



Well Operations Report

Well Name:	ARROWHEAD RIVER C-55
UWI:	300/C-55-60.40-122.45/00
License #:	WID1979
Field:	FT LIARD (5501)
Profile:	Directional
Zone:	Landry
Class:	Level I

CNRL has performed the well abandonment operations within the last 30 days for this well as outlined in the approved program. Included in this document are the daily reports, and a wellbore schematic of the current state of the well. Additional documentation will follow in the summer once a gas migration test is complete with a change of well status form, and pictures of the cut and capped wellbore.

Please advise if any additional information is required

Thank you,

Canadian Natural Resources Limited

A handwritten signature in black ink, appearing to read "Terran Bernhard", written over a white background.

Terran Bernhard, P.Eng.

Abandonment Engineer

Canadian Natural Resources Limited

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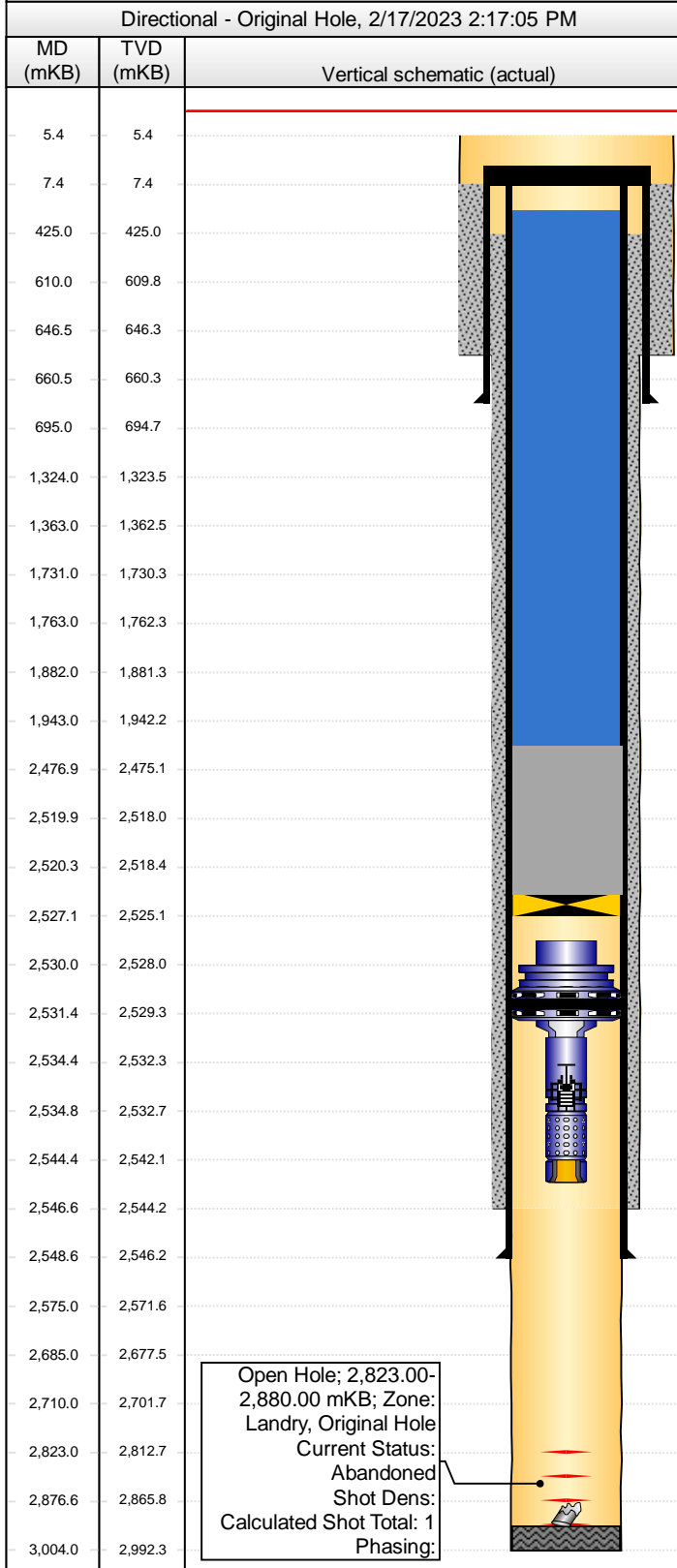


Canadian Natural

Downhole Schematic (Gov't Submission)

ANADARKO ET AL ARROWHEAD RIVER C-55

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979		Field Name FT LIARD			Province N.W.T						
Well Profile Directional		Fluid Type Deep Gas		Original KB Elevation (m) 625.30		KB-Ground Distance (m) 5.40		KB-Casing Flange Distance (m) 625.30		KB-Tubing Head Distance (m) 625.30					
Latitude (°) 60° 34' 6.125" N		Longitude (°) 122° 55' 34.597" W		Orig Spud Date 2/9/2003		Orig RR Date 3/18/2003		C&C Date 1/24/2023		GW Protected? Yes		BGWP (mKB) 605.40		Oilsand Area No	
Directions To Well													H2S Classification Sour		



SCVF & GM Tests (Last 2 Records)							
Test Date		Test Type			Failed?		
1/24/2023		SCVF			No		
1/24/2023		Gas Migration			No		
Openhole Information							
Section Des		Size (mm)	Top (mKB)		Bottom (mKB)		
Surface		311.0	5.40		659.00		
Intermediate 1		215.9	659.00		2,546.60		
Main 1		158.7	2,546.60		3,004.00		
Casing Strings							
Csg Des		OD (mm)	Wt/Len (kg/m)	Grade	Top (mKB)	Set Depth (MD) (mKB)	
Conductor							
Surface		244.5	59.527	L-80	7.40	661.00	
Intermediate		177.8	38.692	L-80	7.40	2,548.60	
Cement Stages							
Description		Cementing Start Date	Top Depth (mKB)	Btm (mKB)	Vol Cement Re...		
Surface Cement		2/14/2003	7.40	659.00	3.50		
Comment							
35.7 tonnes G, no additives, 3.5m3 cement returns.							
Description		Cementing Start Date	Top Depth (mKB)	Btm (mKB)	Vol Cement Re...		
Intermediate Cement		3/3/2003	425.00	2,546.60	0.00		
Comment							
27.0 tonnes (25.3 m3) 1-1-2 G + 0.5% CD-31 + 0.1% R-35 @ 1683 kg/m3 tailed with 7.0 tonnes (5.3 m3) Thermal 40F + 0.5% CD-32 + 0.4% FL-77 + 0.2% R-35 @ 1876 kg/m3. No cement returns. CBL performed 1/17/2023 Shows cement top at 425mKB							
Description		Cementing Start Date	Top Depth (mKB)	Btm (mKB)	Vol Cement Re...		
Cement Plug - 15 Mar 2003		3/15/2003	2,880.00	3,004.00			
Comment							
3.5 tonnes Thermal 40F + 0.5% CD-31 + 0.3% FL-63 + 0.3% R-35, tagged at 2861mKB, drilled down to 2876mKB, cement not taking weight, waited 8 hrs, tagged hard at 2880mKB							
Perforations							
Zone		Top (mKB)	Btm (mKB)	Current Status			
Landry, Original Hole		2,823.00	2,880.00	Abandoned			
Tubing Strings							
Tubing - Production set at 2,544.58mKB on 3/17/2003 00:00							
Tubing Description			String Max N...	Wt (kg/m)	String Grade		
Tubing - Production			60.3	6.990	L80		
Comment							
Components from Perm packer down IMPRAGLON coated.							
Packer pressure tested to 15 MPa for 15 minutes 3/17/2003							
COOPER CAMERON installed well head and pressure tested seals to 35 MPa - 3/12/2003							
Installed slip stop and G pack off at 80 mCF - 4/1/2004.							
COOPER CAMERON 1-way BPV installed in tubing hanger 4/1/2004							
Tubing Components							
Item #	Jts	Item Des	OD (mm)	ID (mm)	Len (m)	Top (mKB)	Btm (mKB)
1-1	1	Hydril 553 CB L-80	88.9	72.8	1.20	2,528.75	2,529.95
1-2	1	Halliburton On/Off 47.63mm "F"	139.7	47.6	0.70	2,529.95	2,530.65
1-3	1	Halliburton BWC Perm Packer	159.4	72.8	0.78	2,530.65	2,531.43
1-4	1	88.9 x 60.3 mm Hydril 553 CB	88.9	48.3	0.11	2,531.43	2,531.54
1-5	1	Hydril 553 CB L-80	60.3	48.3	2.98	2,531.54	2,534.52
1-6	1	Hydril 553 CB, Baker "F" Nipple 45....	60.3	46.0	0.28	2,534.52	2,534.80
1-7	1	Hydril 553 CB L-80 Perfed Jt	60.3	48.3	9.58	2,534.80	2,544.38
1-8	1	Re-entry Guide 45.49mm No/Go	60.3	45.5	0.20	2,544.38	2,544.58
Other In Hole							
Des			Run Date	Pull Date	Top (mKB)	Btm (mKB)	
BPV (for visual)			4/1/2004	1/5/2023	3.00	3.20	



Canadian Natural

Downhole Schematic (Gov't Submission)

ANADARKO ET AL ARROWHEAD RIVER C-55

Current Event (UWI) 300/C-55-60.40-122.45/00	Surface Legal Location	License # NT001979	Field Name FT LIARD	Province N.W.T	
Well Profile Directional	Fluid Type Deep Gas	Original KB Elevation (m) 625.30	KB-Ground Distance (m) 5.40	KB-Casing Flange Distance (m) 625.30	KB-Tubing Head Distance (m) 625.30

Directional - Original Hole, 2/17/2023 2:17:06 PM			Other In Hole				
MD (mKB)	TVD (mKB)	Vertical schematic (actual)	Des	Run Date	Pull Date	Top (mKB)	Btm (mKB)
			Inhibited Water - Tubing	4/7/2003	1/15/2023	3.40	2,530.00
			Inhibited Water - Casing		1/15/2023	5.40	2,530.70
5.4	5.4		Steel plate welded to centralizer	1/23/2023		7.25	7.40
7.4	7.4		Fresh water	1/15/2023		9.00	2,476.85
425.0	425.0		Slip stop and G pack off	4/1/2004	1/11/2023	83.00	83.50
610.0	609.8		Cement Plug	1/18/2023		2,470.35	2,526.85
646.5	646.3		Bridge Plug - Permanent 10K	1/15/2023		2,526.85	2,527.15
			FWG plug in F Profile - p-tested to 14 MPa	4/7/2003		2,534.40	2,534.80
660.5	660.3		CT BHA	3/25/2003		2,876.60	2,880.00
Formation Tops							
		Formation Name	Top (mKB)	Com			
		SCATTER SAND	554.00	behind surface			
		Garbutt	610.00	behind surface			
		Banff	699.00	Porous			
		Exshaw	1,324.00	Tight			
		Kotcho	1,334.00	Tight			
		Tetcho	1,731.00	Tight			
		Trout River	1,760.00	Tight			
		Kakisa	1,847.00	Tight			
		Fort Simpson	1,882.00	Tight			
		Muskwa	2,530.00	Tight			
		Slave Point	2,538.00	Tight			
		Watt Mountain	2,655.00	Tight			
		Keg River	2,705.00	Tight			
		Headless	2,789.30	Tight			
		Landry	2,823.00	Porous			
2,520.3	2,518.4						
2,527.1	2,525.1						
2,530.0	2,528.0						
2,531.4	2,529.3						
2,534.4	2,532.3						
2,534.8	2,532.7						
2,544.4	2,542.1						
2,546.6	2,544.2						
2,548.6	2,546.2						
2,575.0	2,571.6						
2,685.0	2,677.5						
2,710.0	2,701.7						
2,823.0	2,812.7						
2,876.6	2,865.8						
3,004.0	2,992.3						

Open Hole; 2,823.00-2,880.00 mKB; Zone: Landry, Original Hole
Current Status: Abandoned
Shot Dens: Calculated Shot Total: 1
Phasing:



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 1.0
1/5/2023 10:00 to 1/5/2023 11:00

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Sunny	Temperature (°C) -14		

Daily Activities		
Morning Ops @ 7am		
SR: Waited on rig		
Daily Operations Summary		
Moved in wellhead crew pulled BPV. Checked scv no LEL'S, no H2S. Rig out move to J-74		
Time Log		
Start Time	Dur (hr)	Com
10:00	1.00	Moved wellhead crew to location spotted unit. Rigged up on wellhead and pulled BPV. Rigged out secured well. Checked SCV no LEL'S, no H2S.

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
				Roy Craft	Wellsite Supervisor
				Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Contractor	Rig Number
				Rig Manager	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 2.0
1/11/2023 12:00 to 1/11/2023 16:00

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30		Casing Pressure (kPa)	Tubing Pressure (kPa) 2		Set Depth (MD) (mKB) 2,548.60
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30		Road Condition Rough	Weather Clear		Temperature (°C) -13

Daily Activities							
Morning Ops @ 7am							
SR: MIRUSR							
Daily Operations Summary							
Travel from K35 to location. Swept location with 4 head gas monitor with no LEL'S or H2S detected. Bubble test SCV = No Bubbles. SITP 2 KpaDW. Slickline pull G Pack-off plug from 86 mGL (no change in pressure) Pull Slip stop. Shut in & secure well. Rig out all equipment. Move to camp.							
Time Log							
Start Time	Dur (hr)	Com					
12:00	0.75	Travel from K35 to location. Move in United Safety air hand, Reliance Slickline unit HD0164. Move in Poorboy Picker					
12:45	0.25	Review CNRL hazard assessment and TIW plan. Service providers complete HA & JSA for tasks today. Held safety meeting with all personal & reveiwed hazards of spotting equipment and pulling G Pack off plug. Slips, trips, line fo fire, pinch points, backing up using spotters,					
13:00	3.00	Had safety hand don air pack and checked for any H2S on tbg. No H2S. SITP 2 KpaDW. MIRU Reliance slickline unit, BOP's and lubricator purged and pressure tested lubricator with N2 to 7 Mpa (good) RIH with equalizing prong to 86 mGL. Jar down many times with no pressure change. RIH GS pulling tool to 86 mGL. Latch and pull G Pack-off plug. POOH with plug to surface. Found Kobe's knockout still intact. RIH RB pulling tool & latch Slip Stop. POOH Slip stop. Rig out Reliance Slickline unit. Travel to Camp.					

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
				Jeffrey Willick	Abandonment Ops Mgr.
				Dale Duffy	Superintendent
				Phil Millard	Wellsite Supervisor
				Contractor Reliance Oilfield Services	Rig Number HD0164
				Rig Manager Brent Belanger	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 3.0
1/13/2023 14:00 to 1/13/2023 20:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023		Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa)		Tubing Pressure (kPa)	Set Depth (MD) (mKB) 2,548.60
Job End Date 1/24/2023		Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough		Weather Overcast	Temperature (°C) -15

Daily Activities							
Morning Ops @ 7am							
SR: Continue to rig in equipment.							
Daily Operations Summary							
Move rig and equipment to loc. Spot equipment stood derrick rigged in accumulator lines and steam lines. Fired up boiler. Heat up bop's over night.							
Time Log							
Start Time	Dur (hr)	Com					
14:00	0.50	Move rig and equipment to location.					
14:30	6.50	Spot, pump tank, 64m3 tank, Dog house, rig matting and bop's. Stood flare stack. Spot rig on matting stood derrick and secured. Unloaded boiler spot and rig in and fire up. Rigged in accumulator lines and steam line to wellhead. Tarpped in bop's and heat up over night.					

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water				Roy Craft	Wellsite Supervisor
				Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor Precision Well Servicing	Rig Number 119
				Rig Manager Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 4.0
1/14/2023 07:30 to 1/14/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Overcast	Temperature (°C) -15		

Daily Activities	
Morning Ops @ 7am SR: PT wellhead seals	
Daily Operations Summary Continued to rig in equipment. Install BPV removed wellhead installed 279mm bop stack. Did 10 min bubble test SCV no bubbles, gas migration test no LEL'S. Changed handling equipment over to 88.9mm. PT blind rams, pipe rams 1400kPa low and 34000kPa high, annular 1400kPa low and 7000kPa high all 10 min each. Pulled BPV PT tbg 7000kPa 10 min solid test. Pumped 200L down csg pressured up to 3000kPa had fluid come up scv. Bled pressure off. Drained equipment secured well.	
Time Log	
Start Time	Dur (hr)
07:30	0.50
08:00	11.50

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	0.00	0.00		Roy Craft	Wellsite Supervisor
				Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor Precision Well Servicing	Rig Number 119
				Rig Manager Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 5.0
1/15/2023 07:30 to 1/15/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Overcast	Temperature (°C) -16		

Daily Activities		
Morning Ops @ 7am		
SR: Continue to pull and lay down tbg		
Daily Operations Summary		
PT wellhead seals 34000kPa 10min solid test. Orogo did inspection on equipment. All good. Tried to come off packer with no success. Got verbal approval from Mike Martin with Orogo to cut tbg. Held bop drill 2min secure well and muster witnessed by Orogo. MIRU E-Line. Ran in hole with 69.85mm gauge ring to 2530.0mKB. POOH. RIH with 89.0mm jet cut 88.9mm hydrill tbg off at 2529.50mKB. POOH rigged out and released wireline. Circulated well over to fresh water 52.0m3 no H2S. No gas flared or vented. POOH laying down 27 jts hydril tbg. Drained equipment and secured well.		
Time Log		
Start Time	Dur (hr)	Com
07:30	0.50	07:30hrs. Serviced and started equipment. Held safety meeting with all personal. Filled out JSA for tasks today and discussed hazards. Line of fire, swing, path, high pressure lines, overhead loads, steam lines. Working with possible H2S. Use buddy system, bump test personal 4 head monitor and H2S monitors. Know muster points and plan escape routes. Use 3 point contact at all times. Orogo attended safety meeting. Function tested mesh gaurd system. Bump tested personal 4 head monitor. Conducted walk around checking for any hazards. OROGO checked all certs on equipment, bop stack function tested function tested bop's from remotes. Also checked all certs, for p-tank.
08:00	1.00	Checked SITP & SICP both zero kPa. Had stream flo pressure tested wellhead seals 31000kPa for 10 min held 100%. Backed out last 3 lock screws seized in.
09:00	2.00	Picked up on tbg hanger tried to find free point string weight 34000 dAN'S. Worked tbg string jarring down and pulling up to 45000 dAN'S ptting left hand torque into tbg. Worked tbg for 45min trying to come off packer with no success. Had Mike Martin with Orogo on location and got verbal approval to jet cut tbg above packer. Waited on e-line for 30min. Held bop drill took 2min to secure well and meeting at muster point. Orogo withness drill and was happy.
11:00	0.25	MIRU E-line. Held safety meeting with all personal. Filled out JSA and reviwed hazards and wireline procedures.
11:15	3.50	Rigged up on tbg. Ran in hole with 69.85mm gauge ring to 2530.0mKB. POOH. Made up and ran in hole with 89.0mm jet cutter to and cut 88.9mm hydrill tbg off at 2529.50mKB. POOH rigged out and released wireline.
14:45	2.50	Rigged testers line into csg and pump line into tbg. Pressure tested to 7000kPa. Started circulating well to fresh water at 500L/min at 7000kPa. Monitored scv while circulating had slight trickle of fluid. Looks like straight inhibitor. No gas flared or vented.
17:15	2.25	POOH laying down 27 jts 88.9mm hydril tbg. Drained equipment and secured well. 19:30hrs SDFN

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	52.00	0.00	52.00	Roy Craft	Wellsite Supervisor
Produced Fluid	0.00	52.00	-52.00	Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor Precision Well Servicing	Rig Number 119
				Rig Manager Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 7.0
1/17/2023 07:30 to 1/17/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -16		

Daily Activities	
Morning Ops @ 7am	
SR: Run Tbg Balance Cement Plug	
Daily Operations Summary	
SR: S/S equip Hold Pre-Jsm with all personal, R/I Wireline Perform CBL log Send Results to Calgary, Changed over Handling Equip to 73mm and Test to 1.4 and 35Mpa for 10mins each on each Element Good Test, RIH with 20 tail joints set packer at 62Mkb test to PBP @ 2526.9Mkb to 7400Kpa for 10mins Good pull tbg to 33Mkb test To PBP Good Test Test from 33Mkb to Surface Failed Bleed off pressure snake SCV to Confirm not Frozen Good Pulled tension into packer test from 33Mkb to Surface Good Test unset Packer POOH with Tbg and Packer P/Test well bore to 7400Kpa for 10 mins Final Results	
Time Log	
Start Time	Dur (hr)
07:30	0.50
08:00	4.50
12:30	1.00
13:30	0.50
14:00	5.50

Perforations Summary	

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	0.00	0.00	52.00	Roy Craft	Wellsite Supervisor
Produced Fluid	0.00	0.00	-52.00	Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor	Rig Number
				Precision Well Servicing	119
				Rig Manager	
				Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 7.0
1/17/2023 07:30 to 1/17/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -16		

Perforations Summary

Daily Fluids Summary

Operational Supervisors

	Contact	Title
	Mike Loveless	Well Site Supervisor



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 8.0
1/18/2023 07:30 to 1/18/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -10		

Daily Activities		
Morning Ops @ 7am		
SR: SL punch hole in tbg pull tbg		
Daily Operations Summary		
Sweep Lease S/S Equip do Rig Walk around, Pre-Jsm with all Personal Tally & RIH with 73mm Work string to PBP @ 2526.9Mkb 264 jts & 10" Pup Pre-Jsm R/I Charger Cementers take on 600Ltrs of fresh water batch 1m3 of Charger Thermal-40 spot Cement Plug holding 4000Kpa B/Pressure leaving 50 lineal meters of Cement On PBP set @ 2526.9Mkb CMT @ 2476.85Mkb Back wash 15.2 m3 with no luck pressured up to 10Mpa down Csg pumped down tbg to 15Mpa with no luck pulled 2 joints total 10 joints and 10" pulled pressured up tbg to 10Mpa shut in valve Jarred tbg with no luck. Release Vac Truck run 1 joint to prevent tbg from freezing secure well winterize equip SDFN.		
Time Log		
Start Time	Dur (hr)	Com
07:30	0.50	Conduct Pre-JSM with Services, Review Hazard Assessment,TIWP and Fire & Explosion,4-Pillars of safety,Ensure personal have CNRL CSO Orientation and are fit for duty,Review Jsa's and sign off on services Hazard Assessment,Review Abandonment program and job scope, Hot Steam, Proper PPE Check Pressures,Line of fire, swing path,Crush Zones high pressure lines, overhead loads, steam lines. Bump test personal 4 head monitor and H2S monitors. Picking up Tbg off of Catwalk Slips & Trips Know muster points and plan escape routes. Use 3 point contact at all times. Function tested mesh gaurd system.Traffic Moving Equip Blind Spots and Spoters Good Communication at all time.
08:00	5.50	Function test equip Perform lease walk around, Tally and RIH with 73mm tbg to PBP Set at 2526.9Mkb Tagged PBP with 3.9Meters in on joint 265 pull 2 joints run 10" Pup and 1 joint with total in 264 joints and 10" pup.
13:30	1.50	Wait on Cementers to Perform another Cement Squeeze for CNRL.
15:00	0.50	Held Pre-Jsm with all personal. Filled out hazard assessment and JSA for cementing. Identified all hazards. High pressure lines, steam, cement and addtives, noise from vacuum truck.
15:30	5.00	MIRU Charger pumping solutions. Rig in iron on tbg and pump line onto csg.take on 600Ltrs to batch Broke circulation with 0.30m3 fresh water. Pressure tested iron to 15000kPa. Mixed up 1m3 Thermal-40 @1800kg/m3. Addtives CHRT-H .6 %, CHFL-1 1%, CHFR-.05%, CHDF -P .2% CHGC-2 2% Circulated to bottom with 7.6m3 fresh water at 400L/min 4000kPa holding 4000kPa back pressure. Balanced plug. Break off iron pulled and layed down 8 jts and 10" pup. Rig out cementers Leaving 50 lineal meters of Thermal cement on PBP Set at 2526.9Mkb CMT @ 2476.9Mkb.Rig in Circu Equip pump line on to csg and Return line to tbg. Backed washed tbg with 15.2m3 with no luck pressured up to 10Mpa down Csg pumped down tbg to 15Mpa with no luck pulled 2 joints pressured up tbg to 10Mpa Jarred tbg with no luck. Release Vac Truck run 1 joint to prevent from freezing secure well winterize equip SDFN.

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	0.00	0.00	52.00	Roy Craft	Wellsite Supervisor
Produced Fluid	0.00	0.00	-52.00	Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor Precision Well Servicing	Rig Number 119
				Rig Manager Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 8.0
1/18/2023 07:30 to 1/18/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -10		

Perforations Summary

Daily Fluids Summary

Operational Supervisors

	Contact	Title
	Mike Loveless	Well Site Supervisor



Daily Service Report (Gov't Submissions)

ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 9.0

1/19/2023 07:30 to 1/19/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -8		

Daily Activities							
Morning Ops @ 7am							
SR: Run Tbg Balance Cement Plug							
Daily Operations Summary							
S/S Equip Hold Pre-Jsm with all personal,R/I Reliance Slickline RIH with 58mm G/ring in tbg to tag cement at 2068.20 Mkb 9 joints and 10" pup out of hole = 89.61Mkb Tbg landed at 2526Mkb - 89.61= 2436.39Mkb Cement tag in tbg at 2068.2 GL No Luck setting Collar Stop RIH with Hole Punch 2.18" to tag at 2078Mkb no luck punching hold, run set collar stop at 2021 GL Run punch hole at 2021 GL pump to confirm Good. RIH w/tbg tag Cement Top @ 2520.4Mkb POOH with Tbg to Derrick 109 stands 218 joints to hole in tbg R/I Mud can and vac truck Total 224 Good Tbg 37 Cemented 1 with Hole and 1 with punch marks in Treads Total Tbg 263 Joints Secure well winterize Equip SDFN.							
Time Log							
Start Time	Dur (hr)	Com					
07:30	0.50	Conduct Pre-JSM with Services, Review Hazard Assessment,TIWP and Fire & Explosion,4-Pillars of safety,Ensure personal have CNRL CSO Orientation and are fit for duty,Review Jsa's and sign off on services Hazard Assessment,Review Abandonment program and job scope, Hot Steam, Proper PPE Check Pressures,Line of fire, swing path,Crush Zones high pressure lines, overhead loads, steam lines. Bump test personal 4 head monitor and H2S monitors. Picking up Tbg off of Catwalk Slips & Trips Know muster points and plan escape routes. Use 3 point contact at all times. Function tested mesh gaurd system. Rigging in Slickline Traffic Moving Equip Blind Spots and Spoters Good Communication at all time.					
08:00	6.00	R/I Reliance Slickline RIH with 58mm G/ring in tbg to tag cement at 2068.20 Mkb 9 joints and 10" pup out of hole = 89.61Mkb Tbg landed at 2526Mkb - 89.61= 2436.39Mkb tbg landed after 9 joints and 10" pup pulled, 2436.39 Mkb - Cement tag in tbg at 2068.2 Mkb a difference of 368.19 meters left in tbg 368.19 x .0030 =1.1m3 cement in tbg. RIH with Collar Stop 2.2" locate tbg collar at 2077Mkb Tried to set with no luck Surface Tools RIH with Hole Punch 2.18" to tag at 2078Mkb Attempted to punch hole with no luck possible trying to punch in collar Surface tools Inspect tools. Punch never Rotated RIH with Collar Stop to attempt to set in a collar at 2021 GL Good Set, Surface Tools RIH with Tbg Punch and Punch Hole @ 2021 GL Surface Tools Pump .5m3 to Confirm Good RIH and Retrieve Collar Stop, R/O Slickline.					
14:00	5.50	RIH with tbg to Confirm CMT in CSG tagged Cement @ 2520.4Mkb Contact calgary with Well Conditions, POOH with tbg to derrick 109 stands 218 joints to hole in tbg R/I Mud can and vac truck Continue OOH with tbg to Cemented Tbg Total 224 Good Tbg 37 Cemented 1 with Hole and 1 with punch marks in Treads Total Tbg 263 Joints Secure well winterize Equip SDFN.					

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	0.00	0.00	52.00	Roy Craft	Wellsite Supervisor
Produced Fluid	0.00	0.00	-52.00	Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor Precision Well Servicing	Rig Number 119
				Rig Manager Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 9.0
1/19/2023 07:30 to 1/19/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -8		

Perforations Summary

Daily Fluids Summary

Operational Supervisors

	Contact	Title
	Mike Loveless	Well Site Supervisor



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 10.0
1/20/2023 07:30 to 1/20/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -7		

Daily Activities		
Morning Ops @ 7am		
SR: R/O Move		
Daily Operations Summary		
S/S Equip Hold Pre-Jsm with all personal Function test equip, RIH with 73mm tbg to CMT @ 2520.4Mkb R/I Cementers Batch Spot 1m3 of Cement CMT 2470.35Mkb R/O Release Cementers Pulled 8 joints Back washed 15m3 of Fresh Water Release Vac Truck, POOH with 263 joints Secure well Winterize Equip SDFN.		
Time Log		
Start Time	Dur (hr)	Com
07:30	0.50	Conduct Pre-JSM with Services, Review Hazard Assessment,TIWP and Fire & Explosion,4-Pillars of safety,Ensure personal have CNRL CSO Orientation and are fit for duty,Review Jsa's and sign off on services Hazard Assessment,Review Abandonment program and job scope, Hot Steam, Proper PPE Check Pressures,Line of fire, swing path,Crush Zones high pressure lines, overhead loads, steam lines. Bump test personal 4 head monitor and H2S monitors. Picking up Tbg off of Catwalk Slips & Trips Know muster points and plan escape routes. Use 3 point contact at all times. Function tested mesh gaurd system.Traffic Moving Equip Blind Spots and Spoters Good Communication at all time.
08:00	4.00	Function test equip Perform lease walk around, Tally and RIH with 73mm tbg to Cement Top at 2520.4Mkb Tagged CMT with 3 meters on joint 264 pull 2 joints run 10" Pup and 1 joint with total in 263 joints and 10" pup.Crew performed BOP Drill While Runnig Tbg from Derrick Well Secured in 45 sec's
12:00	0.50	Held Pre-Jsm with all personal. Filled out hazard assessment and JSA for cementing. Identified all hazards. High pressure lines, steam, cement and addtives, noise from vacuum truck.
12:30	1.50	MIRU Charger pumping solutions.Break Circulation with Rig Pump Good 1 m3 Rig in iron on tbg and pump line onto csg.take on 580Ltrs to batch Pressure tested iron to 15000kPa. Mixed up 1m3 Thermal-40 @1800kg/m3. Addtives CHRT-H .8 % CHDF-L .2% CHGC-2 2% Circulated to bottom with 7.35m3 fresh water at 400L/min holding no back pressure pump pressure at 3029Kpa Balanced plug. Break off iron pulled and layed down 8 jts and 10" pup. Rig out cementers Leaving 50 lineal meters of Thermal cement on Cement top at 2520.4Mkb CMT @ 2470.35Mkb.Rig in Circu Equip pump line on to csg and Return line to tbg. Backed washed tbg with 15.2m3 Release Vac Truck
14:00	5.50	R/O Circu Equip POOL with 73mm tbg to Catwalk trailer 263 joints and 10" Pup Secure well winterize equip SDFN.

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	0.00	0.00	52.00	Roy Craft	Wellsite Supervisor
Produced Fluid	0.00	0.00	-52.00	Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor	Rig Number
				Precision Well Servicing	119
				Rig Manager	
				Mike Gauthier	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 10.0
1/20/2023 07:30 to 1/20/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa) 0	Set Depth (MD) (mKB) 2,548.60		
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear	Temperature (°C) -7		

Perforations Summary

Daily Fluids Summary

	Operational Supervisors	
	Contact	Title
	Mike Loveless	Well Site Supervisor



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 11.0
1/21/2023 07:30 to 1/21/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa)		Set Depth (MD) (mKB) 2,548.60	
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough		Weather Clear	Temperature (°C) 0	

Daily Activities							
Morning Ops @ 7am C&C: Ready For Cut & Cap							
Daily Operations Summary S/S Equip Hold Pre-Jsm with all personal Review Workplace Harassment and Violence Prevention Policy Plan with all personal Function test equip R/O W/Floor & Power Tongs, N/D Bop's Install well Head and Secure,R/O SR & equip Clean and inspect Location Prepare to Move to 300/A-77-60.50-112.30/00 in the Morning SDFN.							
Time Log							
Start Time	Dur (hr)	Com					
07:30	0.50	Conduct Pre-JSM with Services, Reviewed CNRL'S Workplace Harassment and Voilence Prevention Policy Plan CNRL-OVR-POL-HR-000018 Review Hazard Assessment,TIWP and Fire & Explosion,4-Pillars of safety,Ensure personal have CNRL CSO Orientation and are fit for duty,Review Jsa's and sign off on services Hazard Assessment,Review Abandonment program and job scope, Hot Steam, Proper PPE Check Pressures,Line of fire, swing path,Crush Zones overhead loads, steam lines. Bump test personal 4 head monitor and H2S monitors Slips & Trips Know muster points and plan escape routes. Use 3 point contact at all times. Function tested mesh gaurd system.Traffic Moving Equip Blind Spots and Spoters Rigging out SR & Equip Good Communication at all time.					
08:00	11.50	Function test SR Equip perform Rig Walk around Top Fill Hole with 3 m3 R/O Work floor and power Tongs, N/D BOPS install & secure well Head R/O SR & Equip prepare to Move to 300/A-77-60.50-122.30/00 Inspected soft spot at Km-10 to soft to move equip through, Construction working on secureing access to move equip through 20 swamp matts beening installed today should be good to move in the morning SDFN.					

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water			52.00	Roy Craft	Wellsite Supervisor
Produced Fluid	0.00	0.00	-52.00	Dale Duffy	Superintendent
				Jeffrey Willick	Abandonment Ops Mgr.
				Mike Gauthier	Rig Manager
				Contractor	Rig Number
				Rig Manager	



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 11.0
1/21/2023 07:30 to 1/21/2023 19:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa)		Set Depth (MD) (mKB) 2,548.60	
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough		Weather Clear	Temperature (°C) 0	

Perforations Summary

Daily Fluids Summary

Operational Supervisors

	Contact	Title
	Mike Loveless	Well Site Supervisor



Daily Service Report (Gov't Submissions)
ANADARKO ET AL ARROWHEAD RIVER C-55

Job: Abandonment
Report #: 12.0
1/24/2023 08:00 to 1/24/2023 12:30

Current Event (UWI) 300/C-55-60.40-122.45/00		Surface Legal Location		License # NT001979	Field Name FT LIARD		Province N.W.T	
WI (%) 100.00	Objective						Plug Back Depth (mKB)	
Job Start Date 1/5/2023	Ground Elevation (m) 619.90	Tubing Head Elevation (m) 0.00	KB-TH (m) 625.30	Casing Pressure (kPa) 0	Tubing Pressure (kPa)		Set Depth (MD) (mKB) 2,548.60	
Job End Date 1/24/2023	Original KB Elevation (m) 625.30	Casing Flange Elevation (m) 0.00	KB-Casing Flange Distance (m) 625.30	Road Condition Rough	Weather Clear		Temperature (°C) -22	

Daily Activities	
Morning Ops @ 7am	
RR: Ready for Reclamation	
Daily Operations Summary	
Conduct SCV/ GM test, both good. Dig up 2.5 M around well & separate any dirty dirt from good dirt. Welder cut off wellhead. Weld vented plate between Surface & Production Casings. Weld on vented cap with ID #1979. Push in 5 M 73mm Jnt 1 M North of well centre. Back-fill hole with clean dirt. Make up sign with ID #, Company name, Date of Cut & Cap, Coordinates with NAD 83. Production casing cut 2 M below original ground level, Lease is ready for reclamation.	
Time Log	
Start Time	Dur (hr)
08:00	0.50
	Checked with GM tester no ppm's. Conduct Gas Migration test; Take 4 readings at 90° around casing, at a 2 meter radius and at a 6 m radius around well as per CNRL SCVF & GM Testing - Operational Procedures (July 2011). Recorded 0 ppm readings at all locations.
	SCVF/GM testing done as per CNRL SCVF & GM Testing – Operational Procedure: No issues.
	Ensure vent is clear. Bubble test SCV for 15 min (No Bubbles)
08:30	4.00
	Travel to location Sweep work area with bump tested LEL monitor 0 - LEL's & 0 - PPM H2S. Conduct pre job safety meeting with services complete and review, Hazard Assessment, TIW and OROGO Regulations. Ensure all personnel have had CSO or PST Orientation. Review Beaver Enterprises & Nahanni Hazard Assessment. Dig down 2.5 M below GL &Separate any contaminated dirt from good dirt. Weld vented plate between Surface & Production Casings. Weld on 177.8mm vented cap with ID #1979. Push in 5 M 73mm Jnt 1 M North of well centre. Back-fill hole with clean dirt. Make up sign with ID #, Company name, Date of Cut & Cap, Coordinates with NAD 83. Spray paint Sign & post Orange. Well cut 2 M below original ground level
	Ensure pictures of operations are in attachments. No Grd Dist as confirm no under ground lines in this field.
	Lease has wellhead & dirty dirt pile off to the side.
	Well is Cut & Capped Jan 24 2023
	Well is now ready for reclamation.

Perforations Summary			

Daily Fluids Summary				Operational Supervisors	
Fluid	To well (m³)	From well (m³)	Left to recover (m³)	Contact	Title
Fresh Water	0.00	0.00	52.00	Jeffrey Willick	Abandonment Ops Mgr.
Produced Fluid	0.00	0.00	-52.00	Dale Duffy	Superintendent
				Phil Millard	Wellsite Supervisor
				Contractor	Rig Number
				Rig Manager	