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CONSULTING ENGINEERING & ENVIRONMENTAL SERVICES

Our Project No. CE01283
Your Reference No.

October 22, 1991

Mr. Phil Besler, P.Eng.
Assistant Drilling Manager
Paramount Resources Ltd.
4000 First Canadian Centre
350 - 7th Avenue S.W.
Calgary, Alberta
T2P 3W5

Dear Phil:

Attached are 4 bound copies and 1 unbound copy of our report on the environmental components of Paramount's Cameron Hills Oil Development Plan. We have incorporated Sue Rose's comments on our earlier draft.

Good luck with the submission. We look forward to a continuing relationship with you on this project.

Yours truly,

Hardy BBT Limited

James D. Howell, M.Sc., P.Geol.
Senior Environmental Scientist
Environmental Services Division

JDH:tm

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CAMERON HILLS OIL DEVELOPMENT PLAN

ENVIRONMENTAL COMPONENTS

Prepared for:

Paramount Resources Ltd.

Calgary, Alberta

Prepared by:

Hardy BBT Limited

Calgary, Alberta

October, 1991

CEO1283

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1.0 INTRODUCTION

Paramount Resources Ltd. (Paramount) proposes to evaluate, delineate, develop and produce oil reserves in the Cameron Hills Area, Northwest Territories (Figure 1). The Company plans to take a phased approach to the project, commencing with full-scale production in the southern portion of their holdings (Phase I) followed by production in the area to the north and west (Phase II). Paramount has filed a development plan for their Phase I component with the National Energy Board (Paramount Resources Ltd. 1991b). This document supplements the development plan, discussing the environmental components of Phase I activities during the 1991-1992 drilling season. Following successful completion of activities scheduled for the 1991-1992 drilling season, specific details of subsequent activities will be finalized. The environmental implications of these subsequent activities will be addressed in another submission at that time.

This report is divided into four sections: a project overview, project setting, potential environmental effects, and mitigation of effects.

2.0 PROJECT OVERVIEW

2.1 PREVIOUS EXPLORATION ACTIVITIES IN THE CAMERON HILLS

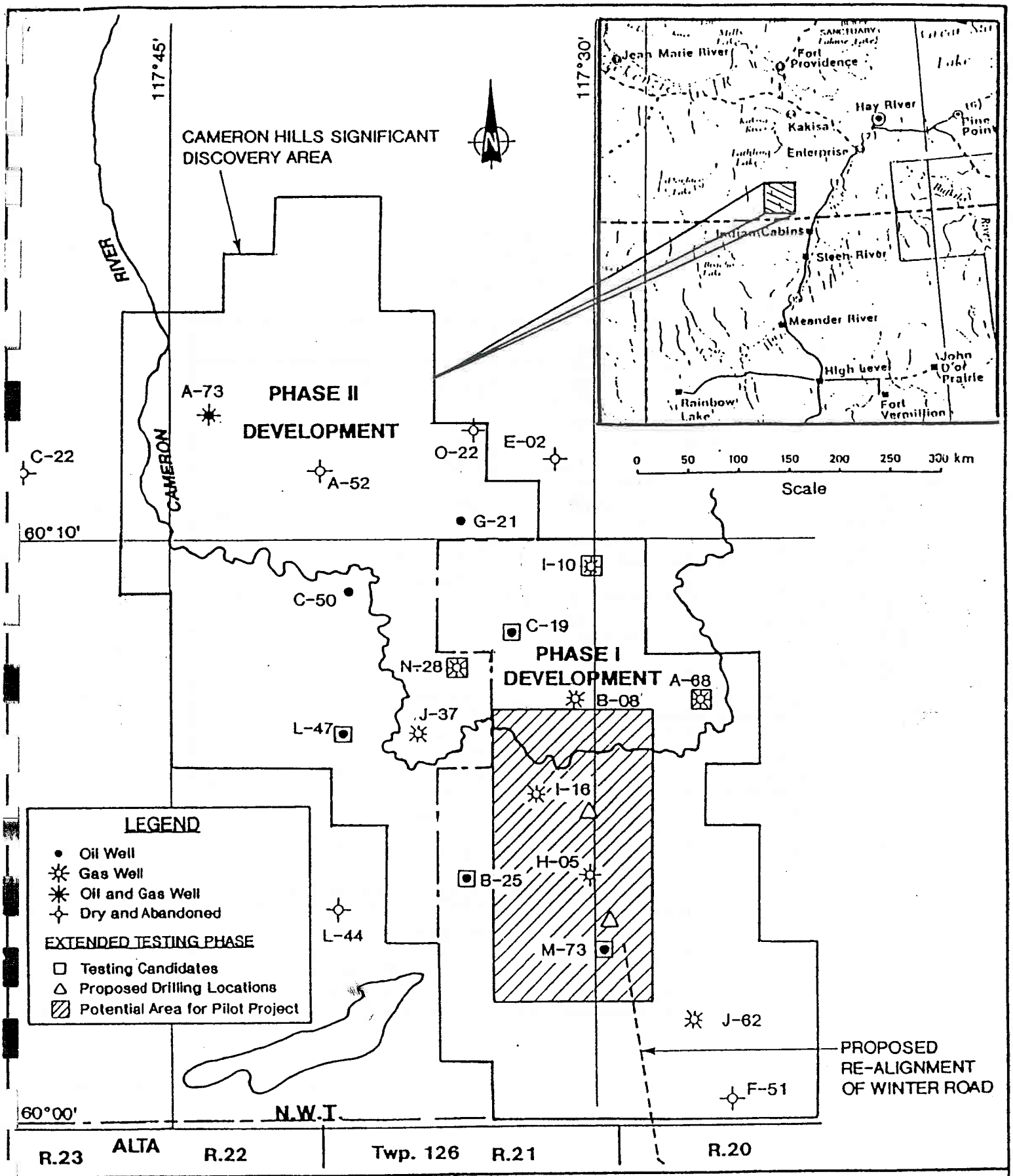
Paramount has been actively exploring for hydrocarbons in the Cameron Hills area since 1978 and by 1991, sixteen wells had been drilled. Previous to Paramount's activity Hudson's Bay Oil and Gas Company Ltd. drilled in the area in the late 1960s. The locations of Paramount's wells are shown in Figure 1 and listed in Table 1. In addition to drilling activities in the Cameron Hills, approximately 650 km of seismic surveys were shot on Paramount's acreage in 1984.

As a result of exploration activities, Paramount plans to pursue commercial oil production from three reservoirs underlying the Cameron Hills: the Sulphur Point, Muskeg Equivalent Dolomite, and Keg River.

Drilling and seismic activities conducted in the Cameron Hills by Paramount have followed the standard petroleum industry practices used in Paramount's exploration activities in southern Canada. All work carried out in the Northwest Territories portion of the Cameron Hills has been accomplished under Land Use Permits from Indian and Northern Affairs Canada.

2.2 CAMERON HILLS ACCESS

Access to Paramount's acreage in the Cameron Hills is by winter access road and by air. The winter access road is approximately 40 km long and runs from a point near Indian Cabins on the 84N NTS map sheet in northern Alberta. The portion of the road in the Northwest Territories is approximately 10 km long. Land Use Permits for winter road construction are obtained each year prior to establishment of the road. Air access to the area is facilitated by a temporary winter airstrip equipped with landing lights and a radio beacon.



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CAMERON HILLS
LOCATION MAP

Figure 1

TABLE 1

Wells Drilled by Paramount Resources and its Partners in the Cameron Hills 1979 - 1991

Well No.	Year	Status
J-62	1980	gaswell
I-16	1985	gaswell
I-10	1985-1986	potential oil and gaswell
C-50	1986	gaswell
B-08	1989	gaswell
L-47	1989	oil well
L-44	1990	potential water disposal well
A-73	1990	gaswell
N-28	1990	gaswell
J-37	1990	gaswell
A-68	1990	potential oil and gaswell
M-73	1991	delineation well (significant oil reserves recognized)
C-19	1991	delineation well
B-25	1991	delineation well
G-21	1991	delineation well
A-52	1991	dry and abandoned

2.3 DESCRIPTION OF WELL SITES AND ASSOCIATED FACILITIES

Well pads are typically 120 m square and include a sump for the disposal of used drilling fluids upslope of the well on dry ground. In some cases, the sump is located offsite because of the lack of a suitable on-site location. When drilling is completed, sumps are generally closed and abandoned using a modified squeeze method where backfill is added to the sump and mixed with the fluids prior to capping.

A temporary work camp is established on the property each year. Solid waste is collected and disposed of at an approved landfill site. Combustible garbage is burnt in an incinerator and any residue is taken to an approved landfill site.

Battery units are surrounded by containment dykes. The dykes are constructed of impermeable clay, found on-site or trucked in from a nearby source. Fluids, on site, are contained in approved vessels which are surrounded by berms or dykes constructed to contain a volume of fluid greater than the total storage capacity of the vessels.

2.4 CONTINGENCY PLANS

Paramount is a member of the Prairie Regional Oil Spill Containment and Recovery Action Corporation (PROSCARAC) and has access to Oil Spill Containment and Recovery (OSCAR) units for use in the event of an oil spill. The closest OSCAR unit to Cameron Hills is in Fairview, Alberta. Paramount will be preparing a contingency plan for activities during the 1991-1992 drilling season.

2.5 DEVELOPMENT PLAN - PHASE I

Phase I of Paramount's Cameron Hills Development consists of three components:

(1) Extended production testing
(2) Pilot project
(3) Full scale commercial production

2.5.1 Extended Production Testing

Extended production testing is planned for the period December, 1991 to April, 1992. Total time for the testing is expected to be 75 to 90 days. The program involves the monitoring of the pressure and production trends of six potential oilwells, the drilling of two new wells, and the evaluation of experimental stimulation techniques at one or more locations within Paramount's acreage. The winter access road used over the past two drilling seasons will be re-aligned to run due north from the Northwest Territories-Alberta border.

Extended production tests are planned for six wells: M-73, L-47, C-19, B-25, A-68, and I-10. Each well will be equipped with a single, portable vapour-tight, well battery. Well effluent will either be treated on site or trucked to a central location for water removal and treatment. Paramount proposes to complete the L-44 well for water disposal into the Sulphur Point or Keg River formation. Solution gas will be separated or stripped off and flared on-site. The clean oil will be trucked to the Rainbow pipeline terminal at Zama, Alberta for pipeline transport to market. Two to three loads of 28 m^3 will be shipped daily. Larger volume (47 m^3) tank trucks may be used, dependent on access and road conditions.

Two new wells are proposed for early 1992. One will be a step-out well to M-73. The other will be in the same vicinity. Stimulation alternatives are planned for the B-25 well and completion and testing are planned for the N-28 well.

With the exception of the drilling of two new wells and the re-alignment of the winter access road, all activities during this component will be on previously disturbed lands. All existing wells have been drilled and completed according to the current Canada Oil and Gas Drilling Regulations. Drilling and completion of the new wells will follow the same regulations. Re-alignment of the winter access road will follow Indian and Northern Affairs Canada (1984) guidelines.

2.5.2 Pilot Project

Upon successful completion of the extended production tests, a pilot project targeting year round production is planned as a prototype for the full scale commercial operation. This pilot project is scheduled for the period April, 1992 to October, 1993. Activities during the pilot project stage will include the construction of an all-weather road, continued production of the existing wells identified during the previous stage, the drilling of three or four new wells, and the installation of the first facilities.

The all-weather road will follow the same alignment as the winter road used in the 1991-1992 drilling season. Road construction is scheduled for the summer of 1992 and is anticipated to extend over a three to four month period.

New wells will include either four conventional wells or two conventional plus one horizontal well. These will likely be in the vicinity of the M-73 well. If a horizontal well is deemed worthwhile, a local 3-D seismic program will likely be shot to identify optimal well site location and serve as a guide

during drilling. Production from a minimum of six wells will continue until December, 1993.

Installation of the pilot project's central facilities will be concurrent with the drilling program. These will include an enlarged work camp, an interfield gathering system, and surface facilities.

The proposed production system will be a conventional oil operation similar to those currently found in Alberta.

2.5.3 Full Scale Commercial Production

If the pilot project proves successful and the economics appear favourable, the project will be expanded to full-scale production in January, 1994. This stage will involve additional drilling, the construction of associated central facilities, and expanded production and transportation facilities.

Commencing in January, 1994, four wells will be drilled to extend the limits of proven reserves and maintain or increase productivity. By April, 1994, productivity is targeted at 1500 barrels per day. Thereafter, a constant level of annual drilling will maintain production levels at 1500 to 3000 barrels per day. Additional seismic surveys may be required to further define the reservoir and pinpoint new drilling sites. Drilling and seismic activities will be scheduled for the winter months, in most cases, unless located on suitable terrain for year round access.

Facility expansion will occur after the 1994 winter drilling season and will include the expansion of the interfield pipeline system and the construction of a system for water and/or gas reinjection. If productivity exceeds current expectations, transportation alternatives to trucking the oil out will be investigated. These may include pipeline or rail options.

3.0 PROJECT SETTING

The Cameron Hills Upland extends from northwestern Alberta into southwestern Northwest Territories. The hills are located in the taiga plains ecodistrict (Wilken 1986) which covers southwestern Northwest Territories extending into northeastern British Columbia and northern Alberta. This area is characterized by level to gently rolling plains underlain by discontinuous permafrost. Much of the area has poor drainage. Vegetation cover is typically mixed wood, with dominant species being spruce and pine.

The following description of the environmental components of Paramount's lease area is based on a literature review and discussion with environmental personnel in the territorial government.

3.1 CLIMATE AND AIR QUALITY

The climate of the area is typical continental with moderately warm summers and cold winters. The mean temperature is 16°C in July and -25°C in January. Mean annual precipitation is 433 mm. The frost free period is between 59 and 72 days with local variation based on topography and elevation. Table 2 and Figure 2 summarize climatic data from High Level Alberta, the closest climate station to the Cameron Hills.

Air quality in the Cameron Hills is high because of its remoteness and lack of industrial activity.

TABLE 2

Climate Normals for High Level Alberta

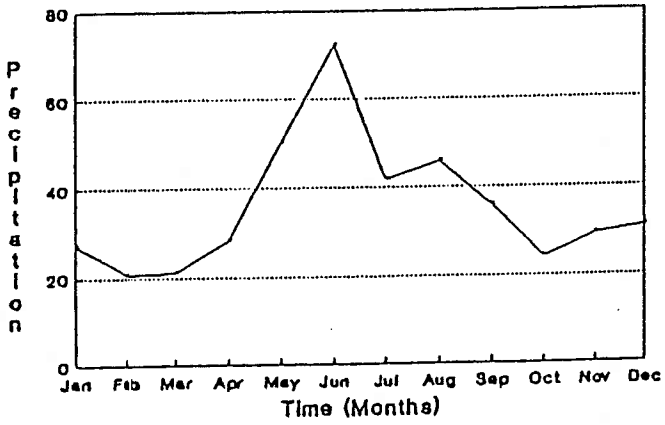
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Precipitation													
Mean Rainfall	0.8	0.1	0.1	13.6	46.1	77.4	41.7	45.8	34.4	8.7	0.2	0.0	268.9
Mean Snowfall	26.6	20.6	21.0	14.5	4.3	0.0	0.0	0.0	1.3	15.3	29.1	30.0	163.6
Mean Total	27.3	20.7	21.1	28.1	50.4	72.4	41.7	45.8	35.7	24.0	29.3	30.9	432.5
1 No. Days w/meas rain	0	0	0	3	8	9	7	7	6	2	0	0	42
No. Days w/meas snow	14	9	9	5	3	0	0	0	1	4	10	14	69
No. Days w/meas precip	14	9	9	7	8	11	14	11	10	7	11	14	125
Greatest rain in 24 hrs	2.0	0.8	T	20.3	26.4	36.3	47.0	68.3	35.8	1.9	2.4	0.8	68.3
Greatest snow in 24 hrs	17.8	11.4	15.7	21.6	8.7	T	0.0	T	9.1	13.7	18.8	19.5	21.6
Greatest precip in 24 hrs	14.7	10.4	13.2	20.3	33.8	36.3	47.0	68.3	35.8	15.0	26.9	19.5	68.3
Temperature (°C)													
Mean Daily Max	-18.5	-11.5	-4.3	7.7	16.9	20.9	22.8	21.1	14.7	6.8	-6.4	-15.1	4.6
Mean Daily Min	-30.6	-25.4	-19.3	-6.2	1.6	6.3	8.7	6.8	1.4	-4.2	-16.3	-25.4	-8.6
Mean Daily	-24.6	-18.5	-11.8	0.8	9.3	13.6	15.7	14.0	8.1	1.3	-11.4	-20.3	-2.0
Extreme Max	8.3	11.1	12.8	30.2	33.9	30.0	34.4	32.2	27.2	22.2	15.0	8.1	34.4
Extreme Min	-50.6	-46.1	-45	-32.2	-10.4	-1.4	0.6	-2.2	-13.9	-20.9	-38.9	-47.2	-50.6
Wind													
Mean Wind Speed (km/hr)	5.9	6.3	8.0	9.4	9.7	8.0	6.9	6.8	7.2	7.6	6.0	5.0	7.2
and prevailing direction	N	N	N	N	N	N	N	N	N	SE	N	N	N
Mean Vector Speed (km/hr)	5.5	3.9	4.4	1.3	0.7	2.0	1.4	1.7	0.8	0.5	2.8	3.1	2.3
and direction													

1. measurable rain > 0.2 mm
   measurable snow > 0.2 cm
   measurable precipitation > 0.2 mm water equivalent

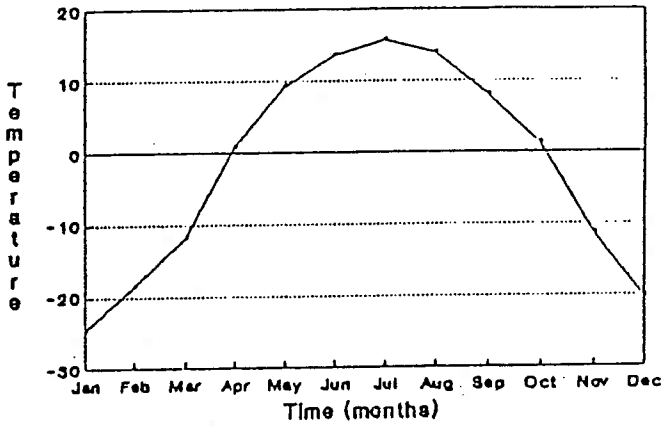
   T = trace

rainfall in mm
snowfall in cm
total precip in mm water equivalent

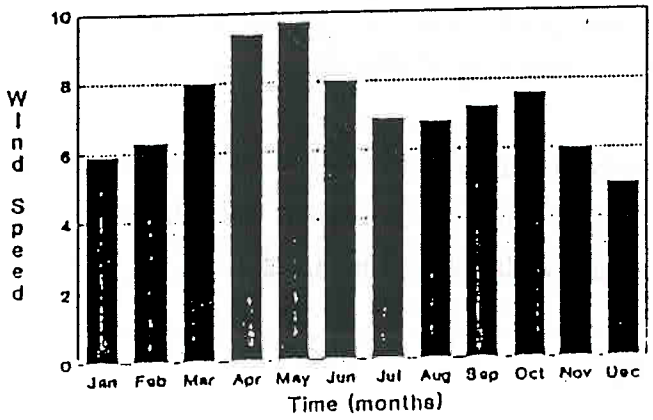
Figure 2. Climatic Data (a) Precipitation, b) Temperature, c) Wind) for High Level Station A Alberta. Note High Level is the closest station to Cameron Hills (G. Vermette Env. Canada, pers. comm.) and may not reflect the conditions existing in the Cameron Hills fully.



a) Mean Total Precipitation (mm)



b) Temperature (°C)



c) Mean Wind Speed (km/hr)

3.2 GEOLOGY

3.2.1 Physiography

The Cameron Hills Upland is one of several flat-topped Cretaceous highlands which collectively comprise the Alberta Plateau. The Cameron Hills are bordered by the Northern Alberta Lowlands along their southern and eastern flanks and the Great Slave Plain along the northern flank. The plateau is elongate and irregular in outline with its long axis trending nearly east-west. Regionally, the Cameron Hills are characterized by an undulating to depressional surface expression; however, there are areas of rolling to gently rolling terrain particularly along the plateau flanks.

Generally, relief is minimal along the plateau top, but it ranges from approximately 550 m to 750 m within the immediate study area. The Cameron River is the largest physical feature within the study area. The river meanders across the mid-point of the study area within a comparatively wide, subdued floodplain. The river has incised a moderately deep channel along the western boundary of the study area.

The terrain north of the river is rolling or undulating with comparatively steep slopes. The terrain south of the river is generally more subdued, comprised of extensive lakes and lowlands.

3.2.2 Bedrock Geology

The geology of the Cameron Hills is described by Douglas (1972). Regionally, the Pleistocene drift and Recent sediments unconformably overlie undifferentiated gypsiferous shales of the Sully Formation; sandstones and shales of the Sikanni Formation; and shales, sandstones and siltstones of the Buckinghorse Formation which collectively comprise the Fort St. John Group of Late Cretaceous age. The Cretaceous section unconformably overlies, in

turn, a Paleozoic carbonate succession consisting predominantly of limestone and to a lesser degree dolomite. The section is interbedded with siltstones and shales throughout.

Regional strike of the Paleozoic succession is NNW-SSE; and regional dip is southwest at comparatively shallow angle. The Fort St. John Group's attitude is likely similar and attains a collective thickness of approximately 60 m; the Paleozoic sequence attains a collective thickness of approximately 1000 m within the immediate study area.

The Middle Devonian succession and specifically the Sulphur Point Formation is the primary target of exploration activity. More detailed information on the bedrock geology appears in Paramount Resources Ltd. (1991a).

3.2.3 Surficial Geology

Surface materials consist of bedrock, glacial drift, and postglacial sediment. The rock cropping out in the Cameron Hills area consist exclusively of the undifferentiated shales, sandstones, and siltstones comprising the Fort St. John Group.

Glacial deposits consist mostly of moraine (till) deposited during the Wisconsin advance. Two distinct surface forms comprising till, or till and bedrock have been delineated within the study area:

(1) Ground moraine or ablation moraine that blankets or veneers the underlying bedrock surface

(2) Streamlined or fluted till and bedrock

Two orientations of fluting have been described in the study area - a west-southwest and southwest orientation. Whether this is indicative of successive glacial advances or a single advance is not clear from the available data.

Meltwater channel sands and gravels are scattered throughout the uplands.

Postglacial deposits include stream and river alluvial material commonly in the form of fans particularly along the plateau margins or as point-bars in the streams and the Cameron River.

The abrupt plateau margins are often characterized by colluvial material which is noted along its eastern and northern edges (Morris 1970); likely a result of freeze and thaw processes operating within the uplands.

Organic-rich and clayey lacustrine sediments characterize the extensive, often water-covered, low lying terrain within the Cameron Hills.

3.3 SOILS

The soils of the Cameron Hills uplands are largely comprised of organic material and are mapped by Clayton et al. (1977) as Cryic Fibrisols. The soils are characterized by a relatively undecomposed, fibric organic material with ice sporadically scattered in parts of the soil profile. Although poorly developed, with weathering to approximately 50 cm or less, other soils consist mostly of Luvisols which typically occupy well or rapidly drained sites and gleysolic soils occupying low-lying, poorly drained terrain particularly south of the Cameron River. Parent materials of the mineral soil are generally clayey or loamy, weakly calcareous tills.

3.4 WATER RESOURCES

The Cameron River is the largest river and major physical feature within the Significant Discovery Area. South of the Cameron River, relief is minimal and numerous irregularly shaped lakes, a result of ponding meltwater and accumulation of precipitation within the low lying terrain, are common. The lakes are often shallow and are typically interconnected by streams to form extensive wetlands.

Conversely, drainage north of the river along the flanks of the upland is better defined, characterized by a parallel pattern. Ponds and lakes are notably absent or few in number.

The drainage systems fall within the extensive Mackenzie Drainage Basin which ultimately empties into the Arctic Ocean.

3.5 VEGETATION

Forest cover of the Cameron Hills is mixed wood with an abundance of white spruce (Picea Clauca (Moinch) Voss) and lesser amounts of trembling aspen (Populus tremuloides Michx). Black spruce (Picea mariana (Mill) B.S.P.) is dominant on the lowlands and plateau uplands. Jack pine (Pinus banksiana Lamb.) and lodgepole pine (Pinus contorta Dougl. var. latifolia Engelm.) are found on dried soils.

In the pine communities, understorey species consist of soapberry (Shepherdia canadensis), prickly rose (Rosa acicularis), and bearberry (Arctostaphylos uva-ursi). In black spruce dominated communities the understory is primarily Labrador tea (Ledum groenlandicum), baked appleberry (Rubus chamaemorus), and lichens. Bog, or lowland areas, are dominated by the shrubs leatherleaf (Chamaedphne calyculata) and bog rosemary (Andromeda polifolia)(Reid 1977).

Wetlands in the region are generally infertile ponds with little or no emergent vegetation around the edge. However, where vegetation is present, sedge (Carex spp.) and some bulrush (Scirpus spp.) dominate. Aquatic species are low in variety and abundance, although the CLI maps list yellow water lily (Nuphar variegatum), arrowhead (Sagittaria spp.), and pondweed (Potamogeton spp.) as occurring in this region.

Soils developed in the Cameron Hills are rated as Class 5, 6 and 7 for forestry capability. The limitations to growth are primarily drainage.

3.6 WILDLIFE

Information specific to wildlife in Paramount's lease in the Cameron Hills is lacking. The following description is based on regional information.

Fairbarns (1983) observed nine mammal species in the Alberta portion of the Cameron Hills: moose, black bear, wolf, coyote, snowshoe hare, beaver, red squirrel, chipmunk, and a mustellid (probably pine marten). Wood frogs and chorus frogs were also observed, and 106 bird species have been recorded as occurring or thought to occur in the Cameron Hills.

Wildlife sightings by wellsite personnel working in the Cameron Hills over the past twelve years have been few.

This region has moderate to very low capability for the production of ungulates. For moose (Alces alces) and caribou (Rangifer tarandus) the land is rated as Class 5 and 6 (Canada Land Inventory). Class 6 lands are limited mainly by excessive soil moisture, but are also adversely affected by topography, poor interspersion of landforms, lack of soil fertility, and lack of essential trace elements. Class 5 lands are limited by excessive soil moisture and poor interspersion of landforms.

Prime habitat for ungulates is found along river valleys and around lakes. The best habitat in this region is located along the Hay River, at Caribou Lake, and in the Caribou Mountains. To the north of the Cameron Hills moose populations increase, and to the west caribou populations increase (T. Chown, Renewable Resource Officer, Department of Renewable Resources, Government of the Northwest Territories, pers. comm.).

Waterfowl present in the region are dominated by the following duck species: bufflehead (Bucephala albeola), common goldeye (Bucephala clangula), lesser scaup (Aythya affinis), canvasback (Aythya valisineria), and mallard (Anas platyrhynchos).

Although regionally this area is characterized by many small lakes and wetlands, waterfowl productivity is limited in the Cameron Hills. Limitations are related to poor development of edge cover, and low fertility of water and soil. Along the escarpment of the Cameron Hills, the terrain is too steep to allow optimum development of ponds.

3.7 FISHERIES

As with wildlife, information on fisheries in the Cameron Hills is lacking. The following is based on regional information.

The main fish species found in this region include Arctic grayling (Thymallus arcticu), walleye (Stizostedion vitreum vitreum), and northern pike (Esox lucius).

The Cameron Hills area supports primarily warm water sport fish species and has moderate to very low sport fishery potential. Most of the area is considered to be Class 4 which is characterized by numerous and severe limitations to sport fish production. Limitations are water depth and a

shortage of pool habitat (frequency and depth). In the Northwest Territories portion of the Cameron Hills, fishing pressure is very low (T. Chown, Renewable Resource Officer, Department of Renewable Resources, Government of the Northwest Territories, pers. comm.).

3.8 RECREATION AND LAND USE

Access into the Cameron Hills is primarily via winter roads. Use for trapping, hunting, or recreation is low throughout the year.

Based on the CLI maps for the region, the Cameron Hills capability for recreation is generally low. However, recreational use is made of the river valleys and uplands. Activities such as canoeing, camping, viewing, photographing, snowshoeing, snowmobiling, and angling can all be accommodated in this area.

Current land uses in this region include hydrocarbon exploration, trapping, hunting, and timber operations.

There are a few trappers with registered traplines in the Alberta portion of the Cameron Hills where the main species taken is marten (T. Chown, Renewable Resource Officer, Department of Renewable Resources, Government of the Northwest Territories, pers. comm.). There are no records of traplines in the Significant Study Area.

Hydrocarbon exploration is the only present land use in Paramount's lease area. The area is remote, with the nearest settlements being Kakisa (80 km), Hay River (100 km) and Fort Providence (120 km).

3.9 HERITAGE RESOURCES

No heritage resource /archaeological sites have been recorded within the Cameron Hills, however, mapping within the area is minimal (C. Arnold, Head, Prince of Wales Northern Heritage Centre, pers. comm.).

4.0 IMPACTS AND MITIGATIVE MEASURES

Impacts and mitigative measures for the extended production testing component of Phase 1 of the Cameron Hills Development are discussed below in qualitative terms. Impacts are less precisely known for the pilot project and full scale commercial production, because the details of each component will depend on the results of the previous one. Accordingly, impacts associated with these components are not presented at this time.

The identification of impacts is based on superimposing the project components on the existing environment. The description of the existing environment is based on a literature review and discussions with Paramount personnel and government environmental personnel.

4.1 CLIMATE AND AIR QUALITY

Machinery used during extended production testings at the wells will produce noise and small amounts of unburned hydrocarbons, nitrogen oxides, sulphur dioxide, carbon monoxide, water vapour and suspended particulates. Standard mufflers on vehicles will reduce noise. Emissions will last only during the 75 to 90 day testing period and will have negligible effect on the air quality of the area.

Flaring of produced gases will occur over the 75 to 90 day period as each well is tested. In the context of the Cameron Hills, the effect on air quality will be negligible because of the small areal extent affected and short duration of flaring.

4.2 GEOLOGY

Most of the activities during the extended production testing will occur at existing wells on lands that have already been disturbed. The drilling of the two new wells will require surface clearing and construction of well pads using material from an existing borrow pit near wellsite N-28. The extraction of gravel for the pads will have a localized, moderate impact on the surficial geology.

4.3 SOILS

There is potential for soil contamination from accidental spills of small volumes of hydrocarbons or produced water. These will be mitigated by implementation of the spill contingency plan.

4.4 WATER RESOURCES

The potential for affecting water resources in the Phase I development area is associated with stream siltation due to erosion, drainage disruption due to the construction of the two new well pads, and water contamination from accidental spills of small volumes of hydrocarbons.

Stream siltation and drainage disruption will be minimized by implementing drainage and erosion control measures as has been done during previous drilling seasons. Impacts of accidental spills will be mitigated by the presence of dykes and berms around areas with fluids on site, and through implementation of the spill contingency plan.

4.5 VEGETATION

Forest vegetation will be removed from approximately 3 ha for the two new wellsites. This will result in a minimal impact on the forest in the area because of the small area affected and the low capability of the soils to support commercial forestry.

4.6 WILDLIFE

The drilling of two new wells will remove approximately 3 ha of wildlife habitat and will cause some modification and restriction of wildlife movement. Although specific information on the wildlife in the Phase I area is not available, there have been few wildlife sightings by wellsite personnel working in the area over the past twelve years. The small area that will be disturbed by the production testing activities and the apparent low wildlife population in the area suggest that the impact of habitat loss will be negligible.

The impact of human activity on wildlife present in the area is also expected to be negligible. Wellsite personnel are prohibited from hunting or trapping in the area and from feeding or harassing the wildlife.

4.7 FISHERIES

Interaction between the project and fisheries in the Cameron Hills is expected to be minimal. Activities will take place during freeze-up. Drainage and erosion control measures will mitigate any impacts due to siltation resulting from construction of the new drilling pads or construction of the winter access road.

Fisheries habitat will not be disturbed during field activities and the wellsite crews will adhere to local fishing regulations in the area. Expected impact of the project on fisheries is negligible.

4.8 RECREATION AND LAND USE

The project is not expected to interact with recreational activity, hunting, or trapping in the Cameron Hills.

4.9 HERITAGE RESOURCES

Interaction between the project and heritage resources is not expected at the development drilling stage.

5.0 RESIDUAL IMPACT

Residual impacts expected from the extended production testing stage of Phase I of Paramount's development plan in the Cameron Hills consist of the presence of two additional well pads. These facilities will be located in an area where similar facilities have been present since the 1960s. The impact of these facilities on the environment will be minimal to negligible.

6.0 REFERENCES

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