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# Abandonment Information Package

**Obsidian et al North Liard C-31A**

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October 28, 2019

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# Abandonment Information Package

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## DETAILED WELL REPORT:

**Well Name:** CDN FOREST ET AL NORTH LIARD C -31A

**UWID:** 300/C -31 -6040 – 12330/0

**Licence #:** N1907

### A. Drilling

This well was drilled to a total depth of 2941.0mKB in August 4, 2000. It has PBDT of 2255.0mKB in April 3, 2001. Three sidetracks were conducted during the drilling as follows:

- Sidetrack No. 1  
2366.8 mKB (TVD 2361.0mKB) – 2450.0mKB (TVD 2444.1mKB), majorly penetrated shales In Fort Simpson and Horn River formations
- Sidetrack No. 2  
2300.0mKB (TVD 2294.3mKB) -2330.0mKB (TVD 2324.3mKB) majorly penetrated Shales in Fort Simpson formation
- Sidetrack No. 3  
2300.0mKB (TVD 2294.3mKB) -2941.0mKB (TVD 2865.3mKB) majorly penetrated Shales in fort Simpson Horn Rover formations.

These three horizontal sections were fully abandoned with cement plugs due to no reservoir rock being penetrated. No coring and DST were performed.

### B. Completion

Vertical section was re-completed from January 15 to February 6, 2002. The well was perforated in the Fort Simpson and Exshaw formations and followed by swab/flow tests. The perforation interval as follows:

<i>Perforation interval</i>	<i>Formation</i>	<i>Status</i>
1697.0 -1703.0mKB	Exshaw	Current
1762.0 – 1768.0mKB	Exshaw	Current, fracd
1730.0 - 1736.0mKB	Exshaw	Current
1967.0 – 1973.0mKB	Fort Simpson	ABD, fracd twice (BP @1800mKB)

## Abandonment Information Package

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### C. Swab and Flow Test Summary

- 1760.0 -01768.0 mKB (Exshaw formation )
  - Swab Test (01/24/2002)                      9 swabs recovered 7.91m<sup>3</sup> 100% water
  - Flow Test 901/25-01/31/2002)            recovered 32.4m<sup>3</sup> water +116m<sup>3</sup> gas
  
- 1630.0 -1703.0mKB(Exshaw Formation )
  - Swab Test (02/07/2002)                      23 swabs recovered 30.8m<sup>3</sup> 100% water
  - Swab Test (02/08/2002)                      35 swabs recovered 21.8m<sup>3</sup> 100% water
  - Swab Test (02/09/2002)                      36 swabs recovered 8.6m<sup>3</sup> 100% water
  - Swab Test (02/10/2002)                      12 swabs recovered 1.8m<sup>3</sup> 100% water

Please see attached Latest Well Diagram, Well Data and History.

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## Penn West Energy Trust Well Data and History

August 13, 2008

C-31A-60-40-123-30

By: Denis Yang

General Data		Participants			
Well Name :	CDN FOREST et al North Liard C-31A				
Surface Location:	60°30'00.3158" N 123°36'36.1336" W	Spud Date :	Aug 04, 2000	Company	WI (%)
Bottom Location:	60°30'02.7440" N 123°36'30.5449" W	Rig Rel Date :	Jan 05, 2001		
Well Status :	Completed	License # :	1900		
Zone :	Exshaw	Surf Lse (\$/Yr) :			
		KB (m) :	488.0		
		GL (mKB) :	481.3		
		MD	2,941.0		
		PBTD (mKB) :	2,255.0		

Surface Casing	
Aug 10, 2000	15 jts, 508.0mm conductor, 195.0kg/m, 56 @ 190.0mKB Cemented w/ 80.0t 0-1-0 G + 1.0% CaCl2, no cmt returns
Aug 21, 2000	55 jts, 339.7mm casing, 101.0kg/m, K-55 @ 710.3mKB Cemented w/ 105.0t 0-1-0 G + 0.5% CFR + 0.3% LTR, 11.0 m3 good cmt returns

Production Casing	
Dec 20, 2000	189 jts, 244.5mm casing, 80.0kg/m, HCL-80, BT&C @ 2629.6mKB Cemented w/ 20.0t 0-1-0 G + 0.75% CFR + 0.4% CFL-1 + 0.2% LTR, filled w/ 30.0t Thermal 40 + 1.0% CFR + 0.35% CFL-H + 0.15% HTR-2 with 6L FA-1/m3, tailed in w/ 53.0t Thermal 40 + 0.7% CFR + 0.7% CFL-2 + 0.2% LTR. Calculated cmt top @ 1100.0mKB

DSTs	
	None

Perforations				
Date	Depth (mKB)		Status	Comments
	From	To		
Feb 06, 2002	1,697.0	1,703.0	Current	7sh/m, Exshaw
Feb 06, 2002	1,698.0	1,702.0	Current	7sh/m, Exshaw
Feb 06, 2002	1,730.0	1,736.0	Current	7sh/m, Exshaw
Jan 27, 2002	1,762.0	1,768.0	Fractured	w/ 35.0 t of 20/40 sand
Jan 25, 2002	1,762.0	1,765.0	Current	7sh/m, Exshaw
Jan 25, 2002	1,764.0	1,768.0	Current	7sh/m, Exshaw
Jan 24, 2002	1,800.0	1,800.0	Bridge plug	Schlumberger's WR plug capped with sand
Jan 17, 2002	1,967.0	1,973.0	Fractured	w/ 35.0 t of 20/40 sand
Jan 17, 2002	1,967.5	1,972.5	Suspended	7sh/m, re-perforated, Fort Simpson
Jan 15, 2002	1,967.0	1,973.0	Fractured	w/ 35.0 t of 20/40 sand
Jan 15, 2002	1,967.0	1,973.0	Suspended	7sh/m, Fort Simpson

Production String Details	
Feb 11, 2002	1-PX plug in XN nipple, 1-244.5mm x 88.9mm tubing hanger, 1-88.9mm x 60.3mm XO, 1 jt-60.3mm x 9.5m tubing, 1-60.3mm x 3.0m pup, 182 jts-60.3mm tubing(1740.9m), 7.0kg/m, J55, EUE, 1-60.3mm XN nipple c/w 47.8mm profile & 45.4mm no/go @ 1759.3mKB, 1jt-60.3mm x 9.6m tubing, 1-sawtooth collar, Tubing bottom @1769.3mKB

Rod String Details	
	None

Report Date : Jul 23, 2007 1:54 PM

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## Penn West Energy Trust Well Data and History

August 13, 2008

C-31A-60-40-123-30

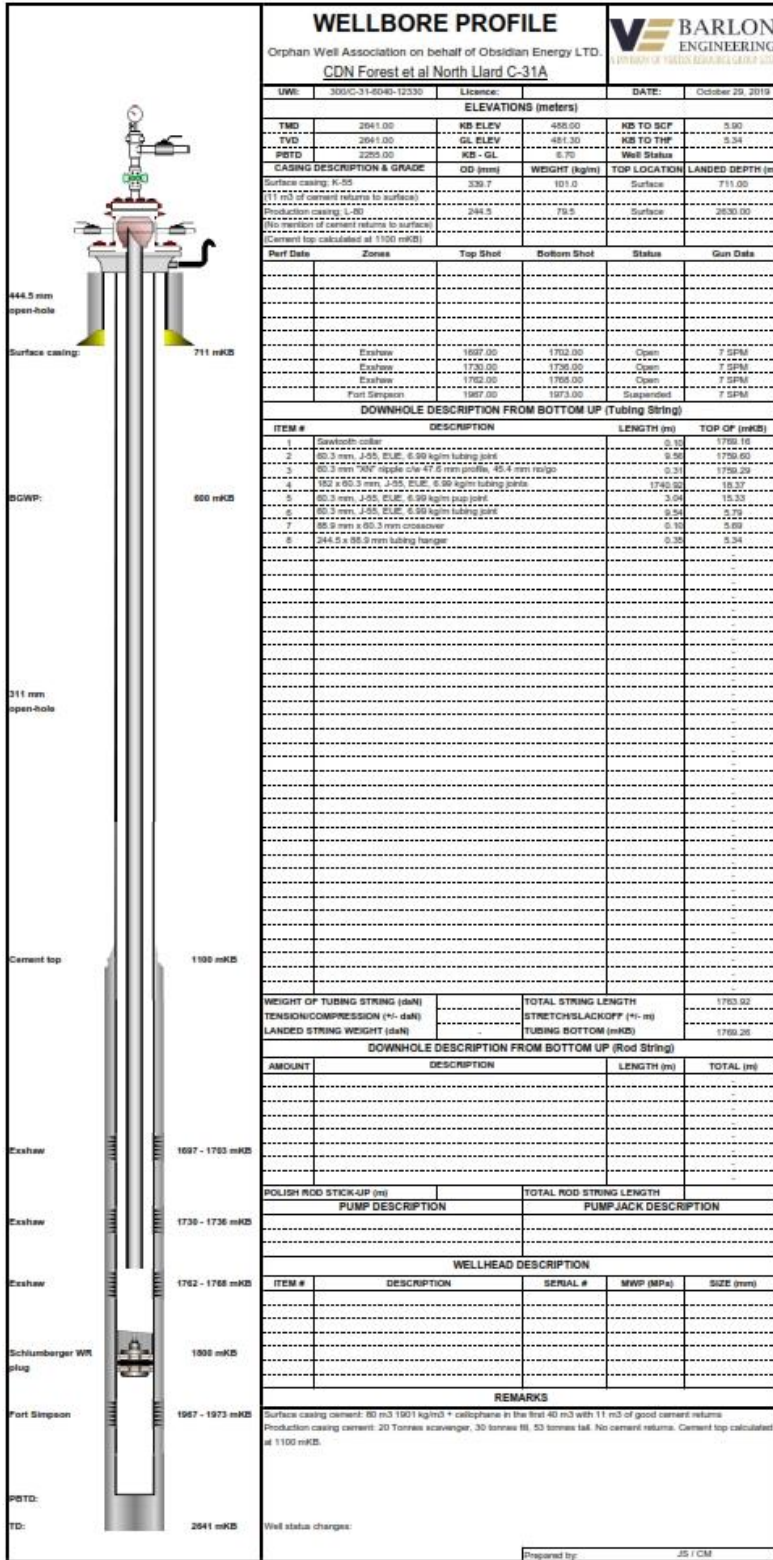
By: Denis Yang

### Well History

Feb 06, 2002	Perforated Exshaw 1730.0~1736.0mKB, 1697.0~1703.0mKB, 1698.0~1702.0mKB @ 7sh/m w/101mm ERHSC, 60 degree phasing, 23 gram charges. Swab test till Feb 11(see attached test data).
Jan 25, 2002	Perforated Exshaw 1762.0~11765.0mKB, 1764.0~1768.0mKB @ 7sh/m w/101mm ERHSC, 60 degree phasing, 23 gram charges. Fracd w/ 35.0t of 20/40 sand.
Jan 24, 2002	Suspended Fort Simpson perforations: set Schlumberger WR plug at 1800.0mKB and capped with sand.
Jan 22, 2002	Static Gradient:BHP=2896.5kPa @ MPP 1970.0mKB, BHT=106°C, fluid level @ 1850mKB.
Jan 17, 2002	Re-perforated Fort Simpson 1967.5~1972.5mKB @ 7sh/m w/101mm ERHSC, 60 degree phasing, 23 gram charges. Fracd w/ 35.0t of 20/40 sand. Swab test(see attached test data).
Jan 15, 2002	Perforated Fort Simpson 1967.0~1973.0mKB @ 7sh/m w/101mm ERHSC, 60 degree phasing, 23 gram charges. Fracd w/ 35.0t of 20/40 sand.
Apr 02, 2001	Ran cement plug #2 2400~2280mKB with 244.5mm cast iron bridge plug at 2370.0mKB. Final cement plug back depth @ 2255.0mKB.
Apr 01, 2001	Ran cement plug #1 2941~2841mKB with 244.5mm cast iron bridge plug at 2622.0mKB.
Mar 30, 2001	Completed sidetrack No 3 drilling at TD 2941.0mKB(TVD 2865.3mKB).
Jan 27, 2001	Started sidetrack No 3 drilling at kick-off point 2300.0mKB(TVD 2294.3mKB).
Jan 24, 2001	Completed sidetrack No 2 drilling at TD 2330.0mKB(TVD 2324.3mKB), and abandoned.
Jan 12, 2001	Started sidetrack No 2 drilling at kick-off point 2300.0mKB(TVD 2294.3mKB).
Jan 08, 2001	Completed sidetrack No 1 drilling at TD 2450.0mKB(TVD 2444.1mKB), and abandoned.
Jan 05, 2001	Started sidetrack No 1 drilling at kick-off point 2366.8mKB (TVD 2361.0mKB).
Dec 20, 2000	Drilled to 2629.6mKB. Ran and cemented 244.5mm casing @ 2629.6mKB.
Aug 21, 2000	Ran and cemented 339.7mm casing @ 710.3mKB.
Aug 04, 2000	Spud.

**EXISTING WELL DIAGRAM:**

# Abandonment Information Package



**ABANDONMENT PROGRAM**



***OBSIDIAN ET AL NORTH LIARD C – 31A***

**Wellbore Abandonment Program**

**Original**

**WID : 1907**

**Bottomhole Location: 300/C -31 – 6040 -12330**

**Surface Location: C-41-6030-12330**

**NON-CONFIDENTIAL**

**AFE # TBA**

**Obsidian Energy  
200, 207 - 9 Avenue S.W.**

# Abandonment Information Package

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Calgary, Alberta T2P 1K3

Phone: (403) 777 - 2500

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## OBJECTIVE

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The subject location is a gas well abandonment.

This well was originally drilled in 2000 to TD of 2941.0mKB and measured depth of 2730 mKB and was originally completed in the Nahanni formation as a gas producer. Three sidetracks were conducted during drilling and were fully abandoned with cement plugs. Vertical section was re-completed from Jan.11 to Feb. 10, 2002. It was perforated in the Fort Simpson from 1967.0 – 1973.0mKB in Jan. 15, 2002 and reperforated after 2 days from 1967.5 – 1972.5 mKB and then fractured twice. Retrievable bridge plug was set at 1800 mKB with 1.5m sand on top of it. The well was then perforated in the Exshaw formation from 1762.0 -1768.0mKB; 1730.0 -1736.0 and 1697.0 -1703.0mKB in Feb. 2002. The well was cemented to surface and no surface casing vent flow exists.

A service rig will be brought to location to pull the tubing and release WR plug. Two cement retainer squeezes will be completed in two different formations with existing open perforations. Utilizing Alberta's ERCB Directive 20 (Well Abandonment), the cement retainer will be set @1963mKB and1690mKB respectively, pressure tested to 7MPa for 10 minutes and capped with 8m class 'G' cement. A permanent bridge plug will be set on top of cemented retainer sitting @ 1690mKB. Bridge plug will be pressure tested to 7Mpa and capped with 8m class G cement. The well will then be cut and capped. The above procedure will be performed to provide isolation of gas bearing zone, discrete pressure zones and prevent any formation fluid from flowing through or escaping from the wellbore (Canada Oil and Gas Drilling and Production Regulations -SOR/2009-315)

## II WELL DATA

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**Well Name: CDN FOREST ET AL NORTH LIARD C-31**

<b>License Number:</b>	N1900	<b>U.W.I.:</b>	300/C-31-6040-12330
<b>License Date:</b>	July, 14, 2000	<b>Lahee Class:</b>	EXP
<b>Spud Date:</b>	Aug. 4, 2000	<b>Rig Released:</b>	Jan. 05, 2001
<b>AFE Number:</b>		<b>Working Interest:</b>	100%
<b>AFE Amount:</b>		<b>Main Hole Mud:</b>	
<b>Elevations:</b>	<b>KB:</b> 488.5m	<b>GL:</b> 481.3m	<b>KB-CF:</b> 5.9 m
<b>Depths:</b>	<b>TVD:</b> 2941.0mKB	<b>PBTD:</b> 2255.0mKB	<b>BGWP:</b>
	<b>MD:</b> 2730.0m		
<b>ERP:</b> Corporate	<b>Current Status:</b> Shut In		
<b>OROGO Level:</b>	Level II Well		

## III TUBULAR & WELLHEAD DATA

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**Conductor Casing 1** : set @ 31.7mKB  
(914.4mm hole size)

**Conductor Casing 2:** 15 jts. , 508mm, 195kg/m, grade 56 set @190.0mKB

## Abandonment Information Package

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Cemented w/ 60m<sup>3</sup> 0-1-0 "G" +1% CaCl<sub>2</sub>. No cement returns at tank but cement was found at ground level when 762mm pipe was cut off  
**(660mm hole size)**

**Surface Casing:** 55 jts. , 339.70mm, 101 kg/m, K-55 , BT& C set @ 710.3mKB

Cemented w/ 80.40m<sup>3</sup> of 0:1:0 w/0.5 % CFR +0.3% LTR 80m<sup>3</sup> Slurry @1901kg/m<sup>3</sup> + cellophane to the first 40m<sup>3</sup> with 11m<sup>3</sup> of good cement returns  
**(444.50 hole size)**

**Collapse: 13400 Kpa    Burst: 23800 Kpa**  
**Drift I.D.: 311.379 mm    Capacity: 0.078100 m<sup>3</sup>/m**

**Intermediate Casing:** 143 jts. , 244.50mm, 80kg/m, HCl 80, BT&C, set @ 2629.57m

Cemented w/ 22.5m<sup>3</sup> Thermal 40 +1% CFR, 0.35% CFL-2, + 0.35%CFL-H, 0.15%HTR-2, 6L FA-1 /m<sup>3</sup> Tail w/ 37.51m<sup>3</sup> Thermal 40 +0.7% CFR, .7%CFL-2 , 0.2% LTR.

Additional Comment: mixed 20 sacks of MICA to the first 20 tonnes of "G" cement. Mixed 10 sacks of mica and 10 sacks of cellophane to the first 20 tonnes of thermal 40. Full returns while cementing. Calculated cement top @ 1100mKB  
**(311.00 hole size)**

**Collapse: 46000 Kpa    Burst: 55000 Kpa**  
**Drift I.D.: 212.83 mm    Capacity: 0.036912 m<sup>3</sup>/m**

**Note: No need to cement squeeze un-cemented interval. Please see Appendix A for the Geologist review report)**

**Production Casing:** set @ 2730mKB  
**(215.9mm hole size)**

**Tubing String:**  
(Bottom up )

Sawtooth collar  
1\*60.3mm J-55, EUE, 6.99kg/m joint tubing  
60.3mm "XN" nipple c/w 47.6mm profile, 45.4mm nogo  
182 \* 60.3mm J-55 ,EUE, 6.99kg/m ,tubing  
1\* 60.3mm J-55 ,EUE, 6.99kg/m , pup joint  
1\*60.3mm J-55 ,EUE, 6.99kg/m , joint tubing  
88.9mm \*60.3mm crossover  
244.5 \* 88.9mm tubing hanger  
"PX" plug in "XN" nipple  
**Tubing bottom landed @ 1769.26mKB**

**Collapse: 55800 Kpa    Burst: 53100 Kpa**  
**Drift I.D.: 48.285 mm    Capacity: 0.002017m<sup>3</sup>/m**

**Note: Please see well detailed report for Latest Schematic Diagram**

**Rod String:** none

**Other Downhole:**

**Wellhead:** 35 MPa Vetco Gray flanged wellhead

# Abandonment Information Package

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## IV RESERVOIR PROPERTIES

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Formation: Horn River

Fluid Type: Gas

Status: open hole / Abandoned

Cement: 1) 4.73m<sup>3</sup> Thermal 40 + Additives    2) Cement: 7.5m<sup>3</sup> Thermal 40 + Additives

Cement Top = 2841mKB

Cement top = 2255mKB

Cement Base = 2400 mKB

3) 244.5 mm cast iron Bridge Plug set 2255mKB, pressure tested to 7MPa

Formation: Fort Simpson

Fluid Type: Gas

Status: isolated with Retrievable Bridge Plug set @ 1800mKB

Interval (mKB): 1967.0 -1973.0

Length (m): 6

Formation: Exshaw

Fluid Type: Gas

Status: existing open perforation

Interval (mKB): 1762.0 -1768.0 / 1730.0 – 1736.0 / 1697.0 -1703.0

Length (m): 6/6/6; total: 18

BHP (kPa): 18100 kPa (well file recompletion dated 1/23/2002)

Temperature (°C): 106 well file recompletion dated 1/23/2002)

H<sub>2</sub>S / CO<sub>2</sub> (%): **2 / 18** – well file info. dated Oct. 2, 2000 (always check and confirm H<sub>2</sub>S on location)

## V COORDINATES & DIRECTIONS

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Coordinates (NAD 83)

Latitude 60.50053° N                      Longitude 123.61476° W

Directions: as per scouting and construction

## VI OBSIDIAN REQUIREMENTS

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### HEALTH AND SAFETY MANAGEMENT

Obsidian Energy (Obsidian) is committed to protecting, its personnel, property and the public from accidents or incidents resulting from any of its operations. Obsidian shall meet these obligations by providing resources and taking the appropriate measures to protect and promote the health and safety of its employees, and to ensure operations do not adversely affect the environment and the general public.

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## HEALTH, SAFETY & ENVIRONMENT REQUIREMENTS

The Well site Supervisor will have reviewed the contents & requirements of;

- The Obsidian Policies & Procedures CD\*-2008 and completed the required acknowledgements as it applies to all Obsidian well servicing operations.
- The Obsidian Health & Safety Management Policy
- The Obsidian Safely Managing Accidents Reduction Tactics Management System (SMART)
- The Obsidian Wellsite Supervisor "To Do" Checklist & Documentation Requirements\*.

## GENERAL REQUIREMENTS

The Wellsite Supervisor will;

Conduct operations in accordance with provincial Acts & Regulations (Alberta, BC, Sask. & Manitoba, NWT), industry recommend practices (IRP's), ERCB / OGC / MER & MPB guides & directives/ NEB (National Energy Board), Canada Oil and Gas Drilling and Production Regulation and Obsidian codes of practice.

Review the contents, requirements and have onsite the following documentation;

The well servicing program & AFE cost estimate for the operations to be undertaken.

- ◇ The Obsidian Corporate or Site Specific Emergency Response Plan (ERP) & required permits.  
Complete a review of the procedures outlined in the ERP with all onsite Supervisors.
- ◇ The Obsidian Field Operations ERP Guide.
- ◇ The Enform Well Servicing Blowout Prevention Manual.
- ◇ The Obsidian Employer/Contractor Basic Safety Orientation Handbook.

## OPERATIONAL & REPORTING REQUIREMENTS

The Wellsite Supervisor will;

- ◇ Complete the required Obsidian notifications.
- ◇ Complete & report completion of the Obsidian Wellsite Handover Forms
- ◇ Complete the regulatory (ERCB, OGC, MER & MPB, NEB) notification requirements 24 hours;
  1. Prior to the beginning of any well servicing operations.
  2. Prior to the beginning of Flaring, Incinerating & venting as per regulatory (ERCB D-060/OGC/SER / NEB)
- ◇ Complete & post the Obsidian Notice of Supervisor Form
- ◇ Complete & post an Emergency Response Contact List that includes the STARS registration.
- ◇ Complete & post a Fire & Explosion Prevention Plan as per ERCB D-030 & IRP 18.
- ◇ Review and confirm any/all changes in operations with the Well Servicing Coordinator or their alternate.
- ◇ Complete daily the worker Sign-in/Sign-out form.

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- ◇ Complete & report daily the Obsidian – Hazard Assessment Safe Work Agreement
  1. Pre-Job Safety Meeting operations to be undertaken at the beginning of the day & whenever a change in the scope of operations occurs.
  2. Review the requirements for the Obsidian - Codes of Practice & Rules.
  3. Ensure all onsite personnel are IRP 16 compliant and can make available the required safety & well operations certifications (H<sub>2</sub>S Alive, First Aid, WHMIS & TDG etc).
  4. Make all onsite personnel aware of their responsibilities should an incident occur as per the ERP.
  5. Make it known to all onsite personnel for the requirement to wear & utilize the appropriate personnel protective equipment (PPE) as per Obsidian Standards.
  6. Make it known to contractors their responsibilities for the compliance of any subcontractors.
  7. Maintain and make available Material Safety Data Sheets for the Obsidian & contractor materials.
  8. Make available & complete Obsidian HSE Opportunity & Worker Observation Cards.
  9. Ensure that the appropriate WARNING/HAZARD signs are positioned at the lease entrance.
  10. Designate appropriate SMOKING AREA(s) as per regulations.
- ◇ Complete & report a Site Safety Orientation for workers arriving after the issue of the Safe Work Agreement.
- ◇ Read & report daily tubing & casing pressures.
- ◇ Complete & report all pressure & function testing associated with service rig, coil tubing rig & BOP system inspections requirements & frequency as specified by CAODC, ERCB D-037. 7 NEB
  - Inspection certificates must be provided for all third party equipment on site.
- ◇ Complete & document the required BOP & man down practice drills as specified in ERCB D-037 & Obsidian standard practice.
  1. Review & discuss daily well control processes.
  2. For sites where the presence of H<sub>2</sub>S has been identified all personnel should be familiar with the onsite SCBA's and as a minimum complete a 'mask up' operation.
- ◇ Immediately notify the Well Servicing Coordinator or their designate of ALL incidents and NEB. (Up to and including "unsafe acts & near misses" that could have or did result in someone being injured, equipment damage, spills & releases) & complete the Obsidian Incident Reports.
- ◇ Complete & submit at the end of operations all material and equipment transfers.

## Field Tickets:

***Ensure that the well name, location, AFE number, cost coding, and Completions Superintendent are correct on all field tickets prior to signing and the information is entered into WellView.*** Without this information on all tickets the vendor may experience difficulty in receiving payment. Review the ticket to verify the charges are fair and accurate; if the Wellsite Supervisor feels that the charges are not correct do not sign the ticket and contact the Calgary office with the details. Have the vendor send the invoice into:

**Obsidian Energy**  
200, 207 9<sup>th</sup> Avenue SW  
Calgary, Alberta T2P 1K3  
**Attention: Completions Engineering**

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## VII CONTACTS

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### Obsidian

Name	Title	Office	Cellular
Craig Langford	Environmental Coordinator	403-597-0428	

All other contacts will be confirmed 30 days prior to commencement of operations

### REGULATORY, HEALTH, & SAFETY AGENCIES

Name	Location	Office
OROGO	Yellowknife	867-767-9097 – Main Switchboard 867-445-8551 – Emergency 867-873-6924 – Spill Response Line

Department of Indian Affairs

And Northern Development Fort Simpson 867- 695-262

Fort Nelson General Hospital Forth Nelson, BC 250-774-8100

Emergency 911

Forth Liard Emergency Response Team Fort Liard, NWT

R.C.M.P 770-1111-phone # 770-4224-fax

Resource Wildlife 770-4300 –phone # 770-4600-fax

Fire Emergency (Safety and Protective Officer) 867- 770-4104 Ext. 116 – phone #

867- 770-4004 – fax #

### SERVICE COMPANY:

**Service Rig** - still determining specific service Rig Company

**Important information regarding Back- up Rig** - There are service rigs available to us in NE BC in the event that the primary service rig suffers catastrophic failure, one of these would be mobilized to the C31-A location should it be required

**Note: Certification of above services will be available onsite. Copy will be submitted to OROGO prior to commencing operations**

# Abandonment Information Package

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## VIII PROCEDURE

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**Note:** *Copy of Operations Authorization, Well approval from National Energy Board (NEB) and operating manuals and other procedures to execute the work activity should be available all the time in the location*

- : *All depths in the program are measured depths.*
- : *ERCB Directive 20: Well Abandonment Guide will be utilized to comply with Canada Oil and Gas Drilling and Production Regulation (SOR/2009-315) part 6 section 56 to 58*
- : *“Oil and Gas Occupational Health and Safety Regulations”, “Canada Oil and Gas Drilling and Production Regulations” and “Canada Oil and Gas Operations Act” Copies should be followed and available on site all the time*
- : *Personnel and equipment certificates should always be available during operation*

1. Notify the Obsidian field office and OROGO at least 24 hours before commencing well site operations. Ensure the following documentation is completed prior to commencing wellsite operations:
  - Obsidian *Wellsite Hazard Assessment Plot Plan*; scout the location for construction requirements, hazard identification, and wellhead specification.
  - Obsidian *Notice of Supervision* form.
  - Obsidian *Well Site / Facility Handover Form* with the Obsidian production staff.
  - Obsidian ‘Ground Disturbance’ requirements.
  - Obsidian **Flaring / Venting / Incinerating Resident Notification Form**; deliver to all the applicable residents and document the date and time of delivery in Wellview - confirm with the Calgary office that the resident notification has been conducted.

**Note:** Refer to the key contacts in the program for names and numbers.

2. No flaring is anticipate on this wellbore
3. Perform a surface casing vent flow and gas migration test. Ensure the *Obsidian Surface Casing Vent Flow/Gas Migration Data Sheet* is completed and sent in with the final report.
4. Rig in free standing Class III rig and associated equipment in accordance with which ERCB, NEB, Obsidian Exploration and OH&S specifications. Complete CAODC service rig inspection, and rectify any deficiencies before continuing. Function test crown saver and all diesel engine ‘kills’.

**Note:** Ensure the Unit and associated equipment can handle 2000 metres of 60.3 mm, J55 tubing

5. Rig in the following safety services as required:

Service	Condition
ETV	Travel time from wellsite to health care facility > 40 minutes
Medic	Number of workers on location > 19
Air Trailer	H <sub>2</sub> S > 0 ppm
Safety Supervisor	H <sub>2</sub> S > 1.0%
Fire Protection	Heating or high pressure pumping of flammable fluids
Shower unit	Potential of body exposure to injurious materials

6. Sweep area for ‘LEL’. Check wellhead for H<sub>2</sub>S and shut in pressures.

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7. Hold a safety and procedural meeting; conduct a pre-job hazard assessment with all onsite Personnel and document in the Wellview report.

Note: Ensure the Directive 033 - Explosive Mixture and Ignition Potential Identification Sheet is filled out, discussed, and posted in the doghouse.

8. Stump test the BOP equipment, manifold, and lines. Ensure the well is dead; kill well by bullheading the well over to fresh water. Remove wellhead, install the BOPs and pressure test the ring groove connection. Perform all pressure and function tests to ERCB and Obsidian Energy specifications.

Note: Low pressure test: 1400 kPa.  
High pressure test: 21 000 kPa (Or Max. capability of wellhead)

**Note: water will be used as a kill fluid since Hydrostatic Pressure of water @ deepest existing open perforation is higher than the determined BHP @ that depth. Please see below calculations:**

Data: P @ 1768mKB = 10995 KPa

H (depth) of deepest open perms. = 1973.0mKB

Therefore: P @ 1973.0 mKB:  $10995/1768 = X / 1973.0$

$$X = \text{Pressure} = 12270 \text{ kPa}$$

Hydrostatic Pressure of water @ deepest open perms. =  $10 \text{ kPa/m} * 1768\text{m} = 17680 \text{ Kpa}$

Therefore, water as a kill fluid will be enough to suppress the pressure of formation fluids.

In the unlikely event the well must be circulated to kill, the methane will be vented to the rig tank during the kill operations. The volume of gas in the wellbore at pressure is 65 m<sup>3</sup> assuming no fluid in the wellbore. The methane would be flowed to atmosphere at a rate equivalent to 100 E3/M3 per day.

9. Pull tubing out of hole in the derrick

Details: Sawtooth collar  
(Bottom up) 1\*60.3mm J-55, EUE, 6.99kg/m joint tubing  
60.3mm "XN" nipple c/w 47.6mm profile, 45.4mm nogo  
182 \* 60.3mm J-55 ,EUE, 6.99kg/m ,tubing  
1\* 60.3mm J-55 ,EUE, 6.99kg/m , pup joint  
1\*60.3mm J-55 ,EUE, 6.99kg/m , joint tubing  
88.9mm \*60.3mm crossover  
244.5 \* 88.9mm tubing hanger  
"PX" plug in "XN" nipple  
**Tubing bottom landed @ 1769.26mKB**

**Collapse: 55800 Kpa    Burst: 53100 Kpa**  
**Drift I.D.: 48.285 mm    Capacity: 0.002017m<sup>3</sup>/m**

**NOTE: additional 60.3mm tubing needed to set bridge plug @ 1960mKB**

10. Run in hole with Schlumberger "WR" retrieving tool on 60.3 mm tubing. Circulate sand off of the "WR" plug. Latch on to plug and open equalizing valve. Unset "WR" plug and let elements relax for 10 minutes. Pull and stand 60.3 mm tubing. Lay down "WR" plug.
11. Run in hole with bit and 244.5 mm scraper while circulating within 15 m of lowest perforation to clean the hole before setting a bridge plug

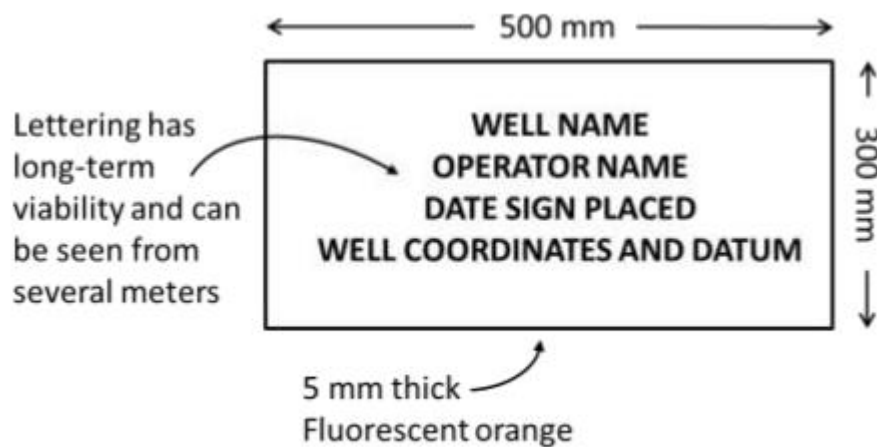
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11. Run hole with 60.3 mm tubing complete with 10K permanent bridge plug and 244.5 mm packer . Set 10K permanent bridge plug at 1960 mKB. Set just above bridge plug and pressure test bridge plug to 7 MPa for 10 minutes. Unset packer, pull and stand tubing. Lay down packer
12. Run in tubing open ended and circulate 15 m of cement on to bridge plug set at 1960 mKB. Circulate 15 m of cement on top of the bridge plug. Pull and stand tubing.
13. Run hole with 60.3 mm tubing complete with 10K permanent bridge plug. Set 10K permanent bridge plug at 1690 mKB. Pressure test bridge plug to 7 MPa for 10 minutes. Unset packer, pull and stand tubing. Lay down setting tool
14. Run in tubing open ended and circulate 15 m of cement on to bridge plug set at 1690 mKB. Circulate 15 m of cement on top of the bridge plug. Pull and stand tubing.
15. Conduct surface casing vent flow test to confirm the wellbore can be cut and capped. Fill out and sign the Surface Casing Vent Flow data sheet. Also ensure there is no pressure on the wellbore. If no evidence of gas migration or surface casing vent flow exits, proceed with cut and cap operation.
16. Excavate a ditch / hole around the wellhead down to a depth of 2.5 m.
17. Ensure no wellhead pressure has built up by opening the casing or tubing valve. Perform a LEL atmospheric measurement in the excavation to ensure cutting operations are safe. Secure the wellhead with overhead rigging. Cut two windows into the production casing – DO NOT EXCEED 1/3 CASING CIRCUMFERENCE WITH EITHER WINDOW. Cut off both casings so that the production casing is recessed lower than the surface casing and that both casing strings are at least 2.0 meters below ground level when capped. Ensure all workers are fully prepared for well head and casing movement during this operation and are protected accordingly.
18. TACK Weld a metallurgic ally compatible steel plate across the production casing, using non continuous fillet welds to allow the production string to vent. Weld a separate steel plate in a similar fashion onto the surface casing. Weld the first two numbers of the location onto the top of the surface casing plate for future identification (i.e. – LSD-SECTION).

NOTE: All steel plates must be compatible with the production casing to avoid corrosion.

19. Fill in the excavation above the casings. Remove all debris and move off location. Install post and sign at casing stub location with the following information:

NOTE: Not fluid or solids waste is anticipated during the operations.



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20. Inform the field foreman that the job is complete.
21. Rig out and release all equipment. Note: All waste should be handled in accordance with Obsidian NWT Waste Management Plan document.
22. Prepare a sketch of the lease, including surplus equipment, contaminated area, etc. and forward to Calgary.

# APPENDIX A

## APPENDIX B



# Abandonment Information Package

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