99	205.08	11.96
10,910.00	66.72	306.43	10,766.37	180.75	-328.29	225.41	11.66
10,942.00	69.49	307.49	10,778.30	198.60	-352.01	246.44	9.19
10,974.00	72.67	307.37	10,788.68	217.00	-376.05	268.06	9.94
11,006.00	76.14	307.35	10,797.28	235.70	-400.54	290.04	10.84
11,037.00	80.35	307.37	10,803.59	254.11	-424.66	311.68	13.58
11,069.00	85.53	306.66	10,807.52	273.22	-450.01	334.19	16.34
11,094.00	87.90	306.83	10,808.96	288.15	-470.01	351.80	9.50
11,128.00	89.54	303.08	10,809.72	307.62	-497.86	375.02	12.04
11,160.00	90.12	304.73	10,809.81	325.47	-524.42	396.45	5.47
11,223.00	90.62	306.19	10,809.40	362.02	-575.73	439.89	2.45
11,317.00	90.28	307.89	10,808.67	418.64	-650.76	506.56	1.84
11,412.00	91.02	310.59	10,807.59	478.72	-724.32	576.46	2.95
11,507.00	89.97	313.07	10,806.77	542.07	-795.10	649.19	2.83
11,601.00	89.85	316.64	10,806.91	608.36	-861.73	724.24	3.80
11,696.00	90.25	319.37	10,806.83	678.96	-925.28	803.13	2.90
11,791.00	90.06	322.96	10,806.57	752.95	-984.84	884.80	3.78
11,886.00	91.39	326.39	10,805.37	830.44	-1,039.76	969.29	3.87
11,981.00	91.02	327.00	10,803.37	909.82	-1,091.91	1,055.25	0.75
12,076.00	91.20	328.80	10,801.53	990.27	-1,142.38	1,142.05	1.90
12,171.00	90.68	331.23	10,799.98	1,072.54	-1,189.85	1,230.20	2.62
12,266.00	90.46	333.84	10,799.03	1,156.82	-1,233.66	1,319.84	2.76
12,361.00	89.11	335.66	10,799.39	1,242.74	-1,274.18	1,410.63	2.39
12,456.00	89.01	339.74	10,800.95	1,330.61	-1,310.22	1,502.71	4.30
12,551.00	89.17	342.14	10,802.45	1,420.38	-1,341.23	1,595.97	2.53
12,646.00	89.75	345.42	10,803.35	1,511.58	-1,367.76	1,690.01	3.51
12,741.00	89.91	348.94	10,803.63	1,604.20	-1,388.84	1,784.68	3.71
12,836.00	89.94	351.50	10,803.76	1,697.81	-1,404.98	1,879.63	2.69
12,932.00	90.12	353.75	10,803.71	1,793.01	-1,417.30	1,975.62	2.35

**Survey Report for Magnum 3-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
13,027.00	90.15	354.79	10,803.48	1,887.53	-1,426.78	2,070.53	1.10
13,122.00	90.59	358.52	10,802.87	1,982.35	-1,432.33	2,165.18	3.95
13,154.00	90.68	359.58	10,802.51	2,014.34	-1,432.86	2,196.93	3.32
13,217.00	90.80	358.90	10,801.70	2,077.33	-1,433.69	2,259.40	1.10
13,280.00	91.17	359.12	10,800.62	2,140.31	-1,434.78	2,321.90	0.68
13,312.00	91.57	358.96	10,799.85	2,172.30	-1,435.32	2,353.64	1.35
13,375.00	90.74	359.33	10,798.58	2,235.28	-1,436.26	2,416.12	1.44
13,407.00	90.12	359.34	10,798.34	2,267.28	-1,436.63	2,447.84	1.94
13,501.00	89.85	359.72	10,798.37	2,361.27	-1,437.40	2,541.00	0.50
13,596.00	89.63	359.26	10,798.80	2,456.27	-1,438.24	2,635.16	0.54
13,691.00	90.00	358.68	10,799.10	2,551.25	-1,439.95	2,729.43	0.72
13,787.00	89.51	358.94	10,799.52	2,647.23	-1,441.95	2,824.72	0.58
13,882.00	90.12	358.72	10,799.82	2,742.21	-1,443.89	2,919.02	0.68
13,976.00	89.81	359.01	10,799.88	2,836.19	-1,445.75	3,012.32	0.45
14,071.00	89.75	358.30	10,800.24	2,931.16	-1,447.98	3,106.65	0.75
14,164.00	89.11	357.96	10,801.17	3,024.11	-1,451.01	3,199.09	0.78
14,259.00	90.93	357.85	10,801.14	3,119.04	-1,454.48	3,293.56	1.92
14,353.00	90.55	358.04	10,799.92	3,212.97	-1,457.85	3,387.02	0.45
14,447.00	89.69	359.08	10,799.73	3,306.94	-1,460.22	3,480.37	1.44
14,540.00	90.89	1.15	10,799.25	3,399.93	-1,460.03	3,572.40	2.57
14,634.00	89.66	0.15	10,798.80	3,493.92	-1,458.96	3,665.29	1.69
14,728.00	90.71	1.33	10,798.50	3,587.91	-1,457.75	3,758.16	1.68
14,821.00	90.74	1.19	10,797.32	3,680.88	-1,455.71	3,849.91	0.15
14,914.00	91.20	1.95	10,795.75	3,773.83	-1,453.16	3,941.56	0.96
15,008.00	89.01	0.96	10,795.58	3,867.79	-1,450.77	4,034.24	2.56
15,101.00	89.78	0.46	10,796.56	3,960.78	-1,449.62	4,126.13	0.99
15,196.00	89.14	0.60	10,797.45	4,055.77	-1,448.74	4,220.04	0.69
15,291.00	89.32	0.09	10,798.73	4,150.76	-1,448.17	4,313.99	0.57
15,385.00	89.97	0.33	10,799.31	4,244.76	-1,447.82	4,406.99	0.74
15,480.00	90.89	0.57	10,798.60	4,339.75	-1,447.08	4,500.92	1.00
15,543.00	91.39	0.75	10,797.35	4,402.74	-1,446.35	4,563.17	0.84
15,575.00	90.80	1.39	10,796.74	4,434.72	-1,445.75	4,594.75	2.72
15,607.00	89.78	1.49	10,796.57	4,466.71	-1,444.95	4,626.30	3.20
15,669.00	89.20	0.60	10,797.13	4,528.70	-1,443.82	4,687.50	1.71
15,733.00	88.43	359.65	10,798.45	4,592.68	-1,443.68	4,750.82	1.91
15,764.00	88.58	359.91	10,799.26	4,623.67	-1,443.80	4,781.52	0.97
15,796.00	89.85	359.79	10,799.70	4,655.67	-1,443.88	4,813.20	3.99
15,860.00	89.75	359.57	10,799.92	4,719.67	-1,444.24	4,876.61	0.38
15,955.00	89.97	359.60	10,800.15	4,814.67	-1,444.93	4,970.74	0.23
16,050.00	90.34	359.37	10,799.89	4,909.66	-1,445.78	5,064.90	0.46
16,144.00	91.33	359.89	10,798.52	5,003.65	-1,446.39	5,158.03	1.19
16,240.00	89.48	0.84	10,797.85	5,099.64	-1,445.78	5,252.97	2.17
16,335.00	89.69	0.31	10,798.53	5,194.63	-1,444.82	5,346.87	0.60
16,430.00	90.37	359.83	10,798.48	5,289.63	-1,444.71	5,440.89	0.88
16,462.00	90.31	359.93	10,798.29	5,321.63	-1,444.78	5,472.58	0.36
16,525.00	90.46	359.70	10,797.87	5,384.63	-1,444.98	5,534.97	0.44
16,557.00	90.71	0.34	10,797.54	5,416.62	-1,444.97	5,566.65	2.15
16,621.00	90.59	1.11	10,796.82	5,480.62	-1,444.16	5,629.88	1.22
16,716.00	90.22	1.38	10,796.15	5,575.59	-1,442.09	5,723.60	0.48
16,804.00	89.29	2.84	10,796.52	5,663.53	-1,438.85	5,810.19	1.97
16,835.00	88.37	3.17	10,797.16	5,694.48	-1,437.23	5,840.60	3.15

**Survey Report for Magnum 3-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
16,897.00	89.60	2.50	10,798.25	5,756.39	-1,434.16	5,901.46	2.26
16,990.00	90.19	3.48	10,798.42	5,849.26	-1,429.31	5,992.71	1.23
17,085.00	89.44	3.00	10,798.73	5,944.11	-1,423.94	6,085.84	0.94
17,180.00	89.35	2.75	10,799.73	6,038.98	-1,419.18	6,179.08	0.28
17,275.00	89.04	3.12	10,801.07	6,133.85	-1,414.31	6,272.30	0.51
17,370.00	89.07	1.09	10,802.64	6,228.77	-1,410.83	6,365.77	2.14
17,465.00	89.54	1.09	10,803.79	6,323.74	-1,409.02	6,459.53	0.49
17,559.00	89.75	1.33	10,804.37	6,417.72	-1,407.03	6,552.28	0.34
17,654.00	90.03	0.14	10,804.55	6,512.71	-1,405.82	6,646.14	1.29
17,749.00	90.46	0.36	10,804.15	6,607.71	-1,405.40	6,740.13	0.51
17,813.00	90.62	0.45	10,803.54	6,671.70	-1,404.95	6,803.41	0.29
17,844.00	90.56	0.02	10,803.22	6,702.70	-1,404.82	6,834.08	1.40
17,939.00	89.97	359.51	10,802.79	6,797.70	-1,405.21	6,928.18	0.82
18,034.00	89.88	358.43	10,802.91	6,892.68	-1,406.92	7,022.45	1.14
18,065.00	90.25	358.80	10,802.87	6,923.67	-1,407.67	7,053.23	1.69
18,129.00	90.74	358.76	10,802.32	6,987.66	-1,409.03	7,116.76	0.77
18,192.00	91.33	359.10	10,801.18	7,050.63	-1,410.21	7,179.27	1.08
18,224.00	91.51	359.19	10,800.39	7,082.62	-1,410.68	7,211.00	0.63
18,256.00	91.63	359.36	10,799.51	7,114.61	-1,411.09	7,242.72	0.65
18,319.00	90.65	358.75	10,798.26	7,177.58	-1,412.13	7,305.21	1.83
18,415.00	90.96	358.78	10,796.91	7,273.55	-1,414.20	7,400.51	0.32
18,510.00	91.30	359.23	10,795.04	7,368.52	-1,415.85	7,494.75	0.59
18,606.00	90.65	358.98	10,793.40	7,464.49	-1,417.35	7,589.97	0.73
18,670.00	90.52	358.90	10,792.75	7,528.48	-1,418.53	7,653.48	0.24
18,701.00	90.49	358.63	10,792.48	7,559.47	-1,419.20	7,684.25	0.88
18,795.00	90.80	358.98	10,791.42	7,653.44	-1,421.16	7,777.56	0.50
18,827.00	91.02	358.99	10,790.91	7,685.43	-1,421.72	7,809.31	0.69
18,890.00	89.54	359.39	10,790.60	7,748.43	-1,422.61	7,871.79	2.43
18,953.00	89.69	359.32	10,791.03	7,811.42	-1,423.32	7,934.25	0.26
18,985.00	89.75	359.67	10,791.18	7,843.42	-1,423.61	7,965.97	1.11
19,080.00	88.92	358.98	10,792.29	7,938.40	-1,424.73	8,060.15	1.14
19,112.00	88.64	358.76	10,792.97	7,970.39	-1,425.36	8,091.91	1.11
19,175.00	90.31	358.98	10,793.54	8,033.37	-1,426.60	8,154.43	2.67
19,269.00	90.86	359.30	10,792.59	8,127.36	-1,428.01	8,247.67	0.68
19,363.00	90.43	359.32	10,791.53	8,221.34	-1,429.14	8,340.87	0.46
19,458.00	89.88	358.85	10,791.27	8,316.33	-1,430.66	8,435.11	0.76
19,553.00	90.00	358.92	10,791.37	8,411.31	-1,432.51	8,529.40	0.15
19,648.00	88.89	358.32	10,792.29	8,506.28	-1,434.79	8,623.73	1.33
19,743.00	89.91	359.83	10,793.28	8,601.26	-1,436.33	8,717.97	1.92
19,838.00	91.08	0.74	10,792.46	8,696.25	-1,435.86	8,811.94	1.56
19,933.00	91.30	1.23	10,790.49	8,791.22	-1,434.22	8,905.72	0.57
19,964.00	91.14	1.52	10,789.83	8,822.20	-1,433.48	8,936.28	1.07
19,996.00	90.43	1.44	10,789.39	8,854.19	-1,432.65	8,967.83	2.23
20,027.00	89.54	0.69	10,789.40	8,885.18	-1,432.08	8,998.43	3.75
20,122.00	89.51	1.18	10,790.19	8,980.16	-1,430.53	9,092.24	0.52
20,154.00	90.59	1.79	10,790.16	9,012.15	-1,429.70	9,123.79	3.88
20,217.00	89.69	2.26	10,790.01	9,075.11	-1,427.47	9,185.80	1.61
20,312.00	90.03	2.26	10,790.24	9,170.04	-1,423.72	9,279.24	0.36
20,407.00	91.17	2.80	10,789.24	9,264.94	-1,419.53	9,372.59	1.33
20,502.00	91.36	3.27	10,787.15	9,359.78	-1,414.50	9,465.76	0.53
20,597.00	90.09	2.29	10,785.94	9,454.66	-1,409.90	9,559.03	1.69

**Survey Report for Magnum 3-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
20,692.00	89.63	2.25	10,786.18	9,549.58	-1,406.13	9,652.47	0.49
20,786.00	92.03	2.58	10,784.81	9,643.48	-1,402.17	9,744.86	2.58
20,882.00	90.28	2.71	10,782.88	9,739.36	-1,397.74	9,839.14	1.83
20,945.00	90.52	4.26	10,782.44	9,802.24	-1,393.91	9,900.85	2.49
20,977.00	90.71	5.03	10,782.10	9,834.13	-1,391.32	9,932.05	2.48
21,071.00	88.52	4.08	10,782.73	9,927.82	-1,383.86	10,023.75	2.54
21,127.00	89.97	5.29	10,783.47	9,983.63	-1,379.29	10,078.34	3.37
<b>Final Sperry MWD Survey @ 21127.00 ft.</b>							
21,175.00	89.97	5.29	10,783.49	10,031.43	-1,374.86	10,125.03	0.00
<b>Straight Line Projection to TD @ 21175.00 ft.</b>							

**Survey Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,260.00	10,258.85	-28.20	-51.04	Tie-On to Weatherford Gyro Surveys @ 10260.00 ft.
10,306.00	10,304.84	-28.02	-51.68	First Sperry MWD Survey @ 10306.00 ft.
21,127.00	10,783.47	9,983.63	-1,379.29	Final Sperry MWD Survey @ 21127.00 ft.
21,175.00	10,783.49	10,031.43	-1,374.86	Straight Line Projection to TD @ 21175.00 ft.

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Magnum 3-36-25H Plan A BHL	351.86	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
2,196.00	9,319.00	Extreme Gyro Surveys	NS-GYRO-MS
9,320.00	10,260.00	Weatherford Surveys	NS-GYRO-MS
10,306.00	21,175.00	Sperry MWD Surveys	MWD

**Survey Report for Magnum 3-36-25H - Sperry MWD Surveys****Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Magnum 3-36-25H S - survey misses target center by 10261.01ft at 10260.00ft MD (10258.85 TVD, -28.20 N, -51.04 E) - Polygon	0.00	0.00	-2.00	0.01	0.00	389,191.53	1,208,847.52	48° 1' 29.869 N	103° 36' 18.972 W
Magnum 3-36-25H S - survey misses target center by 10261.01ft at 10260.00ft MD (10258.85 TVD, -28.20 N, -51.04 E) - Polygon	0.00	0.00	-2.00	0.01	0.00	389,191.53	1,208,847.52	48° 1' 29.869 N	103° 36' 18.972 W
Magnum 3-36-25H F - survey misses target center by 66.02ft at 21171.01ft MD (10783.49 TVD, 10027.46 N, -1375.23 E) - Point	0.00	0.00	10,756.00	10,033.01	-1,435.00	399,273.59	1,207,818.27	48° 3' 8.878 N	103° 36' 40.093 W
Magnum 3-36-25H C - survey misses target center by 10261.01ft at 10260.00ft MD (10258.85 TVD, -28.20 N, -51.04 E) - Polygon	0.00	0.00	-2.00	0.01	0.00	389,191.53	1,208,847.52	48° 1' 29.869 N	103° 36' 18.972 W

**North Reference Sheet for Sec. 36-T153N-R101W - Magnum 3-36-25H - Plan A**

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

Vertical Depths are relative to RKB (22') @ 2178.00ft (Nabors 419). Northing and Easting are relative to Magnum 3-36-25H

Coordinate System is US State Plane 1983, North Dakota Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 100° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:48° 44' 0.000 N°

False Easting: 1,968,500.00ft, False Northing: 0.00ft, Scale Reduction: 0.99993638

Grid Coordinates of Well: 389,191.53 ft N, 1,208,847.52 ft E

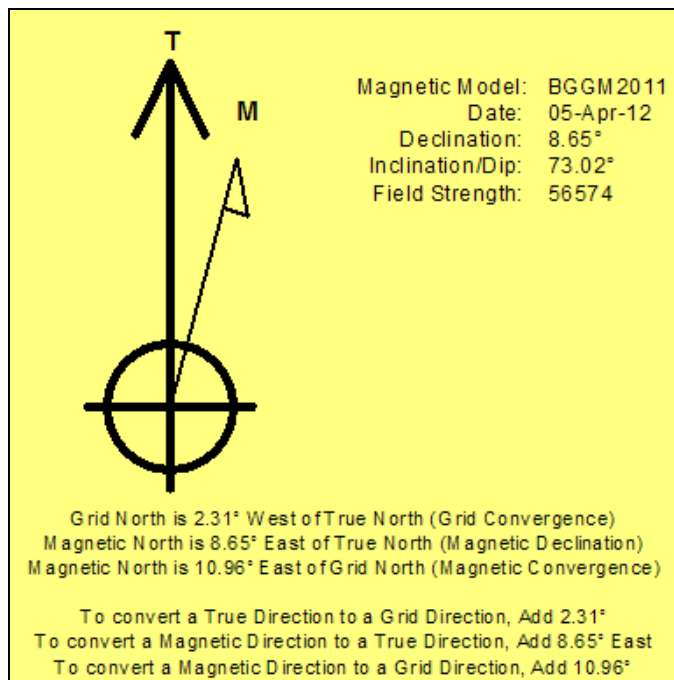
Geographical Coordinates of Well: 48° 01' 29.87" N, 103° 36' 18.97" W

Grid Convergence at Surface is: -2.31°

Based upon Minimum Curvature type calculations, at a Measured Depth of 21,175.00ft

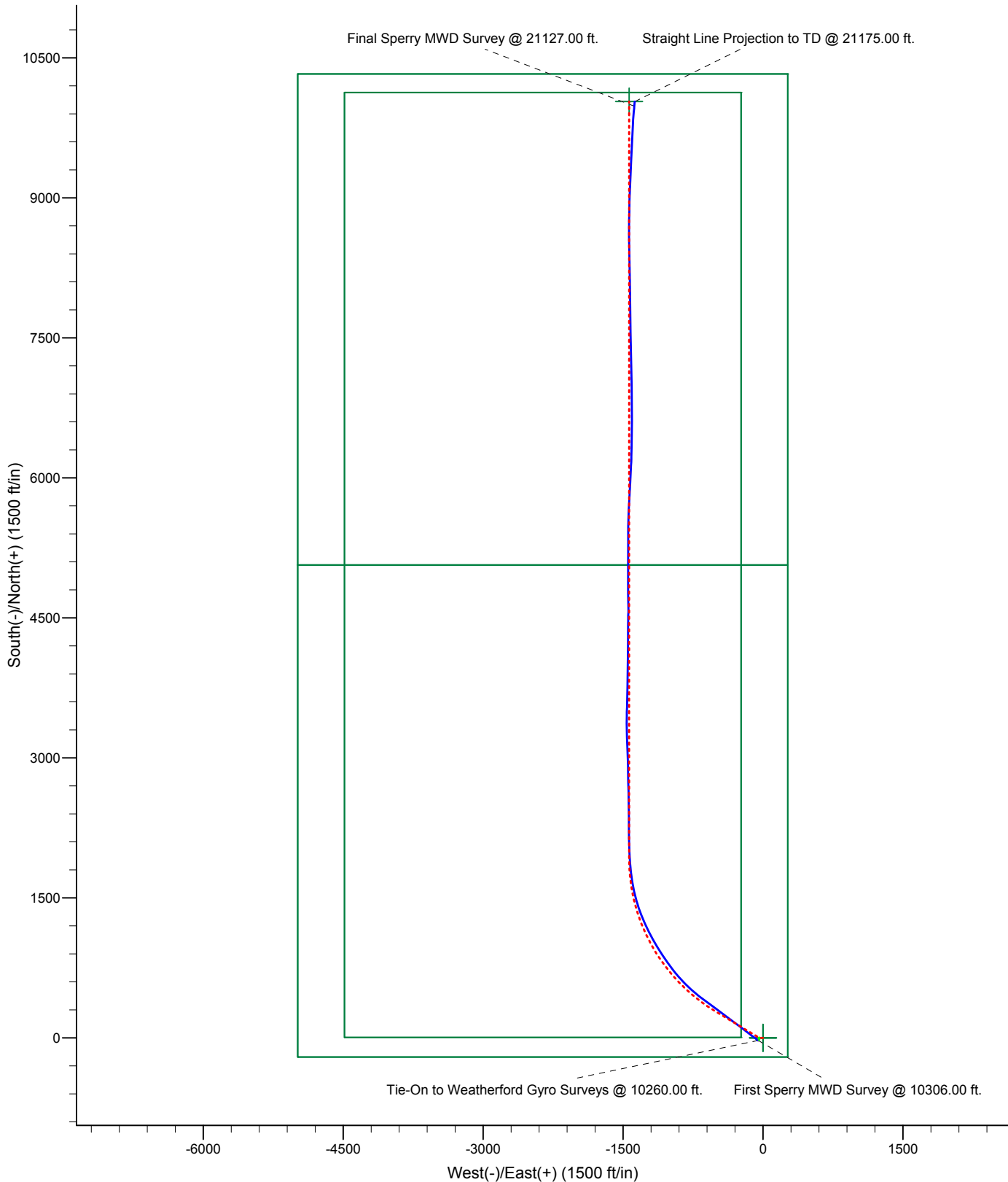
the Bottom Hole Displacement is 10,125.20ft in the Direction of 352.20° (True).

Magnetic Convergence at surface is: -10.96° ( 5 April 2012, , BGGM2011)



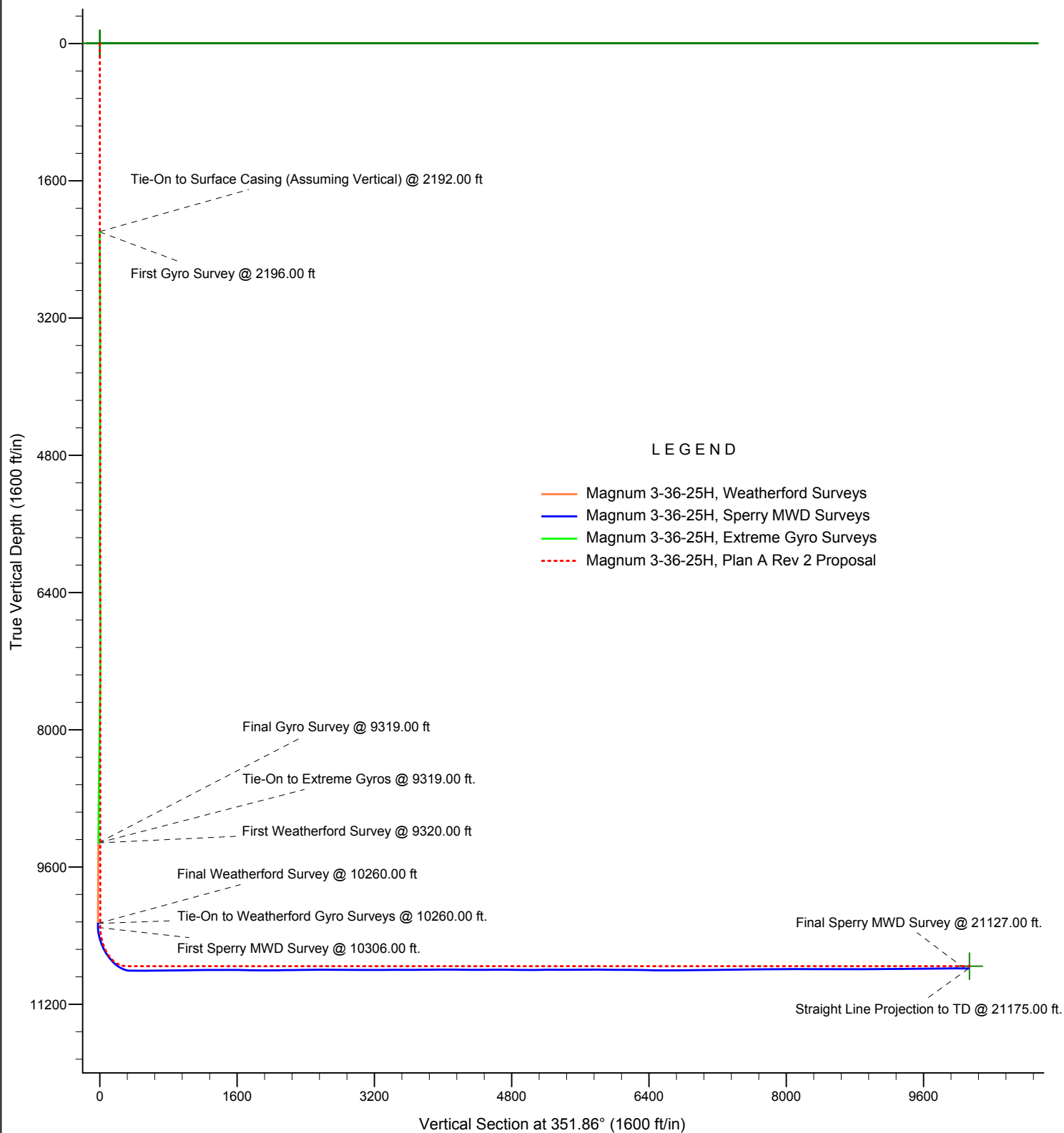
LEGEND

- Magnum 3-36-25H, Weatherford Surveys
- Magnum 3-36-25H, Sperry MWD Surveys
- Magnum 3-36-25H, Extreme Gyro Surveys
- Magnum 3-36-25H, Plan A Rev 2 Proposal



Project: McKenzie County, ND  
Site: Sec. 36-T153N-R101W  
Well: Magnum 3-36-25H

# Slawson Exploration Company, Inc.



# **Slawson Exploration Company, Inc**

## **Magnum 3-36-25H**

**205' FSL & 265' FEL**

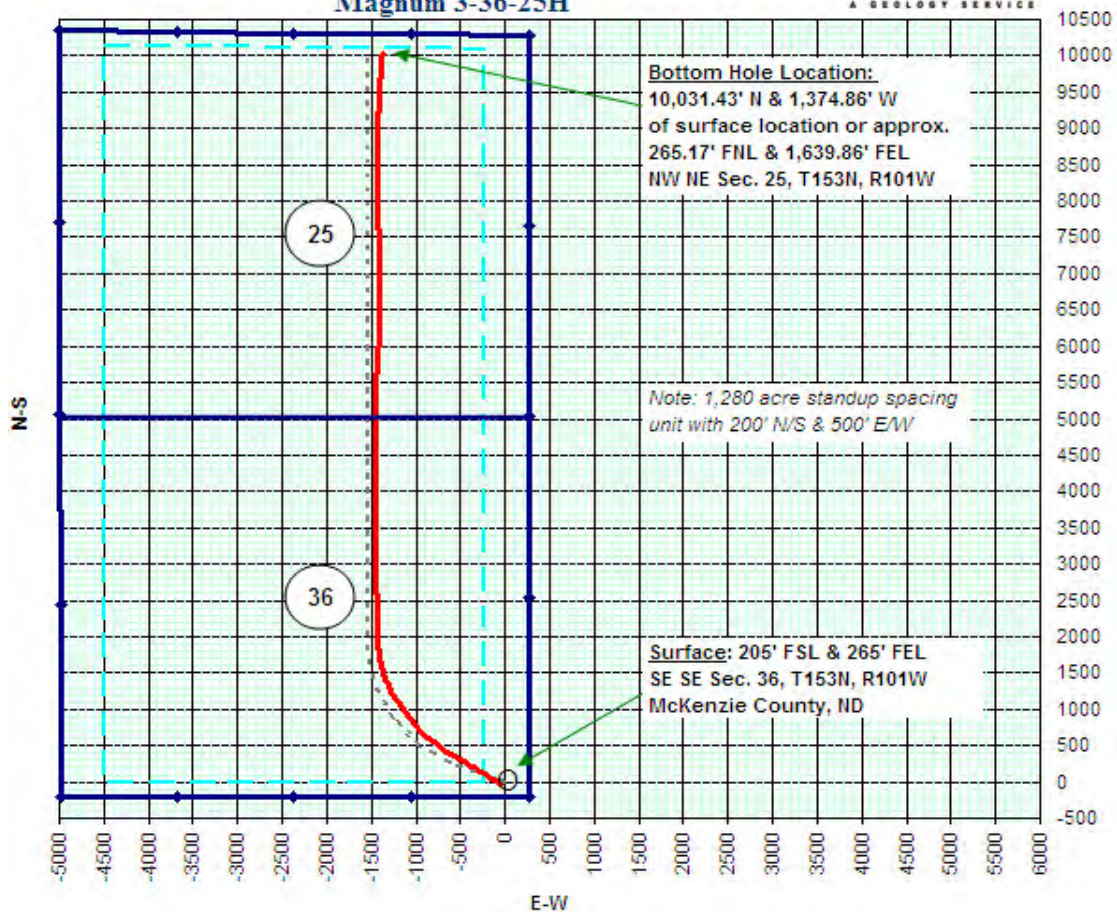
**SE SE Section 36, T153N, R101W**

**Baker Field / Middle Bakken**

**McKenzie County, North Dakota**

### **PLAN VIEW**

Slawson Exploration Company, Inc.  
Magnum 3-36-25H



### **BOTTOM HOLE LOCATION:**

**10,031.43' North & 1,374.86' West of surface location or approx.  
265.17' FNL & 1,639.86' FEL, NW NE Section 25, T153N, R101W**

#### **Prepared for:**

Bob Bogle  
Slawson Exploration Company, Inc  
1675 Broadway, Suite 1600,  
Denver, CO 80202

#### **Prepared by:**

Brandon Hill, Donovan Wilczynski  
PO Box 51297; Billings, MT 59105  
2150 Harnish Blvd., Billings, MT 59101  
(406) 259-4124  
geology@sunburstconsulting.com  
www.sunburstconsulting.com

# **WELL EVALUATION**



*Figure 1: Nabors 419 drills Magnum 3-36-25H in McKenzie County, ND (Brandon Hill, for Sunburst Consulting).*

## **INTRODUCTION**

The **Slawson Exploration Co. Magnum 3-36-25H** [SE SE Sec. 36, T153N, R101W] is located ~15 miles southwest of the town of Williston in McKenzie County, North Dakota. The well was the third of three wells drilled in Section 36. *Magnum 3-36-25H* was planned with one 10,386' long northbound leg with intent to intersect regional fracture trends that might enhance reservoir quality within the Middle Bakken Member.

Directional tools were utilized to build a curve and land within the 200' legal setbacks of Section 36. Vertical deviation drilling was used to help ensure the wellbore crossed the eastern hard-line. A single horizontal lateral in the Middle Bakken was proposed to be drilled into the NE  $\frac{1}{4}$  of NE  $\frac{1}{4}$  of Section 25.

## OFFSET INFORMATION

Three previously completed nearby wells were used as offset control on *Magnum 3-36-25H*. The *Lindvig 1-35* was drilled in August of 1981 by Texas Gas exploration Co 1.1 miles west of the *Magnum 3-36-25H*. The *Magnum 1-36-25H* was the first of three laterals drilled in Section 36 by Slawson Exploration Co and was spud in January of 2012. The third offset was the Slawson Exploration Co.'s *Magnum 2-36-25H*, spud in March of 2012. The *Magnum 2-36-25H* was drilled on the same pad and parallels the subject well to the east.

During the curve, gamma ray measurements were constantly compared to offset data to help determine a proper landing depth. To aid in the landing of the curve, a table (Table 1) was constructed utilizing isopach thicknesses to target of select gamma markers from the offset wells. Due to variances of offset isopachs, a weighted average was used in forecasting a landing depth. Comparing gamma ray markers at the *Magnum 3-36-25H* to correlative markers from the offsets made it easier to predict the probable TVD depth of the Middle Bakken target. With its proximity, the *Magnum 2-36-25H* most closely resembled gamma ray signatures at the *Magnum 3-36-25H*.

## TARGET PROXIMATION

Formation/ Zone:	Proposed Top of Target From:			
	Lindvig 1-35	Magnum 1-36-25H	Magnum 2-36-25H	Average of Offset Wells
Kibbey Lime	10,811'	10,810'	10,847'	10,823'
Charles	10,812'	10,785'	10,793'	10,797'
Base Last Salt	10,803'	10,808'	10,797'	10,803'
Mission Canyon	10,798'	10,807'	10,790'	10,798'
Lodgepole	10,794'	10,802'	10,798'	10,798'
LP 1	-	-	-	-
LP 2	10,800'	10,806'	-	10,803'
LP 3	-	-	-	-
False Bakken	10,807'	10,802'	10,802'	10,804'
Upper Bakken Shale	10,806'	10,805'	10,805'	10,805'
Middle Bakken	10,805'	10,805'	10,805'	10,805'
M. Bakken (Target)	10,807'	10,807'	10,807'	10,807'

*Table 1: Using isopach thicknesses of gamma markers from offset wells to determine a proposed landing target.*

## VERTICAL OPERATIONS

The *Magnum 3-36-25H* was spud on May 07, 2012 with the Nabors #419 drilling rig. A 13 ½" hole was drilled with fresh water to 2,192' MD and isolated with 9 5/8" 36# K-55 casing cemented to surface. On May 12, 2012 vertical operations began. Upon casing exit the drilling fluid was changed to diesel invert with a target weight of 9.4 to 9.7 ppg for use in the remaining vertical and curve. The area surrounding *Magnum 3-36-25H* was a highly prosperous and well developed Mission Canyon field. *Magnum 3-36-25H* was the first of the three wells drilled in section 36 to avoid significant loss of drilling fluid upon reaching the Mission Canyon. Slides in the vertical were put in place to cause the vertical to drift west away from the nearby *Magnum 2-36-25H*.

The vertical was drilled to a KOP of 10,306' MD with 2 HDBS bits. The first drilled from under casing to 8,979' MD where it was pulled as planned for the Kibbey bit trip. The second HDBS bit was replaced at 10,300' MD when the preliminary KOP was reached. An additional 6' would be drilled with the curve assembly before kicking off.

The first bit drilled 6,787' in 48 hours for an average ROP of 141.39 ft/hr. The second bit completed the vertical after drilling 1,321' in 32.7 hours for an average ROP of 40.39 ft/hr. Vertical operations were completed on May 16, 2012.

## DIRECTIONAL OPERATIONS

Sperry Sun provided equipment and personnel for MWD and directional services. Sunburst Consulting geologists worked closely throughout the project with Sperry Sun to make steering decisions and maximize the amount of borehole in the pay zone. Attention was also paid to providing a smooth lateral wellbore to ease the implementation of the aggressive production fracture program. Tight adherence to the drill plan was required to prevent collision with previously drilled laterals. As such, surveys were monitored closely to ensure a safe distance from *Magnum 2-36-25H*.

### Curve Build

The curve was to drill down 477' TVD in 750' MD and required 12 degrees of build per 100' (Figures 2 & 3). The curve was drilled with a single 8 3/4" PDC bit. After completing the build section 7" casing was set at 11,128' MD, 10,809.74' TVD, ~22' below the Upper Bakken Shale. The single HDBS bit drilled 843' in 45.8 hours for an average drilling rate of 18.40 ft/hr.

The HDBS FXD55M combined with the Sperry directional motor drilled quickly while providing predictable and generous build rates. The optimal performance of the curve assembly allowed for increased rotation whilst decreasing time spent on the build section. The added benefit of predictable build rates made forecasting the TVD of the False Bakken and Upper Bakken Shale from penetration rates more reliable; this in turn allowed for on the fly adjustments to landing target and insured a landing within the desired objective.

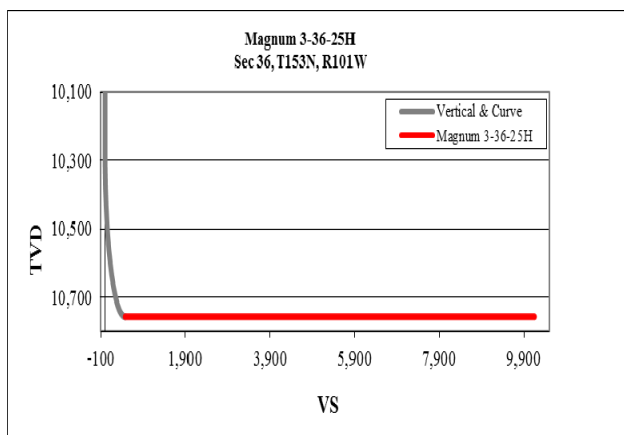


Figure 2: Drill plan provided by Slawson.

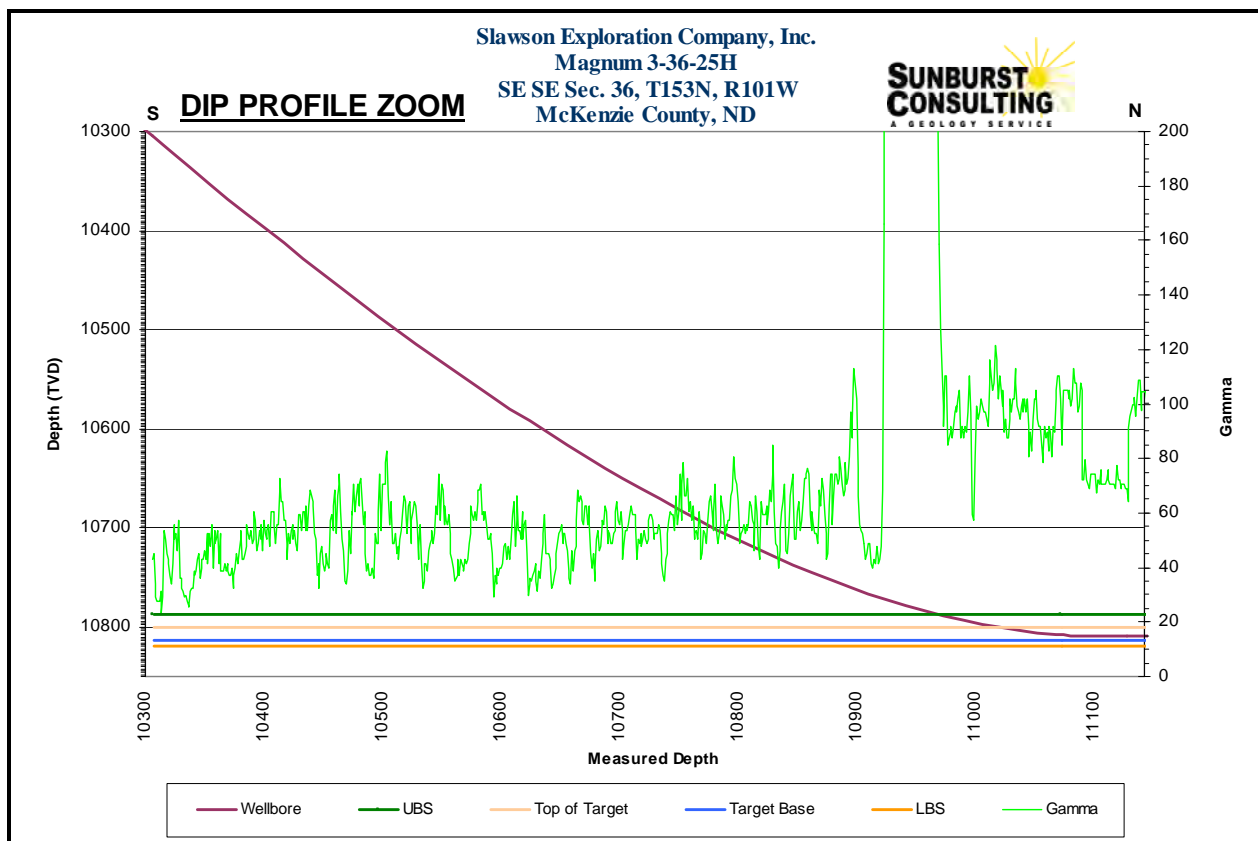


Figure 3: Curve as drilled. Illustrated on the Sunburst Profile.

## Lateral

Lateral drilling fluid was ~10.1– 9.7 ppg diesel invert. Three trips were required while drilling the *Magnum 3-36-25H* lateral. The first came as penetration rates began to fall and sliding became difficult at 16,798' MD. A fresh motor and Security bit were put in place to continue the lateral. Along with the BHA, a NOV agitator was picked up to ease the difficulty in sliding. Drilling continued until 18,112' MD when penetration rates dropped to zero as a result of a failed motor. A new motor was put behind a fresh Security bit. Once back on bottom, the motor drilled for 528' before penetration rates again dropped to zero. A new slow speed BICO motor was run with the same Security bit to finish out the lateral. The final BHA improved penetration rates dramatically. The slow speed BICO proved to be the best performing motor of the lateral.

The first assembly drilled 5,655' in 148.08 hours, much of that for a lateral turn, for an average ROP of 38.18 ft/hr. The Second assembly drilled 1,314' in 44.58 hours for an average speed of 29.47 ft/hr. The third assembly drilled 528' in 18.34 hours for an average speed of 28.78 ft/hr. The final assembly with the BICO motor drilled 2,535' in 48.00 hours for an average of 52.81 ft/hr. The well reached a total depth (TD) of 21,175' MD at 02:45 CDT June 10, 2012.

# GEOLOGIC EVALUATION AND HYDROCARBON SHOWS

## Methods

Geologic supervision of *Magnum 3-36-25H* was provided by Sunburst Consulting, Inc. with two wellsite geologists. A digital gas detector was interfaced with a Pason electronic data recorder system. Pason provided drill rate, on-off bottom, and pump strokes to the gas detection computer and received total gas information from Sunburst for viewing around location. Rig crews caught lagged samples under the direction of Sunburst geologists (see LITHOLOGY for sample lag intervals and descriptions). Sample cuttings were examined wet and dry under a binocular microscope using both plain (broad spectrum) and transmitted light. Sunburst personnel also closely examined MWD gamma ray information and penetration rates to aid in steering decisions and dip rate estimations.

## Lithology and Hydrocarbon Shows

Geologic evaluation began at 8,400' MD in the Anhydrite and Limestone of the **Kibbey Formation** [Mississippian, Big Snowy Group]. Samples from this area were described as:

*ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity;*

*SILTSTONE: orange, friable, sub blocky to sub platy, calcareous cement, moderately cemented, no visible porosity;*

*ANHYDRITE: off white, cryptocrystalline, soft, massive, amorphous texture, no visible porosity.*

The **Charles Formation** [Mississippian, Madison Group] was penetrated at 8,592' TVD (-6,425'). The **Base of the Last Charles Salt** was drilled at 9,265' TVD (-7,087'), 6' high to *Magnum 2-36-25H*. Samples from this interval (Figure 4) were described as:

*SALT: translucent, crystalline, hard, anhedral to trace subhedral, crystalline texture, no visible porosity; trace ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity;*

*LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity.*



Figure 4: Photograph of salt, anhydrite, and limestone found in Charles Formation.

The **Mission Canyon** [Mississippian, Madison Group] was penetrated at 9,480' TVD (-7,302'), 13' high to *Magnum 2-36-25H*. Surrounding the *Magnum 3-36-25H* was a heavily produced Mission Canyon field. Large amounts of LCM prevented losses of drilling fluid, but made it difficult to evaluate overall Mission Canyon potential. Due to heavy sample contamination, pictures of cuttings from the Mission Canyon are not available. Samples from the Mission Canyon were described as:

*LIMESTONE: mudstone, light brown gray, light brown, trace medium brown, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, trace pinpoint porosity, rare spotty light to medium brown oil stain;*

*DOLOMITE: mudstone, light gray brown, friable, earthy texture, trace pinpoint porosity very trace light brown oil stain;*

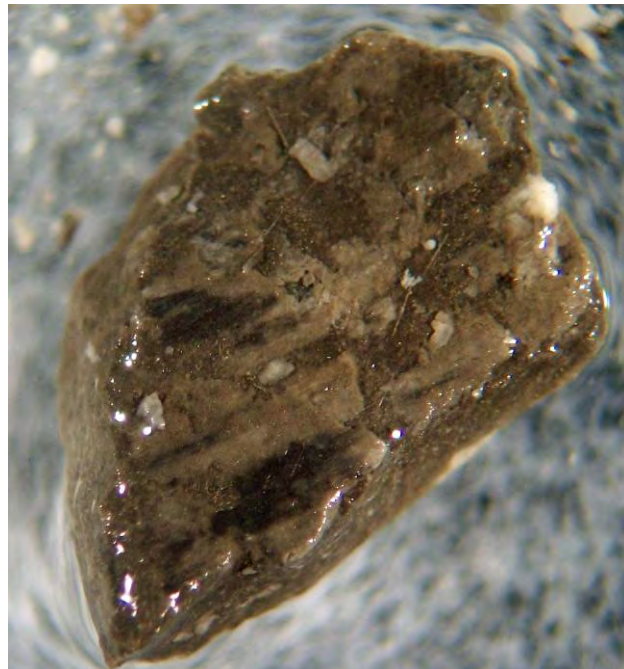
*LIMESTONE: mudstone, dark gray, common off white to cream, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown spotty oil stain;*

*DOLOMITIC LIMESTONE: mudstone, off white to cream, tan to light brown, light gray brown, very fine grained, firm to hard, crystalline texture, trace alga laminated, slightly argillaceous, trace light brown oil stain, no visible porosity.*

The **Lodgepole Formation** [Mississippian, Madison Group] top was drilled at 10,017' TVD (-7,839'), 5' high to *Magnum 2-36-25H*. Approximately 745' TVD of limestone, much of it argillaceous mudstone with common pyrite and sparry calcite, was drilled in the Lodgepole. Samples collected from the Lodgepole (Figure 5) were described as:

*ARGILLACEOUS LIMESTONE: mudstone, medium gray to rare off white to rare medium brown, microcrystalline, firm to common hard, dense, earthy to rare crystalline texture, no visible porosity;*

*LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsugrosic texture, argillaceous in part, possible intercrystalline porosity, no visible oil stain.*



*Figure 5: Photograph of limestone from the upper Lodgepole Formation (note live oil stain).*

The “**False Bakken**” was penetrated at 10,762’ TVD (-8,584’), evidence of a 10,804’ TVD target depth. The underlying **Scallion** interval showed gas peaks as high as 1,947 units.

The **Upper Shale** of the **Bakken Formation** [Mississippian – Devonian] was drilled at 10,772’ TVD (-8,594’), supporting a casing point of 10,805’ TVD. The Bakken came in 2’ low to the *Magnum 2-36-25H*. Sample returns were typical black, carbonaceous, and petroliferous shale (Figure 6), characterized by gamma ray values in excess of 400 API. Total gas readings displayed peaks up to 477 units with background measurements ranging between 250 and 350 units. Samples were described as:

*SHALE: black, firm to friable, sub blocky to sub platy, earthy texture, petroliferous, carbonaceous, abundant disseminated pyrite, nodular pyrite, no visible porosity.*



*Figure 6: Photograph of typical black carbonaceous Bakken Shale.*

The **Middle Member** of the **Bakken Formation** was penetrated at 10,970’ MD, (10,787 TVD), 2’ low to the *Magnum 2-36-25H*, evidence supporting a target of 10,805’ TVD (Table 1). While drilling the *Magnum 3-36-25H*, samples varied only slightly within the target area. Some differences in *oil staining* could be seen. The targeted interval consisted of a series of high gamma (110-120 API) and cool gamma (85-95 API) intervals stacked upon one another. Commonly in the high gamma markers samples would consist of silty sandstone mixed with light gray siltstone stringers. The facies of cool gamma were primarily well cemented sandstone with marker F2 showing occasional stringers of lime packstone. Samples collected from the Middle Bakken (Figure 7& 8) were described as:

*SILTSTONE: medium brown, friable to trace firm, sub blocky to sub platy, calcareous cement, poorly to trace moderately cemented, trace disseminated pyrite, no visible porosity.*

*SILTY SANDSTONE: cream to off white, very fine grained, friable to trace firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to trace moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace dark brown spotty oil stain .*

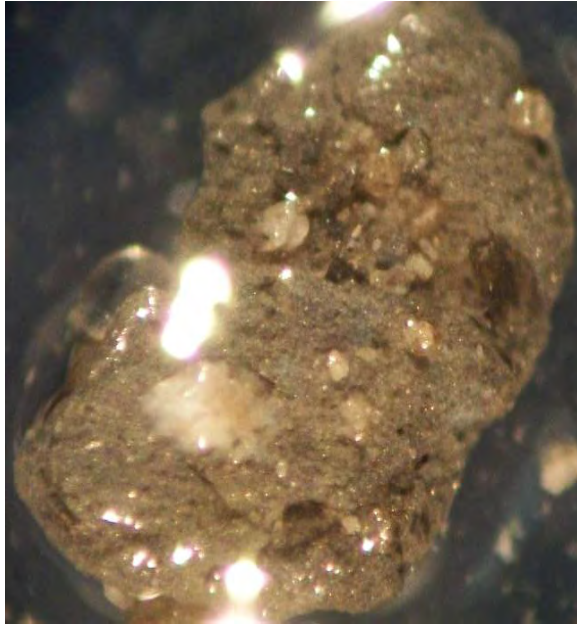


Figure 7: Photograph of siltstone found above and below zone (L). Figure 8: Photograph of silty sandstone found throughout target zone (R).

The lateral began with a background gas of about 150 units with an average connection gas above 200 units (Note: See Figure 9 for visual representation of this section). Gas levels decreased slightly by 11,400 MD with average background measurements around 100 units and peaks reaching only 150 units. With lower gas levels in the middle of the target zone, the bit was allowed to climb up to about 2'-3' from the top of zone. As the bit approached the top of zone, gas levels rose slightly to 150 units with connections averaging around 250 units. By 12,200 MD' the wellbore had reached its pinnacle and began to descend in formation. As the bit traveled back down through zone, gas levels remained steady. The wellbore would then flatten low in zone within the F4 marker. This low in zone position was accompanied with waning hydrocarbon gas. By 13,000' MD the average background gas was less than 150 units. Despite relatively low backgrounds connections averaged above 500 units. Average gas measurements climbed slightly around 13,900' MD when the bit entered the middle portion of zone passing through marker F2. Background gas levels doubled to an average of 250-300 units with connections averaging above 600 units. Gas levels remained fairly steady until ~15,200' MD where they rose to their highest levels thus far (Figure 10). Background gas levels between 15,200' and 15,700' MD would average around 400 units with connections nearing 700 units. Additionally within this interval, increases in *spotty black oil stain* as well as the *more common dark brown oil stain* was seen in cuttings. The total gas increase was localized and measurements decreased to a lateral low by 16,000' MD despite maintaining an approximate stratigraphic position.

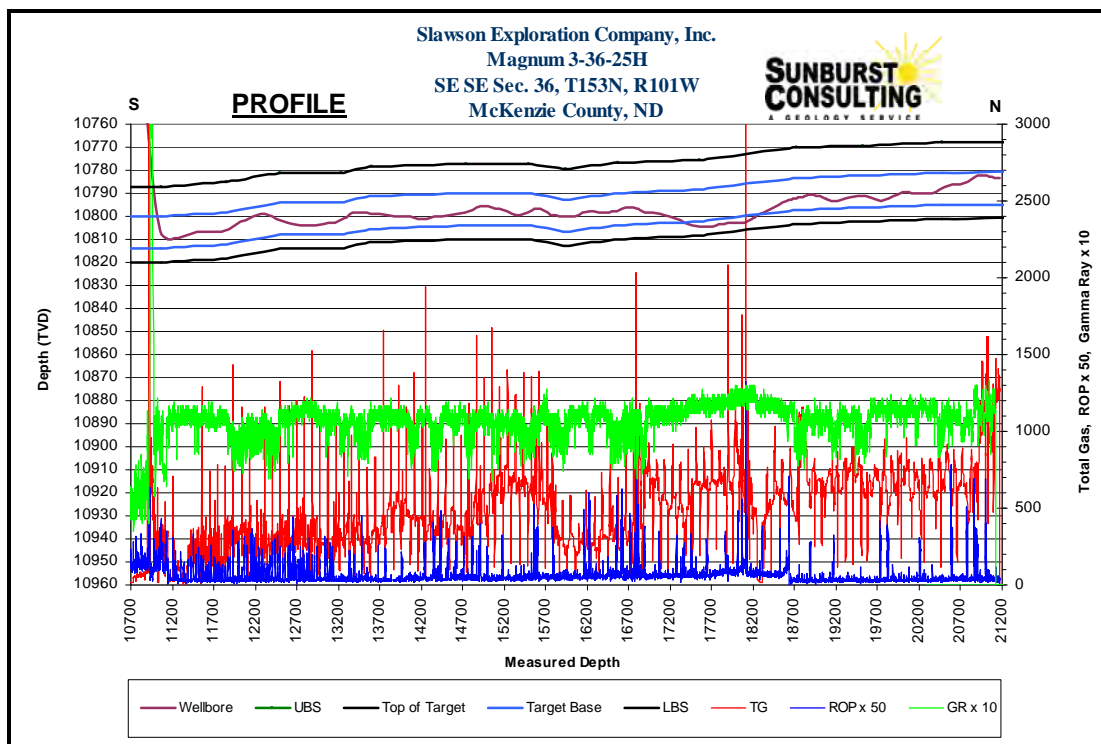


Figure 9: Sunburst profile showing gas levels as tied to lateral progression.



Figure 10: Magnum 3-36-25H log segment showing peak gas levels.

Decreasing background gas levels were less than half of previous measurements, around 150 units with connections barely averaging over 250 units. The decrease in gas did coincide with a *very slight decrease in oil staining* and a more common hardening of calcite cement. It is possible that the increased cementing caused porosity occlusion. Relatively low gas levels would continue until roughly 16,900' MD when they began to rise despite being low within the target interval. The average background gas would hover around 350-400 units, but connections lowered slightly to 400-500 units. Gas levels were higher here than any previous trips to bottom of our targeted interval.

Gas levels would remain steady over the next 1,000' before decreasing slightly. By 18,300' MD, average background gas was less than 300 units and connections were barely distinguishable. At this point in the lateral the bit had just reentered the bottom of the targeted interval. As the wellbore climbed in section gas levels would increase. Beginning at 18,700' MD, gas levels climbed briefly, approaching 600 units, before declining and leveling off around 18,850 MD. Hydrocarbon gas levels remained steady with backgrounds averaging of 250-300 units and occasionally as high as 400 units. While the wellbore approached TD, the bit began climbing aggressively. It soon passed to its highest point within zone and background levels increased to a lateral high. The average background would reach 500+ units with connections over 800 units.

During the lateral there were three trips to surface for BHA changes. The change-outs allowed for the recording of trip gases of 1,017, 3,081, and 1,388 units. The second was punctuated by a 10'-15' flare.

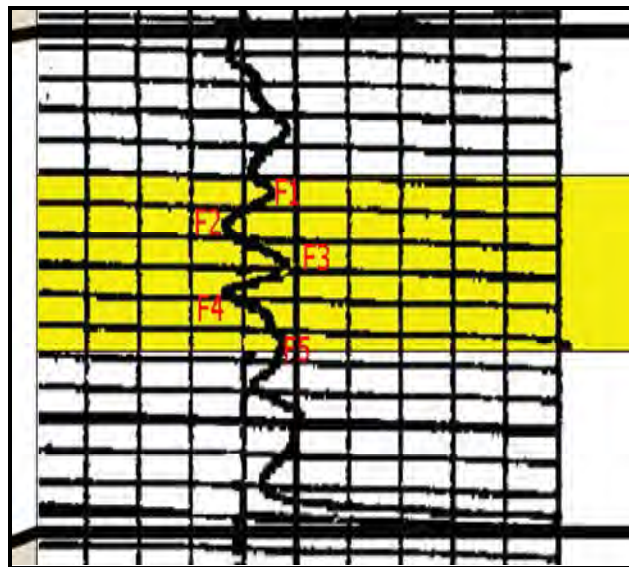
**Marker F1:** This marker made up the first 2' of the zone (Note: See Figure 11 for visual representation of this section). Overlying Marker F1 was a dark siltstone with *trace* spotty brown oil stain and low porosity. Increases in pyrite and gray sandstone were also observed. Decreased oil staining and intergranular porosity was common in this marker.

**Marker F2:** Marker F2 began about 3' into the target zone and continued until 5' into zone. This facies was encountered early in the tangent section before setting casing. It was similar in nearly every way to Marker F4. Common characteristics of this marker were increasing white to cream sandstone and increasing pyrite levels. On occasion this marker would contain trace amounts of lime packstone. It is important to note that *exceptional porosity* was observed in offset electric logs within this interval, showing porosity up to 13%. It is unclear how permeable this interval is, but with production fracturing the increased porosity will likely benefit overall production. Typically within this marker, *rare to occasional spotty brown oil staining* was seen with areas of *spotty black oil stain*. This marker shared gamma characteristics with F4 and F6, averaging 85-95 API.

**Marker F3:** Marker F3 extended from 4'-6' into the target. This marker appeared slightly warmer than surrounding markers reaching 105-110 API. Samples were identical to that of Marker F1. *Trace to rare light brown oil staining* was typical, but occasionally increased to include *spotty light black staining*. Some hydrocarbon staining may have been obscured by the darker colors of the sandstone in this marker. Hydrocarbon gas levels were generally higher in the warm gamma intervals found at Markers F3 and F5. This may be due to the tight nature of the cream and off white sandstones found in the low gamma intervals.

**Marker F4:** The F4 marker began about 6' from the top of zone and in the lateral averaged a 95-105 API gamma signature. The lower cool gamma marker did not show staining that would set it apart for other areas within zone. Cream to off white sandstone made up the majority of samples examined in this marker. The sandstone was identical to marker F2 though packstone was never observed within this interval.

**Marker F5:** Marker F5 ranged from 9'-12' below the top of zone. This marker made up the last 3' of zone, comprised of sand and siltstones much like Marker F1. Proceeding downward through section in this marker, gamma measurements increased above 120 API, indicating an exit from the bottom of zone. Sands within this interval showed *trace dark brown oil stain*. The siltstones show virtually *no oil staining* and were tight in nature with grayish brown coloration.



*Figure 11: Type gamma ray profile of the Middle Bakken from the near-by Fossum well.*

### **Geo-Steering**

The **target zone** within the Middle Bakken is defined as the 14' zone below gamma marker "MBKMGR" (Marker F1; Figure 11). The target zone in the Middle Bakken was established based on the samples and electric logs from nearby offset wells. Prognosis predicted 35' of viable zone between the Bakken shales, the first 13' of which is above the desired target. The *Magnum 3-36-25H* required turning the lateral from northwest to due north shortly after exiting intermediate casing which resulted in the implementation of slides purely for azimuth. The initial prognosis called for a regional dip of a nearly flat 0.09° down which predicted the pay zone to drop ~16' over the course of the two section lateral. Gamma markers from a large collection of offset data showed little to no definition within the targeted interval. As the lateral progressed, the low gamma valleys of makers F2, F4, and F6 became the most recognizable.

The bit exited the Upper Bakken Shale at 10,970' MD (10,787' TVD) and passed into the top of the target interval at 11,017' MD (Note: See Figure for visual representation of this section). The wellbore landed at a casing point of 11,128' MD (10,810' TVD), approximately 23' into the

Middle Bakken and 10' below the "MBKMGR" marker (Marker F1). The wellbore continued through zone until contact with Marker F4 was seen at 11,851' MD. Stratigraphically, that put the bit 5' from the bottom of zone. The bit was pushed up to gain separation from the bottom of zone. The top of target was estimated to have dropped approximately 2' for dip of 0.14° up. While turning due north, the bit was also pushed up through zone. At 12,504' MD, Marker F4 was seen again with a 4' change in TVD, evidence of a dip change to ~0.36° up.

The bit continued within zone when gamma suggested the bit had contacted Marker F2 at 13,229' MD. Contact with this marker suggested the bit was roughly 4' below the top of target and dip flattened. The bit would rise and fall through target until making contact with Marker F2 at 13,604' MD. This showed that dip had increased dramatically to 0.40° up. As the lateral progressed repeated contact with Marker F4 at 14,741' and 15,502' MD showed dip decreasing to 0.07° and flat, respectively. The lateral remained within the targeted interval until 17,465' MD, when the wellbore exited the bottom of the target and slides had to be executed to redirect drilling back into zone. Local dip rates as high as 0.25° up made returning to zone difficult. After ~900' the bit reentered zone. Contact with Marker F4 at 19,530' MD would turn drilling back down as dip flatten to 0.06° up. As the lateral came to a close, gamma was evidence of dip steepening slightly to 0.08° up. As the wellbore approached TD, the bit began to build aggressively on rotation and nearly reach the top of zone. The final data point showed that formation had flattened.

The well ended with the bit about 16' below the Upper Bakken Shale at 21,175' MD. The final bottom hole location of *Magnum 3-36-25H* is 10,031.43' North and 1,374.86' west of surface location or approximately 265.17' FNL and 1,639.86' FEL, NW NE Sec. 25 T153N, R101W.

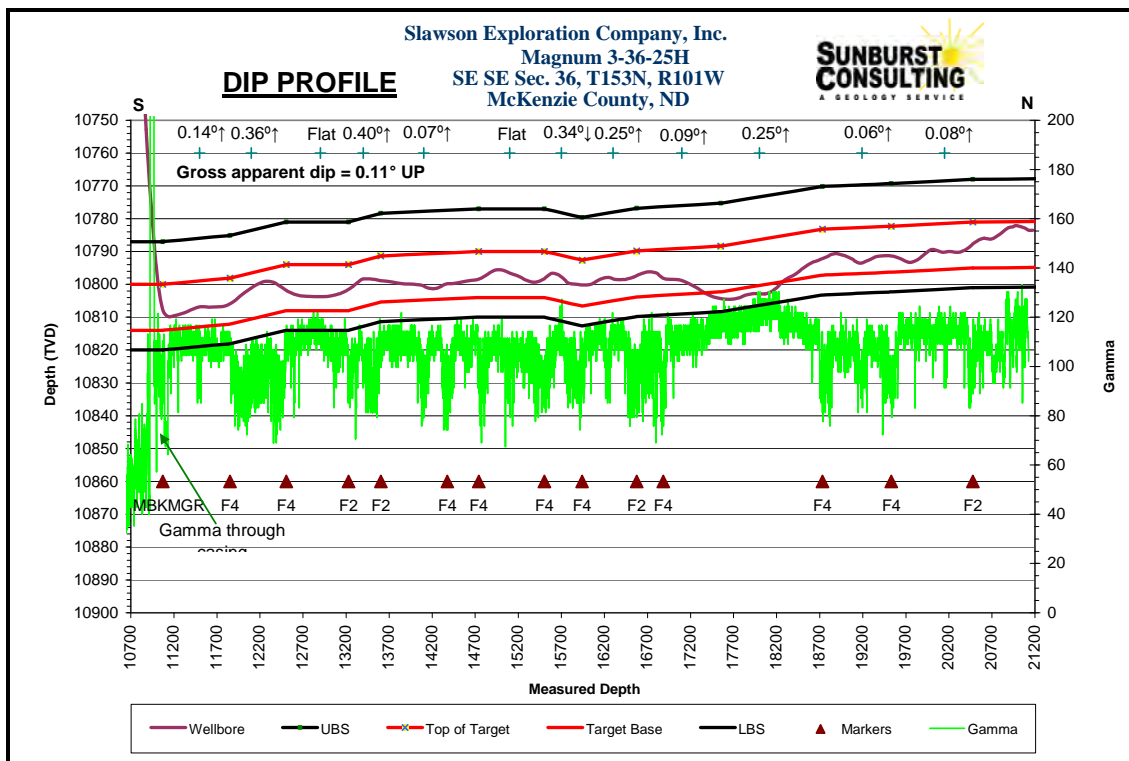


Figure 12: Dip profile showing lateral progression and dip calculations.

## **Conclusions**

The *Magnum 3-36-25H* shows moderate potential for hydrocarbon production. The intervals marked as F1, F2, and F3 are recorded to have as much as 13% porosity on offsets. The Slawson fracture program will likely maximize the local porosity matrix and allow for increased production value. Gas levels were lower at the *Magnum 3-36-25H* than recorded at the previous Magnum laterals, but initial production numbers from *Magnum 1-36-25H* provide encouragement. The wellbore remained within the targeted interval for over 90% of the lateral total footage which will help to maximize frac potential.

## **SUMMARY**

- 1) The *Magnum 3-36-25H* was spud on May 07, 2012 with the Nabors #419 drilling rig. Vertical operations were completed on May 15, 2012.
- 2) Localized depletion of the Mission Canyon made vertical operations difficult; however, quick and effective use of LCM helped to prevent the loss of drilling fluid that was seen on the *Magnum 1-36-25H* and *Magnum 2-36-25H*.
- 3) A single HDBS bit drilled a 843' curve in 45.80 hours for an average drilling rate of 18.41 ft/hr. Four BHA's were required to complete the 10,047' long lateral
- 4) Lateral hole drag was reduced with the use of an inline reamer. The ease at which the bit was able to reach bottom while sliding should indicate a nicely groomed wellbore for liner insertion.
- 5) *Magnum 3-36-25H* reached TD at 02:45 CDT on June 10, 2012. The wellbore remained within the targeted interval for 91% of the total lateral footage.
- 6) The Slawson Exploration Co. *Magnum 3-36-25H* awaits completion operations to determine its ultimate production potential. 4" production liner will be set to bottom to facilitate an aggressive fracture stimulation program.

Respectfully submitted,

Brandon Hill

C/o Sunburst Consulting, Inc.  
10 June 2012

# WELL DATA SUMMARY

<b><u>OPERATOR:</u></b>	Slawson Exploration Company, Inc
<b><u>ADDRESS:</u></b>	1675 Broadway, Suite 1600, Denver, CO 80202
<b><u>WELL NAME:</u></b>	<b>Magnum 3-36-25H</b>
<b><u>API #:</u></b>	33-053-04069
<b><u>WELL FILE #:</u></b>	22731
<b><u>SURFACE LOCATION:</u></b>	205' FSL & 265' FEL SE SE Section 36, T153N, R101W
<b><u>FIELD/ PROSPECT:</u></b>	Baker Field / Middle Bakken
<b><u>COUNTY, STATE</u></b>	McKenzie County, North Dakota
<b><u>BASIN:</u></b>	Williston
<b><u>WELL TYPE:</u></b>	Middle Bakken Horizontal
<b><u>ELEVATION:</u></b>	GL: 2,156' KB: 2,178"
<b><u>SPUD/ RE-ENTRY DATE:</u></b>	May 7, 2012
<b><u>BOTTOM HOLE LOCATION:</u></b>	10,031.43' North & 1,374.86' West of surface location or approx. 265.17' FNL & 1,639.86' FEL, NW NE Section 25, T153N, R101W
<b><u>CLOSURE COORDINATES:</u></b>	Closure Direction: 352.20° Closure Distance: 10,125.21'
<b><u>TOTAL DEPTH / DATE:</u></b>	21,175' on June 10, 2012 91% within target interval
<b><u>TOTAL DRILLING DAYS:</u></b>	35 days
<b><u>CONTRACTOR:</u></b>	Nabors #419

<b><u>PUMPS:</u></b>	#1 & #2 - PZ Gardener 10 (stroke length - 10") 7", 5,0" liner
<b><u>TOOLPUSHERS:</u></b>	Mark Olsen, Luke Croegaert, Kelly Krueger
<b><u>FIELD SUPERVISORS:</u></b>	Bill Kinden, Kevin Wehrung
<b><u>CHEMICAL COMPANY:</u></b>	Geo
<b><u>MUD ENGINEER:</u></b>	Mark Dudley
<b><u>MUD TYPE:</u></b>	Fresh water in surface hole Diesel invert in vertical, curve, and lateral
<b><u>MUD LOSSES:</u></b>	Invert Mud: 136 bbls
<b><u>PROSPECT GEOLOGIST:</u></b>	Bob Bogle
<b><u>WELLSITE GEOLOGISTS:</u></b>	Brandon Hill, Donovan Wilczynski
<b><u>GEOSTEERING SYSTEM:</u></b>	Sunburst Digital Wellsite Geological System
<b><u>ROCK SAMPLING:</u></b>	30' from 8,400' - 11,150' & 50' from 11,150' -21,175' (TD)
<b><u>SAMPLE EXAMINATION:</u></b>	Binocular microscope & fluoroscope
<b><u>SAMPLE CUTS:</u></b>	N/A: Samples washed in diesel
<b><u>GAS DETECTION:</u></b>	MSI (Mudlogging Systems, Inc.) TG- total gas
<b><u>ELECTRIC LOGS:</u></b>	Weatherford
<b><u>DIRECTIONAL DRILLERS:</u></b>	Sperry Sun Tom Cobb, Mike Janes, Chris Dempsey
<b><u>MWD:</u></b>	Sperry Sun Aaron Craver, Joshua Flannagan
<b><u>CASING:</u></b>	Surface: 9 5/8" 50 jts 36# K-55 set to 2,192' Intermediate: 7" 184 JTS 29# HCP 110 , 71 JTS 32# HCP-110 set to 11,128'
<b><u>SAFETY/ H<sub>2</sub>S MONITORING:</u></b>	Oilind Safety

**KEY OFFSET WELLS:**

**Texas Gas Exploration Corp.**

**Lindvig 1-35**

SE SE Sec. 35, T153N, R101W

McKenzie County, ND

**Slawson Exploration Company, Inc**

**Magnum 1-36-25H**

SW SW Section 36, T153N, R101W

McKenzie County, ND

**Slawson Exploration Company, Inc**

**Magnum 2-36-25H**

SE SE Section 36, T153N, R101W

McKenzie County, ND

# WELL LOCATION PLAT

Slawson Exploration Company, Inc.  
1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

205 feet from the south line and 265 feet from the east line (surface location)

Section 36, T. 153 N., R. 101 W., 5th P.M.

250 feet from the north line and 1700 feet from the east line (bottom location)

Section 25, T. 153 N., R. 101 W., 5th P.M.

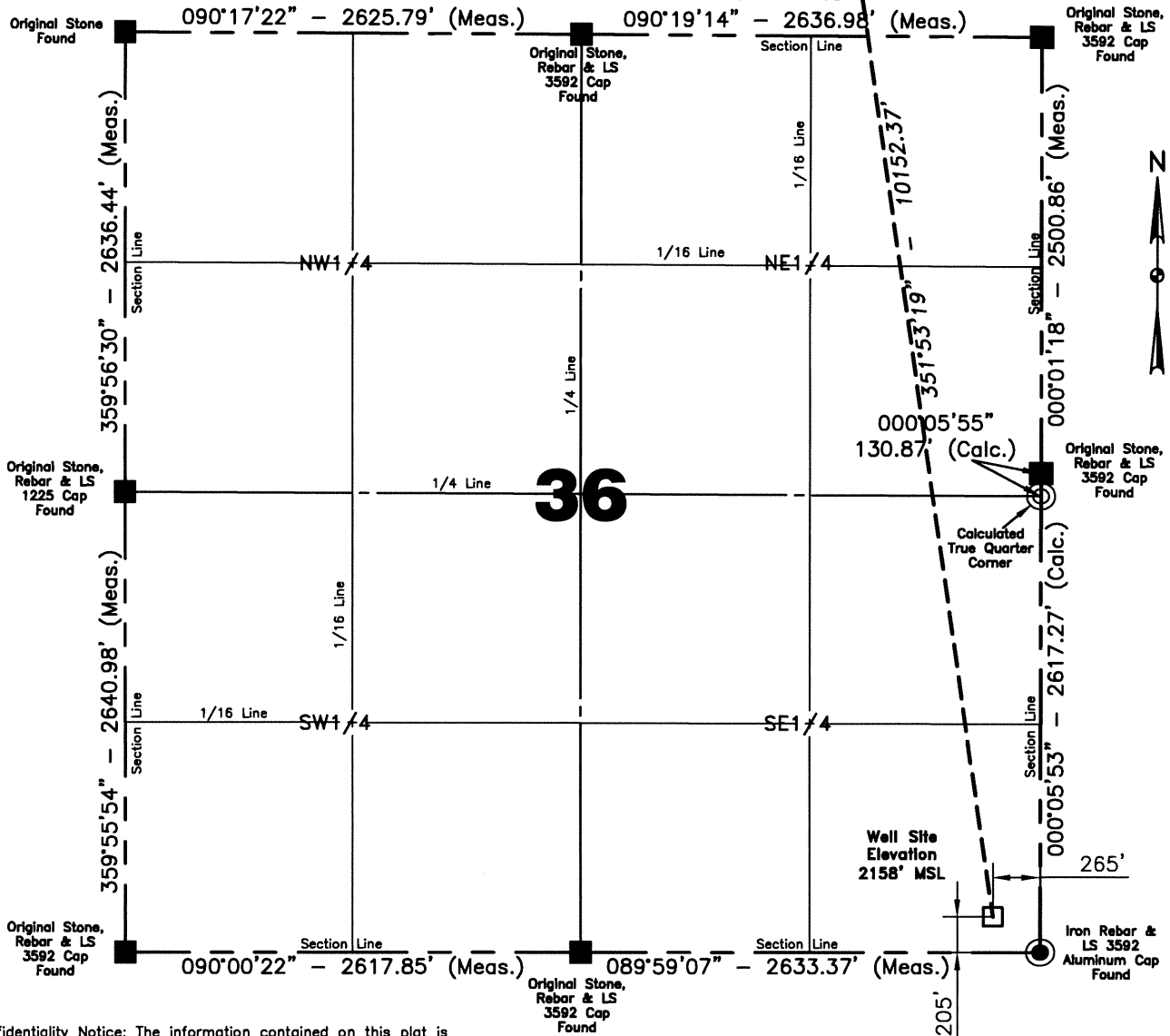
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

Latitude 48°01'29.869" North; Longitude 103°36'18.972" West (surface location)

Latitude 48°03'09.063" North; Longitude 103°36'39.969" West (bottom location)

[Derived from OPUS Solution NAD-83(CORS96)]



Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

NOTE: All land corners are assumed unless otherwise noted. The well location shown hereon is not an as-built location.

Scale 1"=1000'

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

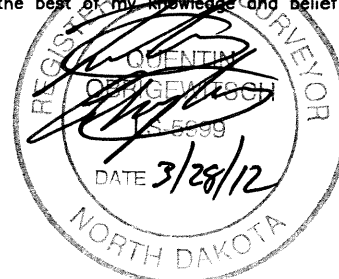
Brian L. Schmalz 8/26/2011  
Surveyed By N.D.P.L.S. # 6809 Date

Vertical Control Datum Used  
Sea-Level Datum of NAVD 88  
Based on elevation derived from OPUS Solution on CP\*KLJ 15-152-10 (iron rebar) Located a distance of 6192.72' on an azimuth of 270°16'47" from the SW corner of Section 36, T.153N., R.101W., 5th P.M. being at 2134.39' Elevation MSL.

Project No. 3712480

Book OW-257 Pg. 47-50 Staking

Professional Consulting Engineers and Surveyors  
Registered in  
North Dakota, South Dakota  
Montana, Wyoming & Minnesota  
Tele-Fax No. 701-483-2795  
Bus. Phone No. 701-483-1284  
P.O. Box 290  
677 27th Ave. E.  
Dickinson, North Dakota 58602  
Certificate of Authorization #C-061



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

# HORIZONTAL SECTION PLAT

Slawson Exploration Company, Inc.

1675 Broadway, Suite 1600, Denver, Colorado 80202

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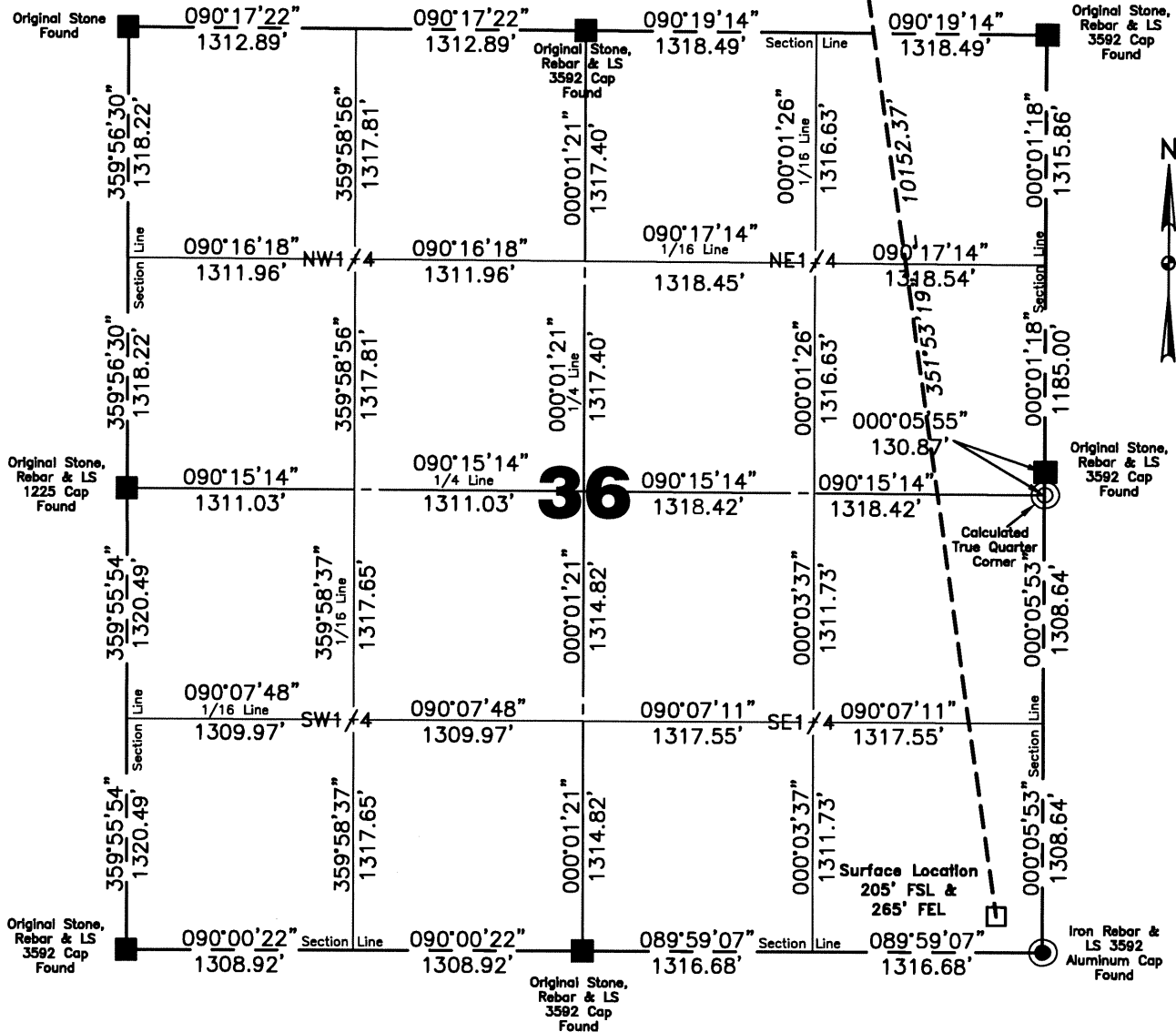
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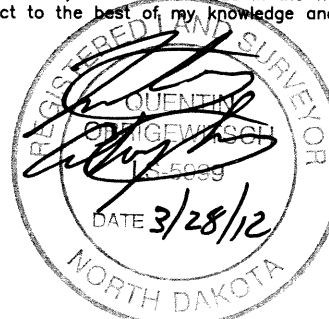
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All corners shown on this plat were found in the field during Slawson Exploration Company Magnum 3-36-25H oil well survey on August 26, 2011. Distances to all others are calculated. All azimuths are based on the south line of the southwest quarter of Section 36, being on an azimuth of 090°00'22".

Surveyed By	Field Book
B. Schmalz	OW-257
Computed & Drawn By	Project No.
Z. Theisen	3712480



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

# HORIZONTAL SECTION PLAT

Slawson Exploration Company, Inc.  
1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

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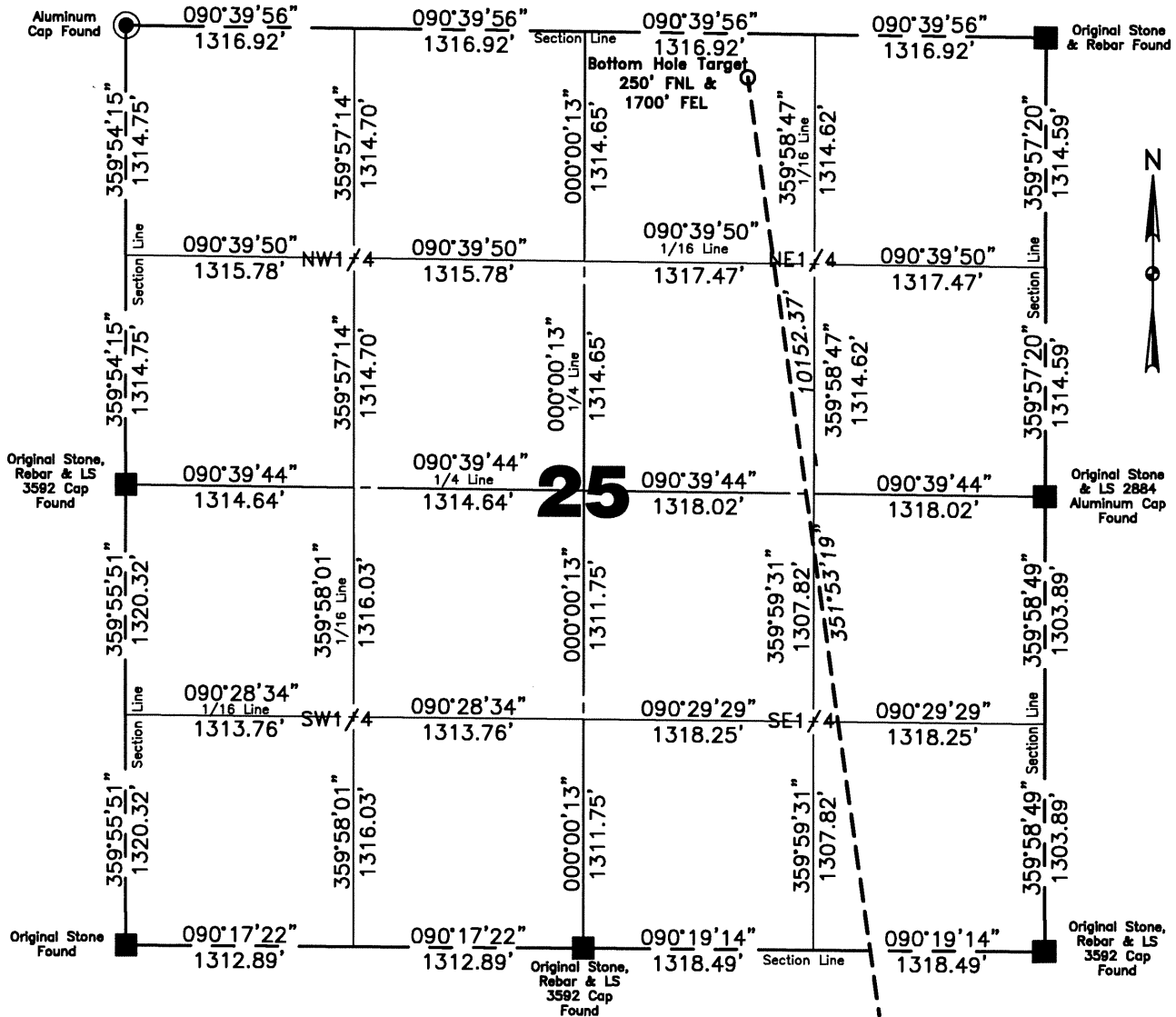
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

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[Derived from OPUS Solution NAD-83(CORS96)]



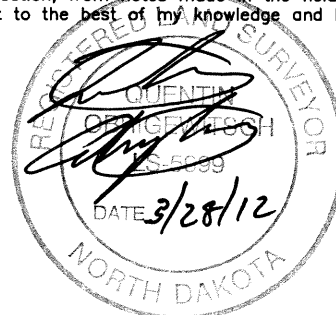
Scale 1"=1000'

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B. Schmalz	OW-257
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Z. Theisen	3712480

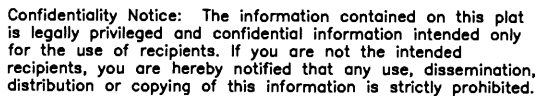


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Jackson  
Engineers Surveyors  
Planners

[Derived from OPUS Solution NAD-83(CORS96)]



SE1/4SE1/4, Section 36  
T.153N., R.101W., 5th P.M.

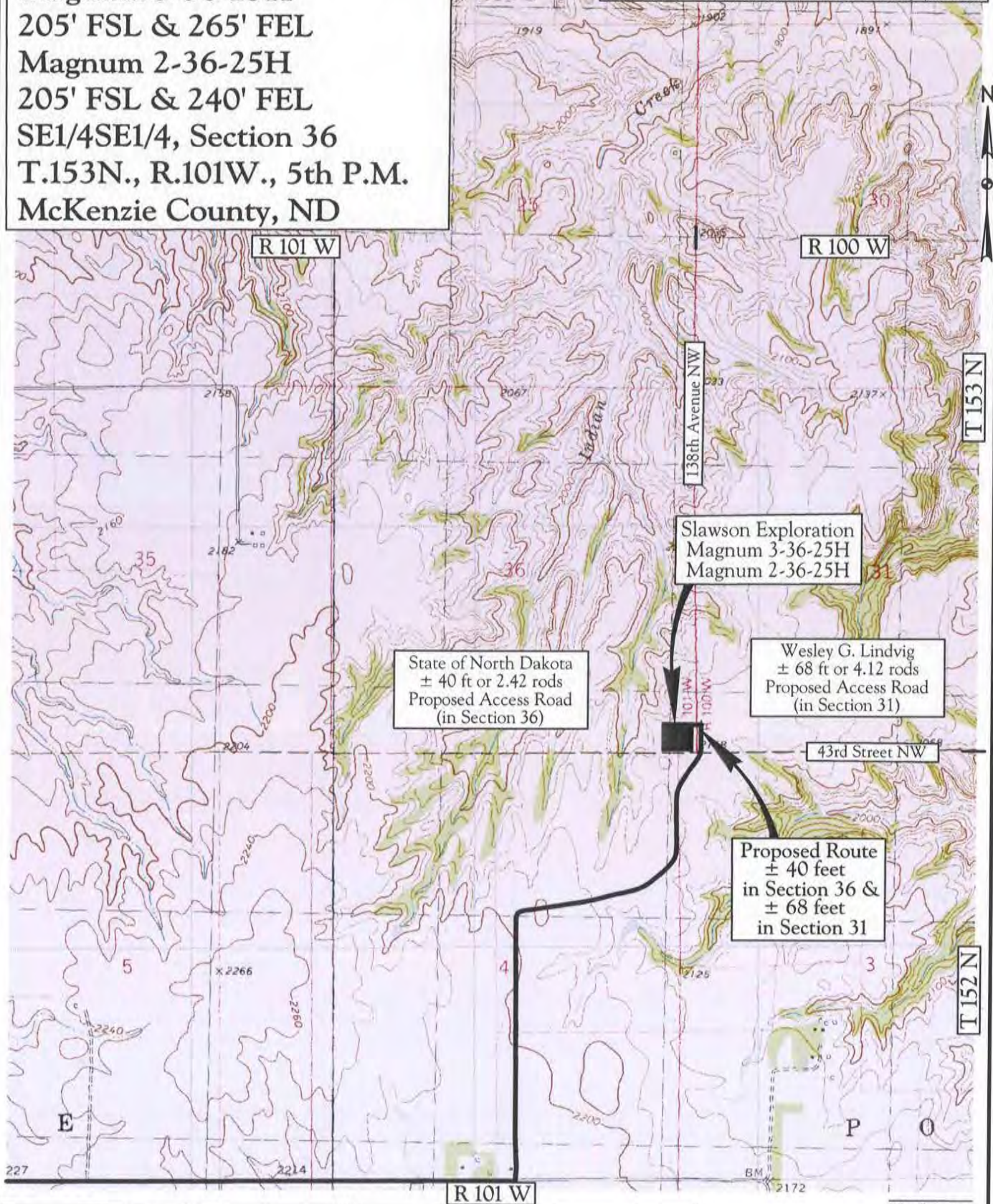


Drawn By Z. Theisen	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1" = 100'	Date 3/23/2012
Field Book OW-257	Material Pad Layout	Revised —	Project No. 3711645, 3712480	Drawing No. 6

**Kadrmas  
Lee &  
Jackson**  
Engineers Surveyors  
Planners

Slawson Exploration Co., Inc.  
 Magnum 3-36-25H  
 205' FSL & 265' FEL  
 Magnum 2-36-25H  
 205' FSL & 240' FEL  
 SE1/4SE1/4, Section 36  
 T.153N., R.101W., 5th P.M.  
 McKenzie County, ND

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Map "B"  
 Quad Access Route

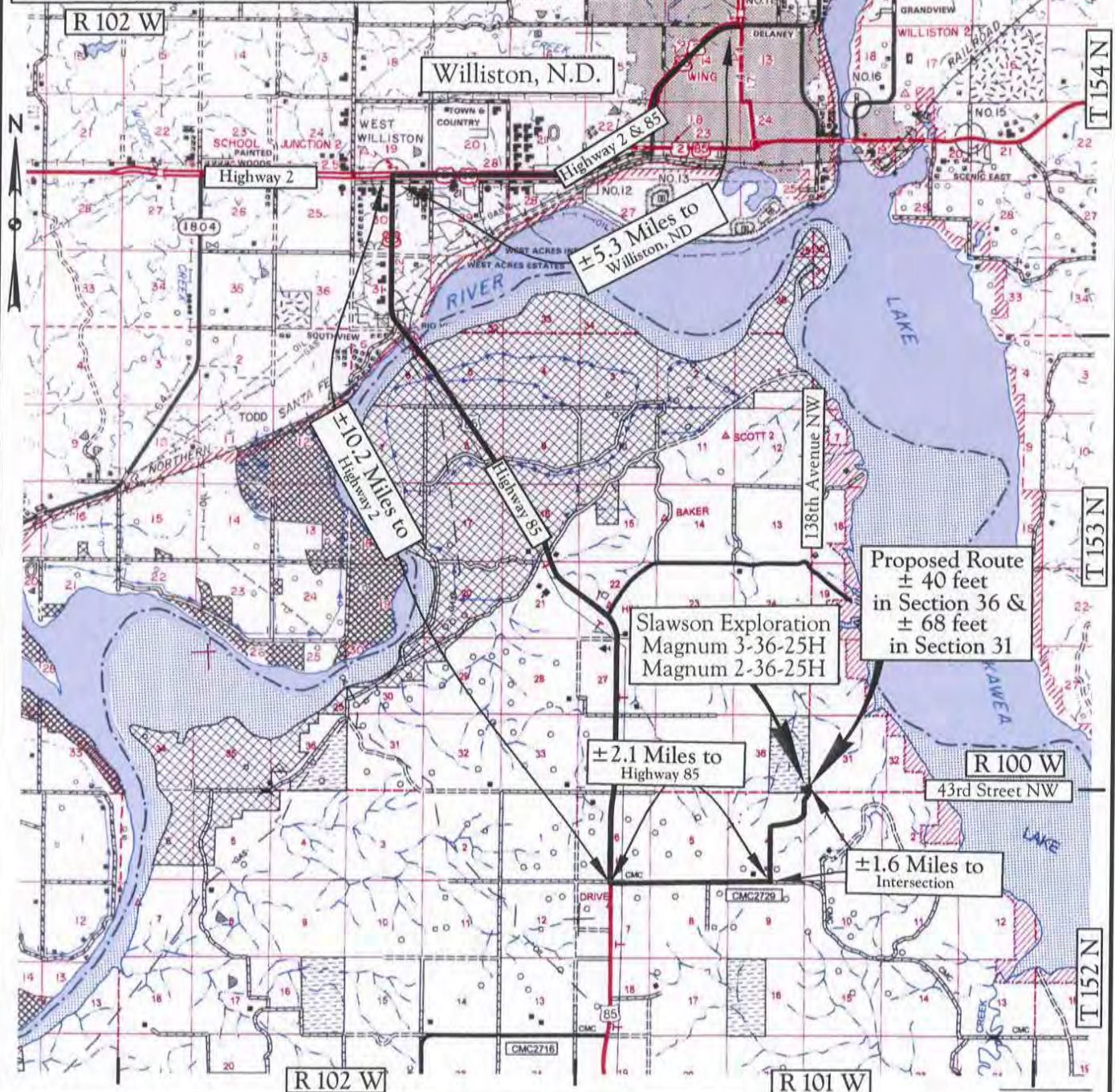
Legend  
 Existing Roads ———  
 Proposed Roads - - - - -

Scale 1" = 2000'

Kadmas  
 Lee &  
 Jackson  
 Engineers Surveyors  
 Planners

Slawson Exploration Co., Inc.  
 Magnum 3-36-25H  
 205' FSL & 265' FEL  
 Magnum 2-36-25H  
 205' FSL & 240' FEL  
 SE1/4SE1/4, Section 36  
 T.153N., R.101W., 5th P.M.  
 McKenzie County, ND

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Map "A"  
 County Access Route

**Legend**  
 Existing Roads ———  
 Proposed Roads - - - - -

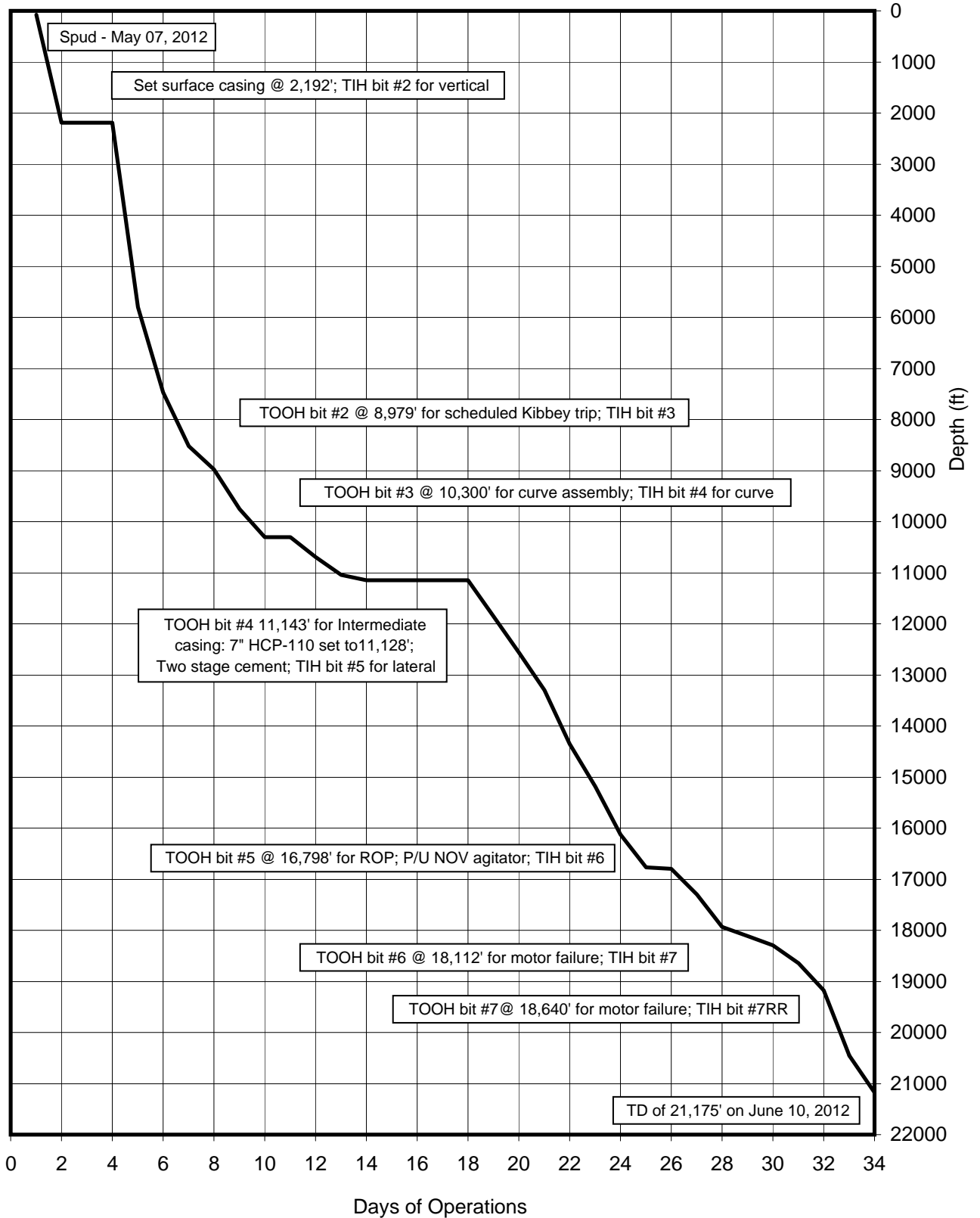
Scale 1" = 2 Miles

Kadmas  
 Lee &  
 Jackson  
 Engineers Surveyors  
 Planners

# TIME VS DEPTH

Slawson Exploration Company, Inc

Magnum 3-36-25H



# DAILY DRILLING SUMMARY

Day	Date 2012	Depth (6000 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	WOB (Klbs) MM	RPM (RT)	RPM (MM)	PP	SPM 1	SPM 2	GPM	24 Hr Activity	Formation
1	5/8	80'	-	1	-	-	-	-	-	-	-	-	Repair mud pump motor cooling fan (electrical). Spud in at 13:30 on may 7, 2012. Drill from 80 - 1121. Received 54 joints 9 5/8 j55 36# casing from stock at black hills	-
2	5/9	2,192'	2,112	1	-	-	-	-	-	-	-	-	Drill surface from 1121 - 1828. Service rig. Drill surface from 1828 - 2162 Circulate hole clean. Wiper trip to bit and back, no troubles. Drill from 2162 - 2192. Circulate hole clean. Trip out of hole for casing.	-
3	5/10	2,192'	0	2	-	-	-	-	-	-	-	-	Lay down 8 inch drill collars. Rig up Wyoming casing. Make up float equipment and start running casing Repair pipe skate (downtime) Run 53 jns 9-5/8 K55 36# STC casing (2196.47 threads off, 2214 threads on) FC @ 2147 shoe @ 2192'. 5 centralizers. Circulate casing while rigging up Baker Hughes cementers. Cement with 591 sks premium lite cement with .08%stf+3%cacH+ 25 lbs/sk cello flake + 1% bwoc sodium metasilicate + 1 gals/100 sk fp-131 + 12% bwoc bentonitell (12 ppg and 2.39 yield) lead cement and 250 sks class G with .08%stf+2%cacH+ 25 lbs/sk cello flake + 1 gals/100 sk FP-13L (15.8 ppg and 1.16 yield) tail cement. Displace with 166.5 bbls fresh water. Plug down at 1918, floats held. Rig down cementers and cut off casing. Weld on cameron well head. Nipple up BOP's.	Niobrara
4	5/11	2,192'	0	2	-	-	-	-	-	-	-	-	Nipple up BOP's. Pressure test BOP's 250 low, 5000 high, annular to 250 low, 3500 high. Clean surface water out of mud system, install wear bushing. Pick up mud motor and MWD. Trip in hole. Downtime for blown hose on top drive. Trip in hole. Displace water out of hole with invert. Install rotating head rubber.	Niobrara
5	5/12	5,801'	3,609	2	16	-	50	150	2790	97	97	461	Rig serviceDrill cement and float equipment. Drill from 2192 - 5801 ROP = 156.9 fph	Dakota
6	5/13	7,473'	1,672	2	20	-	50	174	2790	100	102	461	Drill from 5801 - 7068 ROP = 115.1 fph. Rig service. Drill from 7068 - 7245 ROP = 88.5 fph. Rig on down time for crack in pulsation block on only available pump. Tripping out of hole while being welded. Drill from 7245 - 7473 ROP = 76 fph. Rig on down time for crack in pulsation block on only available pump. Tripping out of hole while being welded.	Opeche
7	5/14	8,521'	1,048	2	25	12	50	140	2498	0	102	484	Trip back in hole from shoe (downtime for pump repair). Wash 60 feet to bottom Drill from 7473 - 8410 ROP = 62.4 fph Rig service. Drill from 8410 - 8521 ROP = 37 fph.	Kibbey
8	5/15	8,979'	458	3	18	16	50	139	2719	0	101	480	Drill 8,519' - 8,596', Rig service, Drill 8,596' - 8,979', TOO, Lay down BHA, Pick up BHA, TIH, Slip and cut drill line, Rig service, TIH	Charles
9	5/16	9,753'	774	3	22	-	50	124	2347	90	-	428	TIH, Ream/wash last 5 stands, Drill 8,979' - 9,073', Rig service, Drill 9,073' - 9,660', Rig service, Drill 9,660' - 9,753'	Mission Canyon

# DAILY DRILLING SUMMARY

Day	Date 2012	Depth (6000 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	WOB (Klbs) MM	RPM (RT)	RPM (MM)	PP	SPM 1	SPM 2	GPM	24 Hr Activity	Formation
10	5/17	10,300'	547	3	23	-	50	124	2360	90	-	428	Drill 9,753' - 10,030', Rig service, Drill 10,030' - 10,220', Rig service, Drill 10,220' - 10,300', Reached KOP, Circulate & condition, TOOH	Lodgepole
11	5/18	10,300'	0	3	-	-	-	-	-	-	-	-	TOOH, Lay down BHA, Rig up elong, Wireline/elog, Rig down elong, TIH, Rig service, TIH reaming as necessary	Lodgepole
12	5/19	10,691'	391	4	23	35	25	134	3113	-	97	463	TIH reaming as necessary, Drill/slide 10,300' - 10,641', Rig service, Drill 10,641' - 10,691'	Lodgepole
13	5/20	11,043'	352	4	20	30	25	132	3023	96	-	456	Drill/slide 10,691' - 10,832', Rig service, Drill/slide 10,832' - 11,022', Rig service, Drill/slide 11,022' - 11,043'	Middle Bakken
14	5/21	11,143'	100	4	20	30	25	132	3023	96	-	456	Drill/slide 11,043' - 11,117', Rig service, Drill 11,117' - 11,143', Circulate bottoms up, Short trip	Middle Bakken
15	5/22	11,143'	0	4	-	-	-	-	-	-	-	-	TIH after short trip, Circulate bottoms up, TOOH, Lay down BHA, Rig up casing crew, Run casing	Middle Bakken
16	5/23	11,143'	0	4	-	-	-	-	-	-	-	-	Run casing, Wait on cement crew	Middle Bakken
17	5/24	11,143'	0	4	-	-	-	-	-	-	-	-	Wait on cement crew, Rig up cement crew, Cement well, BOP test	Middle Bakken
18	5/25	11,143'	0	5	-	-	-	-	-	-	-	-	Pick up BHA, TIH, Drill float, TIH, Pressure test casing, TIH	Middle Bakken
19	5/26	11,862'	719	5	14	26	50	264	2735	103	-	249	Pressure test casing, Ream/wash to bottom, Drill cement, landing collar, float & shoe, Drill 11,143' - 11,536', Rig service, Downtime for top drive washed swivel packing, Drill 11,536' - 11,862'	Middle Bakken
20	5/27	12,559'	697	5	17	30	50	269	2619	105	-	254	Drill 11,862' - 12,124', Rig service, Drill 12,124' - 12,589'	Middle Bakken
21	5/28	13,300'	741	5	20	39	50	264	2989	103	-	249	Drill 12,589' - 12,884', Rig service, Drill 12,884' - 13,330'	Middle Bakken
22	5/29	14,348'	1,048	5	15	50	50	267	2953	104	-	252	Drill 13,330' - 13,739', Rig service, Drill 13,739' - 14,245', Rig service, Drill 14,245' - 14,348'	Middle Bakken
23	5/30	15,182'	834	5	14	42	50	267	3111	-	104	252	Drill 14,348' - 14,682', Rig service, Drill 14,682' - 15,057', Rig service, Drill 15,057' - 15,182'	Middle Bakken
24	5/31	16,121'	939	5	13	34	50	265	3075	-	103	250	Drill 15,182' - 15,718', Rig service, Drill 15,718' - 16,121'	Middle Bakken
25	6/1	16,764'	643	5	16	25	50	267	3126	104	-	252	Drill 16,121' - 16,288', Rig service, Drill 16,288' - 16,669', Rig service, Drill 16,669' - 16,764'	Middle Bakken
26	6/2	16,798'	34	5	16	25	50	267	3126	104	-	252	Drill 16,764' - 16,798', Circulate bottom up, TOOH, Lay down BHA/Pick up BHA, TIH, Slip and cut, Rig service, TIH	Middle Bakken
27	6/3	17,295'	497	6	12	30	51	244	3505	95	-	230	TIH, Circulate bottoms up, Drill 16,798' - 17,226', Rig service, Drill 17,226' - 17,295'	Middle Bakken
28	6/4	17,929'	634	6	13	35	51	244	3581	95	0	230	Drill 17,295' - 17,418', Rig service, Drill 17,418' - 17,892', Rig service, Drill 17,892' - 17,929'	Middle Bakken

# DAILY DRILLING SUMMARY

Day	Date 2012	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	WOB (Klbs) MM	RPM (RT)	RPM (MM)	PP	SPM 1	SPM 2	GPM	24 Hr Activity	Formation
29	6/5	18,112'	183	6	9	28	55	257	3826	-	100	242	Drill 17,929' - 18,039', Rig service/work on top drive, Drill 18,039' - 18,112', Circulate bottoms up, TOOH, Lay down BHA	Middle Bakken
30	6/6	18,295'	183	7	11	38	53	244	3596	-	95	230	TOOH, Lay down BHA, Pick up BHA, TIH, Rig service, TIH, Drill 18,112' - 18,295'	Middle Bakken
31	6/7	18,640'	345	7	12	35	52	257	3733	100	-	242	Drill 18,295' - 18,639', Circulate bottoms up, TOOH	Middle Bakken
32	6/8	19,173	533	7RR	18	73	52	134	3871	94	-	228	TOOH, Lay down BHA, Pick up BHA, TIH, Rig Service, TIH, Slip and cut, TIH, Drill 18,640' - 19,173'	Middle Bakken
33	6/9	20,459	1,286	7RR	19	33	53	132	3933	93	-	225	Drill 19,173' - 19,791', Rig service, Drill 19,791' - 20,459'	Middle Bakken
34	6/10	21,174	2,001	7RR	19	49	53	132	3974	93	-	225	Drill 20,459' - 20,835', Rig service, Drill 20,835' - 21,175', TD well, Circulate bottoms up, Wiper trip	Middle Bakken

# DAILY MUD SUMMARY

Day	Date 2012	Mud Depth	Mud WT (ppg)	Vis (sec/qt)	PV (cP)	YP (lbs/100 ft2)	Gels (lbs/100 ft <sup>3</sup> )	Cake (API/HTHP)	Cor. Solids (%)	NAP/H2O (% by vol)	NAP/H <sub>2</sub> O (ratio)	Cl <sup>-</sup> (mg/L)	Excess Lime (lb/bbl)	Alk	Electrical Stability	Salinity (ppm)	600/300	LGS/HGS (%)	Gain/Loss (bbls)
1	05/08	655'	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	05/09	1,520'	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	05/10	2,168'	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	05/11	3,090'	9.7	69	19	12	7/9	2	10.42	68/21.58	77/23	28k	0.65	0.5	670	212188	25/31	4.48/5.94	-
5	05/12	7,045'	9.6	54	17	12	7/8	2	10.31	69/20.69	77/23	30k	3.12	2.4	735	236891	23/29	4.66/5.65	-
6	05/13	7,530'	9.5	54	15	7	5/7	2	9.56	69.5/20.94	77/23	34k	3.38	2.6	825	264606	18.5/22	4.51/5.06	-
7	05/14	8,704'	9.5	51	15	14	8/9	2	9.31	71/20.69	77/23	30k	2.73	2.1	820	236891	22/29	3.66/5.65	-
8	05/15	9,035'	9.5	57	15	19	9/10	2	10.35	69/20.65	77/23	29k	2.99	2.3	840	229960	24.5/34	5.86/4.49	-12
9	05/16	9,882'	9.8	64	23	19	12/14	2	11.51	67/21.49	76/24	35k	2.6	2	610	265761	32.5/42	6.51/5.00	-32
10	05/17	10,300'	9.9	66	25	19	11/12	2	11.59	67/21.41	76/24	43.5k	2.21	1.7	635	311818	34.5/44	6.24/5.35	-/-
11	05/18	10,322'	9.9	73	24	24	14/16	2	11.59	67/21.41	76/24	45k	2.54	1.95	610	311818	36/48	6.24/5.35	-/-
12	05/19	10,765'	9.95	56	21	17	10/13	2	11.31	67/21.69	76/24	45k	2.86	2.2	705	311818	29.5/38	5.29/6.01	-/-
13	05/20	11,117'	10	52	20	14	10/12	2	11.59	67/21.41	76/24	45k	2.86	2.2	800	311818	27/34	5.44/6.15	-/9
14	05/21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	05/22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	05/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	05/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	05/25	11,170'	9.75	75	24	14	9/11	2	10.11	63/26.89	70/30	46k	2.6	2	525	279307	31/38	5.26/4.85	-/-
19	05/26	12,110'	9.7	52	16	13	7/8	2	10.04	65/24.96	72/28	46k	3.32	2.55	755	302345	22.5/29	5.26/4.77	-/-
20	05/27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	05/28	13,440'	9.7	60	17	16	11/14	2	10.31	68/21.69	76/24	45k	5.59	4.3	820	311818	25/33	5.11/5.20	-/-
22	05/29	14,431'	9.7	62	17	16	11/14	2	10.43	69/20.57	77/23	43k	5.59	4.3	890	311818	25/33	5.10/5.33	-/-
23	05/30	15,555'	9.75	60	16	17	11/13	2	10.71	69/20.29	77/23	44k	5.46	4.2	900	311818	24.5/33	5.25/5.46	-/-
24	05/31	16,255'	9.7	63	17	20	12/15	2	10.59	68/21.41	76/24	41k	5.46	4.2	920	311818	27/37	5.26/5.33	-/-
25	06/01	16,798'	9.9	60	17	21	13/15	2	12.18	67/20.82	76/24	32k	4.29	3.3	980	251245	27.5/38	6.50/5.68	-35
26	06/02	16,798'	10	63	18	21	14/15	2	12.82	67/20.18	77/23	37k	4.94	3.8	1020	301190	28.5/39	7.35/5.47	-48
27	06/03	17,451'	9.7	65	18	17	12/13	2	10.79	69/20.21	77/23	38k	4.81	3.7	950	306966	26.5/35	5.38/5.41	-/-
28	06/04	18,037'	9.7	61	17	17	11/12	2	10.84	70/19.16	78/22	37k	4.81	3.7	1030	311818	25.5/34	5.25/5.59	-/-
29	06/05	18,112'	9.9	65	17	18	12/13	2	11.82	68/20.18	77/23	37k	4.81	3.7	1130	301190	26/35	5.97/5.86	-/-
30	06/06	18,443'	9.7	53	15	16	11/12	2	10.91	70/19.09	78/22	36k	4.81	3.7	1050	306966	23/31	5.36/5.55	-/-
30	06/07	18,640'	10	54	15	14	9/10	2	11.95	68/20.05	77/23	35k	1.95	1.5	1150	286110	22/29	5.28/6.67	-/-
31	06/08	19,506'	9.8	54	17	14	10/11	2	12.58	70/17.42	78/22	25k	1.3	1	1020	234580	24/31	7.66/4.91	-/-

# DAILY MUD SUMMARY

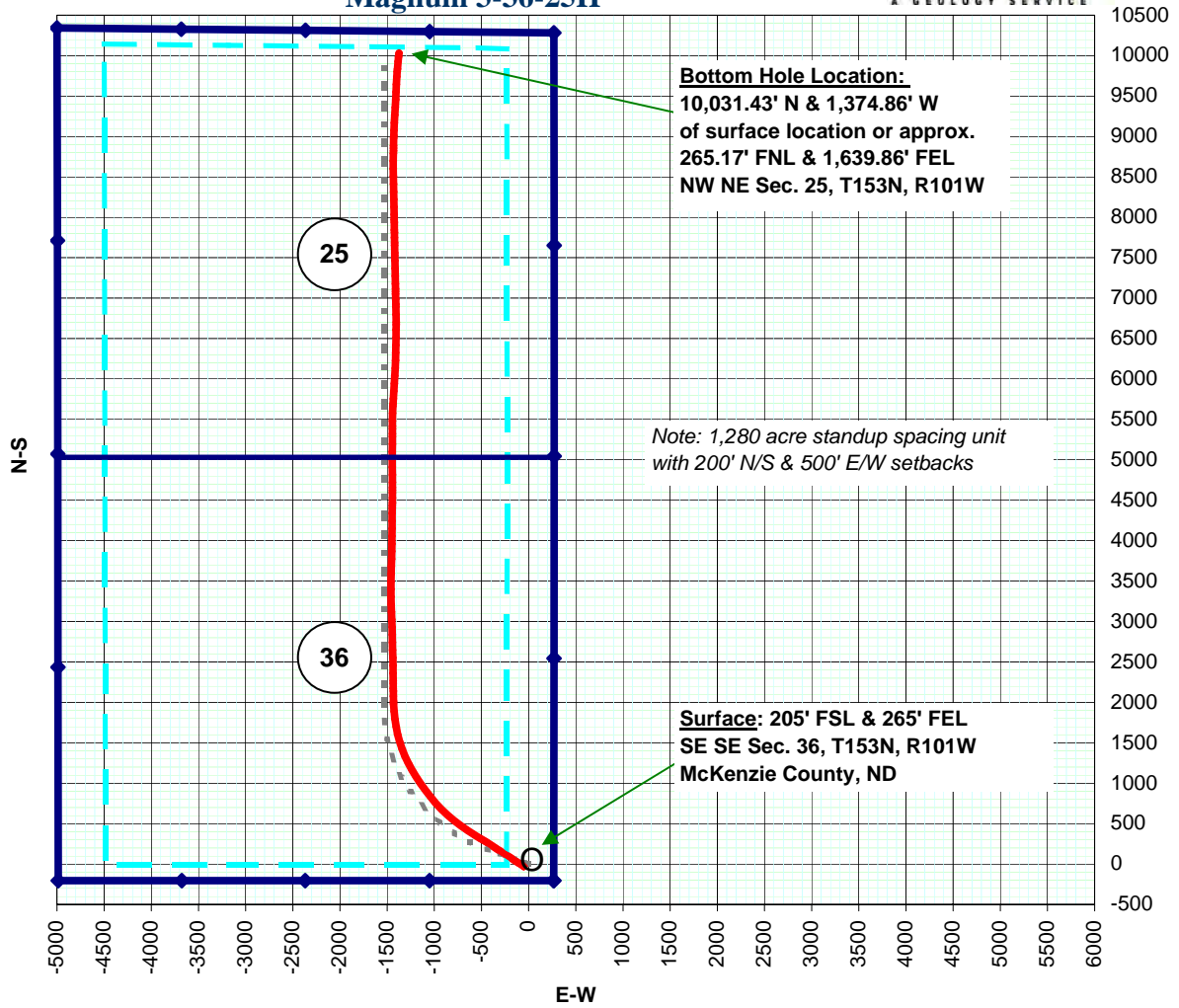
Day	Date 2012	Mud Depth	Mud WT (ppg)	VIS (sec/qt)	PV (cP)	YP (lbs/ 100 ft <sup>2</sup> )	Gels (lbs/ 100 ft <sup>3</sup> )	Cake (API/ HTHP)	Cor. Solids (%)	NAP/H2O (%) by vol	NAP/H <sub>2</sub> O (ratio)	Cl <sup>-</sup> (mg/L)	Excess Lime (lb/bbl)	Alk	Electrical Stability	Salinity (ppm)	600/ 300	LGS/HGS (%)	Gain/ Loss (bbls)
32	06/09	20,722'	9.8	53	15	18	11/12	2	11.72	70/18.28	78/22	31k	2.6	2	1025	276997	24/33	5.89/5.82	-/-
33	06/10	20,722'	9.8	53	15	18	11/12	2	11.72	70/18.28	78/22	31k	2.6	2	1025	276997	24/33	5.89/5.82	-/-

## BIT RECORD

Bit #	Size	Type	Make	Model	Serial #	Jets	Depth In	Depth Out	Footage	Hours	Accum. Hours	Vert. Dev.
1	13 1/2	PDC	-	S11A	7-1-0268	4x20	80'	2,192'	2,112'	40	40.00	Surface
2	8 3/4	PDC	HDBS	FX65D	11907278	4x16	2,192'	8,979'	6,787'	48	88.00	Vertical
3	8 3/4	PDC	HDBS	FX65D	1195460	4x16	8,979'	10,300'	1,321'	32.7	120.70	Vertical
4	8 3/4	PDC	HDBS	FXD55M	12003497	5x18	10,300'	11,143'	843'	45.8	166.50	Curve
5	6	PDC	SMITH	SDI513	JE2393	5x16	11,143'	16,798'	5,655'	148.08	314.58	Lateral
6	6	PDC	Security	FX64	11975872	6x20	16,798'	18,112'	1,314'	44.58	359.16	Lateral
7	6	PDC	Security	FX64	11997490	6x20	18,112'	18,640'	528'	18.34	377.50	Lateral
7RR	6	PDC	Security	FX64	11997490	6x20	18,640'	21,175'	2,535'	48	425.50	Lateral

## PLAN VIEW

Slawson Exploration Company, Inc.  
Magnum 3-36-25H



Slawson Exploration Company, Inc.

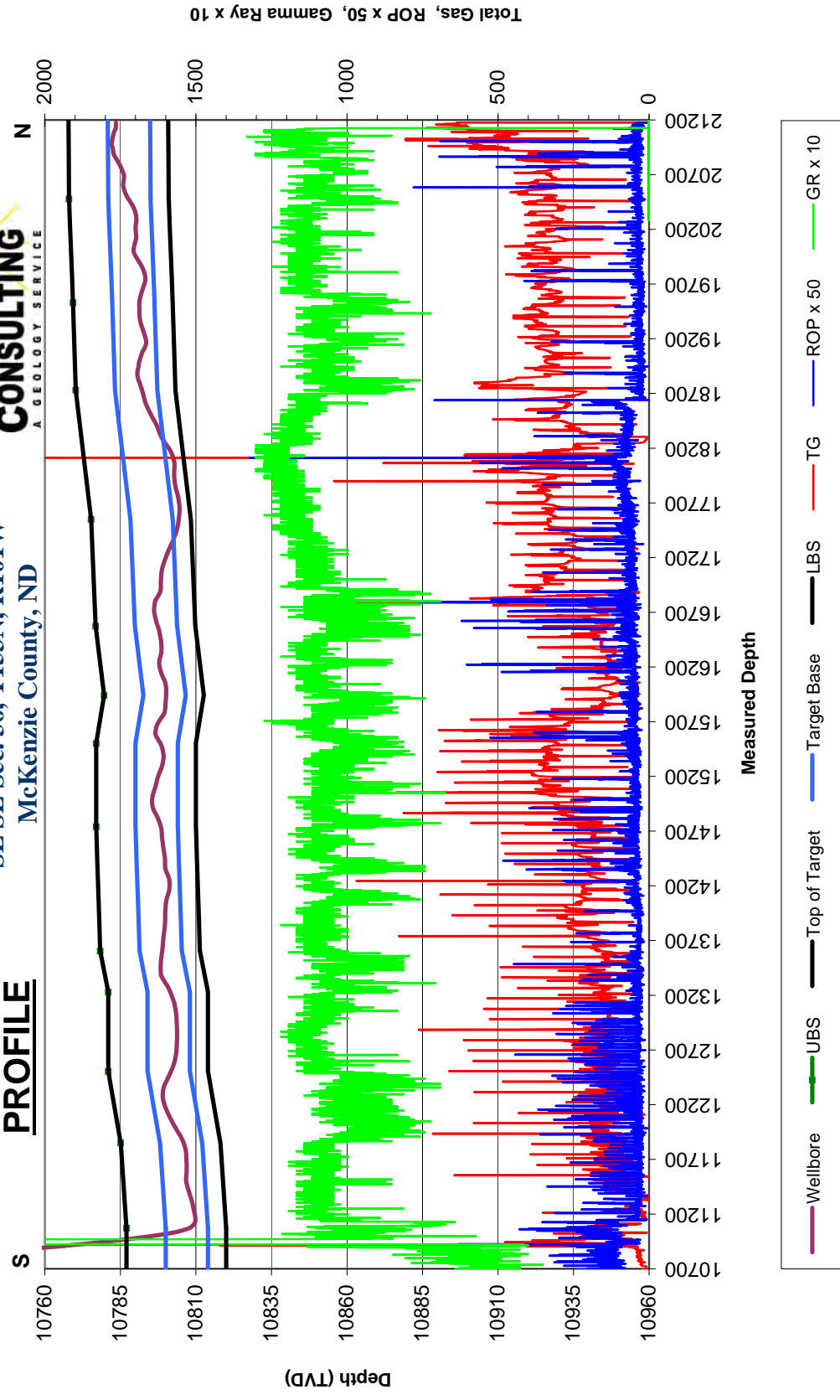
Magnum 3-36-25H

SE SE Sec. 36, T153N, R101W

McKenzie County, ND



## PROFILE



# FORMATION MARKERS & DIP ESTIMATES

Slawson Exploration Company, Inc. - Magnum 3-36-25H

Dip Change Points	MD	TVD	TVD diff.	MD diff.	Dip	Dipping up/down	Type of Marker
<b>Marker</b>							
Gamma Marker F 4	11,072'	10,800.00				Flat	Gamma
Gamma Marker F 4	11,851'	10,798.09	-1.91	779.00	0.14	Up	Gamma
Gamma Marker F 4	12,504'	10,793.98	-4.11	653.00	0.36	Up	Gamma
Gamma Marker F 2	13,229'	10,793.98	0.00	725.00	0.00	Flat	Gamma
Gamma Marker F 2	13,604'	10,791.34	-2.64	375.00	0.40	Up	Gamma
Gamma Marker F 4	14,741'	10,790.00	-1.34	1137.00	0.07	Up	Gamma
Gamma Marker F 4	15,502'	10,790.00	0.00	761.00	0.00	Flat	Gamma
Gamma Marker F 4	15,940'	10,792.62	2.62	438.00	-0.34	Down	Gamma
Gamma Marker F 2	16,574'	10,789.80	-2.82	634.00	0.25	Up	Gamma
Gamma Marker F 4	17,550'	10,788.30	-1.50	976.00	0.09	Up	Gamma
Gamma Marker F 4	18,731'	10,783.20	-5.10	1181.00	0.25	Up	Gamma
Gamma Marker F 4	19,530'	10,782.30	-0.90	799.00	0.06	Up	Gamma
Gamma Marker F2	20,478'	10,781.00	-1.30	948.00	0.08	Up	Gamma
Gamma Marker F 1	21,175'	10,781.00	0.00	697.00	0.00	Flat	Gamma
<b>Gross Dip</b>							
Initial Target Contact	11,015'	10,800.00					
Projected Final Target Contact	21,175'	10,780.80	-19.20	10160.00	0.11	Up	Projection

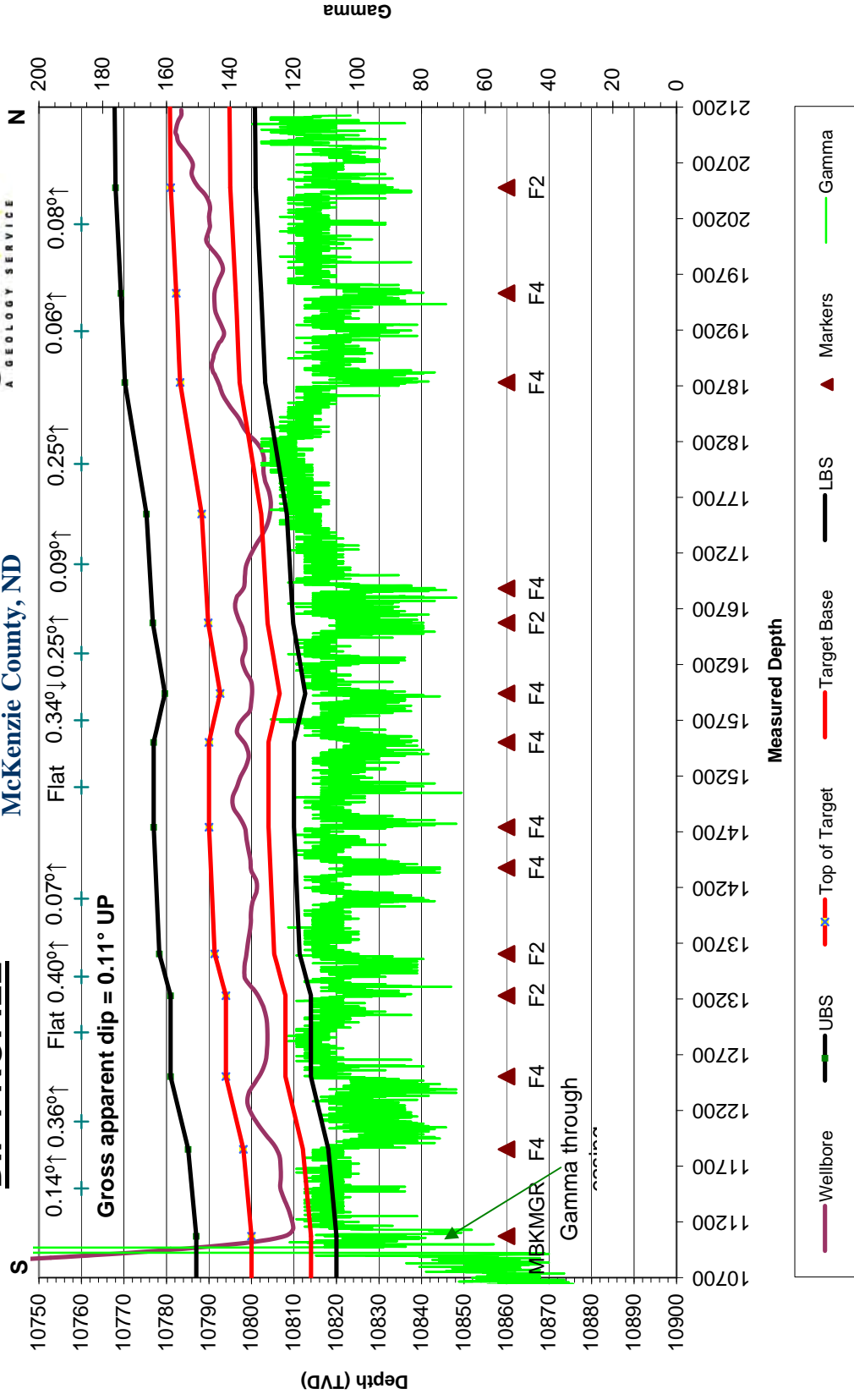
## DIP PROFILE

# Slawson Exploration Company, Inc.

# Magnum 3-36-25H

**SE SE Sec. 36, T153N, R101W**

## McKenzie County, ND



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**SUNBURST CONSULTING, INC.**

&gt;

Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 3-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	265	FE/WL:	E

Kick-off:	5/18/2012
Finish:	6/9/2012
Directional Supervision:	Sperry Sun

Date: 6/18/2012  
Time: 11:43

**F9 to re-calculate**

Minimum Curvature Method (SPE-3362)

Proposed dir: **351.86**

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/
			AZM	TVD				100
Tie	10260.00	0.30	208.70	10258.85	-28.20	-51.04	-20.69	0.05
1	10306.00	1.62	296.19	10304.84	-28.02	-51.68	-20.42	3.55
2	10338.00	7.05	305.96	10336.74	-26.66	-53.68	-18.80	17.06
3	10370.00	13.00	307.32	10368.24	-23.33	-58.13	-14.86	18.61
4	10401.00	17.32	308.65	10398.15	-18.33	-64.51	-9.01	13.98
5	10433.00	20.84	307.38	10428.39	-11.90	-72.76	-1.47	11.08
6	10465.00	24.02	307.63	10457.96	-4.46	-82.44	7.26	9.94
7	10497.00	27.23	307.09	10486.81	3.93	-93.44	17.12	10.06
8	10528.00	30.57	305.72	10513.95	12.81	-105.51	27.62	10.98
9	10560.00	33.88	306.47	10541.02	22.87	-119.29	39.53	10.42
10	10592.00	36.67	306.55	10567.14	33.86	-134.14	52.52	8.72
11	10624.00	39.47	307.55	10592.33	45.76	-149.88	66.52	8.96
12	10656.00	42.26	307.40	10616.53	58.49	-166.50	81.48	8.72
13	10688.00	45.33	307.94	10639.62	72.03	-184.02	97.36	9.66
14	10719.00	47.56	307.66	10660.98	85.79	-201.77	113.50	7.22
15	10751.00	49.90	307.17	10682.09	100.41	-220.88	130.67	7.40
16	10783.00	52.81	306.78	10702.07	115.43	-240.84	148.37	9.14
17	10815.00	55.97	306.97	10720.70	131.04	-261.65	166.77	9.89
18	10847.00	59.31	307.01	10737.82	147.31	-283.24	185.93	10.44
19	10878.00	62.99	306.48	10752.78	163.55	-304.99	205.08	11.96
20	10910.00	66.72	306.43	10766.37	180.75	-328.29	225.42	11.66
21	10942.00	69.49	307.49	10778.31	198.61	-352.01	246.45	9.19
22	10974.00	72.67	307.37	10788.68	217.00	-376.05	268.06	9.94
23	11006.00	76.14	307.35	10797.28	235.70	-400.54	290.04	10.84
24	11037.00	80.35	307.37	10803.60	254.12	-424.66	311.68	13.58
25	11069.00	85.53	306.66	10807.53	273.23	-450.01	334.19	16.34
26	11094.00	87.90	306.83	10808.96	288.16	-470.01	351.80	9.50
27	11128.00	89.54	303.08	10809.72	307.63	-497.86	375.02	12.04
28	11160.00	90.12	304.73	10809.82	325.48	-524.42	396.45	5.47
29	11223.00	90.62	306.19	10809.41	362.02	-575.73	439.90	2.45
30	11317.00	90.28	307.89	10808.67	418.64	-650.76	506.57	1.84
31	11412.00	91.02	310.59	10807.59	478.73	-724.32	576.46	2.95
32	11507.00	89.97	313.07	10806.77	542.08	-795.10	649.20	2.83
33	11601.00	89.85	316.64	10806.92	608.37	-861.72	724.25	3.80
34	11696.00	90.25	319.37	10806.84	678.96	-925.28	803.14	2.90
35	11791.00	90.06	322.96	10806.58	752.95	-984.84	884.81	3.78
36	11886.00	91.39	326.39	10805.38	830.44	-1039.76	969.30	3.87
37	11981.00	91.02	327.00	10803.38	909.82	-1091.91	1055.26	0.75
38	12076.00	91.20	328.80	10801.54	990.28	-1142.38	1142.05	1.90
39	12171.00	90.68	331.23	10799.98	1072.55	-1189.85	1230.21	2.62

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**SUNBURST CONSULTING, INC.**

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Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 3-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	265	FE/WL:	E

Kick-off:	5/18/2012
Finish:	6/9/2012
Directional Supervision:	Sperry Sun

Date: 6/18/2012  
Time: 11:43

**F9 to re-calculate**

Minimum Curvature Method (SPE-3362)

Proposed dir: **351.86**

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/
			AZM	TVD				100
40	12266.00	90.46	333.84	10799.03	1156.83	-1233.66	1319.85	2.76
41	12361.00	89.11	335.66	10799.39	1242.74	-1274.18	1410.64	2.39
42	12456.00	89.01	339.74	10800.95	1330.61	-1310.22	1502.72	4.30
43	12551.00	89.17	342.14	10802.46	1420.38	-1341.23	1595.98	2.53
44	12646.00	89.75	345.42	10803.35	1511.58	-1367.76	1690.02	3.51
45	12741.00	89.91	348.94	10803.64	1604.20	-1388.84	1784.69	3.71
46	12836.00	89.94	351.50	10803.76	1697.81	-1404.98	1879.64	2.69
47	12932.00	90.12	353.75	10803.71	1793.01	-1417.30	1975.63	2.35
48	13027.00	90.15	354.79	10803.49	1887.54	-1426.78	2070.54	1.10
49	13122.00	90.59	358.52	10802.87	1982.36	-1432.33	2165.19	3.95
50	13154.00	90.68	359.58	10802.52	2014.35	-1432.86	2196.94	3.32
51	13217.00	90.80	358.90	10801.70	2077.34	-1433.69	2259.41	1.10
52	13280.00	91.17	359.12	10800.62	2140.32	-1434.78	2321.91	0.68
53	13312.00	91.57	358.96	10799.86	2172.31	-1435.32	2353.65	1.35
54	13375.00	90.74	359.33	10798.59	2235.28	-1436.26	2416.13	1.44
55	13407.00	90.12	359.34	10798.35	2267.28	-1436.63	2447.85	1.94
56	13501.00	89.85	359.72	10798.37	2361.28	-1437.40	2541.01	0.50
57	13596.00	89.63	359.26	10798.80	2456.27	-1438.24	2635.17	0.54
58	13691.00	90.00	358.68	10799.11	2551.26	-1439.95	2729.44	0.72
59	13787.00	89.51	358.94	10799.52	2647.23	-1441.94	2824.73	0.58
60	13882.00	90.12	358.72	10799.83	2742.21	-1443.88	2919.03	0.68
61	13976.00	89.81	359.01	10799.88	2836.20	-1445.75	3012.33	0.45
62	14071.00	89.75	358.30	10800.25	2931.17	-1447.98	3106.66	0.75
63	14164.00	89.11	357.96	10801.17	3024.11	-1451.01	3199.10	0.78
64	14259.00	90.93	357.85	10801.14	3119.05	-1454.48	3293.56	1.92
65	14353.00	90.55	358.04	10799.93	3212.98	-1457.85	3387.03	0.45
66	14447.00	89.69	359.08	10799.73	3306.94	-1460.22	3480.38	1.44
67	14540.00	90.89	1.15	10799.26	3399.94	-1460.03	3572.41	2.57
68	14634.00	89.66	0.15	10798.81	3493.93	-1458.96	3665.30	1.69
69	14728.00	90.71	1.33	10798.50	3587.92	-1457.75	3758.17	1.68
70	14821.00	90.74	1.19	10797.33	3680.89	-1455.70	3849.92	0.15
71	14914.00	91.20	1.95	10795.75	3773.84	-1453.16	3941.57	0.96
72	15008.00	89.01	0.96	10795.58	3867.80	-1450.77	4034.25	2.56
73	15101.00	89.78	0.46	10796.56	3960.79	-1449.62	4126.14	0.99
74	15196.00	89.14	0.60	10797.46	4055.78	-1448.74	4220.05	0.69
75	15291.00	89.32	0.09	10798.73	4150.77	-1448.17	4314.00	0.57
76	15385.00	89.97	0.33	10799.32	4244.76	-1447.82	4407.00	0.74
77	15480.00	90.89	0.57	10798.60	4339.76	-1447.08	4500.93	1.00
78	15543.00	91.39	0.75	10797.35	4402.74	-1446.35	4563.17	0.84
79	15575.00	90.80	1.39	10796.74	4434.73	-1445.75	4594.76	2.72

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**SUNBURST CONSULTING, INC.**

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Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 3-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
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Kick-off:	5/18/2012
Finish:	6/9/2012
Directional Supervision:	Sperry Sun

Date: 6/18/2012  
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**F9 to re-calculate**

Minimum Curvature Method (SPE-3362)

Proposed dir: **351.86**

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
80	15607.00	89.78	1.49	10796.58	4466.72	-1444.95	4626.31	3.20
81	15669.00	89.20	0.60	10797.13	4528.70	-1443.82	4687.51	1.71
82	15733.00	88.43	359.65	10798.45	4592.69	-1443.68	4750.83	1.91
83	15764.00	88.58	359.91	10799.26	4623.68	-1443.80	4781.52	0.97
84	15796.00	89.85	359.79	10799.70	4655.67	-1443.88	4813.21	3.99
85	15860.00	89.75	359.57	10799.92	4719.67	-1444.24	4876.61	0.38
86	15955.00	89.97	359.60	10800.16	4814.67	-1444.93	4970.75	0.23
87	16050.00	90.34	359.37	10799.90	4909.66	-1445.78	5064.91	0.46
88	16144.00	91.33	359.89	10798.53	5003.65	-1446.39	5158.04	1.19
89	16240.00	89.48	0.84	10797.85	5099.64	-1445.78	5252.97	2.17
90	16335.00	89.69	0.31	10798.54	5194.63	-1444.82	5346.87	0.60
91	16430.00	90.37	359.83	10798.49	5289.63	-1444.71	5440.90	0.88
92	16462.00	90.31	359.93	10798.30	5321.63	-1444.77	5472.59	0.36
93	16525.00	90.46	359.70	10797.88	5384.63	-1444.98	5534.98	0.44
94	16557.00	90.71	0.34	10797.55	5416.63	-1444.97	5566.65	2.15
95	16621.00	90.59	1.11	10796.82	5480.62	-1444.16	5629.88	1.22
96	16716.00	90.22	1.38	10796.15	5575.59	-1442.09	5723.61	0.48
97	16804.00	89.29	2.84	10796.53	5663.53	-1438.85	5810.20	1.97
98	16835.00	88.37	3.17	10797.16	5694.48	-1437.23	5840.61	3.15
99	16897.00	89.60	2.50	10798.26	5756.39	-1434.16	5901.46	2.26
100	16990.00	90.19	3.48	10798.43	5849.27	-1429.31	5992.71	1.23
101	17085.00	89.44	3.00	10798.74	5944.11	-1423.94	6085.84	0.94
102	17180.00	89.35	2.75	10799.74	6038.99	-1419.18	6179.09	0.28
103	17275.00	89.04	3.12	10801.07	6133.85	-1414.31	6272.31	0.51
104	17370.00	89.07	1.09	10802.64	6228.77	-1410.83	6365.78	2.14
105	17465.00	89.54	1.09	10803.79	6323.75	-1409.02	6459.54	0.49
106	17559.00	89.75	1.33	10804.38	6417.72	-1407.03	6552.29	0.34
107	17654.00	90.03	0.14	10804.56	6512.71	-1405.81	6646.15	1.29
108	17749.00	90.46	0.36	10804.15	6607.71	-1405.40	6740.13	0.51
109	17813.00	90.62	0.45	10803.55	6671.71	-1404.95	6803.42	0.29
110	17844.00	90.56	0.02	10803.23	6702.71	-1404.82	6834.09	1.40
111	17939.00	89.97	359.51	10802.79	6797.70	-1405.21	6928.18	0.82
112	18034.00	89.88	358.43	10802.91	6892.69	-1406.92	7022.45	1.14
113	18065.00	90.25	358.80	10802.88	6923.68	-1407.67	7053.24	1.69
114	18129.00	90.74	358.76	10802.33	6987.66	-1409.03	7116.77	0.77
115	18192.00	91.33	359.10	10801.19	7050.64	-1410.21	7179.28	1.08
116	18224.00	91.51	359.19	10800.40	7082.62	-1410.68	7211.01	0.63
117	18256.00	91.63	359.36	10799.52	7114.61	-1411.09	7242.73	0.65
118	18319.00	90.65	358.75	10798.26	7177.59	-1412.13	7305.22	1.83
119	18415.00	90.96	358.78	10796.92	7273.56	-1414.20	7400.51	0.32

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**SUNBURST CONSULTING, INC.**

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Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 3-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	265	FE/WL:	E

Kick-off:	5/18/2012
Finish:	6/9/2012
Directional Supervision:	Sperry Sun

Date: 6/18/2012  
Time: 11:43

**F9 to re-calculate**

Minimum Curvature Method (SPE-3362)

Proposed dir: 351.86

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
120	18510.00	91.30	359.23	10795.04	7368.52	-1415.85	7494.76	0.59
121	18606.00	90.65	358.98	10793.41	7464.50	-1417.34	7589.98	0.73
122	18670.00	90.52	358.90	10792.76	7528.48	-1418.53	7653.49	0.24
123	18701.00	90.49	358.63	10792.48	7559.47	-1419.20	7684.26	0.88
124	18795.00	90.80	358.98	10791.42	7653.45	-1421.16	7777.56	0.50
125	18827.00	91.02	358.99	10790.92	7685.44	-1421.72	7809.31	0.69
126	18890.00	89.54	359.39	10790.61	7748.43	-1422.61	7871.80	2.43
127	18953.00	89.69	359.32	10791.03	7811.42	-1423.32	7934.26	0.26
128	18985.00	89.75	359.67	10791.19	7843.42	-1423.61	7965.97	1.11
129	19080.00	88.92	358.98	10792.29	7938.41	-1424.72	8060.16	1.14
130	19112.00	88.64	358.76	10792.97	7970.39	-1425.36	8091.91	1.11
131	19175.00	90.31	358.98	10793.55	8033.38	-1426.60	8154.44	2.67
132	19269.00	90.86	359.30	10792.59	8127.36	-1428.01	8247.67	0.68
133	19363.00	90.43	359.32	10791.53	8221.35	-1429.14	8340.87	0.46
134	19458.00	89.88	358.85	10791.27	8316.33	-1430.66	8435.12	0.76
135	19553.00	90.00	358.92	10791.37	8411.32	-1432.51	8529.41	0.15
136	19648.00	88.89	358.32	10792.29	8506.28	-1434.79	8623.74	1.33
137	19743.00	89.91	359.83	10793.29	8601.26	-1436.33	8717.98	1.92
138	19838.00	91.08	0.74	10792.47	8696.25	-1435.85	8811.95	1.56
139	19933.00	91.30	1.23	10790.50	8791.22	-1434.22	8905.72	0.57
140	19964.00	91.14	1.52	10789.83	8822.20	-1433.48	8936.29	1.07
141	19996.00	90.43	1.44	10789.40	8854.19	-1432.65	8967.84	2.23
142	20027.00	89.54	0.69	10789.40	8885.18	-1432.08	8998.44	3.75
143	20122.00	89.51	1.18	10790.19	8980.17	-1430.53	9092.24	0.52
144	20154.00	90.59	1.79	10790.16	9012.16	-1429.70	9123.79	3.88
145	20217.00	89.69	2.26	10790.01	9075.12	-1427.47	9185.80	1.61
146	20312.00	90.03	2.26	10790.24	9170.04	-1423.72	9279.24	0.36
147	20407.00	91.17	2.80	10789.25	9264.94	-1419.53	9372.59	1.33
148	20502.00	91.36	3.27	10787.15	9359.78	-1414.50	9465.77	0.53
149	20597.00	90.09	2.29	10785.95	9454.66	-1409.90	9559.04	1.69
150	20692.00	89.63	2.25	10786.18	9549.59	-1406.13	9652.47	0.49
151	20786.00	92.03	2.58	10784.82	9643.49	-1402.17	9744.87	2.58
152	20882.00	90.28	2.71	10782.88	9739.36	-1397.74	9839.15	1.83
153	20945.00	90.52	4.26	10782.44	9802.24	-1393.91	9900.85	2.49
154	20977.00	90.71	5.03	10782.10	9834.13	-1391.32	9932.06	2.48
155	21071.00	88.52	4.08	10782.73	9927.83	-1383.86	10023.75	2.54
156	21127.00	89.97	5.29	10783.47	9983.63	-1379.28	10078.35	3.37
PTB	21175.00	89.97	5.29	10783.50	10031.43	-1374.86	10125.03	0.00

# DEVIATION SURVEYS

Depth	Inclination	Azimuth
0	0.00	0.00
2192	0.00	0.00
2196	1.14	201.83
2207	1.14	209.57
2255	1.32	252.46
2298	2.46	266.26
2350	2.81	271.36
2446	2.81	272.67
2541	2.64	270.39
2637	2.46	269.51
2732	2.11	269.07
2828	2.11	268.37
2923	2.11	270.83
3019	1.93	263.53
3113	2.02	268.28
3209	1.67	270.48
3305	0.62	271.18
3401	0.62	261.86
3496	0.70	266.52
3591	0.62	244.72
3688	0.53	281.02
3784	0.26	263.36
3880	0.18	242.53
3974	0.00	50.13
4070	0.26	241.56
4165	0.26	196.47
4261	0.18	145.06
4356	0.44	144.27
4452	0.18	171.34
4547	0.09	57.52
4642	0.18	14.01
4737	0.00	118.51
4833	0.09	102.52
4929	0.18	118.95
5024	0.18	121.24
5119	0.26	81.51
5215	0.53	125.98
5310	0.70	69.38
5406	0.79	96.28
5501	0.88	98.65
5596	0.44	246.57
5691	0.44	246.92
5786	0.79	256.41
5882	1.23	247.36
5977	0.53	252.46
6072	0.26	309.94

Depth	Inclination	Azimuth
6167	0.62	27.99
6263	0.70	15.59
6359	0.70	16.47
6454	0.79	26.14
6550	0.44	17.53
6644	0.53	19.02
6740	0.62	29.13
6835	0.26	39.94
6930	0.09	119.39
7026	0.00	99.53
7122	0.26	129.94
7218	0.62	131.61
7314	0.26	120.89
7409	0.44	108.85
7503	0.53	142.68
7599	0.62	161.05
7695	0.62	164.83
7790	0.53	174.94
7886	0.70	164.04
7982	1.23	168.79
8077	0.79	224.86
8173	0.79	196.47
8268	0.88	197.97
8364	0.88	192.17
8460	0.88	204.73
8556	0.97	191.64
8652	0.97	204.21
8746	1.14	198.05
8842	0.70	203.68
8936	0.53	208.51
9032	0.53	229.26
9127	0.44	221.52
9222	0.70	210.71
9319	0.62	213.26
9320	0.70	218.20
9340	0.70	222.10
9360	0.60	223.70
9380	0.60	223.70
9400	0.60	219.80
9420	0.70	214.40
9440	0.60	220.30
9460	0.60	223.00
9480	0.60	227.00
9500	0.60	216.20
9520	0.60	218.40
9540	0.60	224.40

Depth	Inclination	Azimuth
9560	0.60	226.90
9580	0.60	228.20
9600	0.60	229.70
9620	0.60	232.50
9640	0.60	239.20
9660	0.60	235.00
9680	0.60	221.60
9700	0.60	236.20
9720	0.50	221.20
9740	0.50	225.80
9760	0.40	221.20
9780	0.40	224.00
9800	0.40	226.80
9820	0.40	232.00
9840	0.40	222.00
9860	0.40	225.70
9880	0.30	219.70
9900	0.30	226.30
9920	0.40	234.90
9940	0.50	230.50
9960	0.50	225.20
9980	0.50	222.00
10000	0.50	225.60
10020	0.50	225.70
10040	0.40	227.50
10060	0.40	227.80
10080	0.40	227.90
10100	0.40	226.30
10120	0.40	225.00
10140	0.40	226.60

Depth	Inclination	Azimuth
10160	0.30	219.60
10180	0.40	219.10
10200	0.30	219.30
10220	0.30	213.50
10240	0.30	210.70
10260	0.30	208.70
10306	1.62	296.19
10060	0.40	227.80
10080	0.40	227.90
10100	0.40	226.30
10120	0.40	225.00
10140	0.40	226.60
10160	0.30	219.60
10180	0.40	219.10
10200	0.30	219.30
10220	0.30	213.50
10240	0.30	210.70
10260	0.30	208.70
10306	1.62	296.19
10080	0.40	227.90
10100	0.40	226.30
10120	0.40	225.00
10140	0.40	226.60
10160	0.30	219.60
10180	0.40	219.10
10200	0.30	219.30
10220	0.30	213.50
10240	0.30	210.70
10260	0.30	208.70
10306	1.62	296.19

# FORMATION TOPS & STRUCTURAL RELATIONSHIPS

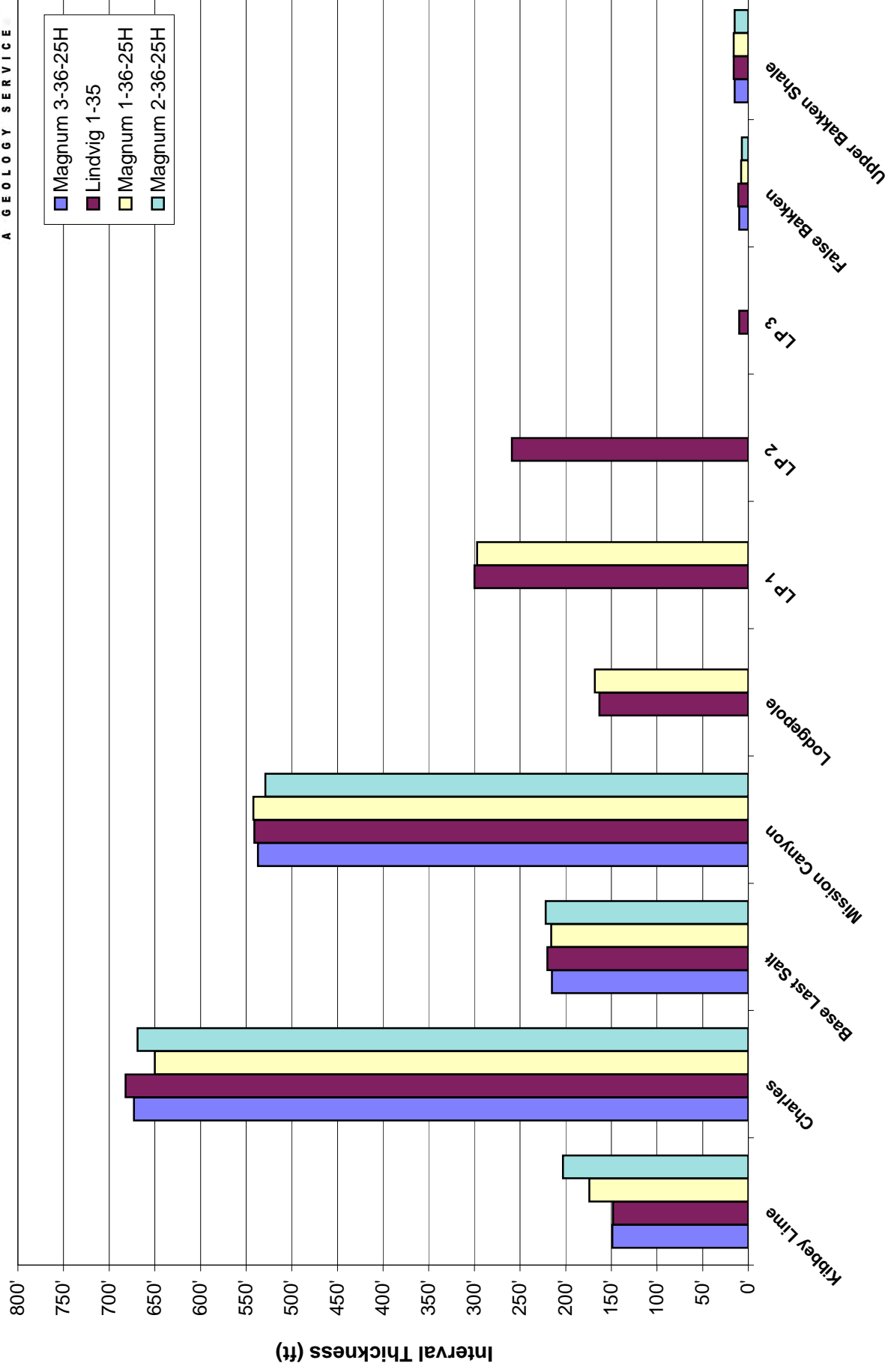
Operator: Well Name: Location:	Subject Well:											Offset Wells:	
	Slawson Exploration Company, Inc Magnum 3-36-25H 205' FSL & 265' FEL SE SE Section 36, T153N, R101W GL: 2,156' Sub: 22' KB: 2,178'												
Elevation:													
Formation/ Zone	Prog. Top	Prog. Datum (MSL)	Driller's Depth Top (MD)	Driller's Depth Top (TVD)	E-Log Top (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target	Dip To Prog.	Dip To Lindvig 1-35	Dip To Magnum 1-36-25H	Dip To Magnum 2-36-25H	
Tyler	-	-	-	-	8,095'	-5,917'	348'	2,712'	-	-251'	-240'	-	
Kibbey Lime	8,299'	-6,121'	8,443'	8,443'	8,445'	-6,265'	149'	2,364'	-144'	-41'	-32'	-44'	
Charles	8,446'	-6,268'	8,592'	8,592'	8,591'	-6,414'	673'	2,215'	-146'	-42'	-7'	10'	
Base Last Salt	9,254'	-7,076'	9,265'	9,265'	9,266'	-7,087'	215'	1,542'	-11'	-33'	-30'	6'	
Mission Canyon	9,446'	-7,268'	9,480'	9,480'	9,483'	-7,302'	537'	1,327'	-34'	-28'	-29'	13'	
Lodgepole	10,016'	-7,838'	10,017'	10,017'	10,017'	-7,839'	-	790'	-1'	-24'	-24'	5'	
LP 1	-	-	-	-	-	-	-	-	-	-	-	-	
LP 2	-	-	10,497'	10,486'	-	-8,308'	-	321'	-	-30'	-28'	-1'	
LP 3	-	-	-	-	-	-	-	-	-	-	-	-	
False Bakken	-	-	10,898'	10,762'	-	-8,584'	10'	45'	-	-37'	-26'	1'	
Upper Bakken Shale	10,736'	-8,558'	10,992'	10,772'	-	-8,594'	15'	35'	-36'	-36'	-28'	-2'	
Middle Bakken	-	-	10,970'	10,787'	-	-8,609'	20'	20'	-	-35'	-27'	-2'	
M. Bakken (Target)	10,758'	-8,580'	11,015'	10,807'	-	-8,629'	-	0'	-49'	-37'	-29'	-4'	

# CONTROL DATA

Operator: Well Name: Location:  Elevation:	Texas Gas Exploration Corp. Lindvig 1-35 SE SE Sec. 35, T153N, R101W McKenzie County, ND 1.1 mi. W of Magnum3-36-25H KB: 2,226'				Slawson Exploration Company, Inc Magnum 1-36-25H SW SW Section 36, T153N, R101W McKenzie County, ND 0.75 mi. W of Magnum 3-36-25H KB: 2,209'				Slawson Exploration Company, Inc Magnum 2-36-25H SE SE Section 36, T153N, R101W McKenzie County, ND 24' W of Magnum 3-36-25H KB: 2,178'			
Formation/ Zone	E-Log Top	Datum (MSL)	Interval Thickness	Thickness to Target	E-Log Top	Datum (MSL)	Interval Thickness	Thickness to Target	E-Log Top	Datum (MSL)	Interval Thickness	Thickness to Target
Tyler	7,892'	-5,666'	558'	2,926'	7,886'	-5,677'	556'	2,923'	7,858'	-	-	-
Kibbey Lime	8,450'	-6,224'	148'	2,368'	8,442'	-6,233'	174'	2,367'	8,399'	-6,221'	203'	2,404'
Charles	8,598'	-6,372'	682'	2,220'	8,616'	-6,407'	650'	2,193'	8,602'	-6,424'	669'	2,201'
Base Last Salt	9,280'	-7,054'	220'	1,538'	9,266'	-7,057'	216'	1,543'	9,271'	-7,093'	222'	1,532'
Mission Canyon	9,500'	-7,274'	541'	1,318'	9,482'	-7,273'	542'	1,327'	9,493'	-7,315'	529'	1,310'
Lodgepole	10,041'	-7,815'	163'	777'	10,024'	-7,815'	168'	785'	10,022'	-7,844'	-	781'
LP 1	10,204'	-7,978'	300'	614'	10,192'	-7,983'	297'	617'	-	-	-	-
LP 2	10,504'	-8,278'	259'	314'	10,489'	-8,280'	-	320'	10,485'	-8,307'	-	-
LP 3	10,763'	-8,537'	10'	55'	-	-	-	-	-	-	-	-
False Bakken	10,773'	-8,547'	11'	45'	10,767'	-8,558'	8'	42'	10,763'	-8,585'	7'	40'
Upper Bakken Shale	10,784'	-8,558'	16'	34'	10,775'	-8,566'	16'	34'	10,770'	-8,592'	15'	33'
Middle Bakken	10,800'	-8,574'	18'	18'	10,791'	-8,582'	18'	18'	10,785'	-8,607'	18'	18'
M. Bakken (Target)	10,818'	-8,592'	16'	0'	10,809'	-8,600'	17'	0'	10,803'	-8,625'	16'	0'
Lower Bakken Shale	10,834'	-8,608'	-	-16'	10,826'	-8,617'	-	-17'	10,819'	-8,641'	-	-16'

# INTERVAL THICKNESS

Slawson Exploration Company, Inc - Magnum 3-36-25H

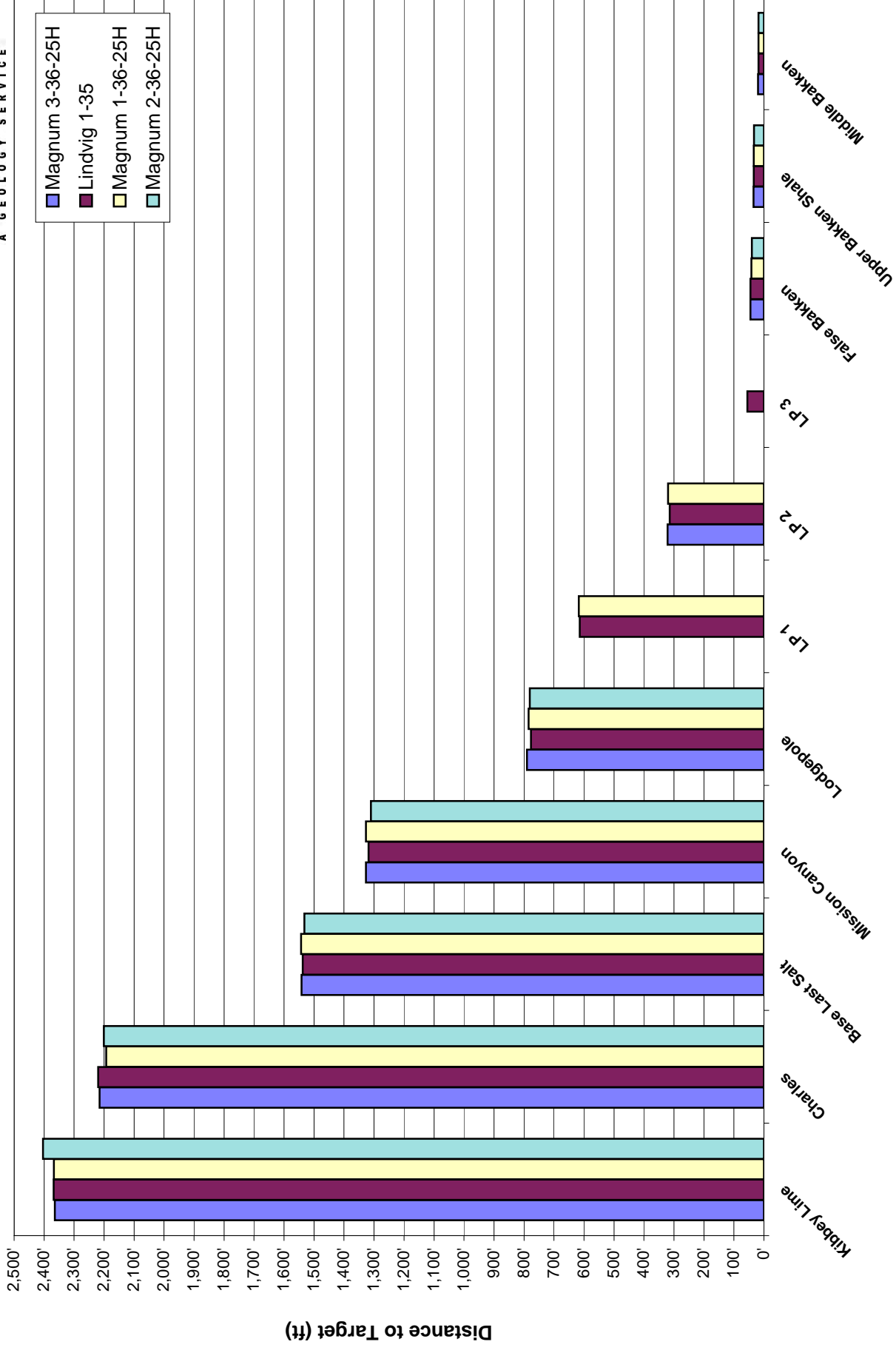


# TARGET PROXIMATION

Formation/ Zone:	Proposed Top of Target From:			
	Lindvig 1-35	Magnum 1-36-25H	Magnum 2-36-25H	Average of Offset Wells
Kibbey Lime	10,811'	10,810'	10,847'	10,823'
Charles	10,812'	10,785'	10,793'	10,797'
Base Last Salt	10,803'	10,808'	10,797'	10,803'
Mission Canyon	10,798'	10,807'	10,790'	10,798'
Lodgepole	10,794'	10,802'	10,798'	10,798'
LP 1	-	-	-	-
LP 2	10,800'	10,806'	-	10,803'
LP 3	-	-	-	-
False Bakken	10,807'	10,802'	10,802'	10,804'
Upper Bakken Shale	10,806'	10,805'	10,805'	10,805'
Middle Bakken	10,805'	10,805'	10,805'	10,805'
M. Bakken (Target)	10,807'	10,807'	10,807'	10,807'

# ISOPACH TO TARGET

Slawson Exploration Company, Inc - Magnum 3-36-25H



## LITHOLOGY

Rig crews caught samples in 30' intervals from 8,400' – 11,150' MD and 50' samples from 11,150' – 21,128' MD (TD). Gamma ray marker tops have been inserted into the sample descriptions below for reference. Samples were examined wet and dry under a binocular microscope. Sample descriptions begin just above the Kibbey Lime. The drilling fluid was diesel invert mud from surface casing exit (2,192' MD) to 21,175' MD (TD).

### ***Drilling in Kibbey Formation [Miss, Big Snowy Gp]***

8400-8430 SILTSTONE: orange, friable, sub blocky to sub platy, calcareous cement, moderately cemented, no visible porosity

### ***“Kibbey Lime” [Miss, Big Snowy Gp] 8,443' MD (8,443' TVD, -6,265')***

8430-8460 ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity; SILTSTONE: as above

8460-8490 LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity; SILTSTONE: pink orange, firm to trace hard, sub blocky to sub platy, calcareous cement, well to trace very well cemented, no visible porosity

8490-8520 LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity; SILTSTONE: pink orange, firm to trace hard, sub blocky to sub platy, calcareous cement, well to trace very well cemented, no visible porosity

8520-8550 ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity,

8550-8592 ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity

### ***Charles [Miss, Madison Gp] 8,592' MD (8,592' TVD, -6,414')***

8592-8610 ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity; salt

8610-8640 ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity; salt

8640-8670 SALT: frosted to trace translucent to trace milky, crystalline, hard, anhedral, no visible porosity

8670-8700 SALT: frosted to trace translucent to trace milky, crystalline, hard, anhedral, no visible porosity; ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

8700-8730 SALT: frosted to trace translucent to trace milky, crystalline, hard, anhedral, no visible porosity; ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

8730-8760 SALT: frosted to trace translucent to trace milky, crystalline, hard, anhedral, no visible porosity; ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

8760-8790 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

8790-8820 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8820-8850 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity;

8850-8880 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8880-8910 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8910-8940 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity

8940-8970 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity

8970-9000 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

9000-9030 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; LIMESTONE: mudstone, gray, light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

9030-9060 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; LIMESTONE: mudstone, gray, light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

9060-9090 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

9090-9120 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; ANHYDRITE: cream to off white, soft, amorphous; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

9120-9150 ANHYDRITE: cream to off white, soft, amorphous; ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; LIMESTONE: mudstone, light brown, medium to light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity;

9150-9180 ANHYDRITE: cream to off white, soft, amorphous; ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity

9180-9210 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; LIMESTONE: mudstone, gray, light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity

9210-9240 ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity; SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

9240-9265 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

**Base of Charles Salt [Miss., Madison Gp]**

**9,265' MD (9,265' TVD, -7,087')**

9265-9300 very poor sample quality ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, no visible porosity; trace ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture

9300-9330 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown to light brown gray, microcrystalline, friable to firm, earthy to slightly crystalline texture; ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture

9330-9360 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown to light brown gray, microcrystalline, friable to firm, earthy to slightly crystalline texture; ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture

9360-9390 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown to light brown gray, microcrystalline, friable to firm, earthy to slightly crystalline texture, no visible porosity; ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture, no visible porosity or oil stain

9390-9420 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown to light brown gray, occasional medium brown, trace of white, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain

9420-9450 Sample highly contaminated with LCM, ARGILLACEOUS LIMESTONE: mudstone, light gray to gray, microcrystalline, friable, earthy texture, trace disseminated pyrite, no visible porosity; ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture, no visible porosity

9450-9480 Sample highly contaminated with LCM, ARGILLACEOUS LIMESTONE: mudstone, medium to light brown, light gray to gray, microcrystalline, friable, earthy texture, trace disseminated pyrite, no visible porosity; trace ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture, no visible porosity

9480-9510 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown gray, light to ms brown, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, trace vuggy porosity, trace spotty light brown oil stain; trace ARGILLACEOUS LIMESTONE: mudstone, medium to light gray brown, microcrystalline, friable, earthy texture, trace disseminated pyrite, no visible porosity or oil stain

9510-9540 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown gray, light brown, trace medium brown, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, trace pinpoint porosity, rare spotty light to medium brown oil stain DOLOMITE: mudstone, light gray brown, friable, earthy texture, trace pinpoint porosity very trace light brown oil stain

9540-9570 Sample highly contaminated with LCM, LIMESTONE: mudstone, light brown gray, light brown, trace medium brown, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, trace pinpoint porosity, rare spotty light to medium brown oil stain; trace ARGILLACEOUS LIMESTONE: mudstone, medium to light gray brown, microcrystalline, friable, earthy texture, rare disseminated pyrite, no visible porosity or oil stain; trace ANHYDRITE: as above

9570-9600 Sample highly contaminated with LCM, LIMESTONE: mudstone, dark gray, common off white to cream, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown spotty oil stain; trace ARGILLACEOUS LIMESTONE: as above

9600-9630 Sample highly contaminated with LCM, LIMESTONE: mudstone, dark gray, common off white to cream, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown spotty oil stain; trace ARGILLACEOUS LIMESTONE: as above

9630-9660 Sample highly contaminated with LCM, LIMESTONE: mudstone, dark gray, common off white to cream, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown spotty oil stain, trace ARGILLACEOUS LIMESTONE: as above

9660-9690 Sample highly contaminated with LCM, LIMESTONE: mudstone, light to medium brown, occasional light brown gray, rare cream, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, no visible porosity

9690-9720 Sample highly contaminated with LCM, LIMESTONE: mudstone, light to medium brown, occasional light brown gray, rare cream, microcrystalline, firm to friable, earthy to slightly crystalline texture, rare algal material, trace disseminated pyrite, no visible porosity

9720-9750 Sample highly contaminated with LCM, LIMESTONE: mudstone, light to medium brown, occasional light brown gray, rare cream, microcrystalline, firm to friable, earthy to slightly crystalline texture, rare algal material, trace disseminated pyrite, no visible porosity

9750-9780 LIMESTONE: mudstone, light gray to gray brown, microcrystalline to very fine crystalline, firm to hard, earthy, slightly dolomitic, trace disseminated pyrite, no visible porosity; DOLOMITIC LIMESTONE: mudstone, off white to cream, tan to light brown, light gray brown, very fine crystalline, firm to hard, crystalline texture, trace alga laminated, slightly argillaceous, trace light brown oil stain, no visible porosity

9780-9810 LIMESTONE: mudstone, light gray to gray brown, microcrystalline to very fine crystalline, firm to hard, earthy, slightly dolomitic, trace disseminated pyrite, no visible porosity; DOLOMITIC LIMESTONE: mudstone, off white to cream, tan to light brown, light gray brown, very fine crystalline, firm to hard, crystalline texture, trace alga laminated, slightly argillaceous, trace light brown oil stain, no visible porosity

9810-9840 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, dolomitic in part, trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

9840-9870 LIMESTONE: mudstone, light brown gray, light brown, trace medium brown, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, trace pinpoint porosity, rare spotty light to medium brown oil stain; DOLOMITE: mudstone, light gray brown, friable, earthy texture, trace pinpoint porosity very trace light brown oil stain

9870-9900 LIMESTONE: mudstone, light brown gray, light brown, trace medium brown, microcrystalline, firm to friable, earthy to slightly crystalline texture, trace disseminated pyrite, trace pinpoint porosity, rare spotty light to medium brown oil stain; DOLOMITE: mudstone, light gray brown, friable, earthy texture, trace pinpoint porosity, very trace light brown oil stain

9900-9930 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, dolomitic in part, trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

9930-9960 ARGILLACEOUS LIMESTONE: mudstone, light gray to gray brown, microcrystalline to very fine crystalline, firm to hard, earthy, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, off white to cream, dark gray, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown dead spotty oil stain

9960-9990 ARGILLACEOUS LIMESTONE: mudstone, light gray to gray brown, microcrystalline to very fine crystalline, firm to hard, earthy, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, off white to cream, dark gray, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown dead spotty oil stain

9990-10017 LIMESTONE: mudstone, off white to cream, dark gray, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown dead spotty oil stain; ARGILLACEOUS LIMESTONE: mudstone, light gray to gray brown, microcrystalline to very fine crystalline, firm to hard, earthy, trace disseminated pyrite, no visible porosity

**Lodgepole Formation [Miss., Madison Gp]**

**10,017' MD (10,017' TVD, -7,839')**

10017-10050 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10050-10080 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain

10080-10110 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10110-10140 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10140-10170 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain;  
ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10170-10200 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture; LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain

10200-10230 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture; LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, possible intercrystalline porosity, no visible oil stain

10230-10260 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, trace intercrystalline porosity, no visible oil stain;  
ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10260-10290 ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture; LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, possible intercrystalline porosity, no visible oil stain

10290-10320 ARGILLACEOUS LIMESTONE: mudstone, medium gray to rare off white to rare medium brown, microcrystalline, firm to common hard, dense, earthy to rare crystalline texture, no visible porosity

10320-10350 ARGILLACEOUS LIMESTONE: mudstone, medium gray to rare off white to rare medium brown, microcrystalline, firm to common hard, dense, earthy to rare crystalline texture, no visible porosity

10350-10380 ARGILLACEOUS LIMESTONE: mudstone, medium gray to rare off white to rare medium brown, microcrystalline, firm to common hard, dense, earthy to rare crystalline texture, no visible porosity

10380-10410 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10410-10440 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10440-10470 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10470-10500 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10500-10530 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10530-10560 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10560-10590 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10590-10620 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10620-10650 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10650-10680 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10680-10710 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10710-10740 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10740-10770 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10770-10800 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10800-10830 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10830-10860 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10860-10898 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity; LIMESTONE: mudstone, cream, light tan, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

**False Bakken [Miss., Madison Gp]**

**10,898' MD (10,762' TVD, -8,584)**

10898-10922 ARGILLACEOUS LIMESTONE: mudstone, light gray to occasional cream to rare medium gray, microcrystalline, firm, dense, earthy to trace crystalline texture, trace disseminated pyrite, trace siliceous, no visible porosity; SHALE: dark gray, dark brown, black, blocky to platy, friable, occasionally soft, calcareous in part, trace fracture porosity

**Upper Bakken Shale [Dev.-Miss.]**

**10,922' MD (10,772' TVD, -8,594')**

10922-10950 SHALE: black, firm, subblocky, earthy texture, carbonaceous, petroliferous, common disseminated pyrite, rare nodular pyrite, no visible porosity; LIMESTONE: wackestone to mudstone, light gray, white, cream, microcrystalline to very fine crystalline, firm to hard, earthy to slightly microsucrosic, slightly dolomitic, occasional sparry calcite trace light black oil stain occasional intercrystalline porosity, occasional fractured porosity

10950-10977 SHALE: black, firm, subblocky, earthy texture, carbonaceous, petroliferous, common disseminated pyrite, rare nodular pyrite, no visible porosity; SILTSTONE: medium gray, friable, sub blocky to sub platy, calcareous cement, moderately cemented, occasional disseminated pyrite, no visible porosity

**Middle Bakken [Dev.-Miss.]**

**10,970' MD (10,787' TVD, -8,609')**

10977-11010 SILTSTONE: medium gray, friable, sub blocky to sub platy, calcareous cement, moderately cemented, occasional disseminated pyrite, no visible porosity

11010-11040 SILTSTONE: medium gray, friable, sub blocky to sub platy, calcareous cement, moderately cemented, occasional disseminated pyrite, no visible porosity; SILTY SANDSTONE: light gray to trace cream, very fine grained, friable, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace dark brown spotty to even oil stain

11040-11070 SILTY SANDSTONE: light gray to trace cream, very fine grained, friable, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace dark brown spotty to even oil stain; SILTSTONE: medium gray, friable, sub blocky to sub platy, calcareous cement, moderately cemented, occasional disseminated pyrite, no visible porosity

11070-11100 SILTY SANDSTONE: light to medium gray, occasional cream, light brown, very fine grained, friable, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11100-11130 SILTY SANDSTONE: gray to light brown, common light gray to cream, trace medium brown, trace dark gray, very fine grained, friable to soft, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11130-11150 SILTY SANDSTONE: gray to light brown, common light gray to cream, trace medium brown, trace dark gray, very fine grained, friable to soft, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11150-11200 SILTY SANDSTONE: white, tan, light gray to light brown, trace medium brown, very fine grained, friable to soft, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

11200-11250 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11250-11300 SILTY SANDSTONE: light brown, common light gray to cream, tan, trace medium brown, very fine grained, friable to soft, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, trace light black oil stain

11300-11350 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

11350-11400 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11400-11450 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11450-11500 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11500-11550 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11550-11600 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11600-11650 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11650-11700 SILTY SANDSTONE: light gray to light brown, off white to tan, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare dark brown spotty oil stain

11700-11750 SILTY SANDSTONE: light gray to light brown, off white to tan, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare dark brown spotty oil stain

11750-11800 SILTY SANDSTONE: light gray to light brown, off white to tan, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare dark brown spotty oil stain

11800-11850 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11850-11900 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

11900-11950 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain trace LIMESTONE: packstone, white to off white, cream to tan, microcrystalline, friable to firm, crystalline texture, common oolites and pellets, possible intercrystalline porosity

11950-12000 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain trace LIMESTONE: packstone, white to off white, cream to tan, microcrystalline, friable to firm, crystalline texture, common oolites and pellets, possible intercrystalline porosity

12000-12050 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

12050-12100 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain trace LIMESTONE: packstone, white to off white, cream to tan, microcrystalline, friable to firm, crystalline texture, common oolites and pellets, possible intercrystalline porosity

12100-12150 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12150-12200 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12200-12250 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12250-12300 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12300-12350 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12350-12400 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12900-12950 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

12950-13000 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13000-13050 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13050-13100 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13100-13150 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13150-13200 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13200-13250 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13250-13300 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13300-13350 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain trace LIMESTONE: packstone, white to off white, cream to tan, microcrystalline, friable to firm, crystalline texture, common oolites and pellets, possible intercrystalline porosity

13350-13400 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13400-13450 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13450-13500 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain trace LIMESTONE: packstone, white to off white, cream to tan, microcrystalline, friable to firm, crystalline texture, common oolites and pellets, possible intercrystalline porosity

13500-13550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13550-13600 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13600-13650 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13650-13700 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13700-13750 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13750-13800 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13800-13850 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13850-13900 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13900-13950 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

13950-14000 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

14500-14550 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

14550-14600 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

14600-14650 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14650-14700 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14700-14750 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14750-14800 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14800-14850 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14850-14900 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14900-14950 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

14950-15000 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15000-15050 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15050-15100 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15100-15150 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15150-15200 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

15200-15250 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15250-15300 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15300-15350 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

15350-15400 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15400-15450 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15450-15500 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

15500-15550 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15550-15600 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15600-15650 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15650-15700 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15700-15750 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15750-15800 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15800-15850 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15850-15900 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15900-15950 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

15950-16000 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16000-16050 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16050-16100 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

16100-16150 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16150-16200 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, sub angular to sub rounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

16700-16750 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16750-16800 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16800-16850 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16850-16900 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16900-16950 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16950-17000 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

17000-17050 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17050-17100 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17100-17150 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17150-17200 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

17200-17250 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17250-17300 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17300-17350 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17350-17400 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

17400-17450 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

17450-17500 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

17500-17550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

17550-17600 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

17600-17650 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

17500-17550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity



18150-18200 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

18250-18300 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

18350-18400 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

18450-18500 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

18500-18550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain; SILTSTONE: medium gray brown, soft to friable, sub blocky to sub platy, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

18550-18600 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain

18600-18650 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18650-18700 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18700-18750 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18750-18800 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18800-18850 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18850-18900 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18900-18950 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

18950-19000 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

19000-19050 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

19050-19100 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

19100-19150 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

19150-19200 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

19200-19250 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

19250-19300 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain

19300-19350 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain

19350-19400 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19400-19450 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain

19450-19500 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19500-19550 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain

19550-19600 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

19600-19650 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, spotty light black oil stain

19650-19700 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19700-19750 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19750-19800 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19800-19850 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19850-19900 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19900-19950 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

19950-20000 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

20000-20050 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

20050-20100 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

20100-20150 SILTY SANDSTONE: light gray to light brown, trace off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

20150-20200 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20200-20250 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20250-20300 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20300-20350 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20350-20400 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20400-20450 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20450-20500 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

20500-20550 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

20550-20600 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20600-20650 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

20650-20700 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20700-20750 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20750-20800 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20800-20850 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20850-20900 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

20900-20950 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

20950-21000 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

21000-21050 SILTY SANDSTONE: off white to light brown, tan, light gray, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, weakly laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

21000-21100 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

21100-21150 SILTY SANDSTONE: tan, trace medium brown, light gray to light brown, off white, very fine grained, friable to firm, sub angular to sub rounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, common dark to light brown spotty oil stain, trace light black oil stain

21150-21175 SILTY SANDSTONE: SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown, very fine grained, friable to firm, sub angular to sub rounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light to dark brown spotty oil stain

# **ELECTRIC LOG REPORT**

**OPERATOR - WELL NAME:** Slawson Exploration Company, Inc. - Magnum 3-36-25H

**LOCATION:** 205' FSL & 265' FEL SE SE Section 36, T153N, R101W

**LOGGING COMPANY:** Weatherford

**ENGINEER:** Mike Grainger

**WITNESSED BY:** Brandon Hill, Kevin Wehrung

**DATE:** May, 17, 2012

**DRILLER'S TD DEPTH:** 10,300'

**DRILLER'S CASING DEPTH:** 2,192'

**LOGGER'S TD DEPTH:** 10,290'

**LOGGER'S CASING DEPTH:** 2,187'

**ELEVATION:**  
GL: 2,156'  
KB: 2,178

**MUD CONDITIONS:**  
Mud type: Oil-based  
Wt: 9.8 lb/gal  
Vis: 45 s

**LOGGING TIME:**  
Arrived: 11:00 CDT Jan 6, 2012  
First tool on bottom: 11:32 CDT Jan 6, 2012  
Last tool on surface: 06:15 CDT Jan 6, 2012  
Departed: 6:45 CDT Jan 6, 2012

**LOGGING PROGRAM:**  
Run #1: Array Induction Log  
Run #2: (Compensated Photo  
Density, Compensated Dual  
neutron Log) 10,286' TD - 7,700'  
Run #3: Hole Volume Caliper Log  
10,286' TD - 2,187' (casing)

**HOLE CONDITION:** No sticky spots or excess rugosity.

**TECHNICAL PROBLEMS:**  
Run #1: No problems.  
  
Run #2: No problems.  
  
Run #3: No problems.

**COMMENTS:** Repeat runs show acceptable overlap; overall data quality good and comparable to Lindvig 1-35

**TOPS:**

Niobrara	4,219'	-2,041'
Carlile	4,512'	-2,334'
Greenhorn	4,639'	-2,461'
Belle Fouche	4,859'	-2,681'
Mowry(Dakota Group)	5,053'	-2,875'
New Castle	5,206'	-3,028'
Skull Creek	5,227'	-3,049'
Inyan Kara (Dakota Sands)	5,460'	-3,282'
Swift	6,018'	-3,840'
Rierdon	6,413'	-4,235'
Piper	6,528'	-4,350'
Dunham Salt	6,934'	-4,756'
Spearfish	6,993'	-4,815'
Pine Salt	7,298'	-5,120'
Minnekahta	7,415'	-5,237'
Opeche	7,436'	-5,258'
Opeche Salt A		
Opeche Salt B		
Broom Creek(Minnelusa Group)	7,496'	-5,318'
Amsden	7,983'	-5,805'
Tyler	8,095'	-5,917'
Otter	8,158'	-5,980'
Kibbey	8,411'	-6,233'
Kibbey "Lime"	8,445'	-6,267'
Charles	8,591'	-6,413'
Base Last Salt	9,266'	-7,088'
Ratcliffe	9,306'	-7,128'
Midale	9,389'	-7,211'
Mission Canyon	9,483'	-7,305'
Lodgepole	10,017'	-7,839'

**PROSPECTIVE INTERVALS:**

Tyler (8,011'-8,017') has 6' 24-27% cross-plot porosity yielding an Sw of 45-50%. Tyler (8,019'-8,030') has 11' 26-37% cross-plot porosity yielding an Sw of 7%-49%. Tyler (8,032'-8,039') has 7' 23-29% cross-plot porosity yielding an Sw of 28-50 %. Tyler (8,054'-8,062') has 8' 19-33% cross-plot porosity yielding an Sw of 8-48%. Tyler (8,070'-8,079') has 9' 17-26% cross-plot porosity yielding an Sw of 32-49%. Tyler (8,090'-8,097') has 7' 18-36% cross-plot porosity yielding an Sw of 36-49%. Mission Canyon (9,856'-9,866') has 10' 6-9% cross-plot porosity yielding an Sw of 22-38%

# LOG CALCULATIONS

<i>Depth</i>	<i>X-Plot Porosity</i>	<i>Rt</i>	<i>Sw</i>
<b>Amsden</b> <span style="float: right;">Rw= 0.02</span>			
7709	0.056	10.235	0.792
7710	0.071	7.191	0.741
7711	0.078	3.368	0.988
7712	0.078	2.974	1.052
7713	0.075	2.836	1.122
7714	0.071	3.818	1.018
7715	0.085	5.615	0.700
7716	0.091	4.720	0.718
7717	0.089	6.883	0.605
7718	0.079	8.366	0.620
7719	0.079	4.446	0.845
7720	0.082	3.343	0.945
7721	0.088	4.227	0.778
7722	0.095	3.514	0.791
7723	0.137	2.463	0.656
7724	0.136	1.726	0.792
7725	0.134	1.360	0.906
7726	0.139	1.366	0.868
7727	0.139	1.430	0.852
7728	0.147	1.501	0.787
7729	0.191	1.520	0.601
7730	0.222	1.537	0.513
7731	0.239	1.612	0.466
7732	0.266	1.638	0.415
7733	0.252	1.704	0.431
7734	0.229	1.426	0.518
7735	0.208	1.206	0.620
7736	0.149	1.680	0.732
7737	0.123	2.204	0.775
7738	0.128	3.607	0.581
7739	0.115	9.021	0.409
7740	0.089	10.007	0.500
7741	0.080	17.469	0.424
7742	0.068	19.890	0.466
<b>Amsden</b> <span style="float: right;">Rw= 0.02</span>			
7743	0.070	7.071	0.760
7744	0.071	5.372	0.863
7745	0.066	8.951	0.716
7746	0.083	2.452	1.084
7747	0.126	1.124	1.060
7748	0.153	0.903	0.972
7749	0.160	1.054	0.862
7750	0.154	1.520	0.747
7751	0.133	2.701	0.646
7752	0.102	8.896	0.463
7753	0.082	16.052	0.430
7754	0.076	22.523	0.392

7755	0.073	25.901	0.383
7756	0.071	63.522	0.251
7757	0.072	51.001	0.276
7758	0.066	34.273	0.368
7759	0.063	10.167	0.701
7760	0.075	3.196	1.057
7761	0.095	3.168	0.837
7762	0.079	14.890	0.467
7763	0.066	41.967	0.331
<b>Amsden Rw= 0.02</b>			
7764	0.065	63.021	0.274
7765	0.079	37.148	0.296
7766	0.099	4.296	0.691
7767	0.113	2.557	0.783
7768	0.106	3.585	0.706
7769	0.110	3.158	0.725
7770	0.121	2.162	0.795
7771	0.117	1.948	0.868
7772	0.134	2.146	0.719
7773	0.165	1.450	0.713
7774	0.141	1.735	0.759
7775	0.076	7.114	0.699
7776	0.056	9.454	0.825
<b>Amsden Rw= 0.02</b>			
7780	0.060	24.361	0.475
7781	0.074	46.821	0.279
7782	0.084	39.025	0.269
7783	0.079	68.309	0.218
7784	0.078	16.875	0.442
7785	0.087	3.607	0.858
7786	0.119	1.648	0.928
7787	0.163	1.130	0.818
7788	0.150	1.215	0.856
7789	0.101	2.402	0.902
7790	0.067	5.920	0.866
<b>Amsden Rw= 0.02</b>			
7796	0.050	13.059	0.784
7797	0.075	3.641	0.992
7798	0.083	3.900	0.866
7799	0.070	13.647	0.550
7800	0.069	9.196	0.673
7801	0.070	5.360	0.868
7802	0.081	5.392	0.750
7803	0.097	8.393	0.505
7804	0.141	18.606	0.233
7805	0.148	21.900	0.204
7806	0.134	7.311	0.391
7807	0.126	3.190	0.626
7808	0.116	2.331	0.799
7809	0.131	1.687	0.831
7810	0.139	1.963	0.728
7811	0.128	2.108	0.758

7812	0.136	1.773	0.781
7813	0.161	2.040	0.614
7814	0.186	0.976	0.768
7815	0.183	0.918	0.806
7816	0.134	1.470	0.870
7817	0.111	1.887	0.925
7818	0.105	2.654	0.827
7819	0.114	2.809	0.741
7820	0.138	3.041	0.589
7821	0.166	4.384	0.406
7822	0.157	4.013	0.450
7823	0.152	1.399	0.788
7824	0.150	1.465	0.778
7825	0.133	2.178	0.723
7826	0.147	0.997	0.966
7827	0.170	0.847	0.906
7828	0.182	0.853	0.840
7829	0.189	1.000	0.747
7830	0.178	1.096	0.758
7831	0.169	0.767	0.956
7832	0.192	0.380	1.195
7833	0.200	0.404	1.113
7834	0.158	0.786	1.011
7835	0.128	3.122	0.624
7836	0.145	2.150	0.667
7837	0.160	1.460	0.729
7838	0.162	1.379	0.743
7839	0.180	0.819	0.870
7840	0.195	0.701	0.866
7841	0.192	0.771	0.840
7842	0.173	0.933	0.846
7843	0.135	1.019	1.039
7844	0.153	0.738	1.073
7845	0.174	0.724	0.953
7846	0.158	0.837	0.982
7847	0.144	1.186	0.903
7848	0.118	3.993	0.601
7849	0.116	4.814	0.558
7850	0.142	3.349	0.544
7851	0.152	3.712	0.483
7852	0.111	3.606	0.673
7853	0.046	9.501	0.999
<b>Amsden</b> <b>Rw= 0.02</b>			
7873	0.046	11.634	0.907
7874	0.082	5.833	0.715
7875	0.126	5.085	0.498
7876	0.155	4.782	0.417
7877	0.172	4.633	0.382
7878	0.165	4.937	0.386
7879	0.138	4.970	0.460
7880	0.103	6.661	0.534
7881	0.123	5.698	0.481

7882	0.152	3.736	0.480
7883	0.167	3.349	0.463
7884	0.178	3.373	0.434
7885	0.182	3.656	0.406
7886	0.168	3.651	0.439
7887	0.161	3.263	0.486
7888	0.163	3.166	0.488
7889	0.176	2.749	0.484
7890	0.186	2.400	0.490
7891	0.197	2.515	0.452
7892	0.203	2.529	0.438
7893	0.192	2.545	0.462
7894	0.204	2.669	0.425
7895	0.225	2.620	0.389
7896	0.221	2.528	0.403
7897	0.218	2.455	0.414
7898	0.221	2.318	0.421
7899	0.217	2.100	0.450
7900	0.228	1.827	0.458
7901	0.239	1.776	0.444
7902	0.231	2.297	0.404
7903	0.212	3.119	0.377
7904	0.159	4.713	0.410
7905	0.087	6.553	0.638
7906	0.123	5.187	0.505
7907	0.202	3.548	0.373
7908	0.249	2.881	0.335
7909	0.241	3.077	0.334
7910	0.226	3.210	0.350
7911	0.223	2.649	0.390
7912	0.219	2.409	0.415
7913	0.222	2.376	0.414
7914	0.217	2.236	0.435
7915	0.208	1.928	0.490
7916	0.249	1.700	0.436
7917	0.302	1.662	0.363
7918	0.257	1.766	0.413
7919	0.241	1.959	0.418
7920	0.212	2.053	0.464
7921	0.199	2.206	0.478
7922	0.198	2.843	0.423
7923	0.244	3.050	0.332
7924	0.262	2.443	0.345
7925	0.262	2.560	0.337
7926	0.248	2.486	0.362
7927	0.223	2.241	0.424
7928	0.217	2.031	0.458
7929	0.215	1.956	0.470
7930	0.205	1.976	0.490
7931	0.223	1.841	0.468
7932	0.261	1.859	0.398
7933	0.255	2.017	0.390

7934	0.250	2.110	0.389
7935	0.234	2.121	0.415
7936	0.209	1.982	0.482
7937	0.184	1.578	0.610
7938	0.156	1.410	0.762
7939	0.147	1.701	0.738
7940	0.139	2.655	0.623
7941	0.128	4.380	0.527
7942	0.134	4.739	0.485
7943	0.168	3.042	0.482
7944	0.206	2.034	0.482
7945	0.208	1.807	0.507
7946	0.178	2.311	0.524
7947	0.154	3.040	0.528
7948	0.180	3.343	0.430
7949	0.219	1.901	0.467
7950	0.227	1.370	0.533
7951	0.204	1.372	0.593
7952	0.189	1.575	0.595
7953	0.198	1.625	0.561
7954	0.212	1.482	0.548
7955	0.214	1.609	0.520
7956	0.201	1.696	0.540
7957	0.181	1.494	0.640
7958	0.171	1.352	0.712
7959	0.165	1.420	0.718
7960	0.158	1.568	0.713
7961	0.129	1.944	0.785
7962	0.095	4.952	0.668
7963	0.070	12.109	0.578
7964	0.098	5.384	0.625
7965	0.117	5.689	0.505
7966	0.116	4.857	0.554
7967	0.112	3.360	0.687
7968	0.103	4.395	0.658
7969	0.124	2.887	0.671
7970	0.183	1.535	0.623
7971	0.251	1.210	0.512
7972	0.224	1.336	0.545
7973	0.139	2.315	0.667
7974	0.083	7.243	0.630
7975	0.107	7.770	0.472
7976	0.132	5.663	0.450
7977	0.133	5.113	0.470
7978	0.168	2.974	0.488
7979	0.202	2.207	0.471
7980	0.200	2.087	0.489
7981	0.171	3.399	0.448
7982	0.133	7.038	0.400
7983	0.068	22.838	0.435
<b>Tyler</b> <b>Rw= 0.02</b>			
7986	0.070	12.703	0.567

7987	0.136	3.417	0.561
7988	0.211	1.431	0.559
7989	0.251	1.104	0.536
7990	0.255	1.125	0.524
7991	0.273	1.215	0.470
7992	0.218	1.506	0.529
7993	0.166	2.110	0.587
7994	0.161	2.315	0.576
7995	0.144	3.388	0.532
7996	0.170	2.842	0.493
7997	0.226	1.655	0.487
7998	0.229	1.422	0.518
7999	0.221	1.412	0.537
8000	0.228	1.336	0.537
8001	0.233	1.349	0.522
8002	0.235	1.419	0.506
8003	0.223	1.467	0.523
8004	0.227	1.476	0.513
8005	0.227	1.473	0.514
8006	0.209	1.525	0.548
8007	0.205	1.500	0.563
8008	0.217	1.464	0.538
8009	0.221	1.455	0.531
8010	0.234	1.446	0.503
8011	0.264	1.397	0.453
8012	0.274	1.372	0.440
8013	0.244	1.337	0.500
8014	0.245	1.296	0.507
8015	0.258	1.252	0.490
8016	0.266	1.236	0.478
8017	0.248	1.267	0.506
8018	0.239	1.235	0.532
8019	0.265	1.186	0.491
8020	0.268	1.210	0.480
8021	0.270	1.147	0.489
8022	0.310	1.014	0.452
8023	0.310	1.215	0.413
8024	0.297	3.120	0.269
8025	0.287	16.815	0.120
8026	0.343	31.873	0.073
8027	0.375	28.043	0.071
8028	0.306	3.347	0.253
8029	0.277	1.274	0.452
8030	0.292	0.972	0.490
8031	0.234	1.240	0.542
8032	0.235	2.359	0.392
8033	0.284	3.093	0.283
8034	0.264	2.205	0.361
8035	0.264	1.886	0.390
8036	0.269	2.200	0.354
8037	0.261	2.235	0.362
8038	0.282	1.256	0.448

8039	0.293	0.909	0.505
8040	0.254	0.953	0.571
8041	0.223	1.007	0.632
8042	0.240	0.907	0.619
8043	0.259	0.868	0.586
8044	0.259	0.868	0.586
8045	0.266	0.865	0.572
8046	0.239	0.983	0.596
8047	0.229	1.112	0.585
8048	0.240	1.050	0.575
8049	0.244	0.915	0.605
8050	0.275	0.870	0.551
8051	0.318	0.815	0.493
8052	0.327	0.844	0.471
8053	0.261	1.042	0.530
8054	0.192	3.278	0.406
8055	0.276	14.716	0.133
8056	0.410	18.348	0.080
8057	0.330	14.622	0.112
8058	0.234	6.603	0.235
8059	0.219	3.720	0.334
8060	0.223	2.147	0.433
8061	0.258	1.676	0.423
8062	0.242	1.496	0.477
8063	0.225	1.045	0.615
8064	0.253	0.887	0.592
8065	0.269	1.175	0.485
8066	0.263	1.272	0.476
8067	0.271	1.085	0.501
8068	0.257	0.914	0.575
8069	0.287	0.930	0.512
8070	0.264	1.259	0.477
8071	0.224	2.061	0.440
8072	0.220	2.840	0.382
8073	0.174	6.277	0.324
8074	0.172	5.576	0.348
8075	0.229	1.876	0.450
8076	0.260	1.229	0.490
8077	0.257	1.414	0.462
8078	0.251	1.984	0.401
8079	0.230	2.163	0.419
8080	0.198	1.854	0.524
8081	0.174	1.799	0.604
8082	0.154	1.852	0.673
8083	0.161	2.215	0.591
8084	0.203	2.153	0.475
8085	0.223	1.698	0.487
8086	0.204	1.864	0.508
8087	0.181	2.065	0.544
8088	0.144	2.879	0.580
8089	0.125	4.070	0.562
8090	0.183	3.082	0.440

8091	0.234	2.304	0.398
8092	0.240	2.155	0.402
8093	0.263	2.404	0.346
8094	0.294	1.778	0.361
8095	0.327	1.109	0.411
8096	0.359	0.881	0.420
8097	0.323	0.800	0.489
8098	0.299	0.729	0.555
8099	0.301	0.747	0.543
8100	0.253	1.084	0.538
8101	0.208	1.743	0.515
8102	0.176	1.290	0.710
8103	0.159	1.292	0.781
8104	0.154	2.044	0.643
8105	0.148	2.055	0.667
8106	0.129	2.615	0.678
8107	0.110	3.835	0.658
8108	0.099	6.422	0.564
8109	0.059	17.106	0.579
<b>Tyler</b> <b>Rw= 0.02</b>			
8112	0.061	13.796	0.621
8113	0.070	5.599	0.849
8114	0.089	3.063	0.909
8115	0.094	3.395	0.816
8116	0.106	3.407	0.722
8117	0.110	5.302	0.559
8118	0.088	17.760	0.381
8119	0.094	7.959	0.531
8120	0.134	2.696	0.642
8121	0.151	2.160	0.637
8122	0.151	2.227	0.626
8123	0.189	1.348	0.645
8124	0.187	1.228	0.683
8125	0.168	1.552	0.677
8126	0.142	2.226	0.670
8127	0.116	3.456	0.657
8128	0.121	2.276	0.773
8129	0.146	1.347	0.833
8130	0.154	1.187	0.842
8131	0.175	1.062	0.785
8132	0.208	1.062	0.660
8133	0.226	1.225	0.566
8134	0.218	1.446	0.540
8135	0.180	1.752	0.592
8136	0.166	1.859	0.624
8137	0.179	1.486	0.648
8138	0.194	1.138	0.685
8139	0.213	1.035	0.652
8140	0.204	1.429	0.581
8141	0.189	1.924	0.540
8142	0.213	1.405	0.561
8143	0.233	1.195	0.555

8144	0.234	1.113	0.574
8145	0.218	0.971	0.657
8146	0.200	1.241	0.634
8147	0.167	1.345	0.728
8148	0.157	0.962	0.920
8149	0.176	1.056	0.783
8150	0.178	1.344	0.686
8151	0.141	1.933	0.719
8152	0.146	1.616	0.760
8153	0.161	1.658	0.682
8154	0.119	3.638	0.624
8155	0.089	7.262	0.590
8156	0.079	6.340	0.708
8157	0.090	4.546	0.737
8158	0.123	2.561	0.717
8159	0.140	2.244	0.674
8160	0.148	2.211	0.642
8161	0.150	2.185	0.636
8162	0.127	3.339	0.610
8163	0.089	6.384	0.630
8164	0.077	7.231	0.685
8165	0.078	6.416	0.715
8166	0.058	7.372	0.902
<b>Otter</b>	<b>Rw= 0.02</b>		
8171	0.039	16.786	0.895
8172	0.071	5.200	0.872
8173	0.089	4.451	0.751
8174	0.065	7.679	0.788
8175	0.055	5.928	1.065
8176	0.101	1.903	1.018
8177	0.141	1.142	0.938
8178	0.150	1.111	0.893
8179	0.129	1.754	0.826
8180	0.109	2.596	0.806
8181	0.094	4.125	0.743
8182	0.101	3.525	0.745
8183	0.128	2.670	0.677
8184	0.133	2.555	0.663
8185	0.135	2.137	0.718
8186	0.132	2.256	0.712
8187	0.108	3.647	0.688
8188	0.090	6.649	0.608
8189	0.086	5.806	0.684
8190	0.092	4.667	0.714
8191	0.113	1.919	0.904
8192	0.142	1.363	0.854
8193	0.140	1.534	0.815
8194	0.140	1.354	0.865
8195	0.154	1.215	0.835
8196	0.134	1.510	0.861
8197	0.093	3.419	0.824
8198	0.076	6.039	0.761

8199	0.099	3.046	0.818
8200	0.131	2.159	0.735
8201	0.136	2.256	0.692
8202	0.140	2.446	0.647
8203	0.140	2.861	0.597
8204	0.128	2.196	0.744
8205	0.134	1.414	0.889
8206	0.123	2.610	0.713
8207	0.098	5.073	0.640
8208	0.091	3.493	0.829
8209	0.071	3.501	1.059
8210	0.076	3.218	1.032
8211	0.083	3.473	0.911
8212	0.033	11.515	1.277
<b>Otter</b> <b>Rw= 0.02</b>			
8222	0.070	6.083	0.823
8223	0.117	6.552	0.474
8224	0.109	5.986	0.531
8225	0.092	5.022	0.683
8226	0.070	7.228	0.749
8227	0.021	41.755	1.064
<b>Otter</b> <b>Rw= 0.02</b>			
8231	0.049	9.689	0.930
8232	0.075	4.347	0.904
8233	0.127	2.101	0.770
8234	0.159	1.704	0.682
8235	0.172	1.791	0.616
8236	0.176	1.633	0.628
8237	0.140	2.212	0.680
8238	0.116	3.345	0.669
8239	0.133	2.010	0.750
8240	0.169	1.289	0.736
8241	0.125	1.769	0.850
8242	0.054	5.268	1.148
8243	0.083	3.534	0.901
8244	0.150	2.151	0.643
8245	0.167	1.920	0.613
8246	0.183	1.680	0.596
8247	0.191	1.544	0.597
8248	0.195	1.374	0.619
8249	0.175	1.720	0.615
8250	0.142	2.660	0.611
8251	0.101	3.381	0.760
8252	0.089	4.710	0.733
8253	0.105	4.428	0.638
8254	0.133	3.332	0.584
8255	0.146	2.870	0.570
8256	0.146	2.514	0.609
8257	0.137	2.729	0.623
8258	0.145	3.147	0.549
8259	0.158	2.611	0.554
8260	0.151	3.117	0.532

8261	0.141	3.279	0.552
8262	0.147	2.462	0.613
8263	0.155	2.328	0.599
8264	0.151	2.404	0.603
8265	0.141	3.876	0.511
8266	0.139	3.255	0.564
8267	0.144	2.220	0.661
8268	0.128	2.972	0.639
8269	0.091	4.308	0.747
8270	0.061	5.898	0.962
8271	0.081	6.224	0.696
8272	0.126	2.342	0.732
8273	0.150	1.916	0.683
8274	0.104	4.960	0.608
8275	0.077	5.998	0.747
8276	0.108	3.647	0.686
8277	0.124	3.973	0.572
8278	0.127	3.129	0.630
8279	0.124	3.133	0.643
8280	0.131	5.209	0.471
8281	0.141	4.981	0.450
8282	0.108	5.296	0.571
8283	0.067	7.250	0.787
<b>Otter</b> <b>Rw= 0.02</b>			
8285	0.06022976	9.157434	0.776
8286	0.07594803	6.134557	0.752
8287	0.08279042	6.017636	0.696
8288	0.05621449	9.623783	0.811
8289	0.07131949	5.932989	0.814
8290	0.10328177	4.017126	0.683
8291	0.08447086	5.402591	0.720
8292	0.04988516	7.926273	1.007
<b>Otter</b> <b>Rw= 0.02</b>			
8294	0.070	5.329	0.879
8295	0.106	4.680	0.617
8296	0.121	4.751	0.538
8297	0.116	4.438	0.579
8298	0.087	6.416	0.641
8299	0.072	6.908	0.746
8300	0.072	6.816	0.756
8301	0.074	7.448	0.701
8302	0.076	6.303	0.740
8303	0.075	5.692	0.790
8304	0.086	4.605	0.766
8305	0.091	4.321	0.748
8306	0.098	4.105	0.712
8307	0.106	3.587	0.705
8308	0.074	5.001	0.859
8309	0.072	4.122	0.973
8310	0.101	3.032	0.801
8311	0.087	4.096	0.801
8312	0.052	7.052	1.029

<b>Otter</b> <b>Rw= 0.02</b>			
8317	0.067	9.388	0.692
8318	0.078	7.822	0.645
8319	0.088	6.163	0.646
8320	0.093	5.782	0.633
8321	0.080	6.571	0.687
8322	0.034	14.057	1.124
8323	0.028	14.043	1.356
8324	0.084	3.819	0.860
8325	0.123	2.175	0.782
8326	0.134	1.531	0.854
8327	0.147	1.368	0.821
8328	0.117	1.864	0.887
8329	0.091	2.570	0.971
8330	0.095	3.134	0.837
8331	0.093	3.560	0.803
8332	0.103	3.639	0.719
8333	0.133	3.822	0.544
8334	0.120	4.249	0.571
8335	0.087	4.868	0.735
8336	0.074	6.700	0.741
8337	0.070	6.478	0.798
8338	0.092	4.134	0.753
8339	0.108	3.787	0.672
8340	0.078	4.558	0.847
8341	0.061	6.559	0.912
<b>Otter</b> <b>Rw= 0.02</b>			
8343	0.067	10.210	0.658
8344	0.088	7.114	0.605
8345	0.117	4.898	0.545
8346	0.142	3.540	0.531
8347	0.135	2.671	0.643
8348	0.127	2.365	0.727
8349	0.114	2.324	0.817
8350	0.125	1.655	0.880
8351	0.179	0.799	0.885
8352	0.219	0.493	0.919
8353	0.233	0.483	0.875
8354	0.212	0.520	0.927
8355	0.181	0.697	0.933
8356	0.141	1.173	0.927
8357	0.129	1.761	0.826
8358	0.153	1.190	0.850
8359	0.193	0.802	0.817
8360	0.186	0.775	0.865
8361	0.128	1.228	0.994
8362	0.127	3.318	0.609
8363	0.146	4.051	0.482
8364	0.140	4.101	0.499
8365	0.133	3.346	0.582
8366	0.117	2.677	0.739
8367	0.098	3.357	0.788

8368	0.104	4.434	0.648
8369	0.105	5.747	0.560
8370	0.108	5.814	0.544
8371	0.113	5.487	0.536
8372	0.114	4.558	0.582
8373	0.118	3.706	0.622
8374	0.123	3.285	0.637
8375	0.129	2.892	0.642
8376	0.160	2.023	0.620
8377	0.168	1.401	0.710
8378	0.162	1.121	0.823
8379	0.176	0.904	0.844
8380	0.190	0.752	0.858
8381	0.182	0.774	0.881
8382	0.159	1.091	0.853
8383	0.132	1.658	0.834
8384	0.146	1.727	0.737
8385	0.157	1.391	0.762
8386	0.164	1.207	0.787
8387	0.167	1.331	0.733
8388	0.143	1.732	0.752
8389	0.129	1.920	0.790
8390	0.129	2.056	0.765
8391	0.096	3.000	0.852
8392	0.080	5.015	0.786
8393	0.081	5.768	0.726
8394	0.075	6.320	0.748
8395	0.085	4.901	0.753
8396	0.095	4.593	0.694
8397	0.090	5.511	0.670
8398	0.068	8.304	0.726
<b>Kibbey Rw= 0.02</b>			
8493	0.057	10.892	0.748
8494	0.070	4.039	1.001
8495	0.074	4.483	0.898
8496	0.079	3.845	0.915
8497	0.111	2.840	0.757
8498	0.127	3.572	0.589
8499	0.104	3.784	0.696
8500	0.091	3.714	0.809
8501	0.076	5.136	0.818
8502	0.063	6.594	0.879
8503	0.070	4.463	0.960
8504	0.081	3.600	0.926
8505	0.078	4.598	0.845
8506	0.076	5.225	0.817
8507	0.067	6.354	0.833
<b>Kibbey Rw= 0.02</b>			
8516	0.059	9.021	0.804
8517	0.073	5.789	0.810
8518	0.093	3.244	0.845
8519	0.088	3.164	0.905

8520	0.071	5.123	0.876
8521	0.062	6.074	0.922
8522	0.066	5.028	0.956
8523	0.082	3.931	0.873
8524	0.087	3.339	0.890
8525	0.083	3.366	0.927
8526	0.076	4.004	0.928
8527	0.059	5.081	1.062
<b>Kibbey</b> <b>Rw= 0.02</b>			
8535	0.056	8.534	0.860
8536	0.077	6.981	0.698
8537	0.097	4.173	0.713
8538	0.105	3.435	0.730
8539	0.097	3.308	0.803
8540	0.089	3.244	0.880
8541	0.076	3.637	0.973
8542	0.072	4.231	0.952
8543	0.074	4.367	0.920
8544	0.080	4.678	0.817
8545	0.094	3.950	0.758
8546	0.083	3.814	0.874
8547	0.063	6.483	0.883
<b>Kibbey</b> <b>Rw= 0.02</b>			
8569	0.104	2.172	0.919
8570	0.099	2.541	0.900
8571	0.096	2.444	0.946
8572	0.100	2.419	0.910
8573	0.085	3.493	0.895
8574	0.074	5.067	0.854
8575	0.074	5.489	0.812
8576	0.079	3.874	0.913
8577	0.068	3.806	1.061
8578	0.069	4.967	0.925
8579	0.092	4.320	0.739
8580	0.092	4.487	0.728
8581	0.092	6.180	0.616
8582	0.096	6.000	0.599
8583	0.093	5.924	0.623
8584	0.092	6.851	0.588
8585	0.088	6.479	0.634
8586	0.079	7.658	0.643
8587	0.094	10.667	0.458
8588	0.099	15.037	0.370
8589	0.103	17.170	0.332
<b>Midale</b> <b>Rw= 0.02</b>			
9390	0.067	7.727	0.755
9391	0.101	2.862	0.826
9392	0.117	2.046	0.848
9393	0.113	2.565	0.784
9394	0.096	3.526	0.788
9395	0.097	3.457	0.787
9396	0.073	5.042	0.866

9397	0.048	15.084	0.759
<b>Midale</b> <b>Rw= 0.02</b>			
9489	0.056	4.516	1.196
9490	0.073	4.363	0.931
9491	0.094	3.873	0.767
9492	0.075	4.831	0.855
9493	0.051	6.914	1.058
9494	0.055	5.757	1.075
9495	0.076	3.781	0.955
9496	0.077	2.894	1.082
9497	0.060	3.699	1.230
<b>Mission Canyon:</b> <b>Rw= 0.02</b>			
9856	0.058	54.787	0.331
9857	0.076	43.471	0.283
9858	0.082	40.767	0.269
9859	0.086	40.267	0.258
9860	0.091	35.030	0.263
9861	0.083	31.083	0.307
9862	0.083	24.646	0.342
9863	0.076	24.101	0.378
9864	0.061	37.249	0.378
9865	0.071	81.447	0.221
9866	0.066	63.419	0.268



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

## Department of Mineral Resources

Lynn D. Helms - Director

## North Dakota Industrial Commission

www.oilgas.nd.gov

BOB BOGLE

Date: 4/17/2012

SLAWSON EXPLORATION COMPANY, INC.

1675 BROADWAY SUITE 1600

DENVER, CO 80202 USA

### RE: CORES AND SAMPLES

Well Name: **MAGNUM 3-36-25H** Well File No.: **22731**

Location: **SESE 36-153-101** County: **MCKENZIE**

Permit Type: **Development - HORIZONTAL**

Field: **BAKER** Target Horizon: **BAKKEN**

Dear BOB BOGLE:

North Dakota Century Code (NDCC) Section 38-08-04 provides for the preservation of cores and samples and their shipment to the State Geologist when requested. The following is required on the above referenced well:

- 1) All cores, core chips and samples must be submitted to the State Geologist as provided for the NDCC Section 38-08-04 and North Dakota Administrative Code 43-02-03-38.1.
- 2) Samples shall include all cuttings from:

#### Base of the Last Charles Salt

Samples of cuttings shall be taken at 30' maximum intervals through all vertical, build and horizontal sections. Samples must be washed, dried, packed in sample envelopes in correct order with labels showing operator, well name, location and depth, and forwarded in standard boxes to the State Geologist within 30 days of the completion of drilling operations.

- 3) Cores: ALL CORES cut shall be preserved in correct order, properly boxed, and forwarded to the State Geologist within 90 days of completion of drilling operations. Any extension of time must have written approval from the State Geologist.
- 4) All cores, core chips, and samples must be shipped, prepaid, to the State Geologist at the following address:  
**ND Geological Survey Core Library  
Campus Road and Cornell  
Grand Forks, ND 58202**
- 5) NDCC Section 38-08-16 allows for a civil penalty for any violation of Chapter 38 08 not to exceed \$12,500 for each offense, and each day's violation is a separate offense.

Sincerely

Richard A. Suggs  
Geologist

**SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4**

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No. 22731

*WA*

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input type="checkbox"/> Notice of Intent	Approximate Start Date
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Progress	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
<input checked="" type="checkbox"/> Other	<b>OH Logging Waiver</b>

Well Name and Number <b>Magnum #3-36-25H</b>					
Footages		Qtr-Qtr	Section	Township	Range
205 F S L 265 F E L		SESE	36	153 N	101 W
Field <b>Baker</b>		Pool <b>Bakken</b>		County <b>McKenzie</b>	

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

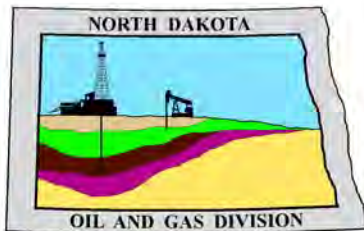
Name of Contractor(s) <b>none</b>			
Address	City	State	Zip Code

**DETAILS OF WORK**

*#20314*  
Slawson Exploration Company, Inc. (SECI) respectfully requests an open hole logging waiver for the proposed Magnum 2-36-25H well. It is located within one mile from the Lewis Federal 5300-34-51H well, which was drilled by Oasis Petroleum with open hole logs completed. Geologic control for the Magnum 3-36-25H will be achieved utilizing mudlogs and the gamma ray log from the MWD tool to be run in this well. A CBL/GR log will also be run from the KOP to 100' above TOC and to the surface with the GR.

Company <b>Slawson Exploration Company, Inc.</b>		Telephone Number <b>(720) 457-9821</b>	
Address <b>1675 Broadway, Suite 1600</b>			
City <b>Denver</b>		State <b>CO</b>	Zip Code <b>80202</b>
Signature <i>[Signature]</i>		Printed Name <b>Khem Suthiwan</b>	
Title <b>Permitting Manager</b>		Date <b>March 29, 2012</b>	
Email Address <b>ksuthiwan@slawsoncompanies.com</b>			

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>4-10-2012</i>	
By <i>[Signature]</i>	
Title <b>Richard A. Suggs</b> <b>Geologist</b>	



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

## Department of Mineral Resources

Lynn D. Helms - Director

## North Dakota Industrial Commission

[www.oilgas.nd.gov](http://www.oilgas.nd.gov)

April 10, 2012

Khem Suthiwan  
Permitting Manager  
SLAWSON EXPLORATION COMPANY, INC.  
1675 Broadway, Suite 1600  
Denver, CO 80202

**RE: HORIZONTAL WELL  
MAGNUM 3-36-25H  
SESE Section 36-153N-101W  
McKenzie County  
Well File # 22731**

Dear Khem :

Pursuant to Commission Order No. 18012, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the **200' setback** from the north & south boundaries and **500' setback** from the east & west boundaries within the 1280 acre spacing unit consisting of All of Sections 36 & 25 T153N R101W.

**PERMIT STIPULATIONS: SLAWSON EXPLORATION must contact NDIC Field Inspector Marc Binns at 701-220-5989 prior to location construction. A PERIMETER DIKE IS REQUIRED DUE TO THE ADJACENT DRAINAGE AT THE NDIC INSPECTOR'S DISCRETION.**

### Drilling pit

NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. Reserve and circulation of mud system through earthen pits are prohibited. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

### Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. The minimum legal coordinate from the well head at casing point is: 235W. Also, based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 10096N & 235W.

### Location Construction Commencement (Three Day Waiting Period)

Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

### **Permit Fee & Notification**

Payment was received in the amount of \$100 via credit card. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

### **Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells**

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to [certsurvey@nd.gov](mailto:certsurvey@nd.gov).

Survey points shall be of such frequency to accurately determine the entire location of the well bore. Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

### **Confidential status**

Your request for confidential status of all information furnished to the Director, or his representatives, is hereby granted. Such information, except production runs, shall remain confidential for six months commencing on the date the well is spud.

Confidential status notwithstanding, the Director and his representatives shall have access to all well records wherever located. Your company personnel, or any person performing work for your company shall permit the Director and his representatives to come upon any lease, property, well, or drilling rig operated or controlled by them, complying with all safety rules, and to inspect the records and operation of such wells and to have access at all times to any and all records of wells. The Commission's field personnel periodically inspect producing and drilling wells. Any information regarding such wells shall be made available to them at any time upon request. The information so obtained by the field personnel shall be maintained in strict confidence and shall be available only to the Commission and its staff.

### **Surface casing cement**

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

### **Logs**

NDAC Section 43-02-03-31 requires the running of a Cement Bond Log from which the presence of cement can be determined in every well in which production or intermediate casing has been set and a Gamma Ray Log must be run from total depth to ground level elevation of the well bore. All logs must be submitted as one paper copy and one digital copy in LAS (Log ASCII) format, or a format approved by the Director. Image logs that include, but are not limited to, Mud Logs, Cement Bond Logs, and Cyberlook Logs, cannot be produced in their entirety as LAS (Log ASCII) files. To create a solution and establish a standard format for industry to follow when submitting image logs, the Director has given approval for the operator to submit an image log as a TIFF (\*.tif) formatted file. The TIFF (\*.tif) format will be accepted only when the log cannot be produced in its entirety as a LAS (Log ASCII) file format. The digital copy may be submitted on a standard CD, or attached to an email sent to [digitallogs@nd.gov](mailto:digitallogs@nd.gov). Thank you for your cooperation.

Sincerely,

Todd L. Holweger  
Mineral Resources Permit Manager



# APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 54269 (08-2005)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Type of Work <b>New Location</b>	Type of Well <b>Oil &amp; Gas</b>	Approximate Date Work Will Start <b>04 / 15 / 2012</b>	Confidential Status <b>Yes</b>
Operator <b>SLAWSON EXPLORATION COMPANY, INC.</b>			Telephone Number <b>720-457-9821</b>
Address <b>1675 Broadway, Suite 1600</b>		City <b>Denver</b>	State <b>CO</b> Zip Code <b>80202</b>

☒ Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet.

☒ This well is not located within five hundred feet of an occupied dwelling.

## WELL INFORMATION (If more than one lateral proposed, enter data for additional laterals on page 2)

Well Name <b>MAGNUM</b>				Well Number <b>3-36-25H</b>			
Surface Footages <b>205 F S L 265 F E L</b>		Qtr-Qtr <b>SESE</b>	Section <b>36</b>	Township <b>153 N</b>	Range <b>101 W</b>	County <b>McKenzie</b>	
Longstring Casing Point Footages <b>388 F S L 706 F E L</b>		Qtr-Qtr <b>SESE</b>	Section <b>36</b>	Township <b>153 N</b>	Range <b>101 W</b>	County <b>McKenzie</b>	
Longstring Casing Point Coordinates From Well Head <b>183 N From WH 441 W From WH</b>		Azimuth <b>292.5 °</b>	Longstring Total Depth <b>11031 Feet MD 10758 Feet TVD</b>				
Bottom Hole Footages From Nearest Section Line <b>264 F N L 1798 F E L</b>		Qtr-Qtr <b>NWNE</b>	Section <b>25</b>	Township <b>153 N</b>	Range <b>101 W</b>	County <b>McKenzie</b>	
Bottom Hole Coordinates From Well Head <b>10032 N From WH 1533 W From WH</b>		KOP Lateral 1 <b>10281 Feet MD</b>	Azimuth Lateral 1 <b>360 °</b>		Estimated Total Depth Lateral 1 <b>21417 Feet MD 10758 Feet TVD</b>		
Latitude of Well Head <b>48 ° 01 ' 29.87 "</b>		Longitude of Well Head <b>-103 ° 36 ' 18.97 "</b>		NAD Reference <b>NAD83</b>		Description of (Subject to NDIC Approval) <b>Spacing Unit: All of Sect 36 &amp; 25 T153N R101W</b>	
Ground Elevation <b>2158 Feet Above S.L.</b>		Acres in Spacing/Drilling Unit <b>1280</b>		Spacing/Drilling Unit Setback Requirement <b>200 Feet N/S 500 Feet E/W</b>		Industrial Commission Order <b>18012</b>	
North Line of Spacing/Drilling Unit <b>5268 Feet</b>		South Line of Spacing/Drilling Unit <b>5252 Feet</b>		East Line of Spacing/Drilling Unit <b>10488 Feet</b>		West Line of Spacing/Drilling Unit <b>10549 Feet</b>	
Objective Horizons <b>Bakken</b>						Pierre Shale Top <b>2030</b>	
Proposed Surface Casing	Size <b>9 - 5/8 "</b>	Weight <b>36 Lb./Ft.</b>	Depth <b>2135 Feet</b>	Cement Volume <b>660 Sacks</b>	<b>NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.</b>		
Proposed Longstring Casing	Size <b>7 - 0 "</b>	Weight(s) <b>29 &amp; 32 Lb./Ft.</b>	Longstring Total Depth <b>11031 Feet MD 10758 Feet TVD</b>		Cement Volume <b>679 Sacks</b>	Cement Top <b>4883 Feet</b>	Top Dakota Sand <b>5383 Feet</b>
Base Last Charles Salt (If Applicable) <b>9254 Feet</b>		<b>NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.</b>					
Proposed Logs <b>OH Log Waiver - CBL w/ GR and CCL from KOP to 100' above the TOC &amp; GR to surface</b>							
Drilling Mud Type (Vertical Hole - Below Surface Casing) <b>Invert</b>				Drilling Mud Type (Lateral) <b>Other - See Comments</b>			
Survey Type in Vertical Portion of Well <b>MWD Every 100 Feet</b>		Survey Frequency: Build Section <b>30 Feet</b>		Survey Frequency: Lateral <b>90 Feet</b>		Survey Contractor <b>Directional Drilling Co.</b>	

**NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.**

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

**REQUIRED ATTACHMENTS:** Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, \$100 fee.  
See Page 2 for Comments section and signature block.

### COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS

No occupied dwelling within 1,320 ft. Lateral will be drilled with CaCl water unless pressure is encountered, then will switch to 80/20 invert mud. KB @ 2,180'. Certified surveyors well location plat, horizontal sections, pad layout, pad x-sections, topo map, proposed directional survey & plots, and drilling program will be emailed. The proposed well will be located on the existing Magnum 2-36-25H well pad (W22249).

#### Lateral 2

KOP Lateral 2 Feet MD	Azimuth Lateral 2 °	Estimated Total Depth Lateral 2 Feet MD      Feet TVD		KOP Coordinates From Well Head From WH      From WH	
Formation Entry Point Coordinates From Well Head From WH      From WH		Bottom Hole Coordinates From Well Head From WH      From WH			
KOP Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County
Bottom Hole Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County

#### Lateral 3

KOP Lateral 3 Feet MD	Azimuth Lateral 3 °	Estimated Total Depth Lateral 3 Feet MD      Feet TVD		KOP Coordinates From Well Head From WH      From WH	
Formation Entry Point Coordinates From Well Head From WH      From WH		Bottom Hole Coordinates From Well Head From WH      From WH			
KOP Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County
Bottom Hole Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County

#### Lateral 4

KOP Lateral 4 Feet MD	Azimuth Lateral 4 °	Estimated Total Depth Lateral 4 Feet MD      Feet TVD		KOP Coordinates From Well Head From WH      From WH	
Formation Entry Point Coordinates From Well Head From WH      From WH		Bottom Hole Coordinates From Well Head From WH      From WH			
KOP Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County
Bottom Hole Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County

#### Lateral 5

KOP Lateral 5 Feet MD	Azimuth Lateral 5 °	Estimated Total Depth Lateral 5 Feet MD      Feet TVD		KOP Coordinates From Well Head From WH      From WH	
Formation Entry Point Coordinates From Well Head From WH      From WH		Bottom Hole Coordinates From Well Head From WH      From WH			
KOP Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County
Bottom Hole Footages From Nearest Section Line F      L      F      L		Qtr-Qtr	Section	Township N	Range W      County

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.		Date <b>03 / 29 / 2012</b>
<b>ePermit</b>	Printed Name <b>Khem Suthiwan</b>	Title <b>Permitting Manager</b>

#### FOR STATE USE ONLY

Permit and File Number <b>22731</b>	API Number <b>33 - 053 - 04069</b>
Field <b>BAKER</b>	
Pool <b>BAKKEN</b>	Permit Type <b>DEVELOPMENT</b>

#### FOR STATE USE ONLY

Date Approved <b>4 / 10 / 2012</b>
By <b>Todd L. Holweger</b>
Title <b>Mineral Resources Permit Manager</b>

# WELL LOCATION PLAT

Slawson Exploration Company, Inc.

1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

205 feet from the south line and 265 feet from the east line (surface location)

Section 36, T. 153 N., R. 101 W., 5th P.M.

250 feet from the north line and 1700 feet from the east line (bottom location)

Section 25, T. 153 N., R. 101 W., 5th P.M.

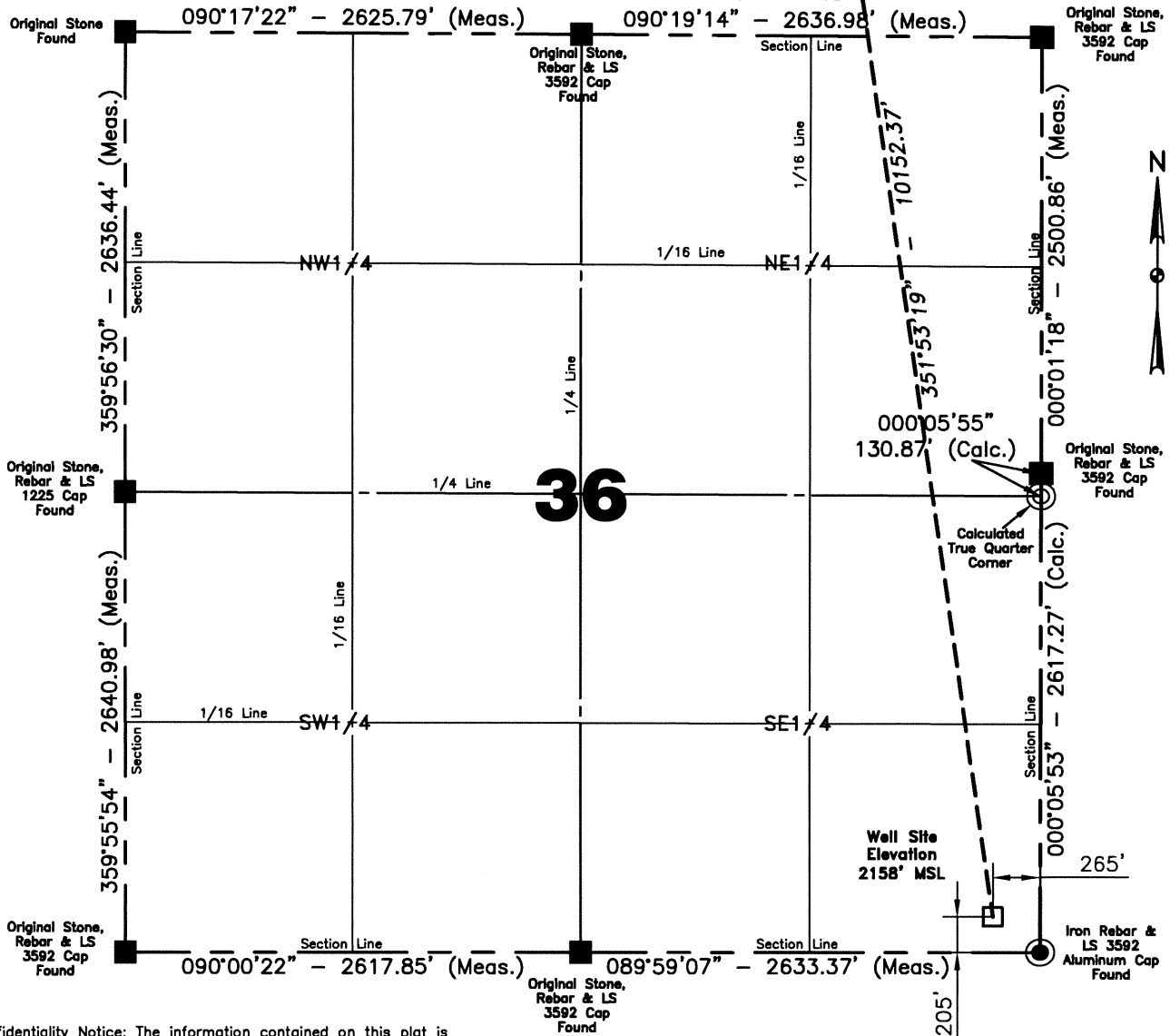
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

Latitude 48°01'29.869" North; Longitude 103°36'18.972" West (surface location)

Latitude 48°03'09.063" North; Longitude 103°36'39.969" West (bottom location)

[Derived from OPUS Solution NAD-83(CORS96)]



Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

NOTE: All land corners are assumed unless otherwise noted. The well location shown hereon is not an as-built location.

Scale 1"=1000'

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

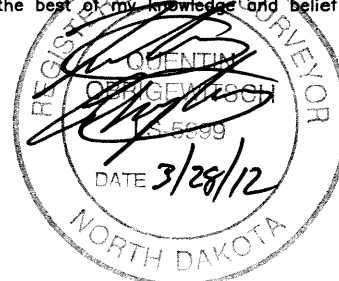
Brian L. Schmalz 8/26/2011  
Surveyed By N.D.P.L.S. # 6809 Date

Vertical Control Datum Used  
Sea-Level Datum of NAVD 88  
Based on elevation derived from OPUS Solution on CP\*KLJ 15-152-10 (iron rebar) Located a distance of 6192.72' on an azimuth of 270°16'47" from the SW corner of Section 36, T.153N., R.101W., 5th P.M. being at 2134.39' Elevation MSL.


Project No. 3712480

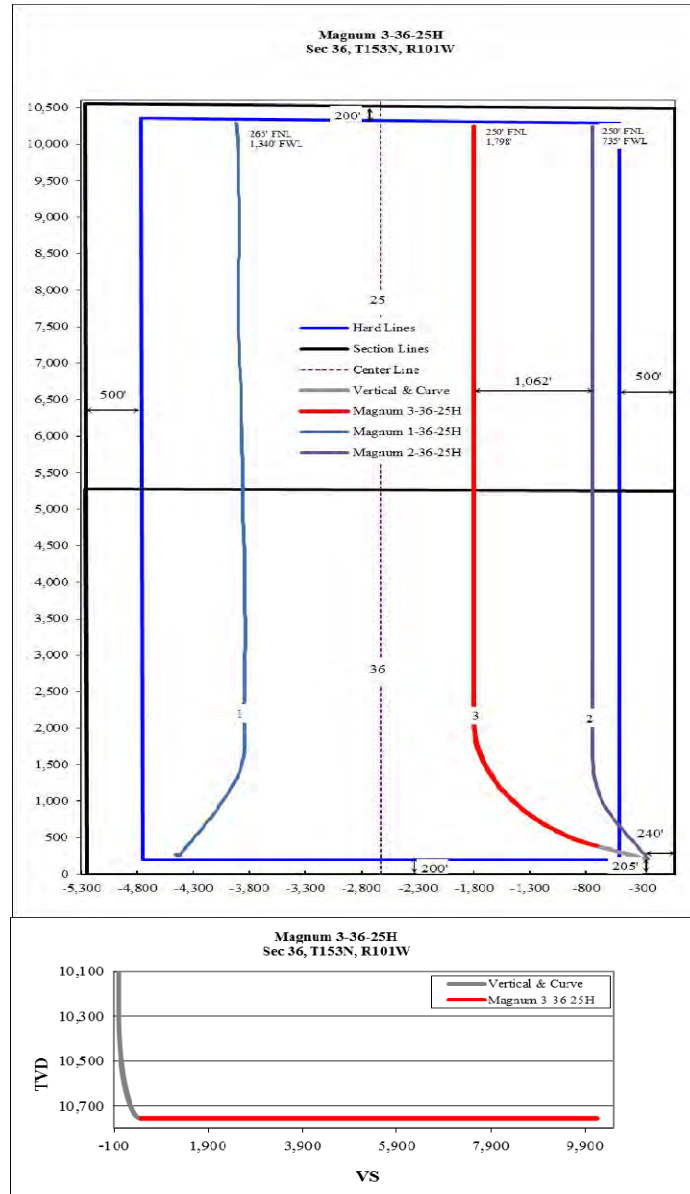
Book OW-257 Pg. 47-50 Staking

Professional Consulting Engineers  
and Surveyors  
Registered in  
North Dakota, South Dakota  
Montana, Wyoming & Minnesota  
Tele-Fax No. 701-483-2795  
Bus. Phone No. 701-483-1284  
P.O. Box 290  
677 27th Ave. E.  
Dickinson, North Dakota 58602  
Certificate of Authorization #C-061



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

1675 Broadway, Ste. 1600 Denver, Co. 80202		 <b>SLAWSON</b> exploration company, inc.		Phone # 303-592-8880	
				Fax: 303-592-8881	
				Log Fax:	
<b>GENERAL WELL INFORMATION</b>					
Magnum 3-36-25H - single-lateral Bakken producer with stage-frac completion					
LEASE NAME AND NUMBER					
ORIGINAL GL:	2,158'	FOOTAGE CALLS - SURFACE HOLE		205' FSL	265' FEL
FINISHED PAD ELEVATION:	2,156'	SURFACE HOLE LOCATION		SESE	36, 153N, 101W
KB(24')	2,180'	BOTTOM HOLE LOCATION		NENE	25, 153N, 101W
PROPOSED TVD	10,758'	LATITUDE		48° 01' 29.869" N	
PROPOSED TMD	21,417'	LONGITUDE		103° 36' 18.972" W	
LATERAL LENGTH (FT.)	10,386'	COUNTY/STATE		McKenzie CO, ND	
FIELD	Wildcat				
<b>DIRECTIONS TO WELL:</b>					
<b>ESTIMATED TOPS</b>		<b>SUBSEA</b>	<b>TVD</b>	<b>ESTIMATED TOPS</b>	
<b>SUBSEA</b>		<b>TVD</b>	<b>SUBSEA</b>		<b>TVD</b>
Pierre/base Foxhills	150'	2,030'	Charles	-6,266'	8,446'
Dakota (marine)	-3,203'	5,383'	base last Charles salt	-7,074'	9,254'
Dunham Salt	-4,565'	6,745'	Mission Canyon	-7,266'	9,446'
Base Dunham Salt	-4,583'	6,763'	Lodgepole	-7,836'	10,016'
Pine Salt	-4,836'	7,016'	Upper Bakken shale	-8,556'	10,736'
Base Pine Salt	-4,870'	7,050'	Top of Target	-8,571'	10,751'
Opeche	-4,895'	7,075'	Target	-8,578'	10,758'
Minnelussa	-5,100'	7,280'	Base of Target	-8,585'	10,765'
Kibbey Lime	-6,119'	8,299'			
<b>MUD PROGRAM</b>			<b>Type</b>	<b>Viscosity</b>	<b>Weight</b>
<b>Start at (ft.)</b>	<b>Change at (ft.)</b>			<b>Fluid Loss</b>	<b>LCM</b>
0	2,130'	( Through Surface Casing Depth)	fresh water	28-32	8.34
2,130'	7" csg point		80/20 invert	45-50	9.6-10.5
7" csg point	Total MD		80/20 invert	45-50	10.5-12.5
Maximum anticipated bottom hole pressure is 4,658#; BOPs to be tested to 5000psi					
<b>LOGGING PROGRAM</b>					
Open Hole	Triple Combo - DIL,CNL,CDL				
Cased Hole	CBL/GR/CCL				
<b>BIT PROGRAM</b>			<b>CASING PROGRAM</b>		
<b>Hole Size</b>	<b>Casing</b>	<b>Bit Type</b>	<b>Model</b>	<b>Manufacturer</b>	<b>SURFACE CASING:</b>
13-1/2"	9 5/8"	Roller-Cone		Retip	9-5/8" 36# K55
8-3/4" Vertical	7"	PDC	655ZX	SEC	
8-3/4" Curve	7"	PDC	3641	SEC	
6"	4 1/2"	PDC	643	SEC	
<b>DIRECTIONAL PROGRAM</b>			<b>PRODUCTION CASING:</b>		
KOP	10,281'				7" 29# P-110
Build rate	12.0°/100'				7" 32# P-110
Lateral length, (ft.)	10,386'				7" 29# P-110
Curve Azimuth	292.55°				
Target zone top (TVD)	10,751'				
Landing point (TVD)	10,758'				
Target zone bottom (TVD)	10,765'				
Total MD	21,417'				
***** SEE ATTACHED DIRECTIONAL PLAN			Total 29# 8,218' Total 32# 2,813' 11,031' <b>LINER LENGTH:</b> start end Length 4-1/2" 11.6# P-110 10,271' 21,397' 11,126' Mech Packer assembly on 4-1/2" liner - Packer depths to be provided at TD. The sleeves and packers will provided when run.		
<b>CEMENT PROGRAM</b>		<b>Size</b>	<b>Instructions</b>		
SURFACE CASING		9 5/8"	Cement to surface with 398 SX "G" and 262 SX "G" tail; 1,665 cu.ft. total		
Use 60% excess					
PRODUCTION CASING		7"	Cement w/ 303 sx lite Pozmix (Yield: 2.56 ft3/sx) lead and 376 sx Class G (Yield: 1.65 ft3/sx) tail. Calculated cement top 500' above Dakota. Lead coverage from 500' above Dakota to 150' above Charles, Tail coverage from 150' above Charles to 7" shoe. Total Cement Volume: 1,396 cu.ft.		
Use 30% excess and a 9" hole					
See Drilling Procedure for Float Equipment Recommendation					
<b>SLAWSON CONTACT INFORMATION</b>					
<b>Engineering:</b>	<b>Office</b>	<b>Home</b>	<b>Cell</b>		
Mark McCallister	720-897-8758	303-730-9979	303-748-1602		
Matt Houston	720-897-8759	512-944-5528	512-944-5528		
<b>Geology:</b>					
Bob Bogle	720-897-8756	303-773-1706	303-523-5607		



The SHL is 205' FSL & 265 FWL (SESE), Section 36, T153N, R101W, McKenzie County, ND. The state setback is 500' FEL & FWL, 200' FNL & FSL.

**7" Casing:** 8-3/4" hole: KOP at 10,281'. Build curve at **12°/100'** to 90° inclination at 11,031' MD (**10,758' TVD**) at an azimuth of 292.55°. Set 7" casing 388' FSL & 706' FEL, SESE, Section 36, T153N, R101W).

**Lateral:** After drillind out of the 7: casing shoe, increase the azimuth to 360° at 3°/100'. Drill a 6" horizontal well building to an azimuth of 360.00° to TD at a depth of 21,714' MD (**10,758' TVD**), 250' FNL & 1,798' FEL (NWNE) Section 25, T153N , R101W. Expect an inclination of 90.00°. Total 6" lateral is 10,386'.

# Magnum 3-36-25H

KB = 2,180'

KOP = 10,281'

Target = 10,343' TVD

MD	Incl.	Azi.	Based on True North				Vertical Section	UTM N	UTM E
			TVD	North	East	DLS			
0.00	0.00	292.55	0.00	0.00	0.00	0.00	0.00	205.00	-265.00
10,200.00	0.00	292.55	10,200.00	0.00	0.00	0.00	0.00	205.00	-265.00
<b>10,280.50</b>	<b>0.00</b>	<b>292.55</b>	<b>10,280.50</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>205.00</b>	<b>-265.00 KOP</b>
10,330.50	6.00	292.55	10,330.36	1.00	-2.41	12.00	2.61	206.00	-267.41
10,380.50	12.00	292.55	10,379.68	4.00	-9.62	12.00	10.42	209.00	-274.62
10,430.50	18.00	292.55	10,427.91	8.96	-21.55	12.00	23.34	213.96	-286.55
10,480.50	24.00	292.55	10,474.53	15.82	-38.08	12.00	41.24	220.82	-303.08
10,530.50	30.00	292.55	10,519.02	24.51	-59.01	12.00	63.90	229.51	-324.01
10,580.50	36.00	292.55	10,560.90	34.94	-84.12	12.00	91.09	239.94	-349.12
10,630.50	42.00	292.55	10,599.70	46.99	-113.14	12.00	122.51	251.99	-378.14
10,680.50	48.00	292.55	10,635.01	60.53	-145.75	12.00	157.82	265.53	-410.75
10,730.50	54.00	292.55	10,666.43	75.41	-181.59	12.00	196.63	280.41	-446.59
10,780.50	60.00	292.55	10,693.62	91.47	-220.26	12.00	238.50	296.47	-485.26
10,830.50	66.00	292.55	10,716.29	108.53	-261.35	12.00	282.99	313.53	-526.35
10,880.50	72.00	292.55	10,734.18	126.41	-304.40	12.00	329.60	331.41	-569.40
10,930.50	78.00	292.55	10,747.10	144.91	-348.94	12.00	377.83	349.91	-613.94
10,980.50	84.00	292.55	10,754.91	163.83	-394.48	12.00	427.15	368.83	-659.48
<b>11,030.50</b>	<b>90.00</b>	<b>292.55</b>	<b>10,757.52</b>	<b>182.96</b>	<b>-440.53</b>	<b>12.00</b>	<b>477.01</b>	<b>387.96</b>	<b>-705.53 EOC, 7" Csg</b>
<b>Magnum 3-36-25H</b>									
<b>11,030.50</b>	<b>90.00</b>	<b>292.55</b>	<b>10,757.52</b>	<b>182.96</b>	<b>-440.53</b>	<b>12.00</b>	<b>477.01</b>	<b>387.96</b>	<b>-705.53 Begin Lateral</b>
11,130.50	90.00	295.55	10,757.52	223.71	-531.81	3.00	576.95	428.71	-796.81
11,230.50	90.00	298.55	10,757.52	269.18	-620.84	3.00	676.68	474.18	-885.84
11,330.50	90.00	301.55	10,757.52	269.18	-620.84	3.00	676.68	474.18	-885.84
11,430.50	90.00	304.55	10,757.52	321.44	-705.94	3.00	775.68	526.44	-970.94
11,530.50	90.00	307.55	10,757.52	380.28	-786.76	3.00	873.84	585.28	-1,051.76
11,630.50	90.00	310.55	10,757.52	443.26	-864.39	3.00	971.42	648.26	-1,129.39
11,730.50	90.00	313.55	10,757.52	510.22	-938.61	3.00	1,068.32	715.22	-1,203.61
11,830.50	90.00	316.55	10,757.52	580.97	-1,009.23	3.00	1,164.50	785.97	-1,274.23
11,930.50	90.00	319.55	10,757.52	655.32	-1,076.05	3.00	1,259.89	860.32	-1,341.05
12,030.50	90.00	322.55	10,757.52	733.07	-1,138.89	3.00	1,354.42	938.07	-1,403.89
12,130.50	90.00	325.55	10,757.52	814.00	-1,197.57	3.00	1,448.02	1,019.00	-1,462.57
12,230.50	90.00	328.55	10,757.52	897.89	-1,251.93	3.00	1,540.63	1,102.89	-1,516.93
12,330.50	90.00	331.55	10,757.52	984.51	-1,301.83	3.00	1,632.18	1,189.51	-1,566.83
12,430.50	90.00	334.55	10,757.52	1,073.62	-1,347.13	3.00	1,722.62	1,278.62	-1,612.13
12,530.50	90.00	337.55	10,757.52	1,164.98	-1,387.70	3.00	1,811.87	1,369.98	-1,652.70
12,630.50	90.00	340.55	10,757.52	1,258.34	-1,423.44	3.00	1,899.89	1,463.34	-1,688.44
12,730.50	90.00	343.55	10,757.52	1,353.44	-1,454.24	3.00	1,986.61	1,558.44	-1,719.24
12,830.50	90.00	346.55	10,757.52	1,450.02	-1,480.02	3.00	2,071.96	1,655.02	-1,745.02
12,930.50	90.00	349.55	10,757.52	1,547.82	-1,500.71	3.00	2,155.89	1,752.82	-1,765.71
13,030.50	90.00	352.55	10,757.52	1,646.57	-1,516.25	3.00	2,238.35	1,851.57	-1,781.25
13,130.50	90.00	355.55	10,757.52	1,746.00	-1,526.60	3.00	2,319.27	1,951.00	-1,791.60
13,230.50	90.00	358.55	10,757.52	1,845.83	-1,531.74	3.00	2,398.61	2,050.83	-1,796.74
13,330.50	90.00	360.00	10,757.52	1,945.81	-1,533.00	1.45	2,477.15	2,150.81	-1,798.00
13,430.50	90.00	360.00	10,757.52	2,045.81	-1,533.00	0.00	2,556.45	2,250.81	-1,798.00
13,530.50	90.00	360.00	10,757.52	2,145.81	-1,533.00	0.00	2,637.16	2,350.81	-1,798.00
13,630.50	90.00	360.00	10,757.52	2,245.81	-1,533.00	0.00	2,719.15	2,450.81	-1,798.00
13,730.50	90.00	360.00	10,757.52	2,345.81	-1,533.00	0.00	2,802.31	2,550.81	-1,798.00
13,830.50	90.00	360.00	10,757.52	2,445.81	-1,533.00	0.00	2,886.53	2,650.81	-1,798.00
13,930.50	90.00	360.00	10,757.52	2,545.81	-1,533.00	0.00	2,971.74	2,750.81	-1,798.00
14,030.50	90.00	360.00	10,757.52	2,645.81	-1,533.00	0.00	3,057.84	2,850.81	-1,798.00
14,130.50	90.00	360.00	10,757.52	2,745.81	-1,533.00	0.00	3,144.77	2,950.81	-1,798.00
14,230.50	90.00	360.00	10,757.52	2,845.81	-1,533.00	0.00	3,232.45	3,050.81	-1,798.00
14,330.50	90.00	360.00	10,757.52	2,945.81	-1,533.00	0.00	3,320.83	3,150.81	-1,798.00
14,430.50	90.00	360.00	10,757.52	3,045.81	-1,533.00	0.00	3,409.85	3,250.81	-1,798.00
14,530.50	90.00	360.00	10,757.52	3,145.81	-1,533.00	0.00	3,499.46	3,350.81	-1,798.00
14,630.50	90.00	360.00	10,757.52	3,245.81	-1,533.00	0.00	3,589.62	3,450.81	-1,798.00
14,730.50	90.00	360.00	10,757.52	3,345.81	-1,533.00	0.00	3,680.29	3,550.81	-1,798.00
14,830.50	90.00	360.00	10,757.52	3,445.81	-1,533.00	0.00	3,771.43	3,650.81	-1,798.00
14,930.50	90.00	360.00	10,757.52	3,545.81	-1,533.00	0.00	3,863.01	3,750.81	-1,798.00
15,030.50	90.00	360.00	10,757.52	3,645.81	-1,533.00	0.00	3,955.00	3,850.81	-1,798.00
15,130.50	90.00	360.00	10,757.52	3,745.81	-1,533.00	0.00	4,047.37	3,950.81	-1,798.00
15,230.50	90.00	360.00	10,757.52	3,845.81	-1,533.00	0.00	4,140.09	4,050.81	-1,798.00
15,330.50	90.00	360.00	10,757.52	3,945.81	-1,533.00	0.00	4,233.14	4,150.81	-1,798.00
15,430.50	90.00	360.00	10,757.52	4,045.81	-1,533.00	0.00	4,326.51	4,250.81	-1,798.00
15,530.50	90.00	360.00	10,757.52	4,145.81	-1,533.00	0.00	4,420.16	4,350.81	-1,798.00
15,630.50	90.00	360.00	10,757.52	4,245.81	-1,533.00	0.00	4,514.09	4,450.81	-1,798.00
15,730.50	90.00	360.00	10,757.52	4,345.81	-1,533.00	0.00	4,608.27	4,550.81	-1,798.00
15,830.50	90.00	360.00	10,757.52	4,445.81	-1,533.00	0.00	4,702.69	4,650.81	-1,798.00
15,930.50	90.00	360.00	10,757.52	4,545.81	-1,533.00	0.00	4,797.34	4,750.81	-1,798.00



# HORIZONTAL SECTION PLAT

Slawson Exploration Company, Inc.  
1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

205 feet from the south line and 265 feet from the east line (surface location)

Section 36, T. 153 N., R. 101 W., 5th P.M.

250 feet from the north line and 1700 feet from the east line (bottom location)

Section 25, T. 153 N., R. 101 W., 5th P.M.

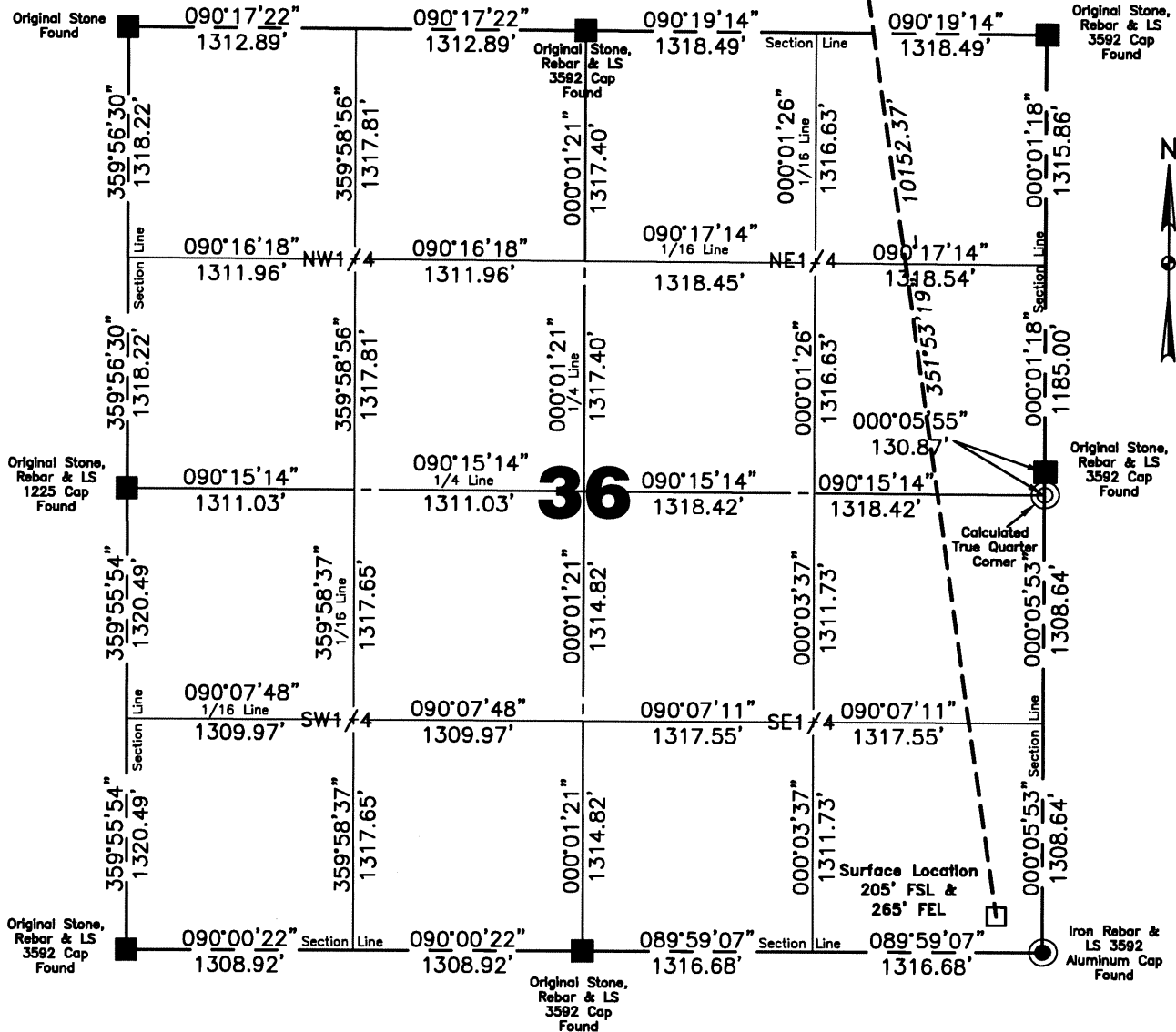
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

Latitude 48°01'29.869" North; Longitude 103°36'18.972" West (surface location)

Latitude 48°03'09.063" North; Longitude 103°36'39.969" West (bottom location)

[Derived from OPUS Solution NAD-83(CORS96)]



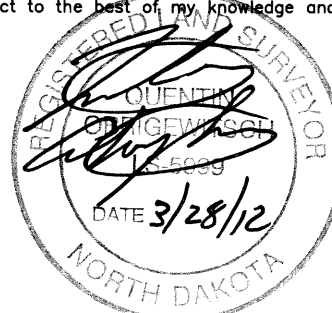
Scale 1"=1000'

Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

All corners shown on this plat were found in the field during Slawson Exploration Company Magnum 3-36-25H oil well survey on August 26, 2011. Distances to all others are calculated. All azimuths are based on the south line of the southwest quarter of Section 36, being on an azimuth of 090°00'22".

Surveyed By	Field Book
B. Schmalz	OW-257
Computed & Drawn By	Project No.
Z. Theisen	3712480



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

# HORIZONTAL SECTION PLAT

Slawson Exploration Company, Inc.  
1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

205 feet from the south line and 265 feet from the east line (surface location)

Section 36, T. 153 N., R. 101 W., 5th P.M.

250 feet from the north line and 1700 feet from the east line (bottom location)

Section 25, T. 153 N., R. 101 W., 5th P.M.

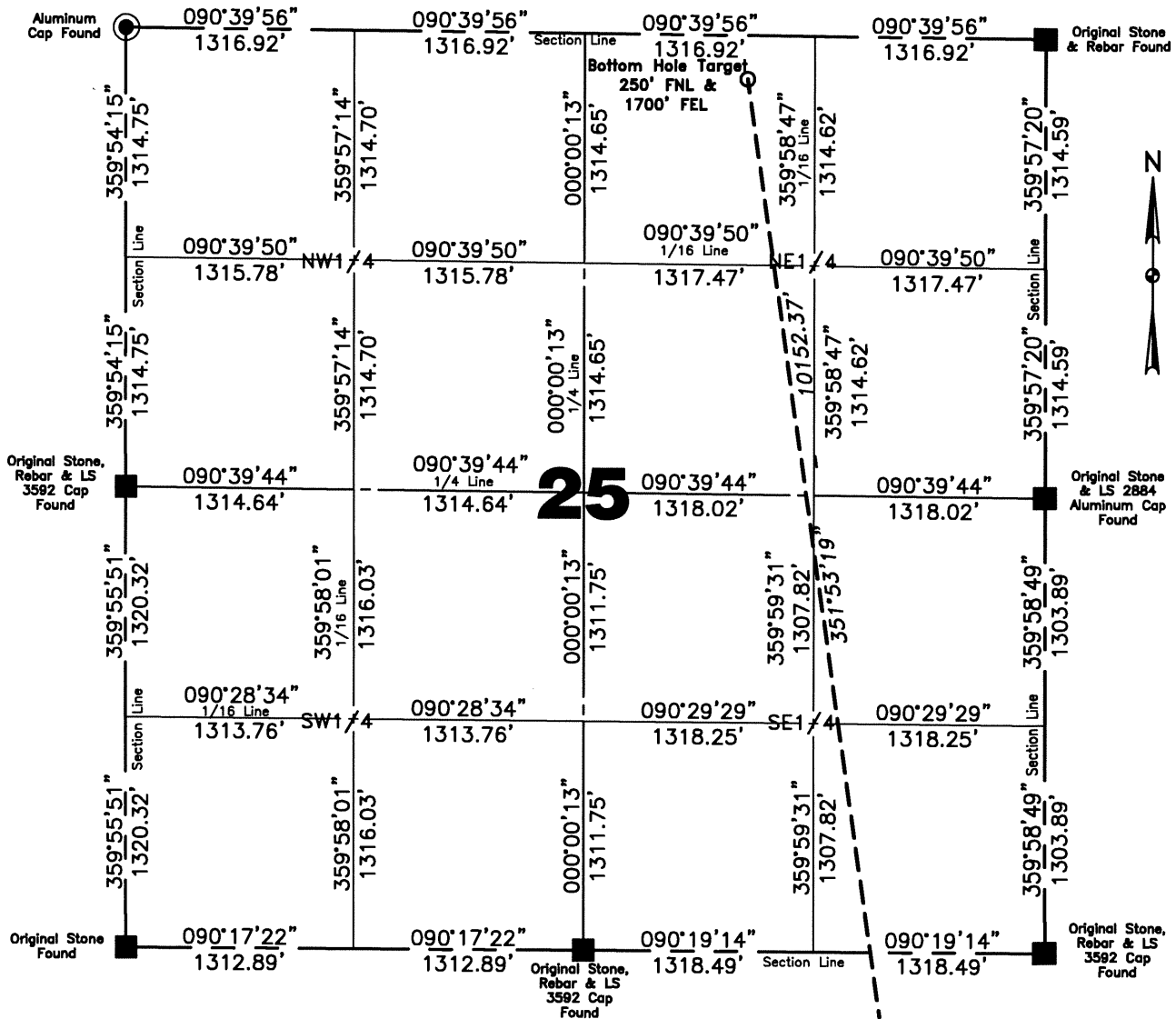
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

Latitude 48°01'29.869" North; Longitude 103°36'18.972" West (surface location)

Latitude 48°03'09.063" North; Longitude 103°36'39.969" West (bottom location)

[Derived from OPUS Solution NAD-83(CORS96)]



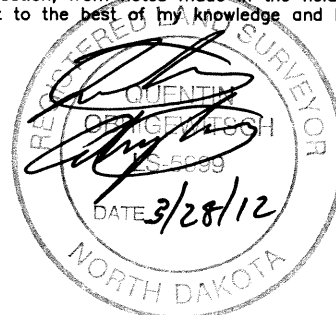
Scale 1"=1000'

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Surveyed By	Field Book
B. Schmalz	OW-257
Computed & Drawn By	Project No.
Z. Theisen	3712480



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

# BOTTOM HOLE LOCATION PLAT

Slawson Exploration Company, Inc.

1675 Broadway, Suite 1600, Denver, Colorado 80202

## Magnum 3-36-25H

205 feet from the south line and 265 feet from the east line (surface location)

Section 36, T. 153 N., R. 101 W., 5th P.M.

250 feet from the north line and 1700 feet from the east line (bottom location)

Section 25, T. 153 N., R. 101 W., 5th P.M.

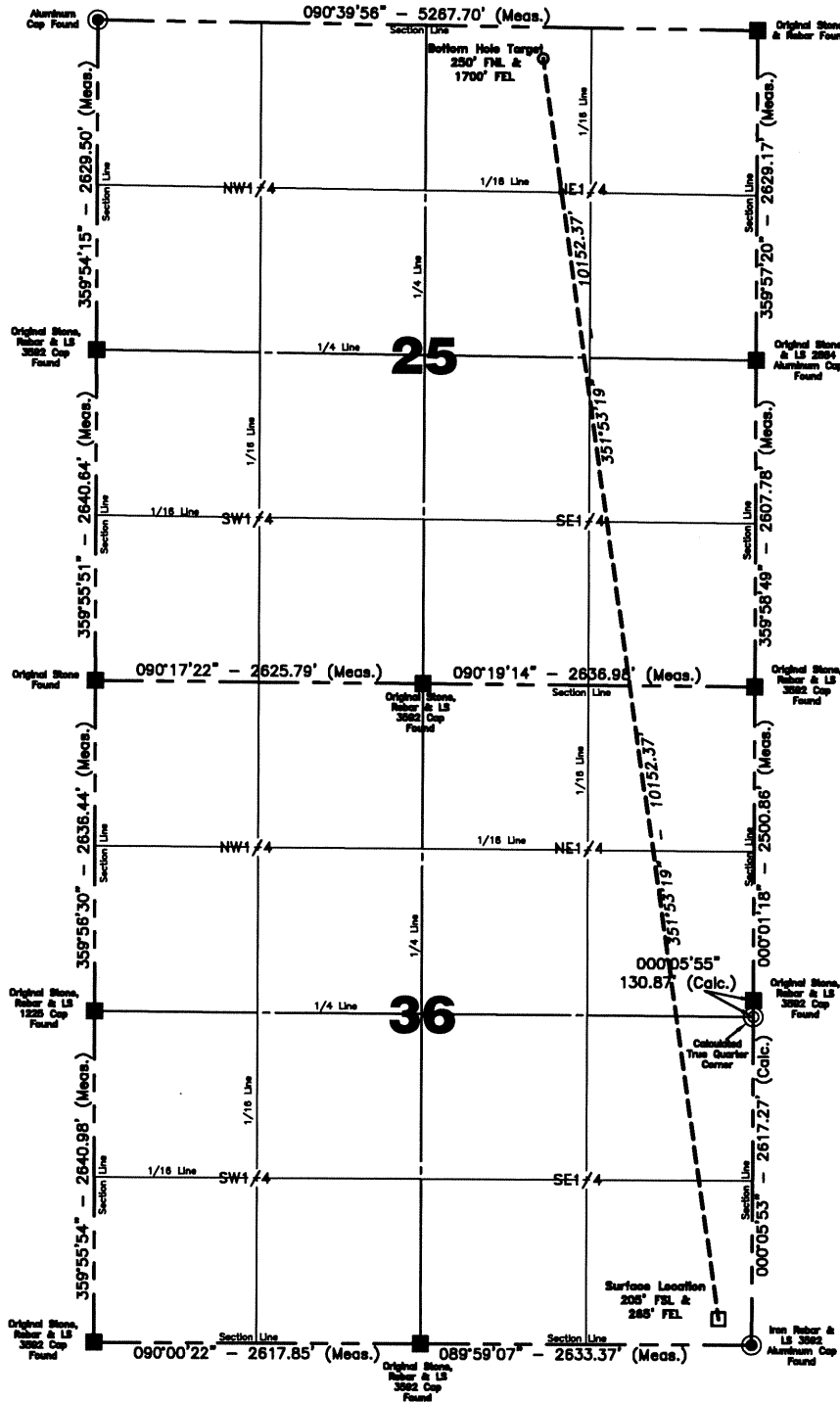
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

Latitude 48°01'29.869" North; Longitude 103°36'18.972" West (surface location)

Latitude 48°03'09.063" North; Longitude 103°36'39.969" West (bottom location)

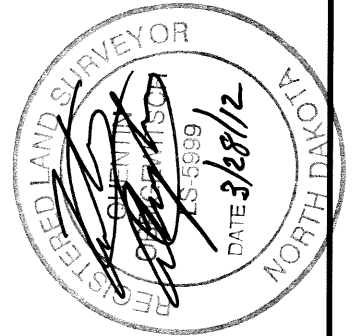
[Derived from OPUS Solution NAD-83(CORS96)]



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All corners shown on this plat were found in the field during Slawson Exploration Company Magnum 3-36-25H oil well survey on August 26, 2011. Distances to all others are calculated. All azimuths are based on the south line of the southwest quarter of Section 36, being on an azimuth of 090°00'22".



Scale 1"=1500'

Kadrmars

Lee &

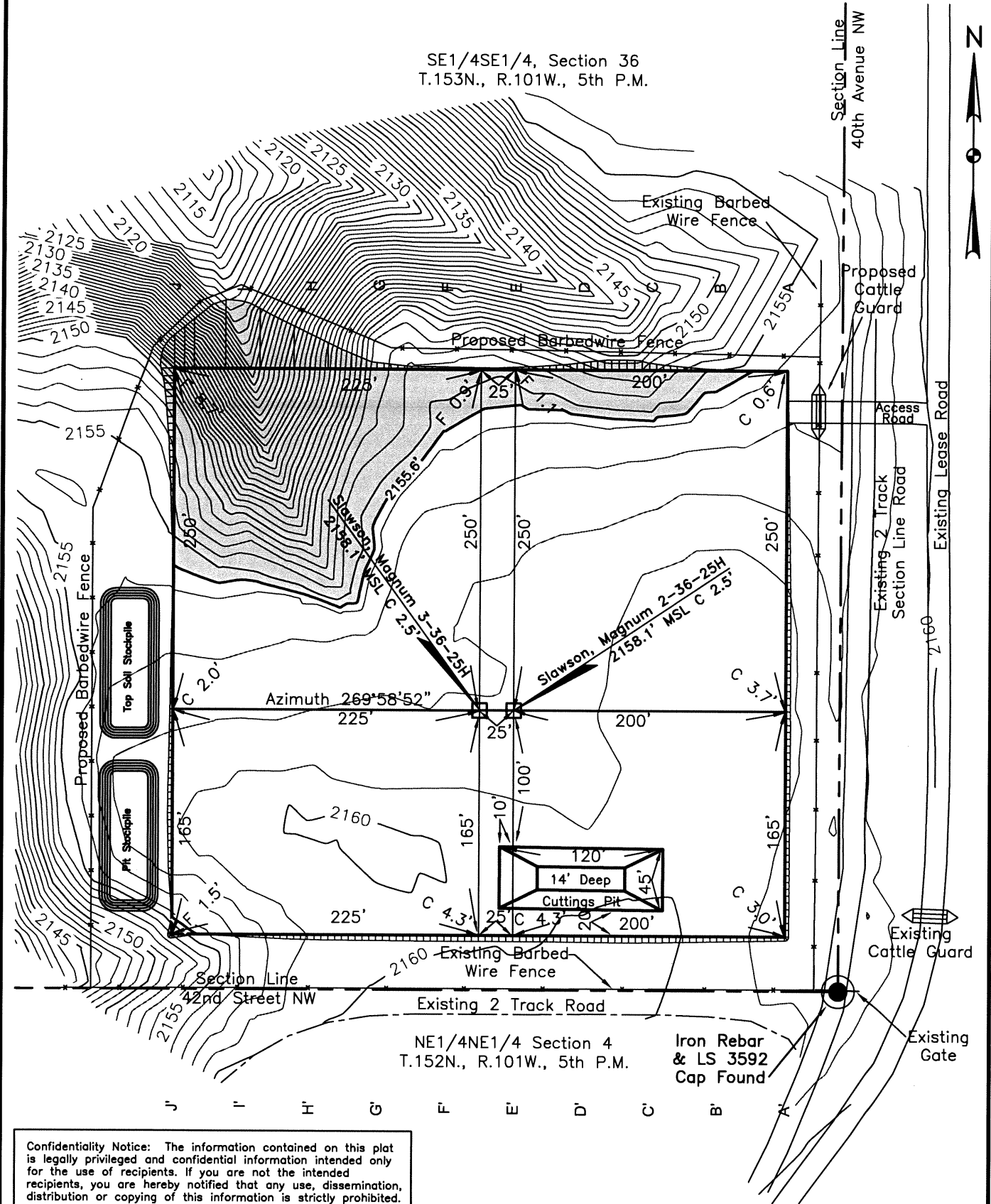
Jackson

Engineers Surveyors  
Planners

Computed & Drawn By Z. Theisen	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1"=1500'	Date 3/23/2012
Field Book OW-257	Material B.H. Layout	Revised —	Project No. 3712480	Drawing No. 4

# Magnum 3-36-25H, Magnum 2-36-25H Pad Layout

SE1/4SE1/4, Section 36  
T.153N., R.101W., 5th P.M.

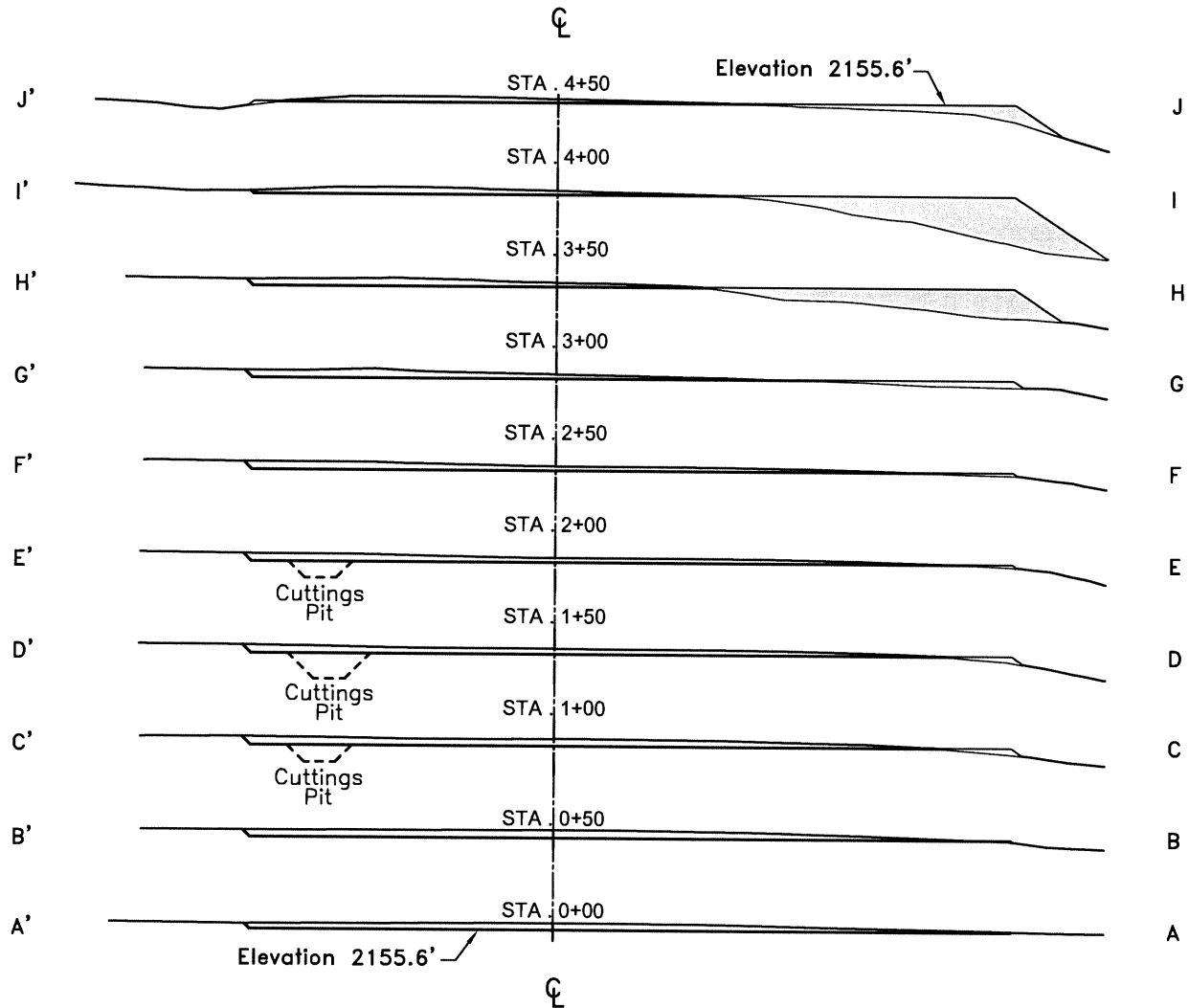


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Drawn By Z. Theisen	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1" = 100'	Date 3/23/2012
Field Book OW-257	Material Pad Layout	Revised —	Project No. 3711645, 3712480	Drawing No. 6

**Kadmas**  
**Lee &**  
**Jackson**  
Engineers Surveyors  
Planners

# Magnum 3-36-25H, Magnum 2-36-25H Cross Sections



Confidentiality Notice: The information contained on this plot is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

Drawn By Z. Theisen	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1" = 100'	Date 3/23/2012
Field Book OW-257	Material Cross Sections	Revised —	Project No. 3711645, 3712480	Drawing No. 7

**Kadmas**  
**Lee &**  
**Jackson**  
Engineers Surveyors  
Planners

**Slawson Exploration Company, Inc.**  
**Magnum 3-36-25H, Magnum 2-36-25H**  
**Section 36, T. 153 N., R. 101 W., 5th P.M.**  
**McKenzie County, North Dakota**

Magnum 3-36-25H Well Site Elevation 2158.1' MSL  
 Magnum 2-36-25H Well Site Elevation 2158.1' MSL  
 Well Pad Elevation 2155.6' MSL

Excavation 16,530 C.Y.  
 Plus Pit 1,480 C.Y.  


---

18,010 C.Y.

Embankment 8,565 C.Y.  
 Plus Shrinkage (+30%) 2,570 C.Y.  


---

11,135 C.Y.

Stockpile Pit 1,480 C.Y.

Stockpile Top Soil (8") 4,850 C.Y.

Production Rehabilitation 0 C.Y.

Road Embankment &  
 Stockpile from Pad 545 C.Y.

Disturbed Area From Pad 4.51 Acres

**NOTE :**

All cut end slopes are designed at 1:1 slopes &  
 All fill end slopes are designed at 1 1/2:1 slopes

Magnum 3-36-25H

205' FSL

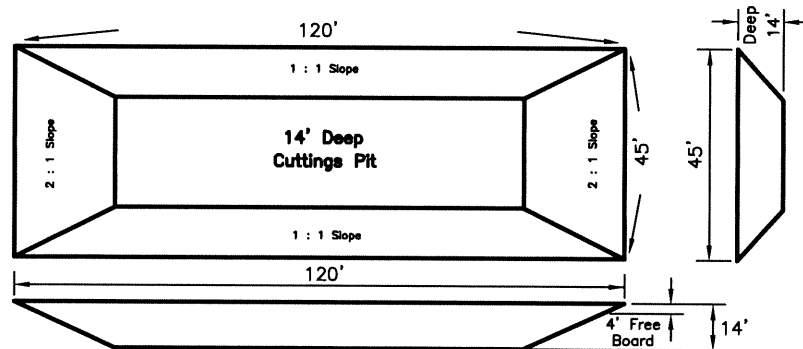
265' FEL

Magnum 2-36-25H

205' FSL

240' FEL

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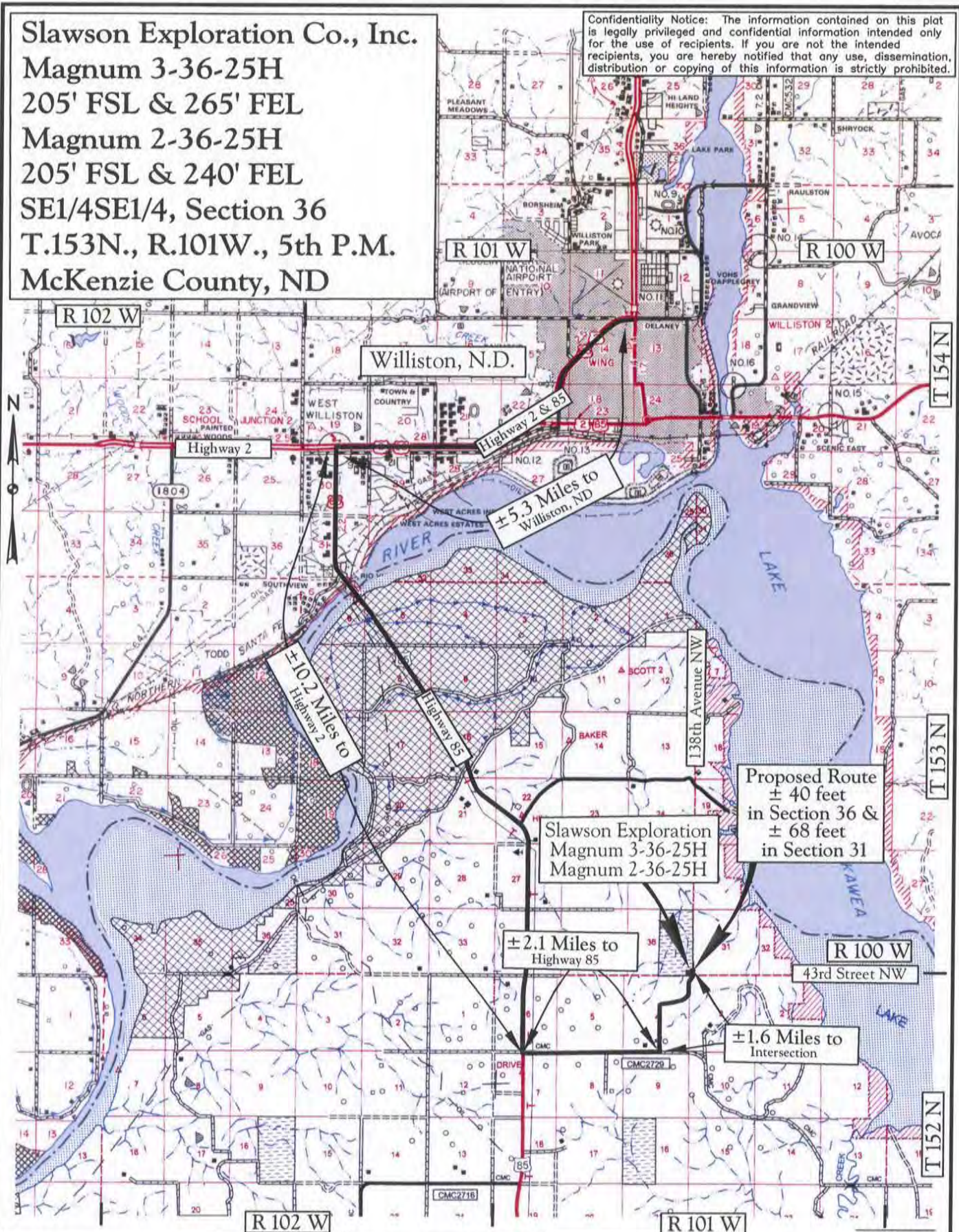


Drawn By Z. Theisen	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale None	Date 3/23/2012
Field Book OW-257	Material Quantities	Revised —	Project No. 3711645, 3712480	Drawing No. 5

**Kadmas**  
**Lee &**  
**Jackson**  
 Engineers Surveyors  
 Planners

Slawson Exploration Co., Inc.  
 Magnum 3-36-25H  
 205' FSL & 265' FEL  
 Magnum 2-36-25H  
 205' FSL & 240' FEL  
 SE1/4SE1/4, Section 36  
 T.153N., R.101W., 5th P.M.  
 McKenzie County, ND

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Map "A"  
 County Access Route

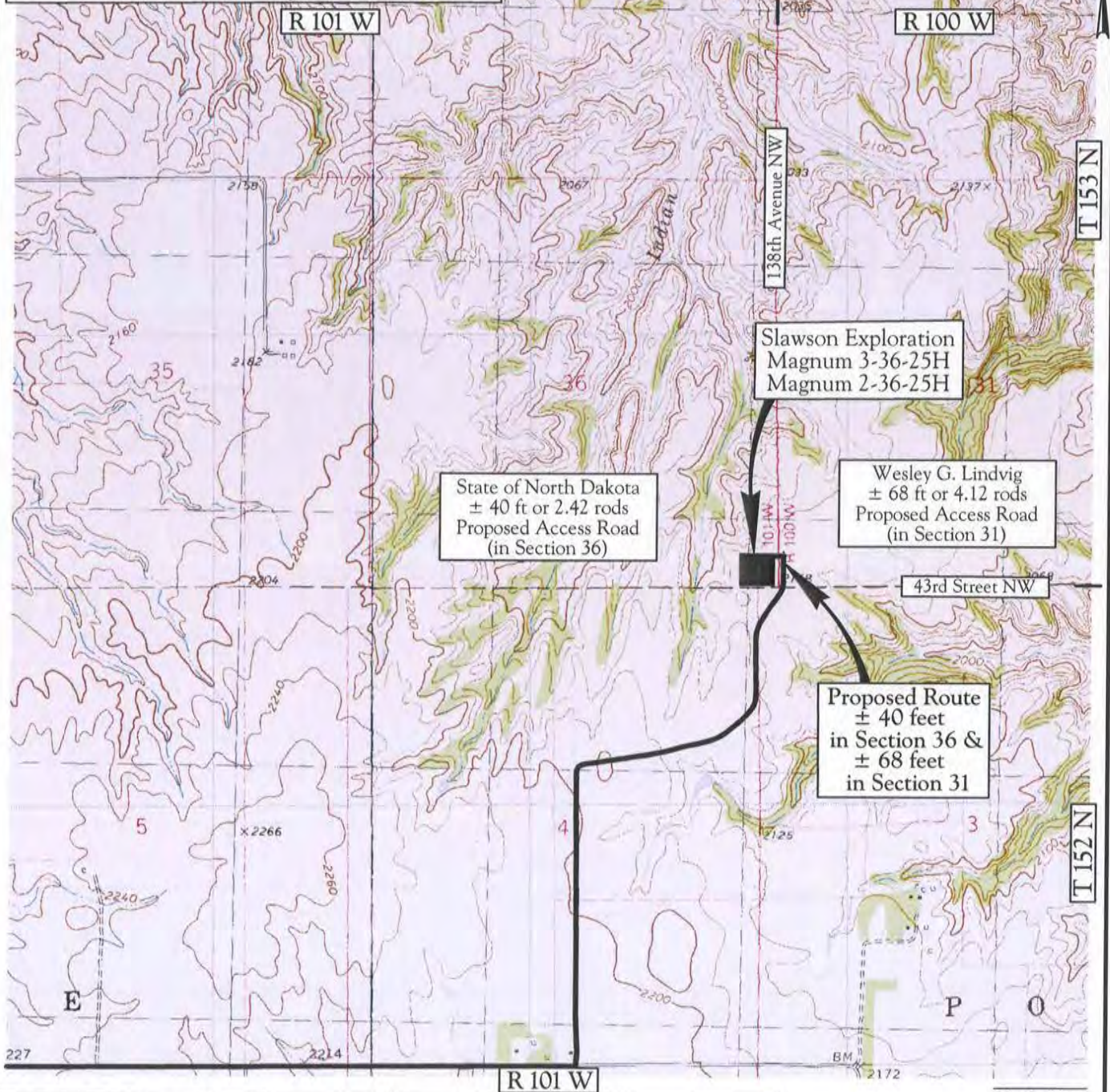
**Legend**  
 Existing Roads ———  
 Proposed Roads - - - - -

Scale 1" = 2 Miles

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Slawson Exploration Co., Inc.  
 Magnum 3-36-25H  
 205' FSL & 265' FEL  
 Magnum 2-36-25H  
 205' FSL & 240' FEL  
 SE1/4SE1/4, Section 36  
 T.153N., R.101W., 5th P.M.  
 McKenzie County, ND

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State of North Dakota  
 $\pm 40$  ft or 2.42 rods  
 Proposed Access Road  
 (in Section 36)

Slawson Exploration  
 Magnum 3-36-25H  
 Magnum 2-36-25H

Wesley G. Lindvig  
 $\pm 68$  ft or 4.12 rods  
 Proposed Access Road  
 (in Section 31)

Proposed Route  
 $\pm 40$  feet  
 in Section 36 &  
 $\pm 68$  feet  
 in Section 31

Map "B"  
 Quad Access Route

Legend  
 Existing Roads —————  
 Proposed Roads - - - - -

Scale 1" = 2000'

Kadmas  
 Lee &  
 Jackson  
 Engineers Surveyors  
 Planners