



ABANDONMENT PROGRAM
OROGO Deadline January 31, 2023
OROGO LEVEL II WELLBORE

PARA ET AL MOUNT COTY I-02
WID # 1884
POTENTIAL H₂S: 0.0%

PROCEDURE APPROVAL & DISTRIBUTION

DATE: February 11, 2020
WELL NAME: PARA ET AL MOUNT COTY I-02
UWID: 300/I-02-6020-12330/1
OPERATIONS AREA: Liard South **PROVINCE:** NWT
OBJECTIVE: Abandon Level II wellbore in accordance with OROGO abandonment guidelines.
AFE No: TBD
PRL Supplier Coding: PR210-9231-xxx (Abandonment program)

REGULATORY APPROVALS:

REQUIRED: YES MV2020A0010 and MV2020L1-0007
TYPE: OROGO Operations Authorization OA-2020-001-PAR (variation #1) & ACW- 2020-004-PAR-I-02-WID1884 pending.
TYPE: MVLWB Water License MV2020L1-0007 & MVLWB Land Use Permit MV2020A0010

AUTHORIZATION RECEIVED by: OROGO & MVLWB **DATE: 2021-01**


PROCEDURE COMPLIES WITH CONDITIONS OF AUTHORIZATION: YES NO

TYPE OF WORKOVER: (Abandonment):


PROCEDURE COMPLIES WITH PARAMOUNT RESOURCES LTD. POLICIES ON:

- 1) Paramount Well Control Manual
- 2) AER Servicing **BOP Class III** well.

DISTRIBUTION: FIELD: **CALGARY:** Richard Bean/Corey Thomson/Well Files

PREPARED BY: Corey Thomson – Engineer (ARO)  **DATE:** February 11, 2021

REVIEWED AND APPROVED BY:
Tim Wood, Manager ARO  **DATE:** February 11, 2021

John Hawkins, Manager Director ARO  **DATE:** February 12, 2021

ABANDONMENT PROGRAM

OBJECTIVE

Suspended wellbore, OROGO Level II well bore. OROGO abandonment deadline January 31, 2023. Abandon the well as per approved ACW and OROGO guidelines. Cut and cap well.

REPORTING

- All rig calls and Daily Reports are to be directed to Corey Thomson (Engineer ARO)
 - Office: 403-261-1250
 - Cell: 403-835-4447
 - E-mail: corey.thomson@paramountres.com

PROGRAM SUMMARY

- Read & record SIP(s).
- Investigate status of SCVF/GM.
- MIRU slick line unit. Bleed off and fill tubing with fresh water. Bleed off and fill annulus with fresh water. Run gauge ring and confirm tubing plug depth. Pull tubing plug from 58.7mm F profile. Run gauge ring to R profile. Set tubing plug in R profile. Bleed off to ensure plug is holding. Pressure test tubing and plug to 14 MPa. Pressure test annulus to 7MPa for 10 minutes. Bleed off pressures. Rig out slick line.
- MIRU Service Rig, P-tank and associated equipment. Remove wellhead and install BOP's.
- Un latch from On/Off tool, circulate to fresh water and pull tubing inspecting out of the hole and stand tubing string.
- RIH 177.8mm casing scraper on 73mm tubing to about 875m KB. POOH and stand tubing.
- RIH with One Step permanent bridge plug for 177.8mm casing on 73mm tubing string. Set PBP at about 873m KB. Pressure test permanent bridge plug to 7000 Kpa for 10 minutes. Rotate off permanent bridge plug and circulate 15 meters of cement on top of PBP using fresh water.
- Pull out of hole and lay down tubing string.
- Winterize well bore.
- Cut and cap the casing strings with vented cap.

WELL HISTORY

Paramount Resources Ltd. drilled a 1744 meter exploratory well, spudded on October 16, 2000 and finishing setting production casing to 1743 meters on December 4, 2000. The main target of the well was the Mattson at 1046 meters with the secondary targets being the Chinkeh Sand at 786 m, the Fantasque at 871 m, and the Flett at 1666 m.

The well potential was evaluated with the drilling rig over four intervals in the Mattson, two intervals in the Chinkeh, and one interval in the Debolt.

The drilling contractor was Akita Drilling Rig #51 based out of Calgary, Alberta. The rig was rated for 2500 m and had a 60 m³ mud system.



The well was drilled on Exploration License No.381 in which Paramount Resources Ltd. has a 50% working interest. Operating License:

- **Para et al Mount Coty I-02**
- WID: 1884
- File: 9211-P33-12-6
- UWI: 300I026020123300

was issued to Paramount Resources Ltd. on October 6, 2000.

The well which is located approximately 6 km south of Fort Liard, lies along the length of the SE plunging anticline observed at the F-36 Mattson gas discovery. The exact co-ordinates of the well are as follows:

- Latitude: 60° 11' 34.008" N
- Longitude: 123° 30' 18.797" W

A Cancor Rathole Inc. rathole rig was moved onto the location on October 9, 2000. The 508-mm conductor hole was drilled to a depth of 23 m. While drilling the conductor hole boulders were encountered to a depth of 10 m. The 406.4 mm heavy walled conductor pipe was set at 23 m and cemented in place.

Equipment for the drilling operations was barged up the Liard River in September and October 2000. Akita drilling rig number 51 was moved onto the location starting on October 11, 2000. The diverter was nipped up and function tested with the HCR. The well spudded on October 16, 2000 at 22:00 hours. The 311-mm surface hole was drilled to 330 mKB when deviation problems were encountered. Directional drilling equipment was used to drill a 222-mm pilot hole to 514 mKB. The hole was then reamed out to 311 mm to 514 mKB. During the drilling of the surface hole there were mud ring problems encountered at approximately 235 mKB and minor amounts of losses to the formation from 150 – 250 mKB. Surface casing of 244.5 mm, 53.57 kg/m, J-55 LT&C casing was run and set at 514 mKB. The surface casing was cemented with 28 tonnes 0:1:0 'G' cement plus 1% CaCl₂. There were initial cement returns but returns were lost in the last 2 m³ pumped. The plug was bumped with 10,500 kPa and the pressure held. The plug was down at 10:00 hours on October 24, 2000. A 1" pipe was run to 25 m and a 2.1 m³ top cement job was performed with good cement returns.

The BOP's were installed, function tested, and pressure tested to 1500 kPa and 14000 kPa for 10 minutes each. The float collar and shoe were drilled out on October 25, 2000. A formation leak off test was done and the gradient was taken to 18 kPa/m with no formation breakdown. The 222-mm main hole was drilled with a gel-chemical mud system. Directional tools were utilized to control deviation problems to a depth of 1705 mKB. The remainder of the main hole was drilled conventionally to a total depth of 1743 mKB. After drilling to 1091 mKB DST #1 was run over the Mattson from 1058 – 1068 mKB. After pulling out of the hole with test tool #1 it was discovered that the tools had backed off at the safety sub. The lost tools were recovered, and drilling resumed. After reaching total depth the open hole density, sonic, induction, and spectra logs were run from TD to the surface casing shoe. A rotary sidewall coring tool was used to attempt to cut 18 cores with successful recovery of 10 cores. Three additional DST's were run on the Mattson, two DST's were run on the Chinkeh, and one DST was run on the Debolt. A 177.8 mm, 38.69 kg/m, J-55, LT&C production casing was run and set at 1743 mKB. The casing was cemented with 34 tonnes 0:1:0 'G' cement plus 0.8% NFL-2. The plug was bumped with 14,400 kPa and the pressure held. The plug was down at 13:22 hours on December 5, 2000.

The drilling rig was left on the location to be used to complete the well.

December 7, 2000. Run casing scraper on 73mm tubing to 1725m KB. POOH. Run CBL-VDL-GR-CCL from 1725m to surface. Cement top + or – 400m KB.

December 8, 2000. Run TCP guns and Baker Model M Packer on 73mm tubing. Set packer at 1045.53m KB. Drop bar and perforate 1059.0-1067.0m KB. No immediate pressure at surface.



December 9, 2000. Drop guns with slick line. Run static gradient. Set dart in 57.15mm R profile at 1042m CF and hang recorders. Swab well down. Prepare to move drilling rig off.

December 10, 2000. Wait on ice bridge for rig move. Line up frac equipment.

December 14, 2000. Recover down hole recorders. Recover dart. BHP = 11,403 Kpa. BHT =42 deg C.

December 15, 2000. Conduct Gelled water frac, placed 14.7 Tonnes of 20/40 sand in formation. Flow on clean up.

December 16, 2000. Attempt to flow well. Well dead. Attempt to stop cock flow, no fluid recovered, only gas. Rig up slick line. Ran blind box and tagged fluid level at 380m CF. run in to tag sand and no sand tagged. Ran down to 1703m with no restrictions.

December 17, 2000. Run in with CTU and clean out with N2 to 959m then CTU broke down. Pull out of hole and rig off.

December 18, 2000. SITP = 5400 Kpa. Rig in slickline to 1500m CF, no sand tagged. Ran bottom hole sampler to 1063m and recover water sample, salinity tests to 10667 ppm. Any attempt to flow in cold weather freezes flow lines.

December 19, 2000. STP = 9950 Kpa. Open well to flow, well slugging water. Flowed 5.3m³ in 7 hours. Well loads up and dies. Stop cock well.

December 20, 2000. Stop cock well, well slugging water. Well flowed 4.03 water in 8 hours. Clean out test equipment and move off of location.

January 2, 2001. Rig in CTU unit and rig tank. Run in CTU and clean out with N2 to 1500m.

March 11, 2001. Rig in Service Rig and equipment. SITP = 10,800 Kpa.

March 12, 2001. Kill well with 3% KCL. Install BOP's Unset packer and POOH. Rig in e-line. Set permanent bridge plug at 1045m KB. Pressure test to 7000 Kpa for 10 minutes and held good. Dump bail 8 lineal meters of cement on bridge plug.

March 13, 2001. RIH with TCP guns Baker Model M packer om 73mm, 9.67kg/m L-80 eue tubing string. Log guns on depth. Set packer at 883.3m KB in 4000 daN compression. Run confirmation log. Pressure test packer to 21,000 Kpa and held good. Remove BOP's and install wellhead. Drop bar and perforate 897.0-917.0m KB. Start tearing out rig.

March 14, 2001. Ran static gradient. BHP = 8900 Kpa. Dropped guns off. Open to flow and well died. Swab well. Pulled 12 swabs and recovered 9.32m³ (0.80m³ oil 17.6 API). SDFN.

March 15, 2001. SITP = 800 Kpa. Open to flow and well dead. Pulled 4 swabs and recovered 4.73m of produced water, fluid level staying around 500m. Clean out vessels and tanks. Rig out testers and service rig. Rig released.

March 16, 2001. Moving equipment off location. SITP = 775.4 Kpa. Ran static gradient. Set tubing plug at 864m CF (868.2m KB 58.72mm F Profile). Bleed off tubing pressure and casing pressure well dead.

July 17, 2007. Lease inspection. SITP = 50 Kpa. SICP = 600 Kpa. SCV passed bubble test.

August 4, 2008. Lease inspection. SITP = 20 Kpa. SICP = 40 Kpa. SCV passed bubble test. Note: Bled off production casing from 530 Kpa to 0 Kpa for 4 minutes. The SICP built up to 40 Kpa after 15 minutes and remained at 40 Kpa after 24 hours.



August 10, 2009. Lease inspection. SITP = 0 Kpa. SICP = 0 Kpa. SCV passed bubble test.

October 2, 2011. Lease inspection. SITP = 33 Kpa. SICP = 18 Kpa. SCV passed bubble test.

September 24, 2014. Lease inspection. SITP = 100 Kpa. SICP = 0 Kpa. SCV passed bubble test. Tested wellhead primary/secondary seals to 11 MPa and held. No test port to test tubing hangar seals.

August 27, 2015. Lease inspection. SITP = 200 Kpa. SICP = 100 Kpa. SCV passed bubble test. Pressure test primary/secondary seals to 11 Mpa and held. No tubing hangar test port.

July 12, 2018. Lease Inspection. SITP = 38 Kpa. SICP = 27 Kpa. SCV passed bubble test.

September 29, 2019. Lease Inspection SITP: TSTM SICP = 0 Kpa. SCV & GM tests passed.

The well remains shut in.

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 workers comply with regulations. All service companies supplying materials will review Material Safety Data Sheets at this meeting for all products supplied and maintain these Material Safety Data Sheets available for worker's examination on location in compliance with WHMIS regulations. All safety meetings will be recorded on the Paramount daily report and on the daily tour sheet.

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.

Rig anchor locations if required will be approved by Paramount Wellsite Supervisor prior to installation.

REGULATIONS

All applicable regulations, including, but not limited to the specific approved OROGO ACW approval, OROGO Well Suspension and Abandonment Guidelines, Oil and Gas Occupational Safety and Health Regulations (NWT) and Occupational Health and Safety (OHS) Regulations (NWT) are to be strictly adhered to. Written instructions must be posted in doghouse or other conspicuous area prior to the wellsite supervisor leaving the lease. Wellsite supervisor must designate, in writing (see attached Form), a competent person to carry out principal contractor's responsibilities. All verbal notifications and approvals from government regulatory agencies will be recorded on Paramount's daily report tour sheet. The name of the individual contacted, and the subject matter of approval or notification should be recorded on same.

Paramount shall provide all staff and contractors for this program with the OROGO 24-hour incident reporting phone number (867-445-8551) prior to commencing any work or activity.

Paramount shall submit to OROGO an updated operator contact list for this program prior to any work or activity by email at orogo@gov.nt.ca.

Paramount shall submit to OROGO certificates and inspection documents for any service rig, well control and associated equipment (including boilers) at least 10 days prior to the rig commencing work by e mail at orogo@gov.nt.ca.



Paramount shall submit to OROGO all reports required under the Oil and Gas Drilling and Production Regulations in a timely manner to OROGO by email at orogo@gov.nt.ca.

Paramount shall submit to OROGO, completed Change of Well Status form 30 days after the service rig release date or when the abandonment operation has been finished.

WORK ORDERS/FIELD TICKETS

Delivery and field tickets for all work, services performed, or materials purchased must be signed by a Company wellsite supervisor. Record the AFE number and well location on all purchase and work tickets.

MATERIAL TRANSFERS

All materials shipped to this location that are not used must be transferred to an appropriate warehouse point. Transfers of any tubular materials must include complete tally. Company wellsite supervisor will complete such transfers and forward both copies to Calgary office for approval and further handling.



PARA ET AL MOUNT COTY I-02 ABANDONMENT

WELL DATA AND WELLBORE CONFIGURATION

WELL DATA:

Surface Location: LAT: 60° 24' 53.928" N LONG: 123 2' 36.636" W NAD83
Bottomhole Location: LAT: 60° 24' 53.964" N LONG: 123 2' 36.024" W NAD83
UWI: 300/I-02-6020-12330/1
Profile: Deviated (Refer to survey)
BGWP: 600m GL (Default)
WID#: 1884
OPERATING LICENCE# **NWT-OL-2014-014**
OROGO OA# **OA-2020-001-PAR (variation #1)**
OROGO ACW# **TBD**
Spud Date: October 16, 2000
Rig Release Date: December 09, 2000
KB: 374.6m
GL: 369.1m
KB-GL: 5.5m
PBTD Original: 1733.0m KB
TD: 1744.0m KB

CONDUCTOR: **Hole size 508mm.**
 406mm Heavy Weight landed at 23m KB.
 Cemented with 80 Sacks of cement.

SURFACE: **Hole size 311mm.**
 39 Jts. 244.5mm 53.57kg/m J-55, LT&C landed at 514.12m KB.
 Cemented with 28 Tonnes 0:1:0 G + 3.0% CaCl₂. 3.0 m³ of cement returns.

PRODUCTION: **Hole Size 222mm to 1744m.**
 138 Jts. 177.8mm 38.69kg/m J-55, LT&C landed at 1743.0m KB. Cemented with
 34 Tonnes 0:1:0 G + 0.8% NFL-2 mixed at 1900kg/m³. Displace with 34.56m³ of
 water. No cement returns. Bond log run during completion operations indicate
 cement top about 400m KB.

PERFORATIONS: 1059.0 – 1067.0m Mattson (Abandoned)
 897.0 – 917.0m Fantasque (Suspended)

Formation Tops geoSCOUT Ref Elev(m): **+374.6**

Formation	TVD (m)	Elev (m)	MD (m)
Kscatter	Behind SFC		
Kgarbutt	538.3	-163.7	538.4
Kcret L 2	639.4	-264.8	639.5
Kchinkeh	707.9	-333.3	708.1
TRtoad_gr	722.0	-347.4	722.2
PRfantasq	789.5	-414.9	789.7
Mmattson	967.7	-593.1	967.9
Mgolata	1643.5	-1268.9	1643.8
Mflett	1712.1	-1337.5	1712.5



SCVF:

SCV passed bubble test.

Gas Migration Test: No GM detected

Tubing/Casing Data:

	Surface Casing	Prod. Casing	Production Tubing String	
Size O.D. (mm)	244.5	177.8	73	
Weight (kg/m)	53.57	38.69	9.67	
Grade	J-55	J-55	L-80	
Connection	ST&C	LT&C	EUE	
Drift I.D. (mm)	222.63	156.24	59.61	
I.D. (mm)	226.59	159.41	62.0	
Capacity (m ³ /m)	0.040326	0.019958	0.003019	
Collapse (MPa)	13.9	29.8	76.9	
Burst (MPa)	24.3	34.3	72.9	
Tension (daN)	175 300	163 200	64 500	
Annular Volume (m ³ /m)			0.015770	
Depth (mKB)	514	1743	892.1	

Reservoir Data:

Formation	Fantasque	Mattson
Perforations	897.0-917.0m KB (Suspended)	1059.0-1067.0m KB (Abandoned)
Reservoir Pressure	8900 Kpa	11,403 Kpa
Shut-in Tubing Pressure	N/A	N/A
Pipeline Pressure @ Tie-in	N/A	N/A
Reservoir Temperature	37.4°C	42°C
H ₂ S %	0	0
Expected Gas Rate	Nil	Nil
Expected Condensate Rate	Nil	Nil
Expected Water Rate	Nil	Nil



GENERAL REQUIREMENTS

- **Wellview Reports are to be synced by 7:00am each day.**
- Before commencing operations, the Wellsite Supervisor will complete a list of nearest available emergency services. This list along with a detailed and accurate description of directions to the location is to be posted in a conspicuous and accessible location known to all personnel.
- Emergency contact list should be completed, posted and available to all on site.
- Ensure that all personnel receive a Paramount orientation, are briefed on the wellsite hazards, safety and first aid equipment locations, escape routes and muster points upon their arrival to the lease. All personnel must be signed in after receiving their briefing and all personnel must sign out when departing the work site.
- Safety and well plan meeting to be held with all service company personnel prior to each job and meetings must be recorded on the Paramount's daily report and on the daily tour sheet.
- All applicable regulations, including, but not limited to the specific approved OROGO ACW approval, OROGO Well Suspension and Abandonment Guidelines, Oil and Gas Occupational Safety and Health Regulations (NWT) and Occupational Health and Safety (OHS) Regulations (NWT) are to be strictly adhered to. Written instructions must be posted in doghouse or other commonly visited area prior to Wellsite Supervisor leaving lease.
- The Wellsite Supervisor is responsible for assessing all worker's competency and ability to perform work.
- All service companies supplying materials will provide Material Safety Data Sheets for all products supplied and maintain these Material Safety Data Sheets available for worker's examination on location in compliance with WHIMIS regulations.
- The Wellsite Supervisor will ensure that dangerous goods shipped or received are classified, packaged, marked, labelled and documented in compliance with the Transportation of Dangerous Goods Regulations. If required, placards must be attached to vehicles transporting dangerous goods. All shipping documents must be forwarded to the Calgary office for filing.
- All operations carried out on behalf of the Operator shall be conducted in a safe and efficient manner in compliance with the Operator's safety regulations and all applicable acts and regulations.
- The Operator expects that all operations conducted will be designed to protect and maintain the quality and integrity of the environment and comply with all environmental acts and regulations.
- BOP equipment will be tested at least once daily, and any equipment found defective should be made serviceable before operations are resumed. Blowout prevention and man-down drills are to be performed weekly and are to be recorded on both the morning reports and tour reports.
- Whenever possible, plan and conduct all completion / workover procedures in a manner which will avoid the mixing of air & hydrocarbons in the wellbore and connected surface piping. If mixing does occur, purge prior to pressurizing or exposing mixture to any other possible source of ignition.
- During the absence of the Wellsite Supervisor, a qualified and competent alternate shall be designated, in writing, to carry out the principal Contractor's responsibilities. Written instructions must be posted in a conspicuous and accessible location known to all personnel prior to the Wellsite Supervisor leaving the location.
- All verbal notifications and approvals received on location from any regulatory agency must be documented and recorded on both morning reports and tour reports and should include a contact name from the agency, phone number and details of the subject matter.



- All field tickets and other supporting documentation submitted for materials purchased and/or services rendered require a correct AFE#, G/L number and accurate identification of the well location along with the Wellsite Supervisor's signature indicating acceptance to the same.



PARA ET AL MOUNT COTY I-02 ABANDONMENT

ABANDONMENT PROGRAM

1. Submit certificates and inspection documents for any service rig, well control and associated equipment (including boilers) at least 10 days prior to the rig commencing work by e mail at orogo@gov.nt.ca.
2. **The Wellsite Supervisor is responsible to** notify (or verify notification has been completed) the OROGO, a **minimum of 24 hours prior** to any well servicing abandonment operation.
3. **The Wellsite Supervisor is responsible to** notify (or verify notification has been completed) the OROGO, a **minimum of 24 hours prior** any planned flaring operation. When a permit is applicable for sour gas flaring, a copy of such permit must be on site during any flaring operation and requirements of such permit must be strictly adhered to
4. **The Wellsite Supervisor is responsible to** verify notifications have been completed to all applicable residents, industrial operators, trappers & guiders within the categorized radius and/or within the emergency planning zone (EPZ) if applicable **a minimum of 24 hours prior** to any flaring operation.
5. Paramount shall provide all staff and contractors for this program with the OROGO 24-hour incident reporting phone number (867-445-8551) prior to commencing any work or activity.
6. Complete lease access and well handover process. Complete lease inspection. Note the condition of the lease, record any clean-up operations required to address any spills and record any other noteworthy findings on the first morning report. Discuss the transportation arrangements for the tanks and fluid with respect to other activity in the surrounding field area.
7. Prepare location for Slick Line unit, Service Rig, P-Tank and flare stack & support equipment.
8. **Ensure all NWT, Paramount and vendor COVID 19 protocols are reviewed, understood and followed by all personnel. PRL COVID protocols and information are available in Comply Works**
9. Perform SCVF bubble-test, **ensure SCV piping is exposed to determine if it is open and intact**, read and record SIP's. Fill-out the 'Surface Casing Vent Flow / Gas Migration Data Sheet' and examine surface casing vent for blow or suction. Check and monitor LEL and H₂S levels at wellhead and investigate for evidence of gas migration at surface.
10. Check for the presence of and confirm there is no H₂S.
11. Note: this well is not tied in to a flowline.
12. Wellhead Pressure Test:
 - If a surface casing vent flow exists, then pressure test the primary and secondary seals.
 - Confirm & document the stamped working pressure of the wellhead on the morning report.
 - Conduct a pressure test on the primary and secondary wellhead seals, to the working pressure, for 15 minutes each.
 - Ensure the test pressure remains below the production casing collapse pressure rating.
 - Check, record and report the tubing and casing pressures.
 - Ensure the valves are not frozen and the gauges are accurate.



13. MIRU service rig complete with a 21 MPa Class III BOP stack. 73 mm rams, kill spool, rig pump, clean tank, and related auxiliary equipment to OROGO, OH&S and PRL regulations and guidelines. Ensure Corporate Policies and Procedures are followed prior to commencing operations (see attached). Space out equipment in accordance with OROGO and OH&S requirements.
 - Ensure all necessary safety equipment is strategically positioned, on site and tested to ensure proper operating condition prior to commencing with the workover operations.
 - All personnel must be familiar with the operation of all emergency equipment. Safety and BOP drills are to be conducted on a regular basis and recorded on the “Daily Completion / Workover Report”
 - Conduct a complete inspection of the service rig per requirements of AER Directive 37 and PRL guideline policy. Identify and remediate any deficiencies prior to initiating completion operations
 - Conduct an operational and safety meeting prior to installing BOPs onto the wellhead and pressure testing.
14. If necessary, install temporary rig anchors and conduct pull tests on each anchor to 20000 lbs. Install escape line anchor and pull test to 3000 lbs. Ensure PRL ground disturbance procedures are followed.
15. Haul in approximately 60 m³ of fresh water. Haul in tubing work string, 73mm, 9.67kg/m J-55 eue tubing string. Ensure bits, scrapers and pressure test packers for 177.8mm are available.
16. Conduct daily pre-job safety meeting and equipment inspection.
17. Tie in circulating lines with a return line tied into ‘P’ tank or rig tank as required. Properly stake surface lines and pressure test lines and manifold to 1,400kPa (low) and 14,000kPa (high) and hold each for ten (10) minutes.
18. MIRU slick line unit with lubricator and BOPs. Purge and pressure test the lubricator to 1400kPa (low) and 14MPa (high) with Nitrogen gas. Purge the lubricator each time before running in the hole with tools. Hang the wireline sheave in the derrick.
19. Bleed off tubing and fill with fresh water. Bleed off annulus and fill with fresh water. RIH gauge ring and confirm plug depth which is reported to be set in the upper 58.7mm F profile. Pull tubing plug from the upper 58.7mm F profile.
20. RIH with brush and locate R profile. POOH. Set a tubing plug in R profile and pressure test tubing to 7000 Kpa for 10 minutes. POOH. Pressure test annulus to 7000 Kpa for 10 minutes. Bleed off pressures. Rig out slick line unit.
21. Stump/function test BOP’s and related accessories.
22. Ensure well is dead. Pressure test the pump lines and connections to 1400 kPa and 14 MPa high. Pressure test the casing to 7 MPa for ten minutes. Bleed off the wellbore to the rig tank.
23. Ensure the well is dead. Install the working spool and BOPs onto the BOP test stump. If required warm up the BOP stack with steam. Function test the blind rams and pipe rams on the test stump. Close the blind rams and pressure test the working spool, the blind rams and BOP flange to 1.4 and 14MPa for 10 minutes each. Install a ported tubing pup and stabbing valve through the BOPs on the BOP test stump. Pressure test the pipe rams and stabbing valve to 1.4MPa and 14MPa for 10 minutes each.
24. Conduct an accumulator function test. Recharge the accumulator, shut off the pump and record the accumulator pressure. Close each ram and record the start and end pressures and the time to close each ram. Recharge the accumulator and record the time for the accumulator to recharge to the original pressure.



Ensure that hand wheels are available and are the correct type and size for all the BOP rams. Record the number of turns to close each ram manually.

25. Remove wellhead top section and nipple up the rig BOPs.
26. Install a 73mm landing pup with an open stabbing valve. Close the stabbing valve. Strip the BOPs over the landing pup and nipple up the stack. Close the pipe rams on the landing pup and pressure test the BOP connection to the wellhead to 1.4MPa (low) and 14MPa (high) for 10 minutes each.
27. Unlatch from On/off tool. Circulate well to fresh water. Pull out of hole with the 73mm tubing and stand the tubing string. **Note: if unable to unlatch from the On/off tool the tubing may need to be cut off.**
28. RIH with casing scraper for 177.8mm casing to 875m KB. Work area from 875 to 865m KB. Pull out of hole and stand tubing string.
29. Rig up hydraulic one step permanent bridge plug for 177.8mm casing c/w mechanical CCL. Mix up enough cement to have 15 vertical meters of Class G cement on top of PBP after set. Run in hole and set permanent bridge plug at about 873m KB. Pressure test to 7000 Kpa for 10 minutes. Un latch from plug and circulate a minimum of 15 meters of cement on top of bridge plug. Pull above top of cement and circulate tubing clean with fresh water. Note: Casing collars are located at 876.1m and 862.9m KB. Refer to the **Computalog SBL/GR/CCL/VDL run on December 6, 2000.**
30. Pull out of hole and lay down the 73mm tubing. Ensure thread protectors are used.
31. Ensure the fluid level is down at least 3 m to prevent freezing and to facilitate the cut and cap.
32. Remove BOPs. Install wellhead. Rig out.
33. Cut and cap the casing strings with vented cap as per the attached procedure in the Appendix or using water Hydro jet vented cap system.
NOTE: Multiple strings can be cut at once with the proposed system



128-spill_report_for
m_e_fillable_1.pdf



NWT SPILL
REPORTABLE SPILL C



Cut Capping
procedure 2008.xls



CORPORATE CONTACTS

Paramount Resources Ltd.
2800, 421 - 7th Avenue, SW
Calgary, AB
T2P 4KP

ARO (Calgary):

	<u>Business</u>	<u>Residence</u>	<u>Cellular</u>	<u>Fax</u>
Corey Thomson Abandonment Engineer E-mail: corey.thomson@paramountres.com	(403) 261-1250		(403) 835-4447	(403) 261-1349
Richard Bean Abandonment Supt- Staff E-mail: richard.bear@paramountres.com	(403) 303-1929		(403) 793-4586	(403) 261-1349

PRODUCTION (District Office):

	<u>Business</u>	<u>Residence</u>	<u>Cellular</u>	<u>Fax</u>
Completions Sub-Surface Foremen				
Martin Doll /	(780) 683-8037		403 926-7192	
Kent Gillett	(780) 683-8037		403 350-2730	

MORNING REPORTS (Calgary):

	<u>Business</u>	<u>Residence</u>	<u>Cellular</u>	<u>Fax</u>
Corey Thomson Abandonment Engineer E-mail: corey.thomson@paramountres.com	(403) 261-1250		(403) 835-4447	(403) 261-1349
Richard Bean Abandonment Supt-Staff E-mail: richard.bear@paramountres.com	(403) 303-1929		(403) 793-4586	(403) 261-1349
Tim Wood ARO Manager E-mail: tim.wood@paramountres.com	(403) 290-2919		(403) 803-8410	(403) 261-1349



CORPORATE POLICY & PROCEDURES

- All operations carried out on behalf of the Operator shall be conducted in a safe and efficient manner in compliance with the Operator's safety regulations and all applicable acts and regulations.
- The Operator expects that all operations conducted will be designed to protect and maintain the quality and integrity of the environment and comply with all environmental acts and regulations.
- All contractors on location must have as a minimum a valid H₂S ticket (if necessary), WHMIS, and be fully covered by the NWT Worker's Compensation Board (WCB) where applicable, carry a minimum of \$5,000,000 liability insurance.
- Before commencing operations, the Wellsite Supervisor will complete a list of nearest available emergency services. This list along with a detailed and accurate description of directions to the location is to be posted in a conspicuous and accessible location known to all personnel.
- Any excavation or installation of anchors (if required) on location shall follow Paramount's Ground Disturbance Requirements:
 - a. Contact 1st Call (Review Paramount's Grey book)
 - b. Prior to excavation – obtain Ground Disturbance Permit
 - i. If pipeline in area, arrange for Hydrovac and hand expose lines within 5 meters of excavation.
- Prior to commencing operations, the Wellsite Supervisor shall:
 - Read and record SIP(s). Examine surface casing vent for blow or suction, record and report findings. Check and monitor LEL and H₂S levels at wellhead and investigate for evidence of gas migration at surface.
 - Bleed off SISCVP. Shut in SCV, install chart recorder, monitor 24-hour build-ups, report same and complete AER's "Surface Casing Vent Flow/Gas Migration" form.
- Before commencing operations, the Wellsite Supervisor in conjunction with the Rig Manager will conduct an initial rig inspection using a CAODC or equivalent inspection form. A detailed rig inspection is to be completed weekly thereafter. Confirmation of these inspections is to be recorded on both the morning report and tour report.
- Have on-site a access to the AER Drilling/ Servicing Regulations - Directive 36, Workplace Health and Safety Regulations, NWT Oil and Gas Operations Act, NWT Drilling and Production Regulations, OROGO Well Suspension and Abandonment Guidelines.
- The Wellsite Supervisor and Rig Manager will conduct daily walk-around inspections and complete a daily rig inspection report in an effort to identify deficiencies regarding well control and safety related items.
- The Wellsite Supervisor must ensure that all pertinent data (tubulars, logs, tests etc.) are properly recorded on the tour sheets and that samples, where required are collected as required by well licence. Also, the Wellsite Supervisor must ensure that trip sheets are properly completed and maintained.
- During cold weather operations, the Wellsite Supervisor must ensure that the blowdown line from the BOP stack to the choke manifold to the degasser is filled with a water/antifreeze solution.
- The Wellsite Supervisor must ensure that all personnel are advised and instructed not to trespass off the demised property.
- Safety meetings are to be held every day with wellsite personnel and recorded on both the morning reports and tour reports. Pre-job safety/orientation meetings are to be held prior to commencing new or non-routine work at which time the



Wellsite Supervisor shall advise all personnel of known hazards, special pre-cautions and procedures. Hazard assessments must be conducted in accordance to Workplace Health and Safety Regulations and documented accordingly.

- BOP equipment will be function tested at least once daily and any equipment found defective should be made serviceable before operations are resumed. Blowout prevention drills are to be performed weekly and are to be recorded on both the morning reports and tour reports. **All appropriate Certifications for equipment used will be on-site and available for review.** Communicate this information with the contracted services.
- The Wellsite Supervisor will ensure that service companies supplying products and/or materials that require Material Safety Data Sheets review and advise wellsite personnel with the potential hazards associated and the appropriate emergency response to be undertaken when handling the same. As well, in compliance with WHMIS regulations, all MSDS are to be posted in a conspicuous and accessible place know to all personnel for their information and emergency reference. Site Specific Orientation to all personnel on-site must be given for all chemicals and materials used.
- The Wellsite Supervisor will ensure that dangerous goods shipped or received are classified, packaged, marked, labeled and documented in compliance with the Transportation of Dangerous Goods Regulations. If required, placards must be attached to vehicles transporting dangerous goods. All shipping documents must be forwarded to the Calgary office for filing.
- The Operator expects full compliance with all conditions detailed on the Land Use Permit and Water Permit, OA and ACW.
- During the absence of the Wellsite Supervisor, a qualified and competent alternate shall be designated, in writing, to carry out the principal Contractor's responsibilities. Written instructions must be posted in a conspicuous and accessible location known to all personnel prior to the Wellsite Supervisor leaving the location.
- All verbal notifications and approvals received on location from any regulatory agency must be documented and recorded on both morning reports and tour reports and should include a contact name from the agency, phone number and details of the subject matter.
- Daily reports shall be e-mailed (faxed) to the Operator's office by 07:00Hrs. every morning. Copy will be forwarded to Calgary. A daily operations report will be provided to the Wellsite Supervisor.
- All field tickets and other supporting documentation submitted for materials purchased and/or services rendered require a correct AFE# and accurate identification of the well location along with the Wellsite Supervisor's signature indicating acceptance to the same.
- All rental equipment must be accounted for and returned promptly upon conclusion of operations. Rental Sheets must be utilized.
- All surplus material and/or equipment must be accounted for and either returned for credit or material transferred to the appropriate warehouse point accordingly.
- All Accidents or Incidents shall be reported **immediately** to the Calgary Office - Attention: Richard Bean and /or Don Jones. Complete the Paramount Safe Incident Report and conduct the necessary Investigations immediately. Fax copy to Calgary within 6 hours of incident.
- Upon conclusion of operations:
 - Fill out the following forms:
AER "Surface Casing Vent Flow/Gas Migration Data Sheet"
Paramount's Suspended /Abandonment Action form

Email / Fax a copy of the above completed form/s to the Calgary office.

- Ensure that all garbage and debris has been removed from the location in accordance with AER Guide



G-58 and that any environmental concern has been addressed. Contact the Construction foreman with any concerns.

- Ensure that all flange bolts are properly torqued in accordance with the manufacturer's specifications and that all valves are properly lubricated.
- Prepare a final wellbore diagram with all pertinent information recorded.
- Forward all paperwork including field logs and computer data files to the Calgary office including copies of all field logs. A paper and digital copy of all Paramount operation reports should be provided. All field tickets, Material Transfers, Incident Reports, well test reports, rig inspection reports and service reports shall be included with the operation report package.
- Notify the District Production Foreman of the well status.



APPENDIX 1

SURFACE CASING VENT FLOWS:

- If a SCVF issue exists, bleed off well and allow well to stand for a minimum of twenty-four (24) hours with the SCV left in the “open” position to allow well to stabilize prior to Noise-Temperature logging.
- Perform “bubble” test as per AEUB Directive 20 and complete the “Surface Casing Vent Flow / Gas Migration Data Sheet”.

NOISE-TEMPERATURE LOGGING:

- When Noise-Temperature Logging, RIH with Noise-Temperature Logging Tools and, correlated to a cased-hole log provided, run the Temperature Log while running in hole to PBTD. Note and record results.
- Pull the Noise Log to surface and obtain readings every five (5) meters. Over “high” noise level intervals and possible origin(s) of the vent flow, reduce increments to one (1) meter readings. Note and record results of same.
- Upon conclusion of logging operations, forward copy of log to Calgary office for inspection prior to proceeding with the balance of the program.

CEMENT-RETAINER CIRCULATIONS/SQUEEZES:

- Ensure a representative sample of make-up water has been forwarded to cementers for compatibility testing.
- Set retainer two (2.0) meters above perms avoiding a casing collar and pressure test to 7.0 MPa.
- RIH with stinger, sting into and perform pressure and function tests.
- Perform feed rate test to perms with fresh produced water.
- Tie in single-pumping unit cementer with squeeze manifold and chart recorder.
- Pressure test surface lines to 1,400kPa (low) and 14,000kPa (high).
- Pull stinger from retainer, mix, pump and circulate prescribed cement design to tubing bottom.
- Sting back into retainer and perform cement circulation/squeeze.

NOTE:

- Where circulation was not established and, after displacing the lead cement, monitor tubing to determine if plug is gravity feeding. If so and if cement setting times permit, allow well to gravity feed at a controlled rate of not more than 0.50 m³/min. as best possible with manifold valve or by pulling the stinger into the “neutral” position. When the well no longer gravity feeds, commence hesitation squeezes in 0.50 m³ increments/stage unless breakdown is observed while pumping a stage at which time pumping should be stopped immediately ending that particular stage. Wait thirty (30) minutes or as appropriate, depending on actual conditions between stages. Attempt to achieve a stabilized lock-up pressure to 7.0 MPa and hold for ten (10) minutes with chart recorder. Record and report same.
- Do not over displace cement squeeze.
- Be prepared to batch mix and pump an additional 1.50 m³ – 3.00 m³ cement, if necessary.
- Do not exceed a pump rate of 1.0 m³/min. or frac gradient (18.0 kPa/m) when feed rate testing or cementing.

Eg. Maximum allowable surface pump pressure when using 1030 kg/m³ fluid @ a depth of 300 m:

$$\begin{aligned} &= \text{Frac pressure} - \text{Hydrostatic pressure} \\ &= (300 \text{ m} \times 18.0 \text{ kPa/m}) - (300 \text{ m} \times 1030 \text{ kg/m}^3 \times 0.00981) \\ &= 5,400 \text{ kPa} - 3,031 \text{ kPa} \\ &= 2,369 \text{ kPa} \end{aligned}$$



- Pull stinger from retainer, displace an eight (15.0) meter balanced cement plug over the retainer, raise string out of balanced cement plug, backwash string clean with fresh water and POOH with stinger.
- Shut in casing valves and WOC as prescribed.

SUSPENSION & ABANDONMENT PLUGS:

- Bridge plugs and cement retainers used for zonal suspension or abandonment and set in compliance with OROGO Well Suspension and Abandonment Guidelines, must be pressure tested to 7000 Kpa prior to capping with fifteen (15) meters of circulated cement for Level II wells and thirty (30) meters of circulated cement for Level I wells.

PRL CUTTING & CAPPING PROCEDURES:

- Move in 'B'-ticket welder, backhoe, and steamer, if required. Hydovac unit may be required if flowlines are present.
- Read and record SIP(s). Check and monitor LEL and H2S levels at wellhead and investigate for evidence of gas migration at surface. Examine surface casing vent for blow or suction. Record and report findings. If present, stop work and hold a safety meeting to review working procedures. If required, contact the Calgary office for further direction. Proceed with work only when conditions are able to be managed safely.

NOTE:

- When ambient temperatures are below freezing, tarp in wellhead and steam wellhead to ensure that wellhead and piping are not frozen.
 - Remove all plugs and function test all wellhead valves to confirm there is no pressure built up in the wellhead or casing. Disassemble the SCV piping assembly and visually inspect that the vent is not plugged with cement or ice.
 - Review corporate ground disturbance package and policies with all on-site personnel prior to commencing excavation around the wellhead. Hydrovac expose all underground facilities (casing, flowlines etc.) within five (5.0) meters of area to be excavated and excavate a 6.0m x 2.5m bell hole around the wellhead ensuring that walls of the bell hole are properly sloped for safe entry and egress and to prevent sloughing in. Check and monitor LEL and H2S levels and investigate for evidence of gas migration.
 - While exercising caution, weld cut a small hole 30 cm below the surface casing bowl and investigate for trapped gas and fluids. Check and monitor LEL and H2S levels. With closed hooks and shackles, connect backhoe bucket to wellhead and pull into tension slightly more than the weight of the wellhead. Weld cut three (3) windows in the surface casing to access the innermost casing string ensuring that 50% of the circumferential metal remains to prevent possible collapse of the surface casing from the weight of the wellhead. While exercising caution, weld cut the innermost string.
- NOTE:**
- Innermost string can be expected to suddenly drop once completely cut. Do not place pry bars, hands or fingers in the windows.
 - Complete weld cut of the surface casing, lift and remove wellhead from bellhole with backhoe.
 - Review the Capping Schematic in this Appendix. Cut off the casing strings so that the top of the Protective Cap will be a minimum of 1.5 meters below the surveyed ground elevation. The surface casing and production casing are to be cut off at the same depth.
 - Fabricate the Protective Cap and slip on collar using the surplus surface casing material.

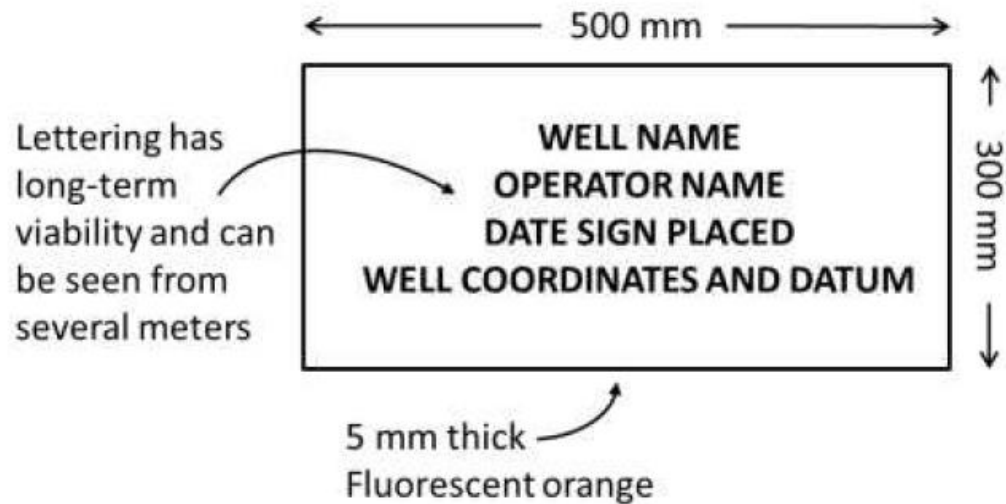


- Dress the casing stubs. Using compatible metallurgical material, install and seal weld a 12.7 mm steel plate “donut” and vent assembly over the surface casing and production casing annulus, and a 12.7 mm steel plate and vent assembly over the inner most casing string. Required vent assemblies are as shown on the Capping Schematic.

NOTE:

- All seal welds are to be pre & post-heated to 3000C.
- Install and weld the Protective Cap to the surface casing as shown on the Capping Schematic. Weld inscribe the LSD on top of the Protective Cap and document with a digital photograph.
- Backfill and compact the excavation, clean up lease and rig out and release all services.
- Complete material transfer(s) and forward equipment for servicing and/or storage.
- Note: OROGO guidelines state that field verified coordinates for the well center must be provided as part of the Well Operations report as follows:
 - The geodetic datum must be specified (NAD83 is recommended): and
 - Coordinates must be provided:
 - In decimal degrees to 4 decimal places or more, or
 - In degrees, minutes and seconds to 2 decimal places, if decimal coordinates are not possible.
- A field sketch of the area must be also be submitted as part of the Well Operations Report.
- After surface abandonment is completed, all abandoned wells must be marked with a durable post and a sign as per below:

Sign Requirements



Well Suspension and Abandonment Guidelines and Interpretation Notes

Post Requirements

