PCI ET AL TWEED LAKE M-47

SUMMARY

NOTE: A deep cellar (1.5 m - 2.0 m) will be required for this location to accommodate the necessary equipment in the event of serious lost circulation problems.

1. Spud and drill a 445 mm hole to a depth of approximately 10 m below ground level (16 m KB). Ream to 610 mm with a hole opener. Thermal degradation is not expected to be a problem.

   NOTE: The actual drilled depth will be determined on location based on the actual lengths of available 508 mm casing (one joint for the barrel and one landing joint).

2. Set one joint of 508 mm K-55, BT&C conductor barrel with a landing joint and cement to surface with at least 4 tonnes of "Arctic-Set" permanfrost cement. Cut off the landing joint below the table and weld on the flow nipple.

3. Drill a 311 mm conductor hole to 60 m if possible, and ream to 445 mm. If massive lost circulation is encountered, set a cement plug to seal this off.

4. Run 6 joints (or less if lost circulation was encountered in step 3) of 340 mm, 101 kg/m, K-55, BT&C conductor casing and cement to surface with at least 14 tonnes of "Arctic-Set" permafrost cement.

5. Install a 346 mm, 21,000 kPa x 340 mm weld-on casing bowl. Nipple up a 346 mm, 21,000 kPa mud cross, a 346 mm, 21,000 kPa Hydril GK annular preventer and a 346 mm, 21,000 kPa Grant rotating head as a diverter system. Pressure test the diverter to 700 kPa.

6. Drill a 311 mm surface hole to 500 m and run 245 mm, 60 kg/m, L-80, LT&C surface casing. Cement to surface using at least 39 tonnes of "Arctic Set" permafrost cement.

   NOTE: If serious problems with lost circulation are encountered prior to reaching 500 m it will be necessary to change to the ALTERNATE PROGRAM A as outlined following this summary.

7. Lift the BOP stack and set the 245 mm casing in slips inside the 346 mm casing bowl. Remove the spacer spool and install a 346 mm, 21,000 kPa casing spool with a secondary seal. Test BOP stack to 21,000 kPa after heading up.

8. Drill out the surface casing shoe plus 5 m of new hole with a 216 mm bit and conduct a pressure integrity test.

9. Directional single-shot surveys are to be run every 50 m.

10. A mud logging unit will be used below the surface casing shoe.

11. Convert to a foam system and continue drilling ahead. Do not start drilling with air as this may lead to serious erosion problems which could prevent returns when subsequently drilling with foam.

12. Drill ahead until samples indicate the shale section of the Saline River formation (estimated top at 863 m) has been penetrated. Drill another 20 m. Load hole and determine if circulation is lost with 1100 kg/m^3 equivalent mud weight.

13. If there is no indication of lost circulation, blow hole clean and continue to drill ahead with foam to 1268 m (20 m above anticipated top of the Mt. Clark formation).

14. Convert to a mud system, salt saturated if required, and begin control drilling. After the Mt. Clark is established, cut one 18 m core. A DST may be run after coring as directed by the Calgary Office.

15. Drill ahead to TD at 1483 m, 150 m into the Proterozoic Clastic Sequence (estimated top at 1333 m).

    NOTE: Subject to sample evaluation and/or shows, one 18 m core may be cut in the Proterozic. This, and a possible DST after coring is to be cleared through the Calgary Office.

16. Run the following logs (or as directed by the wellsite geologist)

    i) DLL-MSFL-GR
    ii) CNL-LDT-NGT-AMS/ML-CAL
    iii) BHCS-WF-GR-CAL
    iv) SHDT, Directional survey

17. On completion of the logging program, wait on orders to either abandon the well or run 178 mm, 43.2 kg/m, SOO-95, LT&C production casing to TD. Cement the production casing to surface with Class "G" cement + 0.5% D65 (turbulence inducer) + 0.1% D13 (retarder). At least 33 tonnes of cement will be required (50% excess).

18. Release the rig.

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ALTERNATE PROGRAM A

6A. Convert to a foam system and continue drilling ahead. Do not start drilling with air as this may lead to serious erosion problems which could prevent returns when subsequently drilling with foam.

7A. Drill ahead until samples indicate the shale section of the Saline River formation (estimated top at 863 m) has been penetrated. Drill another 20 m then strap out to log.

8A. The following logs will be run from approximately 883 m (surface casing point) to the conductor casing shoe:

- Dual Induction Log
- Sonic (Acoustilog)
- Compensated Neutron-Density-Gamma Ray

Due to the lost circulation problems, it will not be possible to displace the hole to mud prior to logging and the appropriate tools for logging in air will be required.

9A. Run the 245 mm, 60 kg/m, L-80, LT&C surface casing to T.D. and cement it in two stages as follows:

i) Class "G" cement sufficient to cover the interval of competent formation at T.D. plus 200% excess will be pumped in from T.D. Approximately 12 tonnes of cement will be required to cover the 20 m of Saline River shale and the estimated 80 m of dense Upper Cambrian limestone/dolomite immediately above the Saline at the base of the Ronning (including an excess factor of 200%).

ii) An external casing packer (ECP) will be set at the 340 mm conductor casing shoe to secure the annulus between the 245 mm and 340 mm casing strings. A DV tool will be situated immediately above the ECP and "Arctic Set" permafrost cement will be pumped through the DV tool to surface. Approximately 8 tonnes of cement will be required (including an excess factor of 20%).

10A. Lift the BOP stack and set the 245 mm casing in slips inside the 346 mm casing bowl. Remove the spacer spool and install a 346 mm, 21,000 kPa casing spool with a secondary seal. Test BOP stack to 21,000 kPa after heading up.

11A. Drill out the 245 mm casing shoe plus 5 m of new hole with a 216 mm bit. Conduct a pressure integrity test.

12A. Do not mud up at this point. Continued drilling with foam will result in better penetration rates than with mud. Also, the Saline River salt section (estimated top at 993 m) can be drilled effectively using foam rather than converting to a saturated salt system prematurely. This conversion may eventually be necessary to avoid the expense of an additional casing string (and the difficulties associated with the subsequent slim-hole drilling), but it can be delayed until core point at which time the possibility of encountering hydrocarbons dictates that mud be used.

13A. Drill ahead with the foam system to 1268 m (20 m above the anticipated top of the Mt. Clark formation). Convert to a mud system, salt saturated, if required, and begin control drilling. After the Mt. Clark is established, cut one 18 m core. A DST may be run after coring as directed by the Calgary Office.

14A. Drill ahead to TD at 1483 m, 150 m into the Proterozoic Clastic Sequence (estimated top at 1333 m).

NOTE: Subject to sample evaluation and/or shows, one 18 m core may be cut in the Proterozic. This, and a possible DST after coring, is to be cleared through the Calgary Office.

15A. Run the following logs (or as directed by the wellsite geologist)

i) DLL-MSFL-GR
ii) CNL-LDT-NGT-AMS/ML-CAL
iii) BHCS-WF-GR-CAL
iv) SHDT, Directional survey

16A. On completion of the logging program, wait on orders to either abandon the well or run 178 mm, 43.2 kg/m, SOO-95, LT&C production casing to TD. Cement the production casing from TD to 783 m (100 m above the surface casing shoe) with Class "G" cement + 0.5% D65 (turbulence inducer) + 0.1% D13 (retarder). At least 16 tonnes of cement will be required (50% excess).

17A. Release the rig.

CONTRACTS: 1984-85 WORK SEASON
MACKENZIE VALLEY EXPLORATION PROGRAMS

CONTRACT	CONTRACTOR/CONTACT	LOCATION	MAILING ADDRESS	TELEPHONE
All Terrain Vehicles	Bar-K Consulting Ltd.: Barry D. King	Edmonton	5112 - 142 St. T6H 4B4	435-5962
Aviation	Okanogan Helicopter Ltd.: Lee Sexsmith	Norman Wells	Norman Wells, NWT X0E 0V0	587-2136
Catering	CVC Services: William Jeffrey	Vancouver/Edmonton	1235 West Pender St. Vancouver, V6E 2V6	604-688-7331
Cats/Graders	Kenn Borek Construction Ltd.: Kenn Borek	Inuvik/Dawson Creek	Inuvik, NWT X0E 0T0	979-3937
Cementing	Dowell Schlumberger Canada Inc.: George Downs	Norman Wells/Calgary	3200 Bow Valley Sq. #4 250 - 6 Ave. SW Calgary T2P 3H7	261-2051
Coring	Norton Christiensen Canada Limited: Ted Godzisz	Calgary/Grand Prairie	812-603 - 7 Ave. SW Calgary T2P 2T5	264-7222
Directional Surveying	Eastman Whipstock: Jim Hurlbut	Calgary	2020, 300 - 5 Ave. SW T2P 3C4	263-4160
Drilling	ATCO/EQUTAK Drilling Ltd: Grant Churchill	Calgary/Inuvik	800 - 6 Ave. SW Calgary T2P 3G3	263-1215
Drilling Muds	Magcobar: Harvey Hall	Calgary	300, 407 - 2 St. SW T2P 2Y3	290-5300
Drill Stem Testing	Lynes United Services Ltd.: John Wercholuk	Calgary	1144 - 29 Ave. NE T2E 7O1	230-9300
Logging	Schlumberger of Canada: Paul Adlakha	Calgary/Inuvik	24 Monenco Place 801 - 6 Ave. SW Calgary, T2P 3W2	231-9600
Medical Services	Arctic Exploration Services (NWT) Ltd.: John Kemp	Tuk/Calgary	#4 1420 - 40 Ave. NE Calgary T2E 6L1	276-9489
Power Tongs	Weatherford Oil Tool Co. (1983) Ltd: Bob Bellivard	Calgary	6435 - 2 St. SE T2P 1J5	253-5573
Road & Icebridge Building	Arctic Icebuilders: Don Boyer	Hay River	Hay River NWT X0E 0R0	874-6363
Seismic Operations	Western Geophysical of Canada Ltd.: Gus Lorenowicz	Calgary	2612 - 37 Ave. NW T1Y 5L2	291-8100
Seismic Operations	Seismic Delta United Int'l Ltd.: Jim Hunder	Calgary	3503 - 78 Ave. SE T2C 1J7	279-8311
Steiger Tractors	Sterling Contractors Ltd.: Bob Sterling	Grand Prairie	202, 11225 - 98 Ave. T8V 5A5	532-9376
Transport Vehicles	ATA Construction Ltd.: Hudley Bjornson	Norman Wells	Norman Wells, NWT X0E 0V0	587-2259

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