SLAWSON
exploration company, inc.

January 5, 2017

US Environmental Protection Agency
Underground Injection Control, Region 8
1595 Wynkoop Street
Denver, Colorado 80202

Mr. Jason Deardorff

Big Bend 3-6 SWD
Underground Injection Control Permit Request
Sec 6-T151N-R92W
Mountrail County, North Dakota

Dear Mr. Deardorff,

Enclosed please find the Underground Injection Control permit request for the Big Bend 3-6 SWD well located in Mountrail County, North Dakota. This submitted permit includes an aquifer exemption request.

Thank you for your attention in this matter. If you have any questions, please contact me using the information provided below.

Sincerely,

/ERIC SUNDBERG/

Eric Sundberg, Environmental and Regulatory Manager
Slawson Exploration Company, Inc.

esundberg@slawsoncompanies.com
Office (720) 420-6975
Mobile (303) 396-2494

cc: Mr. Douglas Minter

Rocky Mountain Division

1675 Broadway, Suite 1600
Denver, Colorado 80202
(303) 592-8880 - FAX (303) 592-8881

RECEIVED JAN 09 2017

OMB No. 2040-0042 Approval Expires 12/31/2011

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number	T/A	C
MD 22361-11336 U		

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name: Slawson Exploration Co., Inc.			Owner Name: Slawson Exploration Co., Inc.		
Street Address: 1675 Broadway, Suite 1600	Phone Number: (303) 592-8880		Street Address: 1675 Broadway, Suite 1600	Phone Number: (303) 592-8880	
City: Denver	State: CO	ZIP CODE: 80202	City: Denver	State: CO	ZIP CODE: 80202

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
[x] Yes [ ] No	[x] Private [ ] Federal [ ] Other	[x] Owner [ ] Operator	1311, 1381, 1382, 1389

VIII. Well Status *(Mark "x")*

[ ] A. Operating	Date Started mo day year	[ ] B. Modification/Conversion	[x] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

[x] A. Individual [ ] B. Area	Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
	0	1	Big Bend Field

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	D		

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
47	56	1.52	102	30	48.2	6	151	92	NW	250	N	200	W

XII. Indian Lands (Mark 'x') [x] Yes [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title *(Type or Print)*	B. Phone No. *(Area Code and No.)*
Eric Sundberg, Environmental and Regulatory Manager	(720) 420-6975
C. Signature /ERIC SUNDBERG/	**D. Date Signed** 1-5-17

EPA Form 7520-6 (Rev. 12-08)

SLAWSON
exploration company, inc.

Big Bend 3-6 SWD
Sec 6-T151N-R92W
Mountrail County, ND

EPA Form 7520-6
List of Attachments

A: Area of Review Methods.

Slawson Exploration Company, Inc (Slawson) proposes the use of the fixed radius ¼ mile area of review (AOR) method.

B: Map of Well/Area and Area of Review.

A topographic map with ¼ mile radius AOR is submitted for review (**Attachment B-1**). A list of landowners within the ¼ mile radius AOR is submitted for review (**Attachment B-2**). There are three producing oil wells, two roads, and one residence located within the AOR. There are no injection wells, abandoned wells, dry holes, mines, quarries, known faults, springs, water wells, aquifers or surface bodies of water within the AOR.

The 3 producing oil (Slawson operated) wells located within the AOR include:

Sniper (Federal) 2-6-7H API 33-061-01867-00-00 Sec 6-T151N-R92W
Sniper (Federal) 5-6-7TFH API 33-061-02180-00-00 Sec 6-T151N-R92W
Whirlwind 2-31H API 33-061-01866-00-00 Sec 6-T151N-R92W

The roads within the AOR are 36th Street NW, which runs east-west directly north of the proposed SWD, and 90th Ave. NW, which runs north-south and is located directly west of the proposed SWD. Both roads will be used for the drilling and completion of the proposed SWD.

The residence house is approximately 1040' from the proposed SWD with access to same from Road 90th Ave. NW.

C: Corrective Action Plan and Well Data.

There are three known oil wells within the AOR. The Sniper (Federal) 2-6-7H (Bakken) API 33-061-01867-00-00 Sec 6-T151N-R92W, Sniper (Federal) 5-6-7TFH (Three Forks) API 33-061-02180-00-00 Sec 6-T151N-R92W, and Whirlwind 2-31H (Bakken) API 33-061-01866-00-00 Sec 6-T151N-R92W are all horizontal wells that penetrate the Dakota near the eastern perimeter of the AOR.

The Sniper (Federal) 2-6-7H 20,256' MD, (10,300 TVD) was completed in October 2012 (**Attachment C-1**). Construction of the 2-6-7H includes 9 5/8" 36# J55 casing below the Fox Hills @ 1757' MD cemented to surface with 710 sacks, 7" 29 & 32# P110 intermediate casing @ 10,684' MD (10,300' TVD) cemented with 1042 sacks, and 4 ½" 11.6# P110 liner with liner hanger pack-off at 9,565', 38 external mechanical packers and 38 sleeves @ 9,565-20,012' MD. The 7" casing primary cement job covers the Dakota group with the TOC at approximately 2,197'. The well poses no threat at this time and will be monitored on a daily basis.

The Sniper (Federal) 5-6-7TFH 20,318' MD, (10,386 TVD) was completed in October 2012 (**Attachment C-2**). Construction of the 2-6-7H includes 9 5/8" 36# J55 casing below the Fox Hills @ 1770' MD cemented to surface with 710 sacks, 7" 29 & 32# P110 intermediate casing @ 10,799' MD (10,386' TVD) cemented with 911 sacks, and 4 ½" 11.6# P110 liner with liner hanger pack-off at 9,743', 33 external mechanical packers and 33 sleeves @ 9,743-20,280' MD. The 7" casing primary cement job covers the Dakota group with the TOC at approximately 3,380'. The well poses no threat at this time and will be monitored on a daily basis.

The Whirlwind 2-31H 15,525' MD, (10,293 TVD) was completed in October 2012 (**Attachment C-3**). Construction of the 2-31H includes 9 5/8" 36# J55 casing below the Fox Hills @ 1766' MD cemented to surface with 726 sacks, 7" 29 & 32# P110 intermediate casing @ 10,714' MD (10,293' TVD) cemented with 965 sacks, and 4 ½" 11.6# P110 liner with liner hanger pack-off at 9,713', 18 external mechanical packers and 18 sleeves @ 9,713-15,497' MD. The 7" casing primary cement job covers the Dakota group with the TOC at approximately 2,350'. The well poses no threat at this time and will be monitored on a daily basis.

The five wells located outside the AOR to the west of the proposed SWD are:
Rainmaker (Federal) 10-36-25TF2H API 33-061-03258-00-00
Sniper (Federal) 1 SLH API 33-061-03084-00-00
Zephyr 1-36H API 33-061-01137-00-00
Stallion 1-1-12H API 33-061-01063-00-00
Stallion 6-1-12TFH API 33-061-03085-00-00

Should it become apparent that remediation is necessary in any of the above listed eight wells, appropriate actions will be taken. These actions could include, but are not limited to, perforating below the Dakota group and block squeezing, pressure testing, and returning the well to service.

It is not anticipated that the proposed Big Bend 3-6 SWD well will exceed the fracture pressure of the injection formation as there will be electrical/mechanical safety shut down devices installed on the pressure side of the injection pump to enact at or below the approved maximum injection pressure (MAIP).

D: Maps and Cross Section of USDWs.

This is not applicable to Class II wells.

E: Name and Depth of USDWs (Class II).

All surface water strata, down to and including the base of the Fox Hills formation (+/- 1656') are at risk to injection. Below lists the names of USDW strata and TDS information:

Name	Depth*1	TDS mg/L *2
Coleharbor Formation	0'	
Bullion Creek Formation	23'	2,110
Cannonball Formation	558'	
Hell Creek Formation	1,043'	1,530
Fox Hills Formation	1,413'	1,530
Base of Fox Hills/T Pierre	1,656'	1,530

*1 Source: Clayton, Lee, 1972. "Geology of Mountrail County, North Dakota", North Dakota Geological Survey Bulletin 55-IV.

Bluemle, John P., Sidney B. Anderson, John A. Andrew, David W. Fischer and Julie A. LeFever, 1986. "North Dakota Stratigraphic Column", North Dakota ?Geological Survey Miscellaneous Series 66.

*2 Source: USGS Water Resources of North Dakota/Water Resources of the Fort Berthold Indian Reservation, West Central North Dakota, Report 98-4098

The use of two strings of casing, two cement jobs designed to surface, and tubing will minimize the risk of contamination to USDW's. The tubing annulus will be monitored daily for pressure, and if detected, the SWD will be shut down immediately and necessary repairs made.

F: Maps and Cross Sections of Geologic Structure.

This is not applicable to Class II wells.

G: Geological Data on Injection and Confining zones.

See **Attachment G.**

In the proposed well location, the Inyan Kara Formation (injection zone) is immediately confined by the overlying Mowry Shale (approximately 350' thick) and the underlying Swift Shale (approximately 440' thick). The Inyan Kara is expected to be approximately 430' thick in this same area.

The upper confining Mowry Formation is Cretaceous and is described as: Shale, medium to dark gray, soft, flakey to splintery, spongy; traces of light-blue-gray bentonitic clay, with no effective porosity or permeability; top is recognized by a high gamma ray marker.

Note: In addition to the adjacent Mowry Formation, the 'upper confining interval' will essentially consist of all the shale units between the Inyan Kara and the deepest surface water stratum, the base of Fox Hills (approximately 3,200' of shale in total).

The lower confining Swift Formation is Jurassic and is described as: Shale, dark gray to greenish, fissile to splintery, dull to sub waxy texture, calcareous; local limestone and glauconitic sandstone.

The Inyan Kara is Cretaceous and is described as: Mainly marine sandstone (upper part), light-gray, fine to coarse, quartzose; and shale, gray, silty, and lumpy. Lower part is mainly nonmarine sandstone; medium to coarse, angular to subrounded, quartzose, occasional lenses of gray, bentonitic shale commonly contains manganese-siderite spherulites (pellets).

Only sand intervals with adequate porosity will be perforated and utilized for injection. It is anticipated that there will be over 120 feet of porous zone available for perforations and injection.

Using the North Dakota Industrial Commission (NDIC) frac gradient of .8 PSI/FT, equates to 1375 PSIG MAIP.

H: Operating Data.

1. Average rate: 15000 BPD Maximum rate: 20,000 BPD
2. Average pressure 900-1200 PSIG estimated. Maximum pressure 1375 PSIG
3. The nature of annulus fluid will be fresh water treated with an inhibitor.
4. Not applicable for Class II wells.
5. The source of injected fluids will include: produced formation water from nearby Bakken and Three Forks oil wells, recovered fracture fluids and drilling pit fluids. See attached water analysis for the Zulu/Fox Pit water – TDS 57,546 (**Attachment H-1**), Fox 1-28H and Skybolt 1-24H produced water – TDS 214,532 & 239,641 respectively (**Attachments H-2 & H-3**).

It is assumed that the waters are characteristic of the nearby wells produced water, frac recovery water, and drill site water. Attached is a listing of Slawson sources of brine (**Attachment H-4**).

6. Not applicable to Class II wells.

I: Formation Testing Program

Slawson will perform a Step Rate Test to ensure that injection pressure does not exceed the fracture pressure of the well. Slawson also reserves the privilege to conduct other reasonable tests as necessary.

J: Stimulation Program

Slawson reserves the privilege to stimulate the Inyan Kara interval with hydrochloric (HCl) acid, fracture treatment, or both types of stimulation methods should injection rates be deemed unsatisfactory.

K: Injection Procedures

Slawson proposes utilizing a pump house complete with a closed system charge pump, filter system, injection pump and two-four 400 BBL storage tanks. Pressure sensors will monitor injection pressure and shut the pump off at or below the maximum allowed injection pressure (MAIP). Water for injection will be pipelined from the Big Bend 1-5 SWD battery (S5 T151N R92W) to the storage tanks located at the SWD site.

It is anticipated that very little, if any water will be trucked to the site for disposal. Meters at the transfer pump and at the injection site will be used to monitor the amount of fluid injected, and any trucked water to the site will be accounted by brine run tickets.

L: Construction Procedures

It is proposed to drill and complete the Big Bend 3-6 SWD well as follows: Build location and use pit-less system for drill cuttings. The drill cuttings will be moved to an approved waste site at conclusion of drilling.

Drill 13 1/2" hole to 120'+ below the Fox Hills to 1,776'+. Run drift surveys every 300'.
Run new 9 5/8" 36# K55 casing to 1,776'+. Cement casing in place with: Lead-395 sacks Type 3 Varicem Cement (11.5 PPG, Yield 2.97 ft3/sack, 18.19 gallons/sack mix). Tail-205 sacks Type 3 Varicem cement (13.0 PPG, Yield 2.01 ft3/sack, 11.06 gallons/sack mix). Use 60% excess and circulate cement to surface.

The VariCem for the surface casing is Type III cement with the following additives: Salt, Cal-Seal, Econolite, Versaset, Poly-flake. (Note: Slawson reserves the privilege to change the cement design).

NU BOPE and test.

from oil wells would be re-routed to other facilities until the SWD well was returned to service.

P: Monitoring Program-Optional for Class II wells

The offset wells will be annulus pressure monitored daily. If annulus pressure is observed, appropriate actions will be taken.

Q: Plugging and Abandonment

See Form 7520-14 Plugging and Abandonment Plan (**Attachment Q-1**), P&A well bore diagram (**Attachment Q-2**), and proposed P&A Procedure (**Attachment Q-3**).

R: Necessary Resources

Slawson Exploration Company, Inc. has a Standby Trust Agreement in place for $150,000. This mechanism has been updated to reflect the addition of the Big Bend 3-6 well (**Attachment R**).

S: Aquifer Exemptions

Application for Aquifer Exemption permit request attached separately.

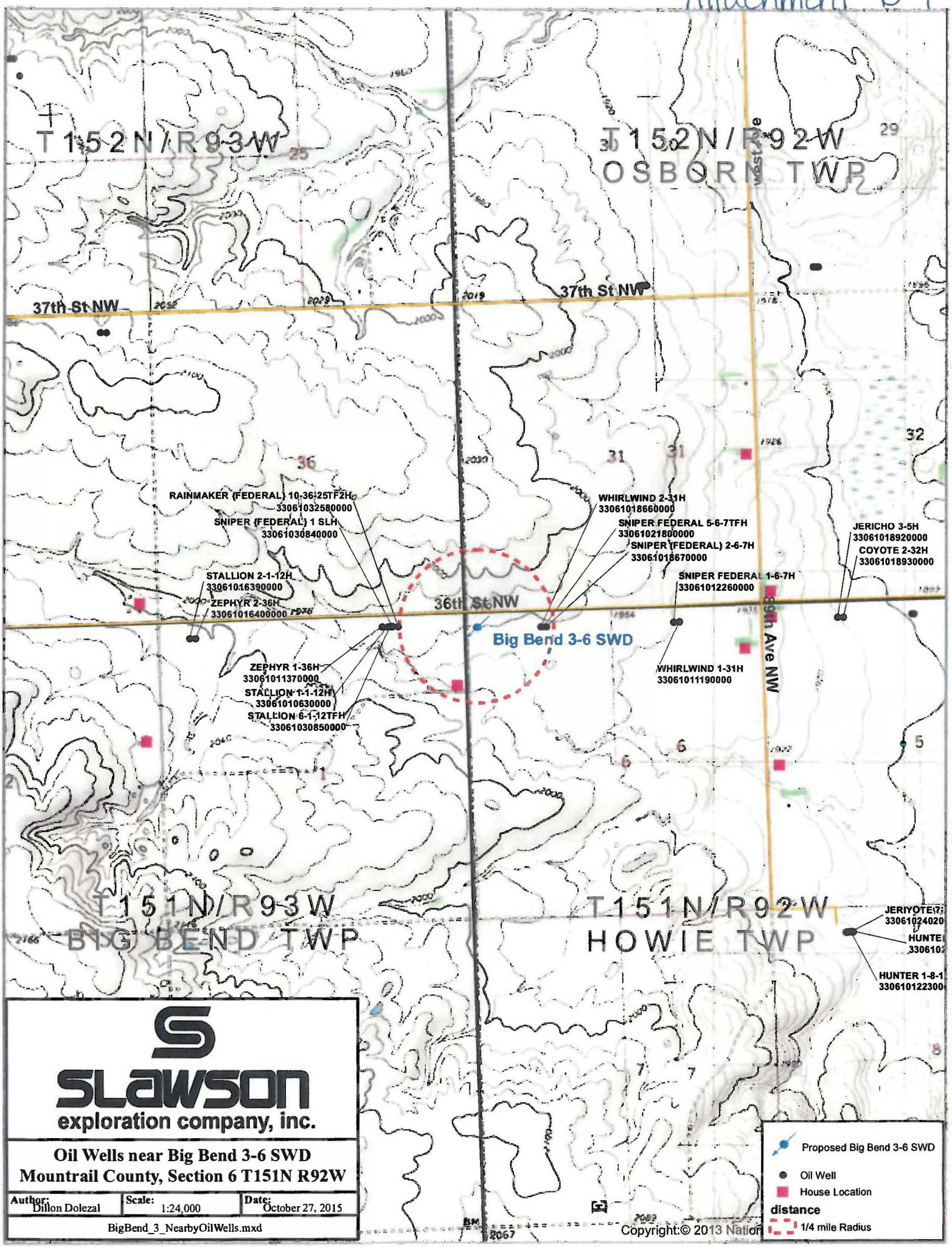
T: Existing EPA Permits

Big Bend 1-5 SWD, S5 T151 R92W (UIC Permit No: ND 22184-08837)

U: Description of Business

Slawson Exploration Company, Inc. is an independent energy company engaged in the exploration, exploitation, development, acquisition, and production of natural gas and crude oil.

Attachment 12-1



SLAWSON
exploration company, inc.

Oil Wells near Big Bend 3-6 SWD
Mountrail County, Section 6 T151N R92W

Author:	Scale:	Date:
Dillon Dolezal	1:24,000	October 27, 2015

BigBend_3_NearbyOilWells.mxd

Attachment 6-2

Exhibit A

Land Owners within ¼ mile (AOR)

Of

250' FNL and 200' FWL

NW¼ of Sec 6, T151N R92W

Big Bend #3-6 SWD

SE¼NW¼, Lots 3, 4, & 5 of Section 6, T151N R92W
Jack & Lily Peterson (Land Owner)
PO Box 639
New Town, North Dakota 58763
(701) 627-4882

S½NE¼, Lots 1 & 2 less outlot 1 of Section 1, T151N R93W
Connie Wolding (Land Owner)
1411 Birchwood Court
San Francisco, CA 94134
(415) 587-1644

Outlot 1 of Lot 1 of S½NE¼ of Section 1, T151N R93W
Bruce & Kathryn Sanderson (Land Owner)
3587 90th Ave NW
New Town, North Dakota 58763
(701) 627-3497

SE¼ of Section 36, T152N R93W and
E½SW¼, Lots 3 & 4 of Section 31, T152N-R92W
Ramona Lacey Farms (Land Owner)
206 5th Street NW
New Town, ND 58763
(701) 627-4733

Attachment C-1 (1 of 4)

WELL COMPLETION OR RECOMPLETION REPORT - FORM

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

NOV 2012 RECEIVED ND OIL & GAS DIVISION

Well File No. 21427

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

Designate Type of Completion
☑ Oil Well ☐ EOR Well ☐ Recompletion ☐ Deepened Well ☐ Added Horizontal Leg ☐ Extended Horizontal Leg
☐ Gas Well ☐ SWD Well ☐ Water Supply Well ☐ Other:

Well Name and Number	Spacing Unit Description
SNIPER (FEDERAL) 2-6-7H	Sections 6 & 7-T151N-R92W

Operator	Telephone Number	Field
Slawson Exploration Company, Inc.	720-457-9820	BIG BEND

Address	Pool
1675 Broadway Suite 1600	Bakken

City	State	Zip Code	Permit Type
Denver	CO	80202	☐ Wildcat ☑ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
280 F N L 1420 F W L	NENW	6	151 N	92 W	Mountrail

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
1/0/1900	9/15/2012	Patterson #167	1974	1952

Type of Electric and Other Logs Run (See Instructions)
OH Log Waiver - GR to surface CBL/GR/CCL

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

Well Bore	String Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	9 5/8	0	1757	13 1/2	36			710	
Vertical Hole	Intermediate	7	0	10684	8 3/4	29 & 32			1042	2197
Lateral1	Liner	4 1/2	9565	20012	6	11.6		9565		

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft) Top	Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	20256	Other	10684	20012	9806	10684	9/15/2012	9/17/2012	PKR	

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)	Name of Zone (If Different from Pool Name)
10684' to 20012'	Middle Bakken

Date Well Completed (SEE INSTRUCTIONS)	Producing Method	Pumping-Size & Type of Pump	Well Status (Producing or Shut-In)
10/24/2012	Flowing		Producing up a 7" Casing

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
10/25/2012	24	18 /64		1502	961.28	1064	42.0 °	Flared

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
	2155		1502	961.28	1064	640

Attachment C-1 (2 of 4)

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Greenhorn	4137	
Belle Fourche	4336	
Mowry	4547	
Inyan Kara	4898	
Swift	5340	
Rierdon	5774	
Piper	5890	
Dunham Salt	absent	
Base Dunham Salt	absent	
Spearfish	6301	
Pine Salt	6556	
Base Pine Sale	6607	
Opeche	6625	
Minnelusa	7031	
Amsden	7201	
Tyler	7398	
Big Snowy	7611	
Kibbey	7788	
Kibbey Lime	7935	
Charles	8101	
Base Last Salt	8609	
Mission Canyon	8794	
Lodgepole	9445	
KOP	9806	
Upper Bakken Shale	10259	
Middle Bakken	10279	
Middle Bakken Mkr	10289	

PLUG BACK INFORMATION

Well Bore	Type of Plug	Top (Ft)	Bottom (Ft)	Sacks Cement

CORES CUT

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

Drill Stem Test

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

Attachment C-1
(3 of 4)

Well Specific Stimulations

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
10/11/2012	Middle Bakken	10684	20012	33	39367	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Sand Frac		3269540	6215	31.1

Details
Fractured the Middle Bakken with 33, stages using fracturing sleeves and packers, with 321440# of 100 Mesh Sand, 2948100# of 20/40 White Sand, and 39367 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 11/26/2012
Signature /MATTHEW GLENN/	Printed Name Matthew Glenn	Title Engineering Technician	

SLAWSON
exploration company, inc.

UPDATED 2-24-16
JIM KRIEGER

WELLBORE DIAGRAM
Sniper (Federal) 2-6-7H

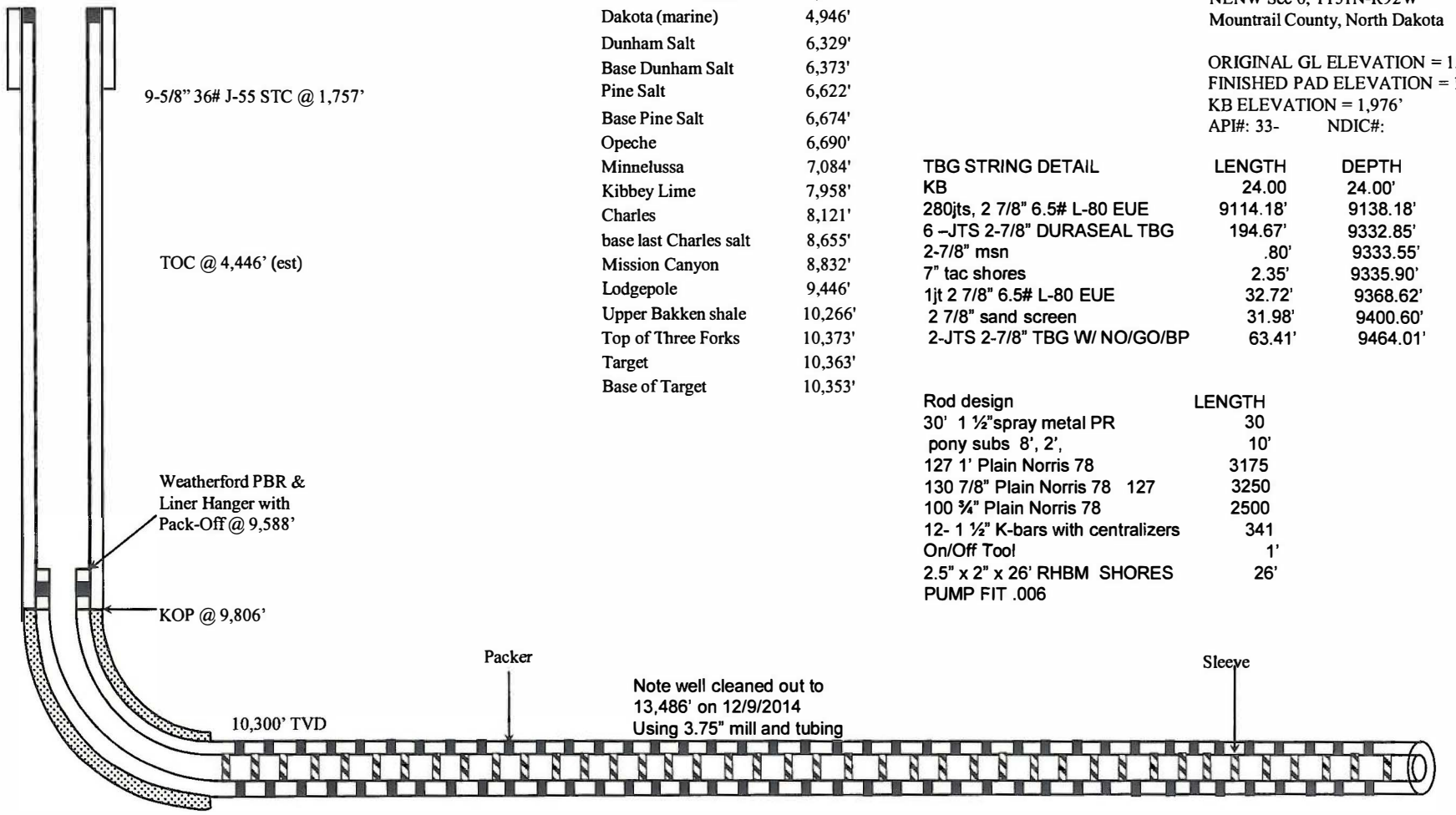
Formation	TVD
Pierre/base Foxhills	1,651'
Dakota (marine)	4,946'
Dunham Salt	6,329'
Base Dunham Salt	6,373'
Pine Salt	6,622'
Base Pine Salt	6,674'
Opeche	6,690'
Minnelussa	7,084'
Kibbey Lime	7,958'
Charles	8,121'
base last Charles salt	8,655'
Mission Canyon	8,832'
Lodgepole	9,446'
Upper Bakken shale	10,266'
Top of Three Forks	10,373'
Target	10,363'
Base of Target	10,353'

Location: 280' FSL and 1,420' FEL
NENW Sec 6, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,955'
FINISHED PAD ELEVATION = 1,952'
KB ELEVATION = 1,976'
API#: 33- NDIC#:

TBG STRING DETAIL	LENGTH	DEPTH
KB	24.00	24.00'
280jts, 2 7/8" 6.5# L-80 EUE	9114.18'	9138.18'
6 –JTS 2-7/8" DURASEAL TBG	194.67'	9332.85'
2-7/8" msn	.80'	9333.55'
7" tac shores	2.35'	9335.90'
1jt 2 7/8" 6.5# L-80 EUE	32.72'	9368.62'
2 7/8" sand screen	31.98'	9400.60'
2-JTS 2-7/8" TBG W/ NO/GO/BP	63.41'	9464.01'

Rod design	LENGTH
30' 1 ½"spray metal PR	30
pony subs 8', 2',	10'
127 1' Plain Norris 78	3175
130 7/8" Plain Norris 78 127	3250
100 ¾" Plain Norris 78	2500
12- 1 ½" K-bars with centralizers	341
On/Off Tool	1'
2.5" x 2" x 26' RHBM SHORES	26'
PUMP FIT .006	



7" 32# P-110 from	Surface	to	213'
7" 29# P-110 from	213'	to	6,154'
7" 32# P-110 from	6,154'	to	8,854'
7" 29# P-110 from	8,854'	to	10,684'

Weatherford Completion System:

10,447' of 4-1/2" 11.6# P-110 BTC liner with 38 packers, 38 sleeves and a liner hanger with pack-off (960' of tools). Set Liner at 20,012'

Lateral TD @ 20,256' MD,
10,302' TVD
9,572' of Open Hole

Attachment C-1 (4 of 4)

Attachment C-2
Page 1 of 4

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)

NOV 2012
RECEIVED
ND OIL & GAS DIVISION

Well File No.
23255

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

Designate Type of Completion
☑ Oil Well ☐ EOR Well ☐ Recompletion ☐ Deepened Well ☐ Added Horizontal Leg ☐ Extended Horizontal Leg
☐ Gas Well ☐ SWD Well ☐ Water Supply Well ☐ Other:

Well Name and Number	Spacing Unit Description
SNIPER FEDERAL 5-6-7TFH	Sections 6 & 7 T151N R92W

Operator	Telephone Number	Field
Slawson Exploration Company, Inc.	720-457-9820	BIG BEND

Address	Pool
1675 Broadway Suite 1600	Bakken

City	State	Zip Code	Permit Type
Denver	CO	80202	☐ Wildcat ☑ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
280 F N L 1370 F W L	NENW	6	151 N	92 W	Mountrail

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
1/0/1900	8/10/2012	Patterson #167	1974	1952

Type of Electric and Other Logs Run (See Instructions)
OH Log Waiver - CBL/GR/CCL, GR to surface

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

Well Bore	String Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	9 5/8	0	1770	13 1/2	36			710	
Vertical Hole	Intermediate	7	0	10799	8 3/4	29 & 32			911	3380
Lateral1	Liner	4 1/2	9743	20280	6	11.6		9743		

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft) Top	Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	20318	Other	10799	20280	9875	10799	8/10/2012	8/12/2012	PKR	

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)	Name of Zone (If Different from Pool Name)
10799' to 20280'	Three Forks

Date Well Completed (SEE INSTRUCTIONS)	Producing Method	Pumping-Size & Type of Pump	Well Status (Producing or Shut-In)
10/26/2012	Flowing		Producing up a 7" Casing

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
10/31/2012	24	18 /64		1092	698.88	870	42.0 °	Flared

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
	2325		1092	698. 88	870	640

Attachment C-2
Page 2 of 4

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Greenhorn	4157	
Belle Fourche	4348	
Mowry	4559	
Inyan Kara	4915	
Swift	5350	
Rierdon	5804	
Piper	5900	
Dunham Salt	absent	
Base Dunham Salt	absent	
Spearfish	6334	
Pine Salt	6568	
Base Pine Sale	6616	
Opeche	6637	
Minnelusa	7043	
Amsden	7213	
Tyler	7404	
Big Snowy	7628	
Kibbey	7798	
Kibbey Lime	7940	
Charles	8115	
Base Last Salt	8623	
Mission Canyon	8807	
Lodgepole	9439	
KOP	9875	
Upper Bakken Shale	10263	
Middle Bakken	10284	
Middle Bakken Mkr	10293	
Three Forks	10375	

PLUG BACK INFORMATION

Well Bore	Type of Plug	Top (Ft)	Bottom (Ft)	Sacks Cement

CORES CUT

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

Drill Stem Test

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

Attachment C-2
Page 3 of 4

Well Specific Stimulations

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
10/15/2012	Three Forks	10799	20280	33	35631	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Sand Frac		2691127	6437	33.5

Details
Fractured the Three Forks with 33, stages using fracturing sleeves and packers, with 315198# of 100 Mesh Sand, 2375929# of 20/40 White Sand, and 35631 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 11/26/2012
Signature (signature)	Printed Name Matthew Glenn	Title Engineering Technician

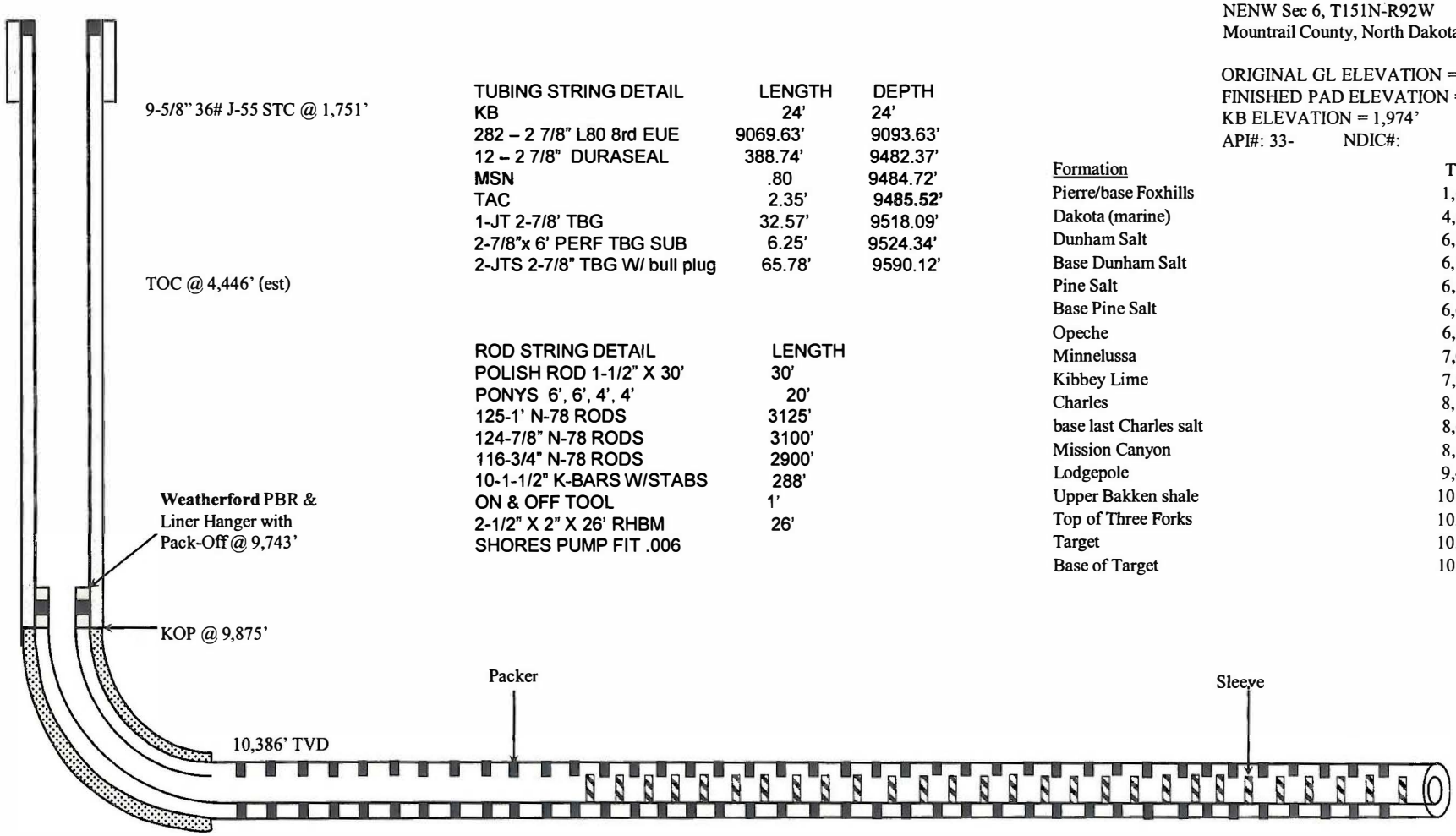
SLAWSON
exploration company, inc.

WELLBORE DIAGRAM
Sniper (Federal) 5-6-7H

Updated: 7/21/16 CW

Location: 280' FNL and 1,370' FWL
NENW Sec 6, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,955'
FINISHED PAD ELEVATION = 1,952'
KB ELEVATION = 1,974'
API#: 33- NDIC#:



TUBING STRING DETAIL	LENGTH	DEPTH
KB	24'	24'
282 – 2 7/8" L80 8rd EUE	9069.63'	9093.63'
12 – 2 7/8" DURASEAL	388.74'	9482.37'
MSN	.80	9484.72'
TAC	2.35'	9485.52'
1-JT 2-7/8' TBG	32.57'	9518.09'
2-7/8"x 6' PERF TBG SUB	6.25'	9524.34'
2-JTS 2-7/8" TBG W/ bull plug	65.78'	9590.12'

ROD STRING DETAIL	LENGTH
POLISH ROD 1-1/2" X 30'	30'
PONYS 6', 6', 4', 4'	20'
125-1' N-78 RODS	3125'
124-7/8" N-78 RODS	3100'
116-3/4" N-78 RODS	2900'
10-1-1/2" K-BARS W/STABS	288'
ON & OFF TOOL	1'
2-1/2" X 2" X 26' RHBM	26'
SHORES PUMP FIT .006	

Formation	TVD
Pierre/base Foxhills	1,651'
Dakota (marine)	4,946'
Dunham Salt	6,329'
Base Dunham Salt	6,373'
Pine Salt	6,622'
Base Pine Salt	6,674'
Opeche	6,690'
Minnelussa	7,084'
Kibbey Lime	7,958'
Charles	8,121'
base last Charles salt	8,655'
Mission Canyon	8,832'
Lodgepole	9,446'
Upper Bakken shale	10,266'
Top of Three Forks	10,373'
Target	10,363'
Base of Target	10,353'

7" 32# P-110 from	Surface	to	216'
7" 29# P-110 from	216'	to	6,116'
7" 32# P-110 from	6,116'	to	8,869'
7" 29# P-110 from	8,869'	to	10,797'

Weatherford Completion System:

9,752' of 4-1/2" 11.6# P-110 BTC liner with 33 packers, 33 sleeves and a liner hanger with pack-off (960' of tools). Set Liner at 20,280'

Lateral TD @ 20,318' MD,
10,444' TVD
9,521' of Open Hole

Attachment C-2
Page 4 of 4

Attachment C-3
Page 1 of 4

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)

NOV 2012 RECEIVED ND OIL & GAS DIVISION

Well File No. 21426

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

Designate Type of Completion
☑ Oil Well ☐ EOR Well ☐ Recompletion ☐ Deepened Well ☐ Added Horizontal Leg ☐ Extended Horizontal Leg
☐ Gas Well ☐ SWD Well ☐ Water Supply Well ☐ Other:

Well Name and Number	Spacing Unit Description
WHIRLWIND 2-31H	Section 31-T152N-R92W

Operator	Telephone Number	Field
Slawson Exploration Company, Inc.	720-457-9820	BIG BEND

Address	Pool
1675 Broadway Suite 1600	Bakken

City	State	Zip Code	Permit Type
Denver	CO	80202	☐ Wildcat ☑ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
280 F N L 1320 F W L	NENW	6	151 N	92 W	Mountrail

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
1/ 0/1900	7/ 3/2012	Patterson #167	1974	1952

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)

Well Bore	String Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	9 5/8	0	1766	13 1/2	36			726	
Vertical Hole	Intermediate	7	0	10716	8 3/4	29 & 32			965	2350
Lateral1	Liner	4 1/2	9713	15497	6	11.6		9713		

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft) Top	Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	15525	Other	10716	15497	9811	10716	7/3/2012	7/4/2012	PKR	

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)	Name of Zone (If Different from Pool Name)
10716' to 15497'	Middle Bakken

Date Well Completed (SEE INSTRUCTIONS)	Producing Method	Pumping-Size & Type of Pump	Well Status (Producing or Shut-In)
10/24/2012	Flowing		Producing up a 7" Casing

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
10/26/2012	24	18 /64		891	570.24	969	42.0 °	Flared

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
	1540		891	570.24	969	640

Attachment C-3
Page 2 of 4

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Greenhorn	4160	
Belle Fourche	4349	
Mowry	4561	
Inyan Kara	4906	
Swift	5356	
Rierdon	5804	
Piper	5899	
Dunham Salt	absent	
Base Dunham Salt	absent	
Spearfish	6340	
Pine Salt	6571	
Base Pine Sale	6620	
Opeche	6639	
Minnelusa	7005	
Amsden	7213	
Tyler	7410	
Big Snowy	7610	
Kibbey	7796	
Kibbey Lime	7940	
Charles	8109	
Base Last Salt	8626	
Mission Canyon	8807	
Lodgepole	9428	
KOP	9811	
Upper Bakken Shale	10256	
Middle Bakken	10276	
Middle Bakken Mkr	10286	

PLUG BACK INFORMATION

Well Bore	Type of Plug	Top (Ft)	Bottom (Ft)	Sacks Cement

CORES CUT

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

Drill Stem Test

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

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

Drill Pipe Recovery

Sample Chamber Recovery

Attachment C-3
Page 3 of 4

Well Specific Stimulations

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
10/18/2012	Middle Bakken	10716	15497	18	21042	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Sand Frac		1721940	5869	31.3

Details
Fractured the Middle Bakken with 18, stages using fracturing sleeves and packers, with 179200# of 100 Mesh Sand, 1542740# of 20/40 White Sand, and 21042 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 11/26/2012
Signature [signature]	Printed Name Matthew Glenn	Title Engineering Technician

Formation	TVD
Pierre/base Foxhills	1,666'
Dakota (marine)	4,946'
Dunham Salt	6,329'
Base Dunham Salt	6,373'
Pine Salt	6,622'
Base Pine Salt	6,674'
Opeche	6,690'
Minnelussa	7,084'
Kibbey Lime	7,958'
Charles	8,121'
base last Charles salt	8,655'
Mission Canyon	8,832'
Lodgepole	9,446'
Upper Bakken shale	10,266'
Top of Target	10,293'
Target	10,303'

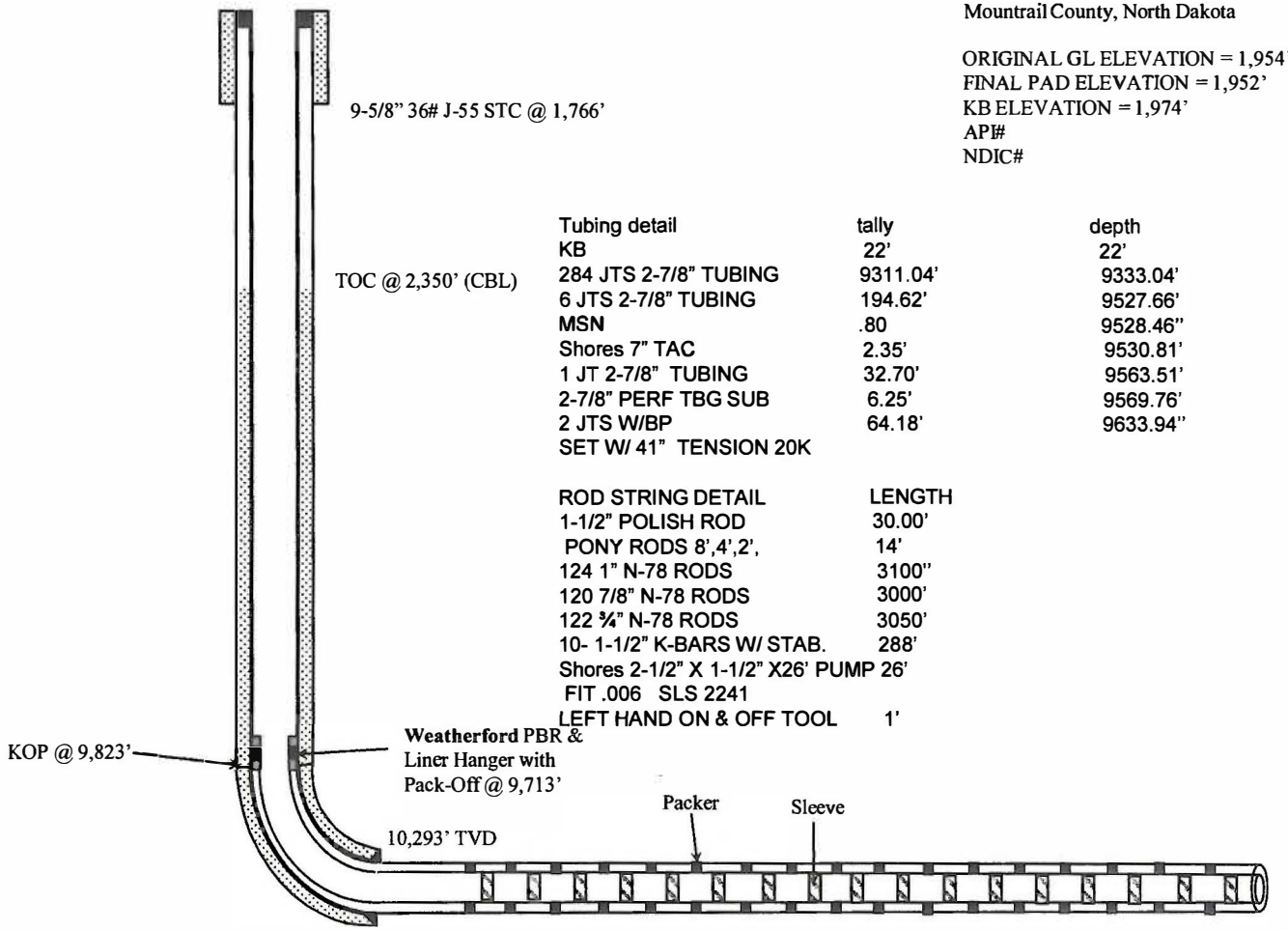
SLAWSON
exploration company, inc.

WELLBORE DIAGRAM
Whirlwind 2-31H

UPDATED 12/4/15 CW

Location: 280' FNL and 1,320' FWL
NENW Sec 6, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,954'
FINAL PAD ELEVATION = 1,952'
KB ELEVATION = 1,974'
API#
NDIC#



Tubing detail	tally	depth
KB	22'	22'
284 JTS 2-7/8" TUBING	9311.04'	9333.04'
6 JTS 2-7/8" TUBING	194.62'	9527.66'
MSN	.80	9528.46"
Shores 7" TAC	2.35'	9530.81'
1 JT 2-7/8" TUBING	32.70'	9563.51'
2-7/8" PERF TBG SUB	6.25'	9569.76'
2 JTS W/BP	64.18'	9633.94"
SET W/ 41" TENSION 20K		

ROD STRING DETAIL	LENGTH
1-1/2" POLISH ROD	30.00'
PONY RODS 8',4',2',	14'
124 1" N-78 RODS	3100"
120 7/8" N-78 RODS	3000'
122 ¾" N-78 RODS	3050'
10- 1-1/2" K-BARS W/ STAB.	288'
Shores 2-1/2" X 1-1/2" X26' PUMP	26'
FIT .006 SLS 2241	
LEFT HAND ON & OFF TOOL	1'

7" 32# P-110 from	Surface	to	176'
7" 29# P-110 from	176'	to	6,172'
7" 32# P-110 from	6,172'	to	8,825'
7" 29# P-110 from	8,825'	to	10,714'

Weatherford Completion System:

5,754' of 4-1/2" 11.6# P-110 liner with 18 mech packers, 18 sleeves and a liner hanger with pack-off. Set Liner at 15,497'

Lateral TD @ 15,525' MD,
10,279' TVD
4,811' of Open Hole

Attachment C-3
Page 4 of 4

BIG BEND 3-6 SWD
Sec 6-T151N-R92W
Mountrail County, ND

Geological Data Sheet

Expected depths, thicknesses and general lithology of units to be encountered in Big Bend 3-6 SWD.

Note: tops and thicknesses from surface through base of Foxhills/top Pierre inferred from surface exposures and shallow boreholes. Top of Pierre, and tops and thicknesses of units below this point, are projected from deep well-log control. Measured depth values are calculated from a datum elevation of 1,990' above sea level.

Measured Depth (thickness)

0 (23) Coleharbor, Pleistocene: unconsolidated sediments, genetically related to glacial processes and a northerly clastic sediment source area. Three general categories: pebbly, sandy, silty clay (87%); sand and gravel (8%); and silt and clay (5%). The "pebbly, sandy, silty clay" unit is inferred to be glacial till, has low permeability, and consequently is an "aquitard" (as opposed to "aquifer"). The "sand and gravel" unit, thought to be derived from glacial rivers, is a well-sorted, highly-permeable aquifer, and is the largest source of potable groundwater in Mountrail County. The "silt and clay" unit is another low-permeability aquitard, and was deposited in larger glacial lakes.

23 (535) Bullion Creek, Paleocene: Silt and clay, brownish-gray, varying amounts of sand, lignite, natural brick, limestone, and sandstone; river, lake, and swamp sediment. Equivalent to strata previously referred to the Tongue River Formation.

558 (485) Cannonball, Paleocene: Sand and mudstone, brownish-yellow and light gray, with lenticular and concretionary sandstone, marine shoreline and offshore sediment.

1043 (370) Hell Creek, Cretaceous: sand, somber shades of light-gray to brownish-gray, and cross bedded sandstone with lignite shale and dark-purple, manganese-oxide – stained concretions; river sediment and some estuarine sediment.

1413 (243) Fox Hills, Cretaceous: Silt and shale, sandy shale, sandstone, and siltstone, shades of buff to yellowish-brown; interbedded with lignitic shale laminae; some beds fossiliferous; intermittent sandstone at top is grayish-brown to white, fine, siliceous; silt and shale gradational downward with shale of the Pierre Formation; largely marine coastal sediment.

1656 (2045) Pierre, Cretaceous: Shale, light to medium or dark-gray, fissile, flaky to blocky, generally noncalcareous; marine offshore sediment.

3701 (257) Niobrara, Cretaceous: Shale, medium-light-gray to medium-gray, calcareous with white, limey inclusions ("First White Specks"); marly zone near the middle.

3958 (226) Carlile, Cretaceous: Shale, medium-dark-gray to black, non-calcareous, soft; large ellipsoidal concretions containing abundant gypsum (selenite); zone of fine, secondary crystals at the top.
4184 (183) Greenhorn, Cretaceous: Shale, dark gray, calcareous, soft; thin-bedded shaly limestone; good electric and radioactivity log marker; ("Second White Specks").

4367 (219) Belle Fourche, Cretaceous: Shale, medium to dark-gray, soft, micaceous, lumpy to massive, spongy, includes beds of light-bluish-gray bentonitic clay.

4586 (354) Mowry, Cretaceous: Shale, medium to dark gray, soft, flakey to splintery, spongy; traces of light-blue-gray bentonitic clay with no effective porosity or permeability; top is marked by radioactive zone.

Note: Note: In addition to the adjacent Mowry Formation, the 'upper confining interval' will essentially consist of all the shale units between the Inyan Kara and the deepest surface water stratum, the base of Fox Hills (approximately 3,200' of shale in total).

4940 (439) Inyan Kara, Cretaceous (Injection Zone): Upper part is mainly marine sandstone, light-gray, fine to coarse, quartzose; and shale, gray, silty, and lumpy. Lower part is mainly nonmarine sandstone, medium to coarse, angular to subrounded, quartzose, occasional lenses of gray, bentonitic shale commonly contains manganese-siderite spherulites (pellets).

5379 (443) Swift, Jurassic (Lower Confining Interval): Shale, dark-gray to greenish, fissile, waxy, silty, calcareous; local limestone and glauconitic sandstone.

5822 (93) Reirdon, Jurassic: Shale, varicolored shades of gray, green, and red, calcareous; some limestone.

5915 (440) Piper, Jurassic: Limestone, white to buff, brown, or gray, dense, finely crystalline, dolomitic, oolitic, fossiliferous; shale, red, gray-green, and purple, silty; gypsum and anhydrite. Recognized members include the Bowes, Firemoon, Tampico, Kline, Picard, Poe and the Dunham Salt at the base.

6355 (287) Spearfish, Triassic to Permian: Siltstone, moderate· to light-brown and reddish-brown; sandstone, fine-grained, frosted, rounded grains, slightly calcareous; halite, massive, clear, large crystals with anhydrite, white, silty; interbeds of shale, gray, fissile, and mudstone, reddish-orange; traces of pyrite and dolomite.

6642 (13) Minnekahta, Permian: Limestone, creamy, pink, and purple mottled, chalky to sublithographic, clayey, anhydritic locally.

6655 (412) Opeche, Permian: Shale, orange-red, slightly dolomitic, locally silty, streaks of anhydrite and gypsum; halite in central basin area.

7067 (217) Minnelusa, Permian to Pennsylvanian: Sandstone, pinkish·gray to pale-reddish-brown, fine-to medium-grained, subangular to well-rounded, shaly, locally dolomitic; interbedded with pinkish-gray to grayish-red, microcrystalline dolomite; local interbeds of grayish-red shale; cherty at unconformity top.

7284 (163) Amsden, Pennsylvanian: Dolomite, pinkish-gray to pale-yellowish-brown, microcrystalline to coarse-crystalline, dense, sandy; interbedded shale, dark-reddish-brown, silty, blocky fissile; and anhydrite, white to grayish-brown, fine crystalline, dolomitic; sandstone near top, gray to pale-red, fine-grained, calcareous.

7447 (361) Tyler, Pennsylvanian: Shale and limestone, medium· to dark-gray to red and varicolored, carbonaceous near base; sandstone, fine-to medium-grained; channels, barrier islands, and shoreline deposits.

7808 (318) Kibbey, Mississippian: Sandstone, reddish· to light-gray, fine· to medium-grained, rounded; limestone, white to brown, dense, dolomitic; shale, reddish to variegated, silty, interbedded gypsum.

8126 (715) Charles, Mississippian: Poplar interval: evaporites; interbedded anhydrite, halite, dolomite, mudstone, and shale; iron staining common; Ratcliffe interval: limestone, pale-yellow-brown, dolomitic, oolitic; alternating with dolomitic limestone, anhydritic, and shale beds.

8841 (622) Mission Canyon, Mississippian: Limestone, yellow-brown to pink, fine, fragmental, oolitic, and pseudo-oolitic; intertonguing lenses of anhydrite and shaly dolomitic limestone. Tilston interval: limestone, pale-yellowish-brown to pink, dolomitic, fine to coarsely crystalline, oolitic and crinoidal, cherty; anhydrite; minor gray shale

9463 (820) Lodgepole, Mississippian: Limestone, dark-gray to brown to pale-orange or pinkish, argillaceous to cherty to dolomitic, fragmental, finely crystalline to granular, oolitic, dense, vuggy to fine intergranular

10283 (110) Bakken, Mississippian: Shale, black, noncalcareous, carbonaceous, fissile, pyritic; gray, argillaceous dolomite in middle part

10393 (235) Three Forks, Devonian: Siltstone and shale, grayish shades of red, green, and orange, interbedded and interlaminated, dolomitic, anhydritic; sandstone locally at top, silty to fine-grained.

References:

1. Clayton, Lee, 1972. "Geology of Mountrail County, North Dakota", *North Dakota Geological Survey Bulletin 55-IV.*

2. Bluemle, John P., Sidney B. Anderson, John A. Andrew, David W. Fischer and Julie A. LeFever, 1986. "North Dakota Stratigraphic Column", *North Dakota Geological Survey Miscellaneous Series 66*.

Attachment H-1

ASTRO-CHEM LAB, INC.

4102 2nd Ave. West
Williston, North Dakota 58802-0972
P.O. Box 972
Phone: (701) 572-7355

WATER ANALYSIS REPORT

SAMPLE NUMBER W-10-1799 DATE OF ANALYSIS 6-17-10

COMPANY Slawson Exploration Co.

CITY Denver STATE CO

WELL NAME AND/OR NUMBER Zula / Fox

DATE RECEIVED 6-10-10 DST NUMBER

SAMPLE SOURCE Pit Water

LOCATION OF SEC. TWN. RANGE COUNTY

FORMATION DEPTH

DISTRIBUTION Distribution List

RESISTIVITY @ 77°F = 0.105 Ohm-Meters pH = 7.33

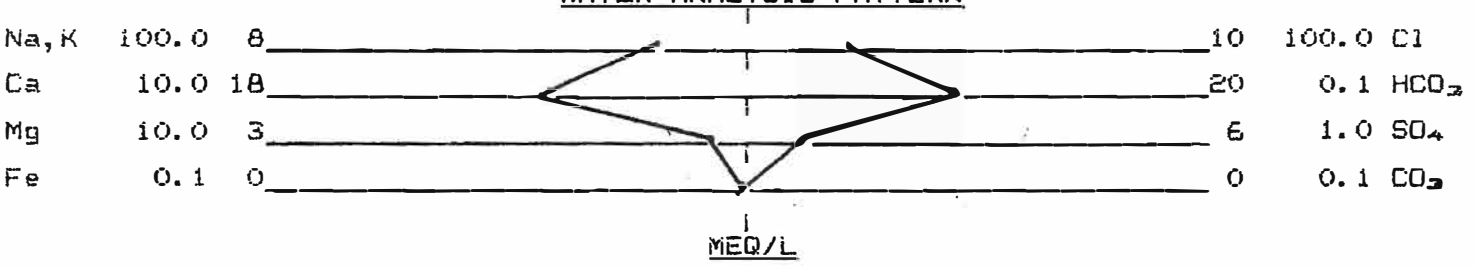
SPECIFIC GRAVITY @ 77°F = 1.045 H_2S = Negative

TOTAL DISSOLVED SOLIDS (CALCULATED) = 60136 mg/L (57546 ppm)

SODIUM CHLORIDE (CALCULATED) = 60613 mg/L (58003 ppm)

CATION	MEQ/L	mg/L	ANION	MEQ/L	mg/L
CALCIUM	175.0	3472	CHLORIDE	1036.8	36758
MAGNESIUM	25.0	278	CARBONATE	0.0	0
SODIUM	783.0	18000	BICARBONATE	2.0	122
IRON	0.0	0.9	SULFATE	6.0	287
CHROMIUM	0.0	0.0	NITRATE	1.1	66
BARIUM	0.0	2.2			
POTASSIUM	29.4	1150			

WATER ANALYSIS PATTERN



REMARKS Sampled 6-8-10

ANALYZED BY: C. Jungels

Attachment H-2

ASTRO-CHEM LAB, INC.

4102 2nd Ave. West
Williston, North Dakota 58802-0972
P.O. Box 972
Phone: (701) 572-7355

WATER ANALYSIS REPORT

SAMPLE NUMBER W-10-1798 DATE OF ANALYSIS 6-17-10

COMPANY Slawson Exploration Co.

CITY Denver STATE CO

WELL NAME AND/OR NUMBER Fox 1-28H

DATE RECEIVED 6-10-10 DST NUMBER

SAMPLE SOURCE Production Water

LOCATION NWNW OF SEC. 28 TWN. 152W RANGE 92W COUNTY Mountrail

FORMATION DEPTH

DISTRIBUTION Distribution List

RESISTIVITY @ 77°F = 0.041 Ohm-Meters pH = 5.27

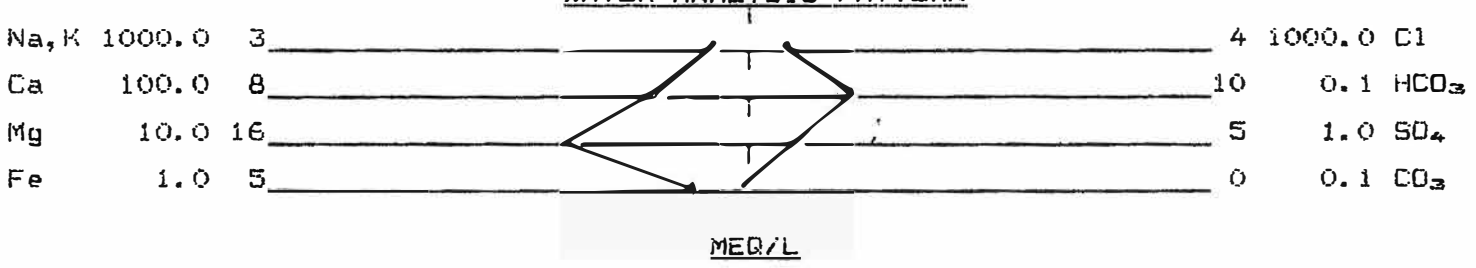
SPECIFIC GRAVITY @ 77°F = 1.195 H_2S = Negative

TOTAL DISSOLVED SOLIDS (CALCULATED) = 256366 mg/L (214532 ppm)

SODIUM CHLORIDE (CALCULATED) = 259288 mg/L (216977 ppm)

CATION	MEQ/L	mg/L	ANION	MEQ/L	mg/L
CALCIUM	800.0	15872	CHLORIDE	4435.2	157241
MAGNESIUM	160.0	1778	CARBONATE	0.0	0
SODIUM	3305.8	76000	BICARBONATE	1.0	61
IRON	4.6	86.0	SULFATE	5.3	255
CHROMIUM	0.1	0.5	NITRATE	1.2	72
BARIUM	0.7	51.0			
POTASSIUM	126.6	4950			

WATER ANALYSIS PATTERN



REMARKS Sampled 6-8-10

ANALYZED BY: C. Jungels

Attachment A-3

ASTRO-CHEM LAB, INC.

4102 2nd Ave. West
Williston, North Dakota 58802-0972
P.O. Box 972
Phone: (701) 572-7355

WATER ANALYSIS REPORT

SAMPLE NUMBER W 11-2283 DATE OF ANALYSIS 5-17-11

COMPANY Slawson Exploration

CITY Denver STATE CO

WELL NAME AND/OR NUMBER Skybolt 1-24H

DATE RECEIVED 5-17-11 DST NUMBER

SAMPLE SOURCE Prod. Water

LOCATION SESE SEC. 24 TWN. 152N RANGE 93W COUNTY Mountrail

FORMATION DEPTH

DISTRIBUTION Dale Smith

RESISTIVITY @ 77° = 0.040 Ohm-Meters pH = 4.95

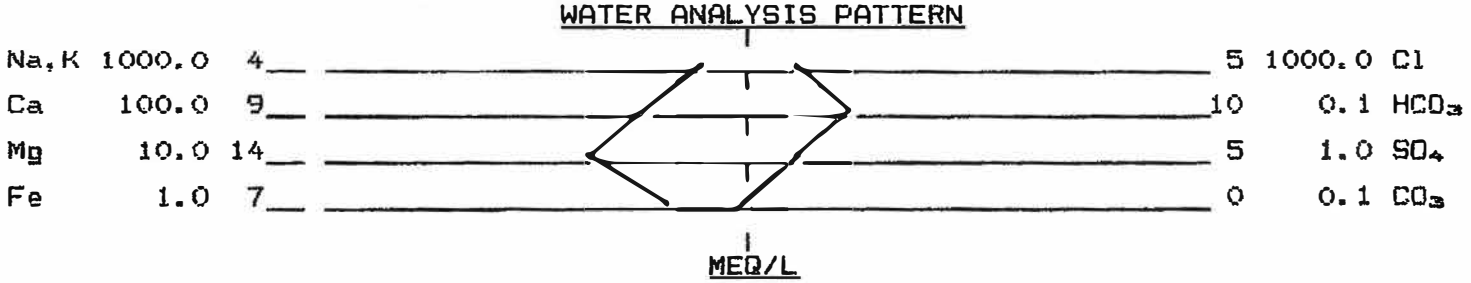
SPECIFIC GRAVITY @ 77°F = 1.200 H_2S = Negative

TOTAL DISSOLVED SOLIDS (CALCULATED) = 287569 mg/L (239641 ppm)

SODIUM CHLORIDE (CALCULATED) = 284543 mg/L (237119 ppm)

CATION	MEQ/L	mg/L	ANION	MEQ/L	mg/L
CALCIUM	920.0	18253	CHLORIDE	4867.2	172557
MAGNESIUM	140.0	1555	CARBONATE	0.0	0
SODIUM	3801.7	87400	BICARBONATE	1.0	61
IRON	7.3	135.0	SULFATE	5.2	248
CHROMIUM	0.1	0.7	NITRATE	0.0	0
BARIUM	.3	19.9			
POTASSIUM	187.7	7340			

WATER ANALYSIS PATTERN



REMARKS Sample 5-16-11

ANALYZED BY: C. Jungels

Champion Technologies

Water Analysis Report

Attention: **Cason Schenfisch**

Customer: **Slawson Exploration Co Inc (1500280)**

Location Code: **31505**
Sample ID: **AA09646**
Batch ID: **2013-03-14-016-45-SW**
Collection Date: **03/08/2013**
Receive Date: **03/14/2013**
Report Date: **03/25/2013**

Region: **Van Hook Field**
Location: **New Town, ND**
System: **Production System**
Equipment: **Sniper Federal 2-6-7H**
Lab ID: **ABU-0045**
Sample Point: **Treater**

Analyses	Result	Unit
Dissolved CO2	**2376**	mg/L
Dissolved H2S	**0**	mg/L
pH	**6.8**	
Pressure	**20**	psi
Temperature	**40**	° F

Analyses	Result	Unit
Ionic Strength	**5.06**	
Resistivity	**0.024**	ohms - m
Total Dissolved Solids	**266664.4**	mg/L
Conductivity	**416302**	µS - cm3
Specfic Gravity	**1.184**	
Bicarbonate	**183**	mg/L
Carbonate	**0**	mg/L

Cations	Result	Unit
Iron	**222.5**	mg/L
Manganese	**8.592**	mg/L
Barium	**13.04**	mg/L
Strontium	**1076**	mg/L
Calcium	**15620**	mg/L
Magnesium	**1223**	mg/L
Sodium	**84875.24**	mg/L

Anions	Result	Unit
Chloride	**163100**	mg/L
Sulfate	**343**	mg/L

Scale Type	SI	PTB
Calcite (CaCO3)	**0.12**	**13.10**
Barite (BaSO4)	**1.76**	**7.60**
Gypsum (CaSO4)	**-0.22**	**0.00**
Hemihydrate (CaSO4)	**-0.25**	**0.00**
Anhydrite (CaSO4)	**-0.22**	**0.00**
Celestite (SrSO4)	**0.75**	**156.10**
Saturation Index Calculation (Tomson-Oddo Model)		

Comments:

Champion Technologies

Water Analysis Report

Attention: **Cason Schenfisch**

Customer: **Slawson Exploration Co Inc (1500280)**

Location Code: **31507**
Sample ID: **AA09648**
Batch ID: **2013-03-14-016-45-SW**
Collection Date: **03/08/2013**
Receive Date: **03/14/2013**
Report Date: **03/25/2013**

Region: **Van Hook Field**
Location: **New Town, ND**
System: **Production System**
Equipment: **Sniper Federal 5-6-7 TFH**
Lab ID: **ABU-0045**
Sample Point: **Treater**

Analyses	Result	Unit
Dissolved CO2	1782	mg/L
Dissolved H2S	0	mg/L
pH	7.0	
Pressure	60	psi
Temperature	100	° F

Analyses	Result	Unit
Ionic Strength	5.63	
Resistivity	0.022	ohms - m
Total Dissolved Solids	284800.7	mg/L
Conductivity	444548	µS - cm3
Specfic Gravity	1.194	
Bicarbonate	110	mg/L
Carbonate	0	mg/L

Cations	Result	Unit
Iron	279.3	mg/L
Manganese	10.62	mg/L
Barium	15.37	mg/L
Strontium	1656	mg/L
Calcium	23670	mg/L
Magnesium	1879	mg/L
Sodium	81762.36	mg/L

Anions	Result	Unit
Chloride	175100	mg/L
Sulfate	318	mg/L

Scale Type	SI	PTB
Calcite (CaCO3)	1.03	43.90
Barite (BaSO4)	1.44	8.80
Gypsum (CaSO4)	-0.22	0.00
Hemihydrate (CaSO4)	-0.19	0.00
Anhydrite (CaSO4)	0.14	34.60
Celestite (SrSO4)	0.90	142.50
Saturation Index Calculation (Tomson-Oddo Model)		

Comments:

Champion Technologies

Water Analysis Report

Attention: **Cason Schenfisch**

Customer: **Slawson Exploration Co Inc (1500280)**

Location Code: **31508**
Sample ID: **AA09649**
Batch ID: **2013-03-14-016-45-SW**
Collection Date: **03/08/2013**
Receive Date: **03/14/2013**
Report Date: **03/25/2013**

Region: **Van Hook Field**
Location: **New Town, ND**
System: **Production System**
Equipment: **Lunker Federal 2-33-4H**
Lab ID: **ABU-0045**
Sample Point: **Treater**

Analyses	Result	Unit
Dissolved CO2	1276	mg/L
Dissolved H2S	0	mg/L
pH	6.5	
Pressure	45	psi
Temperature	72	° F

Analyses	Result	Unit
Ionic Strength	4.65	
Resistivity	0.026	ohms - m
Total Dissolved Solids	245441.9	mg/L
Conductivity	383114	µS - cm3
Specfic Gravity	1.172	
Bicarbonate	146	mg/L
Carbonate	0	mg/L

Cations	Result	Unit
Iron	242.3	mg/L
Manganese	6.523	mg/L
Barium	7.15	mg/L
Strontium	875.5	mg/L
Calcium	13520	mg/L
Magnesium	1394	mg/L
Sodium	78683.44	mg/L

Anions	Result	Unit
Chloride	150100	mg/L
Sulfate	467	mg/L

Scale Type	SI	PTB
Calcite (CaCO3)	-0.12	0.00
Barite (BaSO4)	1.27	4.00
Gypsum (CaSO4)	-0.26	0.00
Hemihydrate (CaSO4)	-0.28	0.00
Anhydrite (CaSO4)	-0.15	0.00
Celestite (SrSO4)	0.66	188.40
Saturation Index Calculation (Tomson-Oddo Model)		

Comments:

Water Analysis Report

Attention: **Cason Schenfisch**

Customer: **Slawson Exploration Co Inc (1500280)**

Location Code: **31506**
Sample ID: **AA09647**
Batch ID: **2013-03-14-016-45-SW**
Collection Date: **03/08/2013**
Receive Date: **03/14/2013**
Report Date: **03/25/2013**

Region: **Van Hook Field**
Location: **New Town, ND**
System: **Production System**
Equipment: **Whirlwind 2-31H**
Lab ID: **ABU-0045**
Sample Point: **Treater**

Analyses	Result	Unit
Dissolved CO2	1716	mg/L
Dissolved H2S	0	mg/L
pH	6.7	
Pressure	45	psi
Temperature	70	° F

Analyses	Result	Unit
Ionic Strength	5.28	
Resistivity	0.024	ohms - m
Total Dissolved Solids	267330.9	mg/L
Conductivity	417418	µS - cm3
Specfic Gravity	1.184	
Bicarbonate	146	mg/L
Carbonate	0	mg/L

Cations	Result	Unit
Iron	175	mg/L
Manganese	8.292	mg/L
Barium	14.47	mg/L
Strontium	1478	mg/L
Calcium	22220	mg/L
Magnesium	1747	mg/L
Sodium	76892.12	mg/L

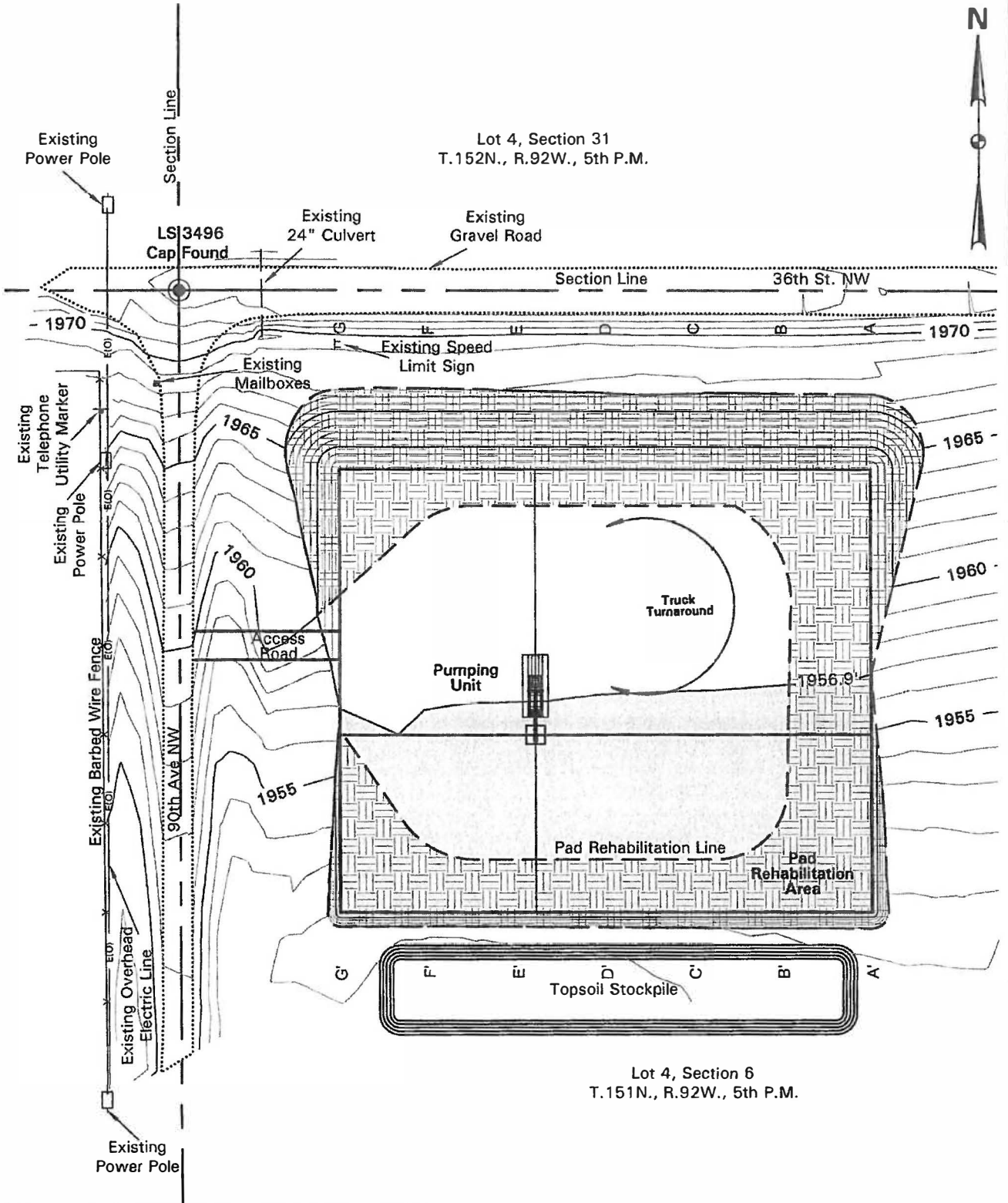
Anions	Result	Unit
Chloride	164300	mg/L
Sulfate	350	mg/L

Scale Type	SI	PTB
Calcite (CaCO3)	0.43	32.80
Barite (BaSO4)	1.60	8.40
Gypsum (CaSO4)	-0.14	0.00
Hemihydrate (CaSO4)	-0.16	0.00
Anhydrite (CaSO4)	0.03	8.80
Celestite (SrSO4)	0.87	160.20
Saturation Index Calculation (Tomson-Oddo Model)		

Comments:

Attachment M-1

Big Bend 3-6 SWD
Production Layout



Computed & Drawn By	Surveyed By	Approved By	Scale	Date
J. Kress	M.A. Krebs	Q. Obrigewitsch	1" = 80'	8/3/2015
Field Book	**Material**	**Revised**	**Project No.**	**Drawing No.**
OW-357	Prod Layout	-	3715517	8

KLJ

Aug 4, 2015 - 11:31 AM - P:\Oil\Slawson\3715517\CADD\3715517BAS02.dwg

Attachment M-2

SLAWSON exploration company, inc.

GL ELEVATION = 1956' EST
KB ELEVATION = 1970' EST
API#
NDIC#

WELLBORE DIAGRAM
BIG BEND 3-6 SWD

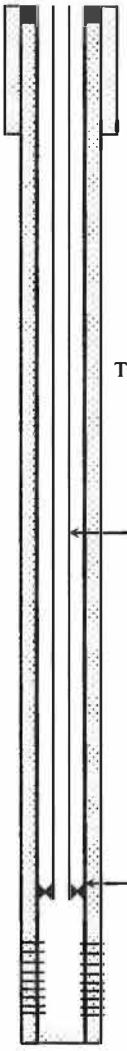
NW NW SEC 6 T151 R92
250' FNL and 200' FWL
Mountrail County, North Dakota

USDW Surface-1656' < 10,000 TDS
Coleharbor-Fox Hills

Formation	TVD KB
Coleharbor Group	0-23'
Bullion Creek	23'
Cannon Ball	558'
Hell Creek	1,043'
Fox Hills	1,413'
Pierre	1,656'
Niobrara	3,701'
Carlile	3,958'
Greenhorn	4,184'
Belle Fourche	4,367'
Mowry	4,586'
Inyan Kara (Dakota)	4,940'
Swift	5,379'
TD	5,530'

Mowry Upper confining zone 4,586'

Swift Lower confining zone 5,379'



9-5/8" 36# J-55 STC @ 1,776'
SHOE BHT 78 F EST

TOC 7" @ Surface (plan)

3-1/2" 9.3# J55 EUE w/ Internal Plastic Coating

Injection Packer @ +/_ 4865'

Inyan Kara Perforations from 4,940' to 5,379' Gross Est.

PBTD @ 5,485'
7" 23# N80 @ 5,530'
TD BHT 150 F EST

NOTE: NOT TO SCALE

NEED CMT

String	Hole Size	Casing Size	Interval/Depth	CUFT	Yield	SXS	TOC
Surface Lead Set 'C' Surface Tail 500' G	13-1/2" 60% Xcess	9-5/8"	0-1363' 1363-1863'	1065 391	2.66 1.15	400 357	Surface 1363'
Production Lead 'Lite' Production Tail 810' G	8-3/4" 20% Xcess	7"	0-4600' 4600-5410'	830 148	2.05 1.15	405 140	Surface 4600'

Attachment Q-1

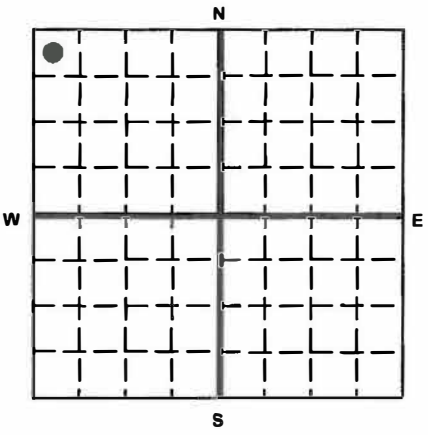
OMB No. 2040-0042 Approval Expires 12/31/2011

United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility	Name and Address of Owner/Operator
Slawson Exploration Co. Inc 1675 Broadway, Ste 1600, Denver, CO 80202	same

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
North Dakota	Mountrail	

Surface Location Description

1/4 of ___ 1/4 of nw 1/4 of nw 1/4 of Section 6 Township 151 Range 92

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 250 ft. frm (N/S) N Line of quarter section and 200 ft. from (E/W) W Line of quarter section.

TYPE OF AUTHORIZATION

- [x] Individual Permit
- [ ] Area Permit
- [ ] Rule

Number of Wells 1

Lease Name BIG BEND

WELL ACTIVITY

- [ ] CLASS I
- [x] CLASS II
  - [x] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [ ] CLASS III

Well Number 3-6 SWD

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
9 5/8"	36	1776	1776	13 1/2"
7"	23	5530	5530	8 3/4"

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- [x] The Balance Method
- [ ] The Dump Bailer Method
- [ ] The Two-Plug Method
- [ ] Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	7	7	7				
Depth to Bottom of Tubing or Drill Pipe (ft	4865	1876	200				
Sacks of Cement To Be Used (each plug)	110	40	40				
Slurry Volume To Be Pumped (cu. ft.)	126.5	46	46				
Calculated Top of Plug (ft.)	4815	1676	0				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.8	15.8	15.8				
Type Cement or Other Material (Class III)	class G	class G	class G				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
4940'	5379'		

Estimated Cost to Plug Wells

$75,000

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Eric Sundberg, Environmental and Regulatory Manager	/ERIN SUNDBERG/	1-5-17

EPA Form 7520-14 (Rev. 12-08)

Attachment Q-2

SLAWSON exploration company, inc.

GL ELEVATION = 1956' EST
KB ELEVATION = 1970' EST
API#
NDIC#

WELLBORE DIAGRAM
BIG BEND 3-6 SWD
PROPOSED P&A

NW NW SEC 6 T151 R92
250' FNL and 200' FWL
Mountrail County, North Dakota

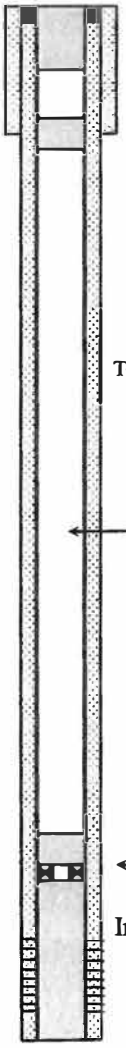
USDW Surface-1656' < 10,000 TDS

Coleharbor-Fox Hills

Formation	TVD
Coleharbor Group	0-23'
Bullion Creek	23'
Cannonball	558'
Hell Creek	1,043'
Fox Hills	1,413'
Pierre	1,656'
Niobrara	3,701'
Carlile	3,958'
Greenhorn	4,184'
Belle Fourche	4,367'
Mowry	4,586'
Inyan Kara (Dakota)	4,940'
Swift	5,379'
TD	5,530'

Mowry Upper confining zone 4,586'

Swift Lower confining zone 5,379'



PLUG #3 Spot 40 SXS CLASS G 0-200'

9-5/8" 36# J-55 STC @ 1,776'
SHOE BHT 78 F EST

PLUG #2 Spot 40 SXS CLASS G 1,676-1,876'
WOC & Tag w/ TBG

TOC 7" @ Surface (plan)

9.2 PPG BRINE BETWEEN PLUGS

PLUG #1 100 SXS CLASS G below PKR & 10 SXS on top 4,815-5,379' Total 110 SXS

Injection Packer @ +/_ 4865' used as cement retainer

Inyan Kara Perforations from 4,940' to 5,379' Gross Est.

PBTD @ 5,485'
7" 23# N80 @ 5,530'
TD BHT 150 F EST

NOTE: NOT TO SCALE

String	Hole Size	Casing Size	Interval/Depth	CUFT	Yield	SXS	TOC
Surface Lead Set 'C' Surface Tail 500' G	13-1/2"	9-5/8"	0-1400' 1363-1863'	1065 391	2.66 1.15	400 357	Surface 1363'
Production Lead 'Lite' Production Tail 820' G	8-3/4"	7"	0-4600' 4600-5410'	830 148	2.05 1.15	405 140	Surface 4600'

Attachment Q-3

SLAWSON
exploration company, inc.

BIG BEND 3-6 SWD
Proposed P&A Procedure

Casing Program: **Surface Casing:**
9 5/8'' 36# K55 ST&C casing to 1,776'+.
Production Casing:
7" 23# N80 @ 5,530' drifted to 6 1/8"
Production Tubing:
3 ½" 9.3# J55 EUE Internal Plastic Coated w/ 7" Nickel Plated Packer

Special Instructions:
ALWAYS stay on established lease roads.
No H2S Safety Equipment Required

P&A Procedure:

1. Move in P&A Rig.
2. Check well for pressure and set 3½" downhole blanking plug w/ bypass in nipple for pressure containment as necessary.
3. Nipple up BOPE.
4. Release from packer at +/- 4865' at on/off tool. TOOH and lay down 3 ½" 9.3# J55 tubing.
5. Pick up 2 7/8" work string w/ on/off tool and connect at on/off tool to packer BHA.
6. Pressure test annulus to 1000 PSI. Establish injection rate and pressure.
7. Plug #1. Mix and pump 115 sacks Class G. Squeeze perforations with 105 sacks below packer and spot 10 sacks on top. TOC at ~4813' calculated.
8. Pull up 5 Stands and reverse tubing clean.
9. Role hole with 9.2 PPG inhibited brine to surface. TOOH.
10. Plug #2. Mix and spot 40 sacks Class G cement (2% Calcium Chloride optional) from 1976' to 1776'. WOC and tag with tubing. Record top plug depth.
11. TOOH and lay down tubing to 200'. Strip off BOPE.
12. Plug #3. Mix and spot 40 sacks Class G (2% Calcium Chloride optional) from 200' to surface. WOC.
13. Cut off well head 3' below ground level.
14. Weld on plate w/ weep hole and the following information:
Slawson, Big Bend 3-6 SWD, NWNW Sec 6-T151N-R92W.

Attachment K
Page 1 of 3

AMENDED
SCHEDULE A
TO
STANDBY TRUST AGREEMENT

U.S. ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PROGRAM
FINANCIAL RESPONSIBILITY REQUIREMENT

Identification of Facilities and Cost Estimates

Schedule A is referenced in the Standby Trust Agreement dated August 24, 2010, by and between Slawson Exploration Company, Inc. (name of owner or operator), the "Grantor" and Intrust Bank, NA (name of the trustee), the "Trustee".

NAME OF WELL	LOCATION OF WELL	CURRENT COST TO PLUG AND ABANDON
Big Bend 1-5 SWD	Sec. 5-T151N-R92W Montrail County, ND	$75,000.00
Big Bend 3-6 SWD	Sec. 6-151N-92W Montrail County, ND	$75,000.00

Dated this 25th day of April, 2011.

GRANTOR

SLAWSON EXPLORATION COMPANY, INC.

/KATHY A. ATKINS/ SMK

Kathy A. Atkins, Vice President

TRUSTEE

INTRUST BANK, NA

By: /ROBERT A. FRANCIS/

Robert A. Francis, V.P.
and Senior Trust Officer

AMENDED
SCHEDULE B

Description of Property / Financial Instrument

Surety Performance Bond

Schedule B is referenced in the Standby Trust Agreement (Section 3) dated August 24, 2010

by and between Slawson Exploration Company, Inc., a Kansas corporation **, the "Grantor,"**
(name of owner or operator)

and Intrust Bank, NA **, the "Trustee."**
(name of the trustee)

Description of Property / Financial Instrument:

1. US Specialty Insurance Company Surety Performance Bond #B009509

2.

Bond No. B009507

SURETY RIDER NO. 1

To be attached to and form a part of Bond No. B009507 on behalf of Slawson Exploration Company, Inc. as Principal, executed by U.S. Specialty Insurance Company as Surety, for the benefit of the U.S. Environmental Protection Agency, as Obligee.

Executed date of bond: August 24, 2015
Effective date of change: October 22, 2015

In consideration of the mutual agreement contained herein, the Principal and the Surety hereby consent to the following changes:

The penalty amount has increased from:

Seventy Five Thousand and No/100 Dollars ($75,000.00)

to:

One Hundred Fifty Thousand and No/100 Dollars ($150,000.00)

The following well has been added:

Big Bend 3-6 SWD
Sec 6 – 151N – 92W
Mountrail County, ND

Nothing contained herein shall vary, alter or extend any provision, term or condition of this bond except as expressly stated herein.

SIGNED, SEALED AND DATED THIS: 22nd day of October, 2015.

Slawson Exploration Company, Inc.
Name of Principal

/KATHY A. ATKINS/ SMK
Kathy A. Atkins, Vice President
Name and title of person signing on behalf of Principal

/EDWIN H FRANK, III/
Signature

Edwin H. Frank, III, Attorney-in-Fact
Name and title of person signing on behalf of Surety

IndemCo

Big Bend 3-6 SWD
Sec 6-T151N-R92W
Mountrail County, ND

Aquifer Exemption Request

Exemption Description

The Big Bend 3-6 SWD well will dispose of produced Bakken and Three Forks Formation waters from the New Town peninsula area which is located south of New Town, ND. The majority of the water will be pipelined to the SWD, with the remaining water trucked. This SWD is necessary to remove as many trucks as possible from the roads to prevent pollution and simultaneously increase road safety. Slawson's goal is to pipe as much water as possible to the Big Bend 3-6 SWD well, minimizing water trucks and hauling traffic.

The requested aquifer exemption is for the Inyan Kara Formation. The Inyan Kara is commonly utilized in North Dakota as an injection interval for Class II fluids. All SWD wells shown on **Figure 1** inject into the Inyan Kara Formation.

In December 2013, the deepest porosity interval in the Inyan Kara of the Big Bend 1-5 SWD well was perforated (5,247-5,274') and swab tested. The attached Astro-Chem Lab analyses (**Figure 2**) show the Inyan Kara Formation water to be between 6,510-9,170 PPM TDS. Since these results are less than the regulatory limit of 10,000 PPM, an aquifer exemption is required to inject into the Inyan Kara Formation.

Type of Exemption Requested

Slawson is requesting an aquifer exemption for the Inyan Kara Formation (Dakota Group) in this area for the following reasons:

1. (**Y**/n) The exempted aquifer does not currently serve as a source of drinking water.

2. (**Y**/n) The exempted aquifer has a total dissolved solids content more than 3,000 and less than 10,000 milligrams per liter (PPM) total dissolved solids (TDS) and is not expected to supply a public water supply system, and

3. (**Y**/n) The exempted aquifer cannot now, and will not in the future, serve as a source of drinking water for any of the following reasons:
   ( ) It produces hydrocarbons;
   (**X**)It is situated at a depth or location which makes recovery of water for drinking purposes economically or technologically impractical: or

( ) Itis so contaminated that it would be economically or technologically impractical to render the water fit for human consumption.

General Application Information

1. The attached map labeled **Figure 3** shows the surface location of all wells within the ½ mile area of review (AOR). There are 6 oil wells and no water wells within the ½ mile AOR, with one oil well just outside the AOR. **Figure 3** shows the Big Bend SWD proximity to the New Town & Sanish Aquifers, Lake Sakakawea, and the oil and water wells.

   Oil wells: Coyote 1-32H, Coyote 2-32H, Coyote 3-32H, Jericho 1-5H Jericho 2-5H TF, Jericho 3-5H, and Jericho 4-5H. Note- the Jericho 1-5H is outside the ½ mile AOR, but has been included.

   Water wells-none, with the closest water well approximately 4,550+ feet SE and at a depth of 79 feet. All water wells shown on figure 3 are shallow, with depths ranging between 79-292 feet deep.

2. A written description of the following:

   a. Name of the aquifer to be exempted;
   Inyan Kara Formation (also referred to as the Dakota or Dakota Sandstone)

   b. Subsurface depth or elevation of the injection zone;
   In the area of the proposed injection well, open hole logs from the Big Bend 1-5 SWD suggest the top of the Inyan Kara Formation is at a subsea of -2,960', or approximately 4,950' below land surface. They also suggest the base of the Inyan Kara is at a subsea of -3,390', or approximately 5,380' below land surface.

   c. Confining layers separating the injection zone from other underground sources of drinking water (USDWs);
   See attached well bore diagram (WBD), **Figure 4**, a schematic of the construction of the proposed well with geology noted.

   There are two major USDWs (Hell Creek & Fox Hills) and several minor shallow USDWs above the Pierre Shale. These USDWs are separated from the injection zone by several shale formations with a collective thickness of approximately 3,166'.

   Immediately above the injection zone and within the Dakota Group are the Skull Creek Shale and Mowry Shale for a total thickness of 368'.

   Above the Dakota Group is the Colorado Group which is 899' thick, consisting of the Belle Fourche Shale (211'), Greenhorn Shale (188'), Carlile Shale (234') and Niobrara Shale (266').

Also, above the Colorado Group is the Montana Group consisting of the Pierre Shale, which is 1,899' thick in the Big Bend 3-6 SWD well. Any USDW in the Big Bend wellbore above the injection zone is protected by approximately 3,166' of impermeable shale as stated above.

Below the injection zone, any potential USDWs are protected by the Jurassic age Swift Formation, which is approximately 444' thick.

d. Thickness of the proposed exempted aquifer;

The thickness of the proposed exempted aquifer is approx. 403'. However, the proposed injection well will be selectively perforated from 4,898-5,274', resulting in 177 net feet of injection interval.

e. Method and calculations used to delineate the exempted aquifer and the area of the exemption;

Slawson used a conservative approach to calculate the aquifer exemption based on forecasted produced water volumes. Based on this method, Slawson is requesting an aquifer exemption to allow a buffer to ensure the exemption is large enough to cover the entire area of influence.

f. Water quality analysis from the aquifer to be exempted.

Attached is a copy of the Astro-Chem Lab water analysis (**Figure 5a-5c**) conducted in December 2013 on the Big Bend 1-5 SWD from Inyan Kara perforations 5,247-5,274'. Below is a summary of the results.

Swab Volume (BBLS)	Conductivity (mS/cm3)	TDS (mg/L)
300	9,300	6,510
400	13,100	9,170
500	12,560	8,790
600	13,390	8,676
715	12,250	7,769

The primary ions include sodium, chloride, and bicarbonate with traces of sulfate. As shown in the data table above, the TDS levels in the Inyan Kara in the Big Bend 3-6 SWD well are within 3,000-10,000 mg/L, requiring an aquifer exemption.

Presently the Inyan Kara Formation of the Dakota Group is utilized as an injector in North Dakota. Also, within the ½ mile AOR, there are no USDWs located within the Inyan Kara Formation.

g. Water quality analysis from the proposed injection water.

Both the Bakken and Three Forks Formation waters contain high concentrations of chlorides, sodium and some calcium, making the physical characteristics of the two waters very similar with total dissolved solids (TDS) up to 344,000 PPM as published in the Catalog of North Dakota Water Chemistries. Below are grab sample analyses of each formation and the results are well within the range of the Catalog. These waters have no secondary use and therefore are disposed of in Class II wells.

Source	Location	Formation	Sample Date	TDS (mg/L)
Sniper Fed 2-6-7H	S6-151-92	Bakken	3/08/13	266,664.4
Sniper Fed 5-6-7TFH	S6-151-92	Three Forks	3/08/13	284,800.7

(Note: See **Figures 6a & 6b**)

h. Information on wells within the exempted area (including ½ mile buffer) including construction information and well schematics (WBD). See **Figures 7a-7g**.

There are six Slawson operated oil wells within the ½ mile AOR which are located in the northern half of Sec 5 T151 R 92W and are listed below.

Coyote 1-32H, Coyote 2-32H, Coyote 3-32H, Jericho 1-5H.*[1], Jericho 2-5H-TF, Jericho 3-5H, and Jericho 4-5H.

(*[1] Jericho 1-5H is outside the AOR, however, WBD is included).

Specific Application Information

The purpose of this information is to support Slawson's determination that the proposed exempted aquifer is situated at a depth or location which makes recovery of water for drinking purposes economically or technologically impractical.

1. Distance from the proposed exempted aquifer to public water supplies;

The proposed aquifer exemption is approximately 3.5 miles south of the nearest public water supply for the city of New Town, ND and approximately 2 miles from Lake Sakakawea's closest shore, a source for the Fort Berthold Indian Reservation farther downstream. The New Town city water supply consists of three (3) ground water wells penetrating the New Town Aquifer. The table below provides additional information about New Town's groundwater sources:

Well ID	Aquifer	Depth
152-092-19AA	New Town	175'
152-092-19AAA	New Town	173'
152-092-20BBb	New Town	184'

2. Current sources of water supply for the potential users of the proposed exempted aquifer;

The principal USDWs in the area of the proposed aquifer exemption are the New Town Aquifer, Sanish Aquifer, and Missouri River/Lake Sakakawea. The list below shows the approximate depth and TDS of other common water sources that are available.

Name	Depth *[1]	TDS mg/L *[2]
Coleharbor Formation	0'	
Bullion Creek Formation	23'	2,110
Cannonball Formation	558'	
Hell Creek Formation	1,043'	1,530
Fox Hills Formation	1,413'	1,530

*[1] Source: Clayton, Lee, 1972. "Geology of Mountrail County, North Dakota", North Dakota Geological Survey Bulletin 55-IV.

Bluemle, John P., Sidney B. Anderson, John A. Andrew, David W. Fischer and Julie A. LeFever, 1986. "North Dakota Stratigraphic Column", North Dakota Geological Survey Miscellaneous Series 66.

*[2] Source: USGS Water Resources of North Dakota/Water Resources of the Fort Berthold Indian Reservation, West Central North Dakota, Report 98-4098 p 1.

The Fox Hills Formation in this area is approximately 290' thick with the top at 1,413'. Note the Hell Creek and Fox Hills Formations are connected hydrologically and are therefore considered to be a single aquifer. This combined aquifer underlies the entire Reservation and ranges from 100 to 350 feet in thickness. USGS 98-4098 pl0.

3. Availability and quality of alternative water sources;

Water resources of the New Town peninsula & Fort Berthold Indian Reservation occur as ground water in bedrock and buried-valley aquifers which are readily available and as surface water in Lake Sakakawea. The below table shows the water resource water allocation for the peninsula.

Resource	Mean TDS (mg/L)	Approximate peninsula (Volume Ac-Ft)
Sentinel Butte Formation	1,300	1,250,500
Tongue River Formation	2,110	1,925,500
Fox Hills/Hell Creek Formation	1,530	4,091,600
New Town Aquifer	1,390	127,500
Sanish Aquifer	1,350	240,000

Total New Town peninsula water available (Ac-Ft) 7,635,100 (Reference USGS Report 98-4098 pgs. 1, 10, 18, 23, 37, 39).

4. Estimated costs to develop the proposed exempted aquifer as a water supply source including any treatment costs and costs to develop alternative water supplies. Include costs for well construction, transportation, and water treatment for each source;

The primary factor controlling the cost of developing the proposed exempted aquifer as a water supply source is depth and water quality. As stated above, the top of the Inyan Kara at the proposed location is expected at approximately 4,950' below land surface with the base of the formation at approximately 5,380' below land surface. In contrast, the better-quality Fox Hills and Hell Creek Formations are available between approximately 1,000 and 1,635' below land surface with several other acceptable formations at shallower depths.

Slawson recently drilled, cased, and partially perforated the Big Bend 3-6 SWD for a cost of $1,085,900. A phone conversation with Rex at Backman Drilling (701.734.6667) located in Wilton, ND provided verbal information for 5" cased domestic wells of $31.00/foot. Agri Industries Inc. (Williston, ND) provided verbal information for 100- 200 gallon per minute industrial wells for 200' 10" casing of approximately $40,000, a 900' Ft. Union well around $60,000 and a 1600' Fox Hills well approximately $150,000. Dennis Water Well Service located in New Town, ND (701.627.2390) provided a verbal quote of $280,000 to drill a Fox Hills well. These costs represented do not include location construction or surface equipment, as it is assumed that these additional costs would be the same for each formation.

Aquifer	Depth (TD)	Estimated TD well cost
Unnamed	200'	$ 6,200[1]
New Town	200'	$ 40,000
Ft. Union	900'	$ 60,000
Fox Hills	1,805'	$280,000
Inyan Kara	5,444'	$1,085,900

As can be observed above, drilling cost varies by depth, size of hole, and contractor. The estimated total depth drilling cost to drill an Inyan Kara water supply well exceeds the cost of drilling a Fox Hills water supply well by an estimated $805,900, with additional savings and shallower depths. Therefore, based on cost, the quantity, and quality of the water available in the Fox Hills/Hell Creek aquifers and other supplies located at shallower depths, it is Slawson's opinion the proposed exempted aquifer is situated at a depth which makes recovery for USDW purposes economically impractical.

[1] Domestic well only, other wells are commercial with larger casing sizes for larger production volumes. Conversations held February 2014.

5. Current sources of public water supply in the area;

As stated above, the principal USDWs in the Peninsula area are the New Town Aquifer and Lake Sakakawea.

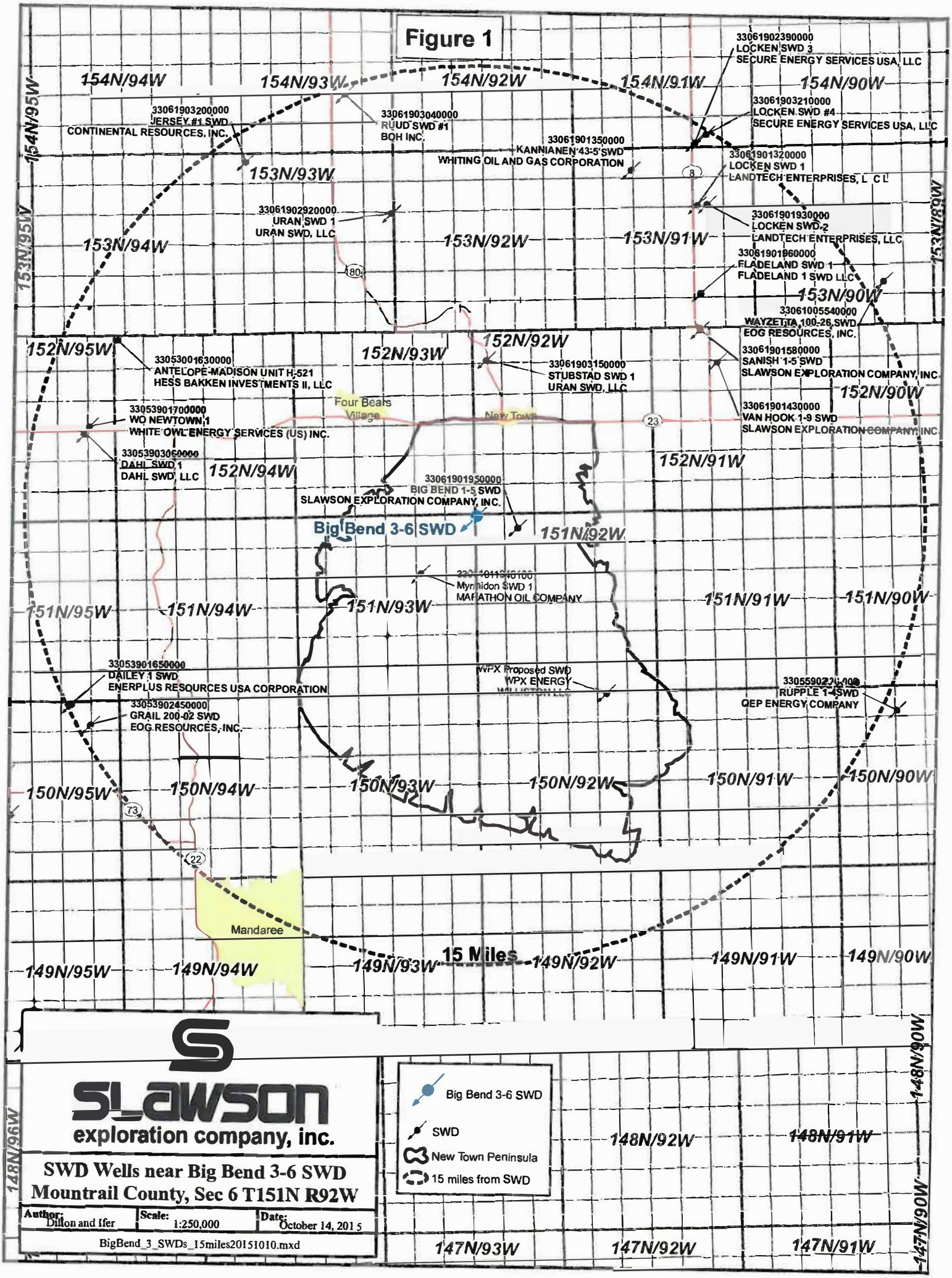


Figure 1
33061902390000
LOCKEN SWD 3
SECURE ENERGY SERVICES USA, LLC
33061903210000
LOCKEN SWD #4
SECURE ENERGY SERVICES USA, LLC
33061903200000
JERSEY #1 SWD
CONTINENTAL RESOURCES, INC.
33061903040000
RUUD SWD #1
BOH INC.
33061901350000
KANNIANEN 43-5 SWD
WHITING OIL AND GAS CORPORATION
33061901320000
LOCKEN SWD 1
LANDTECH ENTERPRISES, L C L
33061902920000
URAN SWD 1
URAN SWD, LLC
33061901930000
LOCKEN SWD-2
LANDTECH ENTERPRISES, LLC
33061901960000
FLADELAND SWD 1
FLADELAND 1 SWD LLC
33061005540000
WAYZETTA 100-26 SWD
EOG RESOURCES, INC.
33053001630000
ANTELOPE-MADISON UNIT H-521
HESS BAKKEN INVESTMENTS II, LLC
33061903150000
STUBSTAD SWD 1
URAN SWD, LLC
33061901580000
SANISH 1-5 SWD
SLAWSON EXPLORATION COMPANY, INC.
33053901700000
WO NEWTOWN 1
WHITE OWL ENERGY SERVICES (US) INC.
33061901430000
VAN HOOK 1-9 SWD
SLAWSON EXPLORATION COMPANY, INC.
33053903060000
DAHL SWD 1
DAHL SWD, LLC
33061901950000
BIG BEND 1-5 SWD
SLAWSON EXPLORATION COMPANY, INC.
Big Bend 3-6 SWD
Mynnidon SWD 1
MARATHON OIL COMPANY
33053901650000
DAILEY 1 SWD
ENERPLUS RESOURCES USA CORPORATION
WPX Proposed SWD
WPX ENERGY
33053902450000
GRAIL 200-02 SWD
EOG RESOURCES, INC.
RUPPLE 1-4 SWD
QEP ENERGY COMPANY
Four Bears Village
New Town
Mandaree
15 Miles
154N/94W
154N/93W
154N/92W
154N/91W
154N/90W
153N/95W
153N/94W
153N/92W
153N/91W
153N/90W
152N/95W
152N/93W
152N/92W
152N/94W
152N/91W
152N/90W
151N/95W
151N/94W
151N/93W
151N/92W
151N/91W
151N/90W
150N/95W
150N/94W
150N/93W
150N/92W
150N/91W
150N/90W
149N/95W
149N/94W
149N/93W
149N/92W
149N/91W
149N/90W
148N/96W
148N/92W
148N/91W
148N/90W
147N/93W
147N/92W
147N/91W
147N/90W
SLAWSON
exploration company, inc.
SWD Wells near Big Bend 3-6 SWD
Mountrail County, Sec 6 T151N R92W
Author: Dillon and Ifer
Scale: 1:250,000
Date: October 14, 2015
BigBend_3_SWDs_15miles20151010.mxd
Big Bend 3-6 SWD
SWD
New Town Peninsula
15 miles from SWD

Figure 2

ASTRO-CHEM LAB, INC.

P.O. BOX 972 – WILLISTON, ND 58802-0972

TELEPHONE
701-572-7355

December 24, 2013

Slawson Exploration Co., Inc.
1675 Broadway
Suite 1600
Denver, CO 80202

Dear Sir:

Waters from the Big Bend 1-5 SWD were submitted on December 23, 2013 for TDS analysis. A conductivity analysis was performed and an approximate TDS was calculated.

DAKOTA 5247-74'

Sample Description	Conductivity (µS/cm)	Approximate TDS (mg/l)	Analyst
300 Swabbed	9,300	6,510	B. Kyllo
400 Swabbed	13,100	9,170	B. Kyllo
500 Swabbed	12,560	8,790	B. Kyllo

If you have any questions or need further information, please do not hesitate to call me at 701-572-7355. Thank you for allowing Astro-Chem to be of service.

Sincerely,

Bruce Kyllo
Astro-Chem Lab, Inc.

BK:vm

M-13-9355-9357

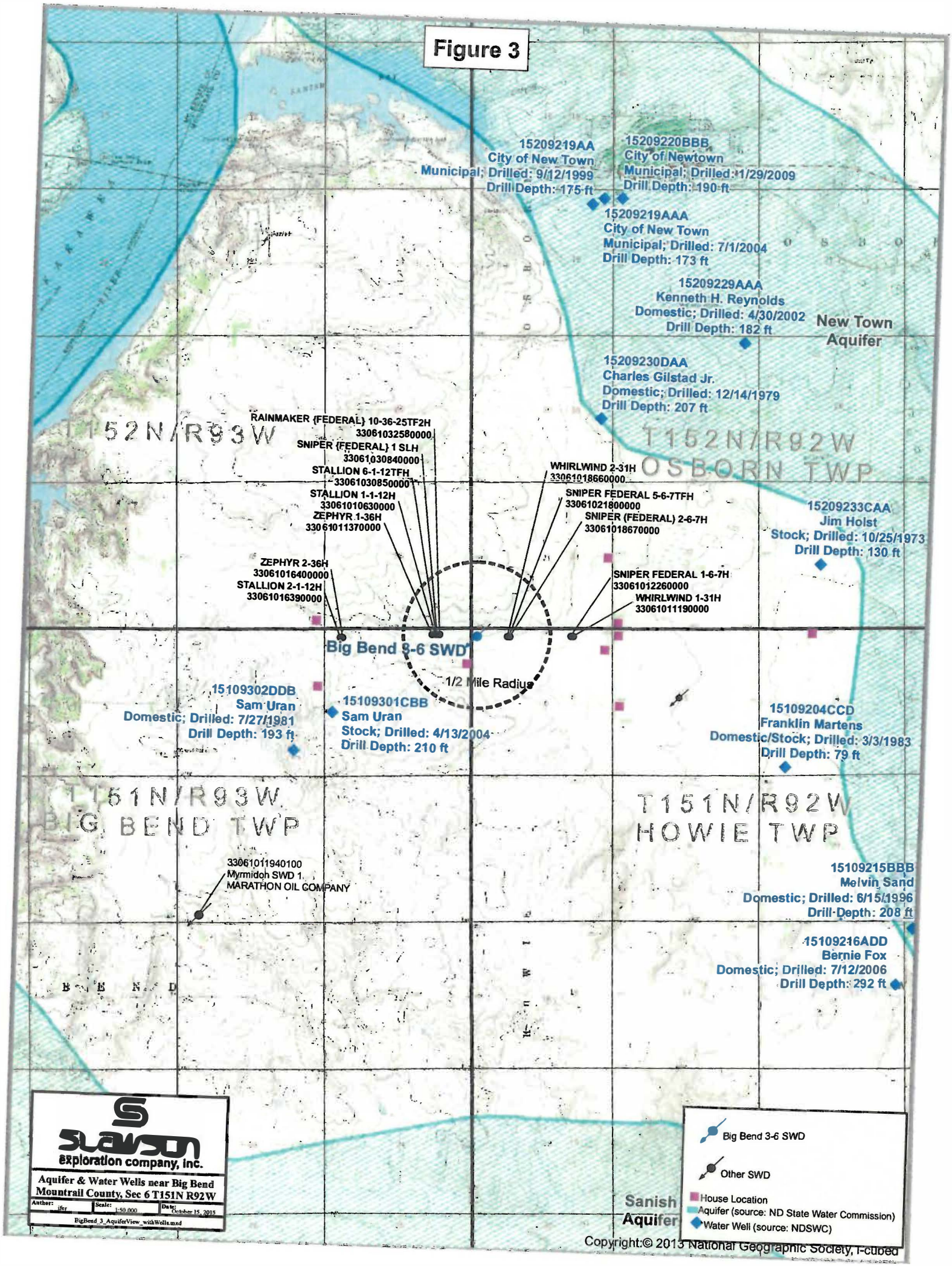


Figure 3
15209219AA
City of New Town
Municipal; Drilled: 9/12/1999
Drill Depth: 175 ft
15209220BBB
City of Newtown
Municipal; Drilled: 1/29/2009
Drill Depth: 190 ft
15209219AAA
City of New Town
Municipal; Drilled: 7/1/2004
Drill Depth: 173 ft
15209229AAA
Kenneth H. Reynolds
Domestic; Drilled: 4/30/2002
Drill Depth: 182 ft
New Town Aquifer
15209230DAA
Charles Gilstad Jr.
Domestic; Drilled: 12/14/1979
Drill Depth: 207 ft
T152N/R93W
T152N/R92W
OSBORN TWP
RAINMAKER (FEDERAL) 10-36-25TF2H
33061032580000
SNIPER (FEDERAL) 1 SLH
33061030840000
STALLION 6-1-12TFH
33061030850000
STALLION 1-1-12H
33061010630000
ZEPHYR 1-36H
33061011370000
WHIRLWIND 2-31H
33061018660000
SNIPER FEDERAL 5-6-7TFH
33061021800000
SNIPER (FEDERAL) 2-6-7H
33061018670000
15209233CAA
Jim Holst
Stock; Drilled: 10/25/1973
Drill Depth: 130 ft
ZEPHYR 2-36H
33061016400000
STALLION 2-1-12H
33061016390000
SNIPER FEDERAL 1-6-7H
33061012260000
WHIRLWIND 1-31H
33061011190000
Big Bend 3-6 SWD
1/2 Mile Radius
15109302DDB
Sam Uran
Domestic; Drilled: 7/27/1981
Drill Depth: 193 ft
15109301CBB
Sam Uran
Stock; Drilled: 4/13/2004
Drill Depth: 210 ft
15109204CCD
Franklin Martens
Domestic/Stock; Drilled: 3/3/1983
Drill Depth: 79 ft
T151N/R93W
BIG BEND TWP
T151N/R92W
HOWIE TWP
33061011940100
Myrmidon SWD 1
MARATHON OIL COMPANY
15109215BBB
Melvin Sand
Domestic; Drilled: 6/15/1996
Drill Depth: 208 ft
15109216ADD
Bernie Fox
Domestic; Drilled: 7/12/2006
Drill Depth: 292 ft
Slawson exploration company, inc.
Aquifer & Water Wells near Big Bend
Mountrail County, Sec 6 T151N R92W
Author: jfer
Scale: 1:50,000
Date: October 15, 2015
BigBend_3_AquiferView_withWells.mxd
Big Bend 3-6 SWD
Other SWD
House Location
Aquifer (source: ND State Water Commission)
Water Well (source: NDSWC)
Sanish Aquifer
Copyright:© 2013 National Geographic Society, i-cubed

Figure 4

SLAWSON exploration company, inc.

GL ELEVATION = 1956' EST
KB ELEVATION = 1970' EST
API#
NDIC#

WELLBORE DIAGRAM
BIG BEND 3-6 SWD

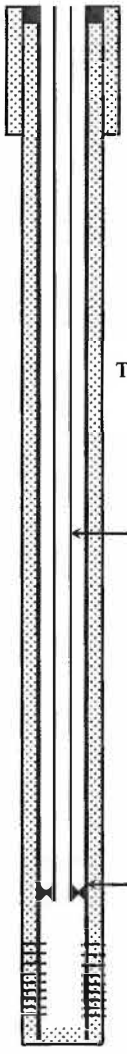
NW NW SEC 6 T151 R92
250' FNL and 200' FWL
Mountrail County, North Dakota

USDW Surface-1656' < 10,000 TDS
Coleharbor-Fox Hills

Formation	TVD KB
Coleharbor Group	0-23'
Bullion Creek	23'
Cannon Ball	558'
Hell Creek	1,043'
Fox Hills	1,413'
Pierre	1,656'
Niobrara	3,701'
Carlile	3,958'
Greenhorn	4,184'
Belle Fourche	4,367'
Mowry	4,586'
Inyan Kara (Dakota)	4,940'
Swift	5,379'
TD	5,530'

Mowry Upper confining zone 4,586'

Swift Lower confining zone 5,379'



9-5/8" 36# J-55 STC @ 1,776'
SHOE BHT 78 F EST

TOC 7" @ Surface (plan)

3-1/2" 9.3# J55 EUE w/ Internal Plastic Coating

Injection Packer @ +/_ 4865'

Inyan Kara Perforations from 4,940' to 5,379' Gross Est.

PBTD @ 5,485'
7" 23# N80 @ 5,530'
TD BHT 150 F EST

NOTE: NOT TO SCALE

String	Hole Size	Casing Size	Interval/Depth	CUFT	Yield	SXS	TOC
Lead: VariCemW1 Tail: 500' VariCem W1	13-1/2" 60% Xcess	9-5/8"	0-1276' 1276-1776'	998 410	2.97 2.01	335 200	Surface 1276'
Lead ElastiCem W3 Tail ElastiCem W1	8-3/4" 30% Xcess	7"	0-4530' 4530-5530'	834 195	2.09 1.62	400 120	Surface 4530'

Figure 5a

ASTRO-CHEM LAB, INC.

4102 2nd Ave. W. Williston, ND 58802-0972 P.O. Box 972 Phone: (701) 572-7355

WATER ANALYSIS REPORT

AMPLE NUMBER W-13-9400 DATE OF ANALYSIS 12-24-13

OMPANY Slawson Exploration

ITY Denver STATE CO

ELL NAME AND/OR NUMBER Big Bend 1-5 SWD

ATE RECEIVED 12-23-13 DST NUMBER

AMPLE SOURCE 715 BBLS Total Swab DAKOTA 5247-74'

OCATION OF SEC. TWN. RANGE COUNTY

ORMATION DEPTH

ISTRIBUTION Jim Burtyk

ESISTIVITY @ 77°F = 0.816 Ohm-Meters pH = 8.29

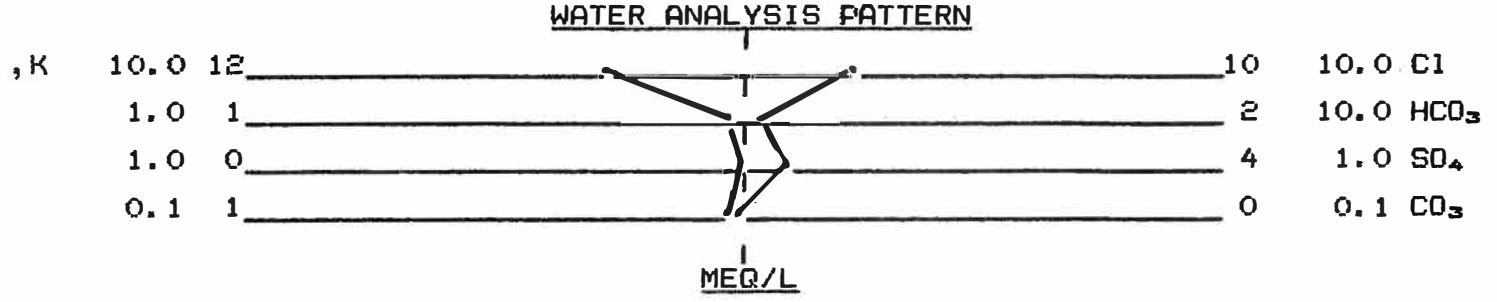
PECIFIC GRAVITY @ 77°F = 1.000 H_2S = Negative

OTAL DISSOLVED SOLIDS (CALCULATED) = 7769 mg/L (7769 ppm)

ODIUM CHLORIDE (CALCULATED) = 5605 mg/L (5605 ppm)

CATION	MEQ/L	mg/L	ANION	MEQ/L	mg/L
CALCIUM	0.8	16	CHLORIDE	95.9	3399
MAGNESIUM	0.2	2	CARBONATE	0.0	0
SODIUM	118.3	2720	BICARBONATE	23.6	1440
IRON	0.1	2.3	SULFATE	3.7	178
CHROMIUM	0.0	0.0	NITRATE	0.0	0
BARIUM	0.0	0.0			
POTASSIUM	0.3	13			

WATER ANALYSIS PATTERN



MARKS Conductivity = 12250 µmhos/cm

Swab 715 BBL

ANALYZED BY: C. Jungels

Figure 5b

ASTRO-CHEM LAB, INC.

P.O. BOX 972 – WILLISTON, ND 58802-0972

TELEPHONE
701-572-7355

December 24, 2013

Slawson Exploration Co., Inc.
1675 Broadway
Suite 1600
Denver, CO 80202

Dear Sir:

Waters from the Big Bend 1-5 SWD were submitted on December 23, 2013 for TDS analysis. A conductivity analysis was performed and an approximate TDS was calculated.

DAKOTA 5247-74'

Sample Description	Conductivity (uS/cm)	Approximate TDS (mg/l)	Analyst
300 Swabbed	9,300	6,510	B. Kyllo
400 Swabbed	13,100	9,170	B. Kyllo
500 Swabbed	12,560	8,790	B. Kyllo

If you have any questions or need further information, please do not hesitate to call me at 701-572-7355. Thank you for allowing Astro-Chem to be of service.

Sincerely,

/BRUCE KYLLO/

Bruce Kyllo
Astro-Chem Lab, Inc.

BK:vm

M-13-9355-9357

Figure 5c

ASTRO-CHEM LAB, INC.
P. O. BOX 972 • WILLISTON, ND 58802-0972

TELEPHONE
701-572-7355

December 27, 2013

Slawson Exploration Co., Inc.
1675 Broadway
Suite 1600
Denver, CO 80202

Dear Sir:

Water from the Big Bend 1-5 SWD was submitted on December 23, 2013 for TDS analysis. A conductivity analysis was performed and an approximate TDS was calculated.

Dakota 5247-74'

Sample Description	Conductivity (µS/cm)	Approximate TDS (mg/l)	Analyst
600 Swabbed	12,390	8,676	C. Jungels

If you have any questions or need further information, please do not hesitate to call me at 701-572-7355. Thank you for allowing Astro-Chem to be of service.

Sincerely,

/CHRISTINA JUNGE/

Christina Junge
Astro-Chem Lab, Inc.

/cj

M-13-9401

Figure 6a

Champion Technologies

Water Analysis Report

Attention: **Cason Schenfisch**

Customer: **Slawson Exploration Co Inc (1500280)**

Location Code: **31505**
Sample ID: **AA09646**
Batch ID: **2013-03-14-016-45-SW**
Collection Date: **03/08/2013**
Receive Date: **03/14/2013**
Report Date: **03/25/2013**

Region: **Van Hook Field**
Location: **New Town, ND**
System: **Production System**
Equipment: **Sniper Federal 2-6-7H**
Lab ID: **ABU-0045**
Sample Point: **Treater**

Analyses	Result	Unit
Dissolved CO2	2376	mg/L
Dissolved H2S	0	mg/L
pH	6.8	
Pressure	20	psi
Temperature	40	° F

Analyses	Result	Unit
Ionic Strength	5.06	
Resistivity	0.024	ohms - m
Total Dissolved Solids	266664.4	mg/L
Conductivity	416302	µS - cm3
Specfic Gravity	1.184	
Bicarbonate	183	mg/L
Carbonate	0	mg/L

Cations	Result	Unit
Iron	222.5	mg/L
Manganese	8.592	mg/L
Barium	13.04	mg/L
Strontium	1076	mg/L
Calcium	15620	mg/L
Magnesium	1223	mg/L
Sodium	84875.24	mg/L

Anions	Result	Unit
Chloride	163100	mg/L
Sulfate	343	mg/L

Scale Type	SI	PTB
Calcite (CaCO3)	0.12	13.10
Barite (BaSO4)	1.76	7.60
Gypsum (CaSO4)	-0.22	0.00
Hemihydrate (CaSO4)	-0.25	0.00
Anhydrite (CaSO4)	-0.22	0.00
Celestite (SrSO4)	0.75	156.10
Saturation Index Calculation (Tomson-Oddo Model)		

Comments:

Figure 6b

Water Analysis Report

Attention: **Cason Schenfisch**

Customer: **Slawson Exploration Co Inc (1500280)**

Location Code: **31507**
Sample ID: **AA09648**
Batch ID: **2013-03-14-016-45-SW**
Collection Date: **03/08/2013**
Receive Date: **03/14/2013**
Report Date: **03/25/2013**

Region: **Van Hook Field**
Location: **New Town, ND**
System: **Production System**
Equipment: **Sniper Federal 5-6-7 TFH**
Lab ID: **ABU-0045**
Sample Point: **Treater**

Analyses	Result	Unit
Dissolved CO2	1782	mg/L
Dissolved H2S	0	mg/L
pH	7.0	
Pressure	60	psi
Temperature	100	° F

Analyses	Result	Unit
Ionic Strength	5.63	
Resistivity	0.022	ohms - m
Total Dissolved Solids	284800.7	mg/L
Conductivity	444548	µS - cm3
Specfic Gravity	1.194	
Bicarbonate	110	mg/L
Carbonate	0	mg/L

Cations	Result	Unit
Iron	279.3	mg/L
Manganese	10.62	mg/L
Barium	15.37	mg/L
Strontium	1656	mg/L
Calcium	23670	mg/L
Magnesium	1879	mg/L
Sodium	81762.36	mg/L

Anions	Result	Unit
Chloride	175100	mg/L
Sulfate	318	mg/L

Scale Type	SI	PTB
Calcite (CaCO3)	1.03	43.90
Barite (BaSO4)	1.44	8.80
Gypsum (CaSO4)	-0.22	0.00
Hemihydrate (CaSO4)	-0.19	0.00
Anhydrite (CaSO4)	0.14	34.60
Celestite (SrSO4)	0.90	142.50
Saturation Index Calculation (Tomson-Oddo Model)		

Comments:

Formation	TVD
Pierre/base Foxhills	1,593'
Dakota (marine)	5,022'
Dunham Salt	6,384'
Base Dunham Salt	6,402'
Pine Salt	6,655'
Base Pine Salt	6,689'
Opeche	6,714'
Base Opeche	6,943'
Kibbey Lime	7,760'
Charles	7,982'
base last Charles salt	8,512'
Mission Canyon	8,682'
Lodgepole	9,284'
Upper Bakken shale	10,104'
Top of Target	10,130'
Target	10,135'
Base of Target	10,140'

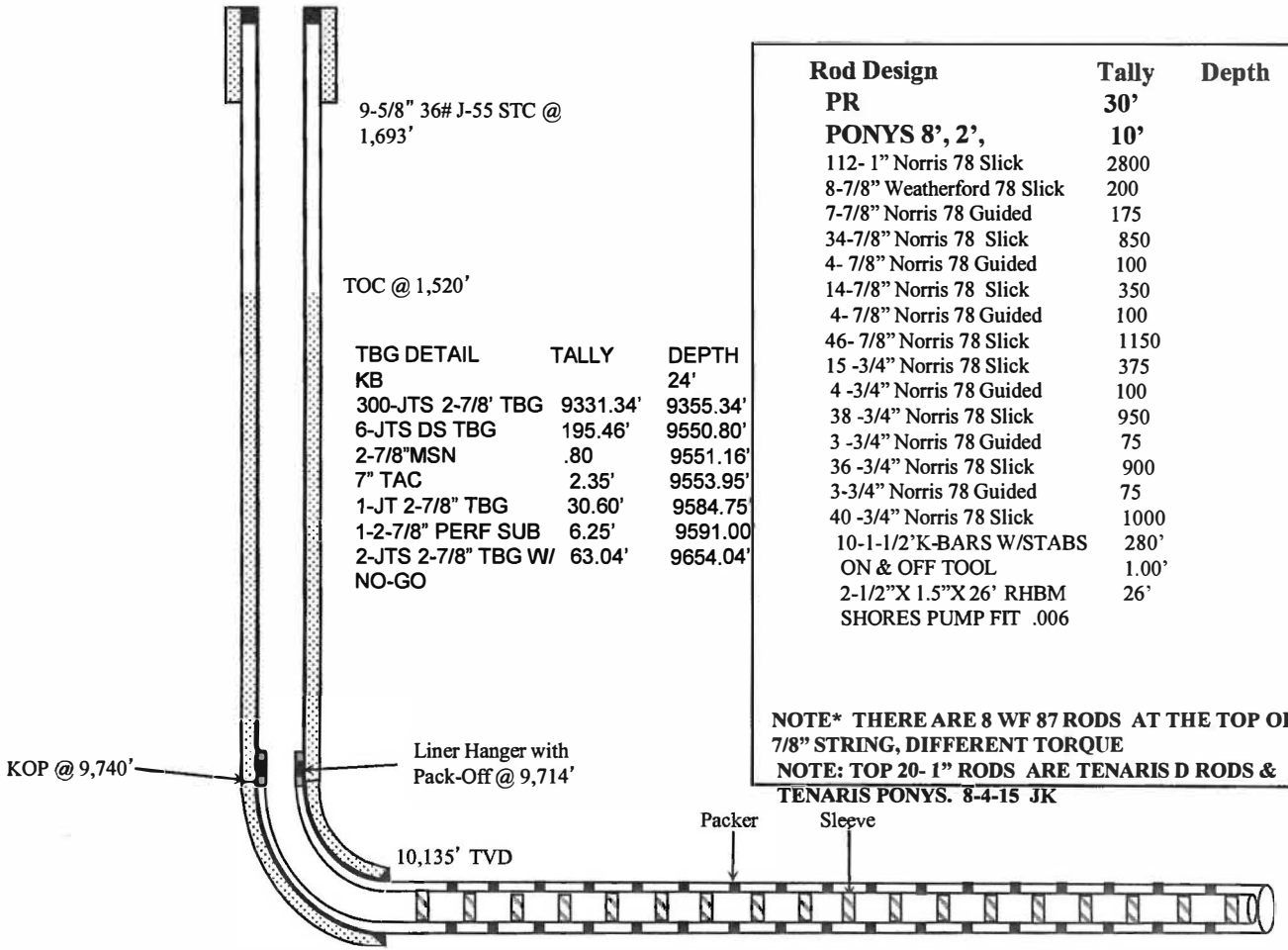
SLAWSON exploration company, inc.

Updated 7-8-16
Jim k

Location: 280' FNL and 1,630' FEL
NWNE Sec 32, T152N-R92W
Mountrail County, North Dakota

GL ELEVATION = 1,894'.'
KB ELEVATION = 1,918'
API#: 33-061-01082
NDIC#: 18220

WELLBORE DIAGRAM
Coyote #1-32H



TBG DETAIL	TALLY	DEPTH
KB		24'
300-JTS 2-7/8' TBG	9331.34'	9355.34'
6-JTS DS TBG	195.46'	9550.80'
2-7/8"MSN	.80	9551.16'
7" TAC	2.35'	9553.95'
1-JT 2-7/8" TBG	30.60'	9584.75'
1-2-7/8" PERF SUB	6.25'	9591.00
2-JTS 2-7/8" TBG W/ NO-GO	63.04'	9654.04'

Rod Design	Tally	Depth
PR	30'	
PONYS 8', 2',	10'	
112- 1" Norris 78 Slick	2800	
8-7/8" Weatherford 78 Slick	200	
7-7/8" Norris 78 Guided	175	
34-7/8" Norris 78 Slick	850	
4- 7/8" Norris 78 Guided	100	
14-7/8" Norris 78 Slick	350	
4- 7/8" Norris 78 Guided	100	
46- 7/8" Norris 78 Slick	1150	
15 -3/4" Norris 78 Slick	375	
4 -3/4" Norris 78 Guided	100	
38 -3/4" Norris 78 Slick	950	
3 -3/4" Norris 78 Guided	75	
36 -3/4" Norris 78 Slick	900	
3-3/4" Norris 78 Guided	75	
40 -3/4" Norris 78 Slick	1000	
10-1-1/2'K-BARS W/STABS	280'	
ON & OFF TOOL	1.00'	
2-1/2"X 1.5"X 26' RHBM	26'	
SHORES PUMP FIT .006		

NOTE* THERE ARE 8 WF 87 RODS AT THE TOP OF THE 7/8" STRING, DIFFERENT TORQUE
NOTE: TOP 20- 1" RODS ARE TENARIS D RODS & TENARIS PONYS. 8-4-15 JK

7" 26# HCP-110 from Surface to 6,213' 7" 32# P-110 from 6,213' to 7,063' 7" 26# HCP-110 from 7,063' to 7,799' 7" 32# P-110 from 7,799' to 8,628' 7" 26# HCP-110 from 8,628' to 10,769'

5,689' of 4-1/2" 11.6# HCP-110 liner with 17 swell packers, 18 sleeves and a liner hanger with pack-off (499' of tools). Set Liner at 15,402'

Lateral TD @ 15,443' MD, 10,144' TVD
4,684' of Open Hole

Figure 7a

Updated 12-16-16
Jeremiah P

SLAWSON exploration company, inc.

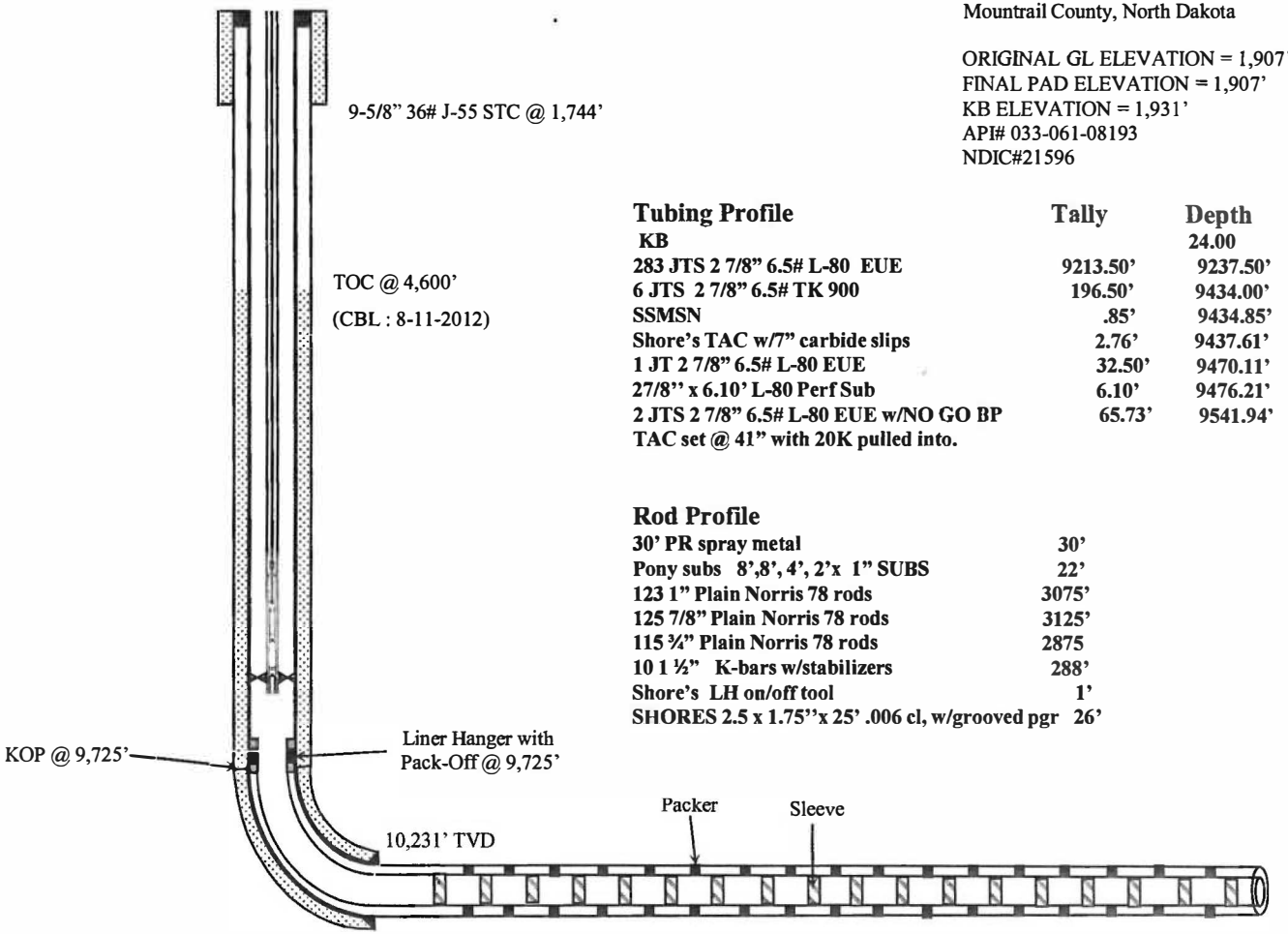
WELLBORE DIAGRAM
Coyote 2-32H

Location: 290' FNL and 1,430' FWL
NENW Sec 5, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,907'
FINAL PAD ELEVATION = 1,907'
KB ELEVATION = 1,931'
API# 033-061-08193
NDIC#21596

Formation	TVD
Pierre/base Foxhills	1,621'
Dakota (marine)	4,939'
Dunham Salt	6,301'
Base Dunham Salt	6,334'
Pine Salt	6,609'
Base Pine Salt	6,660'
Opeche	6,680'
Minnelussa	7,034'
Kibbey Lime	7,883'
Charles	8,038'
base last Charles salt	8,546'
Mission Canyon	8,712'
Lodgepole	9,372'
Upper Bakken shale	9,192'
Top of Target	10,221'
Target	10,231'
Base of Target	10,241'

Temporary rod design 6/20/2013
Quinn soft set tool
10 k-bars with stabilizers
115- ¾" rods, 125 7/8", 126 1" rods
4 work rods in hole that need to come out,
For a total of 130. 1" rods.
We backed off top rod and have a box looking up
Approx, 4' down. Installed 5K gate valve.



Tubing Profile	Tally	Depth
KB		24.00
283 JTS 2 7/8" 6.5# L-80 EUE	9213.50'	9237.50'
6 JTS 2 7/8" 6.5# TK 900	196.50'	9434.00'
SSMSN	.85'	9434.85'
Shore's TAC w/7" carbide slips	2.76'	9437.61'
1 JT 2 7/8" 6.5# L-80 EUE	32.50'	9470.11'
27/8" x 6.10' L-80 Perf Sub	6.10'	9476.21'
2 JTS 2 7/8" 6.5# L-80 EUE w/NO GO BP	65.73'	9541.94'
TAC set @ 41" with 20K pulled into.		

Rod Profile	
30' PR spray metal	30'
Pony subs 8',8', 4', 2'x 1" SUBS	22'
123 1" Plain Norris 78 rods	3075'
125 7/8" Plain Norris 78 rods	3125'
115 ¾" Plain Norris 78 rods	2875
10 1 ½" K-bars w/stabilizers	288'
Shore's LH on/off tool	1'
SHORES 2.5 x 1.75"x 25' .006 cl, w/grooved pgr	26'

7" 29# P-110 from	Surface	to	6,092'
7" 32# P-110 from	6,092'	to	8,722'
7" 29# P-110 from	8,722'	to	10,420'

5,146' of 4-1/2" 11.6# P-110 liner with 18 mech packers, 18 sleeves and a liner hanger with pack-off (500' of tools). Set Liner at 15,424'

Lateral TD @ 15,439' MD,
10,191' TVD
5,020' of Open Hole

Figure 16

Formation	TVD
Pierre/base Foxhills	1,673'
Dakota (marine)	4,889'
Dunham Salt	6,234'
Base Dunham Salt	6,271'
Pine Salt	6,527'
Base Pine Salt	6,561'
Opeche	6,562'
Minnelussa	6,974'
Kibbey Lime	7,823'
Charles	7,975'
Base last Charles salt	8,525'
Mission Canyon	8,699'
Lodgepole	9,319'
Upper Bakken shale	10,125'
Top of Middle Bakken Target	10,157'
Middle Bakken Target	10,165'
Base of Middle Bakken Target	10,172'

RockSeal Packers @

1	15,132'	PKR 11	12,436'
2	14,855'	PKR 12	12,200'
3	14,578'	PKR 13	11,921'
4	14,341'	PKR 14	11,644'
5	14,068'	PKR 15	11,366'
6	13,788'	PKR 16	11,129'

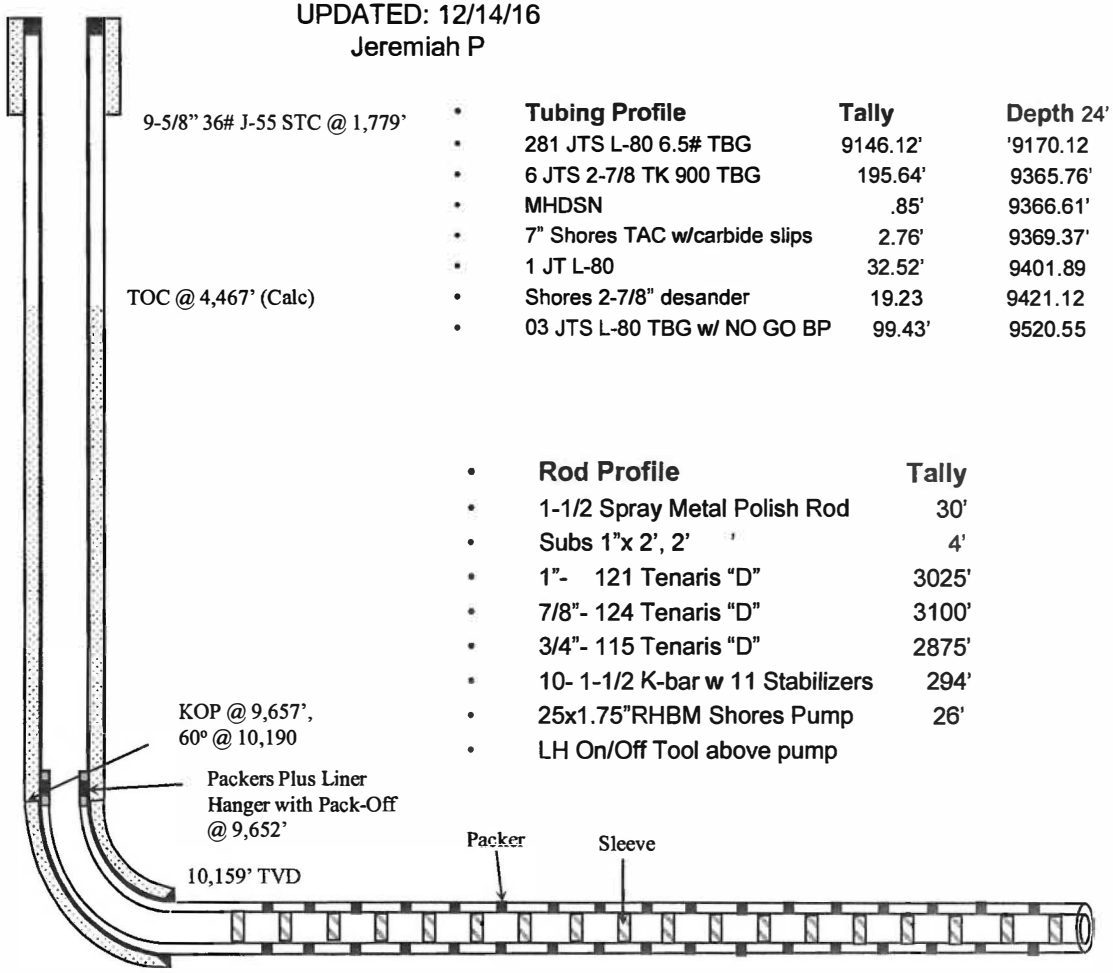
SLAWSON exploration company, inc.

WELLBORE DIAGRAM
Coyote 3-32H

Location: 275' FNL and 2,635' FEL
NWNE Sec 5, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,901'
FINAL PAD ELEVATION = 1,899'
KB ELEVATION = 1,922'
API# 33-061-02433
NDIC# 25026

UPDATED: 12/14/16
Jeremiah P



Tubing Profile	Tally	Depth 24'
281 JTS L-80 6.5# TBG	9146.12'	'9170.12
6 JTS 2-7/8 TK 900 TBG	195.64'	9365.76'
MHDSN	.85'	9366.61'
7" Shores TAC w/carbide slips	2.76'	9369.37'
1 JT L-80	32.52'	9401.89
Shores 2-7/8" desander	19.23	9421.12
03 JTS L-80 TBG w/ NO GO BP	99.43'	9520.55

Rod Profile	Tally
1-1/2 Spray Metal Polish Rod	30'
Subs 1"x 2', 2'	4'
1"- 121 Tenaris "D"	3025'
7/8"- 124 Tenaris "D"	3100'
3/4"- 115 Tenaris "D"	2875'
10- 1-1/2 K-bar w 11 Stabilizers	294'
25x1.75"RHBM Shores Pump	26'
LH On/Off Tool above pump	

7" 32# P-110 from	Surface	to	199'
7" 29# P-110 from	199'	to	6,146'
7" 32# P-110 from	6,146'	to	8,650'
7" 29# P-110 from	8,650'	to	10,549'

Packers Plus Completion System:

5,728' of 4-1/2" 13.5# P-110 BTC liner with 17 mech packers, 18 sleeves and a liner hanger with pack-off (500' of tools). Set Liner at 15,380'

Lateral TD @ 15,395' MD,
10,151' TVD
4,846' of Open Hole

Figure 7c

UPDATED 6/20/15
SH

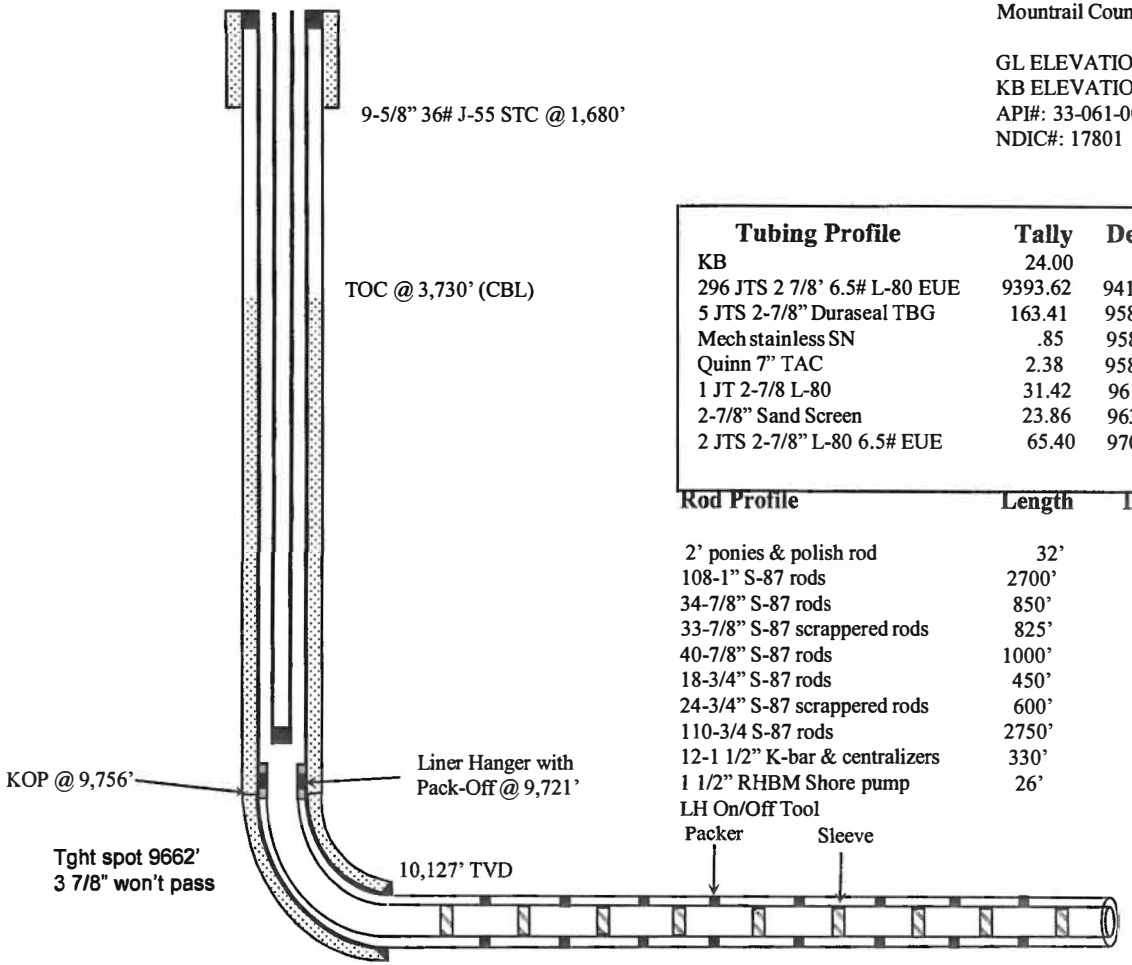
SLAWSON
exploration company, inc.

WELLBORE DIAGRAM
Jericho #1-5H

Location: 280' FNL and 1,400' FEL
NWNE Sec 5, T151N-R92W
Mountrail County, North Dakota

GL ELEVATION = 1,890.'
KB ELEVATION = 1,914'
API#: 33-061-00923
NDIC#: 17801

Formation	TVD
Pierre/base Foxhills	1,604'
Dakota (marine)	4,892'
Dunham Salt	6,254'
Base Dunham Salt	6,287'
Pine Salt	6,526'
Base Opeche Salt	6,633'
Minnelusa-Amsden	6,987'
Kibbey Lime	7,836'
Charles	7,986'
base last Charles salt	8,499'
Mission Canyon	8,665'
Lodgepole	9,423'
Upper Bakken shale	10,145'
Top of Target	10,174'
Target	10,184'
Base of Target	10,194'



Tubing Profile	Tally	Depth
KB	24.00	
296 JTS 2 7/8' 6.5# L-80 EUE	9393.62	9417.62
5 JTS 2-7/8" Duraseal TBG	163.41	9581.03
Mech stainless SN	.85	9581.88
Quinn 7" TAC	2.38	9584.26
1 JT 2-7/8 L-80	31.42	9615.68
2-7/8" Sand Screen	23.86	9639.54
2 JTS 2-7/8" L-80 6.5# EUE	65.40	9704.94

Rod Profile	Length	Depth
2' ponies & polish rod	32'	
108-1" S-87 rods	2700'	
34-7/8" S-87 rods	850'	
33-7/8" S-87 scrappered rods	825'	
40-7/8" S-87 rods	1000'	
18-3/4" S-87 rods	450'	
24-3/4" S-87 scrappered rods	600'	
110-3/4 S-87 rods	2750'	
12-1 1/2" K-bar & centralizers	330'	
1 1/2" RHBM Shore pump	26'	
LH On/Off Tool		

7" 26# HCP-110 from Surface to 6,113'
7" 32# P-110 from 6,113' to 7,010'
7" 26# HCP-110 from 7,010' to 7,757'
7" 32# P-110 from 7,757' to 8,685'
7" 29# L-80 from 8,685' to 10,369'

4,444' of 4-1/2" 11.6# P-110 liner with 8 swell packers, 9 sleeves and a liner hanger with pack-off (204'). Set Liner at 14,370'

Lateral TD @ 14,385' MD,
10,161' TVD
4,016' of Open Hole

Figure 7d

Updated 11-2-16
Jeremiah P

Formation	TVD
Pierre/base Foxhills	1,589'
Dakota (marine)	5,018'
Dunham Salt	6,380'
Base Dunham Salt	6,398'
Pine Salt	6,651'
Base Pine Salt	6,685'
Opeche	6,710'
Base Opeche	6,939'
Kibbey Lime	7,756'
Charles	7,978'
base last Charles salt	8,508'
Mission Canyon	8,678'
Lodgepole	9,280'
Upper Bakken shale	10,100'
Lower Bakken Shale	10,155'
Three Forks	10,195'
Top of Target	10,348'
Target	10,358'
Base of Target	10,368'

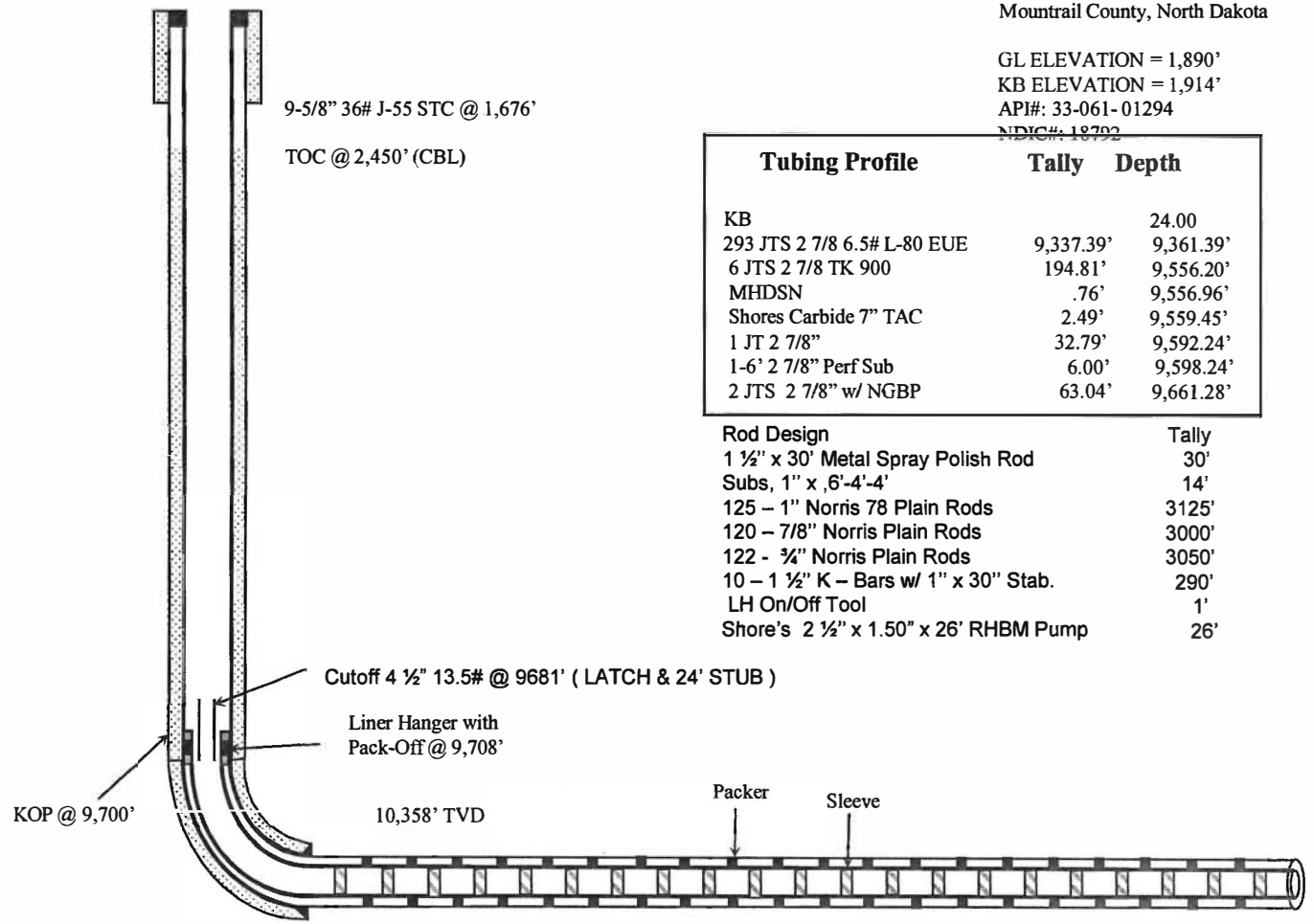
Date 4/13/2016
Pump card Information.
Description: 25-1.50-RHBM-20-4-4-2
Brass sand seal
Barrel: Brass/nic 20' tool
Plunge:r 4gr-m6
Valves: Monal
Pump# SLS 2725
Max stroke: 246"

SLAWSON exploration company, inc.

WELLBORE DIAGRAM
Jericho #2-5TFH

Location: 310' FNL and 1,830' FEL
NWNE Sec 5, T151N-R92W
Mountrail County, North Dakota

GL ELEVATION = 1,890'
KB ELEVATION = 1,914'
API#: 33-061-01294
NDIC#: 18792



Tubing Profile	Tally	Depth
KB		24.00
293 JTS 2 7/8 6.5# L-80 EUE	9,337.39'	9,361.39'
6 JTS 2 7/8 TK 900	194.81'	9,556.20'
MHDSN	.76'	9,556.96'
Shores Carbide 7" TAC	2.49'	9,559.45'
1 JT 2 7/8"	32.79'	9,592.24'
1-6' 2 7/8" Perf Sub	6.00'	9,598.24'
2 JTS 2 7/8" w/ NGBP	63.04'	9,661.28'

Rod Design	Tally
1 ½" x 30' Metal Spray Polish Rod	30'
Subs, 1" x ,6'-4'-4'	14'
125 – 1" Norris 78 Plain Rods	3125'
120 – 7/8" Norris Plain Rods	3000'
122 - ¾" Norris Plain Rods	3050'
10 – 1 ½" K – Bars w/ 1" x 30" Stab.	290'
LH On/Off Tool	1'
Shore's 2 ½" x 1.50" x 26' RHBM Pump	26'

Figure 1e

Updated 7-13-16
Jim k.

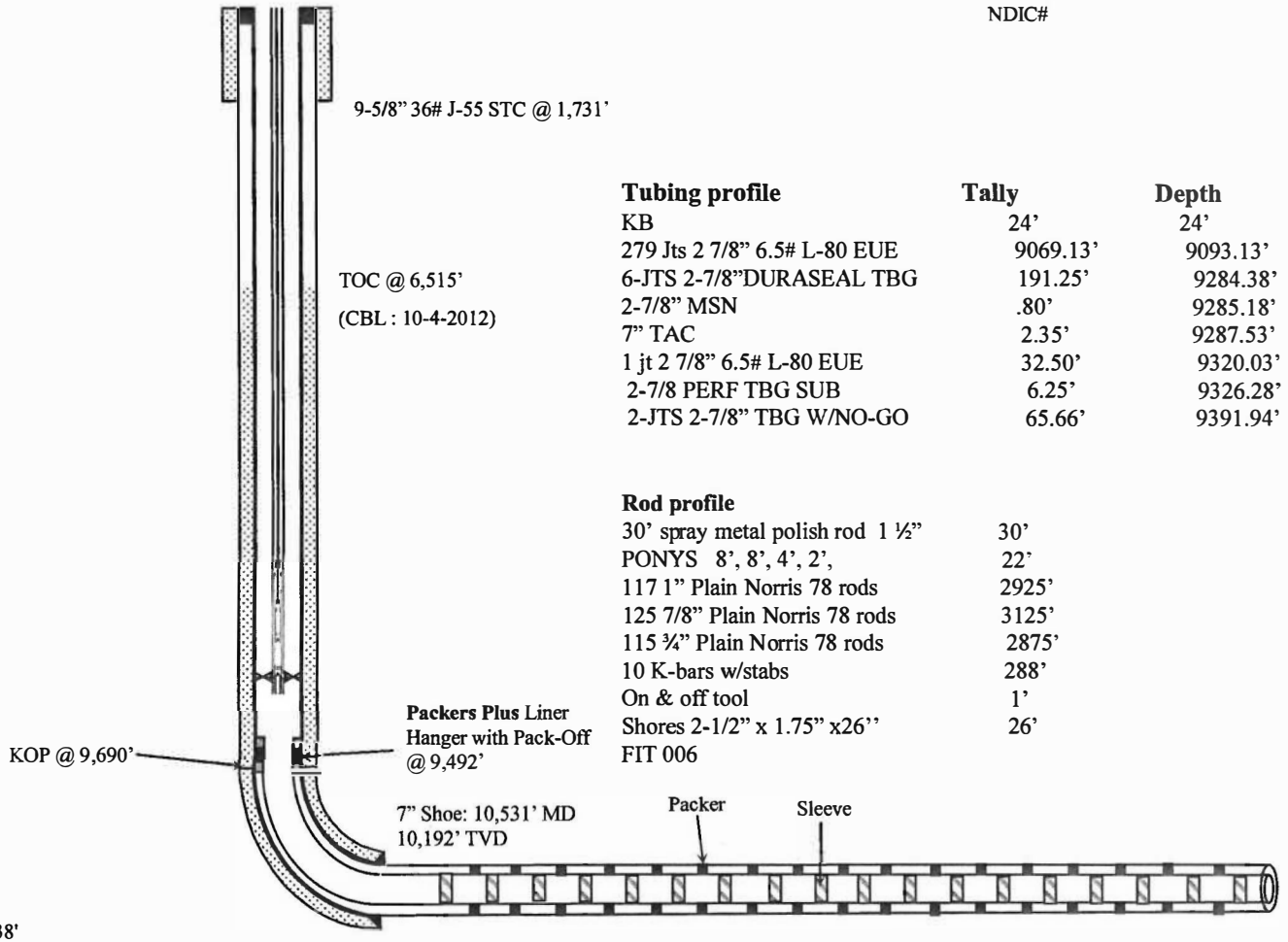
SLAWSON exploration company, inc.

WELLBORE DIAGRAM
Jericho 3-5H

Location: 290' FNL and 1,330' FWL
NENW Sec 5, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,908'
FINAL PAD ELEVATION = 1,907'
KB ELEVATION = 1,931'
API#
NDIC#

Formation	TVD
Pierre/base Foxhills	1,621'
Dakota (marine)	4,939'
Dunham Salt	6,301'
Base Dunham Salt	6,334'
Pine Salt	6,609'
Base Pine Salt	6,660'
Opeche	6,680'
Minnelussa	7,034'
Kibbey Lime	7,883'
Charles	8,038'
base last Charles salt	8,546'
Mission Canyon	8,712'
Lodgepole	9,372'
Upper Bakken shale	9,192'
Top of Target	10,221'
Target	10,231'



Tubing profile	Tally	Depth
KB	24'	24'
279 Jts 2 7/8" 6.5# L-80 EUE	9069.13'	9093.13'
6-JTS 2-7/8"DURASEAL TBG	191.25'	9284.38'
2-7/8" MSN	.80'	9285.18'
7" TAC	2.35'	9287.53'
1 jt 2 7/8" 6.5# L-80 EUE	32.50'	9320.03'
2-7/8 PERF TBG SUB	6.25'	9326.28'
2-JTS 2-7/8" TBG W/NO-GO	65.66'	9391.94'

Rod profile

30' spray metal polish rod 1 ½"	30'
PONYS 8', 8', 4', 2',	22'
117 1" Plain Norris 78 rods	2925'
125 7/8" Plain Norris 78 rods	3125'
115 ¾" Plain Norris 78 rods	2875'
10 K-bars w/stabs	288'
On & off tool	1'
Shores 2-1/2" x 1.75" x26''	26'
FIT 006	

7" 32# P-110 from	Surface	to	238'
7" 29# P-110 from	238'	to	6,085'
7" 32# P-110 from	6,085'	to	8,751'
7" 29# P-110 from	8,751'	to	10,531'

Packers Plus Completion System:

4,539' of 4-1/2" 11.6# P-110 liner with 15 mech packers, 15 sleeves and a liner hanger with pack-off. Set Liner at 14,458'

Lateral TD @ 14,670' MD, 10,200' TVD
4,139' of Open Hole

Figure 7

SLAWSON exploration company, inc.

Updated 7-7-16
JIM K.

Updated 6/10/14

WELLBORE DIAGRAM
Jericho 4-5H

Location: 275' FNL and 2,615' FWL
NENW Sec 5, T151N-R92W
Mountrail County, North Dakota

ORIGINAL GL ELEVATION = 1,900'
FINAL PAD ELEVATION = 1,899'
KB ELEVATION = 1,922'
API# 33-061-02434
NDIC# 25027

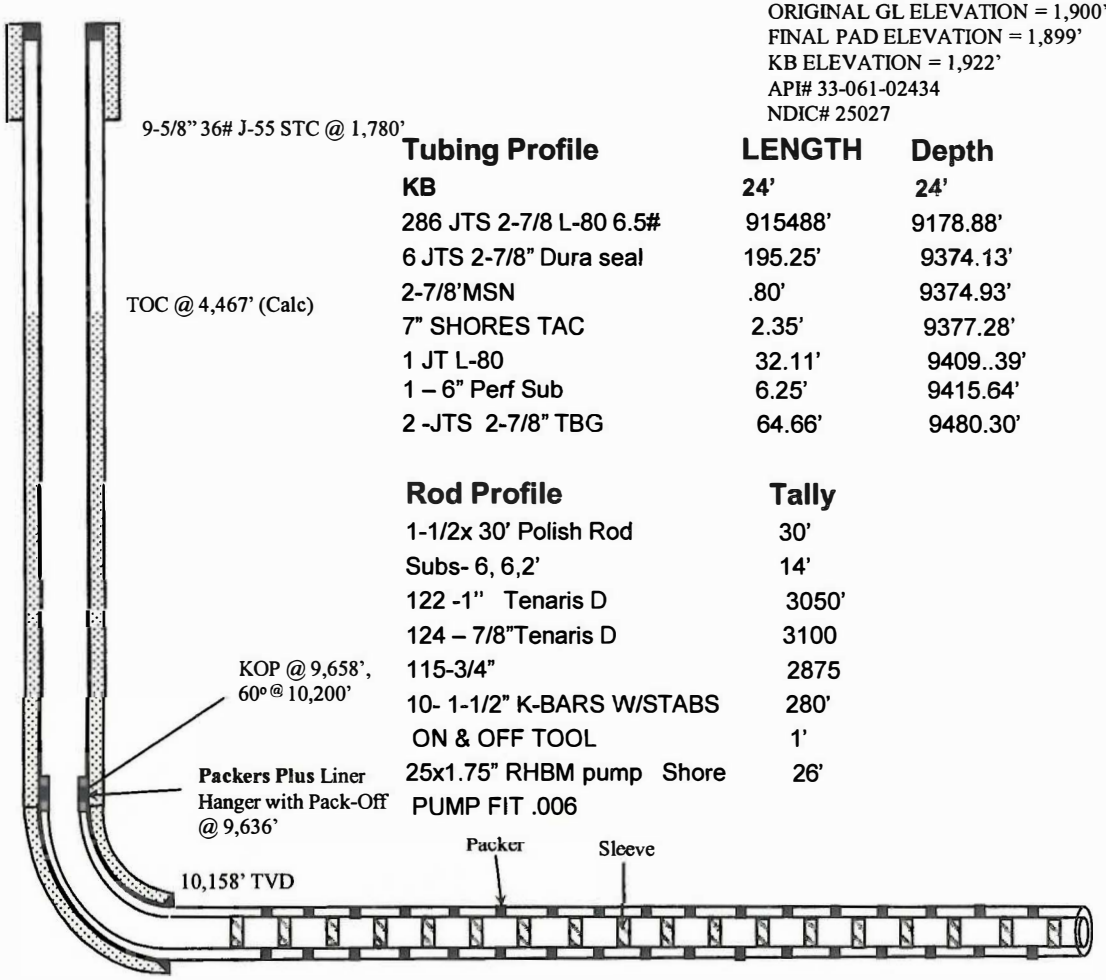
Formation	TVD
Pierre/base Foxhills	1,673'
Dakota (marine)	4,889'
Dunham Salt	6,234'
Base Dunham Salt	6,271'
Pine Salt	6,527'
Base Pine Salt	6,561'
Opeche	6,562'
Minnelussa	6,974'
Kibbey Lime	7,823'
Charles	7,975'
Base last Charles salt	8,525'
Mission Canyon	8,699'
Lodgepole	9,319'
Upper Bakken shale	10,125'
Top of Middle Bakken Target	10,157'
Middle Bakken Target	10,165'
Base of Middle Bakken Target	10,172'

RockSeal Packers @

PKR 1	14,446'	PKR 11	12,089'
PKR 2	14,211'	PKR 12	11,852'
PKR 3	13,974'	PKR 13	11,615'
PKR 4	13,740'	PKR 14	11,377'
PKR 5	13,504'	PKR 15	11,144'
PKR 6	13,270'	PKR 16	10,909'
PKR 7	13,035'	PKR 17	10,678'
PKR 8	12,799'		
PKR 9	12,562'		
PKR 10	12,326'		

FracPorts @

DEH	14,586'	3.063	11,950'
2.438	14,308'	3.125	11,713'
2.500	14,073'	3.188	11,476'
2.563	13,838'	3.250	11,238'
2.625	13,602'	3.313	11,007'
2.688	13,366'	3.375	10,775'
2.750	13,133'	3.438	10,544'
2.813	12,898'		
2.875	12,661'		
2.938	12,424'		
3.000	12,187'		



Tubing Profile	LENGTH	Depth
KB	24'	24'
286 JTS 2-7/8 L-80 6.5#	915488'	9178.88'
6 JTS 2-7/8" Dura seal	195.25'	9374.13'
2-7/8'MSN	.80'	9374.93'
7" SHORES TAC	2.35'	9377.28'
1 JT L-80	32.11'	9409..39'
1 – 6" Perf Sub	6.25'	9415.64'
2 -JTS 2-7/8" TBG	64.66'	9480.30'

Rod Profile	Tally
1-1/2x 30' Polish Rod	30'
Subs- 6, 6,2'	14'
122 -1" Tenaris D	3050'
124 – 7/8"Tenaris D	3100
115-3/4"	2875
10- 1-1/2" K-BARS W/STABS	280'
ON & OFF TOOL	1'
25x1.75" RHBM pump Shore	26'
PUMP FIT .006	

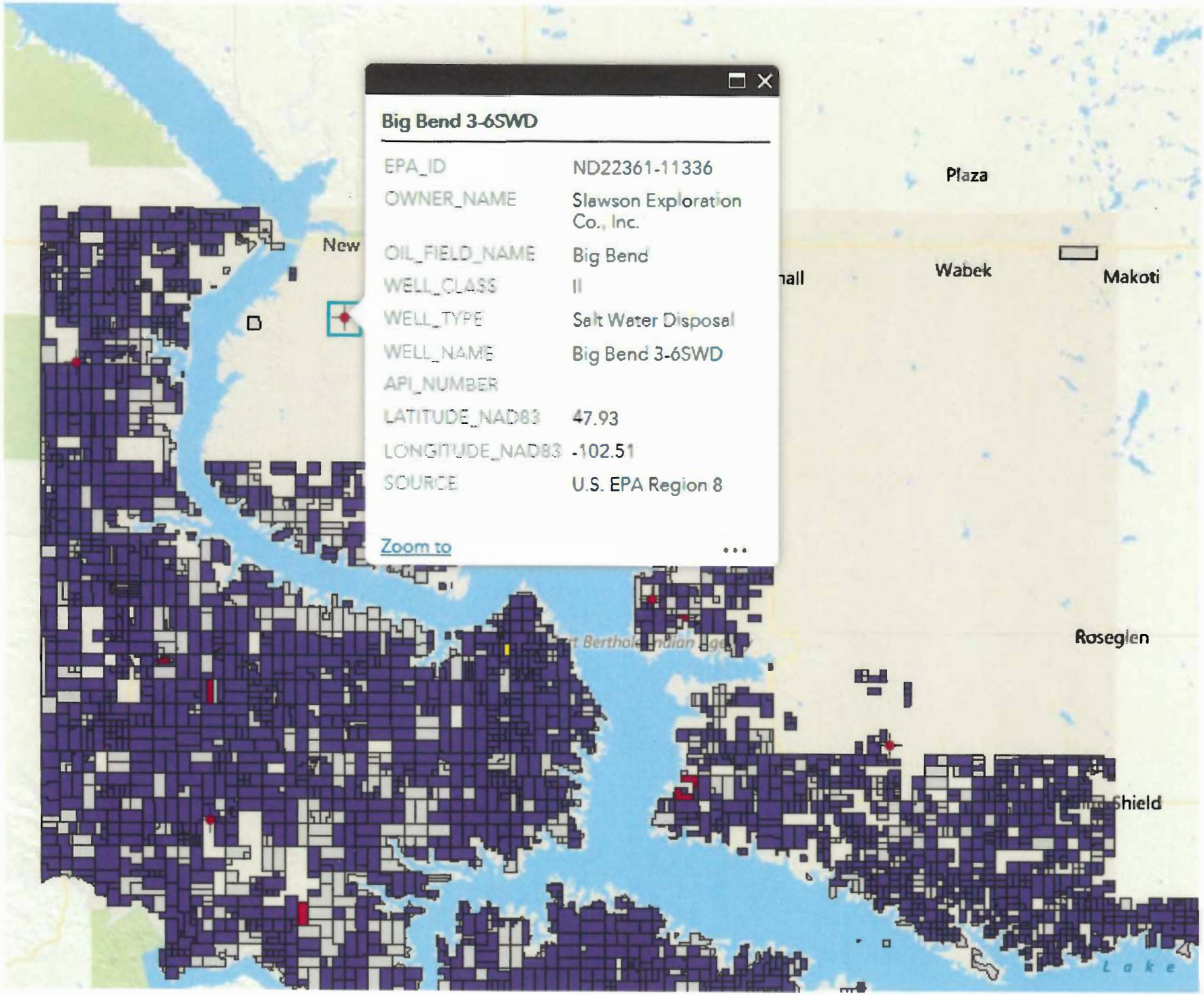
7" 32# P-110 from	Surface	to	199'
7" 29# P-110 from	199'	to	5,964'
7" 32# P-110 from	5,964'	to	8,568'
7" 29# P-110 from	8,568'	to	10,437'

Packers Plus Completion System:

5,313' of 4-1/2" 13.5# P-110 BTC liner with 17 mech packers, 18 sleeves and a liner hanger with pack-off. Set Liner at 14,695'

Lateral TD @ 14,710' MD,
10,182' TVD
4,500' of Open Hole

Figure 7g


Big Bend 3-6SWD
EPA_ID ND22361-11336
OWNER_NAME Slawson Exploration Co., Inc.
OIL_FIELD_NAME Big Bend
WELL_CLASS II
WELL_TYPE Salt Water Disposal
WELL_NAME Big Bend 3-6SWD
API_NUMBER
LATITUDE_NAD83 47.93
LONGITUDE_NAD83 -102.51
SOURCE U.S. EPA Region 8
Zoom to
Plaza
Wabek
Makoti
Roseglen
Shield
Lake