

January 23, 2023

Office of the Regulator of Oil and Gas Operations
PO Box 1320
Yellowknife NT, X1A 2L9

By Email: orogo@gov.nt.ca

RE: Information Request No. 1: Abandonment of the Cameron F-75 Well (ACW-2022-SOG-F-75-WID 1971 variation 2)

ELM Inc, acting on behalf of Alvarez & Marsal Canada Inc in their capacity as the receiver for Strategic Oil and Gas Ltd is responding to the above noted information request sent January 21, 2023.

1.1 Change in the Order of Operations

OROGO has identified potential issues with the proposed well abandonment regarding logging the well. The updated abandonment program has been changed to run the bond log before placement of a bridge plug and cement. This will ensure that the lower portion of the well is logged.

Should you have any questions or require further information, please contact the undersigned at christopher@elminc.ca

Sincerely,

Christopher Gagnon, EIT

ELM Inc, acting as a consultant to Alvarez & Marsal Canada Inc



ELM
Environmental Liability Management

Routine Well Abandonment Program

Strategic Oil and Gas Ltd. C/O Alvarez & Marsal Canada
Inc.

STRATEGIC HB ET AL CAMERON F-75
300/F-75 60-10N 117-15W

Elm Inc. Project Number: STRA050

Developed by: Christopher Gagnon EIT
Reviewed by: Malcolm McKean P.Eng

January 23, 2023

ROUTINE ABANDONMENT PROGRAM

BACKGROUND:

- Suspended vertical oil well
- Completed and evaluated in the Sulphur Point and suspended after evaluation.
- Suspended with WR Bridge Plug (pressure tested at 14000kPa for 10 mins) and cement plug as well as a permanent bridge plug and cement cap at 20 mKB.
- Well filled with inhibited 3% KCl water

ABSTRACT:

- Move on and rig up service rig
- Rig in a rig assist snubbing unit
- Drill out bridge plugs and cement at 20mKB
- Move on wireline and run cement bond log
- Abandon Sulphur Point with permanent bridge plug and cement
- Perforate and squeeze porosity as required
- Cut and cap the well

CONTACTS:

Elm Inc. Calgary Office

Elm Inc. Calgary Office		
Malcolm McKean P.Eng, Vice President Liability	██████████ – Cell	Malcolm@elminc.ca
Christopher Gagnon EIT, Operations Engineer	██████████ – Cell	Christopher@elminc.ca

Elm Inc. Field Staff

Elm Inc. Field Staff		
To be determined	To be determined	To be determined

Client Contact

Client Contact		
Duncan MacRae – Director, A&M	██████████ - Cell	dmacrae@alvarzeandmarsal.com

Regulator Contact

Regulator Contact		
OROGO - Office	867-767-9097	orogo@gov.nt.ca
OROGO - 24-hour emergency line	1-867-445-8551	
NWT Spill Line	1-867-920-8130	

January 23, 2023

WELL INFORMATION:

WELL NAME: STRATEGIC ET AL CAMERON F-75
UNIQUE ID: 300/F75 60-10N 117-15W
SURFACE LOCATION: 60.07472, -117.4864
LICENSE #: 1971
STATUS: Suspended
TOTAL DEPTH: 1463.0 mKB
ELEVATIONS: **GL:** 773.7 m **KB:** 778.8 m
BGWP: 600.0 mKB
PLUG BACK: 5 mKB (Cement on PBP)
H₂S DATA: Unknown, assume 2%
SCVF: None, tested September 15, 2022
GAS MIGRATION: None, tested September 15, 2022
SITP: 0 kPa
SICP: 0 kPa
RESERVOIR PRESSURE: Unknown, but was evaluated by swabbing. Assume 10 MPA as a worst case.
MAX FLARE VOLUME: 1.5 x wellbore volume at 10 MPa = 2.7 e3m³

LANDOWNER: Crown

DIRECTIONS: Refer to maps

COMPLETION: Sulphur Point: 1422.5 – 1426.0 mKB (Suspended)
WR Bridge Plug COE at 1421.0 mKB
Cement Cap 1411 – 1421mKB
Permanent Bridge Plug and 15m Cement 5 – 20mKB

January 23, 2023

FORMATIONS:

Formation	MD (m)
Wabamun	548.0
Fort Simpson	662.92
Beaverhill Lake	1291.0
Slave Point	1347.5
F4 Marker	1389
Watt Mountain	1396.5
Sulphur point Limestone	1404.0
Sulphur Point Dolomite	1413.0
Muskeg	1428.0
TOTAL DEPTH	1463.0

TUBULARS:

SURFACE CASING: 219.1 mm, 35.7 kg/m, J-55, ST&C. Casing landed at 436 mKB. Cemented with 34.0 T 0-1-0 Class G Cement + 2% CaCl₂

7 m³ cement Returns

PRODUCTION CASING: 139.7mm, 20.8 kg/m, J-55, ST&C
Casing landed at 1463.0 mKB. Cemented with 23 T Fill-Lite + 0.6% R-3 + 3.0% A-9 followed by 5.0 T 0-1-0 Class G Cement + 0.4% FL-5.

No returns to surface. Partial bond log ran.

PRODUCTION STRING: No tubing in well.

Casing size and weight	Casing ID (mm)	Casing Drift (mm)	Casing Capacity (m3/m)	Top of Plugback	Casing Capacity to Plugback (m3)
219.1mm 35.7 kg/m	205.664	202.48	0.033221	N/A	N/A
139.7mm, 20.8 kg/m	127.305	124.12	0.012729	1454	18.5

January 23, 2023

DOCUMENTATION & REPORTING:

Daily operation reports are to be emailed prior to 7:00 am the next day following operations. They are to be sent to the ELM Inc office via ElmDownholeOffice@elminc.ca

Daily reports are to include a detailed description of the day's events along with all third party services that were utilized and their respective billing charges. These billing charges are to be added and represented by a daily operational cost. These total daily operational costs are to be reflected in a to-date accumulative cost. Along with the daily report the email must include a brief description of the work that was done that day, as well as a 24 hour forecast for the work to be done the following day.

Any incident or injury is to be reported immediately, after appropriate first- and/or medical-aid has been administered to the Elm Inc. office staff in Calgary. After the situation has been placed under control and all affected parties have been aided or corrected, an incident investigation is to take place and attempt to gather all necessary information via written witness statements and summarized in an incident investigation form. Elm Inc. Calgary office staff will then inform the appropriate client representatives of what has taken place.

After the abandonment has been completed, the well site supervisor is to provide the office staff in Calgary with all third-party purchase orders and field tickets/service reports, material transfers, waste manifests along with all appropriate field safety documents. This needs to be completed immediately following the job.

SAFETY:

A safety meeting is to be held with all service company personnel prior to each job. Wellsite supervisor must notify contractors of known hazards of which contractor(s) may be unaware. Wellsite supervisor must ensure that workers are aware of their responsibilities and duties under OH&S regulations and that worker comply with regulations. All service companies supplying materials will review Safety Data Sheets at this meeting for all products supplied and maintain these Safety Data Sheets available for worker's examination on location in compliance with WHIMIS regulations. All Safety meetings will be recorded on the daily reports.

Whenever possible, plan and conduct all workover procedures in a manner which will avoid the mixing of air & hydrocarbons in the well bore and connected surface piping. If mixing does occur, purge prior to pressurizing or exposing mixture to any other possible source of ignition.

All applicable regulations, including, but not limited to the NWT Office of the Regulator of Oil and Gas Operations (OROGO) and Occupational Health and Safety regulations, are to be strictly

January 23, 2023

adhered to. Written instructions must be posted in the doghouse or other conspicuous area prior to the wellsite supervisor leaving the lease. Wellsite supervisor must designate, in writing, a competent person to carry out principal contractor's responsibilities. All verbal notifications and approvals from government regulatory agencies will be recorded on the daily report. The name of the individual contacted, and the subject matter of approval or notification should be recorded on the same.

REGULATORY:

OROGO regulations require that the Well Approval as signed by the regulator must be posted in a clearly visible location on the work site. The well approval, its additional terms, and this well abandonment program must be precisely followed. Any deviations from the program must be approved by OROGO and clearly documented on the morning report. Include the time, name of person approving the changes, and important points of the phone conversation.

ABANDONMENT PROGRAM:

Pre-Operations Notifications:

1. Notify the Area Foreman 48 hours before operations to begin.

Mobilize and Inspections:

2. Mobilize to location and inspect access. Ensure that access is clear to allow two-way traffic in and out of the site.
3. Move in and rig up service rig complete with pump, tank, and class III BOP's. Rig up all equipment to SOG and OROGO requirements. Rig up P-tank, safety services and an air trailer.
4. Move on and rig in a rig assist snubbing unit.
5. Conduct a walk around lease inspection and hazard assessment. Ensure all necessary safety equipment is strategically positioned on site and tested to ensure proper operating condition prior to commencing the zonal abandonment operations. Document all controls initiated to mitigate identified hazards.
6. Hold and record a safety and procedure meeting with all personnel on location. Perform a walk around inspection to ensure no hazards on the site. Document meeting topics and prepare a site-specific ERP.
7. Disassemble the SCVF piping and ensure that it is not blocked. Re assemble the piping and install a bottle and hose type tester. Watch tester and ensure there are

January 23, 2023

no bubbles in 10 minutes. Document test on daily report and on the “Surface Casing Vent Flow” form. If using a non-freezing liquid (example windshield washer fluid) for the test, document the liquid used and the density. Ensure that the vent stays open and clear of obstructions throughout all operations and note any subsequent flows on the daily report.

Drill Out Shallow Bridge Plug

8. Transfer 28 m³ of water to the rig tank. Mix H₂S scavenger as per manufacturer's specifications.
 - NOTE: Formation is under pressured. Once bridge plug is drilled out, a column of water will be adequate to kill well.
9. Lay circulating lines from wellhead to pressure tank and to the rig tank. Stake lines and pressure test to 1.4 mPa low and 21 Mpa high for 10 minutes per test.
10. Bleed off any well pressure to the pressure tank and flare.
11. Stump test the BOP stack. Test the ram preventors to 1.4 MPa low and 21 Mpa high for 10 minutes per test. Test the annular preventor to 1.4 Mpa low and 7 Mpa high for 10 minutes each. Review and function test all components and the accumulator system.
12. Break down the wellhead, if necessary, install a landing pup and stabbing valve, then install the BOP stack. Pressure test the connections to 1.4 mPa low and 21 Mpa high for 10 minutes per test.
13. Rig in the snubbing unit. Pressure test the BOP systems as per their procedures. Pressure test the connections as per their procedures.
14. Pick up drilling BHA with and RIH on 73mm tubing. Tag cement top at 5 mKB.
 - NOTE: BHA configuration will depend on the snubbing equipment available. If the snubbers have a rotary table, then the BHA will be a bit on tubing. If the snubbers do not have a rotary table, then use a mud motor.
15. Note that there may be trapped pressure below the bridge plug. Perform a risk assessment and hazard analysis for removing this bridge plug (refer to OROGO safety bulletin OROGO-SSB-1). Document and submit the assessments to orogo@gov.nt.ca a minimum of one hour before starting the drill out operation.
16. Drill out cement and permanent bridge plug at 20 mKB. Continue in to 50 mKB to ensure that the plug has been removed.

January 23, 2023

17. Prepare a summary of the plug removal operations and send to OROGO@gov.nt.ca within 1 hour of completing the plug removal
18. Pull out of hole with drilling assembly and lay down.
19. Rig out the snubbing unit.
20. Make up and run in with a casing scraper and clean out down to second cement top at 1411 mKB.
21. Pull out of hole and lay down scraper.

Run radial cement bond log

22. Move on and rig in wireline unit.
23. Run in radial bond tools and record a high-speed log on trip in to PBTD. Run a full radial bond log from PBTD to surface. Send completed logs to wireline company for analysis, and to OROGO and Calgary office.
 - NOTE: If necessary, run a pressure pass at 7 Mpa after the entire well has been logged without pressure.
24. Rig out the wireline unit and all services.
25. Calgary office will review the cement bond log and determine if any remedial cementing will be required in the well. Proceed to “Abandon Sulphur Point” and carry out “Remedial Perforation” as directed by Calgary.

Abandon Sulphur Point

26. Make up and run in hole with a 139.7mm permanent bridge plug on HM type setting tool.
27. Set bridge plug at +/- 1410 mKB. Use setting procedure provided by tool company.
 - NOTE: A permanent bridge plug must not be placed within 5 meters of a casing collar. The casing collars are at 1403.1 and 1416.3 mKB.
28. Disconnect from the plug as per manufacturer's procedure.
29. Pressure test down casing to 7 Mpa for 10 minutes.

January 23, 2023

30. Mix 500 L of cement in barrel and circulate down tubing and onto the plug as per the attached procedure.
31. Pull tubing out of the cement and circulate the well over to fresh water.
32. Pull out of hole with tubing and stand enough for next operation. Calgary office to determine if next operation is “Remedial Perforation” or “Rig out”.

Remedial Perforation

33. Move on wireline unit.
34. Hold and record a safety and procedure meeting with all personnel on location. Perform a walk around inspection to ensure no hazards on the site. Document meeting topics and modify site specific ERP if necessary.
35. Rig in wireline lubricator and full opening valve for well control.
36. Run in hole with a 1 meter, 86mm ERHSC perforating gun loaded with 25-gram charges at 17 shots per meter and 60-degree phasing. Correlate gun based on previous bond log. Perforating depth to be determined by Calgary office. Pull out spent guns and inspect to ensure all shots have fired.
37. Close blind rams. Pump down the casing and evaluate feed rate into the perforations. Attempt to establish circulation to surface. Contact Calgary office to confirm cementing plan. Options will be “Option 1 – Cement Retainer” or “Option 2 – Balanced Plug”.
 - NOTE: If a feed rate is not established Calgary will have to confirm further operational plans with OROGO, with potential for further up hole isolations.
38. Rig out the wireline unit.

Remedial Cementing Option 1 – Cement Retainer

39. Pick up a cement retainer for 139.7mm casing and setting tool.
40. Run in hole with retainer on 73 mm tubing and set as per Calgary’s direction.
 - NOTE: Check Calgary’s order against the collar log from the bond log. A cement retainer must not be placed within 5 meters of a casing collar. If required, contact Calgary to adjust retainer depth.

January 23, 2023

41. Sting out of cement retainer and pressure test down casing to 7 Mpa for 10 minutes.
42. Sting into retainer and confirm feed rates and pressures for cementing company to prepare a treatment program.
43. Pull into neutral and pressure test tubing to 5 Mpa above the pressure established during the feed rate in previous step. Do not exceed 21 Mpa.
44. Move on remedial cementing crew and vacuum truck.
45. Hold and record a safety and procedure meeting with all personnel on location. Perform a walk around inspection to ensure no hazards on the site. Document meeting topics and modify site specific ERP if necessary.
46. Mix cement as per cementing program.
47. Pump cement down tubing and through retainer. Squeeze cement into formation / circulate to surface as per cementing program.
 - NOTE: if circulating cement to surface, do not shut-in surface casing vent until minimum 0.5 m³ of cement has returned to surface.
48. Squeeze cement to final pressure as per cementing program. If cement was circulated to surface, shut in the vent for the squeeze.
49. Sting out of retainer and balance remaining cement on the retainer.
50. Slowly pull out 2 joints of tubing and tie in circulating equipment. Reverse circulate excess cement out of well, leaving at least 15 lineal meters of cement on top of the retainer. Circulate minimum 2 tubing volumes of fresh water and continue circulating with fresh water until returns are clean. Direct returns to vacuum truck and mix with sugar in truck to prevent cement from setting up.
51. Pull tubing and lay down, stopping with 5 joints left for a final circulation to fresh water. Pull out last 5 joints but do not top up to prevent wellhead from freezing solid.
52. Calgary office to advise if further remedial work is required. If so, return to the “Remedial Perforation” section. Otherwise proceed to “Rig Out” section.

Remedial Cementing Option 2 – Balanced Plug

53. Run in hole with tubing open ended and land 16 meters below the perforations.

January 23, 2023

54. Move on remedial cementing crew and vacuum truck.
55. Hold and record a safety and procedure meeting with all personnel on location. Perform a walk around inspection to ensure no hazards on the site. Document meeting topics and modify site specific ERP if necessary.
56. Mix cement as per cementing program.
 - NOTE: Minimum cement plug volume is 1 m³
57. Pump cement down tubing and balance in well as per cementing program.
58. Slowly pull tubing above estimated cement top and reverse circulate 2 tubing volumes of fresh water to clean up tubing.
59. Squeeze cement into formation as per cementing program. Final squeeze pressure must exceed 7 Mpa.
60. Once cement has flat lined, close in well with pressure and rig off cementers. Clean up equipment into vacuum truck and mix sugar in truck to prevent cement from setting up.
61. After cement has set up (overnight at minimum) run in with tubing and probe cement plug. Apply 1800 decanewtons to confirm top of plug.
62. Pressure test plug and casing to 7 MPA for 10 minutes.
63. Pull tubing and lay down, stopping with 5 joints left for a final circulation to fresh water. Pull out last 5 joints but do not top up to prevent wellhead from freezing solid.
64. Calgary office to advise if further remedial work is required. If so, return to the “Remedial Perforation” section. Otherwise proceed to “Rig Out” section.

Rig Out

65. Remove BOP stack and re install wellhead.
66. Rig out the service rig. Clean the rig tank and send the fluid to the next well for re use, or to the slop tank at the battery to be taken to disposal.
67. Ensure all garbage and debris has been removed from location.
68. Proceed to “Wellhead cut and cap” section.

January 23, 2023

Wellhead Cut and Cap

69. Move in waterjet cut and cap crew and equipment.
70. Hold and record a safety and procedure meeting with all personnel on location. Perform a walk around inspection to ensure no hazards on the site. Document meeting topics and prepare a site-specific ERP.
71. Install a bottle and hose type tester on the vent assembly. Watch tester and ensure there are no bubbles in 10 minutes. Document test on daily report and on the "Surface Casing Vent Flow" form. If using a non-freezing liquid (example windshield washer fluid) for the test, document the liquid used and the density.
72. Rig in the waterjet cut and cap crew. Cut and cap the well 1.5 meters below ground level following the waterjet company procedures. Take pictures of the well before the cut, with the wellhead removed, the cut surface, and the vented cap before and during instillation.
73. Backfill open excavation. Photograph the backfill.
74. Install abandoned well sign 1 meter north of the well. Sign is to meet the requirements as outlined in the attachment.
75. Release all services. Field operations are complete.

Final Reporting

76. Prepare a final downhole diagram showing the final well configuration
77. Ensure that all tickets and costs are recorded on the morning reports. If a vendor has not submitted their tickets, then put in an estimated cost.
78. Tickets are to be coded with the well name, AFE number, date, and field supervisor's signature. Ensure vendors electronically send all invoices to

ELM Inc
#1000, 205 – 5th Ave SW
Calgary AB T2P 2V7
AP@Elminc.ca

January 23, 2023

Elm Inc. Terms of Service:

1. The price estimate for this well is presented as a most probable cost based on similar repair operations and is to be used for AFE purposes only. This estimate is only as good as the information provided to Elm. Elm will co-ordinate and supervise the entire operation, pay all third party services and submit a final invoice based on actual costs incurred for equipment and services. Depending on the complexity of the abandonment, location and age of the well, Elm recommends adding 10-25% contingency to the estimates attached.
2. This estimate does not contain any lease clean up costs other than back filling around the wellhead after it has been cut off. If requested Elm's Reclamation Division will perform a site assessment that will be used to determine a cost estimate for surface reclamation. A preferential price to do the site assessment will be given if done in conjunction with the downhole abandonment.
3. Elm does not accept any liability for the well, lease, facility and or property it is working on. Elm acts as an independent consultant, providing mainly consulting and supervision services, with some specialized equipment included.
4. Elm will accept liability for the proper placement of bridge plugs and / or cement plugs that we set, however we do not accept liability for any unforeseen or unmentioned down hole problems. This would include failure of the casing to pressure test, collapsed casing, stuck pipe, tubing or rods, scale and or wax build up, surface casing vent flows, gas migration etc.
5. Elm does accept the responsibility of Prime Contractor for sites that have an agreement assigning the Prime Contractor Status.
6. The cost estimate included services and third party costs as listed, if other services are required they will be billed as per our cost schedule. The client will be informed of any costs to be incurred outside of this summary prior to the work being done. These services usually include: disposal costs, stuck and towing or cat work for access, rental and / or trucking of work strings, trucking of tubing, rods, and / or well heads, sour service, required safety equipment and extra charges associated working in hot or cold temperatures.

Elm's objective is to offer the safest and most efficient abandonment while saving the operator both time and money. We feel that by working with you on this project, we can achieve our goals and maintain the high level of professionalism that is reflected in the end product.