

## Canadian Natural Resources

PRIMROSE, AB

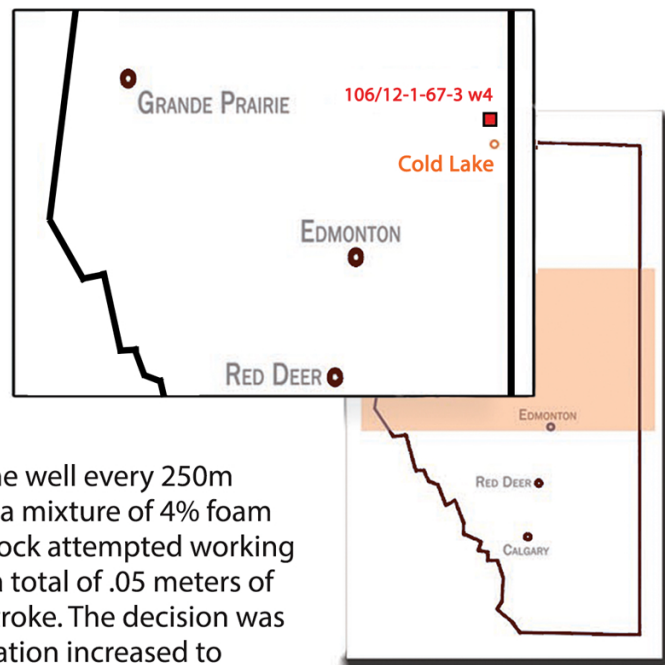
106/12-1-67-3W4 - Pad 75

Longhorn received a call from Doug Babb to run the new 2 3/8" Sandworm prototype on a well in the Primrose Area. The Longhorn technician arrived on lease and rigged in the flush joint Sandworm tool to T Rock's coil tubing unit at 4:30pm and began running in hole.

At 250m, the first returns were observed. T Rock ran in and cycled the well every 250m until they got to the first bridge at 1120m. The coil unit was running a mixture of 4% foam and 30 L/min of N<sub>2</sub>. Longhorn was informed that the day before, T Rock attempted working the bridge with a jetted nozzle for a period of five hours and made a total of .05 meters of hole. Initially, the Sandworm was gaining approximately .05m per stroke. The decision was made to increase the fluid rate up from 30L/m to 60L/m, and penetration increased to approximately .18 m per stroke. 45 minutes after tagging the bridge, the Sandworm had broken through a total of 5m of extremely hard baked sand. Doug then suggested we pull back and circulate above the perforations before continuing on with the clean-out. After cleaning back a total of 50m the coil unit got a hole in the coil and the job was shut-down until morning.

T-Rock arrived on location at 7:30am with a new 2" coil tubing rig. At 11:30 am, the coil tubing was rigged in with the Sandworm tool and ready to run in hole. The coil was run into the well in 250m intervals, circulating each interval until they made returns. At 820m they lost returns and decided to pull back up to 500m. The coil was then run back into the bridge at 1120m and resumed the cleaning out operations of the well. For the most part, it was only a matter of setting the tool down in the sand and letting it hydraulically open, augering itself into the obstruction.

Overall Doug and Cal thought it was a very successful run, and if it had not been for the rig issues and minor issues hanging up on the PSN Nipple, they felt confident that this would have been a 10 hour clean-out. For the first field trial, the prototype 2 3/8" Sandworm preformed superbly.



### Run Summary

<b>Tool:</b>	2 3/8" Sandworm
<b>Target:</b>	Coil Tubing Clean-out
<b>Production Tubing:</b>	114.3 mm / 4.5"
<b>Coil Tubing Size:</b>	50.8mm / 2"
<b>Well TD:</b>	1621m / 5318 ft
<b>Total Run Time:</b>	16 Hours
<b>Liner Cleaned:</b>	900 m / 2952 ft
<b>Client:</b>	Canadian Natural Resources
<b>Consultant:</b>	Doug Babb/Calvin Thirsk
<b>Coil Service:</b>	T Rock Coil Tubing
<b>Foamer Service:</b>	Mike's Oilfield
<b>Nitrogen Unit:</b>	Canadian Nitrogen Services







**LONGHORN**  
CASING TOOLS



**SANDWORM**



**Canadian Natural**

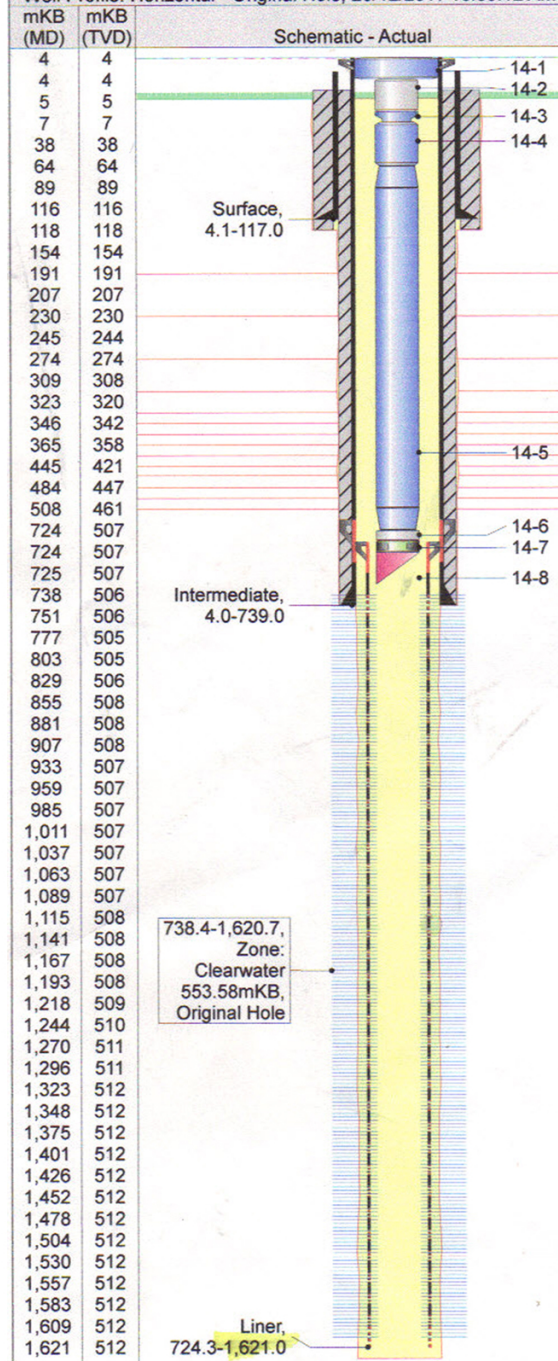
**Downhole Schematic**  
**CNRL 9A75 PRIMROSE 12-1-67-3**

Bottom Hole Location	Surface Legal Location	License No.	Field Name	Province	
106/12-01-067-03W4/00	100/05-12-067-03W4	0381913	PRIMROSE EAST FIELD	Alberta	
Well Profile	Fluid Type	Original KB Elevation (m)	KB-Ground Distance (m)	KB-Casing Flange Distance (m)	KB-Tubing Head Distance (m)
Horizontal	Thermal Oil	678.08	5.15	4.00	4.00

Directions To Well

*Well 3437 worst NAME*

Well Profile: Horizontal - Original Hole, 20/12/2011 10:09:12 AM



PBTDs	Date	Depth (mKB)
	01/05/2008	1,621.00

Casing Strings	Casing Description	OD (mm)	Wt (kg/m)	Grade	Set Depth (MD) (mKB)
	Surface	339.7	71.400	H40	117.00
	Intermediate	244.5	59.527	L-80	739.00
	Liner	168.3	29.760	L-80	1,621.00

Cement Stages	Description	Type	Top (mKB)	Btm (mKB)	Rtns Mix (%)	Rtns Displ. (%)	Cmnt Rtnm (m³)
	Surface Cement	casing	5.00	118.00	100	100	4.00
	Intermediate Cement	casing	5.00	739.00	100	100	10.00

Perforations	Zone	Top (mKB)	Btm (mKB)	Current Status
	Clearwater 553.58mKB, Original Hole	738.37	1,620.70	

Tubing Strings	Tubing Description	OD (mm)	Wt (kg/m)	String Grade	Set Depth (mKB)
	Tubing - Extended Production	114.3	15.630	J-55	732.47

Comment							
Extended Intake for Foam Job							
Item No.	Jts	Item Description	OD (mm)	ID (mm)	Len (m)	Top (mKB)	Btm (mKB)
14-1	1	Tubing Hanger	224.5	114.3	0.29	4.00	4.29
14-2	1	40-40 Pup Joint	114.3	102.9	1.12	4.29	5.41
14-3	1	XO Pup to 40-40	114.3	102.9	1.17	5.41	6.58
14-4	5	S-Max Tubing	114.3	102.9	56.90	6.58	63.48
14-5	56	S-Max Tubing	114.3	102.9	660.29	63.48	723.77
14-6	1	29 Mpa XO Burst #10763-1 SR# 64	114.3		0.51	723.77	724.28
14-7	1	PSN # 96699	114.3	96.4	0.17	724.28	724.45
14-8	1	Muled Tubing Joint	114.3	102.9	8.02	724.45	732.47

