



# SUNDY 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)

RECEIVED

OCT 16 2017

Well File No.  
**22249**

ND OIL & GAS DIVISION

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 21, 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  
**Magnum 2-36-25H**

Footages <b>306 F S L</b>	350 F E L	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	160 Bbls	Oil	132 Bbls
Water	220 Bbls	Water	148 Bbls
Gas	0 MCF	Gas	0 MCF

Name of Contractor(s)  
**Magna Energy Services**

Address <b>13886 Commercial Dr.</b>	City <b>Williston</b>	State <b>ND</b>	Zip Code <b>58801</b>
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## DETAILS OF WORK

PREHEATED & WARMED UP EQUIPMENT, CHECKED PRESSURES 80/ 100, RU PUMP LINES, BLEW WELL DOWN TO TANK, CONTROLLED WELL W/ 60 BBLS OF S/W, INSTALLED ROD TABLE, LOADED & TESTED PUMP, (GOOD). RIH W/2.5 X 1.5 X 26' RHBM, ON/OFF TOOL, 10 K-BARS, W/ 36" CENTRALIZERS, 120 ¾", 120 7/8", 99 1". RODS, 8' 6' 4' 2' SUBS, MADE UP PR. PU PR, SEATED PUMP, SPACED OUT PUMP, PU HEAD TO SPACE OUT, CLAMP WILL BE ON SPRAYED PART, PULLED OUT TWO FT, SEATED PUMP. HUNG WELL OFF, MADE ADJUSTMENTS, LOADED WELL W/PUMP. PRESSURED UP TO 500 PSI. LUFKIN HAND ON LOC, RU SAM UNIT, DROPPED GUYLINES. 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

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

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

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

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

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,

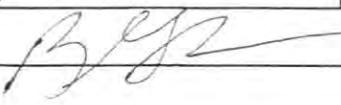
  
Tom Delling  
Petroleum Engineer - Field Inspector

TKD/RSD/RLR

# North Dakota Industrial Commission Follow-up Spill Report

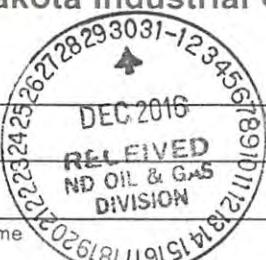
API Number  
33 - 053 - 03944

Well File or Facility No.  
22249

Operator <b>Slawson Exploration Co., Inc.</b>		MAR 2017					Telephone Number 303-592-8880 X300	
Address <b>1675 Broadway, #1600</b>		RELEASE ID ND OIL & GAS DIVISION		City <b>Denver</b>		State <b>CO</b>		Zip Code <b>80202</b>
Well Name and Number or Facility Name <b>MAGNUM 2-36-25H</b>		Field <b>BAKER</b>						
Location of Well or Facility	Footages <b>205 F S L 240 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>Dunn</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 <b>Pumper</b>		Date Release Discovered <b>February 9, 2017</b>		Time Release Discovered <b>10 : 45 AM</b>		Date Release Controlled <b>February 9, 2017</b>		Time Release Controlled <b>11 : 00 AM</b>
Company Personnel Notified <b>Ray Gorka</b>		How Notified <b>Phone</b>				Date Notified <b>February 9, 2017</b>		Time Notified <b>11 : 15 AM</b>
Type of Incident <b>Stuffing Box Leak</b>		Root Cause of Release <b>Freezing</b>				Date Clean up Activities Concluded <b>February 10, 2017</b>		
Distance to Nearest Residence or Occupied Building <b>5305 Feet</b>			Distance to Nearest Fresh Water Well <b>5305 Feet</b>					
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 <b>30' X 25'</b>			Affected Medium <b>Well/Facility Soil</b>			General Land Use <b>Pasture</b>		
Describe Cause of Release or Fire and Other Type of Incidents, Root Causes of Release, Land Uses, and Released Substances <b>Freshwater pump timer malfunctioned and over saturated the well, flow line froze solid and pressured the tbg up...was o. 450psi upon arrival. Have HOT tied into csg to kill well, hydravac is enroute to clean up oil on the ground (estimate 10bo spilled) Crane enroute to strip new radian on polished rod.</b>								
Action Taken to Control Release and Clean Up Action Undertaken <b>New product was brought in to replace contaminated solids</b>								
Potential Environmental Impacts <b>None</b>								
Planned Future Action and/or Action Taken to Prevent Reoccurrence								
Where Were Recovered Liquids Disposed <b>Indian Hills</b>					Where Were Recovered Solids Disposed <b>Indian Hills</b>			
Weather Conditions	Wind Speed MPH	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		<b>Wes Lindvig</b>		<b>February 9, 2017</b>	<b>1 : 00 PM</b>	<b>Ray Gorka</b>		
Federal Agency Lease Number <b>BLM</b>					:			
<b>USFS</b>					:			
Report Originator <b>Ray Gorka</b>			Title <b>Environmental/Regulatory Analyst</b>			Date <b>March 8, 2017</b>		
Signature 			Date <b>March 8, 2017</b>					

# North Dakota Industrial Commission Follow-up Spill Report

API Number 33 - 053-03944								Well File or Facility No. 22249
Operator <b>Slawson Exploration Co., Inc.</b>								Telephone Number 303-592-8880
Address 1675 Broadway, #1600		City Denver		State CO		Zip Code 80202		
Well Name and Number or Facility Name <b>Magnum 2 36 25H</b>		Field <b>Baker</b>						
Location of Well or Facility	Footages 205 F S L	240 F E L	Qtr-Qtr SESE	Section 36	Township 153 N	Range 101 W	County McKenzie	
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 <b>Pumper</b>		Date Release Discovered <b>March 24, 2016</b>	Time Release Discovered <b>10 : 30 AM</b>		Date Release Controlled <b>March 24, 2016</b>		Time Release Controlled <b>11 : 00 AM</b>	
Company Personnel Notified <b>R Gorka</b>		How Notified <b>Phoned</b>			Date Notified <b>March 24, 2016</b>		Time Notified <b>11 : 30 AM</b>	
Type of Incident <b>Valve/Piping Connections Leak</b>		Root Cause of Release <b>Human Error</b>			Date Clean up Activities Concluded <b>March 30, 2016</b>			
Distance to Nearest Residence or Occupied Building <b>1.2 Miles</b>			Distance to Nearest Fresh Water Well <b>1.2 Miles</b>					
Piping Specifics (If Applicable)	Size (Decimal Format) "	Type			Location of Piping			
Volume of Release	Oil 5.00 Barrels	Saltwater			Other			
Volume of Release Recovered	Oil 5.00 Barrels	Saltwater			Other			
Was Release Contained Within Dike <b>Yes</b>		If No, Was Release Contained on Well Site		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 <b>Pasture</b>		
Describe Cause of Release or Fire and Other Type of Incidents, Root Causes of Release, Land Uses, and Released Substances <b>Valve opened either by water hauler or animal?</b>								
Action Taken to Control Release and Clean Up Action Undertaken <b>Better watch of valves and handles.</b>								
Potential Environmental Impacts <b>none</b>								
Planned Future Action and/or Action Taken to Prevent Reoccurrence <b>Keep handles off when not being used</b>								
Where Were Recovered Liquids Disposed <b>Clean Harbors facility</b>					Where Were Recovered Solids Disposed <b>clean harbors facility</b>			
Weather Conditions	Wind Speed MPH	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		
<b>Fee Surface Owner</b>					:			
Federal Agency Lease Number					:			
<b>BLM</b>					:			
<b>USFS</b>					:			
Report Originator <b>R Gorka</b>		Title <b>Environmental/Regula Analyst</b>			Date <b>December 30, 2016</b>			
Reviewed By		Title			Date			





WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

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

**Well File No**

22249

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

A circular stamp with a double-line border. The outer ring contains the numbers "62821701" at the top and "2345678901071" at the bottom. The inner circle contains the word "RECEIVED" in large capital letters, followed by "ND OIL & GAS DIVISION" in smaller capital letters, and the date "MAY 23 2017" at the bottom.

**Designate Type of Completion**

- Oil Well       EOR Well       Recompletion  
 Gas Well       SWD Well       Deepened Well       Added Horizontal Leg  
Water Supply Well       Other: \_\_\_\_\_       Extended Horizontal Leg

Well Name and Number <b>MAGNUM 2-36-25H</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>	Field <b>BAKER</b>	Pool <b>Bakken</b>
Address <b>1675 Broadway Suite 1600</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**

LOCATION OF WELL						
At Surface		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>3/18/2012</b>		Date TD Reached <b>4/27/2012</b>		Drilling Contractor and Rig Number <b>Nabors #419</b>		KB Elevation (Ft) <b>2177</b>
Type of Electric and Other Lines Run (Select one or more)						Graded Elevation (Ft) <b>2156</b>

**Type of Electric and Other Logs Run (See Instructions)**

## Triple Combo - DIL, CNL, CDL with GR to surface CBL/GR/CCL

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

## **PERFORATION & OPEN HOLE INTERVALS**

## **PRODUCTION**

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) <b>11104' to 20705'</b>							Name of Zone (If Different from Pool Name) <b>Middle Bakken</b>	
Date Well Completed (SEE INSTRUCTIONS) 2/14/2013			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>2/15/2013</b>	Hours Tested <b>24</b>	Choke Size <b>22 /64</b>	Production for Test	Oil (Bbls) <b>752</b>	Gas (MCF) <b>753.504</b>	Water (Bbls) <b>218</b>	Oil Gravity-API (Corr.) <b>42.0 °</b>	Disposition of Gas <b>Flared</b>
Flowing Tubing Pressure (PSI)		Flowing Casing Pressure (PSI)		Calculated 24-Hour Rate	Oil (Bbls) <b>752</b>	Gas (MCF) <b>753.504</b>	Water (Bbls) <b>218</b>	Gas-Oil Ratio <b>1002</b>

## GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Greenhorn	4655	
Belle Fourche	4867	
Mowry	5063	
Inyan Kara	5487	
Swift	5930	
Rierdon	6347	
Piper	6537	
Dunham Salt	6947	
Base Dunham Salt	6997	
Spearfish	6997	
Pine Salt	7306	
Base Pine Sale	7364	
Opeche	7453	
Minnelusa	absent	
Amsden	7701	
Tyler	7886	
Big Snowy	8108	
Kibbey	8317	
Kibbey Lime	8451	
Charles	8603	
Base Last Salt	9271	
Mission Canyon	9474	
Lodgepole	10025	
KOP	10282	
Upper Bakken Shale	10770	
Middle Bakken	10785	
Middle Bakken Mkr	10796	

## **PLUG BACK INFORMATION**

CORES CUT

Top (Ft)	Bottom (Ft)	Formation	Top (Ft)	Bottom (Ft)	Formation

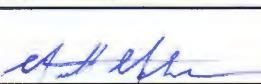
## Drill Stem Test

### Well Specific Stimulation

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												
Fractured the Middle Bakken with 32, stages using fracturing sleeves and packers, with 346204# of 20/40 White Sand, 182669# of 40/70 White Sand, 631217# of 20/40 Ceramic, and 22133 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 3/11/2013
Signature 	Printed Name Matthew Glenn	Title Engineering Technician

# WELL LOCATION PLAT

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

Magnum 2-36-25H

205 feet from the south line and 240 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 550 feet from the east line (bottom location)

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

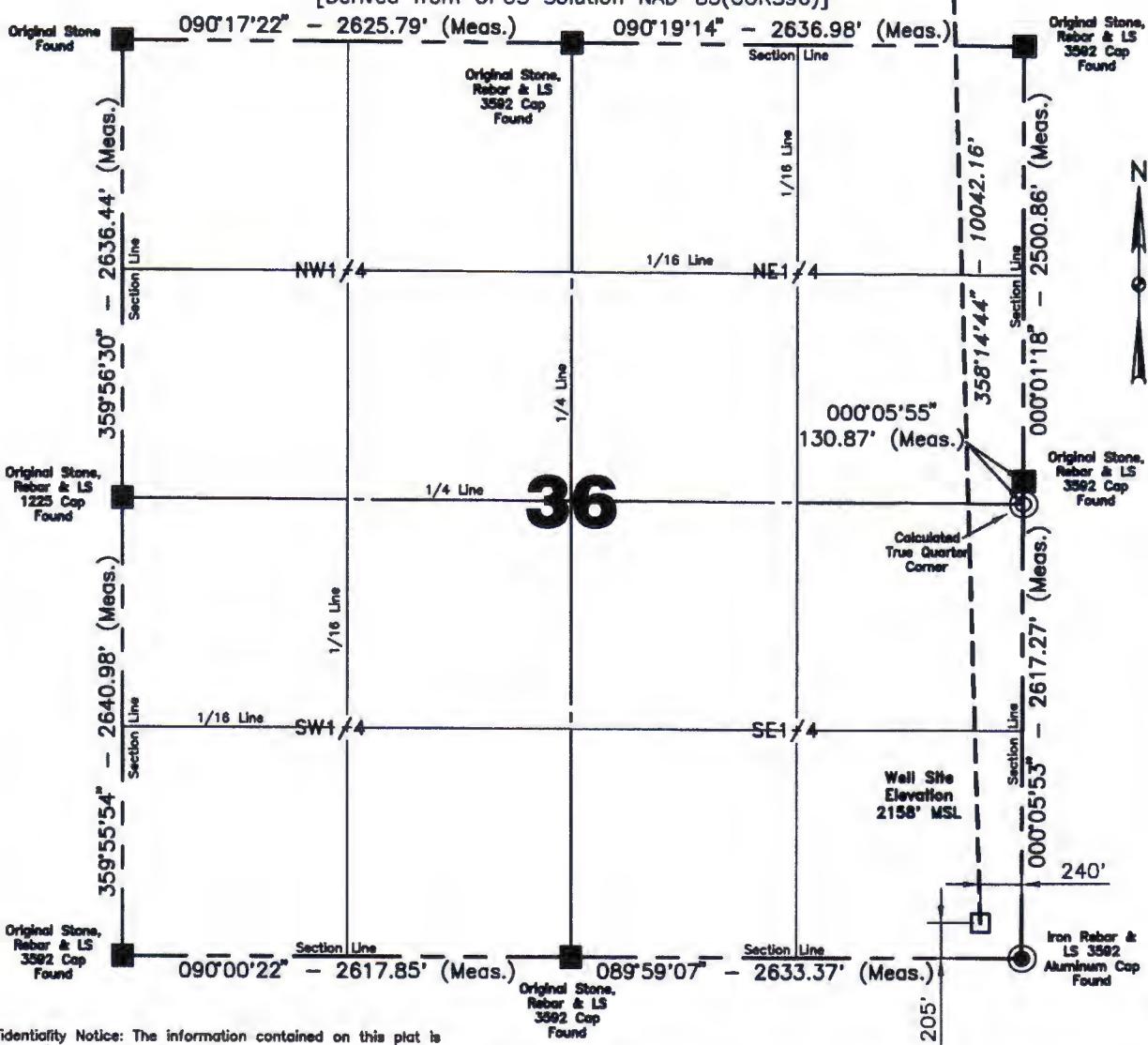
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

**Latitude 48°01'29.869" North; Longitude 103°36'18.604" West (surface location)**

**Latitude 48°03'08.925" North; Longitude 103°36'23.042" 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 herein is not an as-built location.

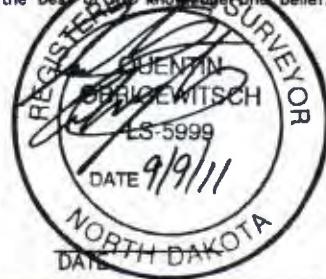
**Brian Schmalz**      **08/26/2011**

Surveyed By N.D.P.L.S. # 6809 Date

Vertical Control Datum Used Sea-Level Datum of NAVD 88	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
Project No. 3711645	
Book OW-257 Pg. 47-50 Staking	

Scale 1"=1000'

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown herein 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.

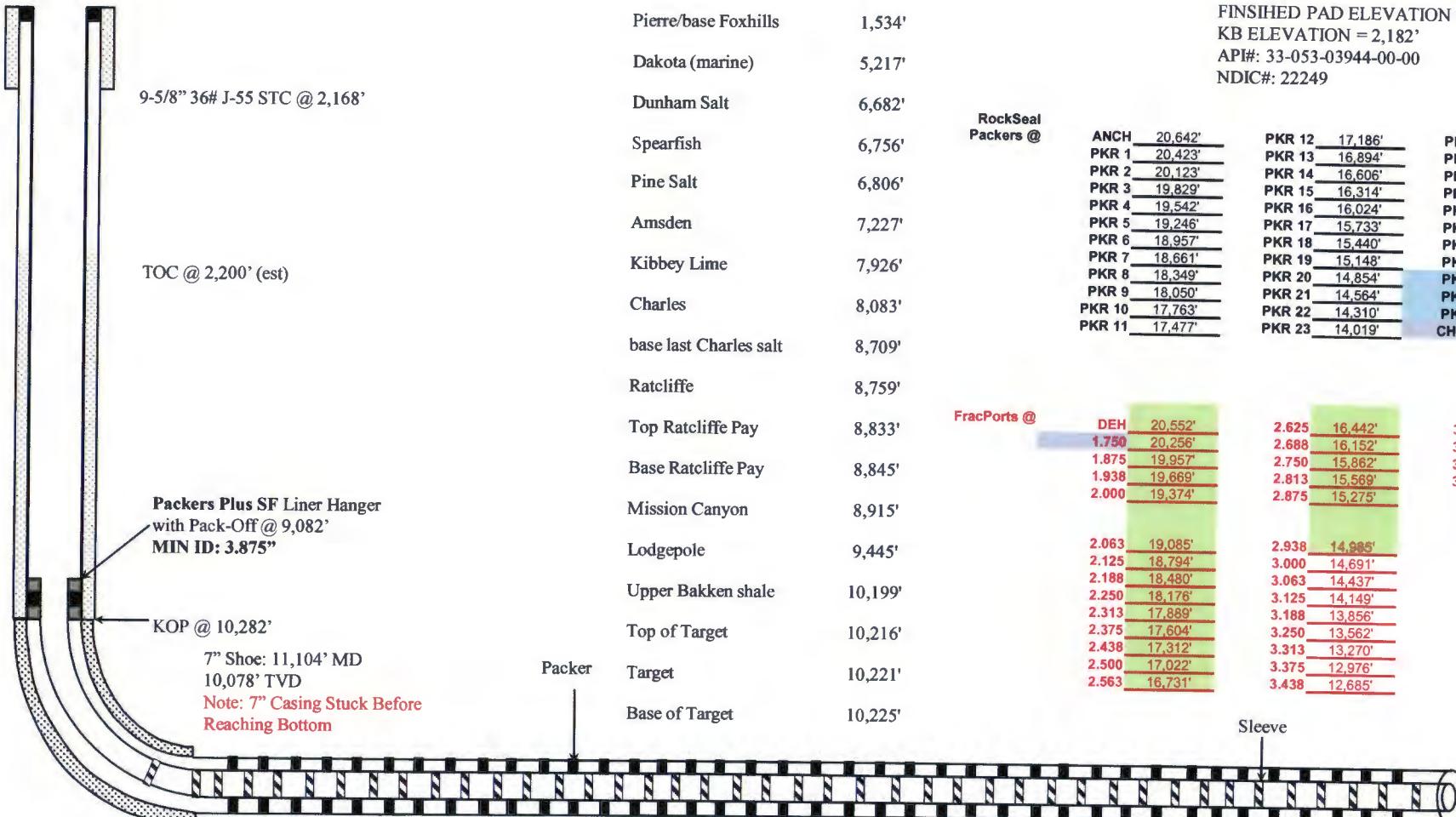


Kadmas  
Lee &  
Jackson  
Engleman Surveyors  
Planners

Updated By:  
On:

### WELLBORE DIAGRAM Magnum 2-36-25H

Location: 205' FSL and 240' FEL  
SESE Sec 36, T153N-R101W  
McKenzie County, North Dakota



7" 29# HCP110 from	Surface	to	6,420'
7" 32# HCP110 from	6,420'	to	9,270'
7" 29# HCP110 from	9,270'	to	11,102'

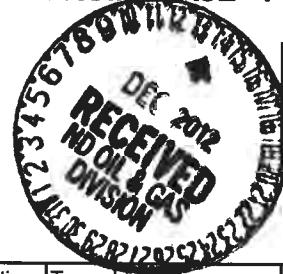
**Packers Plus Completion System:**  
10,444' of 4-1/2" 11.6# P-110 BTC and  
254' of 4-1/2" 13.5# P-110 BTC liner  
with 35 packers, 32 sleeves and a liner  
hanger with pack-off (925' of tools). Set  
Liner at 20,705'

Lateral TD @ 20,728' MD,  
10,798' TVD  
9,624' 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.	22249
NDIC CTB No.	122249

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

Well Name and Number <b>Magnum 2-36-25H</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>720-897-8762</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 Refining &amp; Marketing</b>	Telephone Number <b>201-626-6000</b>	% Purchased <b>100</b>	Date Effective <b>December 1, 2012</b>
Principal Place of Business <b>19100 Ridgewood Parkway</b>	City <b>San Antonio</b>	State <b>TX</b>	Zip Code <b>78259</b>
Field Address <b>11071 32nd St. SW</b>	City <b>Dickinson</b>	State <b>ND</b>	Zip Code <b>58601</b>
Name of Transporter <b>Tesoro Logistics Operations LLC</b>	Telephone Number <b>201-626-6000</b>	% Transported <b>100</b>	Date Effective <b>December 1, 2012</b>
Address <b>19100 Ridgeway Parkway</b>	City <b>San Antonio</b>	State <b>TX</b>	Zip Code <b>78259</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>1st production expected approx. 12/12/12. Slawson Exploration will request a verbal approval for 8,000 BO to allow time to submit a Well completion report.</b>		

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Date <b>December 11, 2012</b>
Signature 	Printed Name <b>Matt Glenn</b>
	Title <b>Engineering Technician</b>

Above Signature Witnessed By	Witness Signature 	Witness Printed Name <b>Stacy Leyshon</b>	Witness Title <b>Market Analyst</b>
------------------------------	-----------------------	--	--

FOR STATE USE ONLY	
Date Approved <b>FEB 25 2013</b>	
By 	
Title <b>Erie Roberson</b>	
Oil & Gas Production Analyst	

Industrial Commission of North Dakota  
Oil and Gas Division

Well or Facility No

**22249**

Verbal Approval To Purchase and Transport Oil      Tight Hole      No

**OPERATOR**

Operator <b>SLAWSON EXPLORATION COMPANY, INC.</b>	Representative <b>Stacy Leyshon</b>	Rep Phone <b>(303) 592-8880</b>
--	--	------------------------------------

**WELL INFORMATION**

Well Name <b>MAGNUM 2-36-25H</b>	Inspector <b>Richard Dunn</b>
Well Location    QQ               Sec               Twp               Rng	County <b>MCKENZIE</b>
SESE             36             153             N             101             W	Field <b>BAKER</b>
Footages                205               Feet From the S Line	Pool <b>BAKKEN</b>
240               Feet From the E Line	
Date of First Production Through Permanent Wellhead	12/12/2012      This Is The First Sales

**PURCHASER / TRANSPORTER**

Purchaser <b>TESORO REFINING &amp; MKTG.</b>	Transporter <b>TESORO LOGISTICS OPERATIONS LLC</b>
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**TANK BATTERY**

Unit Tank Battery Number :
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**SALES INFORMATION**    This Is The First Sales

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

**DETAILS**

	Start Date <b>2/22/2013</b>
	Date Approved <b>2/22/2013</b>
	Approved By <b>Robert Garbe</b>

Start Date      **2/22/2013**  
Date Approved    **2/22/2013**  
Approved By    **Robert Garbe**



6724 Corporation Pkwy  
Fort Worth, Texas 76126  
(817) 717-1820

### **Directional Survey Certification Form**

<b>Slawson</b>	<b>Magnum 2-36-25H</b>	<b>March 29, 2012</b>
<b>Company</b>	<b>Well Name</b>	<b>Final Report Date</b>
<b>ND-SLW-0034</b>	<b>McKenzie County, ND</b>	<b>33-053-03944</b>
<b>Job Number</b>	<b>County/State</b>	<b>API Number</b>
<b>N 48 1' 29.71200"</b>	<b>W 103 36' 16.48800"</b>	<b>36-153-101</b>
<b>Surface Latitude</b>	<b>Surface Longitude</b>	<b>Sec. - TWP - Range</b>
<b>NAD83 ND State Plane, Northern Zone, US Feet</b>	<b>Nabors 419</b>	<b>22</b>
<b>Datum</b>	<b>Rig Contractor/ Name</b>	<b>RKB Height</b>
<b>Survey Depths</b>	<b>0</b>	<b>to</b>
		<b>10237 ft</b>
<b>Type of Survey</b>	<b>Measurements While Drilling (MWD)</b>	
<b>Survey Depths</b>		<b>ft</b>
<b>Type of Survey</b>		
<b>Site Supervisor</b>	<b>Jeromy Haggerty</b>	

The data submitted in this report conforms to the standards and procedures as set forth by Schlumberger. This report represents a true and correct directional wellbore survey based on original survey data obtained at the well site.

~~Jeromy Haggerty  
Basin - ESM~~

4/10/2012  
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 2-36-25H MWD 0' to 10237' Survey Report

(Def Survey)

<b>Report Date:</b>	March 29, 2012 - 07:22 PM							<b>Survey / DLS Computation:</b>	Minimum Curvature / Lubinski			
<b>Client:</b>	Sigswood							<b>Vertical Section Azimuth:</b>	357.350 ° (True North)			
<b>Field:</b>	ND, McKenzie County (NAD 83 NZ) 2011							<b>Vertical Section Origin:</b>	0.000 ft, 0.000 ft			
<b>Structure / Slot:</b>	Lawson (Magnum 2-36-25H) Nabor 419 / Magnum 2-36-25H							<b>TVD Reference Datum:</b>	RKB			
<b>Well:</b>	Magnum 2-36-25H							<b>TVD Reference Elevation:</b>	2180.000 ft above MSL			
<b>Borehole:</b>	Original Hole							<b>Seabed / Ground Elevation:</b>	2158.000 ft above MSL			
<b>UWI / API#:</b>	ND-SLW-0034 / 33-053-03944							<b>Magnetic Declination:</b>	0.670 °			
<b>Survey Name:</b>	Magnum 2-36-25H MWD 0' to 10237'							<b>Total Field Strength:</b>	56577.012 nT			
<b>Survey Date:</b>	March 29, 2012							<b>Magnetic Dip Angle:</b>	73.025 °			
<b>Tort / AHD / DDI / ERD Ratio:</b>	26.094' / 129.642 ft / 3.529 / 0.013							<b>Declination Date:</b>	March 29, 2012			
<b>Coordinate Reference System:</b>	NAD83 North Dakota State Plane, Northern Zone, US Feet							<b>Magnetic Declination Model:</b>	BGGM 2011			
<b>Location Lat / Long:</b>	N 48° 1' 29.71200", W 103° 38' 16.48800"							<b>North Reference:</b>	True North			
<b>Location Grid N/E Y/X:</b>	N 389168.835 ftUS, E 1209015.582 ftUS							<b>Grid Convergence Used:</b>	0.000 °			
<b>CRS Grid Convergence Angle:</b>	-2.31022188 °							<b>Total Corr Mag North-&gt;True</b>	0.670 °			
<b>Grid Scale Factor:</b>	0.99993638							<b>Local Coord Referenced To:</b>	Well Head			
Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC	NS (ft)	EW (ft)	DLS ("/100ft)	Northing (ftUS)	Eastng (ftUS)	Latitude (N/S ° E/W °)	Longitude (E/W ° N/S °)
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	389168.83	1209015.58	N 48° 1' 29.71	W 103° 38' 16.49
Assumed Vertical	2168.00	0.00	0.00	2166.00	0.00	0.00	0.00	0.00	389168.83	1209015.58	N 48° 1' 29.71	W 103° 38' 16.49
Start MWD Survey	2256.00	0.79	53.41	2256.00	0.34	0.38	0.49	0.90	389168.18	1209016.08	N 48° 1' 29.72	W 103° 38' 16.48
	2351.00	0.88	235.60	2350.99	0.32	0.34	0.41	1.76	389169.16	1209016.01	N 48° 1' 29.72	W 103° 38' 16.48
	2446.00	0.18	236.04	2445.99	-0.14	-0.16	-0.31	0.74	389168.69	1209015.26	N 48° 1' 29.71	W 103° 38' 16.49
	2542.00	0.88	236.40	2541.98	-0.81	-0.85	-1.05	0.73	389168.23	1209014.50	N 48° 1' 29.71	W 103° 38' 16.50
	2638.00	0.97	224.44	2635.97	-1.54	-1.82	-2.21	0.23	389167.31	1209013.31	N 48° 1' 29.72	W 103° 38' 16.52
	2730.00	1.14	205.63	2729.96	-2.91	-3.03	-3.17	0.41	389165.94	1209012.29	N 48° 1' 29.62	W 103° 38' 16.53
	2828.00	1.14	218.64	2825.94	-4.48	-4.63	-4.18	0.27	389164.37	1209011.22	N 48° 1' 29.67	W 103° 38' 16.55
	2924.00	1.23	229.10	2923.92	-5.88	-6.08	-5.59	0.24	389162.98	1209009.75	N 48° 1' 29.65	W 103° 38' 16.57
	3019.00	1.14	228.57	3018.90	-7.12	-7.38	-7.07	0.10	389161.75	1209008.22	N 48° 1' 29.64	W 103° 38' 16.59
	3114.00	1.14	226.29	3113.88	-8.35	-8.85	-8.46	0.05	389160.53	1209006.78	N 48° 1' 29.63	W 103° 38' 16.61
	3209.00	1.14	222.95	3208.86	-9.64	-10.00	-9.78	0.07	389159.24	1209005.40	N 48° 1' 29.61	W 103° 38' 16.63
	3304.00	1.23	214.60	3303.84	-11.13	-11.53	-11.01	0.20	389157.76	1209004.12	N 48° 1' 29.60	W 103° 38' 16.65
	3399.00	0.88	219.61	3398.82	-12.49	-12.93	-12.05	0.38	389156.40	1209003.02	N 48° 1' 29.58	W 103° 38' 16.67
	3494.00	1.23	211.28	3493.81	-13.89	-14.37	-13.05	0.40	389155.01	1209001.97	N 48° 1' 29.57	W 103° 38' 16.68
	3589.00	0.97	213.10	3588.79	-15.40	-15.91	-14.01	0.28	389153.50	1209000.94	N 48° 1' 29.55	W 103° 38' 16.69
	3684.00	0.88	204.23	3683.78	-16.71	-17.25	-14.75	0.18	389152.19	1209000.15	N 48° 1' 29.54	W 103° 38' 16.71
	3779.00	0.79	219.87	3778.77	-17.85	-18.42	-15.47	0.26	389151.06	1208999.38	N 48° 1' 29.53	W 103° 38' 16.72
	3877.00	0.79	219.43	3876.76	-18.86	-19.46	-16.33	0.01	389150.05	1208998.48	N 48° 1' 29.52	W 103° 38' 16.73
	3972.00	0.70	224.35	3971.75	-19.75	-20.38	-17.16	0.12	389149.17	1208997.62	N 48° 1' 29.51	W 103° 38' 16.74
	4065.00	0.53	221.83	4064.74	-20.45	-21.11	-17.84	0.19	389148.47	1208996.91	N 48° 1' 29.50	W 103° 38' 16.75
	4159.00	0.44	202.91	4158.74	-21.10	-21.76	-18.27	0.19	389147.83	1208996.45	N 48° 1' 29.50	W 103° 38' 16.76
	4254.00	0.44	171.71	4253.74	-21.79	-22.46	-18.36	0.25	389147.13	1208996.33	N 48° 1' 29.48	W 103° 38' 16.76
	4350.00	0.44	219.61	4349.74	-22.43	-23.11	-18.54	0.37	389146.49	1208996.13	N 48° 1' 29.48	W 103° 38' 16.76
	4447.00	0.26	246.50	4446.73	-22.79	-23.48	-18.98	0.25	389146.14	1208995.67	N 48° 1' 29.46	W 103° 38' 16.77
	4545.00	0.16	238.77	4544.73	-22.95	-23.65	-19.31	0.09	389145.98	1208995.33	N 48° 1' 29.46	W 103° 38' 16.77
	4639.00	0.16	252.65	4638.73	-23.06	-23.77	-19.58	0.05	389145.67	1208995.06	N 48° 1' 29.48	W 103° 38' 16.78
	4734.00	0.62	285.61	4733.73	-22.94	-23.68	-20.22	0.50	389145.99	1208994.43	N 48° 1' 29.48	W 103° 38' 16.79
	4830.00	0.26	269.27	4829.73	-22.78	-23.54	-20.94	0.39	389146.16	1208993.71	N 48° 1' 29.48	W 103° 38' 16.80
	4925.00	0.09	152.81	4924.73	-22.84	-23.61	-21.12	0.33	389146.09	1208993.53	N 48° 1' 29.46	W 103° 38' 16.80
	5021.00	0.09	137.96	5020.73	-22.97	-23.73	-21.03	0.02	389145.97	1208993.61	N 48° 1' 29.48	W 103° 38' 16.80
	5116.00	0.16	87.33	5115.73	-23.02	-23.78	-20.83	0.15	389145.91	1208993.81	N 48° 1' 29.48	W 103° 38' 16.79
	5213.00	0.44	44.18	5212.72	-22.76	-23.51	-20.42	0.34	389146.17	1208994.23	N 48° 1' 29.48	W 103° 38' 16.79
	5306.00	0.70	32.58	5307.72	-22.03	-22.76	-19.86	0.30	389146.90	1208994.83	N 48° 1' 29.49	W 103° 38' 16.78
	5404.00	0.53	72.30	5403.71	-21.43	-22.13	-19.12	0.47	389147.50	1208995.59	N 48° 1' 29.49	W 103° 38' 16.77
	5498.00	0.26	85.89	5497.71	-21.23	-21.91	-18.51	0.29	389147.69	1208996.21	N 48° 1' 29.50	W 103° 38' 16.76
	5594.00	0.53	72.30	5593.71	-21.03	-21.69	-17.89	0.28	389147.89	1208996.84	N 48° 1' 29.50	W 103° 38' 16.75
	5689.00	0.62	48.57	5688.71	-20.59	-21.21	-17.08	0.27	389148.33	1208997.66	N 48° 1' 29.50	W 103° 38' 16.74
	5786.00	0.70	41.80	5785.70	-19.63	-20.42	-16.29	0.12	389149.09	1208998.48	N 48° 1' 29.51	W 103° 38' 16.73
	5882.00	0.97	16.84	5881.89	-18.64	-19.21	-15.67	0.47	389150.27	1208999.15	N 48° 1' 29.52	W 103° 38' 16.72
	5976.00	1.32	32.40	5975.87	-16.99	-17.53	-14.86	0.49	389151.92	1209000.03	N 48° 1' 29.54	W 103° 38' 16.71
	6073.00	1.23	38.73	6072.65	-15.28	-15.78	-13.61	0.17	389153.82	1209001.35	N 48° 1' 29.56	W 103° 38' 16.69
	6168.00	0.88	35.04	5187.63	-13.93	-14.38	-12.55	0.38	389154.87	1209002.46	N 48° 1' 29.57	W 103° 38' 16.67
	6263.00	0.97	25.63	6262.62	-12.63	-13.06	-11.78	0.19	389156.26	1209003.28	N 48° 1' 29.58	W 103° 38' 16.66
	6357.00	0.79	21.94	6356.61	-11.34	-11.74	-11.20	0.20	389157.55	1209003.92	N 48° 1' 29.60	W 103° 38' 16.65
	6456.00	0.79	18.49	6455.60	-10.07	-10.46	-10.75	0.08	389158.82	1209004.42	N 48° 1' 29.61	W 103° 38' 16.65
	6549.00	0.53	44.97	6548.59	-9.18	-9.54	-10.26	0.44	389159.72	1209004.94	N 48° 1' 29.62	W 103° 38' 16.64
	6644.00	0.62	56.39	6643.59	-8.80	-8.94	-9.52	0.15	389160.28	1209005.71	N 48° 1' 29.62	W 103° 38' 16.63
	6739.00	0.53	89.09	6738.56	-8.34	-8.65	-8.66	0.35	389160.54	1209006.58	N 48° 1' 29.63	W 103° 38' 16.62
	6832.00	0.62	63.89	6831.58	-8.14	-8.42	-7.78	0.29	389160.73	1209007.47	N 48° 1' 29.63	W 103° 38' 16.60
	6927.00	1.14	63.07	6926.57	-7.53	-7.76	-6.47	0.55	389161.34	1209008.60	N 48° 1' 29.64	W 103° 38' 16.58
	7025.00	1.14	53.14	7024.55	-6.56	-6.74	-4.82	0.20	389162.30	1209010.49	N 48° 1' 29.65	W 103° 38' 16.56
	7120.00	0.79	61.14	7119.53	-5.73	-5.88	-3.49					

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	OLS ('/100ft)	Northing (ftUS)	Eastng (ftUS)	Latitude (N/S ° '")	Longitude (E/W ° '")
	8270.00	0.88	142.44	8269.25	3.44	3.97	14.67	0.24	389172.21	1209030.40	N 48 1 29.75	W 103 36 16.27
	8365.00	0.97	158.15	8354.24	2.10	2.66	15.44	0.25	389170.87	1209031.11	N 48 1 29.74	W 103 36 16.26
	8458.00	0.79	152.63	8457.23	0.79	1.37	16.05	0.20	389169.55	1209031.87	N 48 1 29.73	W 103 36 16.25
	8554.00	0.97	157.21	8553.22	-0.57	0.03	16.67	0.20	389168.19	1209032.24	N 48 1 29.71	W 103 36 16.24
	8649.00	1.14	169.33	8648.20	-2.25	-1.84	17.16	0.29	389166.50	1209032.66	N 48 1 29.70	W 103 36 16.24
	8745.00	0.97	167.93	8744.19	-4.00	-3.37	17.50	0.18	389164.76	1209032.93	N 48 1 29.66	W 103 36 16.23
	8840.00	0.79	176.01	8839.17	-5.44	-4.81	17.72	0.23	389163.31	1209033.09	N 48 1 29.65	W 103 36 16.23
	8936.00	0.79	183.66	8935.17	-6.76	-6.13	17.72	0.11	389161.99	1209033.04	N 48 1 29.65	W 103 36 16.23
	9029.00	1.23	180.94	9028.15	-8.40	-7.77	17.66	0.48	389160.36	1209032.92	N 48 1 29.64	W 103 36 16.23
	9125.00	1.14	188.05	9124.13	-10.37	-9.75	17.51	0.18	389158.39	1209032.69	N 48 1 29.62	W 103 36 16.23
	9220.00	1.32	179.79	9219.11	-12.39	-11.78	17.38	0.27	389156.37	1209032.48	N 48 1 29.60	W 103 36 16.23
	9316.00	1.23	182.61	9315.08	-14.52	-13.91	17.34	0.11	389154.23	1209032.35	N 48 1 29.57	W 103 36 16.23
	9411.00	1.41	191.57	9410.06	-16.68	-16.08	17.06	0.29	389152.08	1209031.98	N 48 1 29.55	W 103 36 16.24
	9508.00	1.32	179.27	9507.03	-18.95	-18.36	16.84	0.32	389149.81	1209031.86	N 48 1 29.53	W 103 36 16.24
	9602.00	1.32	177.16	9601.01	-21.12	-20.53	16.90	0.05	389147.64	1209031.64	N 48 1 29.51	W 103 36 16.24
	9698.00	2.20	168.63	9696.96	-24.04	-23.44	17.32	0.95	389144.72	1209031.94	N 48 1 29.46	W 103 36 16.23
	9794.00	1.93	165.99	9792.90	-27.44	-26.81	16.08	0.30	389141.32	1209032.58	N 48 1 29.45	W 103 36 16.22
	9888.00	1.67	176.37	9886.85	-30.36	-29.72	16.55	0.44	389138.40	1209032.91	N 48 1 29.42	W 103 36 16.22
	9985.00	1.76	186.91	9983.81	-33.24	-32.60	16.46	0.34	389135.51	1209032.71	N 48 1 29.39	W 103 36 16.22
End MWD Survey	10080.00	1.49	188.76	10078.77	-35.90	-35.27	18.09	0.29	389132.86	1209032.24	N 48 1 29.36	W 103 36 16.22
	10175.00	1.23	179.09	10173.74	-38.13	-37.51	17.92	0.36	389130.83	1209031.97	N 48 1 29.34	W 103 36 16.22
	10237.00	0.97	173.38	10235.73	-39.32	-38.70	17.99	0.45	389129.44	1209032.00	N 48 1 29.33	W 103 36 16.22

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 2-36-25H MWD 0' to 10237'
	22.000	2168.000	1/98,425	SLB_BLIND+TREND	Original Hole / Magnum 2-36-25H MWD 0' to 10237'
	2168.000	2168.000	Act Sins	SLB_BLIND+TREND	Original Hole / Magnum 2-36-25H MWD 0' to 10237'
	2168.000	10237.000	1/8069,000	SLB_MWD-STD	Original Hole / Magnum 2-36-25H MWD 0' to 10237'

# **HALLIBURTON**

6360 EAST YELLOWSTONE HWY • EVANSVILLE, WY 82636

TEL: 307-472-5757 • FAX: 307-232-2097

## Certified Survey Sheet

Customer: **Slawson Exploration Company, Inc.**

Well: **Magnum 2-36-25H**

Legal: **Sec. 36-T153N-R101W**

County: **McKenzie**

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  
Bridget Brennecke  
Well Planner

# **Slawson Exploration Company, Inc.**

**McKenzie County, ND  
Sec. 36-T153N-R101W  
Magnum 2-36-25H**

## **Plan B**

**Survey: Sperry MWD Surveys**

# **Sperry Drilling Services**

## **Standard Report**

**14 May, 2012**

Well Coordinates: 389,190.51 N, 1,208,872.51 E (48° 01' 29.87" N, 103° 36' 18.60" W)  
Ground Level: 2,156.00 ft

Local Coordinate Origin:	Centered on Well Magnum 2-36-25H
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 2-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
10,237.00	0.97	173.38	10,235.73	-38.70	17.99	-39.32	0.00
<b>Tie On to Extreme Surveys @ 10237'</b>							
10,282.00	0.29	291.48	10,280.73	-39.04	17.93	-39.65	2.52
<b>First Sperry MWD Survey @ 10282'</b>							
10,305.00	3.08	324.29	10,303.72	-38.51	17.51	-39.12	12.35
10,337.00	7.33	327.81	10,335.58	-36.09	15.92	-36.63	13.31
10,369.00	11.45	327.65	10,367.14	-31.67	13.14	-32.12	12.88
10,401.00	13.96	330.86	10,398.36	-25.62	9.56	-25.94	8.15
10,432.00	17.45	327.33	10,428.20	-18.44	5.23	-18.61	11.67
10,464.00	20.92	326.44	10,458.42	-9.64	-0.52	-9.61	10.88
10,496.00	24.64	328.18	10,487.91	0.80	-7.20	1.05	11.81
10,528.00	28.10	329.73	10,516.58	12.98	-14.52	13.49	11.02
10,560.00	31.68	331.35	10,544.32	26.86	-22.35	27.65	11.47
10,592.00	35.23	332.18	10,571.01	42.41	-30.69	43.48	11.19
10,623.00	38.78	333.70	10,595.77	59.02	-39.17	60.39	11.83
10,655.00	42.65	334.35	10,620.02	77.79	-48.30	79.46	12.17
10,687.00	46.35	334.49	10,642.84	98.01	-57.98	100.03	11.57
10,719.00	49.98	334.31	10,664.18	119.51	-68.29	121.88	11.35
10,751.00	53.06	334.73	10,684.09	142.12	-79.06	144.86	9.68
10,782.00	56.24	334.29	10,702.02	164.94	-89.94	168.06	10.32
10,814.00	59.80	333.72	10,718.97	189.34	-101.84	192.86	11.23
10,846.00	63.61	334.33	10,734.13	214.66	-114.17	218.61	12.02
10,878.00	67.06	334.85	10,747.48	240.93	-126.65	245.30	10.88
10,909.00	69.11	336.14	10,759.05	267.09	-138.57	271.88	7.66
10,941.00	71.41	336.49	10,769.86	294.68	-150.67	299.88	7.26
10,973.00	73.85	336.96	10,779.41	322.73	-162.74	328.34	7.75
11,005.00	76.30	337.06	10,787.65	351.19	-174.81	357.22	7.66
11,037.00	79.51	337.36	10,794.36	380.03	-186.93	386.48	10.07
11,069.00	83.24	337.84	10,799.16	409.28	-198.99	416.14	11.75
11,100.00	86.18	338.72	10,802.01	437.95	-210.41	445.20	9.90
11,132.00	88.25	338.96	10,803.57	467.76	-221.94	475.40	6.51
11,164.00	89.75	339.53	10,804.13	497.68	-233.28	505.70	5.01
11,196.00	91.51	339.71	10,803.78	527.67	-244.42	536.08	5.53
11,260.00	90.71	339.59	10,802.54	587.66	-266.68	596.83	1.26
11,308.00	90.31	338.58	10,802.11	632.50	-283.81	642.25	2.26
11,374.00	91.42	338.92	10,801.11	694.00	-307.73	704.57	1.76
11,468.00	89.20	342.45	10,800.60	782.69	-338.81	794.31	4.44
11,563.00	88.33	345.48	10,802.65	873.96	-365.04	886.46	3.32
11,659.00	89.14	349.11	10,804.77	967.57	-386.15	980.77	3.87
11,754.00	89.01	352.87	10,806.31	1,061.37	-401.02	1,075.04	3.96
11,848.00	89.08	355.55	10,807.87	1,154.87	-410.50	1,168.82	2.85
11,944.00	89.38	357.86	10,809.16	1,250.70	-416.02	1,264.78	2.43
12,039.00	91.02	359.37	10,808.83	1,345.66	-418.32	1,359.77	2.35
12,071.00	91.23	359.61	10,808.20	1,377.66	-418.60	1,391.75	1.00
12,134.00	90.09	358.67	10,807.48	1,440.64	-419.55	1,454.73	2.35
12,197.00	90.28	358.66	10,807.27	1,503.62	-421.01	1,517.72	0.30
12,229.00	90.31	358.80	10,807.11	1,535.62	-421.72	1,549.72	0.45
12,292.00	90.86	358.41	10,806.47	1,598.59	-423.26	1,612.71	1.07
12,324.00	91.33	358.50	10,805.85	1,630.58	-424.12	1,644.70	1.50
12,387.00	90.06	358.49	10,805.09	1,693.55	-425.77	1,707.70	2.02

**Survey Report for Magnum 2-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
12,419.00	90.28	358.32	10,805.00	1,725.54	-426.66	1,739.69	0.87
12,451.00	90.55	358.08	10,804.76	1,757.52	-427.67	1,771.69	1.13
12,515.00	89.54	358.66	10,804.71	1,821.49	-429.49	1,835.69	1.82
12,578.00	90.00	358.93	10,804.97	1,884.48	-430.81	1,898.68	0.85
12,610.00	90.25	358.87	10,804.90	1,916.47	-431.43	1,930.68	0.80
12,705.00	89.23	358.89	10,805.33	2,011.45	-433.29	2,025.66	1.07
12,800.00	90.25	358.99	10,805.76	2,106.43	-435.04	2,120.65	1.08
12,895.00	89.60	359.73	10,805.88	2,201.43	-436.10	2,215.62	1.04
12,990.00	90.28	359.28	10,805.98	2,296.42	-436.93	2,310.58	0.86
13,085.00	89.29	359.42	10,806.34	2,391.41	-438.00	2,405.55	1.05
13,181.00	89.91	358.97	10,807.01	2,487.40	-439.35	2,501.53	0.80
13,276.00	89.23	359.11	10,807.72	2,582.38	-440.94	2,596.51	0.73
13,340.00	89.08	359.41	10,808.67	2,646.37	-441.77	2,660.48	0.52
13,371.00	89.17	358.96	10,809.14	2,677.37	-442.21	2,691.47	1.48
13,467.00	89.66	358.91	10,810.12	2,773.34	-443.99	2,787.45	0.51
13,562.00	90.28	358.60	10,810.17	2,868.32	-446.06	2,882.44	0.73
13,626.00	90.46	358.77	10,809.76	2,932.30	-447.53	2,946.43	0.39
13,658.00	90.34	358.32	10,809.53	2,964.29	-448.34	2,978.43	1.46
13,753.00	90.65	357.92	10,808.71	3,059.24	-451.46	3,073.43	0.53
13,816.00	91.39	357.99	10,807.59	3,122.19	-453.70	3,136.42	1.18
13,848.00	91.82	357.88	10,806.69	3,154.15	-454.86	3,168.40	1.39
13,942.00	89.54	358.60	10,805.58	3,248.09	-457.74	3,262.39	2.54
14,037.00	90.22	358.49	10,805.78	3,343.06	-460.16	3,357.38	0.73
14,133.00	90.80	358.11	10,804.92	3,439.02	-463.00	3,453.38	0.72
14,228.00	90.12	359.00	10,804.16	3,533.98	-465.40	3,548.37	1.18
14,323.00	89.08	0.23	10,804.82	3,628.97	-466.04	3,643.32	1.70
14,418.00	89.78	359.72	10,805.77	3,723.97	-466.08	3,738.26	0.91
14,512.00	90.34	359.19	10,805.67	3,817.96	-466.97	3,832.22	0.82
14,607.00	90.31	0.69	10,805.13	3,912.96	-467.07	3,927.16	1.58
14,703.00	89.57	0.78	10,805.23	4,008.95	-465.84	4,023.05	0.78
14,797.00	89.94	0.83	10,805.63	4,102.94	-464.52	4,116.93	0.40
14,892.00	89.88	0.16	10,805.78	4,197.94	-463.70	4,211.84	0.71
14,986.00	90.71	0.13	10,805.30	4,291.93	-463.46	4,305.77	0.88
15,082.00	90.77	0.97	10,804.06	4,387.92	-462.54	4,401.66	0.88
15,176.00	90.37	1.30	10,803.12	4,481.90	-460.68	4,495.51	0.55
15,239.00	90.80	1.31	10,802.48	4,544.88	-459.24	4,558.40	0.68
15,270.00	91.20	0.92	10,801.94	4,575.87	-458.64	4,589.34	1.80
15,302.00	89.75	1.40	10,801.67	4,607.86	-457.99	4,621.29	4.77
15,333.00	89.81	1.86	10,801.79	4,638.84	-457.11	4,652.23	1.50
15,365.00	89.82	1.12	10,801.90	4,670.83	-456.28	4,684.17	2.31
15,460.00	90.34	0.25	10,801.76	4,765.83	-455.14	4,779.06	1.07
15,523.00	90.43	0.30	10,801.34	4,828.82	-454.84	4,842.00	0.16
15,554.00	90.55	0.39	10,801.08	4,859.82	-454.65	4,872.97	0.48
15,649.00	90.71	359.91	10,800.03	4,954.82	-454.41	4,967.90	0.53
15,742.00	91.14	359.39	10,798.53	5,047.80	-454.97	5,060.85	0.73
15,837.00	90.40	0.27	10,797.25	5,142.79	-455.26	5,155.78	1.21
15,920.00	90.34	1.38	10,796.72	5,225.78	-454.06	5,238.68	1.34
15,940.00	90.19	1.81	10,796.62	5,245.77	-453.50	5,258.64	2.28
16,035.00	89.48	2.06	10,796.90	5,340.72	-450.30	5,353.41	0.79
16,067.00	89.63	2.04	10,797.15	5,372.69	-449.15	5,385.32	0.47
16,130.00	88.77	2.71	10,798.03	5,435.63	-446.54	5,448.13	1.73

**Survey Report for Magnum 2-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
16,194.00	87.87	1.80	10,799.90	5,499.55	-444.02	5,511.92	2.00
16,225.00	87.63	1.88	10,801.12	5,530.51	-443.03	5,542.82	0.82
16,321.00	89.20	1.70	10,803.77	5,626.43	-440.03	5,638.57	1.65
16,353.00	89.54	1.85	10,804.13	5,658.41	-439.04	5,670.49	1.16
16,416.00	89.97	1.40	10,804.40	5,721.38	-437.25	5,733.36	0.99
16,512.00	90.77	1.89	10,803.78	5,817.34	-434.50	5,829.16	0.98
16,607.00	89.35	2.06	10,803.68	5,912.28	-431.22	5,923.92	1.51
16,671.00	89.60	1.11	10,804.26	5,976.25	-429.45	5,987.79	1.53
16,702.00	89.63	1.53	10,804.47	6,007.25	-428.74	6,018.74	1.36
16,797.00	90.25	0.91	10,804.57	6,102.22	-426.72	6,113.58	0.92
16,861.00	90.80	1.51	10,803.98	6,166.21	-425.37	6,177.48	1.27
16,892.00	90.40	0.72	10,803.66	6,197.20	-424.76	6,208.43	2.86
16,988.00	90.83	1.07	10,802.63	6,293.18	-423.26	6,304.29	0.58
17,083.00	89.35	0.82	10,802.48	6,388.16	-421.70	6,399.16	1.58
17,178.00	90.12	1.26	10,802.92	6,483.15	-419.97	6,494.02	0.93
17,273.00	90.65	1.13	10,802.28	6,578.12	-417.99	6,588.87	0.57
17,368.00	88.95	0.81	10,802.61	6,673.11	-416.38	6,683.73	1.82
17,431.00	89.35	0.67	10,803.55	6,736.09	-415.57	6,746.65	0.67
17,463.00	89.20	0.50	10,803.95	6,768.09	-415.24	6,778.61	0.71
17,558.00	89.78	0.61	10,804.80	6,863.08	-414.32	6,873.51	0.62
17,620.00	90.00	0.43	10,804.92	6,925.08	-413.76	6,935.45	0.46
17,651.00	90.09	0.90	10,804.89	6,956.08	-413.40	6,966.41	1.54
17,715.00	90.46	0.25	10,804.59	7,020.07	-412.76	7,030.34	1.17
17,746.00	90.77	0.58	10,804.25	7,051.07	-412.53	7,061.31	1.46
17,841.00	89.48	0.64	10,804.05	7,146.06	-411.52	7,156.21	1.36
17,935.00	89.94	0.83	10,804.52	7,240.05	-410.32	7,250.10	0.53
18,029.00	90.34	0.34	10,804.29	7,334.05	-409.36	7,344.00	0.67
18,122.00	90.71	0.14	10,803.44	7,427.04	-408.97	7,436.92	0.45
18,215.00	89.23	0.26	10,803.49	7,520.04	-408.64	7,529.84	1.60
18,308.00	89.91	0.63	10,804.19	7,613.03	-407.92	7,622.75	0.83
18,401.00	90.06	0.03	10,804.21	7,706.03	-407.38	7,715.67	0.67
18,464.00	90.62	0.25	10,803.84	7,769.03	-407.23	7,778.62	0.96
18,495.00	90.52	359.97	10,803.53	7,800.03	-407.17	7,809.60	0.96
18,589.00	89.20	0.32	10,803.76	7,894.02	-406.93	7,903.53	1.45
18,682.00	89.29	0.09	10,804.98	7,987.02	-406.60	7,996.45	0.27
18,776.00	89.57	0.07	10,805.92	8,081.01	-406.47	8,090.38	0.30
18,793.00	89.81	359.02	10,806.01	8,098.01	-406.60	8,107.37	6.34
18,888.00	90.12	359.14	10,806.07	8,193.00	-408.13	8,202.35	0.35
18,983.00	90.06	358.23	10,805.92	8,287.97	-410.31	8,297.34	0.96
19,078.00	90.56	0.22	10,805.41	8,382.96	-411.59	8,392.31	2.16
19,141.00	90.92	358.72	10,804.59	8,445.95	-412.18	8,455.28	2.45
19,173.00	91.14	358.90	10,804.02	8,477.93	-412.84	8,487.28	0.89
19,205.00	91.02	359.01	10,803.41	8,509.92	-413.42	8,519.27	0.51
19,268.00	90.15	359.12	10,802.77	8,572.91	-414.45	8,582.25	1.39
19,363.00	89.85	359.48	10,802.77	8,667.90	-415.61	8,677.22	0.49
19,458.00	89.60	358.38	10,803.23	8,762.88	-417.39	8,772.21	1.19
19,553.00	91.08	358.39	10,802.66	8,857.84	-420.06	8,867.20	1.56
19,647.00	89.88	359.40	10,801.87	8,951.82	-421.88	8,961.18	1.67
19,742.00	90.43	359.40	10,801.62	9,046.81	-422.87	9,056.15	0.58
19,838.00	90.52	359.38	10,800.82	9,142.80	-423.89	9,152.12	0.10
19,933.00	90.18	0.23	10,800.24	9,237.80	-424.22	9,247.06	0.96

**Survey Report for Magnum 2-36-25H - Sperry MWD Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
19,997.00	90.59	0.16	10,799.81	9,301.80	-424.00	9,311.01	0.65
20,028.00	90.92	359.01	10,799.40	9,332.79	-424.22	9,342.00	3.86
20,124.00	89.26	0.14	10,799.25	9,428.79	-424.94	9,437.95	2.09
20,219.00	89.26	0.26	10,800.48	9,523.78	-424.60	9,532.87	0.13
20,313.00	89.63	0.44	10,801.39	9,617.77	-424.03	9,626.78	0.44
20,408.00	90.00	0.41	10,801.70	9,712.77	-423.33	9,721.69	0.39
20,502.00	90.31	0.31	10,801.44	9,806.77	-422.74	9,815.61	0.35
20,598.00	90.80	0.05	10,800.51	9,902.76	-422.43	9,911.53	0.58
20,681.00	91.20	0.17	10,799.06	9,985.75	-422.27	9,994.46	0.50
<b>Final Sperry MWD Survey@20681'</b>							
20,728.00	91.20	0.17	10,798.08	10,032.74	-422.13	10,041.42	0.00
<b>Straight Line Projection To Bit @ 20728'</b>							

**Survey Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/S (ft)	+E/W (ft)	
10,237.00	10,235.73	-38.70	17.99	Tie On to Extreme Surveys @ 10237'
10,282.00	10,280.73	-39.04	17.93	First Sperry MWD Survey @ 10282'
20,681.00	10,799.06	9,985.75	-422.27	Final Sperry MWD Survey@20681'
20,728.00	10,798.08	10,032.74	-422.13	Straight Line Projection To Bit @ 20728'

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/S (ft)	Origin +E/W (ft)	Start TVD (ft)
User	No Target (Freehand)	357.95	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
2,168.00	10,237.00	Extreme MWD Surveys	MWD
10,282.00	20,728.00	Sperry MWD Surveys	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter ("")	Hole Diameter ("")
2,168.00	9 5/8"		9-5/8	12-1/4
11,104.00	10,802.27	7"	7	8-3/4

**Survey Report for Magnum 2-36-25H - Sperry MWD Surveys****Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	TVDSS (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,858.68	7,858.00	5,680.00	Tyler		0.00	
8,399.76	8,399.00	6,221.00	Kibbey Lime		0.00	
8,602.79	8,602.00	6,424.00	Charles		0.00	
9,271.91	9,271.00	7,093.00	Base Last Salt		0.00	
9,493.96	9,493.00	7,315.00	Mission Canyon		0.00	
10,023.21	10,022.00	7,844.00	Lodgepole		0.00	
10,920.28	10,763.00	8,585.00	False Bakken		0.00	
10,941.44	10,770.00	8,592.00	Upper Bakken Shale		0.00	
10,994.12	10,785.00	8,607.00	Middle Bakken		0.00	

**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 2-36-25H E	0.00	0.00	10,758.00	10,033.01	-360.00	399,229.24	1,208,917.31	48° 3' 8.879 N	103° 36' 23.903 W
- survey misses target center by 73.94ft at 20728.00ft MD (10798.08 TVD, 10032.74 N, -422.13 E)									
- Point									
Magnum 1-36-25H F	0.00	0.00	-35.00	49.22	-4,197.26	389,408.91	1,204,680.91	48° 1' 30.350 N	103° 37' 20.350 W
- survey misses target center by 11102.43ft at 10237.00ft MD (10235.73 TVD, -38.70 N, 17.99 E)									
- Polygon									
Magnum 2-36-25H S	0.00	0.00	0.00	47.20	-4,197.26	389,406.88	1,204,680.83	48° 1' 30.330 N	103° 37' 20.350 W
- survey misses target center by 11070.05ft at 10237.00ft MD (10235.73 TVD, -38.70 N, 17.99 E)									
- Polygon									
Magnum 1-36-25H F	0.00	0.00	-35.00	49.22	-4,197.26	389,408.91	1,204,680.91	48° 1' 30.350 N	103° 37' 20.350 W
- survey misses target center by 11102.43ft at 10237.00ft MD (10235.73 TVD, -38.70 N, 17.99 E)									
- Polygon									

**North Reference Sheet for Sec. 36-T153N-R101W - Magnum 2-36-25H - Plan B**

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 2-36-25H

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  $100^{\circ} 30' 0.000$  W°, Longitude Origin:  $0^{\circ} 0' 0.000$  E°, Latitude Origin:  $48^{\circ} 44' 0.000$  N°

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

Grid Coordinates of Well: 389,190.51 ft N, 1,208,872.51 ft E

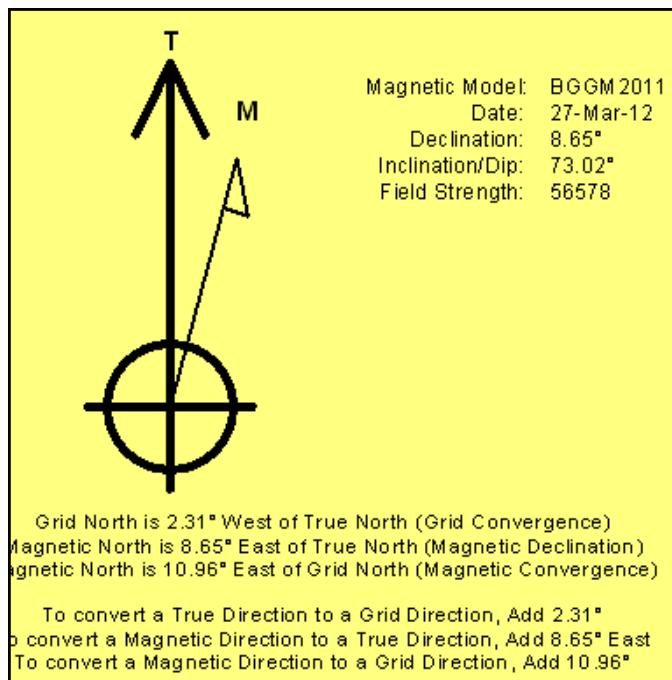
Geographical Coordinates of Well:  $48^{\circ} 01' 29.87''$  N,  $103^{\circ} 36' 18.60''$  W

Grid Convergence at Surface is: -2.31°

Based upon Minimum Curvature type calculations, at a Measured Depth of 20,728.00ft

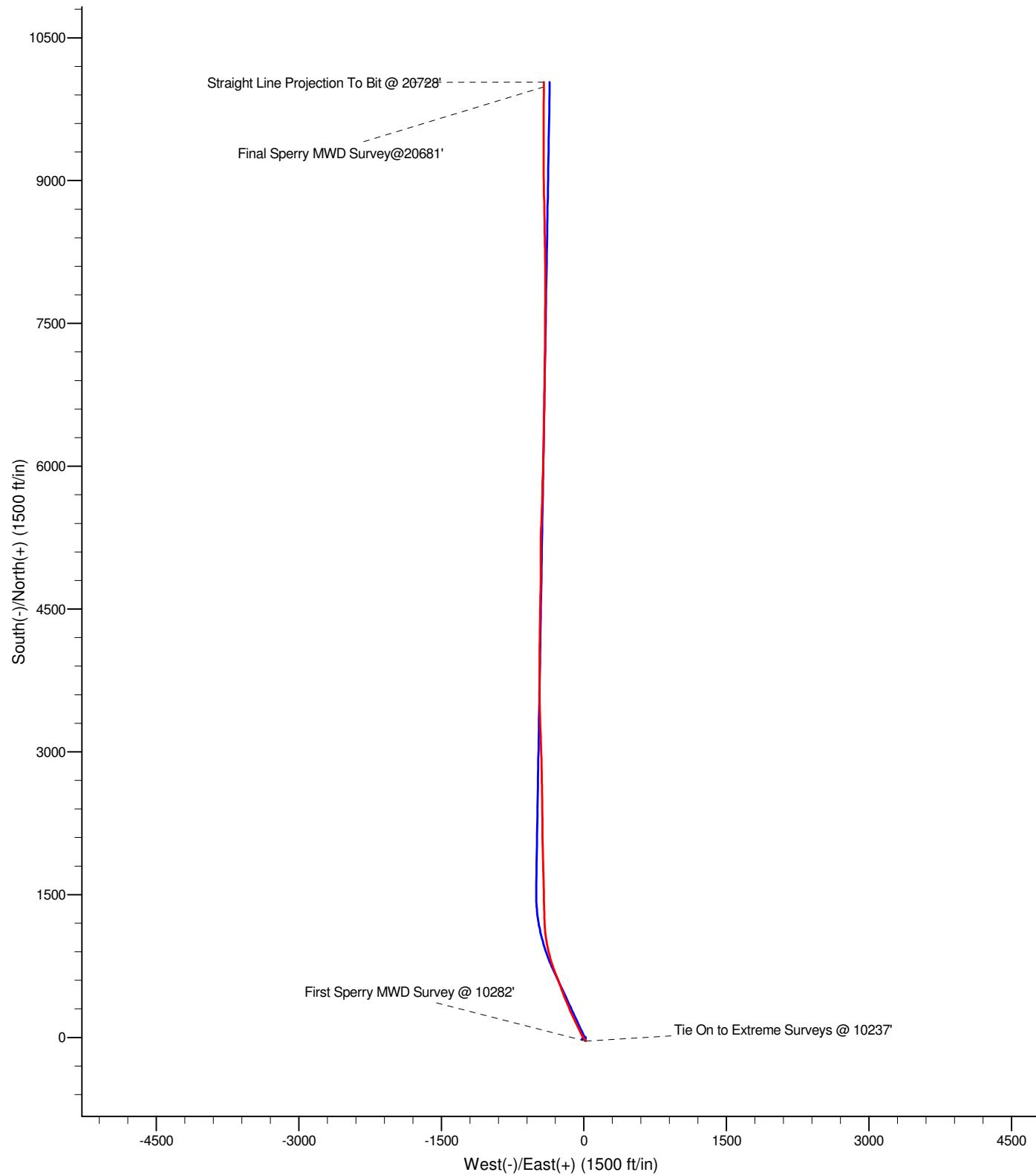
the Bottom Hole Displacement is 10,041.61ft in the Direction of 357.59° (True).

Magnetic Convergence at surface is: -10.96° (27 March 2012, , BGGM2011)



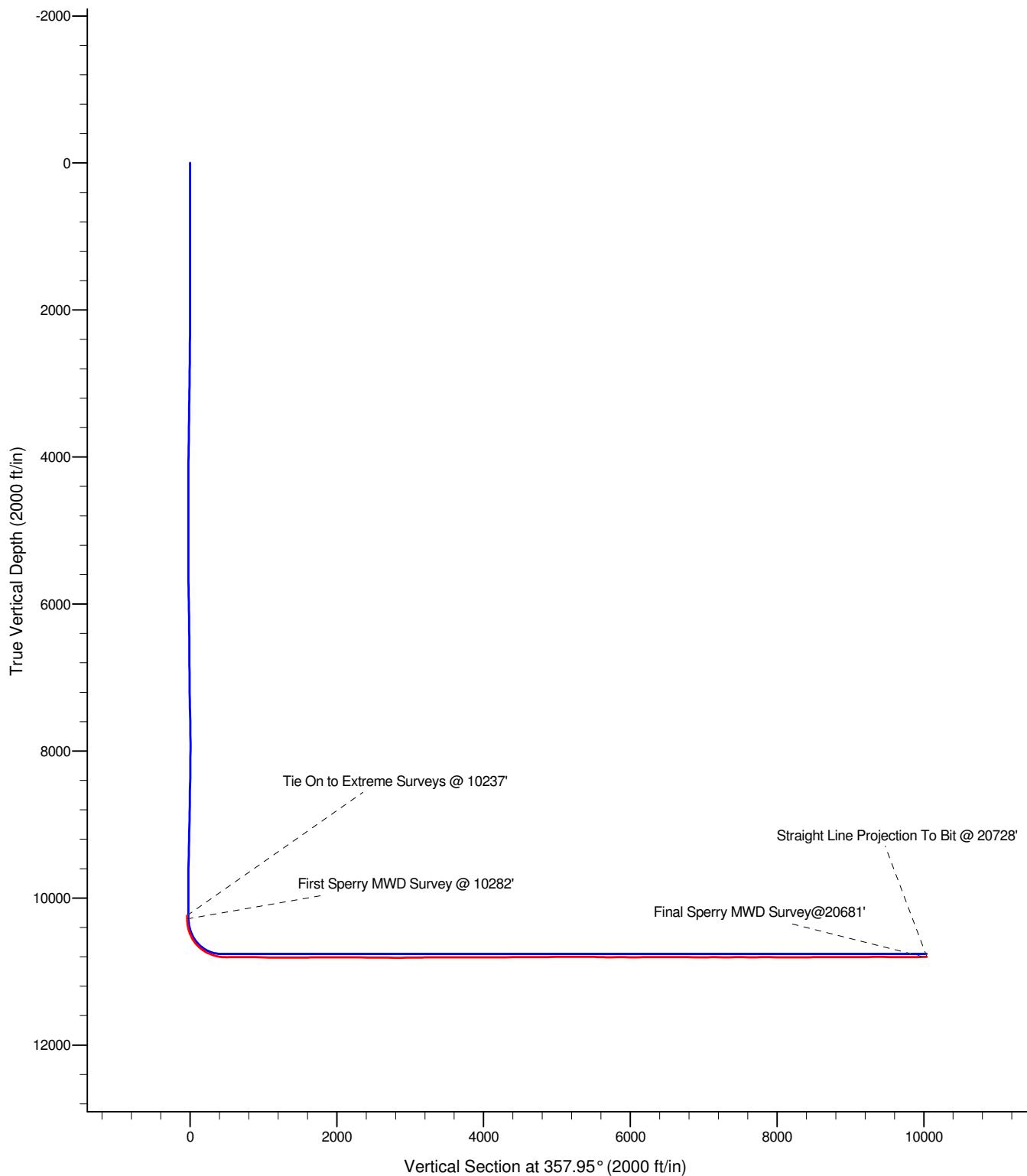
## LEGEND

- Magnum 2-36-25H, Plan B, Plan B Rev 0 V0
- Sperry MWD Surveys



## LEGEND

- Magnum 2-36-25H, Plan B, Plan B Rev 0 V0
- Sperry MWD Surveys





# 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)

TH  
Well File No.

22249

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>May 7, 2012</b>	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Refilling 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 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

**Magnum 2-36-25H**

Footages	Qtr-Qtr	Section	Township	Range
205 F S L	240 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
Water	Bbls
Gas	MCF

Name of Contractor(s)

**See Below**

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>May 7, 2012</b>	
Email Address <b>mglenn@slawsoncompanies.com</b>		

## FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>5-14-12</b>	
By 	
Title <b>Lee V. Jackson</b>	



# 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)

TH  
Well File No.

22249

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
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<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date <b>May 7, 2012</b>	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
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		<input checked="" type="checkbox"/> Other	<b>Pit &amp; surface Reclamation</b>

Well Name and Number

**Magnum 2-36-25H**

Footages	Qtr-Qtr	Section	Township	Range
205 F S L	240 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
Water	Bbls
Gas	MCF

Name of Contractor(s)

**See Below**

Address	City	State	Zip Code

## DETAILS OF WORK

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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>May 7, 2012</b>	
Email Address <b>mglenn@slawsoncompanies.com</b>		

## FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>5-14-12</b>	
By 	
Title <b>Lee V. Jackson</b>	

22249

AD

# Slawson Exploration Company, Inc

## Magnum 2-36-25H

**205' FSL & 240' FEL**

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

**Baker Field / Bakken**

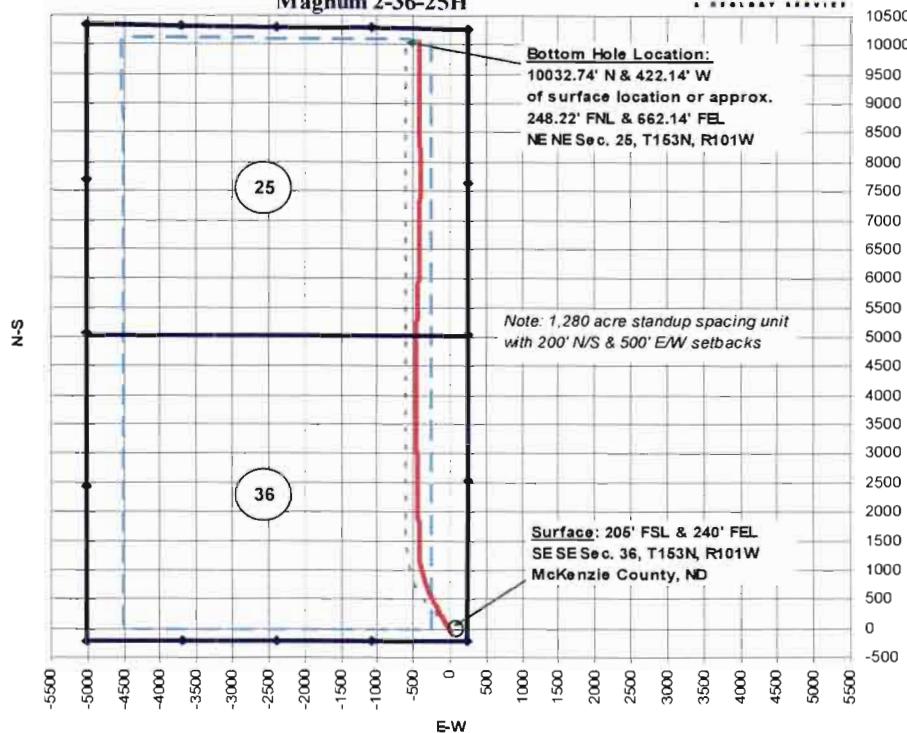
**McKenzie County, North Dakota**



### PLAN VIEW

Slawson Exploration Company, Inc.  
Magnum 2-36-25H

**SUNBURST  
CONSULTING**



### **BOTTOM HOLE LOCATION:**

**10,032.74' N & 422.14' W of surface location or approx.  
248.22' FNL & 662.14' FEL NE NE Sec. 25, T153N, R101W**

#### **Prepared for:**

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

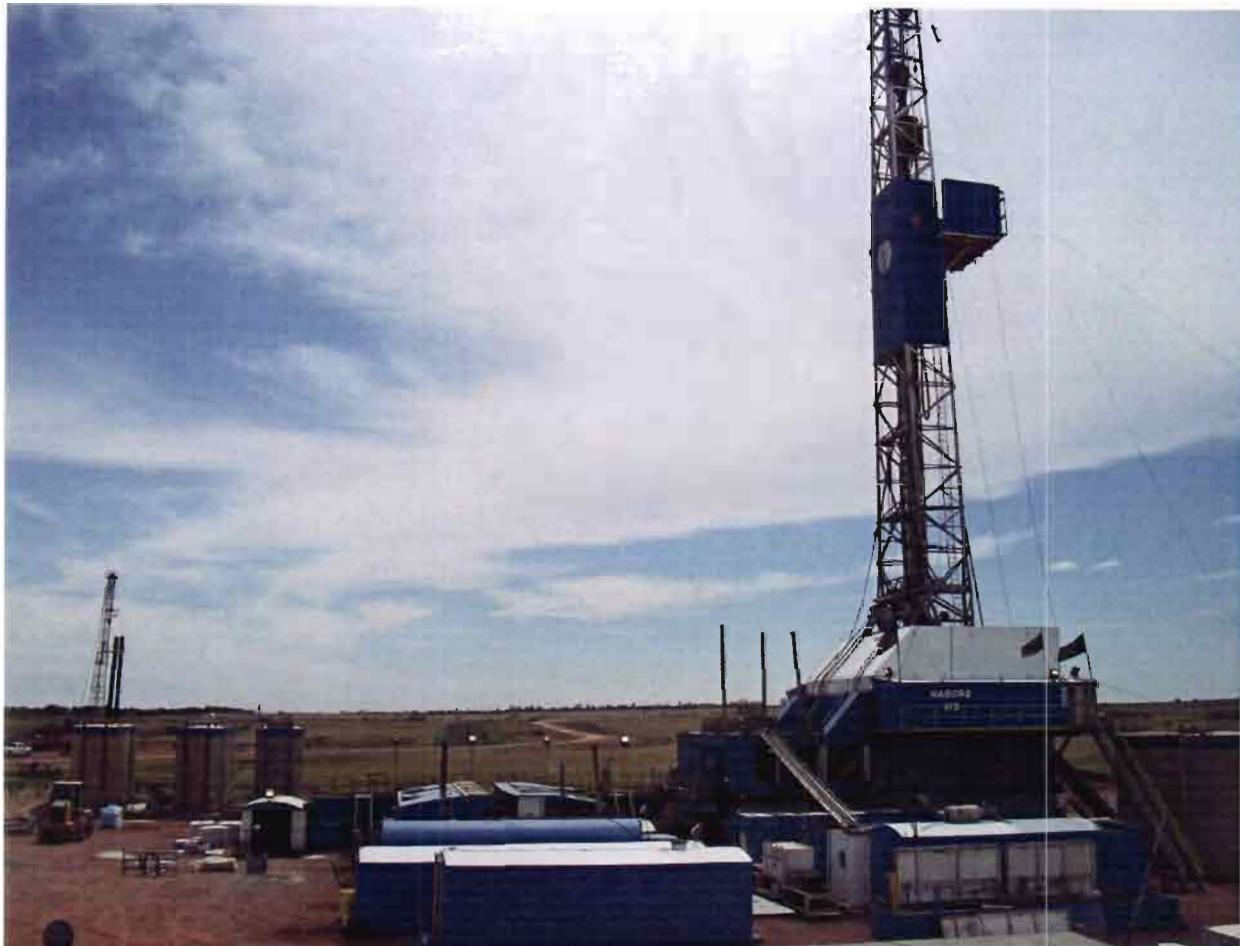
#### **Prepared by:**

Brandon Hill, Ross Hartwick  
P.O. Box 51297 Billings, MT 59105  
2150 Harnish Blvd. Billings, MT 59101  
(406) 259-4124  
[geology@sunburstconsulting.com](mailto:geology@sunburstconsulting.com)  
[www.sunburstconsulting.com](http://www.sunburstconsulting.com)

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A GEOLOGY SERVICE

09/2012

## WELL EVALUATION



*Figure 1: McKenzie county traffic jam. Nabors #419 drills Magnum 2-36-25H while completion of a nearby disposal well is underway (Brandon Hill, for Sunburst Consulting)*

### INTRODUCTION

The Slawson Exploration Company, Inc. **Magnum 2-36-25H** [SE SE Sec. 36, T153N, R101W] is located ~15 miles south of the town of Williston in McKenzie County, North Dakota and is part of an ongoing drilling program exploiting the Bakken pool in Baker Field. The well is the second of three laterals planned for the spacing unit and will consist of a 9,713' lateral drilled from south to north, exploiting the eastern third of sections 36 and 25. Directional tools will build a curve and “land” in the Middle Bakken target within the legal setbacks of the spacing unit, where 7” production casing will be set to isolate up hole formations. The lateral will be geo-steered in the ideal target rock, with the goals of drilling efficiently and minimizing doglegs, to a proposed TD in the NE ¼ of NE ¼ of Section 25.

## OFFSET INFORMATION

Three previously completed nearby wells were used as offset controls on *Magnum 2-36-25H*. The *Lindvig 1-35* was drilled in August of 1981 by Texas Gas exploration Corp. 1.1 miles west of the *Magnum 2-36-25H*. The *Verlin Fossum et al. 26-1* is Red River well drilled by Harper Oil Co. in December of 1979 approximately 1.9 miles northwest of the *Magnum 2-36-25H*. The third offset was the Slawson Exploration Company, Inc.'s *Magnum 1-36-25H*. The *Magnum 1-36-25H* was the first of 3 laterals to be put in sections 36-25. Drilling began in January of 2012 0.8 miles west of the *Magnum 2-36-25H*.

During the curve, gamma ray was constantly compared to the offset data to help determine a proper landing depth. To aid in the landing of the curve, an isopach table (Table 1) was constructed to measure the distance of select gamma markers to the target depth determined from the offset wells.

Due to variances in the offset isopachs, a weighted average was used in forecasting a landing depth. Comparing gamma ray markers at the *Magnum 2-36-25H* to correlative markers from the offsets made it easier to predict the probable TVD depth of the Middle Bakken target. With its proximity, the *Lindvig 1-35* most closely resembled gamma ray signatures at the *Magnum 2-36-25H*.

Formation/ Zone:	Proposed Top of Target From:			
	Lindvig 1-35	Magnum 1-36-25H	Verlin Fossum et al. 26-1	Average of Offset Wells
Kibbey Lime	10,767'	10,766'	10,768'	10,767'
Charles	10,822'	10,795'	10,834'	10,817'
Base Last Salt	10,809'	10,814'	10,805'	10,809'
Mission Canyon	10,811'	10,820'	10,812'	10,814'
Lodgepole	10,799'	10,807'	10,796'	10,801'
LP 1	-	-	-	-
LP 2	10,799'	10,805'	-	10,802'
LP 3	-	-	-	-
False Bakken	10,808'	10,806'	10,806'	10,807'
Upper Bakken Shale	10,804'	10,804'	10,804'	10,804'
Middle Bakken	10,803'	10,803'	10,803'	10,803'
M. Bakken (Target)	10,803'	10,803'	10,803'	10,803'

Table 1: Using distance from gamma markers in offset hole to determine a proposed drilling target.

## VERTICAL OPERATIONS

The *Magnum 2-36-25H* was spud on March 18, 2012 by Nabors #419 (Figure 1). A 13 ½" hole was drilled with fresh water to 2,168' MD and isolated with 9 5/8" 36# K-55 casing cemented to surface. On March 23, 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 2-36-25H* was a highly prosperous and well developed Mission Canyon field. As a result of formation depletion, 901 bbls of invert mud while drilling.

The vertical was drilled to a KOP of 10,287' MD with 2 HDBS bits. The first drilled from under casing to 8,422' MD where it was pulled as planned for the Kibbey bit trip. The second HDBS bit was replaced at 10,282' MD when KOP was reached. The first bit drilled 6,254' in 57 hours for an average ROP of 109.72 ft/hr. The second bit completed the vertical after drilling 1,860' in 39.5 hours for an average ROP of 47.09 ft/hr. Vertical operations were completed on March 30, 2012.

## DIRECTIONAL OPERATIONS

Sperry Sun provided equipment and personnel for MWD and directional services. Sunburst Consulting, Inc. 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 planned drill line path was required to prevent any interference with future drill plans in the section. As such, a window of no more than 25' on either side of the line was given.

### Curve Build

The curve was to drill down 523' TVD in approximately 890' MD and required 12 degrees of build per 100' (Figures 2 & 3). The curve was drilled with a single 8 ¾" PDC bit. After reaching 90 degrees a tangent section was put in place to cross the eastern hard line. After completing the tangent, 7" casing was set at 11,115' MD, 10,802.74' TVD, ~17' below the Upper Bakken Shale. Casing and cement took 8 days due to stuck casing and a two-stage cement job. The single HDBS bit drilled 1,076' in 68.75 hours for an average drilling rate of 15.65 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 the landing target and insured a landing within the desired objective.

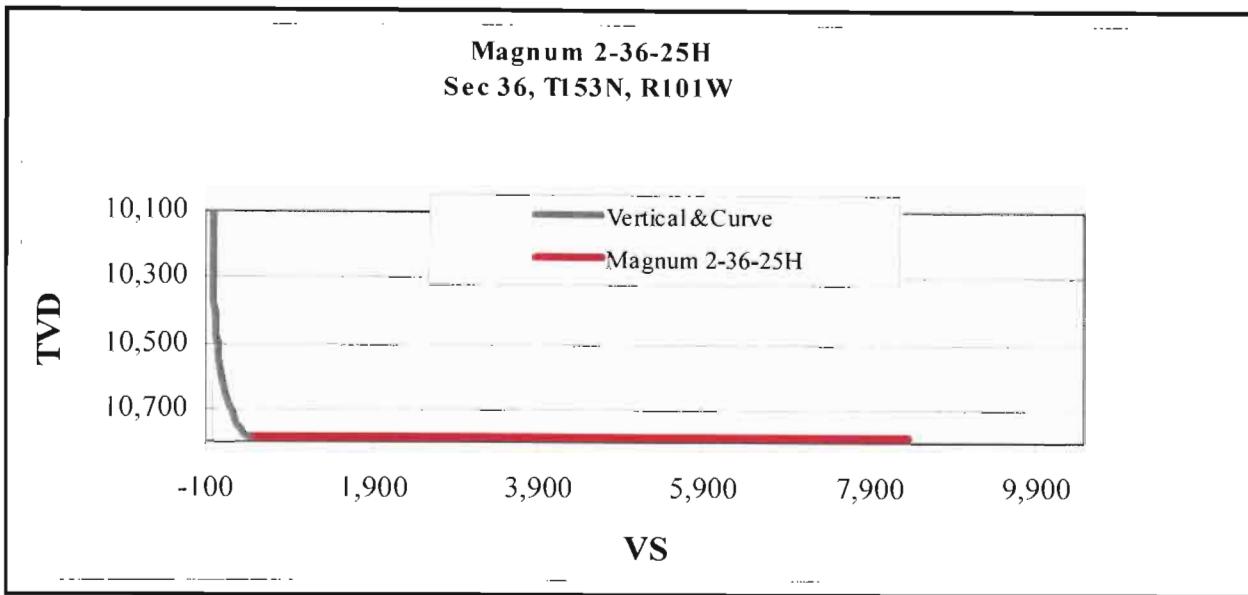


Figure 2: Drill plan provided by Slawson

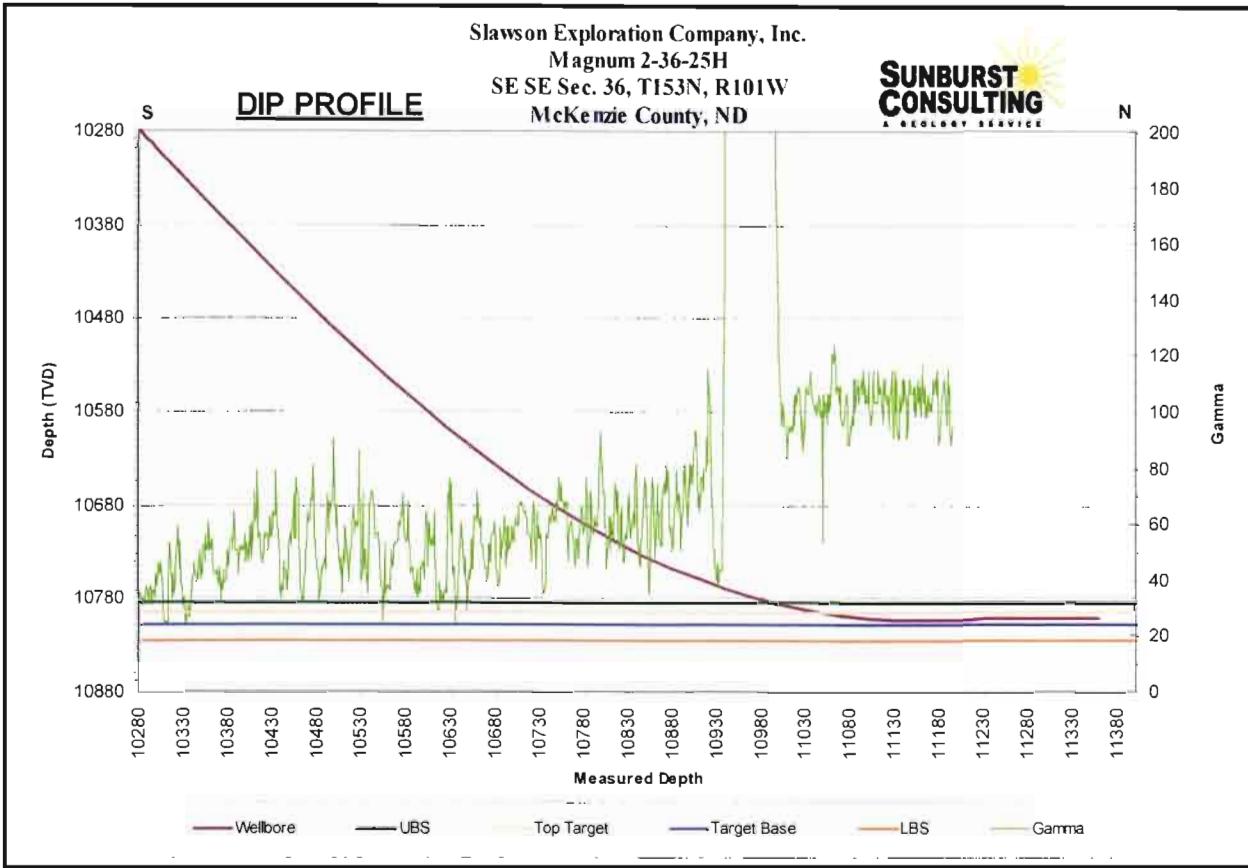


Figure 3: Curve as drilled. Illustrated on the Sunburst Profile

## Lateral

Lateral drilling fluid was ~10.1– 9.65 ppg diesel invert. Two trips were required while drilling the *Magnum 2-36-25H*. The first came as penetration rates began to fall and sliding became difficult at 15,968' MD. A fresh motor and HDBS bit were put in place to continue the lateral. Along with the BHA an Ulterra agitator was picked up, but it didn't appear to decrease the problems associated with sliding. Drilling on the *Magnum 2-36-25H* continued until a MD of 18,823' when penetration rates began to fall off. A new motor was put behind the previous bit along with an NOV agitator. Once back on bottom the penetration rates began to decline even further suggesting the possibility of a weak motor.

The first assembly drilled 4,610' in 99.09 hours for an average ROP of 46.52 ft/hr. The Second assembly drilled 2,885' in 79 hours for and average speed of 36.14 ft/hr. The final assembly with the rerun HDBS drilled 1,905' in 76.1 hours for an average speed of 25.03 ft/hr. The well reached a total depth (TD) of 20,728' MD at 01:00 CDT April 27, 2012. The use of a lateral reamer in the drill string helped to reduce hole drag and over pull which will likely ease the placing of liner.

## GEOLOGIC EVALUATION AND HYDROCARBON SHOWS

### Methods

Geologic supervision of *Magnum 2-36-25H* 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 intervals and descriptions). The 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 7,700' MD in the shale and siltstone of the **Amsden Formation**. Samples from this area were described as:

*SHALE: reddish orange, subblocky to subplaty, no visible porosity*

*SILTSTONE: orange, trace dark red, friable, subblocky to subplaty, calcareous cement, poorly cemented*

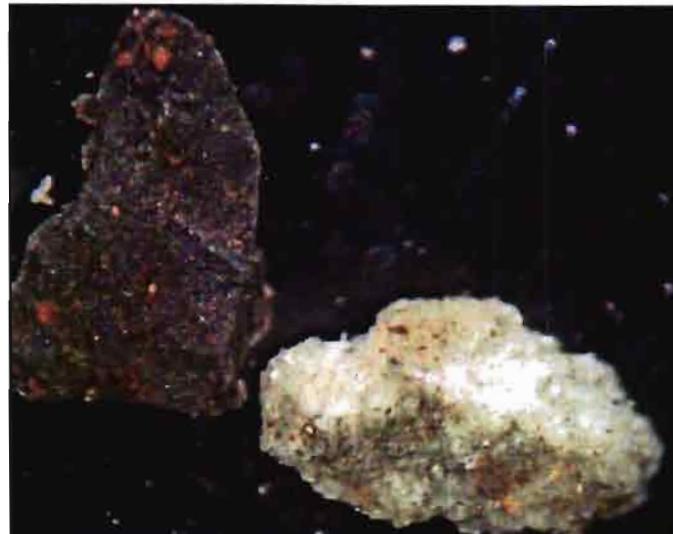
*ANHYDRITE: off white, cryptocrystalline, soft, massive, amorphous texture, no visible porosity*

The **Tyler Formation** [Pennsylvanian, Minnelusa Group] was penetrated at 7,858' TVD (-5,680'). The Tyler consisted of shale and sandstone that in parts of the basin have produced notable hydrocarbons. The *Magnum 2-36-25H* showed an increase in hydrocarbon gas at 8,150' MD. Samples from this interval (Figure 4) were described as:

*SHALE: black, brown, friable, subblocky to subplaty, earthy texture; trace SHALE: orange to trace reddish orange, subblocky to subplaty, no visible porosity*

*SILTSTONE: red orange, friable, subblocky to subplaty, calcareous cement, moderately cemented, no visible porosity*

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



*Figure 4: Photograph of sand and black shale from the Heath interval of the Tyler Formation.*

The **Kibbey “Lime” Interval** [Mississippian, Big Snowy Group] was penetrated at 8,399' TVD (-6,221'), 12' High to the *Magnum 1-36-25H*. Samples from this interval (Figure 5) were described as:

*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,*

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



Figure 5: Photograph of Kibbey limestone

The **Charles Formation** [Mississippian, Madison Group] was penetrated at 8,602' TVD (-6,424'). The **Base of the Last Charles Salt** was drilled at 9,271' TVD (-7,093'), 36' low to the *Magnum 1-36-25H*. Samples from this interval (Figure 6) were described as:

*SALT: translucent, crystalline, hard, anhedral to trace subhedral, crystalline texture, no visible porosity*

*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 6: Photograph of salt, anhydrite, and limestone found in Charles Formation

The **Mission Canyon** [Mississippian, Madison Group] was penetrated at 9,493' TVD (-7,315'), 42' low to the *Magnum 1-36-25H*. Surrounding the *Magnum 2-36-25H* was a heavily produced

Mission Canyon field. The resulting depletion of formation pressure caused the loss of 901 bbls of invert drilling fluid. On some occasions the formation would give back fluid along with high sharp increases in hydrocarbon gas. Large amounts of LCM made it difficult to evaluate overall Mission Canyon potential. The draw down in pressure, however, could speak to favorable permeability. Due to heavy sample contamination pictures of cuttings from the Mission Canyon are not available. Samples from the Mission Canyon were described as:

*DOLOMITIC LIMESTONE: mudstone, off white to cream, tan to light brown, light gray brown, very fine grained, firm to hard, crystalline texture, slightly argillaceous, trace light brown oil stain*

*DOLOMITE: mudstone, light gray brown, friable, earthy texture, rare to occasional intercrystalline porosity, rare dark brown spotty 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*

*ARGILLACEOUS LIMESTONE: mudstone, medium to light gray brown, microcrystalline, friable, earthy texture, rare disseminated pyrite, no visible porosity or oil stain*

The **Lodgepole Formation** [Mississippian, Madison Group] top was drilled at 10,022' TVD (-7,844'), coming in 34' lower than the *Magnum 1-36-25H*. Approximately 750' of limestone, much of it argillaceous mudstone with common pyrite and sparry calcite, was drilled in the Lodgepole. Samples collected from the Lodgepole (Figure 7) were described as:

*ARGILLACEOUS LIMESTONE: mudstone, light gray to rare medium gray to trace medium brown, microcrystalline, firm to trace hard, dense, earthy to trace crystalline texture, trace siliceous, no visible porosity*

*LIMESTONE: mudstone, medium gray to rare light gray to rare off white to trace dark gray, microcrystalline, firm to trace hard, dense, earthy to rare crystalline texture, siliceous in part, possible intercrystalline porosity, trace dark brown dead spotty oil stain*

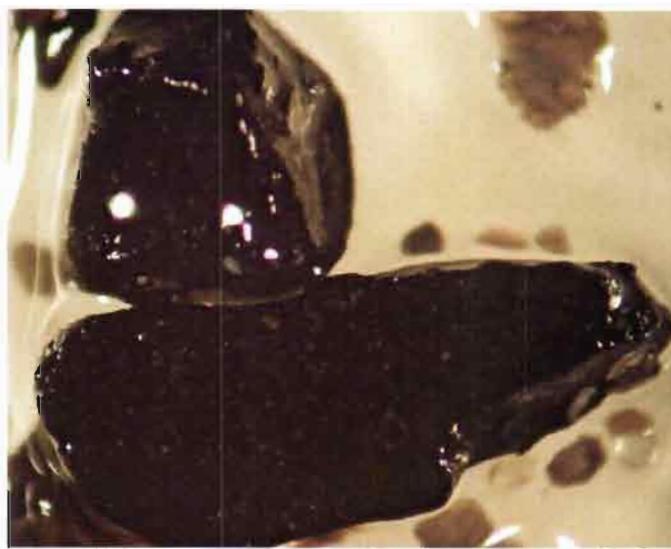


*Figure 7: Photograph of limestone from the upper Lodgepole Formation (note live oil stain).*

The “**False Bakken**” was penetrated at 10,763’ TVD (-8,585’), suggesting a target depth of 10,806’ TVD. The underlying **Scallion** interval showed gas peaks as high as 1,329 units.

The **Upper Shale** of the **Bakken Formation** [Mississippian–Devonian] was drilled at 10,770’ TVD (-8,592’) suggesting a casing point of 10,804’ TVD. The Bakken came in 26’ low to the *Magnum 1-36-25H*. Sample returns were typical black, carbonaceous, and petroliferous shale (Figure 8), characterized by gamma ray values in excess of 400 cps. Background gas climbed steadily with peaks above 600 units over a background of about 250 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 8: Photograph of typical black carbonaceous Bakken Shale.*

The **Middle Member** of the **Bakken Formation** was penetrated at 10,995’ MD, 10,785 TVD (-8,607’), 25’ low to the *Magnum 1-36-25H*, suggesting a target of 10,803’ TVD (Table 1). While drilling the *Magnum 2-36-25H*, samples varied only slightly within the target area. Some differences in oil staining could be seen. The upper half of the targeted interval consisted of a high gamma layer, primarily made up of cream-tan colored silty sandstone with *rare to common oil stain*. At times the silty sandstone would be mixed with light gray siltstone stringers. The lower edge of zone defined as Marker E was well cemented sandstone with occasional stringers of lime packstone. Samples collected from the Bakken Formation (Figure 9) 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 9: Photograph of silty sandstone found through out zone.

The lateral began with a background gas of about 300 units with an average connection gas above 500 units. By the time the tangent was drilled and the well bore reached a casing point of 11,358' MD, background gas had climbed to 350 units, with connections over 1200 units.

Shortly after exiting casing, the bit climbed through section along markers C and B (Figure 11). The average gas climbed slightly to 400 units with connections reaching 600 units with a high over 700 units. Background levels decreased as the bit dropped from the top of zone. The bit was allowed to remain within the D marker but began to drop slightly in section while the laterals turn was being completed. By 11,500' MD the bit was hovering just above the E marker and back ground gas dropped to just over 200u with connections barely reaching 300u. As the wellbore was pushed up in zone gas levels climbed steadily

As the bit reached 12,900' gas levels reached a lateral high (Figure 10), with background levels averaging 800-900 units and connections commonly reaching 2,200 units. That interval also enjoyed an increase in overall ROP that suggests an encouraging porosity. This lateral peak in gas was seen between markers "C" and "D". *Increasing spotty black oil stain* as well as the more common *dark brown oil stain* was seen.

Gas levels continued to decline as the lateral moved forward in part due to the waning drill speeds lowering the amount of lateral exposed on an hourly basis. By 14,500' MD gas levels remained strong between 500-600 units with connections over 1500 units but began decreasing as the wellbore passed 15,000' MD.

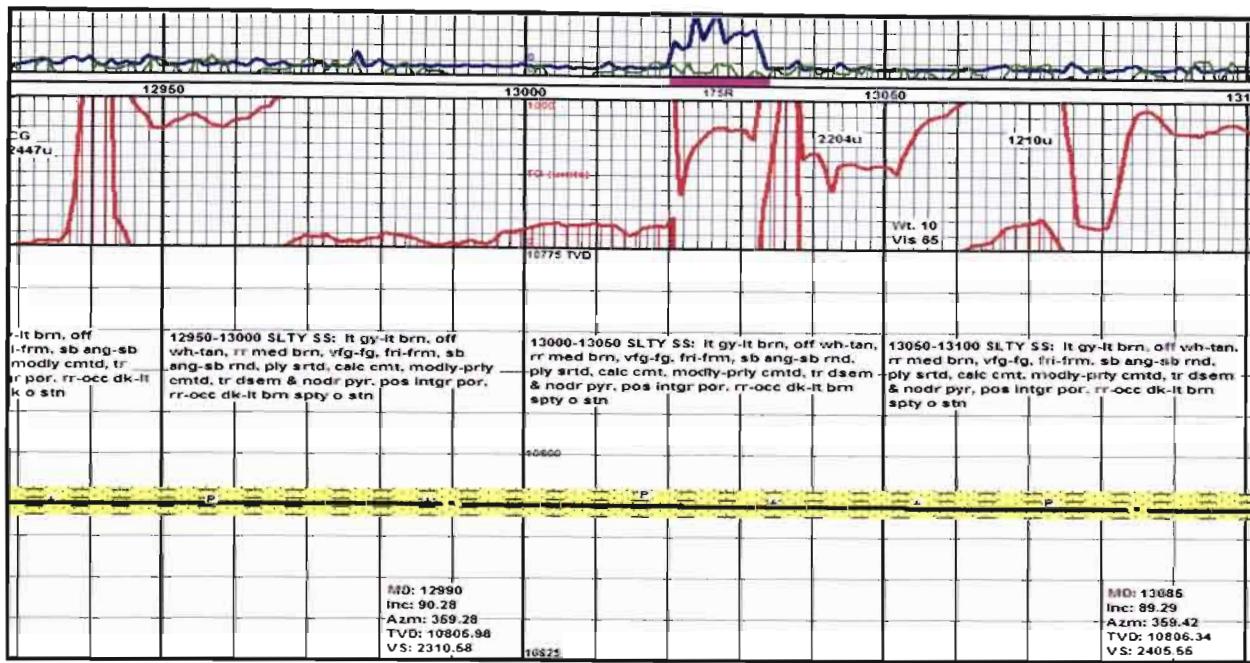


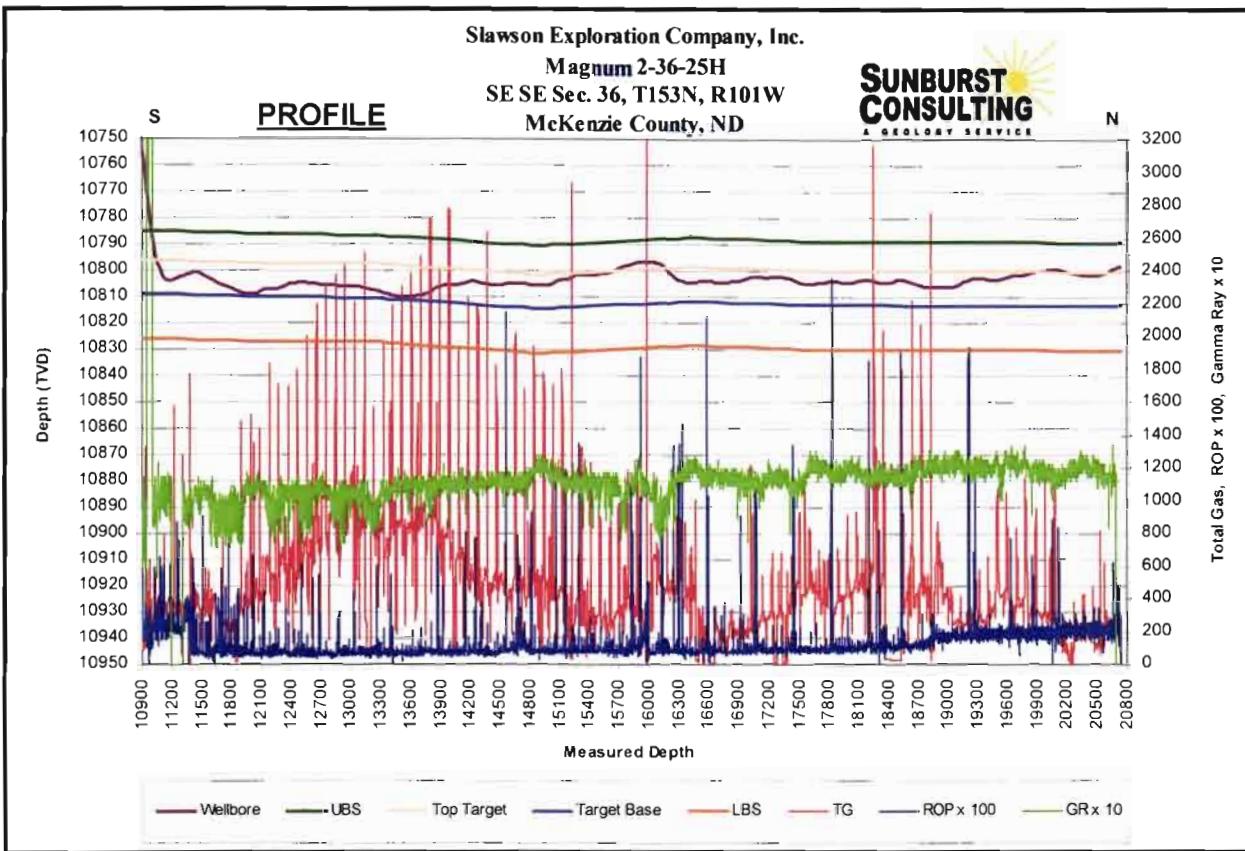
Figure 10: Magnum 2-36-25H log segment showing peak gas levels

Despite position in zone staying steady, gas levels continued to decline as the lateral progressed (Figure 11). A decline was seen by 15,200' MD where hydrocarbon gas levels lowered to ~300 units on average. Despite low background levels connection gases still peaked to nearly 3,000 units showing indications of strong formation pressure. Gas levels recover briefly as the wellbore exited the top of zone around 16,050' MD with background levels averaging between 600-700 units. The increase was short lived however and gas levels would reach a lateral low by a MD of 16,600'. Dip profiling suggested that bit was just above marker C. This area had previously seen a healthy increase in background gases. An increase in calcite cementing and *decreasing oil stain* was observed in samples.

Though position in zone changed very little, gas levels did begin to recover by the time the bit reached a MD of 17,450'. Soon backgrounds of 400-500 units were recorded with accompanying connection gases averaging close to a 1,000 units. Hydrocarbon gas levels would continue to increase as the well drilled ahead. By 18,250' MD the average background gas was over 500 units with connections reaching as much as 2,400 units. These levels would remain steady until dropping near the completion of *Magnum 2-36-25H*.

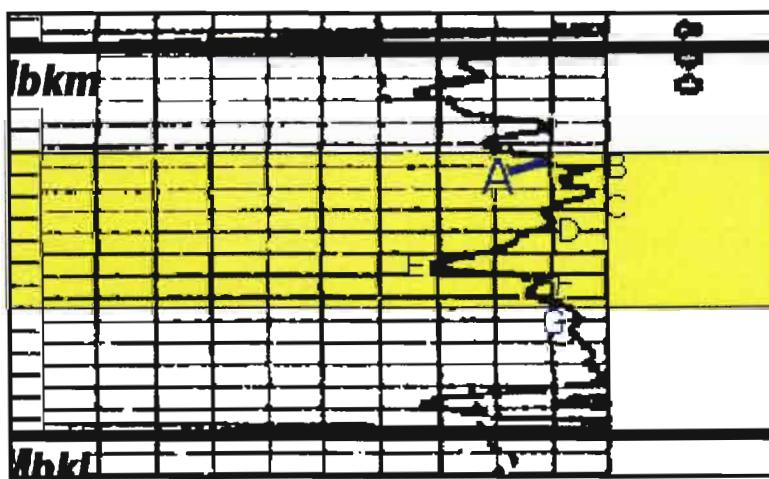
Gas levels dropped slightly to an average of 250-300 units with the majority of connections cresting near 1,000 units starting just after 19,000' MD. As *Magnum 2-36-25H* approached TD, levels remained with little variance in sample oil staining.

During the lateral there were two trips to surface for BHA changes. The change outs allowed for the recording of trip gases of 4,087 and 2,700 units. The trip gases were punctuated by a 15'-20' flare.



*Figure 11:* Sunburst profile showing gas levels as tied to lateral progression.

The target interval as described by Slawson Exploration Company, Inc. ranged from marker A to marker F in Figure 12. Multiple offsets showed that markers A through C had identical signatures. Samples also showed very little variation throughout the upper half of zone. It was quickly apparent while drilling that the upper markers would be unreliable for steering since it would be unclear when passing from one marker to the next.



*Figure 12:* Lindvig 1-35 offset gamma ray signature of the Middle Bakken.

**Marker A:** This marker made up the first 2' of the zone. Overlying marker A was a dark siltstone with *trace spotty brown oil stain* and *low porosity*. The occasions in which the bit passed into this marker showed decreasing levels of hydrocarbon gas. This is likely due to a combination of increasing silt content and porosity plugged by increasing calcite cement.

**Marker B:** Marker B began about 2' into the target zone and continued until 4' into zone. This facies was encountered early in the tangent section before setting casing. It was similar in nearly every way to marker C. Common characteristics of this marker were increasing siltstone content and a slight increase in pyrite levels. It is important to note that *exceptional porosity* was observed in cuttings and offset electric logs showed porosity up to 13% within this interval. It is unclear how permeable the interval is, but with production fracturing the increased porosity will likely benefit overall production. Oil staining varied little within this marker. In general, *trace to rare spotty brown oil stain* was seen with areas of *spotty black oil stain* observed. On offsets, the gamma reached 90-100 cps, the same as A and C. During lateral drilling, markers A and B displayed gamma ray measurements between 100-115 cps.

**Marker C:** Marker C extended from 4'-6' into the target. This marker appeared slightly warmer than surrounding markers reaching 120-130 cps. Samples were identical to that of marker B. The C marker became the most reliable marker for dip calculation. *Oil staining* was mostly *light brown* occasionally increasing to include *spotty light black*. The majority of the lateral was spent just above this marker and hydrocarbon gas levels increased with proximity. The increase in gas could be attributed to the increased porosity exhibited in offset logs. Hydrocarbon gas levels reached a lateral peak within the bottom of this interval. Background gas levels averaged just above 1000 units with connections as high as 2500 units.

**Marker D:** The D marker began about 8' from the top of zone and in the lateral averaged a 95-105 cps gamma signature. The indistinct gamma of the structure made it difficult to pinpoint position and samples shared characteristics with surrounding markers. There were *no increases in oil staining* exclusive to marker D. *Staining* remained similar to other markers within the Middle Bakken ranging in color from *light black* to *light brown*.

**Marker E:** Marker E ranged from 12'-13' TVD below the top of zone. This interval showed the most variety in sample. At times trace amounts of lime packstone would be observed as well as increased contents of sparry calcite and calcareous cement. In general *trace to rare spotty brown oil staining* was noted. Levels of hydrocarbon gas decreased when the wellbore passed through this interval. The drop in gas does coincide with a drop in porosity seen in samples and offset porosity logs.

**Marker F:** The first 2' of marker F made up the last 2' of zone. The F marker ranged from 110 to 115 cps. A small increase in siltstone within samples also helped to identify the marker. The siltstone was tight and grey with *less oil staining* than the interblended sandstone. The increase in siltstone decreased the amount of oil staining observed in samples from this interval.

## Geo-Steering

The **target zone** within the Middle Bakken is defined as the 14' zone below gamma marker "MBKMGR" (Marker A). Slawson feels that optimal hydrocarbon production can be achieved with the implementation of an aggressive production frac program regardless of position within the Middle Bakken. 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 9' of which is above the desired target. The *Magnum 2-36-25H* required a lateral turn to due north which resulted in the implementation of slides purely for azimuth.

The initial prognosis called for a regional dip of nearly flat 0.09° down causing 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 "C" marker became the most recognizable and efforts were made to stay stratigraphically near the peak gamma segment to help analyze formation dip changes.

The bit exited the Upper Bakken Shale at a MD of 10,995' (10,785' TVD) and passed into the top of the target interval at a MD of 11,060' MD (10,796' TVD). After landing the curve a tangent section was required in order to cross the sections eastern hard line. The wellbore landed at a casing point of 11,358' MD (10,801' TVD), approximately 16' TVD into the Middle Bakken and 5' below the "MBKMGR" marker (Marker A).

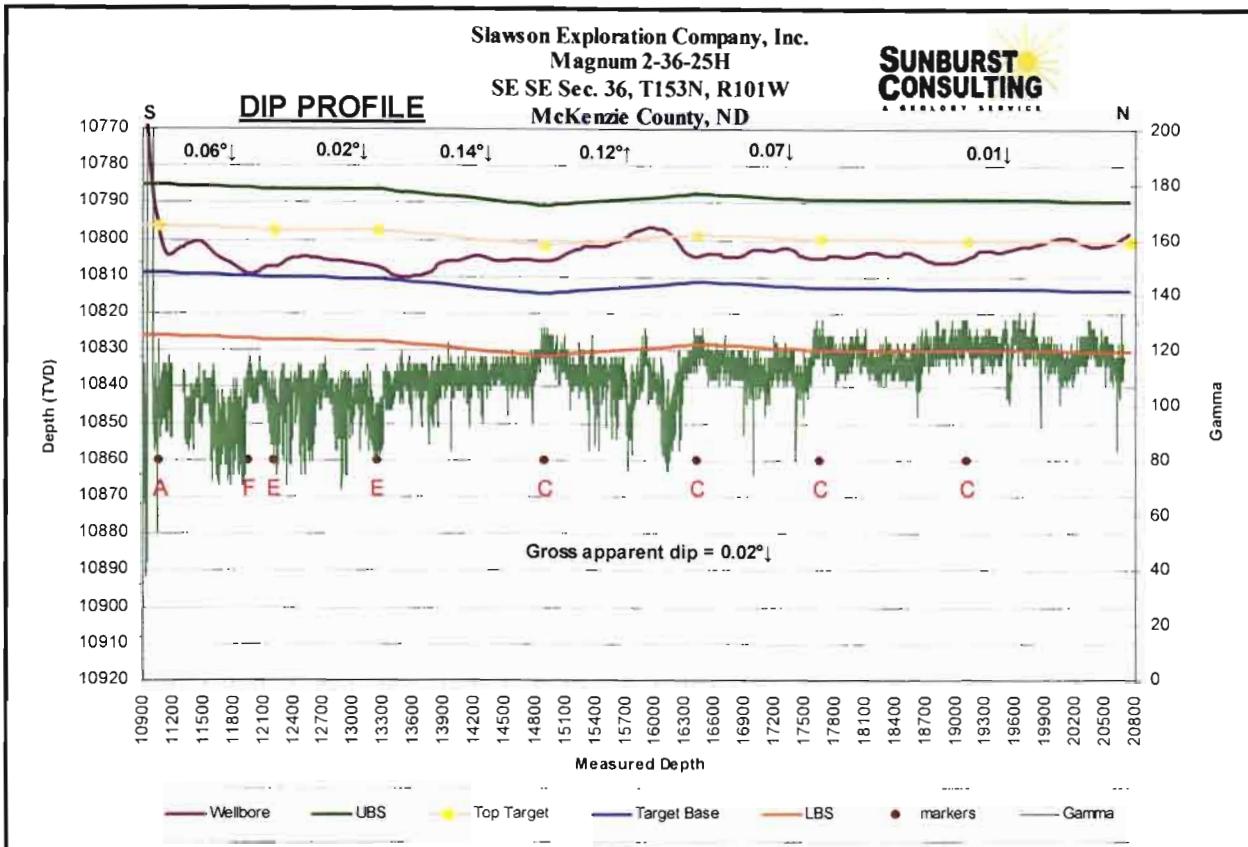
The wellbore continued through zone until contact with marker "E" was seen at a MD of 12,220' MD. Stratigraphically that put the bit just 2-3' from the bottom of zone. The bit was pushed up to gain separation from the bottom of zone. The top of target was estimated to have dropped approximately 1.2' TVD for dip of 0.06° down. The marker was seen again a 1,000' later with virtually no change in TVD making dip ~flat to 0.02° down.

The bit continued within zone when gamma suggested the bit had contacted marker "C" at a MD of 14,893'. Contact with this marker suggested the bit was roughly 5' below the top of target showing that dip had increased to ~0.14° down. With very few markers available for lateral navigation the decision to stay near the recognizable "C" marker was made.

The decision made navigation easier but risked the possibility of exiting the top of zone. The bit would briefly exit the target at a MD of 15,742' when gamma counts decreased dramatically as the bit passed into the low gamma interval above marker "A". Efforts to turn the bit down were successful and the bit reentered the targeted porosity at ~16,130' MD. The follow through from the push down allowed the bit to once again contact marker "C" showing the formations only up dip. The warm gamma marker had come up 3' of TVD in 1,523' of MD for a dip of 0.12°.

Formation would turn back down and dip would flatten as the lateral progressed with the "C" marker staying very close to a TVD of 10,805'. Using the marker, dips of 0.07° and a near flat 0.01° were calculated. Gross dip encountered at the *Magnum 2-36-25H* is estimated to be 0.02° down as calculated by the interpretation that formation dropped only 4' rather than the 16' suggested by structure maps.

The well ended with the bit about 9' below the Upper Bakken Shale at 20,728' MD. The final bottom hole location of *Magnum 2-36-25H* is 10,032.74' north & 422.14' east of surface location or approximately 248.22' FNL & 662.14' FEL ,NE NE Sec. 25 T153N, R101W



*Figure 13: Dip profile showing lateral progression and dip calculations.*

## Conclusions

The *Magnum 2-36-25H* shows moderate potential for hydrocarbon production. The intervals marked as A, B, and C 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. Porosity in some cuttings showed calcite occlusion, the levels of which may impact permeability. Connection gases at times would reach five-times that of background gases suggesting a probability of favorable formation pressure. Permeability remains the most likely limiting factor to *Magnum 2-36-25H*'s potential but initial numbers from *Magnum 1-36-25H* provide encouragement.

## SUMMARY

- 1) The *Magnum 2-36-25H* was spud on March 18, 2012 by Nabors #419. Vertical operations were completed on March 30, 2012 after being delayed by an under-pressured Mission Canyon.
- 2) Localized depletion of the Mission Canyon made vertical operations difficult; however, quick and effective use of LCM helped to reduce the loss of drilling fluid that was seen on the *Magnum 1-36-25H*. A total of 901 bbls loss were a reduction of over 2,300 bbls lost at the *Magnum 2-36-25H*'s predecessor. A mud weight of 9.7 was the maximum weight that could be maintained without increasing losses. The low weight of the mud however made the Upper Bakken Shale less stable which likely contributed to intermediate casing getting stuck.
- 3) A single HDBS bit drilled a 1,076' MD curve in 68.75 hours for an average drilling rate of 15.65 ft/hr. The overall average was decreased do to the long tangent drill that was required to cross the eastern hard line.
- 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) The Slawson Exploration Company, Inc. *Magnum 2-36-25H* 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.  
27 April 2012

# **WELL DATA SUMMARY**

**OPERATOR:** Slawson Exploration Company, Inc

**ADDRESS:** 1675 Broadway, Suite 1600,  
Denver, CO 80202

**WELL NAME:** Magnum 2-36-25H

**API #:** 33-053-03944

**WELL FILE #:** 22249

**SURFACE LOCATION:** 205' FSL & 240' FEL  
SE SE Section 36, T153N, R101W

**FIELD/ PROSPECT:** Baker Field / Bakken

**COUNTY, STATE** McKenzie County, North Dakota

**BASIN:** Williston

**WELL TYPE:** Middle Bakken Horizontal

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

**SPUD/ RE-ENTRY DATE:** March 18, 2012

**BOTTOM HOLE LOCATION:** 10,032.74' N & 422.14' W of surface location or approx.  
248.22' FNL & 662.14' FEL NE NE Sec. 25, T153N, R101W

**CLOSURE COORDINATES:** Closure Direction: 357.59 deg  
Closure Distance: 10041.61

**TOTAL DEPTH / DATE:** 20,728' on April 27, 2012  
94% within target interval

**TOTAL DRILLING DAYS:** 41 days

**CONTRACTOR:** Nabors #419

<u>PUMPS:</u>	#1 - PZ Gardener 10 (stroke length - 10") 7", 5.0" liner #2 - PZ Gardener 10 (stroke length - 10") 7", 5.0" liner
<u>TOOLPUSHERS:</u>	Mark Olsen, Luke Croegaert
<u>FIELD SUPERVISORS:</u>	Bill Kinden, Kevin Wehrung
<u>CHEMICAL COMPANY:</u>	Geo
<u>MUD ENGINEER:</u>	Mark Dudley
<u>MUD TYPE:</u>	Fresh water in surface hole Diesel invert in vertical, curve, and lateral
<u>MUD LOSSES:</u>	Invert Mud: 901 bbls
<u>PROSPECT GEOLOGIST:</u>	Bob Bogle
<u>WELLSITE GEOLOGISTS:</u>	Brandon Hill, Ross Hartwick
<u>GEOSTEERING SYSTEM:</u>	Sunburst Digital Wellsite Geological System
<u>ROCK SAMPLING:</u>	30' from 7,670' - 11,360' 50' from 11,360' -20,728' (TD)
<u>SAMPLE EXAMINATION:</u>	Binocular microscope & fluoroscope
<u>SAMPLE CUTS:</u>	N/A Samples washed in Diesel
<u>GAS DETECTION:</u>	MSI (Mudlogging Systems, Inc.) TG- total gas
<u>ELECTRIC LOGS:</u>	N/A
<u>DRILL STEM TESTS:</u>	N/A
<u>DIRECTIONAL DRILLERS:</u>	Sperry Sun Tom Cobb, Mike Janes, Chris Dempsey
<u>MWD:</u>	Sperry Sun Aaron Craver, John Thomas Smith, Nathan Marksworth, Joshua Flannagan, Mike May

**CASING:**

Surface: 9 5/8" 50 JTS 36# K-55 set to 2,168'

Intermediate: 7" 190 JTS 29# HCP 110 , 66 JTS 32# HCP-110  
set to 11,115'

**SAFETY/ H<sub>2</sub>S MONITORING:**

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

**Harper Oil Co.**

**Verlin Fossum et al. 26-1**

NW SE Sec. 26, T153N, R101W

McKenzie County, ND

# BOTTOM HOLE LOCATION PLAT

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

Magnum 2-36-25H

205 feet from the south line and 240 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 550 feet from the east line (bottom location)

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

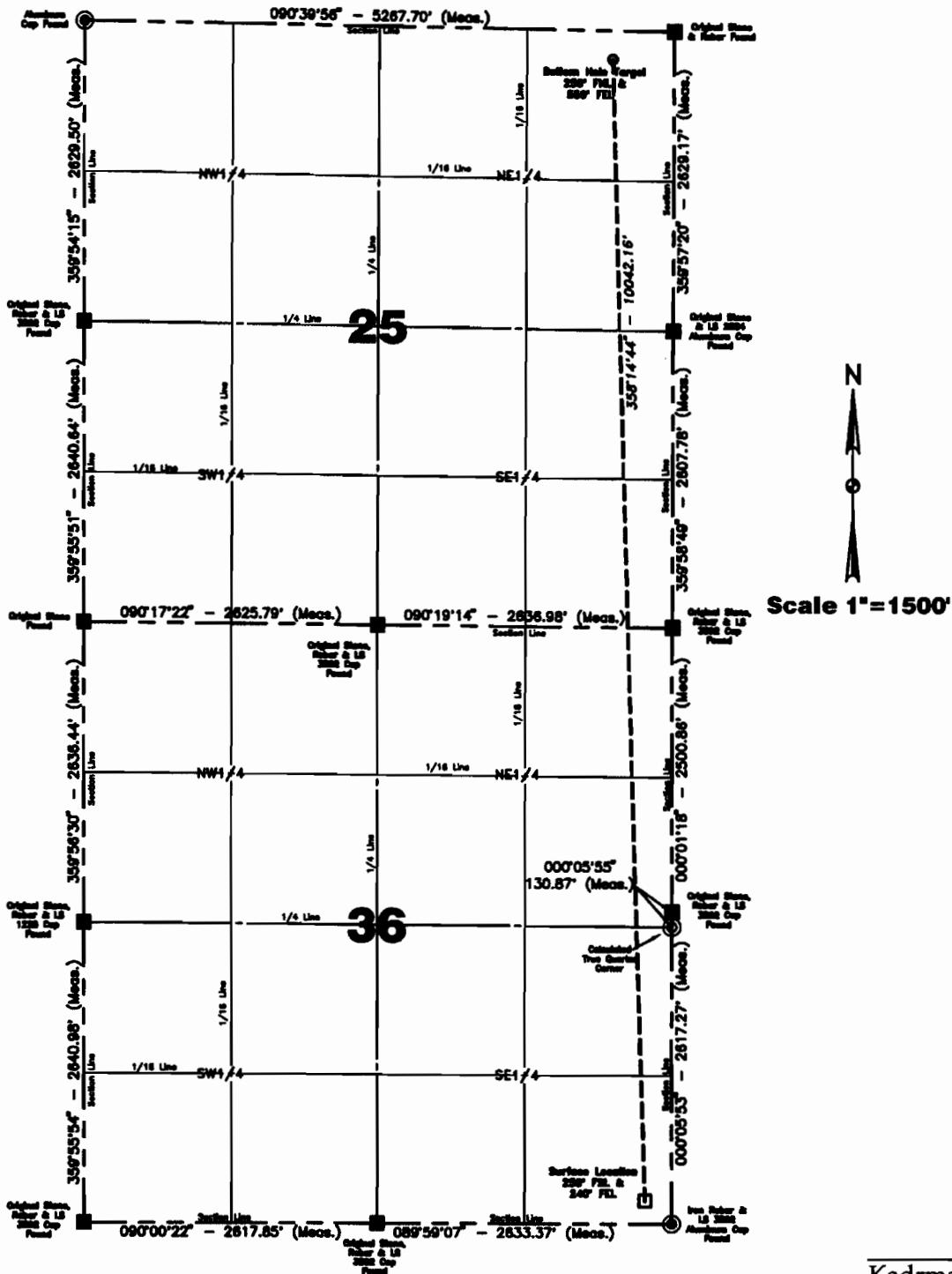
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

**Latitude 48°01'29.869" North; Longitude 103°36'18.604" West (surface location)**

**Latitude 48°03'08.925" North; Longitude 103°36'23.042" West (bottom location)**

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



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prohibited.

Computed & Drawn By A. Romann	Surveyed By B. Schmalz	Approved By Q. Obriegwitsch	Scale 1"=1500'	Date 09/01/2011
Field Book OW-257	Material B.H. Layout	Revised —	Project No. 3711645	Drawing No. 4

Kadrmas

Lee &

Jackson

Engines Surveyors  
Planners

# HORIZONTAL SECTION PLAT

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

Magnum 2-36-25H

205 feet from the south line and 240 feet from the east line (surface location)

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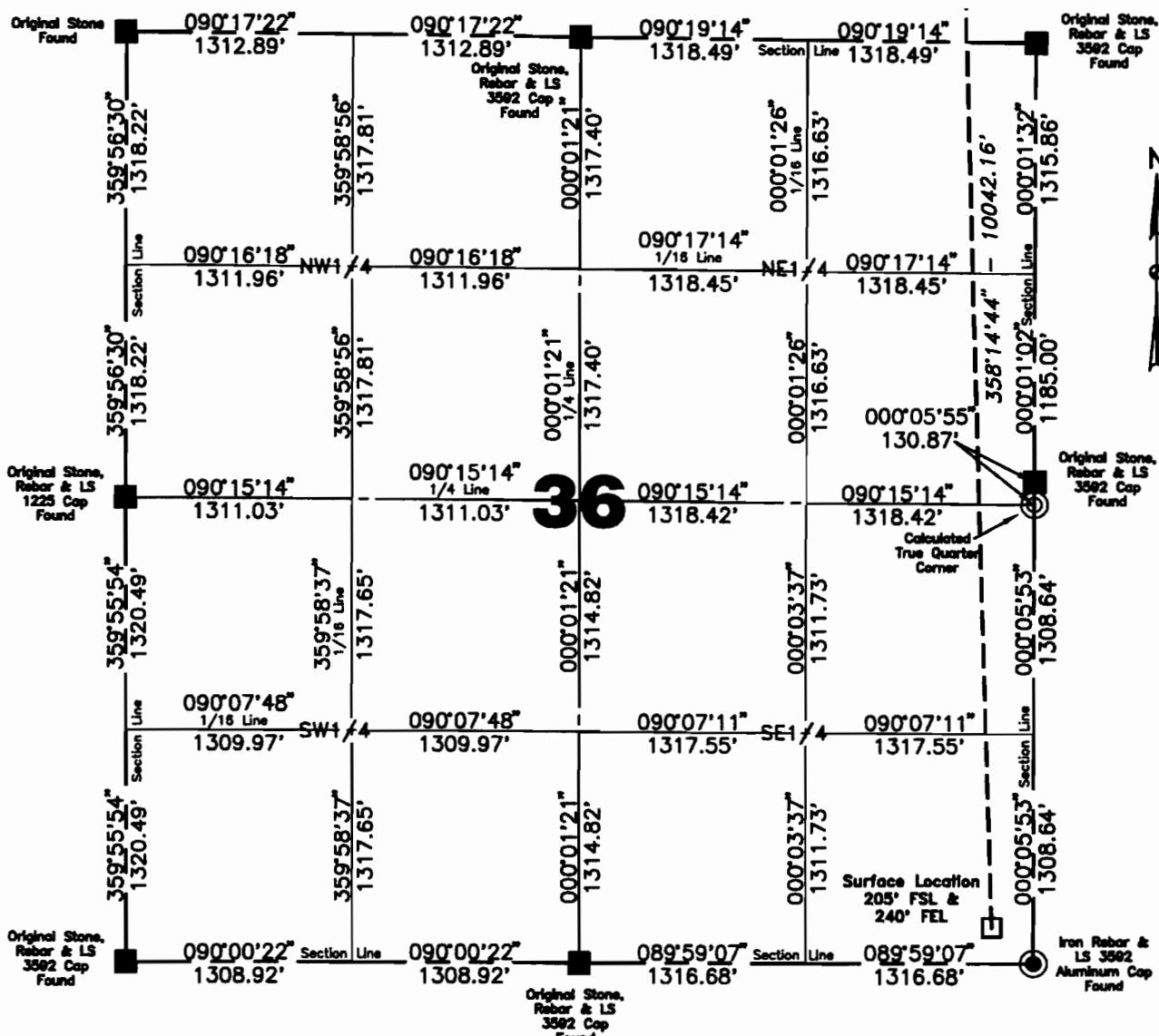
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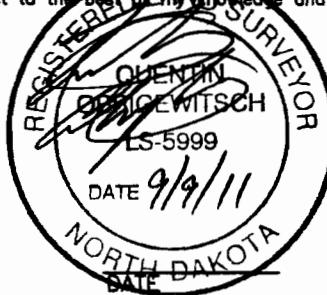
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All corners shown on this plat were found in the field during Slawson Exploration Company Magnum 2-36-25H oil well survey on August 26, 2011. Distances to all others are calculated. All azimuths are based on the south line of the southwest quarter of Section 36, being on an azimuth of 090°00'22".

Surveyed By	Field Book
B. Schmalz	OW-257
Computed & Drawn By	Project No.
A. Romann	3711645

Scale 1"=1000'

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown herein 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.



Kadrmas  
Lee &  
Jackson  
Registered Surveyors  
Planners

# HORIZONTAL SECTION PLAT

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1675 Broadway, Suite 1600, Denver, Colorado 80202

Magnum 2-36-25H

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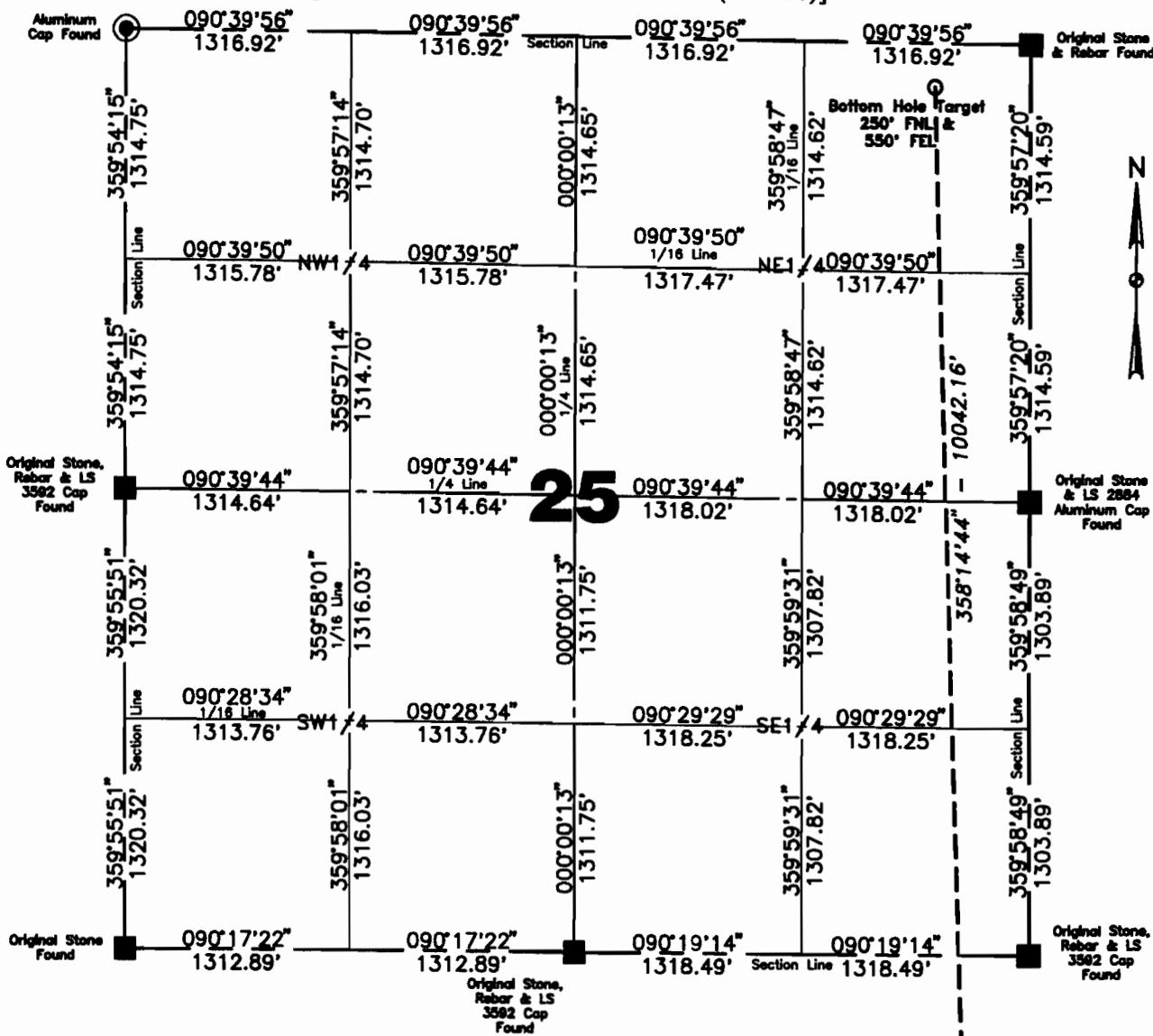
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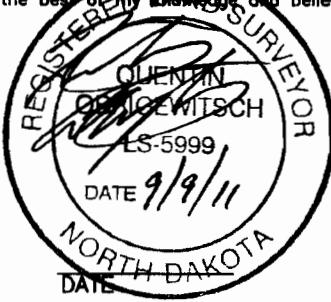


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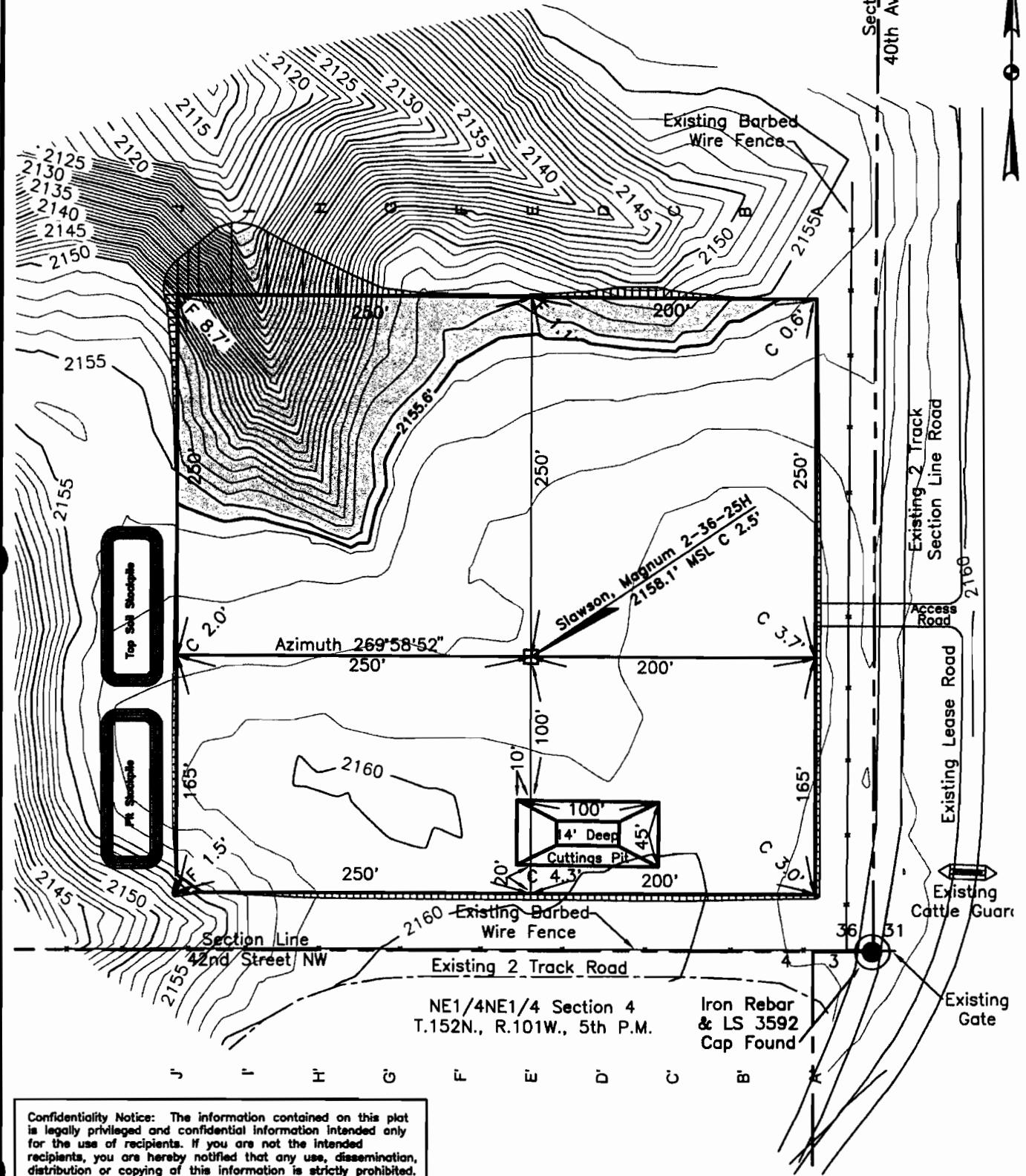
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Kadrmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

## Magnum 2-36-25H Pad Layout

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



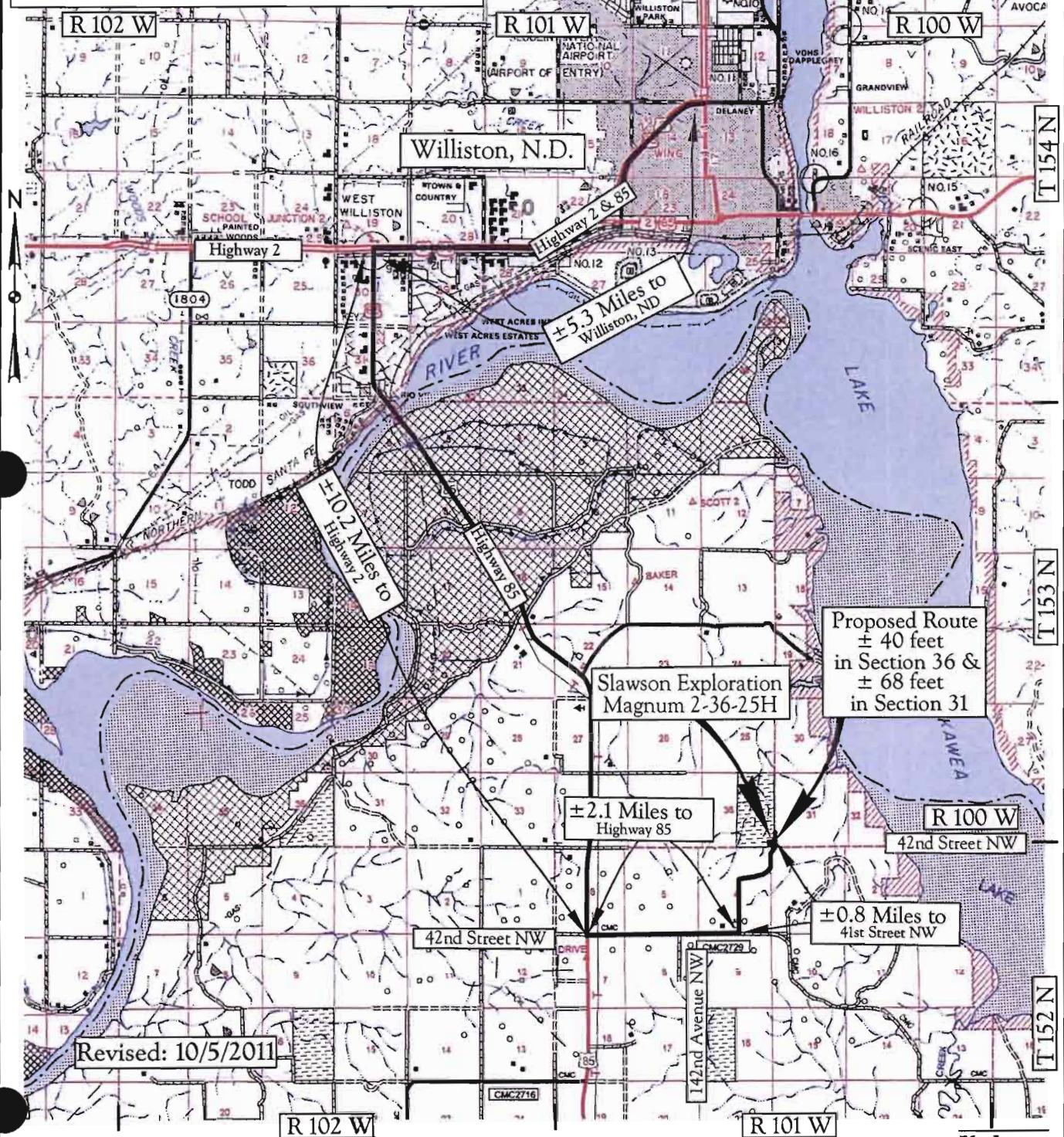
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Drawn By A. Romann	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1" = 100'	Date 09/01/2011
Field Book OW-257	Material Pad Layout	Revised —	Project No. 3711645	Drawing No. 6

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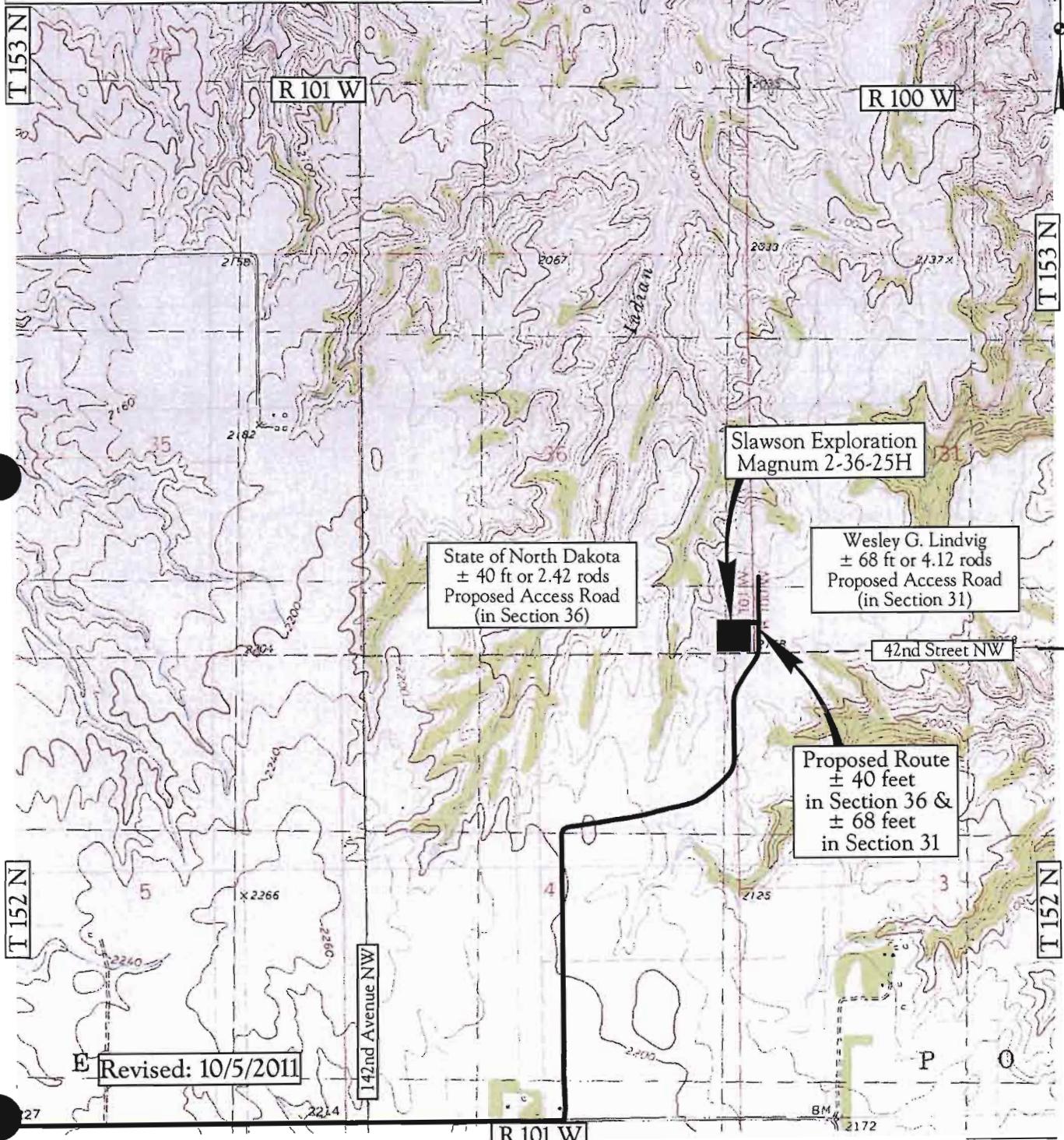
Slawson Exploration Co., Inc.  
 Magnum 2-36-25H  
 205' FSL & 240' FEL  
 SE1/4SE1/4, Section 36  
 T.153N., R.101W., 5th P.M.  
 McKenzie County, ND

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McKenzie County, ND

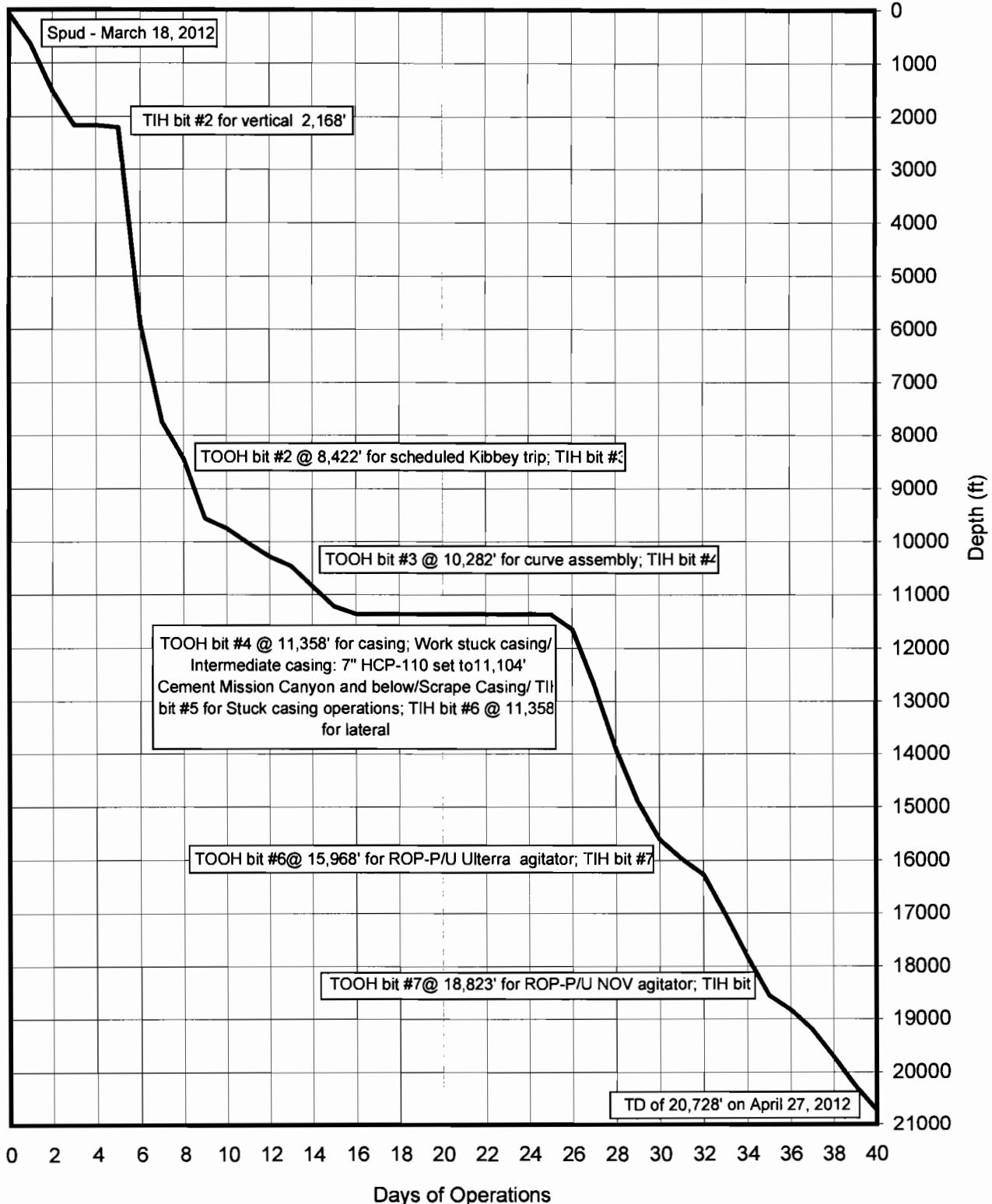
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# TIME VS DEPTH

Slawson Exploration Company, Inc

Magnum 2-36-25H



# 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
0	3/18	80'	-	-	-	-	-	-	-	-	-	-	Install top drive and rig up to get ready to spud	-
1	3/19	655'	575'	1	-	-	-	-	-	-	-	-	Rig up to get ready to spud. Pre-sud safety meeting. SPUD IN AT 1430. (3/18) Drill from 80 - 532. Rig service. Replace lube pump on top drive (Downtime). Drill from 532 - 565. Repair #2 mud pump (Downtime). Drill from 565 - 619. Repair #1 mud pump (Downtime). Drill from 619 - 655	-
2	3/20	1,520'	865'	1	25	-	50	-	-	96	96	323	Drill from 655 - 899. (Reduced rate due to pump problems). Rig service. Drill from 899 - 1020. Trip out of hole to repair top drive washpipe. (down time). Repair top drive washpipe. (down time). Trip in hole (downtime). Rig service. Drill from 1020 - 1520.	-
3	3/21	2,168'	648'	1	25	-	50	-	-	96	96	323	Drill from 1520 - 1926. Rig service. Drill from 1926 - 2138. Circulate hole clean. Rig service. Wiper trip to bit and back. Circulate / clean out mud ring. Drill from 2138 - 2168. Circulate hole clean. Trip out of hole to run casing. Received 51 jnts 9 5/8 36# k55 STC casing from stock at black hills	Pierre
4	3/22	2,168'	-	-	-	-	-	-	-	96	96	323	Trip out of the hole. Lay down 8" drill collars and break bit. Rig up Heller Casing crew. Run 50 jnts 9-5/8 K55 36# STC casing. (2171.04 threads off, 2188.04 threads on) FC @ 2127', shoe @ 2168'. 5 centralizers. Circulate while waiting on Baker Hughes cementers to get rigged up. (Equipment problems). Trouble with cellar pumps, clean rocks out of pumps and hoses. Cement with 585 sks premium lite cement with .08%stf+3%cacl+.25 lbs/sk cello flake + 1% bwoc sodium metasilicate + 1 gals/100 sk fp-13l + 12% bwoc bentonite (12 ppg and 2.39 yield) lead cement and 250 sks class G with .08%stf+2%cacl+.25 lbs/sk cello flake + 1 gals/100 sk FP-13L. (15.8 ppg and 1.16 yield) tail cement. Displace with 165 bbls fresh water. Plug down at 17:05, floats held. Rig down Baker Hughes. Remove cellar pumps. Cut conductor, casing, weld on Cameron 11" 5K well head and test. Nipple up BOP.	Pierre
5	3/23	2,205'	37'	2	20	-	50	-	-	97	97	452	Nipple up BOP. Rig up gas buster. Transfer mud to mud tanks. Test BOP, 250/5000. Annular 250/3500 and casing 1500 for 30 minutes. Install wear bushing. Change out rotating head due to damaged threads on fill line inlet. Pick up vertical BHA. Service rig. Trip in the hole. Displace hole with mud. Install rotating head rubber. Drill float collar, cement and shoe. Drill from 2168' to 2205'. 74 fph.	Pierre

## 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
6	3/24	5,917'	3,712'	2	15	-	50	-	2500	-	102	475	Drill from 2205' to 3827', 180 fph. Service rig. Drill from 3827' to 4494', 167 fph. Attempt to survey. Troubleshoot Extreme Engineering pressure calibrations. Drill from 4494' to 5448', 160 fph. Service rig. Drill from 5448' to 5917', 156 fph.	Dakota
7	3/25	7,745'	1,828'	2	18	-	58	138	2748	0	100	475	Drill 5917-16593, Rig service Drill 6593-7070 Rig service, Drill 7070-7,745'	Tyler
8	3/26	8,442'	697'	3	21	-	53	141	2487	0	100	475	Rotary Drilling 7745-8311 Rig Service, Drill 8311-8442, TOOH, Lay down BHA, Pick up BHA, TIH	Kibbey
9	3/27	9,551'	1,109'	3	15	-	51	117	2042	0	85	404	TIH Drill 8442-8979', Rig Service, Drill 8979-9253', Rig service Drill 9253-9551	Mission Canyon
10	3/28	9,742'	191'	3	16	19	68	110	2484	0	80	408	Rotary Drilling 9,551'-9,586', circulate and condition spot LCM pills, TOOH, service rig, change rotating head/rubber, TOOH to shoe, circulate and condition, TIH, change rotating head/rubber, TIH, rotary drilling 9,586'-9,742', spot pill, TOOH	Mission Canyon
11	3/29	10,028'	286'	3	25	-	51	112	2366	0	81	384	Circulate and condition mix LCM, TIH, wash to bottom, fill pipe, rotary drilling 9,742'-9,837', directional work try to get survey, rotary drilling 9,837'-9,933', circulate and condition, spot pill, TOOH, circulate and condition, TIH, rotary drilling 9,933'-10,028'	Lodgepole
12	3/30	10,282'	254'	3	16	20	68	110	2484	-	80	380	Rotary drilling 10,028'-10,282', circulate and condition pull three stands; spot LCM pill; mix & pump dry job, change rotating head/rubber, TOOH, lay down BHA, pick up BHA, TIH, cut drilling line, TIH	Lodgepole
13	3/31	10,465'	183'	3	16	20	27	139	2824	101	90	480	TIH, Rotary drilling 10,282'-10,465'	Lodgepole
14	4/1	10,842'	377'	3	21	24	26	139	2854	0	101	480	Rotary Drilling 10,456'-10,842'	Lodgepole
15	4/2	11,214'	372'	3	18	29	27	138	2672	0	100	475	Rotary Drilling 10,842'-10,928', service rig, rotary drilling 10,928'-11,214'	Middle Bakken
16	4/3	11,358'	144'	3	-	-	-	-	-	-	-	-	Rotary Drilling 11,214'-11,310', service top drive/compound/blocks, rotary drilling 11,310'-11,358', circulate and condition, TOOH, change rotating head/rubber, service rig, reaming/washing, TIH	Middle Bakken
17	4/4	11,358'	-	3	-	-	-	-	-	-	-	-	Lay down drill pipe, service rig, TIH, lay down drill pipe/drill collars/HWDP, downtime-top drive, service rig, lay down drill pipe, lay down BHA, rig up/down to run casing, pull wear bushing, rig down, safety meeting, run casing	Middle Bakken
18	4/5	11,358'	-	3	20	20	25	428	2350	85	85	404	Run casing, service rig, run casing, working stuck pipe	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
19	4/6	11,358'	-	3	-	-	-	-	-	-	-	-	Working stuck pipe/rig up pump truck/attempt to break circulation/rig down pump truck/casing crew, cased hole logs to set off cementing, tool rig up/down loggers held safety meeting, circulate/cement/displace rig up, cementers hold safety meeting	Middle Bakken
20	4/7	11,358'	-	4	-	-	-	-	-	-	-	-	Circulate/cement/displace, rig down cementers, nipple down BOPs/install well head slips/nipple up/set well head slips/nipple down/cut casing/install wear bushing/nipple up, nipple up BOPs	Middle Bakken
21	4/8	11,358'	-	4	-	-	-	-	-	-	-	-	Test BOPs, service rig, working as directed by operator/center BOP/Rig up flow line/put saver sub clamp, pick up drill pipe/make up bit and bit sub, pick up drill pipe	Middle Bakken
22	4/9	11,358'	-	5	-	-	-	-	-	-	-	-	Pick up drill pipe, service rig, pick up drill pipe, rotary drilling through packer tool @ 9130/ream washing cement, pickup drill pipe, circualte and condition/tag shoe @11012, working as directed by operator/perform leak off test/mix weighted pill/pump pill, TOOH, lay down BHA, pick up BHA, service top drive, TIH	Middle Bakken
23	4/10	11,358'	-	5	-	-	-	-	-	-	-	-	Service rig, downtime-drawworks, TOOH, circulate and condition bottoms up, spot pill and flow check, TOOH, lay down BHA, waiting on 3rd party tools, pick up BHA, downtime-drawworks, pick up BHA, TIH	Middle Bakken
24	4/11	11,358'	-	5	-	-	-	-	-	-	-	-	TIH, waiting on 3rd party personnel, primary cementing hold safey meeting, rig up cementers, test lines, primary cementing, circulate and condition, rig down cementers, TOOH	Middle Bakken
25	4/12	11,358'	-	6	-	-	-	-	-	-	-	-	Lay down 3rd party tools, cut drilling line, pick up 3rd party tools/wireline, cased hole logs/temperature log-check cement, lay down 3rd party tools/wireline, pick up BHA, TIH, change rotating head/rubber, drilling cement packer, float & shoe, formation integrity test(FIT) 11PPG equivalent MW, drilling cement, circulate and condition, change rotating head/rubber, TOOH	Middle Bakken
26	4/13	11,648'	290'	6	14	19	55	72	3343	0	703	250	TOOH, lay down BHA, pick up BHA, TIH, service rig, change rotating head/rubber, TIH, working as directed by operator, fill pipe, change shaker screens, rotary drilling 11,358'-11,648'	Middle Bakken
27	4/14	12,670'	1,022'	5	15	32	52	72	3346	103	0	250	Rotary drilling 11,648'-12,670'	Middle Bakken
28	4/15	13,915'	1,245'	6	16	32	52	265	3275	103	0	250	Rotary drilling 12,670'-13,132', service rig, rotary drilling 13,132'-13,915'	Middle Bakken
29	4/16	14,885'	970'	6	14	40	54	265	3332	103	0	250	Rotary drilling 13,915'-14,370', service rig, rotary drilling 14,370'-14,885'	Middle Bakken
30	4/17	15,601'	1,686'	5	15	30	52	303	3603	0	105	286	Rotary drilling 14,885'-15,061', service rig, rotary drilling 15,061'--15,223', TOOH/mix dry job, TIH, rotary drilling/ream to BTM/ 15,22'-15,317', service rig, rotary drilling 15,317'-15601	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
31	4/18	15,968'	367'	7	15	34	51	265	3453	0	103	250	Rotary drilling 15,601-15,881', service rig drawworks compound and breaks, rotary drilling 15,881-15,968', circulate and condition, TOOH, lay down bha, pick up BHA, TIH	Middle Bakken
32	4/19	16,264'	296'	7	15	25	30	265	3157	103	0	250	Downtime drawworks, TIH, cut drilling line 12 wraps=78' drill line, service rig breaks blocks swivel, TIH, rotary drilling 15,968'-16,264'	Middle Bakken
33	4/20	17,035'	771'	7	13	33	52	262	3659	0	102	247	Rotary drilling 16,264'-16,365', service rig, rotary drilling 16,365'-16,651', service top drive, rotary drilling 16,551'-17,035'	Middle Bakken
34	4/21	17,823'	788'	7	18	33	51	285	3506	0	111	269	Rotary drilling 17,035'-17,32', service rig, rotary drilling 17,320'-17,472', service rig, rotary drilling 17,472'-17,823'	Middle Bakken
35	4/22	18,550'	727'	7RR	18	40	50	270	3635	0	105	255	Rotary drilling 17,823'-18,169', service rig, rotary drilling 18,169'-18,262', change rotating head/hubber, rotary drilling 18,262'-18,542', service rig, rotary drilling 18,542-18,550'	Middle Bakken
36	4/23	18,823'	273'	7RR	15	40	51	260	3852	0	104	246	Rotary drilling 18,550'-18,823', TOOH/took survey/pumped pill/removed rotating rubber/install trip can, TOOH, lay down BHA, TIH, service top drive, TIH	Middle Bakken
37	4/24	19,198'	375'	7RR	12	38	53	247	3859	0	96	233	TIH, pick up BHA P/U agitator and shock sub, TIH, service rig, TIH, change rotating head/rubber, reaming/washing fill pipe & wash to bottom, rotary drilling 18,823'-19,198'	Middle Bakken
38	4/25	19,714'	516'	7RR	12	47	53	244	3893	95	0	230	Rotary drilling 19,198'-19,315', service top drive, nlocks, drawworks & compound, rotary drilling 19,315'-19,714'	Middle Bakken
39	4/26	20,252'	538'	7RR	13	59	53	247	3957	0	96	233	Rotary drilling 19,714'-19,885, service topdrive, drawworks, compound 7 crown, rotary drilling 19,885'-20,252'	Middle Bakken
40	4/27	20,728'	476'	7RR	11	59	52	247	3901	0	95	230	Rotary drilling 20,252'-20,521', service top drive, rotary drilling 20,52'-20,728', circulate and condition, TOOH	Middle Bakken

## 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>2</sup> )	600/ 300	NAP/ H <sub>2</sub> O (ratio)	NAP/ H <sub>2</sub> O (%) by vol)	Cake (API/HTHP)	Cor. Solids (%)	Alk	Excess Lime (lb/bbl)	Cl <sup>-</sup> (mg/L)	LGS/ HGS (%)	Salinity (ppm)	Electrical Stability	Gain/ Loss (bbls)
1	03/19	655'	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	03/20	1,520'	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	03/21	2,168'	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	03/22	2,168'	9.9	82	16	14	8/9	23/30	71/29	65/25.92	2	9.08	0.2	0.26	52k	1.89/7.19	311818	700	-
5	03/23	3,406'	9.4	55	11	10	5/6	18/21	77/23	70/21.41	2	8.59	0.8	1.04	48k	3.68/4.91	311818	675	-
6	03/24	6,210'	9.6	48	6	12	3/5	24/18	80/20	70.00/20.29	2	9.71	1.8	2.34	44k	4.26/5.45	311818	855	-
7	03/25	7,775'	9.6	56	15	20	13/15	25/35	78/22	70.00/20.21	2	9.79	2.2	2.86	38k	4.38/5.40	306966	850	-
8	03/26	8,365'	9.7	60	12	14	10/12	19/26	79/21	70.50/19.16	2	10.34	1.7	2.21	39k	4.95/5.40	311818	820	-
9	03/27	9,586'	9.7	80	14	12	6/7	20/26	78/22	70.50/20.29	2	9.21	1.8	2.34	40k	2.37/6.85	311818	875	-/121
10	03/28	9,742'	9.8	67	12	16	9/10	20/28	80/20	70.50/19.72	2	9.78	2.2	2.86	43k	2.66/7.12	311818	850	-/192
11	03/29	10,147'	9.9	50	15	14	9/11	22/29	80/20	71.50/17.47	2	11.03	1	1.3	44k	4.03/7.00	311818	700	-/276
12	03/30	10,286'	9.9	56	15	14	8/10	22/29	80/20	70.50/17.47	2	12.03	1	1.3	44k	6.21/5.82	311818	675	-/133
13	03/31	10,478'	9.8	50	-6	33	8/10	10.5/27	80/20	71.00/17.47	2	11.53	1.8	2.34	44k	5.92/5.61	311818	700	-/55
14	04/01	11,007'	9.8	-	16	14	9/12	23/30	81/19	70.00/18.60	2	11.4	2	2.6	44k	5.93/5.48	311818	850	-/57
15	04/02	11,340'	9.8	52	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-/41
16	04/03	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	20/-
17	04/04	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
18	04/05	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
19	04/06	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
20	04/07	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
21	04/08	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
22	04/09	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
23	04/10	11,358'	9.8	54	16	14	8/10	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
24	04/11	11,358'	9.8	54	16	14	1/8	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
25	04/12	11,648'	9.8	54	16	17	1/8	23/30	80/20	70.50/17.75	2	11.75	2.5	3.25	44k	6.47/5.28	311818	900	-
26	04/13	11,891'	9.9	71	18	18	1/10	27/36	66/34	59.00/31.00	2	10	1.4	1.82	36k	3.64/6.35	189308	480	28/-
27	04/14	13,092'	10	66	24	17	10/11	32.5/41	67/33	60.00/28.89	2	11.11	1.4	1.82	1.8234k	5.28/5.83	192575	460	
28	04/15	14,300'	10	54	19	8	10/11	23/27	71/29	62.00/25.82	2	12.18	1.3	1.69	32k	6.72/5.46	204102	510	-/21
29	04/16	15,155'	9.9	65	20	13	5/6	26.5/33	70/30	62.50/26.24	2	11.26	1.8	2.34	31k	5.09/6.17	193730	540	-/5
30	04/17	15,601'	9.8	58	19	12	8/9	25/31	72/28	64.00/24.79	2	11.21	1.4	1.82	32k	6.06/5.14	211033	640	-

## 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>2</sup> )	600/ 300	NAP/ H <sub>2</sub> O (ratio)	NAP/ H <sub>2</sub> O (%) by vol)	Cake (API/HTHP)	Cor. Solids (%)	Alk	Excess Lime (lb/bbl)	Cl <sup>-</sup> (mg/L)	LGS/ HGS (%)	Salinity (ppm)	Electrical Stability	Gain/ Loss (bbis)
30	04/18	15,968'	10	64	19	16	6/7	27/35	72/28	65.00/23.12	2	11.88	1.4	1.82	37k	6.06/5.82	262296	800	-
31	04/19	16,307'	9.7	75	24	21	8/10	34.5/45	72/28	64.00/25.44	2	10.56	2.2	2.86	38k	5.94/4.62	245469	830	-
32	04/20	17,123'	9.8	62	19	18	10/12	28/37	74/26	66.00/23.12	2	10.88	1.4	1.82	37k	5.48/5.40	262296	860	-
34	04/21	17,993'	9.7	58	18	16	8/10	26/34	77/23	69.00/20.57	2	10.43	1.3	1.69	40k	5.10/5.33	311818	850	-
35	04/22	18,720'	9.7	60	20	16	10/12	28/36	77/23	69.00/20.85	2	10.15	1.2	1.56	43k	4.56/5.60	311818	865	-
36	04/23	18,823'	9.9	64	19	18	10/12	28/37	78/22	69.50/19.72	2	10.78	1.98	2.57	39k	4.04/6.74	311818	875	-
37	04/24	19,256'	9.75	65	20	20	13/15	30/40	77/23	69.00/20.57	2	10.43	1.52	1.98	43k	4.70/5.73	311818	-	-
33	04/25	19,822'	9.75	64	18	18	11/12	27/36	77/23	68.50/21.13	2	10.37	2.05	2.67	43k	4.70/5.67	311818	905	-
34	04/26	20,361'	9.65	64	19	18	10/11	28/37	78/22	70.00/20.00	2	10	1.5	1.95	43k	4.40/5.59	311818	980	-

## BIT RECORD

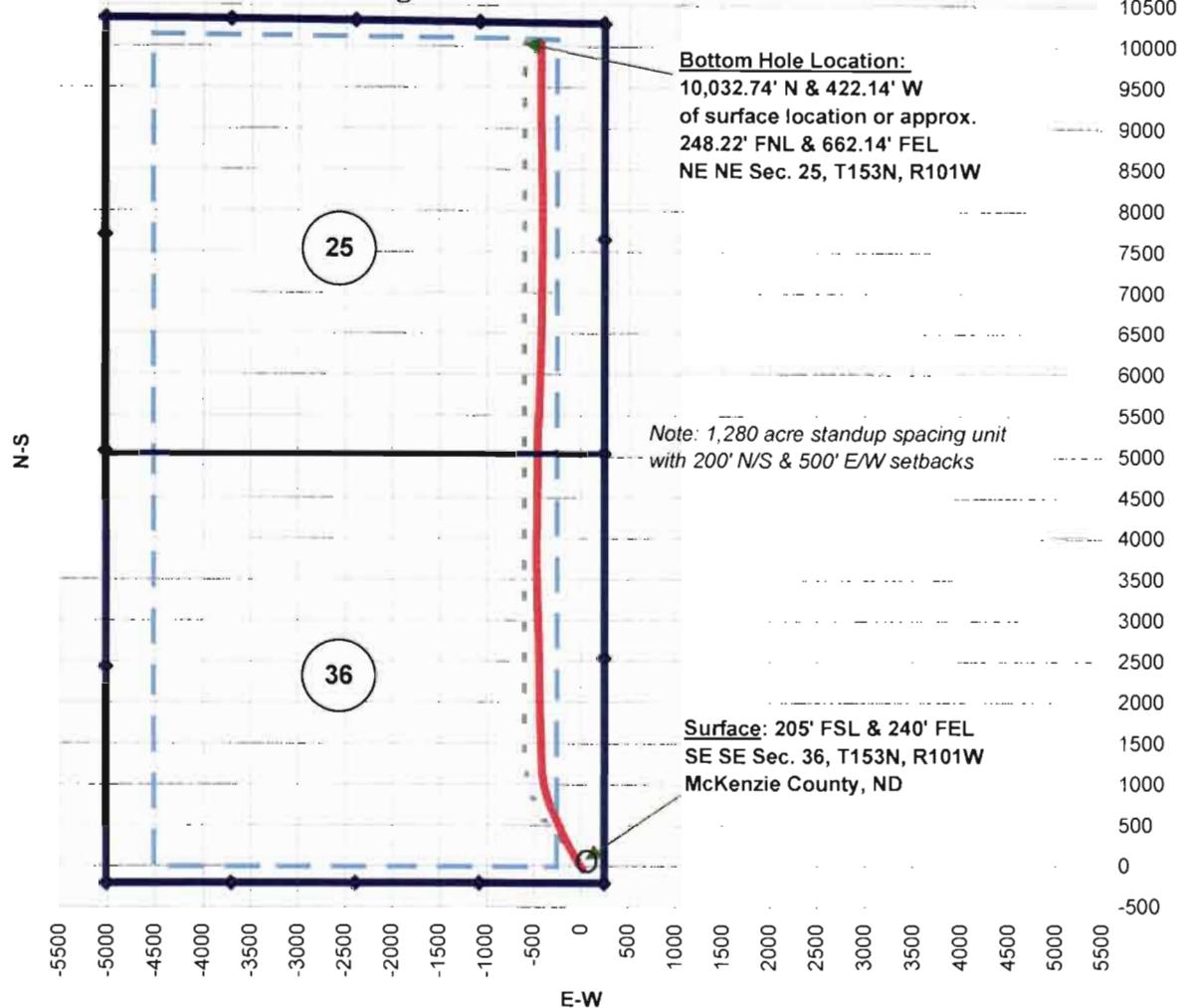
Bit #	Size	Type	Make	Model	Serial #	Jets	Depth In	Depth Out	Footage	Hours	Accum. Hours	Vert. Dev.
1	13 1/2	PDC		D115H	511a-0876	4x20	80'	2,168'	2,088'	40	40.00	Surface
2	8 3/4	PDC	HDBS	FX65D	11907285	4X16	2,168'	8,422'	6,254'	57	97.00	Vertical
3	8 3/4	PDC	HDBS	FX65D	11959246	4X16	8,422'	10,282'	1,860'	39.5	136.50	Vertical
4	8 3/4	PDC	HDBS	FXD55M	11889653	5x18	10,282'	11,358'	1,076'	68.75	205.25	Curve
5	6	Tricone	HDBS	Q30R	11741130	Tricone	11,358'	11,358'	0'	7	212.25	Stuck Casing operations
6	6	PDC	SMITH	SDi513	JF2538	6X18	11,358'	15,968'	4,610'	99.09	311.34	Lateral
7	6	PDC	HDBS	FX64	11717460	6X18	15,968'	18,823'	2,855'	79	390.34	Lateral
7RR	6	PDC	HDBS	FX64	11717460	6X18	18,823'	20,728'	1,905'	76.1	466.44	Lateral

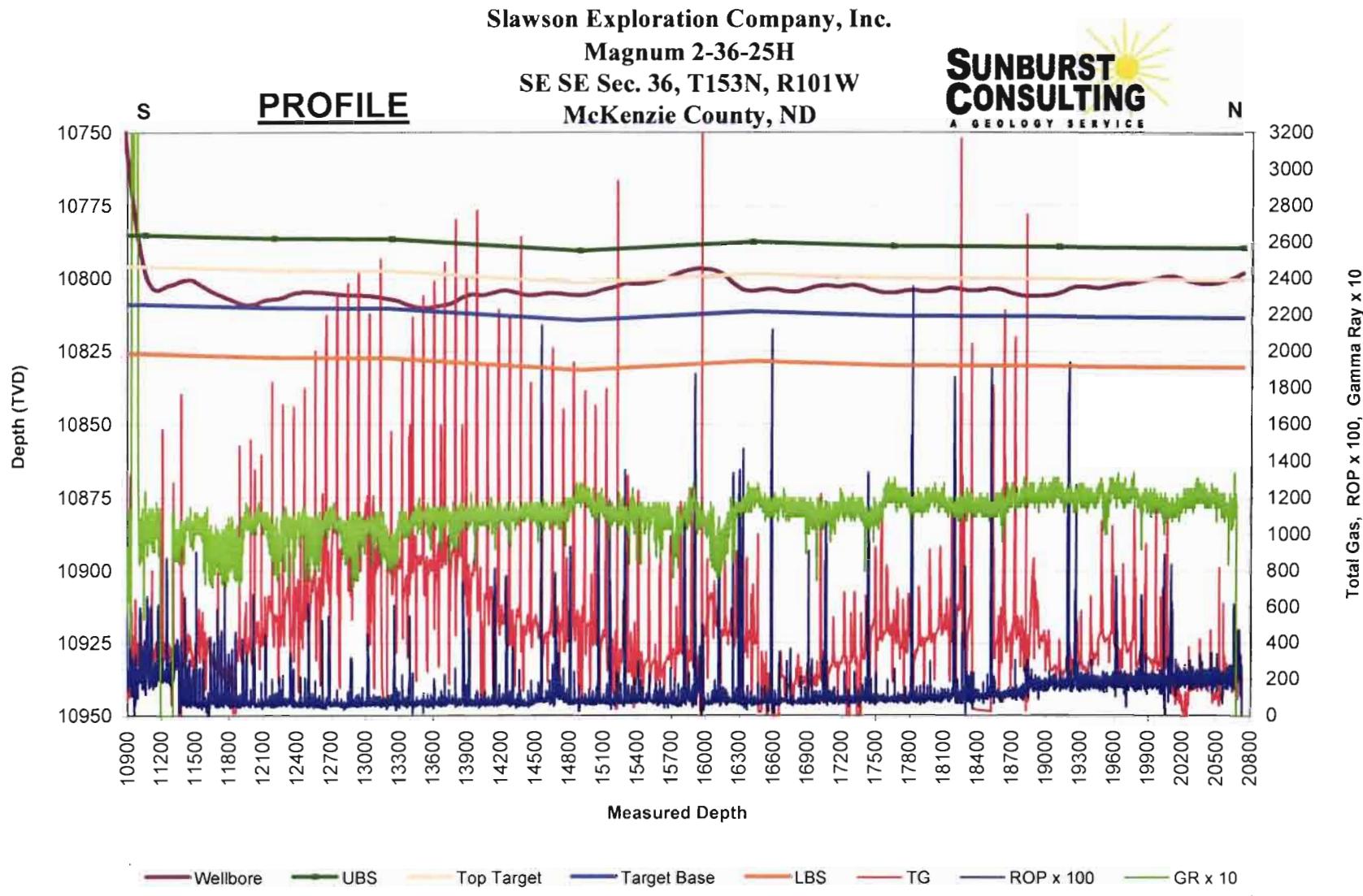
## PLAN VIEW

Slawson Exploration Company, Inc.  
Magnum 2-36-25H



A GEOLOGY SERVICE





# FORMATION MARKERS & DIP ESTIMATES

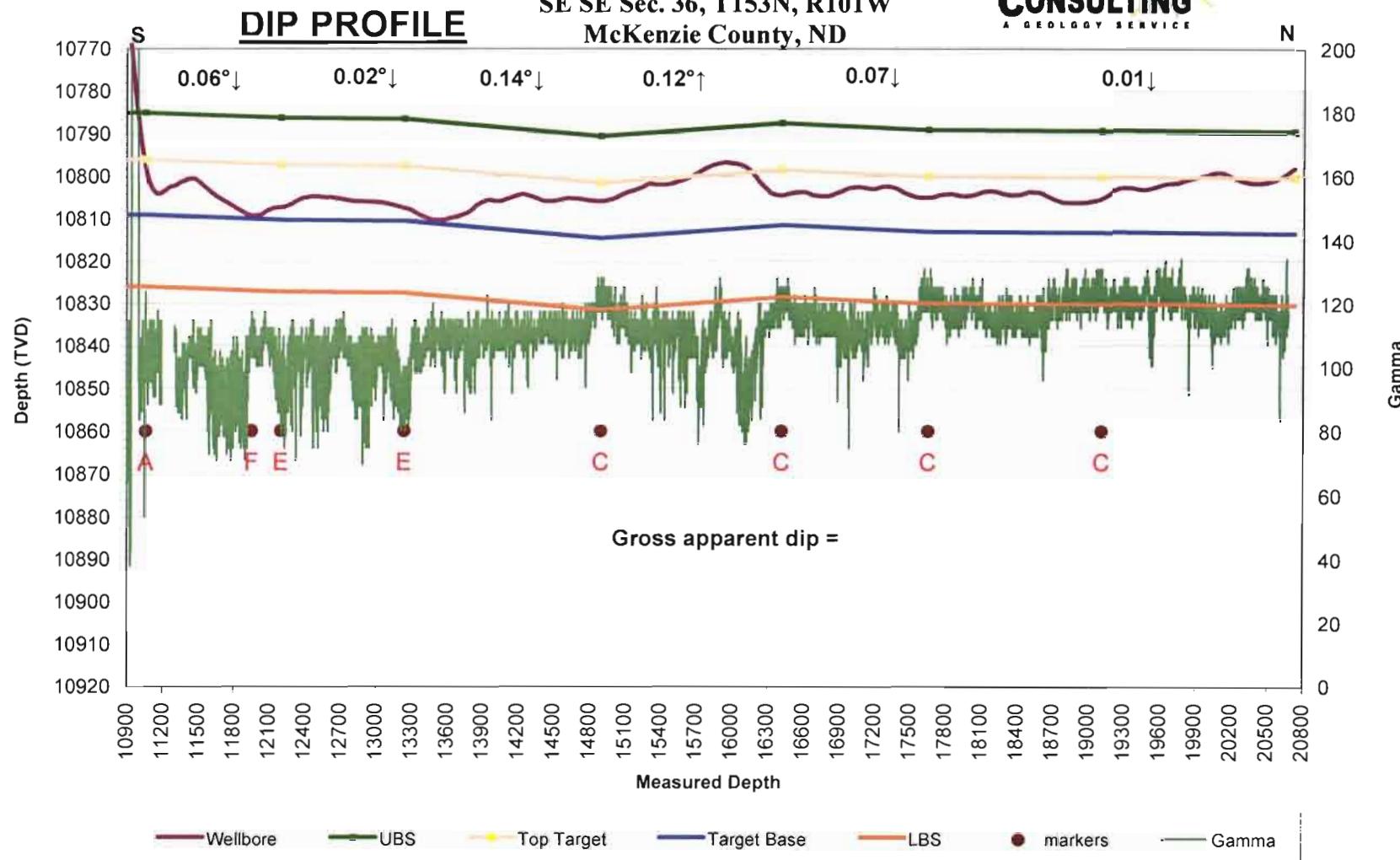
*Slawson Exploration Company, Inc. - Magnum 2-36-25H*

Dip Change Points	MD	TVD	TVD diff.	MD diff.	Dip	Dipping up/down	Type of Marker
<b>Marker</b>							
Gamma Marker (A) Zone Top	11,060'	10,796.00					
Gamma Marker E (Top-10')	12,200'	10,797.20	1.20	1140.00	<b>-0.06</b>	Down	Gamma
Gamma Marker E (Top-10')	13,235'	10,797.50	0.30	1035.00	<b>-0.02</b>	Down	Gamma
Gamma Marker C (top -5')	14,893'	10,801.50	4.00	1658.00	<b>-0.14</b>	Down	Gamma
Gamma Marker C (top -5')	16,416'	10,798.39	-3.11	1523.00	<b>0.12</b>	Up	Gamma
Gamma Marker C (top -5')	17,650'	10,799.89	1.50	1234.00	<b>-0.07</b>	Down	Gamma
Gamma Marker C (top -5')	19,108'	10,800.10	0.21	1458.00	<b>-0.01</b>	Down	Gamma
Continued to TD	20,728'	10,800.50	0.40	1620.00	<b>-0.01</b>	Down	Gamma
<b>Gross Dip</b>							
Initial Target Contact	11,060'	10,796.00					
Projected Final Target Contact	20,728'	10,800.10	4.10	9668.00	<b>-0.02</b>	Down	Projection

Slawson Exploration Company, Inc.  
 Magnum 2-36-25H  
 SE SE Sec. 36, T153N, R101W  
 McKenzie County, ND



N



# SUNBURST CONSULTING, INC.

&lt;

&gt;

Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 2-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	240	FE/WL:	E

Kick-off:	3/30/2012
Finish:	4/27/2012
Directional Supervision:	Sperry Sun.

Date:	5/3/2012
Time:	11:51
<b>F9 to re-calculate</b>	

Proposed dir: 357.95

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
Tie	10237.00	0.97	173.38	10235.73	-38.70	17.99	-39.32	0.45
1	10282.00	0.29	291.48	10280.73	-39.04	17.93	-39.65	2.52
2	10305.00	3.08	324.29	10303.72	-38.51	17.51	-39.12	12.35
3	10337.00	7.33	327.81	10335.58	-36.09	15.92	-36.63	13.31
4	10369.00	11.45	327.65	10367.14	-31.67	13.13	-32.12	12.88
5	10401.00	13.96	330.86	10398.36	-25.62	9.56	-25.94	8.15
6	10432.00	17.45	327.33	10428.19	-18.44	5.22	-18.61	11.67
7	10464.00	20.92	326.44	10458.41	-9.64	-0.53	-9.61	10.88
8	10496.00	24.64	328.18	10487.91	0.80	-7.20	1.05	11.81
9	10528.00	28.10	329.73	10516.58	12.98	-14.52	13.49	11.02
10	10560.00	31.68	331.35	10544.32	26.87	-22.35	27.65	11.47
11	10592.00	35.23	332.18	10571.01	42.41	-30.69	43.48	11.19
12	10623.00	38.78	333.70	10595.76	59.02	-39.17	60.39	11.83
13	10655.00	42.65	334.35	10620.01	77.79	-48.30	79.47	12.17
14	10687.00	46.35	334.49	10642.83	98.02	-57.99	100.03	11.57
15	10719.00	49.98	334.31	10664.17	119.51	-68.29	121.88	11.35
16	10751.00	53.06	334.73	10684.08	142.12	-79.06	144.86	9.68
17	10782.00	56.24	334.29	10702.02	164.94	-89.94	168.06	10.32
18	10814.00	59.80	333.72	10718.96	189.34	-101.84	192.86	11.23
19	10846.00	63.61	334.33	10734.13	214.66	-114.18	218.61	12.02
20	10878.00	67.06	334.85	10747.48	240.93	-126.65	245.30	10.88
21	10909.00	69.11	336.14	10759.05	267.10	-138.58	271.88	7.66
22	10941.00	71.41	336.49	10769.86	294.68	-150.67	299.88	7.26
23	10973.00	73.85	336.96	10779.41	322.73	-162.74	328.34	7.75
24	11005.00	76.30	337.06	10787.65	351.19	-174.82	357.22	7.66
25	11037.00	79.51	337.36	10794.36	380.04	-186.93	386.48	10.07
26	11069.00	83.24	337.84	10799.15	409.28	-198.99	416.14	11.75
27	11100.00	86.18	338.72	10802.01	437.95	-210.41	445.20	9.90
28	11132.00	88.25	338.96	10803.57	467.76	-221.95	475.40	6.51
29	11164.00	89.75	339.53	10804.12	497.68	-233.28	505.70	5.01
30	11196.00	91.51	339.71	10803.77	527.67	-244.43	536.08	5.53
31	11260.00	90.71	339.59	10802.53	587.67	-266.68	596.83	1.26
32	11308.00	90.31	338.58	10802.11	632.50	-283.81	642.25	2.26
33	11374.00	91.42	338.92	10801.11	694.00	-307.73	704.57	1.76
34	11468.00	89.20	342.45	10800.60	782.69	-338.81	794.31	4.44
35	11563.00	88.33	345.48	10802.65	873.96	-365.05	886.46	3.32
36	11659.00	89.14	349.11	10804.77	967.57	-386.15	980.77	3.87
37	11754.00	89.01	352.87	10806.30	1061.37	-401.02	1075.04	3.96
38	11848.00	89.08	355.55	10807.87	1154.87	-410.50	1168.82	2.85
39	11944.00	89.38	357.86	10809.16	1250.70	-416.02	1264.78	2.43

**SUNBURST CONSULTING, INC.**

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Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 2-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	240	FE/WL:	E

Kick-off:	3/30/2012
Finish:	4/27/2012
Directional Supervision:	
	Sperry Sun.

Date: 5/3/2012  
 Time: 11:51  
**F9 to re-calculate**

Proposed dir: 357.95

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				DLS/ 100
			AZM	TVD	N-S	E-W	
40	12039.00	91.02	359.37	10808.83	1345.66	-418.32	1359.77 2.35
41	12071.00	91.23	359.61	10808.20	1377.66	-418.60	1391.75 1.00
42	12134.00	90.09	358.67	10807.47	1440.64	-419.55	1454.73 2.35
43	12197.00	90.28	358.66	10807.27	1503.63	-421.02	1517.72 0.30
44	12229.00	90.31	358.80	10807.11	1535.62	-421.72	1549.72 0.45
45	12292.00	90.86	358.41	10806.46	1598.60	-423.26	1612.71 1.07
46	12324.00	91.33	358.50	10805.85	1630.58	-424.12	1644.71 1.50
47	12387.00	90.06	358.49	10805.09	1693.55	-425.78	1707.70 2.02
48	12419.00	90.28	358.32	10804.99	1725.54	-426.67	1739.70 0.87
49	12451.00	90.55	358.08	10804.76	1757.52	-427.67	1771.69 1.13
50	12515.00	89.54	358.66	10804.71	1821.49	-429.49	1835.69 1.82
51	12578.00	90.00	358.93	10804.96	1884.48	-430.82	1898.68 0.85
52	12610.00	90.25	358.87	10804.89	1916.47	-431.43	1930.68 0.80
53	12705.00	89.23	358.89	10805.32	2011.45	-433.29	2025.66 1.07
54	12800.00	90.25	358.99	10805.76	2106.43	-435.05	2120.65 1.08
55	12895.00	89.60	359.73	10805.88	2201.43	-436.11	2215.62 1.04
56	12990.00	90.28	359.28	10805.98	2296.42	-436.93	2310.58 0.86
57	13085.00	89.29	359.42	10806.34	2391.41	-438.00	2405.55 1.05
58	13181.00	89.91	358.97	10807.01	2487.40	-439.35	2501.53 0.80
59	13276.00	89.23	359.11	10807.72	2582.39	-440.95	2596.51 0.73
60	13340.00	89.08	359.41	10808.66	2646.37	-441.77	2660.48 0.52
61	13371.00	89.17	358.96	10809.14	2677.37	-442.21	2691.47 1.48
62	13467.00	89.66	358.91	10810.12	2773.34	-444.00	2787.45 0.51
63	13562.00	90.28	358.60	10810.17	2868.32	-446.06	2882.44 0.73
64	13626.00	90.46	358.77	10809.75	2932.30	-447.53	2946.44 0.39
65	13658.00	90.34	358.32	10809.53	2964.29	-448.34	2978.43 1.46
66	13753.00	90.65	357.92	10808.71	3059.24	-451.46	3073.43 0.53
67	13816.00	91.39	357.99	10807.59	3122.19	-453.71	3136.42 1.18
68	13848.00	91.82	357.88	10806.69	3154.15	-454.86	3168.41 1.39
69	13942.00	89.54	358.60	10805.58	3248.10	-457.75	3262.39 2.54
70	14037.00	90.22	358.49	10805.77	3343.06	-460.16	3357.38 0.73
71	14133.00	90.80	358.11	10804.92	3439.02	-463.01	3453.38 0.72
72	14228.00	90.12	359.00	10804.16	3533.98	-465.40	3548.37 1.18
73	14323.00	89.08	0.23	10804.82	3628.97	-466.04	3643.32 1.70
74	14418.00	89.78	359.72	10805.77	3723.97	-466.08	3738.26 0.91
75	14512.00	90.34	359.19	10805.67	3817.96	-466.97	3832.22 0.82
76	14607.00	90.31	0.69	10805.13	3912.96	-467.07	3927.16 1.58
77	14703.00	89.57	0.78	10805.23	4008.95	-465.84	4023.05 0.78
78	14797.00	89.94	0.83	10805.63	4102.94	-464.52	4116.93 0.40
79	14892.00	89.88	0.16	10805.78	4197.94	-463.70	4211.84 0.71

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# SUNBURST CONSULTING, INC.

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Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 2-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	240	FE/WL:	E

Kick-off:	3/30/2012
Finish:	4/27/2012
Directional Supervision:	
	Sperry Sun.

Date: 5/3/2012  
 Time: 11:51  
**F9 to re-calculate**

Proposed dir: 357.95

Minimum Curvature Method (SPE-3362)

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

No.	MD	TRUE				N-S	E-W	SECT	DLS/ 100
		INC	AZM	TVD					
80	14986.00	90.71	0.13	10805.30	4291.93	-463.46	4305.77	0.88	
81	15082.00	90.77	0.97	10804.06	4387.92	-462.54	4401.66	0.88	
82	15176.00	90.37	1.30	10803.12	4481.90	-460.68	4495.51	0.55	
83	15239.00	90.80	1.31	10802.48	4544.88	-459.25	4558.40	0.68	
84	15270.00	91.20	0.92	10801.94	4575.87	-458.64	4589.34	1.80	
85	15302.00	89.75	1.40	10801.67	4607.86	-457.99	4621.29	4.77	
86	15333.00	89.81	1.86	10801.79	4638.85	-457.11	4652.23	1.50	
87	15365.00	89.82	1.12	10801.89	4670.83	-456.28	4684.17	2.31	
88	15460.00	90.34	0.25	10801.76	4765.83	-455.14	4779.06	1.07	
89	15523.00	90.43	0.30	10801.34	4828.82	-454.84	4842.00	0.16	
90	15554.00	90.55	0.39	10801.07	4859.82	-454.66	4872.98	0.48	
91	15649.00	90.71	359.91	10800.03	4954.82	-454.41	4967.90	0.53	
92	15742.00	91.14	359.39	10798.53	5047.80	-454.98	5060.85	0.73	
93	15837.00	90.40	0.27	10797.25	5142.79	-455.26	5155.78	1.21	
94	15920.00	90.34	1.38	10796.71	5225.78	-454.06	5238.68	1.34	
95	15940.00	90.19	1.81	10796.62	5245.77	-453.51	5258.64	2.28	
96	16035.00	89.48	2.06	10796.90	5340.72	-450.30	5353.41	0.79	
97	16067.00	89.63	2.04	10797.14	5372.69	-449.15	5385.32	0.47	
98	16130.00	88.77	2.71	10798.02	5435.63	-446.54	5448.13	1.73	
99	16194.00	87.87	1.80	10799.90	5499.56	-444.03	5511.92	2.00	
100	16225.00	87.63	1.88	10801.12	5530.52	-443.03	5542.82	0.82	
101	16321.00	89.20	1.70	10803.77	5626.43	-440.03	5638.57	1.65	
102	16353.00	89.54	1.85	10804.12	5658.41	-439.04	5670.50	1.16	
103	16416.00	89.97	1.40	10804.39	5721.39	-437.26	5733.36	0.99	
104	16512.00	90.77	1.89	10803.77	5817.34	-434.50	5829.16	0.98	
105	16607.00	89.35	2.06	10803.67	5912.28	-431.23	5923.93	1.51	
106	16671.00	89.60	1.11	10804.26	5976.26	-429.46	5987.79	1.53	
107	16702.00	89.63	1.53	10804.47	6007.25	-428.74	6018.74	1.36	
108	16797.00	90.25	0.91	10804.57	6102.22	-426.72	6113.58	0.92	
109	16861.00	90.80	1.51	10803.98	6166.21	-425.37	6177.48	1.27	
110	16892.00	90.40	0.72	10803.66	6197.20	-424.76	6208.43	2.86	
111	16988.00	90.83	1.07	10802.63	6293.18	-423.27	6304.29	0.58	
112	17083.00	89.35	0.82	10802.48	6388.17	-421.70	6399.16	1.58	
113	17178.00	90.12	1.26	10802.92	6483.15	-419.97	6494.02	0.93	
114	17273.00	90.65	1.13	10802.28	6578.12	-417.99	6588.87	0.57	
115	17368.00	88.95	0.81	10802.61	6673.11	-416.38	6683.73	1.82	
116	17431.00	89.35	0.67	10803.54	6736.09	-415.57	6746.65	0.67	
117	17463.00	89.20	0.50	10803.95	6768.09	-415.24	6778.61	0.71	
118	17558.00	89.78	0.61	10804.80	6863.08	-414.32	6873.51	0.62	
119	17620.00	90.00	0.43	10804.91	6925.08	-413.76	6935.45	0.46	

# SUNBURST CONSULTING, INC.

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Operator:	Slawson Exploration Company, Inc.		
Well :	Magnum 2-36-25H		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	36
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	205	FN/SL:	S
	240	FE/WL:	E

Kick-off:	3/30/2012
Finish:	4/27/2012
Directional Supervision:	Sperry Sun.

Date: 5/3/2012  
 Time: 11:51  
**F9 to re-calculate**

Proposed dir: 357.95

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
120	17651.00	90.09	0.90	10804.89	6956.08	-413.40	6966.41	1.54
121	17715.00	90.46	0.25	10804.58	7020.07	-412.76	7030.34	1.17
122	17746.00	90.77	0.58	10804.25	7051.07	-412.54	7061.31	1.46
123	17841.00	89.48	0.64	10804.04	7146.06	-411.52	7156.21	1.36
124	17935.00	89.94	0.83	10804.52	7240.05	-410.32	7250.10	0.53
125	18029.00	90.34	0.34	10804.29	7334.05	-409.36	7344.00	0.67
126	18122.00	90.71	0.14	10803.44	7427.04	-408.97	7436.92	0.45
127	18215.00	89.23	0.26	10803.49	7520.04	-408.64	7529.84	1.60
128	18308.00	89.91	0.63	10804.18	7613.03	-407.92	7622.75	0.83
129	18401.00	90.06	0.03	10804.21	7706.03	-407.39	7715.67	0.67
130	18464.00	90.62	0.25	10803.83	7769.03	-407.23	7778.62	0.96
131	18495.00	90.52	359.97	10803.53	7800.03	-407.17	7809.60	0.96
132	18589.00	89.20	0.32	10803.76	7894.02	-406.93	7903.53	1.45
133	18682.00	89.29	0.09	10804.98	7987.02	-406.60	7996.45	0.27
134	18776.00	89.57	0.07	10805.92	8081.01	-406.47	8090.38	0.30
135	18793.00	89.81	359.02	10806.01	8098.01	-406.61	8107.37	6.34
136	18888.00	90.12	359.14	10806.07	8193.00	-408.13	8202.35	0.35
137	18983.00	90.06	358.23	10805.92	8287.97	-410.31	8297.34	0.96
138	19078.00	90.56	0.22	10805.40	8382.96	-411.60	8392.31	2.16
139	19141.00	90.92	358.72	10804.59	8445.95	-412.18	8455.29	2.45
140	19173.00	91.14	358.90	10804.01	8477.93	-412.84	8487.28	0.89
141	19205.00	91.02	359.01	10803.41	8509.92	-413.43	8519.27	0.51
142	19268.00	90.15	359.12	10802.77	8572.91	-414.45	8582.25	1.39
143	19363.00	89.85	359.48	10802.77	8667.90	-415.62	8677.22	0.49
144	19458.00	89.60	358.38	10803.22	8762.88	-417.39	8772.21	1.19
145	19553.00	91.08	358.39	10802.66	8857.84	-420.07	8867.20	1.56
146	19647.00	89.88	359.40	10801.87	8951.82	-421.88	8961.18	1.67
147	19742.00	90.43	359.40	10801.62	9046.81	-422.87	9056.15	0.58
148	19838.00	90.52	359.38	10800.82	9142.80	-423.90	9152.12	0.10
149	19933.00	90.18	0.23	10800.24	9237.80	-424.22	9247.06	0.96
150	19997.00	90.59	0.16	10799.81	9301.80	-424.00	9311.01	0.65
151	20028.00	90.92	359.01	10799.40	9332.79	-424.23	9342.00	3.86
152	20124.00	89.26	0.14	10799.25	9428.79	-424.94	9437.95	2.09
153	20219.00	89.26	0.26	10800.48	9523.78	-424.61	9532.87	0.13
154	20313.00	89.63	0.44	10801.39	9617.77	-424.03	9626.79	0.44
155	20408.00	90.00	0.41	10801.69	9712.77	-423.33	9721.70	0.39
156	20502.00	90.31	0.31	10801.44	9806.77	-422.74	9815.61	0.35
157	20598.00	90.80	0.05	10800.51	9902.76	-422.44	9911.53	0.58
158	20681.00	91.20	0.17	10799.06	9985.75	-422.28	9994.46	0.50
PTB	20728.00	91.20	0.17	10798.08	10032.74	-422.14	10041.42	0.00

# DEVIATION SURVEYS

Depth	Inclination	Azimuth
0	0.00	0.00
2168	0.00	0.00
2256	0.79	53.41
2351	0.88	235.60
2446	0.18	236.04
2542	0.88	236.40
2636	0.97	224.44
2730	1.14	205.63
2826	1.14	218.64
2924	1.23	229.10
3019	1.14	228.57
3114	1.14	226.29
3209	1.14	222.95
3304	1.23	214.60
3399	0.88	219.61
3494	1.23	211.26
3589	0.97	213.10
3684	0.88	204.23
3779	0.79	219.87
3877	0.79	219.43
3972	0.70	224.35
4065	0.53	221.63
4159	0.44	202.91
4254	0.44	171.71
4350	0.44	219.61
4447	0.26	246.50
4545	0.18	238.77
4639	0.18	252.65
4734	0.62	285.61
4830	0.26	269.27
4925	0.09	152.81
5021	0.09	137.96
5116	0.18	87.33
5213	0.44	44.18
5308	0.70	32.58
5404	0.53	72.30
5498	0.26	65.89
5594	0.53	72.30
5689	0.62	48.57
5786	0.70	41.80
5882	0.97	16.84
5976	1.32	32.40
6073	1.23	38.73
6168	0.88	35.04
6263	0.97	25.63

Depth	Inclination	Azimuth
6357	0.79	21.94
6456	0.79	16.49
6549	0.53	44.97
6644	0.62	56.39
6739	0.53	89.09
6832	0.62	63.69
6927	1.14	63.07
7025	1.14	53.14
7120	0.79	61.14
7215	0.97	41.19
7311	1.23	18.51
7406	1.32	27.39
7471	1.67	37.94
7503	1.67	41.89
7598	1.67	53.23
7693	1.49	50.24
7790	1.49	61.76
7886	0.97	70.46
7981	1.14	86.19
8077	1.14	131.37
8174	0.97	129.34
8270	0.88	142.44
8365	0.97	156.15
8458	0.79	152.63
8554	0.97	157.21
8649	1.14	169.33
8745	0.97	167.93
8840	0.79	176.01
8936	0.79	183.66
9029	1.23	180.94
9125	1.14	188.05
9220	1.32	179.79
9316	1.23	182.61
9411	1.41	191.57
9508	1.32	179.27
9602	1.32	177.16
9698	2.20	168.63
9794	1.93	165.99
9888	1.67	176.37
9985	1.76	186.91
10080	1.49	188.76
10175	1.23	179.09
10237	0.97	173.38

# FORMATION TOPS & STRUCTURAL RELATIONSHIPS

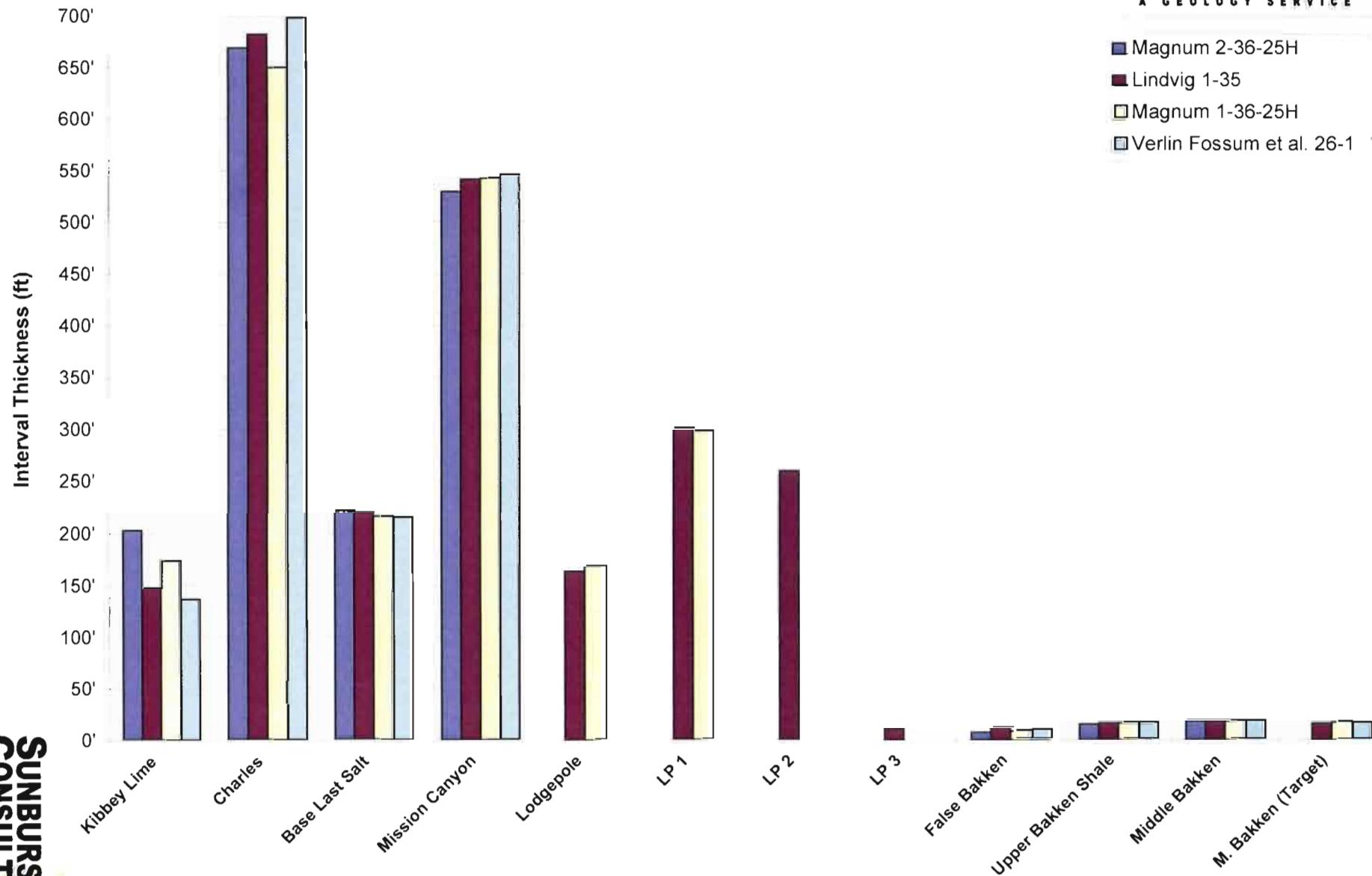
Operator: Well Name: Location:	Subject Well:									Offset Wells:			
	<b>Slawson Exploration Company, Inc</b> <b>Magnum 2-36-25H</b> <b>205' FSL &amp; 240' FEL</b> <b>SE SE Section 36, T153N, R101W</b>												
Elevation:	GL: 2,156' Sub: 22'		KB: 2,178'										
Formation/ Zone	Prog. Top	Prog. Datum (MSL)	Driller's Depth Top (MD)	Driller's Depth Top (TVD)	GR 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 Verlin Fossum et al. 26-1	
Tyler	-	-	7,858'	7,858'	-	-5,680'	541'	2,945'	-	-14'	-3'	-	
Kibbey Lime	8,299'	-6,121'	8,399'	8,399'	-	-6,221'	203'	2,404'	-100'	3'	12'	38'	
Charles	8,446'	-6,268'	8,602'	8,602'	-	-6,424'	669'	2,201'	-156'	-52'	-17'	-28'	
Base Last Salt	9,254'	-7,076'	9,271'	9,271'	9,271'	-7,093'	222'	1,532'	-17'	-39'	-36'	1'	
Mission Canyon	9,446'	-7,268'	9,493'	9,493'	9,493'	-7,315'	529'	1,310'	-47'	-41'	-42'	-6'	
Lodgepole	10,016'	-7,838'	10,022'	10,022'	10,022'	-7,844'	-	781'	-6'	-29'	-29'	10'	
LP 1	-	-	-	-	-	-	-	-	-	-	-	-	
LP 2	-	-	10,493'	10,485'	10,485'	-8,307'	-	318'	-	-29'	-27'	-	
LP 3	-	-	-	-	-	-	-	-	-	-	-	-	
False Bakken	-	-	-	10,763'	10,763'	-8,585'	7'	40'	-	-38'	-27'	0'	
Upper Bakken Shale	10,736'	-8,558'	10,937'	10,770'	10,770'	-8,592'	15'	33'	-34'	-34'	-26'	2'	
Middle Bakken	-	-	10,995'	10,785'	10,785'	-8,607'	18'	18'	-	-33'	-25'	3'	
M. Bakken (Target)	10,758'	-8,580'	11,125'	10,803'	10,803'	-8,625'	-	0'	-45'	-33'	-25'	3'	

## 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 Magnum 2-36-25H				Slawson Exploration Company, Inc Magnum 1-36-25H SW SW Section 36, T153N, R101W McKenzie County, ND .8 mi. W of Magnum 2-36-25H				Harper Oil Co. Verlin Fossum et al. 26-1 NW SE Sec. 26, T153N, R101W McKenzie County, ND 1.9 mi. NW of Magnum 2-36-25H			
	KB: 2,226'				KB: 2,209'				KB: 2,114'			
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'	-	-	-	-
Kibbey Lime	8,450'	-6,224'	148'	2,368'	8,442'	-6,233'	174'	2,367'	8,373'	-6,259'	137'	2,369'
Charles	8,598'	-6,372'	682'	2,220'	8,616'	-6,407'	650'	2,193'	8,510'	-6,396'	698'	2,232'
Base Last Salt	9,280'	-7,054'	220'	1,538'	9,266'	-7,057'	216'	1,543'	9,208'	-7,094'	215'	1,534'
Mission Canyon	9,500'	-7,274'	541'	1,318'	9,482'	-7,273'	542'	1,327'	9,423'	-7,309'	545'	1,319'
Lodgepole	10,041'	-7,815'	163'	777'	10,024'	-7,815'	168'	785'	9,968'	-7,854'	-	774'
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'	-	-	-	-
LP 3	10,763'	-8,537'	10'	55'	-	-	-	-	-	-	-	-
False Bakken	10,773'	-8,547'	11'	45'	10,767'	-8,558'	8'	42'	10,699'	-8,585'	9'	43'
Upper Bakken Shale	10,784'	-8,558'	16'	34'	10,775'	-8,566'	16'	34'	10,708'	-8,594'	16'	34'
Middle Bakken	10,800'	-8,574'	18'	18'	10,791'	-8,582'	18'	18'	10,724'	-8,610'	18'	18'
<b>M. Bakken (Target)</b>	<b>10,818'</b>	<b>-8,592'</b>	<b>16'</b>	<b>0'</b>	<b>10,809'</b>	<b>-8,600'</b>	<b>17'</b>	<b>0'</b>	<b>10,742'</b>	<b>-8,628'</b>	<b>16'</b>	<b>0'</b>
Lower Bakken Shale	10,834'	-8,608'	-	-	10,826'	-8,617'	-	-17'	10,758'	-8,644'	-	-16'

# INTERVAL THICKNESS

Slawson Exploration Company, Inc - Magnum 2-36-25H

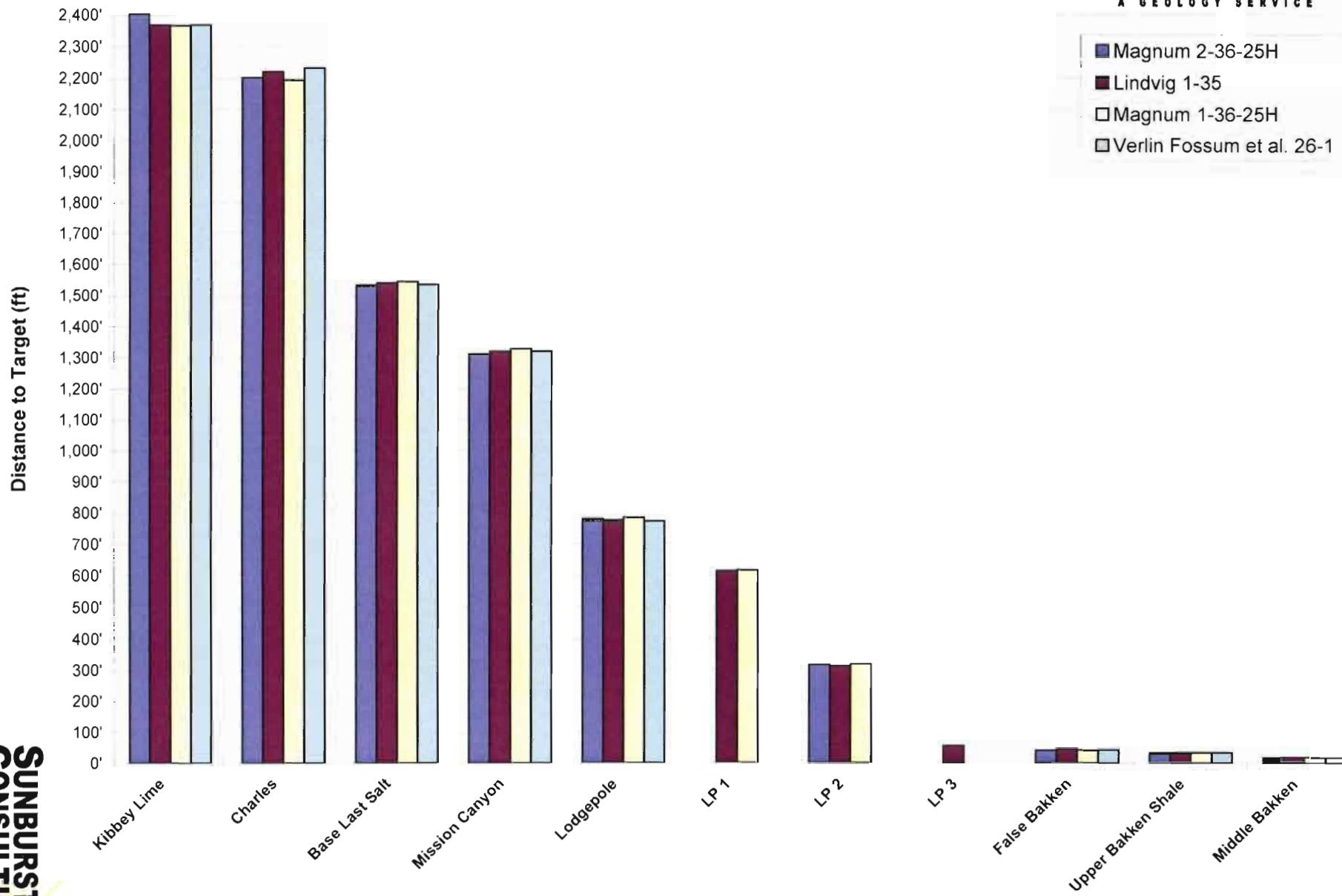


## TARGET PROXIMATION

Formation/ Zone:	Proposed Top of Target From:			
	Lindvig 1-35	Magnum 1-36-25H	Verlin Fossum et al. 26-1	Average of Offset Wells
Kibbey Lime	10,767'	10,766'	10,768'	10,767'
Charles	10,822'	10,795'	10,834'	10,817'
Base Last Salt	10,809'	10,814'	10,805'	10,809'
Mission Canyon	10,811'	10,820'	10,812'	10,814'
Lodgepole	10,799'	10,807'	10,796'	10,801'
LP 1	-	-	-	-
LP 2	10,799'	10,805'	-	10,802'
LP 3	-	-	-	-
False Bakken	10,808'	10,806'	10,806'	10,807'
Upper Bakken Shale	10,804'	10,804'	10,804'	10,804'
Middle Bakken	10,803'	10,803'	10,803'	10,803'
M. Bakken (Target)	10,803'	10,803'	10,803'	10,803'

# ISOPACH TO TARGET

Slawson Exploration Company, Inc - Magnum 2-36-25H



## LITHOLOGY

Rig crews caught samples in 30' intervals from 7,670'-11,360' and 50' samples from 11,360'-20,728' (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 Tyler. The drilling fluid was diesel invert mud from surface casing exit to 20,728' (TD).

7670-7700 SHALE: orange to trace reddish orange, subblocky to subplatey, no visible porosity;  
ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

7700-7730 SHALE: reddish orange, subblocky to subplatey, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

7730-7760 SHALE: reddish orange, subblocky to subplatey, no visible porosity; ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

7760-7790 SILTSTONE: orange, trace dark red, friable, subblocky to subplatey, calcareous cement, poorly cemented ; DOLOMITE: mudstone, light gray to pink gray, cream to light yellow, microcrystalline to very fine crystalline, very trace SANDSTONE: light red, gray, firm, calcareous cement, poorly cemented, no visible porosity

7790-7820 SILTSTONE: orange, trace dark red, friable, subblocky to subplatey, calcareous cement, poorly cemented SHALE: orange to trace reddish orange, subblocky to subplatey, no visible porosity

7820-7858 SILTSTONE: orange, trace dark red, friable, subblocky to subplatey, calcareous cement, poorly cemented DOLOMITE: mudstone, light gray to pink gray, cream to light yellow, microcrystalline to very fine crystalline, SHALE: orange to trace reddish orange, subblocky to subplatey, no visible porosity trace LIMESTONE

### Tyler [Penn., Minnelusa Gp] 7,858' (-5,680')

7858-7880 SILTSTONE: orange, trace dark red, friable, subblocky to subplatey, calcareous cement, poorly cemented DOLOMITE: mudstone, light gray to pink gray, cream to light yellow, microcrystalline to very fine crystalline, SHALE: orange to trace reddish orange, subblocky to subplatey, no visible porosity

7880-7910 SILTSTONE: orange, trace dark red, friable, subblocky to subplatey, calcareous cement, poorly cemented SHALE: orange to trace red, subblocky to subplatey, no visible porosity: trace ANHYDRITE

7910-7940 SILTSTONE: red to orange to rare light pink, friable, subblocky to subplatey, calcareous cement, poorly cemented, shale grained in part, no visible porosity SHALE: orange to trace reddish orange, subblocky to subplatey, no visible porosity very trace SANDSTONE: light red, gray, firm, calcareous cement, poorly cemented, no visible porosity

7940 -7970 SHALE: black, brown, friable, subblocky to subplatey, earthy texture, trace SHALE: orange to trace reddish orange, subblocky to subplatey, no visible porosity, very trace, SANDSTONE: gray, trace reddish gray, gray brown, friable to firm, fine grained, subrounded, trace rounded calcareous cement, poorly cemented; LIMESTONE: mudstone, gray to gray black, microcrystalline,

7970-8000 SHALE: gray to black, friable to firm, subblocky to subplatey, earthy texture, no visible porosity; trace SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity; trace ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8000-8030 SHALE: gray to black, friable to firm, subblocky to subplatey, earthy texture, no visible porosity; trace SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity; trace ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8030-8060 SILTSTONE: red orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity; rare ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity; trace SHALE: black, firm, subblocky to subplatey, earthy texture, no visible porosity

8060-8090 LIMESTONE: mudstone, cream, microcrystalline, friable, dense, earthy texture, no visible porosity; common SHALE: black gray, firm to friable to trace friable, subblocky to subrounded, earthy texture, no visible porosity; trace ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8090-8120 SHALE: medium gray, friable, subblocky to subplatey, waxy to trace earthy texture, no visible porosity; occasional SILTSTONE: green blue, firm, subblocky to subplatey, calcareous cement, well cemented, no visible porosity; trace ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8120-8150 SHALE: gray black, friable to firm, subblocky to subplatey, earthy texture, no visible porosity; rare ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, possible intergranular porosity, trace dark brown dead spotty oil stain; trace SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity

8150-8180 LIMESTONE: mudstone, cream to trace light gray, microcrystalline, firm to trace hard, dense, earthy to trace crystalline texture, trace siliceous, argillaceous in part, no visible porosity SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity

8180-8210 SHALE: gray black, friable to firm, subblocky to subplatey, earthy texture, no visible porosity; trace SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity;

8210-8240 SANDSTONE: light gray, trace reddish gray, gray brown, friable to firm, m grained, subrounded, trace rounded calcareous cement, poorly cemented SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity; SHALE: gray black, friable to firm, subblocky to subplatey, earthy texture, no visible porosity

8240-8270 SILTSTONE: orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity SANDSTONE: light gray, trace reddish gray, gray brown, friable to firm, m grained, subrounded, trace rounded calcareous cement, poorly cemented

8270-8300 SILTSTONE: orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8300-8330 SILTSTONE: orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity

8330-8360 SILTSTONE: red orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity; occasional ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity

8360-8399 SILTSTONE: orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity, LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

**Kibbey "Lime" [Miss. Big Snowy Gp]**

**8,399' (-6,221')**

8399-8420 ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, silty grained in part, no visible porosity, LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity, SILTSTONE: orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity

8420-8450 LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity SILTSTONE: orange, friable, subblocky to subplatey, calcareous cement, moderately cemented, no visible porosity

8450-8480 LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity, SILTSTONE: pink orange, firm to trace hard, subblocky to subplatey, calcareous cement, well to trace very well cemented, no visible porosity

8480-8510 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,

8510-8540 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,

8540-8570 ARGILLACEOUS LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

8570-8602 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, trace salt

*Charles /Miss, Madison Gp/*

*8,602' (-6,424')*

8602-8630 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

8630-8660 SALT: frosted to trace clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

8660-8690 SALT: frosted to trace clear, crystalline, hard, anhedral, no visible porosity

8690-8720 SALT: frosted to trace clear, crystalline, hard, anhedral, no visible porosity LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

8720-8750 SALT: frosted to trace clear, crystalline, hard, anhedral, no visible porosity LIMESTONE: light gray to gray, mudstone to wackestone, microcrystalline, firm, earthy texture, no visible porosity

8750-8780 SALT: frosted to trace clear, crystalline, hard, anhedral, no visible porosity

8780-8810 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; rare ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8810-8840 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

8840-8870 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; rare ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8870-8900 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; rare ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity

8900-8930 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

8930-8960 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

8960-8990 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

8990-9020 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

9020-9050 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

9050-9080 ANHYDRITE: off white, cryptocrystalline, soft, amorphous texture, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, gray, light gray, occasional off white, firm, microcrystalline to very fine crystalline, no visible porosity

9080-9110 LIMESTONE: mudstone, light brown, medium to light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity; 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

9110-9140 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, light brown, firm to friable, microcrystalline to very fine crystalline, no visible porosity; trace ANHYDRITE: cream to off white, soft, amorphous, no visible porosity

9140-9170 ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, no visible porosity; LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity; ANHYDRITE: cream to off white, soft to friable, amorphous

9170-9200 LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, no visible porosity; trace ANHYDRITE: cream to off white, soft to friable, amorphous

9200-9230 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity; trace LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, dolomitic in part, no visible porosity

9230-9271 SALT: frosted to occasional clear, crystalline, hard, anhedral to trace subhedral, no visible porosity

Base of Charles Salt /Miss., Madison Gp/ 9,271' (-7,093')

9271-9290 LIMESTONE: mudstone, light brown to light gray, microcrystalline, friable, earthy texture, argillaceous in part, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, firm, microcrystalline to very fine crystalline, no visible porosity; ANHYDRITE as above

9290-9320 LIMESTONE: mudstone, light brown to light brown gray, microcrystalline, friable to firm, earthy to slightly crystalline texture; 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

9320-9350 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

9350-9380 LIMESTONE: mudstone, light brown to light brown gray, microcrystalline, friable to firm, earthy to slightly crystalline texture, no visible porosity; trace ANHYDRITE: cream to milky white, microcrystalline, soft, chalky texture, no visible porosity or oil stain

9380-9410 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

9410-9440 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

9440-9493 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

**Mission Canyon [Miss., Madison Gp]** **9,493' (-7,315')**

9493-9500 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

9500-9530 LIMESTONE: mudstone, light brown gray, light to ms brown, dark gray, 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

9530-9560 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

9560-9590 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

9590-9620 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

9620-9650 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

9650-9680 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

9680-9710 No Sample due to lost circulation

9710-9740 Sample highly contaminated with lost circulation material: 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

9740-9770 ARGILLACEOUS 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 grained, firm to hard, crystalline texture, slightly argillaceous, trace light brown oil stain

9770-9800 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 grained, firm to hard, crystalline texture, trace alga laminated, slightly argillaceous, trace light brown oil stain, no visible porosity

9800-9830 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable to soft, microsucrosic texture, argillaceous in part, dolomitic in part no visible porosity, no visible oil stain

9830-9860 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable to soft, microsucrosic texture, argillaceous in part, dolomitic in part no visible porosity, no visible oil stain

9860-9890 LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable to soft, microsucrosic texture, argillaceous in part, dolomitic in part no visible porosity, no visible oil stain

9890-9920 LIMESTONE: mudstone, off white to cream, dark gray, microcrystalline, firm, dense, earthy to trace crystalline texture, rare dark brown dead spotty oil stain

9920-9950 Highly Contaminated

9950-9980 Highly Contaminated

9980-10010 Highly Contaminated

10010-10022 Highly Contaminated 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

**Lodgepole Formation /Miss., Madison Gp**

**10,022' (-7,844')**

10022-10070 Highly Contaminated 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

10070-10100 Highly Contaminated 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

10100-10130 highly Contaminated 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

10130-10160 Highly Contaminated LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, , trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10160-10190 Highly Contaminated LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, , trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10190-10220 Highly Contaminated LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, , trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10220-10250 Highly Contaminated LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, , trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10250-10280 Highly Contaminated LIMESTONE: cream to white, gray, light gray, light brown, very fine crystalline, friable, microsucrosic texture, argillaceous in part, , trace intercrystalline porosity, trace light black oil stain; ARGILLACEOUS LIMESTONE: mudstone, tan, light gray brown, light gray, microcrystalline, firm soft, earthy texture

10280-10310 Highly Contaminated 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

10310-10340 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium gray to rare light gray to trace medium brown, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10340-10370 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, mottled cream, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10370-10400 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, mottled cream, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10400-10430 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10430-10460 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10460-10490 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10490-10520 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10520-10550 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10550-10580 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10580-10610 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10610-10640 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, light to medium gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10640-10670 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10670-10700 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10700-10730 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10730-10760 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, microcrystalline, firm to hard, dense to poorly laminated, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10760-10790 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, common light gray to off white, microcrystalline, firm to hard, dense to poorly laminated, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10790-10820 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, common light gray to off white, trace light brown, microcrystalline, firm to hard, dense to poorly laminated, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10820-10850 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, common light gray to off white, trace light brown, microcrystalline, firm to hard, dense to poorly laminated, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10850-10880 Highly Contaminated ARGILLACEOUS LIMESTONE: mudstone, medium to light gray, common light gray to off white, trace light brown, microcrystalline, firm to hard, dense to poorly laminated, earthy to trace crystalline texture, trace disseminated pyrite, no visible porosity

10880-10910 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

10910-10937 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.]****10,937' (10,770' TVD, -8,592')**

10937-10970 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 SHALE: black, firm, subblocky, earthy texture, carbonaceous, petroliferous, common disseminated pyrite, rare nodular pyrite, no visible porosity

10970-10995 SHALE: black, firm, subblocky, earthy texture, carbonaceous, petroliferous, common disseminated pyrite, rare nodular pyrite, no visible porosity

**Middle Bakken /Dev.-Miss.]****10,995' (10,785' TVD, -8,607')**

11000-11030 SILTSTONE: medium gray brown, soft to friable, subblocky to subplatey, very fine grained, dolomitic cement, moderately cemented, occasional disseminated pyrite, possible intergranular porosity

11030-11060 SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, trace disseminated pyrite, no visible porosity; trace SILTY SANDSTONE: light gray to trace cream, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace dark brown spotty to even oil stain

11060-11090 SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, trace disseminated pyrite, no visible porosity; trace SILTY SANDSTONE: light gray to trace cream, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace dark brown spotty to even oil stain

11090-11120 SILTSTONE: medium gray, friable, subblocky to subplatey, calcareous cement, moderately cemented, trace disseminated pyrite, no visible porosity; rare SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, rare dark brown spotty oil stain

11120-11150 SILTY SANDSTONE: cream to trace light gray, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, possible intergranular porosity, occasional dark brown spotty oil stain

11150-11180 SILTY SANDSTONE: cream to trace light gray, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, possible intergranular porosity, occasional dark brown spotty oil stain

11180-11210 SILTY SANDSTONE: cream to trace light gray, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated to nodular pyrite, possible intergranular porosity, occasional dark brown spotty oil stain

11210-11240 SILTY SANDSTONE: cream to trace light gray, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated to nodular pyrite, trace intergranular porosity, rare light brown spotty oil stain

11240-11270 SILTY SANDSTONE: cream to trace light gray, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated to nodular pyrite, trace intergranular porosity, rare light brown spotty oil stain

11270-11300 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, trace firm, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace, light black oil stain, rare dark brown spotty oil stain

11300-11330 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, rare dark brown spotty oil stain

11330-11400 SILTY SANDSTONE: light gray to occasional cream, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, rare dark brown spotty oil stain

11400-11450 SILTY SANDSTONE: light to medium gray, light brown, occasional cream, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11450-11500 SILTY SANDSTONE: light to medium gray, occasional cream, light brown, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11500-11550 SILTY SANDSTONE: light gray to light brown, trace medium brown, very fine grained, friable to soft, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11550-11600 SILTY SANDSTONE: gray to light brown, common light gray to cream, trace medium brown, trace dark gray, very fine grained, friable to soft, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

11600-11650 SILTY SANDSTONE: light brown, common light gray to cream, trace medium brown, very fine grained, friable to soft, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, trace light black oil stain

11650-11700 SILTY SANDSTONE: light brown, common light gray to cream, trace medium brown, rare dark gray, very fine grained, friable to soft, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain, trace light black oil stain

11700-11750 SILTY SANDSTONE: light brown, common light gray to cream, tan, trace medium brown, very fine grained, friable to soft, subangular to subrounded, 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

11750-11800 SILTY SANDSTONE: light brown, common light gray to cream, tan, trace medium brown, very fine grained, friable to soft, subangular to subrounded, 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

11800-11850 SILTY SANDSTONE: light brown, common light gray to cream, tan, trace medium brown, very fine grained, friable to soft, subangular to subrounded, 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

11850-11900 SILTY SANDSTONE: light gray to light brown, trace medium brown, very fine grained, friable to soft, subangular to subrounded, 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

11900-11950 SILTY SANDSTONE: white, tan, light gray to light brown, trace medium brown, very fine grained, friable to soft, subangular to subrounded, 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

11950-12000 SILTY SANDSTONE: white, tan, light gray to light brown, trace medium brown, very fine grained, friable to soft, subangular to subrounded, 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

12000-12050 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

12050-12100 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

12100-12150 SILTY SANDSTONE: medium gray to light brown, dark gray, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

12150-12200 SILTY SANDSTONE: medium gray to light brown, dark gray, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

12200-12250 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

12250-12300 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, weak laminated, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light 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

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

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

12400-12450 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

12450-12500 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

12500-12550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

12550-12600 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

12600-12650 SILTY SANDSTONE: off white to tan, light gray to light brown, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

12650-12700 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, moderately to poorly sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, rare to trace light black oil stain

12700-12750 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain,

12750-12800 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain,

12800-12850 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly to moderately sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain, trace spotty light black 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

12850-12900 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, moderately sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain, trace spotty light black oil stain

12900-12950 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, moderately sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain, trace spotty light black oil stain

12950-13000 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain

13000-13050 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain

13050-13100 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain

13100-13150 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain

13150-13200 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, 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

13200-13250 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, 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

13250-13300 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, 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

13300-13350 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown to dark gray, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13350-13400 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13400-13450 SILTY SANDSTONE: medium to light gray, gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13450-13500 SILTY SANDSTONE: medium to light gray, gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13500-13550 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13550-13600 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13600-13650 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13650-13700 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13700-13750 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

13750-13800 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

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

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

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

13950-14000 SILTY SANDSTONE: medium to light gray, off white to tan, gray to light brown, rare medium brown, trace dark gray, very fine grained, trace fine grained friable to firm, subangular to subrounded, poorly sorted, calcareous cement, poorly cemented, rare disseminated and nodular pyrite, possible intergranular porosity, trace light brown spotty oil stain

14000-14050 SILTY SANDSTONE: gray to light brown, medium to light gray, off white to tan, rare medium brown, trace dark gray, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, trace light brown spotty oil stain, trace light black oil stain

14050-14100 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

14100-14150 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown to dark gray, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

14150-14200 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly to moderately sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain, trace spotty light black oil stain

14200-14250 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly to moderately sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain, trace spotty light black oil stain

14250-14300 SILTY SANDSTONE: medium gray to light brown, dark gray, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, spotty light black oil stain

14300-14350 SILTY SANDSTONE: off white to tan, light gray to light brown, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

14350-14400 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

14400-14450 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

14450-14500 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

14500-14550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, rare disseminated and nodular pyrite, possible intergranular porosity, rare 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, subangular to subrounded, 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

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

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

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

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

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

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

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

14950-15000 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

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

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

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

15150-15200 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

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

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

15300-15350 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

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

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

15450-15500 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

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

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

15600-15650 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

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

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

15750-15800 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

15800-15850 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

15850-15900 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

15900-15950 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

15950-16000 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

16000-16050 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

16050-16100 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

16100-16150 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

16150-16200 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16200-16250 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16250-16300 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, trace dark gray, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

16300-16350 SILTY SANDSTONE: medium to light gray, gray to light brown, off white to tan, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

16350-16400 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain

16400-16450 SILTY SANDSTONE: light gray to light brown, off white to tan, rare medium brown, very fine grained to fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare to occasional dark to light brown spotty oil stain

16450-16500 SILTY SANDSTONE: light to medium gray, occasional cream, light brown, very fine grained, friable, subangular to subrounded, well sorted, calcareous cement, moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, trace dark brown spotty oil stain

16500-16550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16550-16600 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16600-16650 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

16650-16700 SILTY SANDSTONE: light brown to light gray, off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

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

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

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

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

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

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

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

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

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

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

17400-17450 SILTY SANDSTONE: light gray to light brown, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17450-17500 SILTY SANDSTONE: light gray to light brown, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17500-17550 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17550-17600 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17600-17650 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17650-17700 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17700-17750 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17750-17800 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17800-17850 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

17850-17900 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

17900-17950 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, trace disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

17950-18000 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

18000-18050 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18050-18100 SILTY SANDSTONE: off white to tan, light gray to light brown, rare medium brown, very fine grained, friable to firm, subangular to subrounded, poorly sorted, calcareous cement, moderately to poorly cemented, trace disseminated and nodular pyrite, possible intergranular porosity, rare light brown spotty oil stain

18100-18150 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18150-18200 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18200-18250 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18250-18300 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18300-18350 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted to well laminated, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18350-18400 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18400-18450 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18450-18500 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

18500-18550 SILTY SANDSTONE: light brown to light gray, trace off white to tan, trace medium brown to gray, very fine grained, friable to firm, subangular to subrounded, well to moderately sorted, calcareous cement, poorly to moderately cemented, common disseminated and nodular pyrite, possible intergranular porosity, rare dark to light brown spotty oil stain, trace light black oil stain

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

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

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

18700-18750 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

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

18800-18850 No Sample

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

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

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

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

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

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

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

19200-19250 SILTY SANDSTONE: light gray to light brown, off white to tan, trace medium brown, very fine grained, friable to firm, subangular to subrounded, 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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

20700-20728 SILTY SANDSTONE: off white to tan, light brown to light gray, trace medium brown, very fine grained, friable to firm, subangular to subrounded, well sorted, calcareous cement, poorly to moderately cemented, weak laminated, rare disseminated and nodular pyrite, possible intergranular porosity, trace dark to light brown spotty oil stain

***TD 20,728' 27 April 2012 @ 01:00 Hrs CDT***



## SUNDRY NOTICES AND REPORTS ON W

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

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



Well File No.  
**22249**

Well Name and Number  
**Magnum #2-36-25H**

#### Footages

Footages	250 F N L	840 F E L	Qtr-Qtr NENE	Section 25	Township 153 N	Range 101 W
Field Baker			Pool Bakken		County McKenzie	

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

Name of Contractor(s)

**Address**

### **Address**

## **DETAILS OF WORK**

Slawson Exploration Company, Inc. (SECI) began drilling the Magnum 2-36-25H well on March 18, 2012. The curve was drilled to a legal location, 7" casing was ran, and then stuck at 11,104' MD. This is 50' short of the 500' setback of 11,154' MD. SECI proposes the use of the Packers Plus mechanical liner system to isolate the portion of the wellbore that is not across the 500' setback. To maintain the full 10,000 psi differential pressure rating this system offers, we will set the last 2 packers past the TD of the 8.75" hole at 11,375' MD and into the 6" hole size. This will isolate the remainder of the lateral. No stimulations will be performed between the shoe and 11,375'. A wellbore diagram is included illustrating the Packers Plus system as well as the Actual Field Survey showing the 7" casing point location.

UBS 10770TVD.

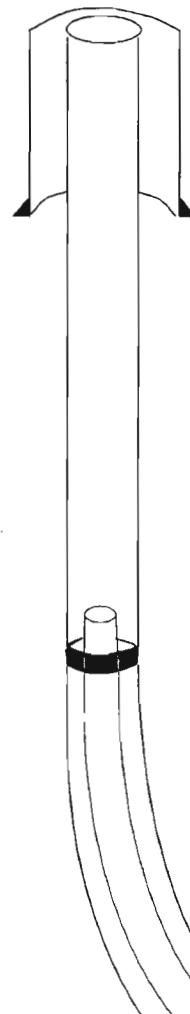
 Slawson must accept all liability with the enclosed procedure. The Magnum 2-36-25H cannot be completed (fracture stimulated) until after Slawson requests a Commission hearing pursuant to NDAC 43-02-03-18.1 (Exception location) and a subsequent decision has been rendered.

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>
Signature 		Printed Name <b>Khem Suthiwan</b>
Title <b>Permitting Manager</b>		Date <b>April 18, 2012</b>
Email Address <b>ksuthiwan@slawsoncompanies.com</b>		

FOR STATE USE ONLY	
<input checked="" type="checkbox"/> Received <b>✓</b>	<input type="checkbox"/> Approved
Date	4/25/12
By	<i>Tom Ellingsen</i>
Title	Mineral Resources Permit Manager

# Packers Plus

Company: Slawson Exploration  
Well #: Magnum 2-36-25H



API# 33-053-03944  
Surface Location: SESE SEC 36, T153N - R101W  
240 ft FEL / 205 ft FSL

## RockSeal Packers @

Casing	Start	End	FTG
7" 29# HCP110	0'	6,420'	6,420'
7" 32# P110	6,420'	9,270'	2,850'
7" 29# HCP110	9,270'	11,104'	1,834'
Liner	Start	End	FTG
4-1/2" 11.6# HCP110	10,270'	20,730'	10,460'

KOP @ 10,282'  
Liner Hanger @ 10,270'

Legal Setbacks: 500 ft FEL / 200 ft FSL

7" 29# Shoe @ 11,104' MD

Liner Length: 10,460'  
Liner: 4-1/2" 11.6# HCP110 BTC  
Liner Hanger: Packer Plus Hanger System  
Set @ 10,270'

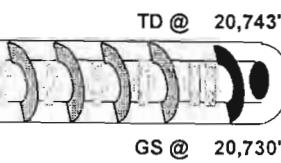
ANCH	20,665'	PKR 12	17,271'	PKR 24	13,767'
PKR 1	20,483'	PKR 13	16,979'	PKR 25	13,475'
PKR 2	20,191'	PKR 14	16,687'	PKR 26	13,183'
PKR 3	19,899'	PKR 15	16,395'	PKR 27	12,891'
PKR 4	19,607'	PKR 16	16,103'	PKR 28	12,599'
PKR 5	19,315'	PKR 17	15,811'	PKR 29	12,307'
PKR 6	19,023'	PKR 18	15,519'	PKR 30	12,015'
PKR 7	18,731'	PKR 19	15,227'	PKR 31	11,723'
PKR 8	18,439'	PKR 20	14,935'	PKR 32	11,431'
PKR 9	18,147'	PKR 21	14,643'	PKR 33	11,375'
PKR 10	17,855'	PKR 22	14,351'	CH PKR	11,015'
PKR 11	17,563'	PKR 23	14,059'		

FracPorts @	DEH	20,575'	2,625	16,541'	3,500	12,453'
	1.813	20,337'	2,688	16,249'	3,563	12,161'
	1.875	20,045'	2,750	15,957'	3,625	11,869'
	1.938	19,753'	2,813	15,665'	3,688	11,577'
	2.000	19,461'	2,875	15,373'		
	2,063	19,169'	2,938	15,081'		
	2,125	18,877'	3,000	14,789'		
	2,188	18,585'	3,063	14,497'		
	2,250	18,293'	3,125	14,205'		
	2,313	18,001'	3,188	13,913'		
	2,375	17,709'	3,250	13,621'		
	2,438	17,417'	3,313	13,329'		
	2,500	17,125'	3,375	13,037'		
	2,563	16,833'	3,438	12,745'		

## Interval Spacing

STG 01	260'	TOE
STG 02	292'	
STG 03	292'	
STG 04	292'	
STG 05	292'	
STG 06	292'	
STG 07	292'	
STG 08	292'	
STG 09	292'	
STG 10	292'	
STG 11	292'	
STG 12	292'	
STG 13	292'	
STG 14	292'	
STG 15	292'	
STG 16	292'	
STG 17	292'	
STG 18	292'	
STG 19	292'	
STG 20	292'	
STG 21	292'	
STG 22	292'	
STG 23	292'	
STG 24	292'	
STG 25	292'	
STG 26	292'	
STG 27	292'	
STG 28	292'	
STG 29	292'	
STG 30	292'	
STG 31	292'	
STG 32	292'	HEEL

AVG 291'



Req. Displacement: 260 ft (11,254' MD)  
500 ft setback line

Redundant Setback Isolation Packers @ 11,375' MD

8-3/4" OH to 11,358' MD

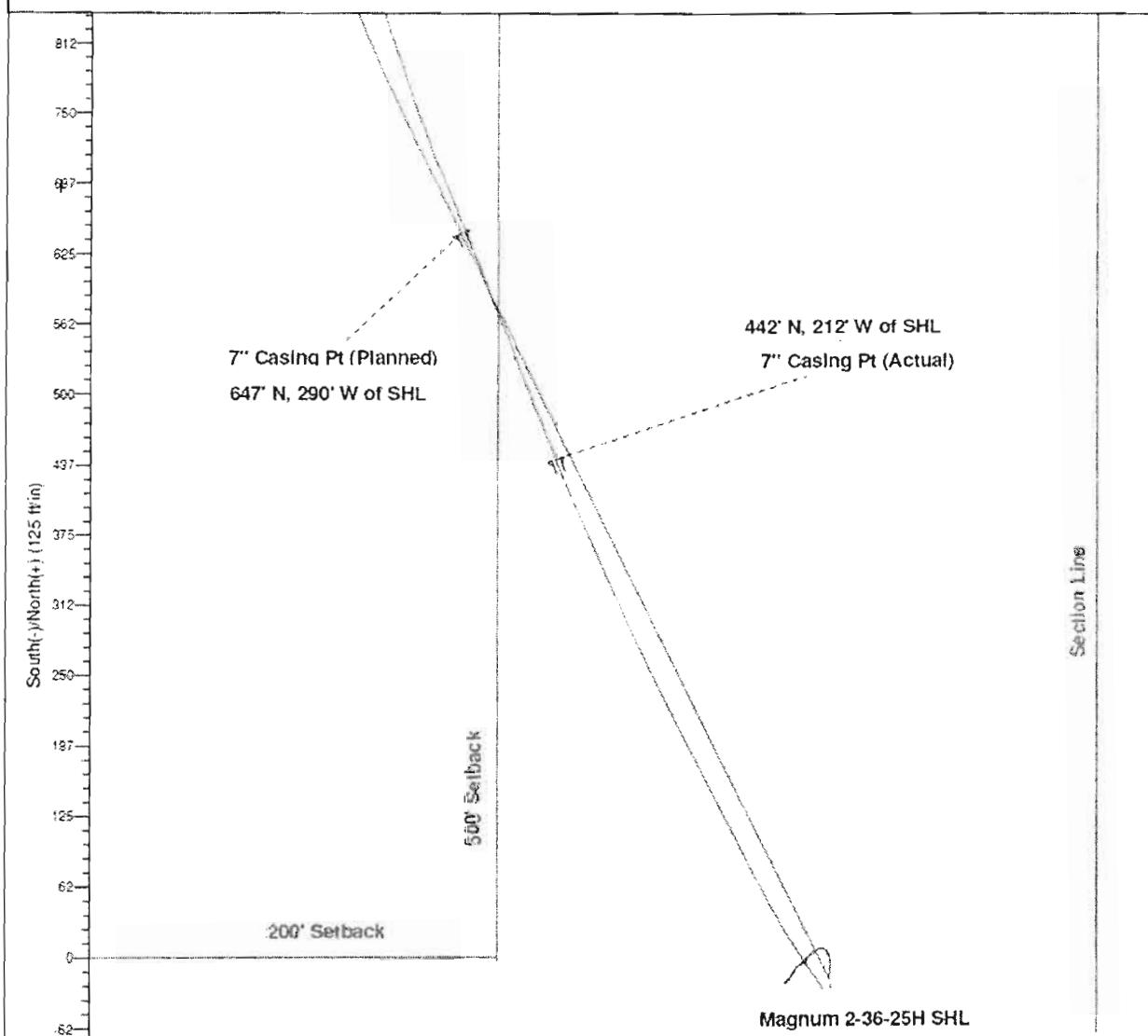
GS @ 20,730'

TD @ 20,743'

Site: Sec. 36-T153N-R101W  
Well: Magnum 2-36-25H  
Wellbore: Plan 8  
Design: Actual Field Survey

HALLIBURTON

# Slawson Exploration Company, Inc.





## 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  
SFSN 5749 (09-2006)

Well File No.

22249

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"/> Drill Bit Progress	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<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.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<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	BHL Revision <i>correction</i>

Well Name and Number <b>Magnum #2-36-25H</b>						
Footages	250 F N L	840 F E L	Qtr-Qtr NENE	Section 25	Township 153 N	Range 101 W
Field Baker	Pool Bakken			County McKenzie		

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

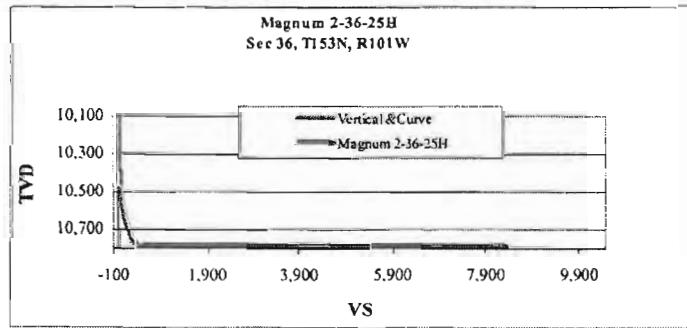
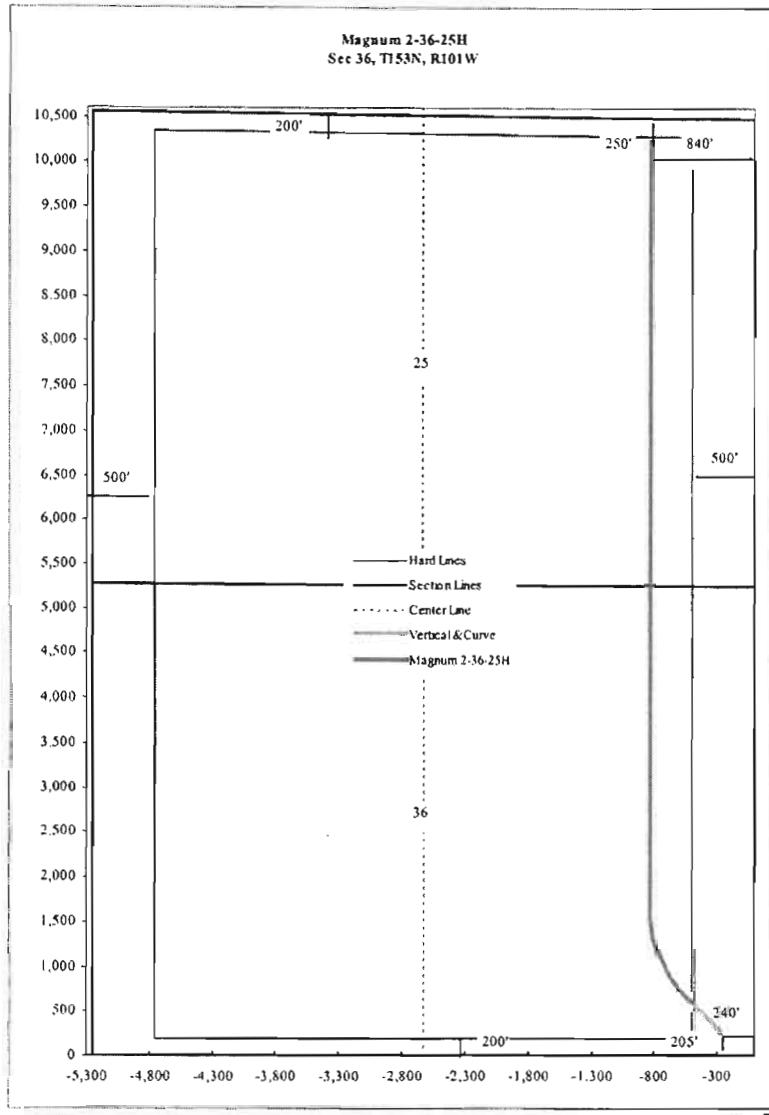
Name of Contractor(s) <b>none</b>			
Address	City	State	Zip Code

### DETAILS OF WORK

Slawson Exploration Company, Inc. respectfully requests a *revision* to the BHL of the Magnum 2-36-25H. The approved APD states the BHL is in the NENE of Section 25 T153N R101W at 250'FNL & 840'FWL. The BHL should be in the NENE of Section 25 T153N R101W at 250'FNL & 840'FWL. Attached with this request is a *revised* Single Lateral Plan for your review.

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 	Printed Name <b>Khem Suthiwan</b>	
Title <b>Permitting Manager</b>	Date <b>March 26, 2012</b>	
Email Address <b>ksuthiwan@slawsoncompanies.com</b>		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>3-27-12</b>	
By 	
Title <b>Petroleum Resource Specialist</b>	



The SHL is 205' FSL & 240' FWL (SESE), Section 36, T153N, R101W, McKenzie County, ND. The state setback is 500' from the east and west section lines and 200' from the north and south section lines.

**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 324.00°. Set 7" casing (591' FSL & 521' FEL, SESE, Section 36, T153N, R101W).

**South Lateral:** Drill a 6" horizontal well building to an azimuth of 360.00° using 12°/100' builds and drill to TD at a depth of 20,743' MD (**10,758' TVD**), 250' FNL & 840' FEL (NENE) Section 25, T153N , R101W. Expect an inclination of 90.00°. Total 6" lateral is 9,713'.

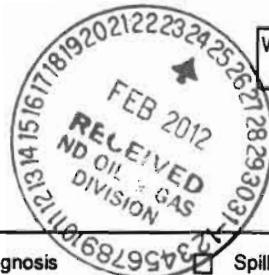


## SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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.

22249



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 type="checkbox"/> Report of Work Done	Date Work Completed	<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 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  
**Magnum #2-36-25H**

Footages	Qtr-Qtr	Section	Township	Range
205 F S L 240 F E L	SESE	36	153 N	101 W
Field Baker	Pool Bakken		County McKenzie	

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

Name of Contractor(s)

none

Address

City

State

Zip Code

**DETAILS OF WORK** #20314

Slawson Exploration Company, Inc. (SECI) respectfully requests an open hole logging waiver for the Magnum #2-36-25H well. It is located within one mile from the Lewis Federal 5300 31-31H well, which was drilled by Oasis Petroleum with open hole logs completed. Geologic control for the Magnum #2-36-25H 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 	Printed Name <b>Khem Suthiwan</b>	
Title <b>Permitting Manager</b>	Date <b>February 22, 2012</b>	
Email Address <b>ksuthiwan@slawsoncompanies.com</b>		

**FOR STATE USE ONLY**

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <b>2-24-2012</b>	
By 	
Title <b>Richard A. Suggs</b>	
Geologist	



**SUNDY 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.  
**22249**

**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>March 15, 2012</b>	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<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.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<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 type="checkbox"/> Other	

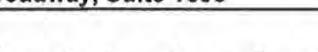
Well Name and Number <b>Magnum 2-36-25H</b>							
Footages	205	F	S	L	240	F	E L
					Qtr-Qtr	SESE	Section 36 Township 153 N Range 101 W
Field	Pool			County			
Baker	Bakken			McKenzie			

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

Name of Contractor(s) <b>Major Drilling Rig #26 - Larry Thoren - 801-243-1260 (Major's Toolpusher)</b>			
Address <b>2200 South, 4000 West</b>	City <b>Salt Lake City</b>	State <b>UT</b>	Zip Code <b>84120</b>

### **DETAILS OF WORK**

Slawson Exploration Company, Inc. (SECI) requests permission for suspension of drilling for up to (90) for the referenced well under NDAC 43-02-03-55. (SECI) intends to drill the surface hole with freshwater based drilling mud and set surface casing with a small drilling rig and move off within 3 to 5 days. The casing will be set at a depth pre-approved by the NDIC per the Application for Permit to Drill NDAC 43-02-03-21. No saltwater will be used in the drilling and cementing operations of the surface casing. Once the surface casing is cemented, a plug or mechanical seal will be placed at the top of the casing to prevent any foreign matter from getting into the well. A rig capable of drilling to TD will move onto the location within the (90) previously outlined to complete the drilling and casing plan as per the APD. The undersigned states that this request for suspension of drilling operations in accordance with the Subsection 4 of Section 43-02-03-55 of the NDAC, is being requested to take advantage of the cost savings and time savings of using an initial rig that is smaller than the rig necessary to drill a well to total depth but is not intended to alter or extend the terms and conditions of, or suspend any obligation under, any oil and gas lease with acreage in or under the spacing or drilling unit for the above-referenced well. (SECI) understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The lined reserve pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). (SECI) will plug and abandon the well and reclaim the well site if the well is not drilled by the larger rotary rig within (90) days after spudding the well with the smaller drilling rig.

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>Mark McCallister</b>	
Title <b>Drilling Engineer</b>	Date <b>February 16, 2012</b>	
Email Address <b>mmccallister@slawsoncompanies.com</b>		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <u>2-23-2012</u>	
By <u>David Tabor</u>	
Title <u>Engineering Technician</u>	



## **Oil and Gas Division**

Lynn D. Helms - Director      Bruce E. Hicks - Assistant 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)

BOB BOGLE Date: 1/19/2012  
SLAWSON EXPLORATION COMPANY, INC.  
1675 BROADWAY SUITE 1600  
DENVER, CO 80202 USA

**RE: CORES AND SAMPLES**

Well Name: **MAGNUM 2-36-25H** Well File No.: **22249**  
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:

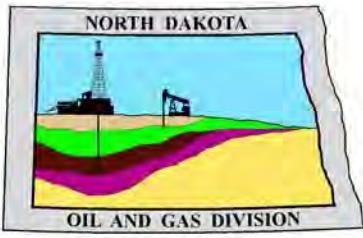
**ND Geological Survey Core Library  
Campus Road and Cornell  
Grand Forks, ND 58202**

- 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



# 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)

January 13, 2012

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

**RE: HORIZONTAL WELL  
MAGNUM 2-36-25H  
SESE Section 36-153N-101W  
McKenzie County  
Well File # 22249**

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. **Tool error is not required pursuant to order.**

**PERMIT STIPULATIONS: A LOCATION DIKE MUST BE CONSTRUCTED ON THE NORTHERN PORTION OF THE SITE. ALSO, IN ORDER TO JUSTIFY THE SPACING UNIT, THE MAGNUM 1-36-25H & MAGNUM 2-36-25H MUST BE DRILLED BACK TO BACK. ALTERNATIVELY, SLAWSON MUST DRILL THE MAGNUM 1-36-25H IF ONLY ONE WELL IS DRILLED IN THE SPACING UNIT INITIALLY. LASTLY, SLAWSON MUST CONTACT MARK BINNS AT 701-220-5989 PRIOR TO LOCATION CONSTRUCTION.**

### 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: 260W. Also, based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 10083N & 260W.

### 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.

Khem Suthiwan  
January 13, 2012  
Page 2

### **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.

### **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.

### **Drilling pit**

Please be advised approval for use of a drilling reserve pit or drill cuttings pit on this site is contingent on site specific conditions and special pit closure requirements may apply.

### **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>11 / 01 / 2011</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>2-36-25H</b>			
Surface Footages <b>205 F S L      240 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>591 F S L      520 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>386 N From WH      280 W From WH</b>		Azimuth <b>324 °</b>	Longstring Total Depth <b>11031 Feet MD      10758 Feet TVD</b>				
Bottom Hole Footages From Nearest Section Line <b>251 F N L      840 F E L</b>		Qtr-Qtr <b>NENE</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      600 W From WH</b>		KOP Lateral 1 <b>10281 Feet MD</b>	Azimuth Lateral 1 <b>360 °</b>	Estimated Total Depth Lateral 1 <b>20743 Feet MD      10758 Feet TVD</b>			
Latitude of Well Head <b>48 ° 01 ' 29.87 "</b>	Longitude of Well Head <b>-103 ° 36 ' 18.60 "</b>	NAD Reference <b>NAD83</b>		Description of Spacing Unit: <b>All of Sect 36 &amp; 25, T153N R101W</b>			(Subject to NDIC Approval)
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>5251 Feet</b>	East Line of Spacing/Drilling Unit <b>10488 Feet</b>			West Line of Spacing/Drilling Unit <b>10548 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>2130 Feet</b>	Cement Volume <b>660 Sacks</b>	NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.		
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>651 Sacks</b>	Cement Top <b>4238 Feet</b>	Top Dakota Sand <b>5383 Feet</b>
Base Last Charles Salt (If Applicable) <b>9254 Feet</b>		NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.					
Proposed Logs <b>Triple Combo - DIL, CNL, CDL with GR to surface CBL/GR/CCL</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.

## Lateral 2

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

## Lateral 3

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

## Lateral 4

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

## Lateral 5

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

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.

Date

**10 / 13 / 2011****ePermit**Printed Name  
**Khem Suthiwan**

Title

**Permitting Manager****FOR STATE USE ONLY**

Permit and File Number <b>22249</b>	API Number <b>33 - 053 - 03944</b>
Field <b>BAKER</b>	
Pool <b>BAKKEN</b>	Permit Type <b>DEVELOPMENT</b>

**FOR STATE USE ONLY**

Date Approved <b>1 / 13 / 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 2-36-25H

205 feet from the south line and 240 feet from the east line (surface location)

Section 36, T. 153 N., R. 191 W., 5th P.M.

250 feet from the north line and 550 feet from the east line (bottom location)

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

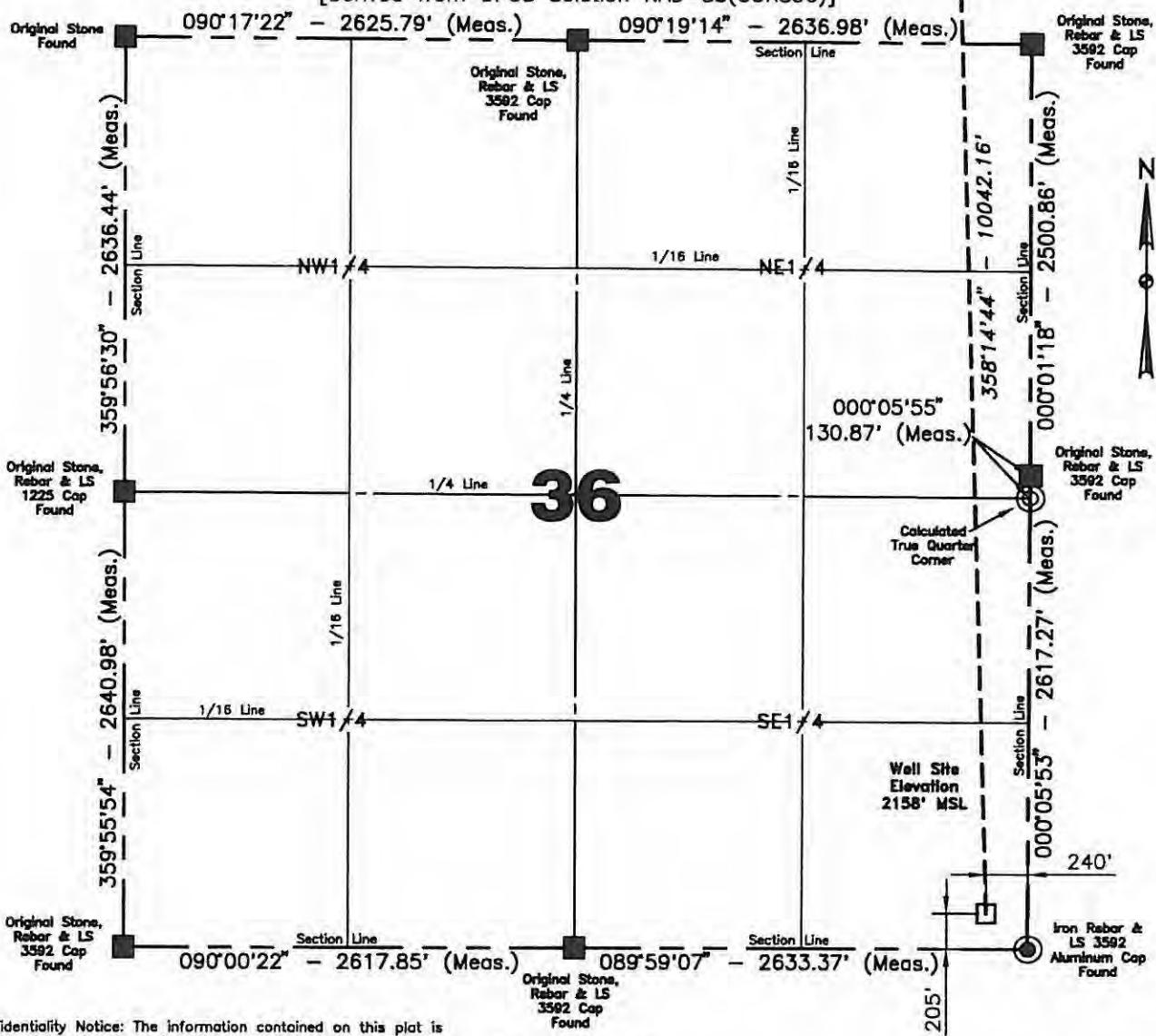
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

**Latitude 48°01'29.869" North; Longitude 103°36'18.604" West (surface location)**  
**Latitude 48°03'08.925" North; Longitude 103°36'23.042" West (bottom location)**  
[Derived from OPUS Solution NAD-83(CORS96)]

Latitude 48°03'08.925" North; Longitude 103°36'23.042" West (surface location); bottom (location)

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



**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.

**NOTE:** All land corners are assumed unless otherwise noted.  
The well location shown herein 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 plot 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 Schmalz      08/26/2011  
Surveyed By N.D.P.I.S. # 6809 Date

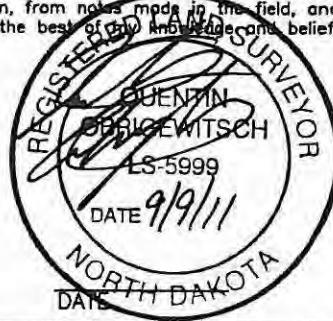
**Vertical Control Datum Used**

Vertical Control Datum Used  
Sea-level Datum of NAVD 88

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.

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



Kadrmas  
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>		<b>Magnum 2-36-25H - single-lateral Bakken producer with stage-frac completion</b>					
LEASE NAME AND NUMBER							
ORIGINAL GL:	2,158'	FOOTAGE CALLS - SURFACE HOLE			205' FSL	240' 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' 29.87" N		
PROPOSED TMD	20,743'	LONGITUDE			103° 36' 18.60" W		
LATERAL LENGTH (FT.)	9,713'	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>
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>Fluid Loss</b>
Start at (ft.)	Change at (ft.)						<b>LCM</b>
0	2,130'	( Through Surface Casing Depth)	fresh water	28-32	8.34	NC	--
2,130'	7" csg point		80/20 invert	45-50	9.6-10.5	5-10	--
7" csg point	Total MD		Brine		9.2-10.2	NC	--
If overpressured			80/20 invert	28	11.5 - 13	5-10	--
<b>Maximum anticipated bottom hole pressure is 4,658#; BOPs to be tested to 5000psi</b>							
<b>LOGGING PROGRAM</b>							
Open Hole	Triple Combo - DIL,CNL,CDL						
Cased Hole	CBL/GR/CCL						
<b>BIT PROGRAM</b>							
<b>Hole Size</b>	<b>Casing</b>	<b>Bit Type</b>	<b>Model</b>	<b>Manufacturer</b>	<b>CASING PROGRAM</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	7"	29#	P-110
6"	4 1/2"	PDC	643	SEC			
<b>DIRECTIONAL PROGRAM</b>							
KOP		10,281'			7"	32#	P-110
Build rate		12.0°/100'			7"	29#	P-110
Lateral length, (ft.)		9,713'					
Curve Azimuth		324.°			Total 29#	8,218'	Total 32#
Target zone top (TVD)		10,751'					2,813'
Landing point (TVD)		10,758'			<b>LINER LENGTH:</b>		
Target zone bottom (TVD)		10,765'			4-1/2"	11.6#	P-110
Total MD		20,743'					
<b>***** SEE ATTACHED DIRECTIONAL PLAN</b>							
<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					
<b>Use 60% excess</b>							
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					
<b>Use 30% excess and a 9" hole</b>							
See Drilling Procedure for Float Equipment							
Recommendation to 7" shoe.							
<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				

**Magnum 2-36-25H**

KB = 2,180'

KOP = 10,281'

Target = 10,343' TVD

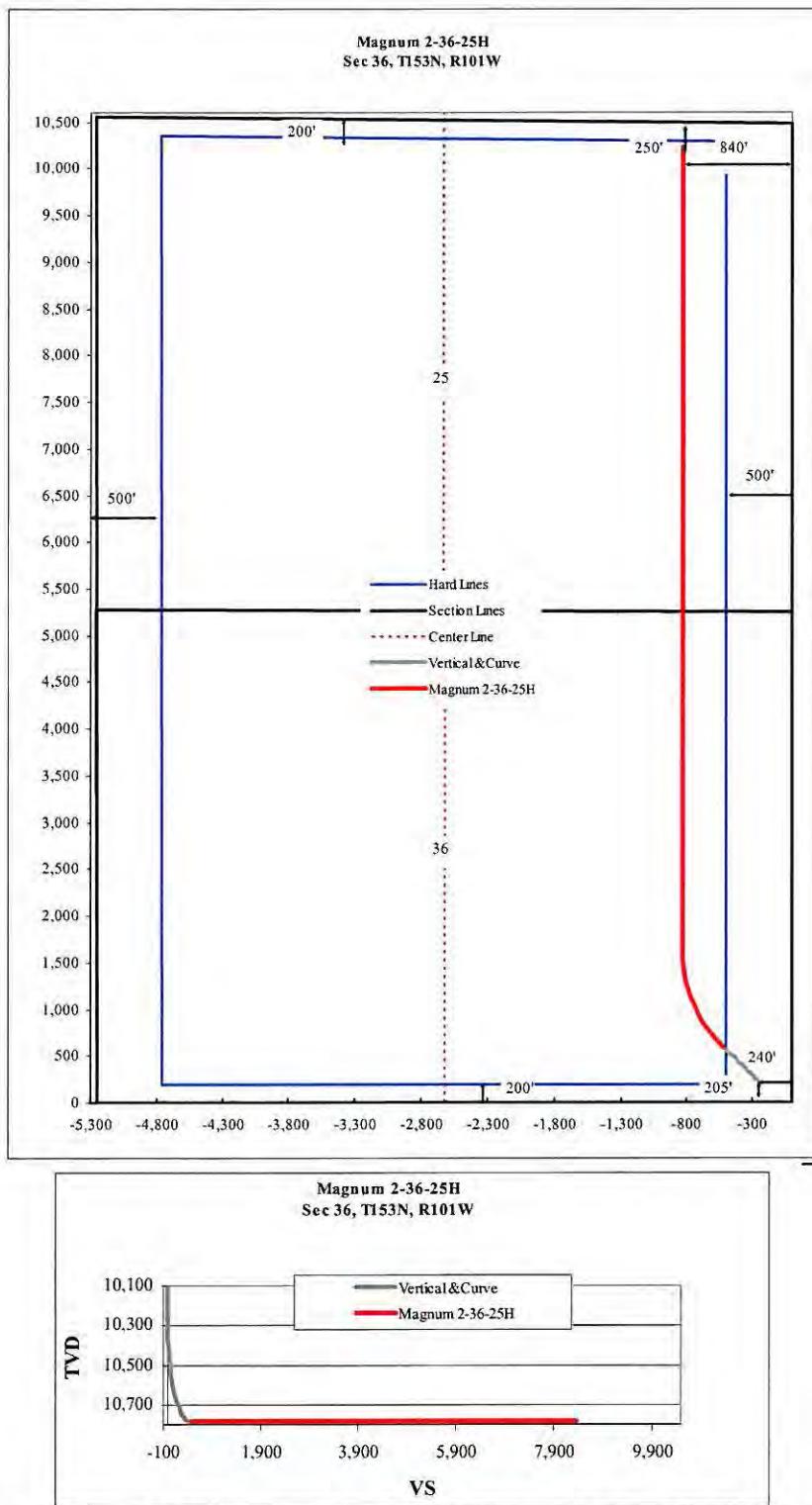
**Based on True North**

<b>MD</b>	<b>Incl.</b>	<b>Azi.</b>	<b>TVD</b>	<b>North</b>	<b>East</b>	<b>DLS</b>	<b>Vertical Section</b>	<b>UTM N</b>	<b>UTM E</b>
0.00	0.00	324.00	0.00	0.00	0.00	0.00	0.00	205.00	-240.00
10,200.00	0.00	324.00	10,200.00	0.00	0.00	0.00	0.00	205.00	-240.00
<b>10,280.50</b>	<b>0.00</b>	<b>324.00</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>-240.00 KOP</b>
10,330.50	6.00	324.00	10,330.36	2.11	-1.54	12.00	2.61	207.11	-241.54
10,380.50	12.00	324.00	10,379.68	8.43	-6.13	12.00	10.42	213.43	-246.13
10,430.50	18.00	324.00	10,427.91	18.89	-13.73	12.00	23.35	223.89	-253.73
10,480.50	24.00	324.00	10,474.53	33.37	-24.25	12.00	41.25	238.37	-264.25
10,530.50	30.00	324.00	10,519.02	51.71	-37.57	12.00	63.92	256.71	-277.57
10,580.50	36.00	324.00	10,560.90	73.71	-53.55	12.00	91.11	278.71	-293.55
10,630.50	42.00	324.00	10,599.70	99.13	-72.02	12.00	122.53	304.13	-312.02
10,680.50	48.00	324.00	10,635.01	127.69	-92.77	12.00	157.83	332.69	-332.77
10,730.50	54.00	324.00	10,666.43	159.08	-115.58	12.00	196.63	364.08	-355.58
10,780.50	60.00	324.00	10,693.62	192.96	-140.19	12.00	238.51	397.96	-380.19
10,830.50	66.00	324.00	10,716.29	228.95	-166.34	12.00	283.00	433.95	-406.34
10,880.50	72.00	324.00	10,734.18	266.66	-193.74	12.00	329.61	471.66	-433.74
10,930.50	78.00	324.00	10,747.10	305.68	-222.09	12.00	377.84	510.68	-462.09
10,980.50	84.00	324.00	10,754.91	345.58	-251.08	12.00	427.16	550.58	-491.08
<b>11,030.50</b>	<b>90.00</b>	<b>324.00</b>	<b>10,757.52</b>	<b>385.92</b>	<b>-280.39</b>	<b>12.00</b>	<b>477.02</b>	<b>590.92</b>	<b>-520.39 EOC, 7" Csg</b>

**Magnum 2-36-25H**

<b>11,030.50</b>	<b>90.00</b>	<b>324.00</b>	<b>10,757.52</b>	<b>385.92</b>	<b>-280.39</b>	<b>12.00</b>	<b>477.02</b>	<b>590.92</b>	<b>-520.39 EOC, 7" Csg</b>
11,130.50	90.00	327.00	10,757.52	468.30	-337.01	3.00	576.95	673.30	-577.01
11,230.50	90.00	330.00	10,757.52	553.53	-389.24	3.00	676.60	758.53	-629.24
11,230.50	90.00	333.00	10,757.52	553.53	-389.24	3.00	676.60	758.53	-629.24
11,330.50	90.00	336.00	10,757.52	642.51	-434.58	3.00	775.24	847.51	-674.58
11,430.50	90.00	339.00	10,757.52	734.87	-472.84	3.00	872.45	939.87	-712.84
11,530.50	90.00	342.00	10,757.52	829.10	-506.21	3.00	968.30	1,034.10	-746.21
11,630.50	90.00	345.00	10,757.52	924.95	-534.60	3.00	1,062.53	1,129.95	-774.60
11,730.50	90.00	348.00	10,757.52	1,022.15	-557.94	3.00	1,154.89	1,227.15	-797.94
11,830.50	90.00	351.00	10,757.52	1,120.44	-576.16	3.00	1,245.11	1,325.44	-816.16
11,930.50	90.00	354.00	10,757.52	1,219.55	-589.21	3.00	1,332.97	1,424.55	-829.21
12,030.50	90.00	357.00	10,757.52	1,319.21	-597.05	3.00	1,418.20	1,524.21	-837.05
12,130.50	90.00	360.00	10,757.52	1,419.14	-599.67	3.00	1,500.59	1,624.14	-839.67
12,230.50	90.00	360.00	10,757.52	1,519.14	-599.67	0.00	1,581.49	1,724.14	-839.67
12,330.50	90.00	360.00	10,757.52	1,619.14	-599.67	0.00	1,662.39	1,824.14	-839.67
12,430.50	90.00	360.00	10,757.52	1,719.14	-599.67	0.00	1,743.29	1,924.14	-839.67
12,530.50	90.00	360.00	10,757.52	1,819.14	-599.67	0.00	1,824.19	2,024.14	-839.67
12,630.50	90.00	360.00	10,757.52	1,919.14	-599.67	0.00	1,905.09	2,124.14	-839.67
12,730.50	90.00	360.00	10,757.52	2,019.14	-599.67	0.00	1,986.00	2,224.14	-839.67
12,830.50	90.00	360.00	10,757.52	2,119.14	-599.67	0.00	2,066.90	2,324.14	-839.67
12,930.50	90.00	360.00	10,757.52	2,219.14	-599.67	0.00	2,147.80	2,424.14	-839.67
13,030.50	90.00	360.00	10,757.52	2,319.14	-599.67	0.00	2,228.70	2,524.14	-839.67
13,130.50	90.00	360.00	10,757.52	2,419.14	-599.67	0.00	2,309.60	2,624.14	-839.67
13,230.50	90.00	360.00	10,757.52	2,519.14	-599.67	0.00	2,390.50	2,724.14	-839.67
13,330.50	90.00	360.00	10,757.52	2,619.14	-599.67	0.00	2,471.41	2,824.14	-839.67
13,430.50	90.00	360.00	10,757.52	2,719.14	-599.67	0.00	2,552.31	2,924.14	-839.67
13,530.50	90.00	360.00	10,757.52	2,819.14	-599.67	0.00	2,633.21	3,024.14	-839.67
13,630.50	90.00	360.00	10,757.52	2,919.14	-599.67	0.00	2,714.11	3,124.14	-839.67
13,730.50	90.00	360.00	10,757.52	3,019.14	-599.67	0.00	2,795.01	3,224.14	-839.67
13,830.50	90.00	360.00	10,757.52	3,119.14	-599.67	0.00	2,875.91	3,324.14	-839.67
13,930.50	90.00	360.00	10,757.52	3,219.14	-599.67	0.00	2,956.82	3,424.14	-839.67
14,030.50	90.00	360.00	10,757.52	3,319.14	-599.67	0.00	3,037.72	3,524.14	-839.67
14,130.50	90.00	360.00	10,757.52	3,419.14	-599.67	0.00	3,118.62	3,624.14	-839.67
14,230.50	90.00	360.00	10,757.52	3,519.14	-599.67	0.00	3,199.52	3,724.14	-839.67
14,330.50	90.00	360.00	10,757.52	3,619.14	-599.67	0.00	3,280.42	3,824.14	-839.67
14,430.50	90.00	360.00	10,757.52	3,719.14	-599.67	0.00	3,361.32	3,924.14	-839.67
14,530.50	90.00	360.00	10,757.52	3,819.14	-599.67	0.00	3,442.23	4,024.14	-839.67
14,630.50	90.00	360.00	10,757.52	3,919.14	-599.67	0.00	3,523.13	4,124.14	-839.67
14,730.50	90.00	360.00	10,757.52	4,019.14	-599.67	0.00	3,604.03	4,224.14	-839.67
14,830.50	90.00	360.00	10,757.52	4,119.14	-599.67	0.00	3,684.93	4,324.14	-839.67
14,930.50	90.00	360.00	10,757.52	4,219.14	-599.67	0.00	3,765.83	4,424.14	-839.67
15,030.50	90.00	360.00	10,757.52	4,319.14	-599.67	0.00	3,846.73	4,524.14	-839.67
15,130.50	90.00	360.00	10,757.52	4,419.14	-599.67	0.00	3,927.64	4,624.14	-839.67
15,230.50	90.00	360.00	10,757.52	4,519.14	-599.67	0.00	4,008.54	4,724.14	-839.67
15,330.50	90.00	360.00	10,757.52	4,619.14	-599.67	0.00	4,089.44	4,824.14	-839.67
15,430.50	90.00	360.00	10,757.52	4,719.14	-599.67	0.00	4,170.34	4,924.14	-839.67
15,530.50	90.00	360.00	10,757.52	4,819.14	-599.67	0.00	4,251.24	5,024.14	-839.67
15,630.50	90.00	360.00	10,757.52	4,919.14	-599.67	0.00	4,332.15	5,124.14	-839.67
15,730.50	90.00	360.00	10,757.52	5,019.14	-599.67	0.00	4,413.05	5,224.14	-839.67

15,830.50	90.00	360.00	10,757.52	5,119.14	-599.67	0.00	4,493.95	5,324.14	-839.67
15,930.50	90.00	360.00	10,757.52	5,219.14	-599.67	0.00	4,574.85	5,424.14	-839.67
16,030.50	90.00	360.00	10,757.52	5,319.14	-599.67	0.00	4,655.75	5,524.14	-839.67
16,130.50	90.00	360.00	10,757.52	5,419.14	-599.67	0.00	4,736.65	5,624.14	-839.67
16,230.50	90.00	360.00	10,757.52	5,519.14	-599.67	0.00	4,817.56	5,724.14	-839.67
16,330.50	90.00	360.00	10,757.52	5,619.14	-599.67	0.00	4,898.46	5,824.14	-839.67
16,430.50	90.00	360.00	10,757.52	5,719.14	-599.67	0.00	4,979.36	5,924.14	-839.67
16,530.50	90.00	360.00	10,757.52	5,819.14	-599.67	0.00	5,060.26	6,024.14	-839.67
16,630.50	90.00	360.00	10,757.52	5,919.14	-599.67	0.00	5,141.16	6,124.14	-839.67
16,730.50	90.00	360.00	10,757.52	6,019.14	-599.67	0.00	5,222.06	6,224.14	-839.67
16,830.50	90.00	360.00	10,757.52	6,119.14	-599.67	0.00	5,302.97	6,324.14	-839.67
16,930.50	90.00	360.00	10,757.52	6,219.14	-599.67	0.00	5,383.87	6,424.14	-839.67
17,030.50	90.00	360.00	10,757.52	6,319.14	-599.67	0.00	5,464.77	6,524.14	-839.67
17,130.50	90.00	360.00	10,757.52	6,419.14	-599.67	0.00	5,545.67	6,624.14	-839.67
17,230.50	90.00	360.00	10,757.52	6,519.14	-599.67	0.00	5,626.57	6,724.14	-839.67
17,330.50	90.00	360.00	10,757.52	6,619.14	-599.67	0.00	5,707.47	6,824.14	-839.67
17,430.50	90.00	360.00	10,757.52	6,719.14	-599.67	0.00	5,788.38	6,924.14	-839.67
17,530.50	90.00	360.00	10,757.52	6,819.14	-599.67	0.00	5,869.28	7,024.14	-839.67
17,630.50	90.00	360.00	10,757.52	6,919.14	-599.67	0.00	5,950.18	7,124.14	-839.67
17,730.50	90.00	360.00	10,757.52	7,019.14	-599.67	0.00	6,031.08	7,224.14	-839.67
17,830.50	90.00	360.00	10,757.52	7,119.14	-599.67	0.00	6,111.98	7,324.14	-839.67
17,930.50	90.00	360.00	10,757.52	7,219.14	-599.67	0.00	6,192.88	7,424.14	-839.67
18,030.50	90.00	360.00	10,757.52	7,319.14	-599.67	0.00	6,273.79	7,524.14	-839.67
18,130.50	90.00	360.00	10,757.52	7,419.14	-599.67	0.00	6,354.69	7,624.14	-839.67
18,230.50	90.00	360.00	10,757.52	7,519.14	-599.67	0.00	6,435.59	7,724.14	-839.67
18,330.50	90.00	360.00	10,757.52	7,619.14	-599.67	0.00	6,516.49	7,824.14	-839.67
18,430.50	90.00	360.00	10,757.52	7,719.14	-599.67	0.00	6,597.39	7,924.14	-839.67
18,530.50	90.00	360.00	10,757.52	7,819.14	-599.67	0.00	6,678.29	8,024.14	-839.67
18,630.50	90.00	360.00	10,757.52	7,919.14	-599.67	0.00	6,759.20	8,124.14	-839.67
18,730.50	90.00	360.00	10,757.52	8,019.14	-599.67	0.00	6,840.10	8,224.14	-839.67
18,830.50	90.00	360.00	10,757.52	8,119.14	-599.67	0.00	6,921.00	8,324.14	-839.67
18,930.50	90.00	360.00	10,757.52	8,219.14	-599.67	0.00	7,001.90	8,424.14	-839.67
19,030.50	90.00	360.00	10,757.52	8,319.14	-599.67	0.00	7,082.80	8,524.14	-839.67
19,130.50	90.00	360.00	10,757.52	8,419.14	-599.67	0.00	7,163.70	8,624.14	-839.67
19,230.50	90.00	360.00	10,757.52	8,519.14	-599.67	0.00	7,244.61	8,724.14	-839.67
19,330.50	90.00	360.00	10,757.52	8,619.14	-599.67	0.00	7,325.51	8,824.14	-839.67
19,430.50	90.00	360.00	10,757.52	8,719.14	-599.67	0.00	7,406.41	8,924.14	-839.67
19,530.50	90.00	360.00	10,757.52	8,819.14	-599.67	0.00	7,487.31	9,024.14	-839.67
19,630.50	90.00	360.00	10,757.52	8,919.14	-599.67	0.00	7,568.21	9,124.14	-839.67
19,730.50	90.00	360.00	10,757.52	9,019.14	-599.67	0.00	7,649.11	9,224.14	-839.67
19,830.50	90.00	360.00	10,757.52	9,119.14	-599.67	0.00	7,730.02	9,324.14	-839.67
19,930.50	90.00	360.00	10,757.52	9,219.14	-599.67	0.00	7,810.92	9,424.14	-839.67
20,030.50	90.00	360.00	10,757.52	9,319.14	-599.67	0.00	7,891.82	9,524.14	-839.67
20,130.50	90.00	360.00	10,757.52	9,419.14	-599.67	0.00	7,972.72	9,624.14	-839.67
20,230.50	90.00	360.00	10,757.52	9,519.14	-599.67	0.00	8,053.62	9,724.14	-839.67
20,330.50	90.00	360.00	10,757.52	9,619.14	-599.67	0.00	8,134.52	9,824.14	-839.67
20,430.50	90.00	360.00	10,757.52	9,719.14	-599.67	0.00	8,215.43	9,924.14	-839.67
20,530.50	90.00	360.00	10,757.52	9,819.14	-599.67	0.00	8,296.33	10,024.14	-839.67
20,630.50	90.00	360.00	10,757.52	9,919.14	-599.67	0.00	8,377.23	10,124.14	-839.67
20,730.50	90.00	360.00	10,757.52	10,019.14	-599.67	0.00	8,458.13	10,224.14	-839.67
<b>20,743.00</b>	<b>90.00</b>	<b>360.00</b>	<b>10,757.52</b>	<b>10,031.64</b>	<b>-599.67</b>	<b>0.00</b>	<b>8,468.24</b>	<b>10,236.64</b>	<b>-839.67 End Lateral</b>



The SHL is 205' FSL & 240' FWL (SESE), Section 36, T153N, R101W, McKenzie County, ND. The state setback is 500' from the east and west section lines and 200' from the north and south section lines.

# HORIZONTAL SECTION PLAT

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

Magnum 2-36-25H

205 feet from the south line and 240 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 550 feet from the east line (bottom location)

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

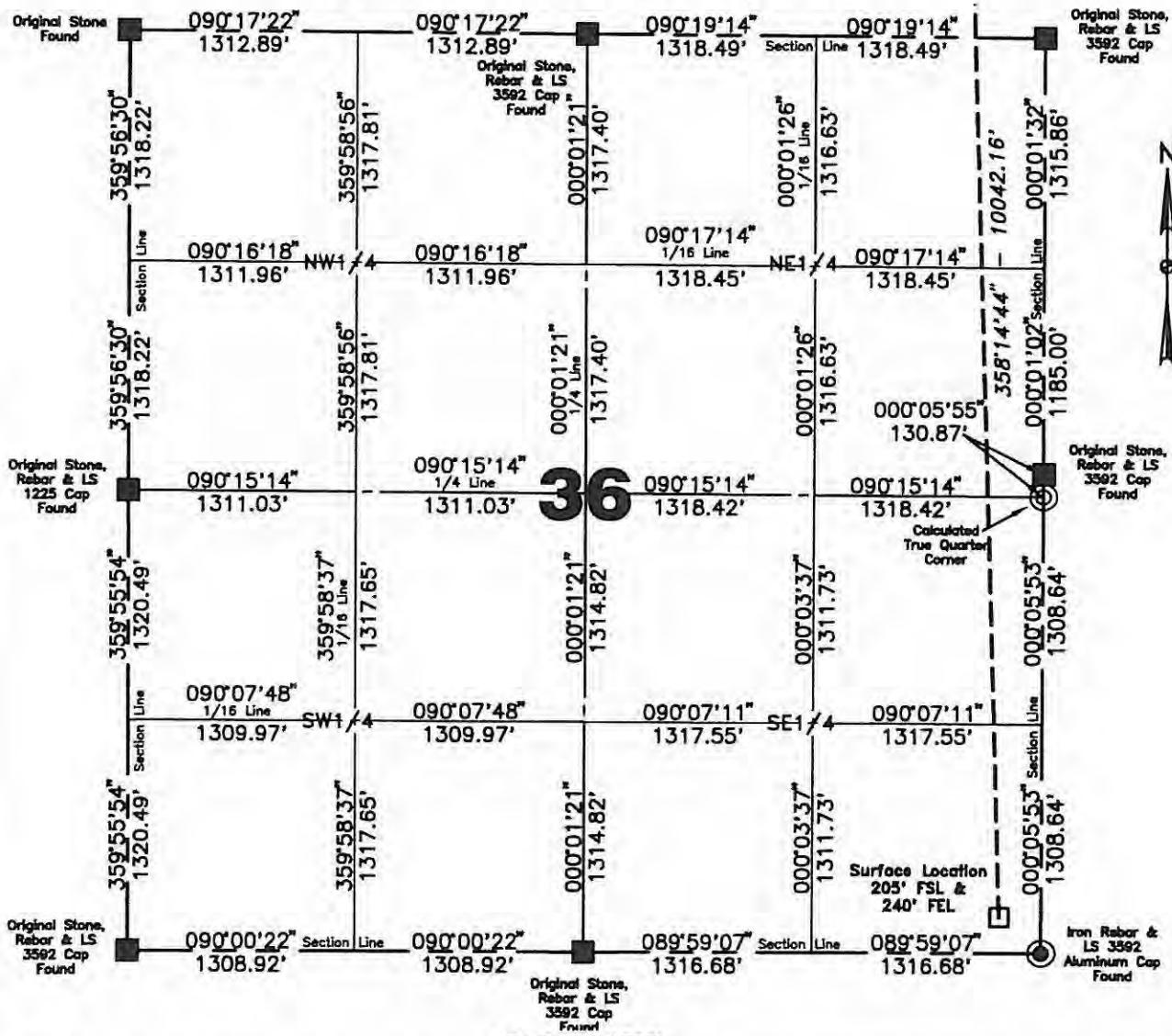
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

**Latitude 48°01'29.869" North; Longitude 103°36'18.604" West (surface location)**

**Latitude 48°03'08.925" North; Longitude 103°36'23.042" West (bottom location)**

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



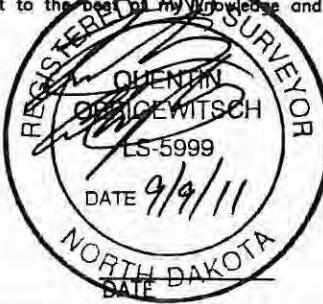
Scale 1"=1000'

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.

All corners shown on this plat were found in the field during Slawson Exploration Company Magnum 2-36-25H 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 B. Schmalz	Field Book OW-257
Computed & Drawn By A. Romann	Project No. 3711645

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.



Kadmas  
Lee &  
Jackson  
Engineers Surveyors  
Planners

# BOTTOM HOLE LOCATION PLAT

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

Magnum 2-36-25H

205 feet from the south line and 240 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 550 feet from the east line (bottom location)

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

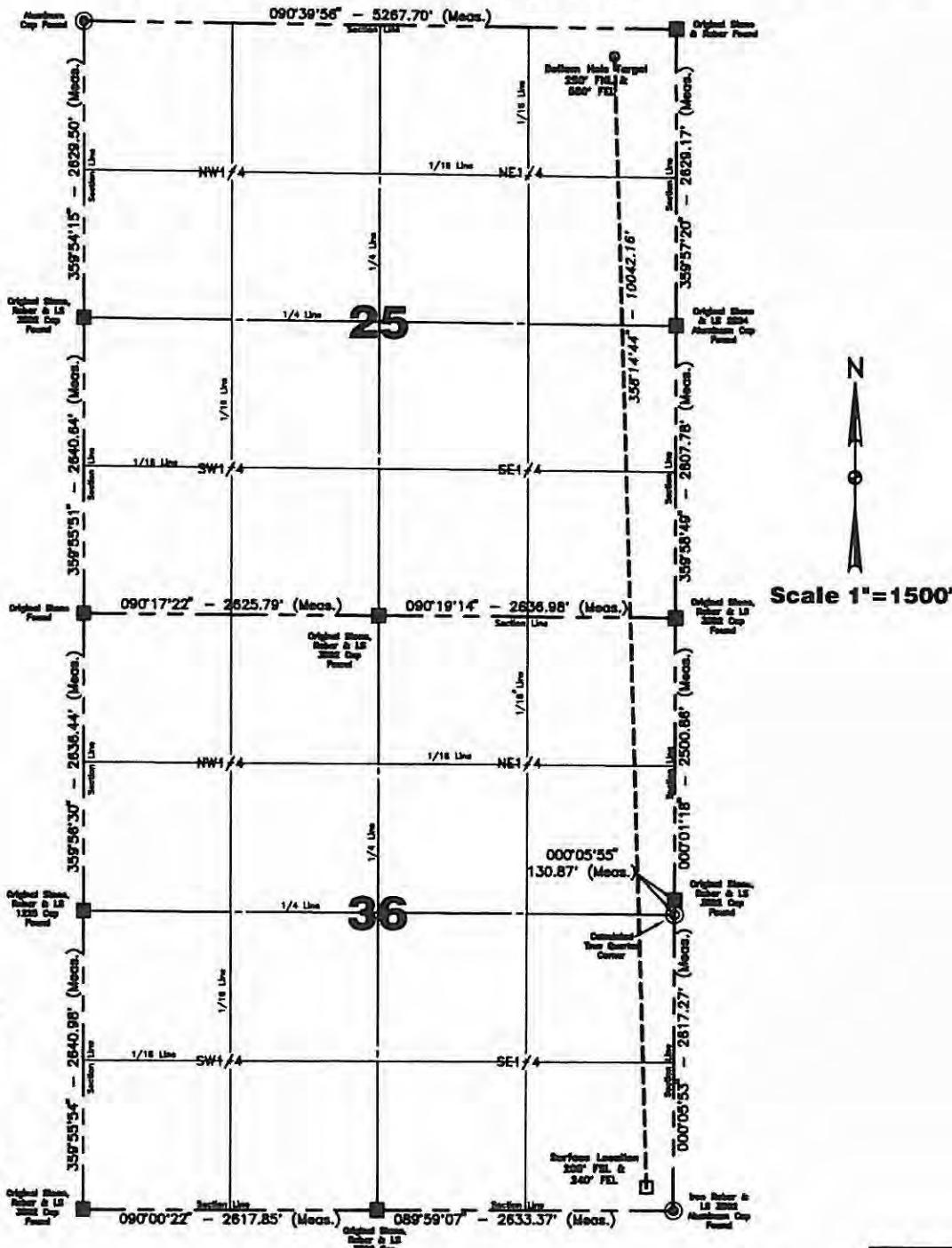
McKenzie County, North Dakota

Surface owner @ well site - State of North Dakota

**Latitude 48°01'29.869" North; Longitude 103°36'18.604" West (surface location)**

**Latitude 48°03'08.925" North; Longitude 103°36'23.042" West (bottom location)**

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



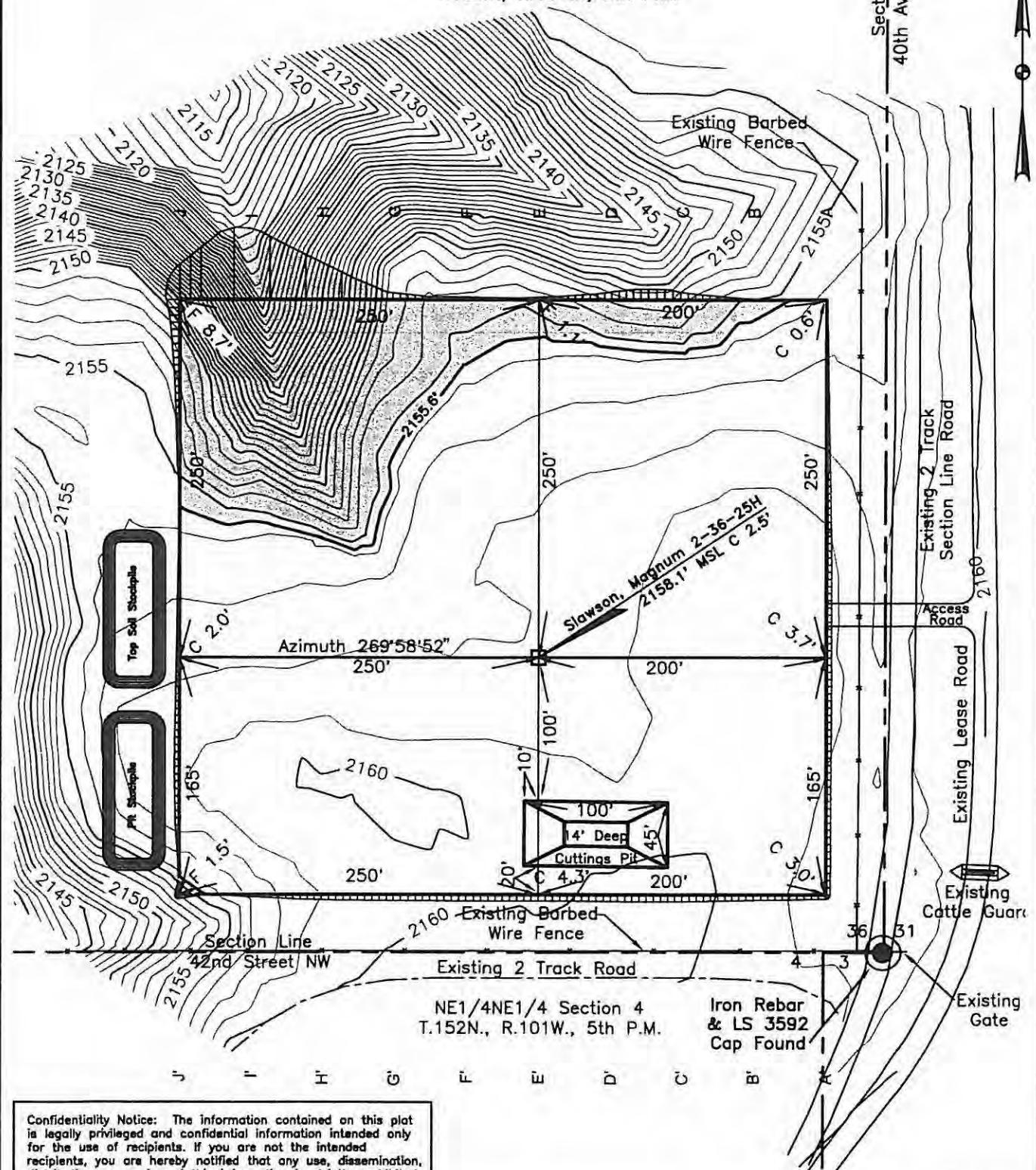
**Confidentiality Notice:**  
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Computed & Drawn By A. Romann	Surveyed By B. Schmalz	Approved By Q. Obriqewitsch	Scale 1"=1500'	Date 09/01/2011
Field Book OW-257	Material B.H. Layout	Revised -	Project No. 3711645	Drawing No. 4

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# Magnum 2-36-25H Pad Layout

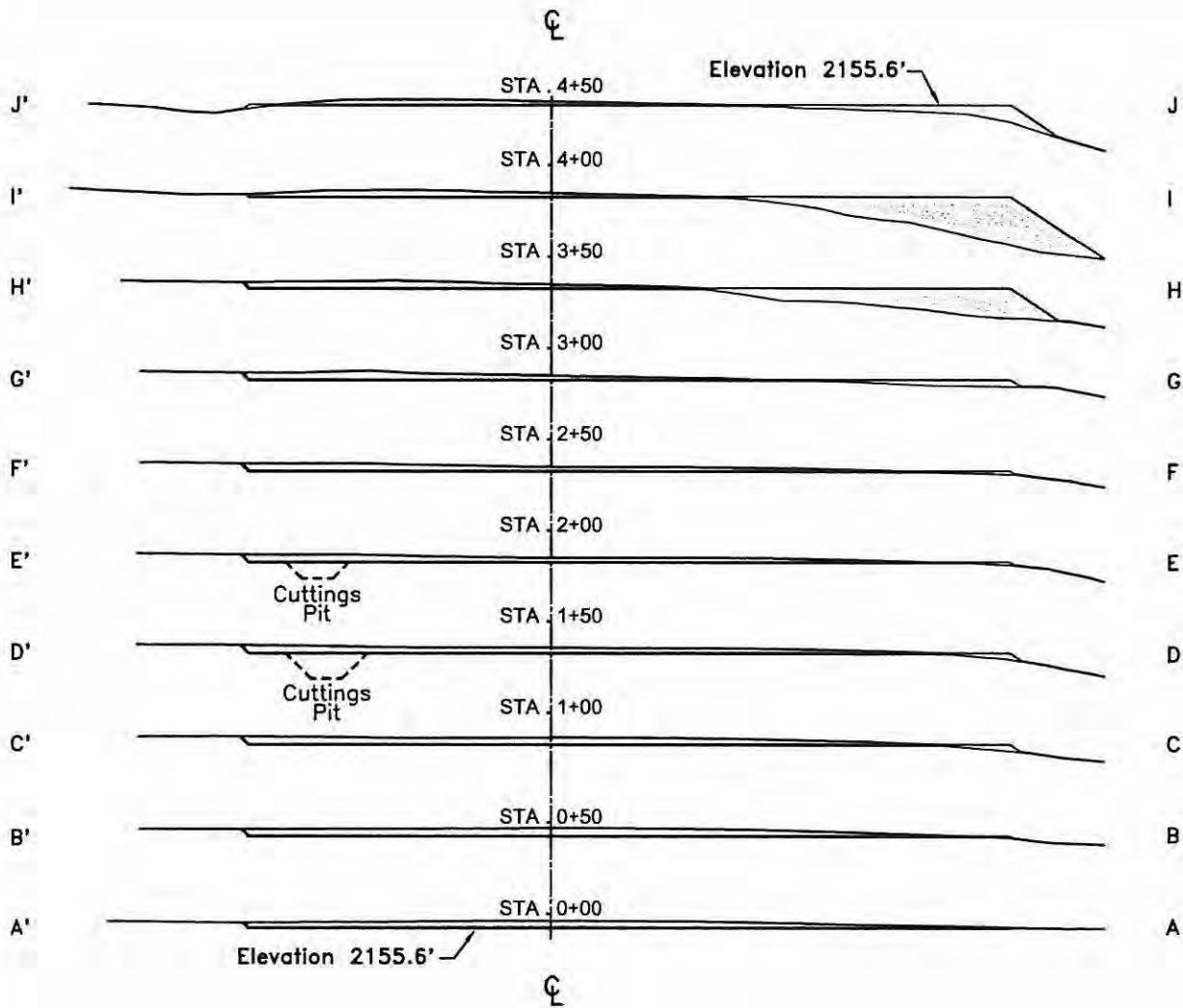
SE1/4SE1/4, Section 36  
T.153N., R.101W., 5th P.M.



Drawn By A. Romann	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1" = 100'	Date 09/01/2011
Field Book OW-257	Material Pad Layout	Revised -	Project No. 3711645	Drawing No. 6

# 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 A. Romann	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale 1" = 100'	Date 09/01/2011
Field Book OW-257	Material Cross Sections	Revised -	Project No. 3711645	Drawing No. 7

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

Well Site Elevation	2158.1' MSL
Well Pad Elevation	2155.6' MSL
Excavation	16,530 C.Y.
Plus Pit	1,160 C.Y.
	<hr/>
	17,690 C.Y.
Embankment	8,565 C.Y.
Plus Shrinkage (+30%)	2,570 C.Y.
	<hr/>
	11,135 C.Y.
Stockpile Pit	1,160 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

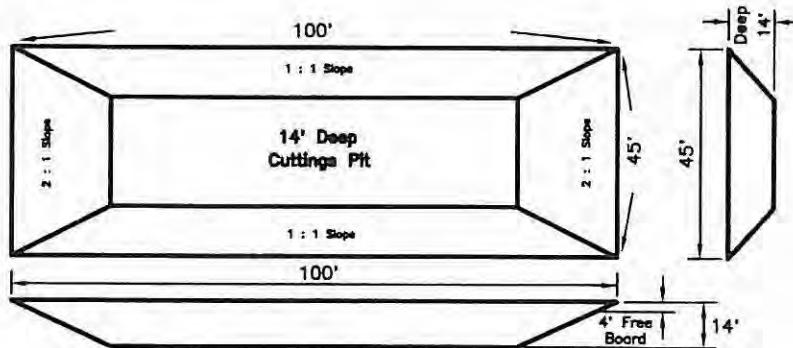
**NOTE :**

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

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**Well Site Location**

205' FSL  
 240' FEL

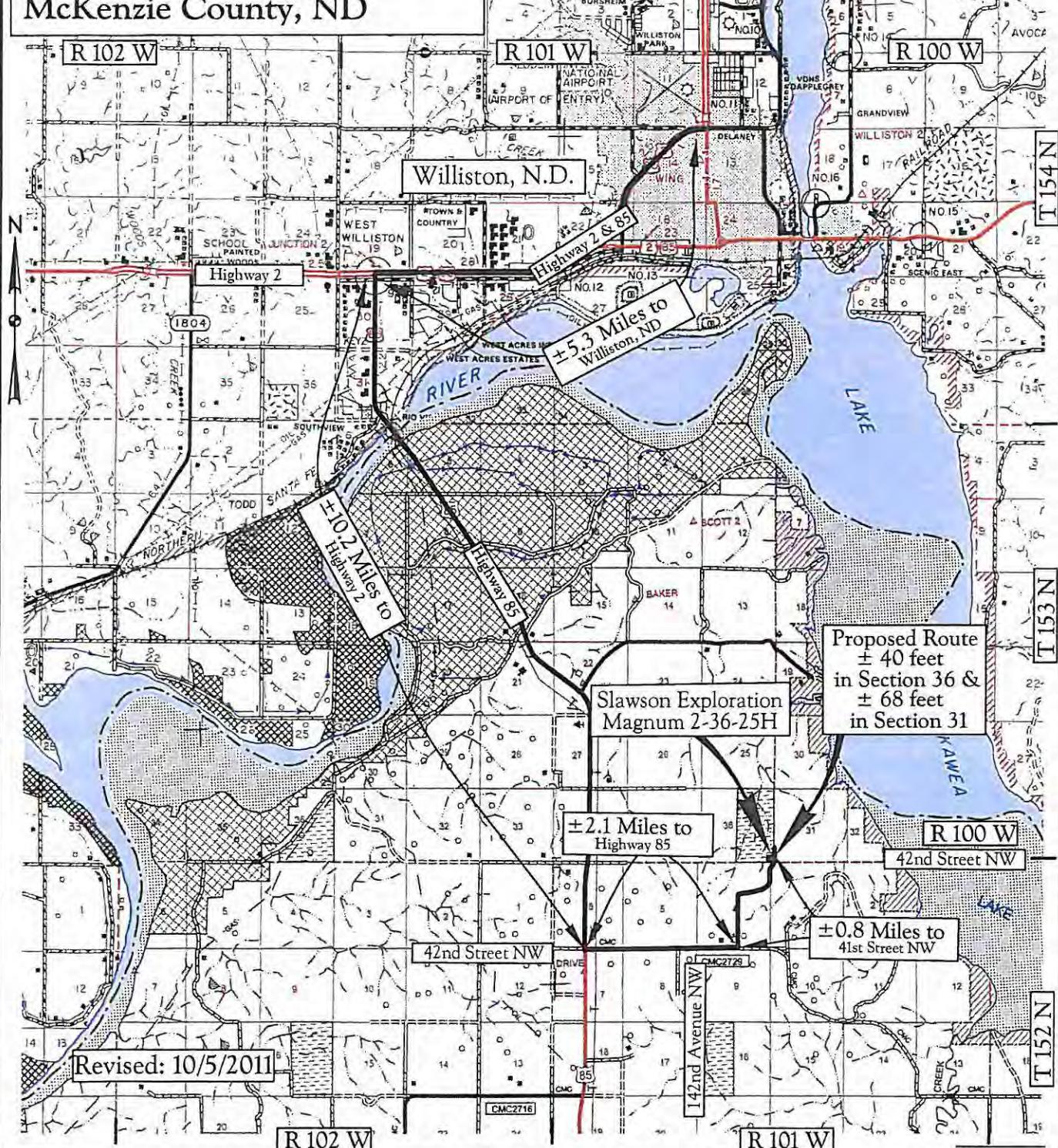


Drawn By A. Romann	Surveyed By B. Schmalz	Approved By Q. Obrigewitsch	Scale None	Date 09/01/2011
Field Book OW-257	Material Quantities	Revised -	Project No. 3711645	Drawing No. 5

**Kadrmas  
 Lee &  
 Jackson**  
Engineers Surveyors  
 Planners

Slawson Exploration Co., Inc.  
 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

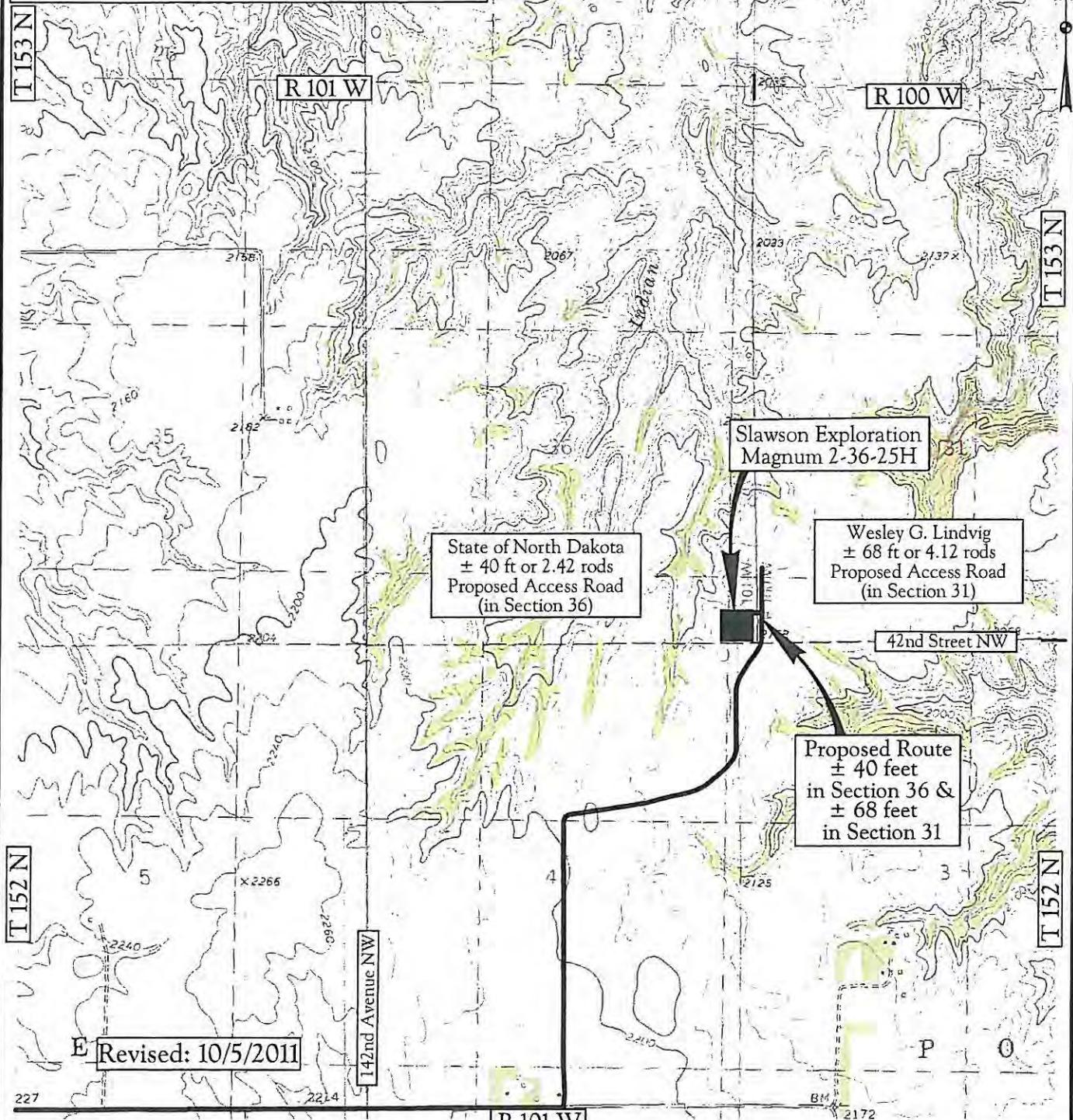


Scale 1"=2 Miles

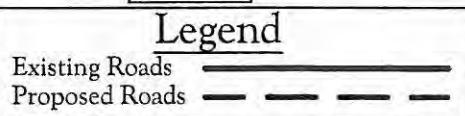
Kadrimas  
 Lee &  
 Jackson  
 Engineers Surveyors  
 Planners

**Slawson Exploration Co., Inc.**  
**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**



Scale 1" = 2000'

**Kadrimas  
 Lee &  
 Jackson**  
Engineers Surveyors  
 Planners