Project Description for the Proposed EnCana Corporation Burnt Lake Drilling Program

Winter 2004

ENCANA

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EXECUTIVE SUMMARY

EnCana is proposing to drill one exploratory well during the winter of 2004, selected from three potential locations (N16, D16 or K16) identified on Richards Island. The well will be drilled to a depth of approximately 3,300 m. The potential wellsite locations are within EL384 on Crown land.

The drilling location will be finalized in November after further data analysis has been completed. Pending regulatory approval, operations are scheduled to begin in December 2003 and be completed by April 2004.

Access to the wellsite will be overland from the Inuvik to Tuktoyaktuk ice road. The access will be constructed over large lakes, with limited overland sections. Akita-Equtak will be the drilling contractor and Akita-Equtak Rig #62 will be used for drilling operations on the program.

The project description has been prepared to meet the requirements of Indian and Northern Affairs Canada (INAC), the NWT Water Board (NWTWB), National Energy Board (NEB), and Environmental Impact Screening Committee (EISC).

The proposed program is located in the Tuktoyaktuk Coastal Plain Ecoregion of the Southern Arctic Ecozone and is characterized by broadly rolling uplands. Vegetative cover at the potential drill locations consists of ground covers and low shrubs, including Labrador tea, lupin, willow, dwarf birch, crowberry, cranberry, blueberry, and grasses and sedges. Except for the sump site, no clearing of vegetation is expected.

EnCana commissioned Kavik-Axys to support the environmental and cumulative effects assessment, Kiggiak-EBA to conduct a sump assessment and recommend construction guidelines, and IEG Inc. to conduct a heritage assessment and recommend avoidance measures.

Consultation meetings were conducted in the Inuvialuit Settlement Region in April/May and August/September 2003. The communities did not express any significant concerns. Feedback obtained during meetings has been incorporated into the planning and assessment of the project wherever possible.

The winter drilling program has been designed to minimize impacts on the environment and land users, with specific technologies being employed to mitigate potential impacts on permafrost. Potential environmental impacts resulting from the construction of the well site, sump and access roads and the drilling program may include: damage to soils and permafrost, short-term disturbance to wildlife, and alteration of vegetation and wildlife habitat. With the implementation of appropriate mitigation however, it is anticipated that the program will not result in significant negative or residual impacts. EnCana is committed to following the mitigative measures outlined in this document.

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EnCana Corporation Burnt Lake Drilling Program, Winter 2004

2 CONTACT NAMES AND ADDRESSES

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3 REGULATORY APPROVALS

Regulatory approvals required for the program are outlined in Table 1.

TABLE 1 REGULATORY APPROVALS

AGENCY	APPROVAL REQUIRED	SUBMISSION DATE
Bill Klassen, Chair Environmental Impact Screening Committee P.O. Box 2120 Inuvik, NT X0E 0T0 Tel. 867-777-2828 Fax 867-777-2610	Approval on Project Description Inuvialuit Final Agreement	26 September 2003
Rudy Cockney,District Manager Indian and Northern Affairs Canada P.O. Box 2100 Inuvik, NT X0E 0T0 Tel. 867-777-3361 Fax 867-777-2090	Land Use Permit *Territorial Lands Act* *Territorial Land Use Regulations*	29 September 2003
Gordon Wray, Chair Northwest Territories Water Board 4920 - 52nd Street, P.O. Box 1500 Yellowknife, NT X1A 2R3 Tel. 867-669-2772 Fax 867-669-2719	Class B Water Licence *NWT Waters Act* *NWT Waters Regulations*	29 September 2003
Terry Baker, Team Leader Exploration and Production National Energy Board 444 - 7th Avenue SW Calgary, AB T2P 0X8 Tel. 403-299-2792 Fax 403-292-5503	Authorization to Drill a Well *Canada Oil and Gas Operations Act*	Minimum 21 days prior to well spud

4 LOCATION

The proposed well site and access route are located on Richards Island in the Inuvialuit Settlement Region of the Northwest Territories. Potential well site locations are identified on Figure 1 and the proposed access is shown in Figure 2.

5 DEVELOPMENT SUMMARY

5.1 Project Scope

EnCana is proposing to drill one exploratory well during the winter of 2004, selected from three potential locations (N16, D16 or K16) identified on Richards Island (Table 2 and Figure 1). The well will be drilled to a depth of approximately 3,300 m. The potential wellsite locations are within EL 384 on Crown land. Currently, it is most likely that the N16 location will be drilled however, the final location will be confirmed in November after further data analysis has been completed.

TABLE 2 PROPOSED WELL SITE LOCATIONS

WELL REFERENCE	LOCATION	
Potential Wellsite Locations		
N-16	Lat/Long:	69 25 53.1/-134 19 06.
	UTM:	526727 / 7702617
K-16	Lat/Long:	69 25 33.6/-134 18 48.9
	UTM:	526920 / 7702017
D-16	Lat/Long:	69 25 06.1/-134 19 06.0
	UTM:	526555 / 7701176

Access to the wellsite will be overland from the Inuvik to Tuktoyaktuk ice road. The access will be constructed over large lakes, with limited overland sections (Figure 2). Akita-Equtak will be the drilling contractor and Akita-Equtak Rig #62 will be used for drilling operations on the program. The three potential drilling locations have been surveyed, and a lease plan has been drawn for the N16 location (Drawing 1).

5.2 Construction

5.2.1 Well Siting and Access Route Selection

Access will be across a combination of lakes, channels and overland sections from the Tuktoyaktuk-Inuvik ice road to the lease site. The proposed access routes are shown in Figure 2. The potential well locations and access routes have been selected to:

- Satisfy technical requirements of the drilling program;
- Utilize existing seismic trails and accesses used during the winter seasons 2001-2003 wherever feasible, to minimize surface disturbance;
- Follow a direct overland route from the river to the well site, maximizing the use of waterbodies;
- Maximize safety considerations;
- Avoid known archaeological sites; and,
- Minimize cost.

5.2.2 Access Route and Lease Site Construction

Construction crews will be based at the Arctic Star barge camp (Figure 2). To facilitate an early season start, equipment will be staged with the barge in the fall. Equipment will be staged both on the Arctic Star, as well as on two barges to be staged adjacent to the Arctic Star.

From the Tuktoyaktuk-Inuvik ice road to the well site, overland sections of the access will be approximately 20 m wide, while on waterbodies, for safety purposes, the width will be increased to 60 m. Where slopes are unavoidable and high banks (>1 m) hinder access, snow and/or ice ramps made of clean snow and water will be constructed to minimize erosion and disturbance by equipment. No clearing of vegetation is expected on the access or the well site.

TABLE 3 PROPOSED ACCESS ROUTES

ROUTE	DISTANCE (km)			AREA (ha) based on route widths of 60 m on water and 20 m on land		
	Land	*Water*	*Total*	*Land*	*Water*	*Total*
Overland Main Access to N16	10.0	8.8	18.8	20.0	52.8	72.8

If the ice on the East Channel is slow to form in the early winter because of warm weather and/or a heavy snow pack, construction equipment may be walked overland from the barge camp to Nesbitt Lake, where construction could begin on overland portions of the main access. Only tracked construction equipment would be used, and the access would follow a route used by EnCana during the Kugmallit 2D seismic program in the winter of 2003. No tracked equipment would be allowed on the tundra without a minimum 10 cm snow cover. This alternate access is identified on Figure 2.

Both the access and drilling lease will be prepared using the same equipment and procedures. All overland sections of the access will be built up with snow and ice to a minimum thickness of 15 cm. The drilling lease will be built up to provide a level surface, with a minimum thickness of ice and snow on the lease of 40 cm. EnCana's construction supervisor will clearly mark the access and lease perimeter.

If D-16 is selected as the location to drill, it will require minimal snow and ice fill because the terrain at that location is relatively flat. The terrain at N-16, and particularly at K-16, is less even and those drill locations, if selected, will require more snow and ice to construct a flat lease site. It may be necessary to use trucks and loaders to load and haul snow from nearby lakes to build up low areas of the lease. Snow fences may also be used in those areas where the trapping of snow may be advantageous for construction of the pad or access.

On all waterbodies, EnCana will use electronic and manual ice profiling to ensure ice thickness is adequate to deploy equipment. Once the ground surface is frozen and has adequate snow cover, snowmachines will be used to pack the snow initially. Snow-cats will follow and be used to blade the access, pack snow and build snow ramps on lake and channel banks. A Delta III or Gator, both with low ground pressure tires, will spray water on all snow ramps, do an initial watering on the overland sections of the access and improve sections of the access as necessary to support the other road building equipment. The access will be dragged using a rubber-tired drag with a Delta. A D6 may be required, but is not likely to be used extensively during road construction. The Delta III or Gator will continue to flood the road sufficiently to allow water trucks to travel safely and efficiently. Fuel sloops will be staged using a D6 or Delta to supply all of the lead equipment. Construction of the lease will follow the same procedure.

An airstrip will be constructed on a lake adjacent to the drilling location and will be approximately 1000 m by 60 m. The lease site will also include a helicopter-landing pad, comprised of a 30 m x 30 m flooded ice area.

5.3 Water Requirements

Water will be withdrawn from lakes (identified as Lakes 1,4,5 and Nesbitt Lake on Figure 1) and the East Channel of the Mackenzie River. Maximum daily withdrawal during access and well site construction is expected to be 1800 m^3. After construction is completed, daily water requirements will be substantially reduced.

The volume of Nesbitt Lake was assessed through a bathymetric survey in the fall of 2002. Volumes for an additional five lakes were estimated based on water depth data collected during the EnCana Burnt Lake 3D program in the winter of 2002. During the Burnt Lake program, at all receiver points on lakes not frozen to bottom, hydrophones were placed 15 cm (6") from the lake bottom. Receiver lines were spaced at 400 m and receiver points were at 60 m intervals on each line. Prior to lowering the hydrophone, crews lowered a rope, with a weight on the end, to the lake bottom. The rope was then lifted to suspend the weight 15 cm from the bottom and the rope was marked. When the rope was pulled to surface the length was measured, and the hydrophone was placed at the appropriate depth. Suspending the hydrophones appropriately was important for seismic data results and the measurements were therefore taken very carefully.

Based on the volume estimates, two of the five lakes assessed were determined to be too shallow for use. The remaining three lakes will be used for water withdrawal. Volume estimates for each lake to be used for water withdrawal are provided in Table 4.

TABLE 4 ESTIMATED VOLUME OF LAKES TO BE USED FOR WATER WITHDRAWAL

Lake	Total Volume (m³)	Total Volume Remaining with 2 m of Ice (m³)	Maximum Depth (m)	Surface Area (ha)
1	6 426 900	4 318 500	10.3	116.8
4	3 316 900	1 222 200	9.2	142.3
5	11 451 500	5 723 800	10.9	327.7
Nesbitt	6 627 750	2 017 134	11.4	313.8

To confirm the estimated volumes prior to withdrawal, additional depth measurements will be taken during ice profiling. Transects will be spaced at 400 m and will be perpendicular to the receiver lines from the Burnt Lake 3D. Data will be collected at 100 m intervals. New contour maps will be developed for each lake and the estimated volumes to be withdrawn will be revised as necessary and agreed to with the Department of Fisheries and Oceans (DFO). It is expected that volume to be withdrawn from each lake will not exceed 1-2% of free water volume, assuming 2 m of ice, which is well within DFO's 5% guideline. Given that a bathymetric survey was completed on Nesbitt Lake, no additional depth measurements will be taken.

5.4 Drilling

5.4.1 Mud Program

EnCana proposes to drill the well using a potassium chloride (KCl) drilling mud system, which is essentially a mixture of potassium chloride, bentonite, and XC polymer. Other operators have used the system recently to drill wells in the Mackenzie Delta. The use of saline inhibitive muds is primarily restricted to areas where water sensitive formations are exposed for prolonged periods of time or where water sensitive producing formations are encountered.

Hydratable shales and clays are expected to be present and an unstable wellbore is probable. The challenge of drilling through permafrost is to keep the wellbore in gauge for successful cementing. Drilling fluid (0°C or above) will have the tendency to thaw or erode the permafrost and cause instability due to the large amounts of gravel and downhole debris. The larger the washout through this section, the more difficult it will be to drill.

It will also increase cement volumes required to cement the casing and make a successful cement job more difficult. The addition of KCl will enable the drilling fluid to maintain a temperature of -1.5°C (3% KCl) without freezing, thus having minimum thawing effect on the permafrost. Also, if the well remains static for longer periods of time, the addition of KCl will decrease the likelihood of the drilling fluid freezing in the mud tanks and the upper section of the hole.

There is the potential of encountering hydrates (a combination of methane and water that can freeze and be stable at some temperatures). The possibility of liberation of gas from hydrates increases with higher drilling fluid temperatures. If this occurs, well control becomes complex. The use of KCl will minimize this potential by allowing freezing point depression of the drilling fluid. The use of KCl will also minimize accretion and bit balling. Bit balling will sometimes occur when drilling through hydratable shales and clays with an insufficiently inhibitive fluid. The cuttings tend to be sticky in nature and will clump together around the bit and wellbore. This makes drilling new hole slow and difficult. KCl will help minimize the hydration of the cuttings and thus help prevent accretion from occurring.

Large diameter drilling holes such as 444.5 mm (171/2") can be difficult to clean with drilling fluids due to very low annular velocities at maximum pump rates. Increasing mud viscosity is required to provide sufficient hole cleaning characteristics. Additions of KCl to freshly hydrated bentonite will flocculate the mud and increase the viscosity and yield point temporarily to provide increased hole cleaning efficiency.

The use of a mud cooler will be utilized on top hole and surface holes to keep mud as close to the freezing point as possible to mitigate against permafrost melting. Permafrost retention will also be aided by the use of a refrigerated conductor pipe.

5.4.2 *Testing and Flaring*

Assuming this exploration well is successful in encountering hydrocarbon-bearing zones, flow testing will be required to determine the potential productivity of the well. The length of time required to flow the well to test a zone is estimated at between 18 and 36 hours. Assuming two gas bearing zones are encountered, total flow period would be in the range of 36 to 72 hours. It is expected that natural gas will be the primary hydrocarbon produced, and the gas will be burned in a flare stack designed to efficiently burn the gas at the flowrates required. In the event that significant hydrocarbon liquid is produced during the test, it will be separated from the gas and collected for transport and disposal at an approved facility. If the production rate of produced hydrocarbon liquids exceeds expectations that could make collection and transportation unfeasible, the flow periods will be shortened or stopped to ensure all the liquids produced can be safely removed from the location for proper disposal. Rather than transporting the liquid, an alternative currently being considered is to use equipment capable of efficiently burning the liquid to generate power for use in the rig and camp.

5.4.3 *Drilling Waste Disposal*

Techniques used in the drilling process will minimize the total volume of waste to be disposed. For example, the solids control system uses a special auger tank, together with two centrifuges, to separate water from the used drilling mud. The water is then recycled, greatly reducing the total volume of mud to be disposed, and making the mud relatively dry prior to disposal. A mud cooler is also used to help minimize hole size and reduce the volume of the active mud system.

Drilling waste will be disposed of in a sump. A senior geotechnical engineer, from Kiggiak-EBA, inspected the three potential drill locations (N16, D16 and K16), with the EnCana construction supervisor. The representative of Kiggiak-EBA assessed terrain, topography, surface drainage, soil and ground ice conditions using test pits, permafrost conditions, including ground ice content and thermokarst, and spatial requirements. A complete summary of the field assessment is provided in Section 11.8.

Based on the initial field assessment two locations were identified as good potential locations for a sump. At the N16 location, a potential sump location was identified adjacent to the well site (Drawing 1). At D16, the potential sump location was identified approximately 200 m from the well site. No suitable location for a sump was identified at the K16 well site. If K16 is selected as the drilling location, a remote sump will be constructed at the site identified adjacent to the N16 site.

To confirm the suitability of the soil and ice conditions at the potential sump locations, Kiggiak-EBA used ground-penetrating radar (GPR). GPR profiles can be used to identify soil characteristics up to 10 m below surface. At the proposed sump location adjacent to N16, four profiles over an area approximately 100 m x 170 m were assessed using the GPR. The GPR showed potentially ice-rich soils or coarse sands and gravels on the western edge of the profile area. These soils are isolated on the western side of the study area and will be avoided by sump construction. The remainder of the survey identified finer-grained soils throughout, which will be appropriate for sump construction.

At the proposed D16 location, three profiles over an area approximately 125 m x 110 m were assessed with the GPR. At the southern and northern edge of the profile area, potentially ice-rich soils or coarse sands and gravels were identified. These areas will be avoided by constructing the sump in the middle of the study area. Similar to N16, the remainder of the study area showed finer-grained soils.

Prior to sump construction, these findings will be confirmed by taking core samples at the proposed sump location.

A Technical Advisory Group has been established through the Environmental Studies Research Fund to identify best practices for drilling waste disposal. Sump assessment and plans for construction and monitoring have tried to adhere to the practices currently being discussed by the group. When the group develops guidelines, EnCana will endeavor to implement them, wherever feasible.

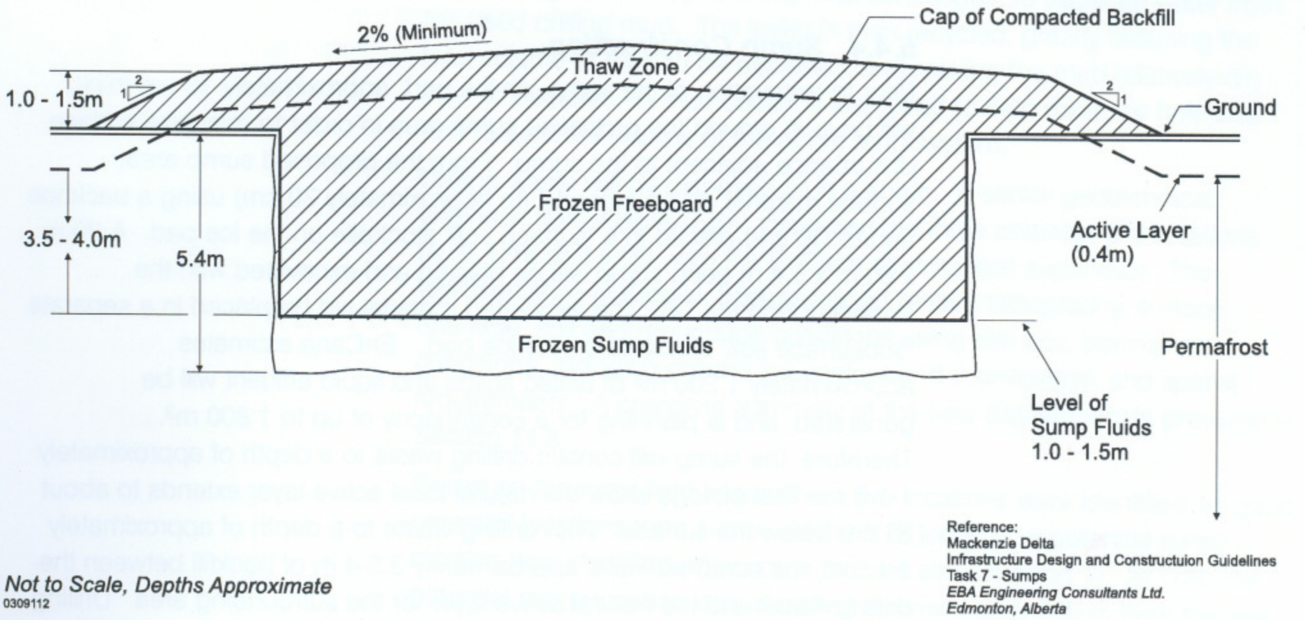
5.4.4 Sump Construction

Prior to excavation of the sump, an ice pad, approximately 15 cm thick, will be built around the proposed sump area in order to minimize surface disturbance adjacent to the sump. From the proposed sump area, surface material will be stripped (to approximately 30 cm) using a backhoe and/or D6 and placed in a "surface soil" stockpile on the ice pad. A 20 m x 60 m x 5.4 m deep sump will be blasted and excavated with the excavator and the D6. The excavated material will be placed in a separate "subsurface soil" stockpile on the ice pad. EnCana estimates approximately 1 200 m^3 of drilled solids and liquid effluent will be generated, and is planning for a contingency of up to 1 800 m^3. Therefore, the sump will contain drilling waste to a depth of approximately 1-1.5 m. Test pit logs show the natural local active layer extends to about 35 cm below the surface. With drilling waste to a depth of approximately 1-1.5 m, the sump will have approximately 3.5-4 m of backfill between the drilling waste and the natural active layer for the surrounding area Drilling waste will be placed in the sump throughout the program, and will be spread evenly across the bottom of the sump to facilitate the freezing process. Tests of the drilling waste will be completed at the sump prior to restoration to confirm chemical composition of the waste and to confirm it is thoroughly frozen.

5.4.5 Sump Restoration and Monitoring

When the drilling operation is complete, the sump will be backfilled and capped. Sump wastes will be buried approximately 3.5-4 m below the level of the surrounding active layer and an additional 1-1.5 m of backfill cap will be compacted above the level of the surrounding ground surface (Drawing 2). First, the soil from the "subsurface soil" stockpile will be removed from the ice pad surrounding the sump and be used to backfill the sump. The backfill will be replaced in layers. Each layer, up to the level of the surrounding active layer, will be thoroughly watered, track-packed, and allowed to freeze, before the next layer of fill is replaced. This process will help ensure the backfill is solid and compacted, which will minimize potential settling. Above the active layer level, the soil backfill will be placed without watering and compacted by track packing. Material from the "surface soil" stockpile will be placed and compacted on the top of the sump cap. Placing this material at the surface is expected to better facilitate revegetation of the sump site. The backfill cover over the sump will provide a minimum of 2 m of overlap on all sides, be 1 m above the surrounding ground level and have a minimum 2% grade, to reduce settling, and prevent runoff or rain entering the sump area.

DRAWING 2 Schematic Diagram of Abandoned Below Ground Sump



The sump will be revegetated with a seed mix agreed to by the Inspector. Revegetation of the site will help to minimize surface erosion and permafrost melt. Five thermistor strings will be placed in and around the sump site to monitor thermal characteristics within the sump, and at undisturbed areas around the sump. The area around the sump will also be monitored for salinity migration using an electromagnetic survey. The survey will measure conductivity of the soil around the sump site to determine if salts in the drilling waste are migrating through the soil from the sump. The sump will be monitored annually for three years after program completion. Should monitoring indicate drilling fluids may be migrating out of the sump, or if the sump integrity appears compromised, a restoration and reclamation plan will be developed in conjunction with the Inspector.