PARAMOUNT RESOURCES LTD

NATIONAL ENERGY BOARD
Exploration and Production
JAN 27 2007

APPLICATION FOR DRILLING APPROVAL FOR

PARA ET AL CAMERON A-03 60^0 10', 117^0 30'

Prepared By: Dave Block

Dated: January 24, 2007

National Energy Board | Office national de l'énergie

Exploratory	☐			Delineation	☐
Development	☒	Other	(N/A)	Service	☐

APPROVAL TO DRILL A WELL

This application is submitted under Section 82.(1) of the *Canada Oil and Gas Drilling Regulations* (SOR/79-82). When approved under Section 83 of the Regulations it is the requisite approval for the commencement of drilling operations.

Well Name:	Para Et Al Cameron A-03				
Operator:	Paramount Resources Ltd.				
Operating License No.:	1159			Drilling Program No.:	
Contractor:	Precision Drilling Ltd.			Interest Identifier:	Production Licence 17
Drilling Rig or Unit:	220			Estimated Well Cost:	$1500000.00
Land Use Permit No.:	**MV2006A0033**			Water Licence No.:	MV2006L1-0010
Location:	Unit: A	Section: 03		Grid:	60-10-117-30
Coordinates: (NAD 27)	Surface:	Lat.: 60°2'12.3"		Long.:	117°30'0.9"
	Bottom Hole:	Lat.: 60°2'12.3"		Long.:	117°30'0.9"
Region:	Nwt			Field / Pool:	Cameron Hills
Elevation KB/RT:	773.8m			GL / Seafloor:	669.9m
Approximate Spud Date:	12/Feb/2007			Est. Days on Location:	14
Anticipated Total Depth:	1589.0m			Target Formation:	Keg River

EVALUATION PROGRAM

	Interval (m KB)	Comments
Ten-metre samples:	..... -	.....
Five-metre samples:	1300.0 - 1589.0	2 sets of washed samples in 11 ml vials 1 set of 500 gram size, dried, in moisture proof bags
Canned sample intervals:	..... -	.....
Conventional cores at:	..... -	.....
Logs and Tests:	425.0 - 1589.0	STI-SP-GR, SPED-CNT-GR-DAC, BCS-GR-SAC, MICROLOG

CASING AND CEMENTING PROGRAM

O.D. (mm)	Weight (kg/m)	Grade	Setting Depth (m KB)	Cementing (m³)
406.0	70.2	A-53	12.2	0.5
219.0	35.7	J-55	425.0	24.5
139.0	23.0	J-55	1589.0	30.8
.....	.....	.....	.....	.....

B.O.P. Equipment: Sour service 279 mm X 21 MPa with double rams and annular

Other Information: .....

Signed: _____ Title: Drilling Consultant

Responsible Officer

Name: Dave Block Operator: Paramount Resources Ltd.

Date: _____ Phone: (403)206-3834

NEB USE ONLY

An approved copy of this notice is to be posted at each drillsite. This operation is authorized under Section 5.(1)(b) of the *Canada Oil and Gas Operations Act* (O-7) and is subject to the terms and conditions attached to this authorization.

Date: _____ Signed: _____

File: - - -

Chief Conservation Officer

WID: _____

UWI: _____

Canada

INTRODUCTION

a. Geology and Topography:

Paramount Resources Ltd. (Paramount) plans to drill a development gas well in the Cameron Hills N.W.T. area during January, 2007. The planned well is Para et al Cameron A-03 which will be a vertical well drilled to be used as a water injection well into the Keg River formation that has been identified by geological mapping. (see the copy of the geological cross sections of the Keg River in the map pocket at the end of this binder). This well is a twin to the Para et al Cameron H-03 well that was drilled in March 2002 in anticipation of injecting produced water into the Keg River formation. The Keg River was completed and tested for water injection, yielding adequate injection results. The Sulphur Point was also completed and tested, resulting in an oil well that continues to produce at economic rates.

b. Well Details:

Well Name: **Para et al Cameron A-03**
Location: Unit A Section 03 Grid Area 60^0 10" N, 117^0 30" W
Ground Level (mASL): 769.99
Estimated KB Elevation (mASL): 773.8
Estimated Total Depth: 1589 mKB
Coordinates:

Surface :	Latitude:	60^0 02' 12.379"
	Longitude:	117^0 30' 00.998"

c. Time and Duration of Drilling Program:

The drilling of this well is anticipated to occur between the period from approximately February 12, 2007 to February 26 2007 utilizing Precision rig #220.

d. Summary of Drilling Operations:

Operations will include drilling a 610 mm conductor hole to approximately 12 meters and setting a 406 mm conductor pipe. The 311 mm surface hole will be drilled to 425 mKB and 219.1 mm surface casing will be run. The 200 mm main hole will be drilled to a total depth of 1589 mKB. 139.7 mm production casing will be run. This well will be drilled vertically with a gel slurry system on surface hole, clear water to approximately 1200 m, and a gel chemical system to total depth.

e. Directions to Well Site:

See the location map in 11 x 17 format at the end of this section and in large format in the map pocket at the end of this binder. As well a copy of the survey plan is enclosed in the map pocket at the end of this binder.

f. Interest Owners:

The working interest owners in the project are:

Operator	Working Interest
Paramount Resources Ltd. 4000, 350 - 7th Avenue S.W. Calgary, Alberta T2P 3W5	88.0 %
Husky Oil Ltd. 707 - 8th Avenue S.W. Calgary, Alberta T2P 1H5	12.0 %

g. Daily Reports:

Daily reports are to be faxed or emailed to the Calgary office by 8:00 AM each day. Reports to include details of all operations and equipment used. Details about mud additives and properties, drill string and bit assemblies, BOP equipment, etc should all be reported. Include conductor and diverter details on first report. Summarize leak off test results for each test conducted. Provide details of any lost circulation noted including depths and volumes. Note any and all unusual events.

h. Well Costs:

It is estimated that the cost to drill and case this well will be approximately 1,500,000. An AFE estimate will be supplied to wellsite supervisor prior to spud date.

60°20', 117°30'

60°20', 117°15'

60°10', 117°30'

60°10', 117°15'

A-03

SCALE 1:40 000

METRES

FEET

Prepared by:
UNIVERSAL GEOSYSTEMS
A Division of Universal Surveys Inc.

HEAD OFFICE
10171 - 123 Avenue
Edmonton, AB T5V 1J7

CALGARY OFFICE
Suite1010, 910 – 7 Avenue SW
Calgary, AB T2P 3N8

DISCLAIMER:
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LEGEND:

- TOWER
- SEISMIC
- AIRSTRIP - (FOREIGN)
- ACCESS ROAD - (FOREIGN)
- AIRSTRIP
- ACCESS ROAD
- PIPELINE R/W
- BRIDGE
- SIGNIFICANT DISCOVERY LICENSE
- CONTOUR
- LEASE - (TIED-IN)
- LEASE - (NOT TIED-IN)
- LEASE - (FOREIGN)
- LEASE - RECLAIMED
- BORROW PIT
- CAMP SITE
- SUMP / PIT
- BATTERY SITE
- OTHER CLEARING

Paramount resources ltd.

REVISED: 22-AUG-05
MODEL: AS-BUILT JULY 2005.
Date: 13-DEC-04
Job No.: 04-1150G
Filename: CH_BASE_NAD83.DGN

Compiled Map Showing
AS-BUILT JULY 2005
Oil & Gas Activity

CAMERON HILLS AREA
Northwest Territories
NAD83 UTM Projection

2. LIST OF KEY CONTACTS

CONTACTS:

a) Paramount Drilling Engineer:

Andre Poitras (403)206-3895 (office)
(403) 863-9796 (cell)
(403) 266-6032 (fax)
(403) 217-6703 (home)

Dave Block (403) 206-3834 (office)
(403) 830-0393 (cell)
(403) 266-6032 (fax)
(403) 253-8976 (home)

b) Paramount Geologist (Daily Geological Reports):

Llew Williams(403) 206-3837 (office)
(403) 202-7400 (home)
(403) 870-8949 (cell)
(403) 266-6032 (office fax)

c) Paramount Office in Cameron Hills:

Area Operations Manager:	Ron Tilley	(403) 290-3640 (Calgary office)
Production Operator:	Doug Bardick	(780) 841-9437 (Cameron Hills office)
		(780) 622-8477 (cell)
Production Operator:	Darrel Field	(780) 841-9437 (Cameron Hills office)
Plant Operator:	Jeff Wanke	(780) 841-9437 (Cameron Hills office)

d) National Energy Board (NEB):

Chris Knoechel Calgary (403) 299-3866 - Residence (403) 241-0047
Rick Turner Calgary (403) 299-3868 - Residence (403) 257-0840 - Cell (403) 540-3754
(Contact either Chris Knoechel or Rick Turner 48 hours prior to the start of operations)
Bharat Dixit Calgary (403) 299-2792 - Residence (403) 239-1093 - Cell (403) 617-3887
John Korec Calgary (403) 292-6614 - Residence (403) 275-6256

NEB EMERGENCIES ONLY: (403) 807-9473

e) Indian and Northern Affairs Canada(INAC):

Norm McCowan Hay River Office: (867) 874-6994, cell: (867) 920-1395

f) **EMERGENCY PHONE NUMBERS**

Refer to the Telephone Contact List Appendix 2 of the Paramount Cameron Hills ERP for additional numbers

RCMP: (867) 874-1111 Hay River, N.W.T.

HOSPITAL:	**(867) 874-7100**	**Hay River, N.W.T.**
	(780) 926-3791	**High Level, Alberta.**
AMBULANCE:	**(867) 874-9333**	**Hay River, N.W.T.**
	(780) 926-2545	**High Level, Alberta**

AIR AMBULANCE (24 HR): 1-800-661-3822 Northern Dispatch

Call Northern Dispatch and they will dispatch the appropriate Air Ambulance.

Airstrip Coordinates: 60^0 08' N, 117^0 34' W (*AIR STRIP NOT ALWAYS IN SERVICE --- CHECK STATUS PRIOR TO INITIATION OF OPERATIONS*)

Airstrip Length: 1100 m (approximate)

HELICOPTER: Denendeh Helicopters Yellowknife (867) 669-05803399
Delta Helicopters High Level (780) 926-3848
Canadian Helicopters High Level (780) 926-2686
Highland Helicopters High Level (780) 926-2284

FIRE DEPARTMENT: (867) 874-2222 Hay River, N.W.T.
(780) 926-2033 High Level, Alberta

NWT FOREST FIRE LINE (24 hr): 1-800-661-0800

ALBERTA FOREST FIRE REPORTING (24 hr): (780) 427-fire (3473)

POISON CENTER: 1-800-332-1414

NAV CANADA (24 hr): 1-866-992-7433 (Flight Service Center)

Contact NAV Canada immediately in the event of a plane crash.

NWT DISASTER SERVICES: (867) 873-7554 Yellowknife, N.W.T.

AREA 'A' SPILL CO-OP: Rainbow (780) 956-8010
Zama: (780) 926-1056

NWT SPILL LINE (24 hr): (867) 874-8130

NEB ENVIRONMENTAL ASSESSMENT OFFICER: John Korec (403) 292-6614

f) Spill Reporting:

Report all spills in excess of 100 liters to 24 hour spill line at (867) 920-8130.

Note: A completed spill report form must be filled out and submitted for all spills, regardless of the volume.

g) Major Spills:

Area 'A' Spill Co-op: Rainbow (78) 956-8010
Zama: (780) 926-1056

FIELD SERVICES

SERVICE	COMPANY	CONTACT	LOCATION	PHONE
Drilling Rig	Precision	Brian Weighill	Calgary	(403) 716-4617
Wellsite Shack	TBD			
Shock Sub, Torque Sub	Torax Oil Tools	Michael Solorenko	Sherwood Park	(780) 440-0134
PVT, Flosho	Pason Systems			1-877-255-3158
Drlg. Fluids	Bronco Mud Inc.	Cal King	Calgary	(403) 860-2433
Logging	Computalog	T. Jamison	Edmonton 1-800-661-5656	(780) 464-6107
DST	Baker Oil Tools	Art Pruden	Calgary	(403) 537-9421
Core & Fluid Analysis	AGAT		Calgary Edmonton	(403) 291-2428 (780) 465-0265
Casing	NUSCO IPSCO	Bill Rathgeber	Calgary Calgary	(430) 266-8528 (403) 279-8000
Casing Trucking	Pe-Ben		Grand Prairie	
Casing Acc.	Nusco	Bill Rathgeber	Calgary	(403) 266-8528
Wellhead	ABB Vetco Gray	Al Stratulate	Calgary Edmonton	(403) 264-4146 (780) 450-1031
Power Tongs	Obtain 3 bids from field			
Cementing	Sanjel BJ	Don Jones Eric Tudor	Calgary High Level Calgary High Level	(403) 269-1420 (780) 926-8803 (403) 531-2524 (780) 926-3823
Welding	D&L Welding	Les Simpson	Onoway	(780) 910-5472
Fuel Supply	Bassett Petroleum	Steve Bassett	Hay River	(867) 874-2562
Conductor, Mousehole, & Rathole	Cancor Rathole	Daryll Hosker	Ft St John	(250) 787-5555
Camp & Catering	Sundance Rentals	Jeff Mangion	Edmonton	(780) 469-0143
Water Haulers & Vacuum Trucks	D&G		High Level	(780) 926-1296
Rental Equipment	Total Rentals		High Level	(780) 841-7220
Drill Bits	Pendemak Ind.	Rod MacKenzie	Edmonton	(780) 435-5706
Centrifuges	J&A Solids Control	Joe Lukey	Calgary	(403) 512-0118
Medical & Safety	Raims	Doug Cardinal	Calgary	(403) 807-2343
Environmental Services	Alpine Environmental	Brett Pequin	Grande Prairie	(780) 538-0050

DRILLING PROGRAM
FOR

PARA ET AL CAMERON A-03 60^0 10', 117^0 30'

SUMMARY:

NOTE: Ensure that adequate amounts mud additives and LCM's are stored in a mud van on location at all times to deal with lost circulation and other hole problems. As well, adequate amounts of fuel must be stored on location in tanks with secondary containment.

Well Name: Paramount et al Cameron A-03
Location: Surface Coordinates: Latitude: 60^0 02' 12.379"
Longitude: 117^0 30' 00.998"

UWI: 300A036010117300

Classification: Development well.
Primary Target: Keg River – water disposal.
Secondary Targets: None.

Est KB Elevation: 773.80 m
Ground Elevation:669.99 m ASL

Est. Surface Casing Depth: 425 m
Est. Total Depth: 1589 mKB in the Keg River

Coring: None.
DST's: None.

Conductor Hole:

-610mm conductor hole drilled to approximately 12.2 meters.
-406 mm conductor pipe with 7 mm wall thickness set at 12.2 meters and cemented with approximately 40 sacks of Portland Normal cement.
-Nipple up and function test a 346 mm (13 5/8") diverter system.
-Ensure all mud lines, standpipe, kelly hose, swivel, kelly and kelly cocks are pressure tested to the working pressure of the rig pumps prior to drilling out.

Surface Hole:

-311 mm hole to 425 mKB
-Have a 342.9 mm bit on location in case gravel and bolder problems require that the hole be reamed out for ease of running casing.
-Gel slurry mud system.
-Gravel and boulders as well as mud rings are common.
-Lost circulation is a potential problem, have adequate amounts of LCM on site.

Surface Casing:

219.1 mm, 35.71 kg/m, J-55, ST&C casing will be landed and cemented with class 'G' cement at 425 mKB.

Wellhead:

229 mm Slip Weld x 219 mm 21 MPa w/52.4 mm EFSO's
2 - 52.4 mm 20.7 MPa (2 - 1/16" 3000#) valves
2 - 52.4 mm 20.7 MPa companion flanges

BOP & Casing Testing:

Surface casing is to be pressure tested to 14000 kPa for 15 minutes prior to dill out.

Immediately after installing BOP's, visually inspect the installation. Pressure test the hydril to 1500 kPa and 10500 kPa. Pressure test the rams, HCR, manifold, stabbing valve, kelly cock, and kill line to 1500 and 10,500 kPa. Test pressures must be held for 5 minutes with no decline or 15 minutes with a maximum decline of 75 kPa for the low test and 525 kPa for the high test.

Repeat BOP test any time a pressure seal is disconnected and at least once every two weeks.

Leak Off Testing:

Perform leak off test after drill out of surface casing shoe as follows. Displace surface casing to clear water prior to drill out. Drill out and drill 10 m using 2 – 3000 daN and 40 rpm. Conduct a formation leak off test to a maximum pressure of 15000 kPa or until leak off is detected. Contact Calgary with the results prior to proceeding

Main Hole:

-**200 mm upper main hole** to 1200 mKB, drilled with clear water.
-Possible lost circulation in the Wabamun, be prepared to mud up early and have adequate amounts of LCM on site. If losses are severe we may have to cement off the lost circulation zone prior to drilling to TD. Severe losses have been encountered at some, but not all, locations in the area. They have been controlled with LCM's in some cases and cement in others.

-**200 mm lower hole** from 1200 mKB to TD at 1589 mKB MD in the Keg River, drilled with gel chemical mud system
-No problems anticipated.

ENVIRONMENTAL ITEMS:
The well site will be bermed to prevent any fluid leaks/spills from escaping from the lease. Any onsite leaks/spills over 100 liters will be reported immediately to the 24 hour spill line. **All spills** will be reported on a spill report form and will be cleaned up with vacuum trucks and the trucking of contaminated material to the satisfaction INAC Land Use Officer.

a. Physical Environment:

This location is accessible only during the winter months. The well will be accessed by existing and new roads. The well will be drilled without onsite sumps. Tanks will be used to contain the drilling mud. Fluids will be stripped out of the mud at the end of the hole for reuse at the next location. Solid drilling wastes will be disposed of at a remote sump site. The drill site will be seeded to grass. Any disturbed sections of the access roads will be re-contoured and seeded.

b. Waste Disposal:

(i) Sewage and Gray Water:

Sewage and gray water will go into a pit adjacent to the camp. The pits will be backfilled when operations at the wells are completed. Kitchen garbage will be incinerated and the ash buried. Any other garbage will be stored in a garbage bin and disposed of at an approved landfill site.

(ii) Waste Engine Oils and Lubricants:

All rig trash will be placed in a garbage bin with a tank for containing oils. The trash will be disposed of at an approved landfill site. The waste oils will be taken to an approved recycling or disposal facility.

(iii) Used Drilling Fluid and Cuttings:

For surface and main hole, all drilling fluids will be contained in tanks. Fluid will be stripped out of the drilling mud at the end of the hole for use at the next location. Wellbore cuttings will be disposed of at a remote site by mixing and burying with at least 1 m of cover as per AEUB Guide G-50 "Drilling Waste Management".

CONDUCTOR HOLE

Move on Cancor Rathole Inc. Drill a 610 mm conductor hole to approximately 12 meters. Run and set a 406 mm conductor pipe with 7 mm wall thickness. Cement the conductor pipe in place with approximately 40 sacks Portland Normal cement. Ensure all mud lines, standpipe, kelly hose, swivel, kelly and kelly cocks are pressure tested to the working pressure of the rig pumps prior to drilling out. Nipple up and function test a 346 mm (13 5/8") diverter system.

Correct Ground Level Elevation for Cut/Fill and Report Correct KB Elevation

Note: Lease cleanups are becoming a serious environmental problem. Minimize waste where possible.

SURFACE HOLE

i) Drill surface hole with gel slurry mud system.

ii) Rig up a 346 mm diverter system to drill surface hole. Ensure surface tanks c/w heater coils are on location and ready to plumb into diverter should water be encountered

iii) Prior to spudding, hold a diverter drill and ensure HCR is operational. After spudding, hold another diverter drill.

iv) Spud in and drill a 311 mm hole to 425 m with gel slurry. If pilot hole required drill with a 222 mm bit and then ream out to 311 mm with hole opener. Drill to a depth allowing for easy installation of cement plug loading head. Casing must be landed in a competent formation. Dummy trip and strap pipe 1 - 2 singles before casing setting depth. If problems are encountered during running of casing, open hole with 342.9 mm bit.

v) Potential Problems:

Mud Rings:	YES
Lost Circulation:	YES
Gravel:	YES
Deviation:	YES
Sloughing:	Possible

vi) Ensure conventional bits are on location.

vii) Run bottom hole assembly as required

viii) Surface hole will be drilled with a gel slurry mud system. Lost circulation has occurred in wells to some degree at various depths. If encountered after mud up, use high viscosity pills loaded with sawdust and kwik seal. All mud additions require the approval of the Drilling Foreman. Any deviation from mud program requires Calgary office approval.

ix) Wait on cement four hours prior to slacking off weight. Install a 229 mm Slip Weld x 219.1 mm 21000 kPa casing head with 2 – 52.4 mm 21000 kPa sour trim valves. The casing bowl flange should be no lower than 0.3 m below ground level and no higher that 0.6 m above ground level. Pressure test the weld to 7000 kPa and ensure pressure is bled off after test. Wait on cement eight hours after plug down prior to

testing BOP equipment. Wait on cement twelve hours after plug down prior to drilling out.

x) Install BOP stack complete with annular, double rams and bleed off spool. Pressure test the surface casing to 14000 kPa, hydril to 10,500 kPa, rams, HCR, manifold, stabbing valve, kelly cock to 1500 and 21000 kPa, and kill line to 21,000 kPa for 15 minutes. Check motor kills, remote BOP station and accumulator. Maximum allowable pressure drop on low test = 75 kPa and high test = 1050 kPa.

xi) COMPLETE DRILLING SUPERVISOR'S CHECK LIST. Hold BOP drill prior to drilling out. Include all details in the tour book. Fill manifold with antifreeze, blow manifold out with steam/air and check weekly, run leak-off test after each drill-out.

INTERMEDIATE HOLE

There will be no intermediate hole section drilled on this well.

MAIN HOLE

i) Based on the drill stem tests and pressure surveys done in the area, the maximum expected pressure gradient is 8.2 kPa/m. The equivalent fluid density to balance the formation would be 840 kg/m^3.

ii) MAXIMUM SURFACE PRESSURE EXPECTED:

Pressure gradient (as per off-set information):	8.24 kPa/m
Maximum Depth of Hole:	1589 mKB TVD
Drilling mud gradient (assuming 1120 kg/m3):	11.0 kPa/m

Overbalance Pressure: (1589 m)*(11.0 kPa/m - 8.24 kPa/m) = 4386 kPa

iii) WELL CONTROL

Post MACP in the manifold shack and the doghouse. Record reduced pump speed and pump pressures daily in the tour reports for each crew.

Function test the Annular and Pipe Rams daily, record closing and opening times for each specific item. On trips, function test Blind Rams, record closing and opening times. Weekly function test HCR and record times. Weekly check of all studs and nuts on BOP stack for tightness and record.

Proper hole fill and recording procedures will be followed on all trips in and out of the hole. Hole fill records will be signed by Drilling Supervisor and will be kept by Rig Manager.

The Wellsite Supervisor and Rig Manager will have a valid PITS "Well Control" Certification and "H_2S Alert". All Drillers will have a valid PITS "First Line Supervisors" Certificate and "H2S Alert".

iv) Show time in hours from plug down to drilled out on Daily Drilling Report.

v) The well will be drilled with clear water to 1200 mKB and a gel chemical mud system from there to total depth. Main hole (200 mm) will allow for 139 mm casing to be run to T D.

vi) Potential Problems:

Lost Circulation:	Possible in the Wabamun
Deviation:	Potential for deviation problems, not usually severe.
H_2S:	Up to 2%
Abnormal Pressures:	None anticipated

vii) Bits as required. (Refer to enclosed bit program Section 14.)

viii) Leak Off Test: Displace surface casing to clear water prior to drill out. Drill out and drill 10 m using 2 – 3000 daN and 40 rpm. Conduct a formation leak off test to a maximum of 15000 KPa or leak off is detected. Contact Calgary with the results prior to proceeding

ix) Drill main hole with clear water to 1200 mKB and a gel chemical system form 1200 mKB to TD. All mud additions require the approval of the Drilling Foreman. See attached mud program. Any deviation from mud program requires Calgary office approval.

DRILL STEM TESTING

This well is being drilled for water injection purposes so no DST's are planned.

GEOLOGICAL and LOGGING PROGRAM:

Geological Prognosis:

FORMATION TOPS	DRILL DEPTH	S.S. ELEV.	ISOPACH	COMMENTS
	(m)	(m)	(m)	
Wabamun	556.8	217.0	166.0	Ground Elevation = 769.99 m
Fort Simpson	722.8	51.0	601.6	Assumed KB = 773.8 m
Beaverhill Lake	1324.4	-550.6	23.4	
Slave Point	1347.8	-574.0	41.3	
F4 Marker	1389.1	-615.3	7.0	
Watt Mountain	1396.1	-622.3	4.0	
Sulphur Point Limestone	1400.1	-626.3	18.0	
Sulphur Point Dolomite	1418.1	-644.3	12.8	
Muskeg	1430.9	-657.1	98.0	
Keg River*	**1528.9**	**-755.1**	**19.9**	Primary Target Zone *
Base Keg Porosity	1548.8	-775.0	40.0	
TD	1588.8	-815.0		

Gas Detection:

A gas detection unit (total gas) will be set up and in working order from **Surface To T.D.**

Samples:

Samples are to be caught at 5 meter intervals from **1300 mKB to TD.**

i) Bottle one set of washed samples for Paramount.

ii) Catch one set of 500 gram unwashed, dried samples in moisture proof bags (plastic lined bags not allowed) and two sets of washed samples in 11 ml plastic vials.

Deliver to:

Head, Core and Sample Repository
Geological Survey
3303 – 33rd St. N.W.
Calgary, Alberta

A copy of the core and sample transmittal letter must be forwarded to the Chief Conservation Officer at the N.E.B.

Logging Program:

a) Data Requirements and Conditions:

i) **THIS WELL IS A TIGHT HOLE.** Extreme care must be taken with respect to the data.

ii) The Logging contractor will be Weatherford.
iii) Logging tools will be combined and operated as a single run if possible.
iv) All logged intervals are to be transmitted ASAP via secure satellite to Computalog in Calgary.
v) We require the following copies of the data delivered to the offices of Paramount Resources Ltd.:
   4 field prints of each log,
   6 final prints of each log,
   4 sets of LAS format 3.5" floppy disks of all the recorded data;.
vi) Run repeat passes across the target intervals (at the direction of the Paramount Rep.) using identical porosity scales as the main pass. Ensure good log repeatability at all times.
vii) Run maximum recording thermometers on each logging tool string and on each run.
viii) Calculate and display the hole volume as determined from the integration of the X-Y caliper data.

b) Proposed Logging Suite:
Log the main hole as follows:

Run #	Suite and Scale	Depths
1.	STI-SP-GR	
	1:600	T.D. to Surface Casing SP – 120-15 mV, GR 0 – 150 Resistivity ILD 0 – 10 ohms & SLFA 0 – 50 ohms liner scale Conductivity 1000 – 0 mhos/m
	1:240	T.D. to surface casing SP – 120- to 15 mV, GR 0 – 150 Resistivity 0.2 – 2000 ohm-m logarithmic scale
2.	SPED-CNT-GR-DAC	
	1:600	T.D. to surface casing GR 0 – 150 Bulk Density 2000 - 3000 kg/m3
	1:240	T.D. to surface casing GR 0 - 150 Sandstone Matrix 45 to –15 Display and integrate X-Y Calipers
3.	BCS-GR-DAC	
	1:600	T.D. to surface casing GR 0 – 150
	1:240	T.D. to surface casing GR 0 - 150 Display and integrate X-Y Calipers
4.	Microlog - GR – Cal	
	1:240	T.D. to 20 m above Slave Point

Mud and Fluid Samples:

a) Mud samples are to be caught prior to any coring and testing;
b) Mud and DST samples are to be sent to AGAT LABORATORIES in Grande Prairie for lab analysis.
c) Representative fluid samples of all DST's from top, middle and bottom of the fluid column are required for analysis.
d) Provide the logging company with a second set of mud and any water samples for R_w determinations and have these values recorded on the field logs.
e) Make sure the well name, location, TIME & DATE that the sample was taken, the source of sample and the temperature are recorded clearly on all samples that are sent to the lab.
f) Fax a one page listing of all samples sent from lease to AGAT, to Paramount in Calgary Attn: Llew Williams. This listing should contain all the information listed in "e".

12. DRILLING FLUIDS PROGRAM

BRONCO MUD INC

DRILLING MUD PROGRAM

Para et at Cameron A-03, TD = 1589 m

Prepared for: Dave Block

Contacts: Cal King
403-860-2433 Office / Cell
403-281-9175 Fax
cking1@home.com

Stock Point : High Level

Trucker : H.L.Powell 780-926-4433

ALL DEPTHS IN mTVD UNLESS NOTED

WELL GEOMETRY POTENTIAL PROBLEMS	TOPS * - Primary Target ** - Secondary Target	MUD PROPERTIES AND PROCEDURES
Surface Hole: **Hole Size:** 349 mm **Casing:** 0 - 425 m, 244.5 mm **Gel Slurry** **Interval:** 0 - 425m **Potential Problems:** Rocks and boulders are localized in the area. Lost circulation is possible in the area and some lost circulation material should be on hand. Mud rings do not appear to be a major problem. Deviation may be a minor problem throughout the glacial till.	T.D. 425m	**Surface Hole:** **Properties:** Density: 1080-1120 kg/m3 Viscosity: 45-60 sec/L pH: 9.0-9.5 Water Loss: N/C cm3 **Procedure:** Spud the hole with a light Gel slurry. Keep the surface volume at a minimum. If gravel or boulders are encountered raise the viscosity with small additions of gel and/or lime to adequately clean the hole. If circulation is lost, increase the viscosity to 50-70 sec/L with Gel and slug the hole with Sawdust and Primaseal in a 5:1 ratio. If mud rings are encountered, add one viscosity cup of Sapp down the drillpipe every connection. If severe, mix 1 sack of Sapp through the chemical barrel and add directly into the pump suction. Gradually increase the viscosity to 60-90 sec/L prior to running surface casing to ensure a clean hole.
Hole Size: 200mm **Casing:** **Interval:** 425– 1200m **Clear Water** **Potential Problems:** Minor reaming and cleaning throughout the interval. No major problems reported on the offset wells. **LOST CIRCULATION:** Is possible in the upper hole (Wabamun). If losses occur mud up earlier and treat. A good supply of LCM should be in the van or load out a hi-boy with LCM.	**Main:** Formation / Depth Bluesky 544 Wabamun 557 Jean Marie 715 Fort Simpson 723 Twin Falls 841 Hay River Shale 992	**Procedure:** Drill down to mud up depth with clear water. Any signs of sloughing or hole instability, mud up immediately. Drill out the cement and shoe with water circulating the sump. Do not treat out the cement as it will assist in flocculation. Drill ahead maintaining a clear water system with additions of Calcium Nitrate and Alcomerfloc. Maintain Calcium content at 250-300 mg/L through this interval. If the water becomes "dirty or cloudy", adding approximately 5 sacks of Calcium Nitrate over a circulation will help. While drilling with water, do not stop the tools for any extended period of time. Annular velocities of 45-50 metres/min across the drillpipe are recommended. Circulate for 15-20 minutes or "bottoms up" prior to trips, in order to clean the hole of cuttings. Watch closely for tight hole on connections or surveys. If possible, try and utilize the sump water for mud up or water dilutions in the mud system. Discontinue additions of Calcium Nitrate approximately 8-12 hours prior to mud up. Small amounts of Bicarb may be used to lower the Calcium content below 60 mg/L.

Hole Size: 200 mm

Casing: 0 – 1650 m, 177.8 mm

Gel Chemical
Interval 1200 m - 1589 m
Potential Problems:
Rapid build up of native solids and lack of effective solids control equipment make the mud density difficult to control

H_2S: Expected in the Slave Point and Sulphur Point Formation

LOST CIRCULATION: Is possible in the upper hole, if losses occur mud up earlier and treat. A good supply of LCM should be in the van or load out a hi-boy with LCM.

Example Form. Tops

Beaverhill Lake	1325
Muskwa	1318
Slave Point	1348
Fort Vermilion	1380
F4	1389
Watt Mountain	1396
Sulphur Point LS	1400
Sulphur Point Dol	1418
Muskeg	1431
Keg River	1529
T.D.	1589

Properties: Density 1080-1120 kg/m3
Viscosity: 45-60 sec/L
pH: 9.5-10.5
Water Loss: 5.0-7.0 cm3

Procedure:
If possible, premix the Gel slurry in the mud tanks while water drilling, for quick displacement to the hole at mud up depth. Treat out calcium in the make up water to below 40 mg/L with soda ash. Excessive hardness will inhibit the hydration of the gel.

Initiate mud up at mud up depth or at any time hole conditions dictate. Drill ahead, maintaining the mud weight as low as possible by diluting and dumping the sand trap regularly. A high speed shaker with an 8 to 12 cone desilter is recommended. Maintain the desilter in a spray discharge with the underflow rate at approximately 20-25 L/min.

Maintain the fluid loss at 5.0-7.0 cm3 throughout the potential productive zones with small amounts of Drispac And Desco. If tight hole, deviation, or differential pressure sticking becomes a problem, lower and maintain the fluid loss as required.

Watch the shakers closely for effective hole cleaning throughout the upper shale sections. These shales can "funnel" into the carbonate gauge hole beneath them causing bridging. Increase the Yield Point with Gel additions as required.

An annular velocity of 35-40 metres/min is recommended across the drill pipe. Avoid turbulent flow in the annulus.

Prior to logging, testing or coring gradually increase the viscosity to 60-70 sec/L to ensure a clean hole.

H2S is expected in the Devonian. Up to 2% is possible. H2S is also possible in smaller amounts form the Jurrasic to T.D. Raise the pH to10.5 with Caustic Soda and maintain to T.D.

Anhydrite is also possible in the Wabamun. The Devonian section will have intermittent Anhydrite of varying degrees. Light Soda Ash treatments will aid in controlling Fluid Loss properties.

BRONCO MUD INC

MATERIAL AND COST ESTIMATES

GEL CHEM MUD SYSTEM

QUANTITY	PRODUCT	UNIT	PRICE	TOTAL
300	Bronco Gel	40 kg	14.50	4350.00
10	Alcomer 120L	20 L	159.00	1590.00
15	Caustic Soda	50 lb	51.50	772.50
10	Staflo	50 lb	289.00	2890.00
50	Envirofloc	80 lb	42.50	2125.00
15	Desco	50 lb	89.50	1342.50
10	Soda Ash	25 kg	28.50	285.00
50	Sawdust	SACK	5.95	297.50
			TOTAL $	13651.00

Stock Point : High Level
Trucker : H.L.PowellL 780-926-4433

PRICING AS PER AGREEMENT.
WE HOPE THIS PROGRAM MEETS WITH YOUR APPROVAL.
IF WE CAN BE OF ANY FURTHER ASSISTANCE PLEASE
DO NOT HESITATE TO CALL. THANK YOU.

BRONCO MUD INC.
****

SURFACE CASING DETAILS: 425m

Surface Casing Specifications:

Size:	219.1 mm O.D.		
Nom. Weight:	35.71 kg/m	Collapse Rating:	9450 KPa
Grade:	J-55	Burst Rating:	20340 KPa
Connection:	8rd, ST&C	Body Yield:	169500 daN
Type – IPSCO.	ERW	Tensile Rating:	108500 daN
Connection		Conn. Torque:	Opt.: 3310 NM
O.D.	219.1 mm		Min.: 2480 NM
Inside Dia.:	205.7 mm		Max.: 4140 NM
Drift Dia.:	202.5 mm		

DESIGN CRITERIA:
Based on the drill stem tests in the area the maximum bottom hole pressure (BHP) is expected to be 11058 kPa at 1341 m. The equivalent fluid density to balance the formation would be 840 kg/m^3.

-Drilling mud gradient 11.0 kPa/m (assuming 1120 kg/m^3).
-Collapse gradient of 11 kPa/m (assuming 1120 kg/m^3).
-Burst gradient of 22 kPa/m (from reg's).
-Casing setting depth 425 m.

SAFETY FACTORS:

Burst SF (min = 1.33):	20340 kPa / (425 m) (22 kPa/m) = **2.18**
Collapse SF (min = 1.0):	9450 kPa / (425m) (11 kPa/m) = **2.02**
Tensile SF (min = 1.6):	108500 daN / (425m) (35.71 kg/m) (.98) = **7.01**

Assuming, from offset data, a leak off gradient of 22.0 kPa/m

Maximum Allowable Casing Pressure (1120 kg/m3 mud)
= (22) (425 m) - (425 m) (1120) (.0098)
= 4,685 kPa

CEMENTING DETAILS:
To be cemented with 32.2 t class 'G' cement + 1.5% $CaCl_2$.

CASING BOWL DETAILS:
229 mm Slip Weld x 219 mm 21 MPa w/52.4 mm EFSO's
2 - 52.4 mm 20.7 MPa (2 - 1/16" 3000#) valves
2 - 52.4 mm 20.7 MPa companion flanges

Para et al Cameron
60° 10' North, 117° 15' West

Surface Casing

Hole Size:	311.2	mm
Casing Size:	219.1	mm
Depth:	425	m
Annular Capacity:	0.0383	m^3/m
Excess:	50 %	(Gauge)

Cement Blend — 0:1:0 'G' + 1.50% CaCl2

425 m to Surface = 425 m

Cement Data

Water Requirement	:m^3/t	0.44
Yield	:m^3/t	0.76
Density	:kg/m^3	1901
Thickening Time	:hrs:min	4:00
Compressive Strength	:MPa/hrs	3.6/8 8.1/16
Temperature	:°C	15

Calculations

0.0383	m^3/m x 425 m	=	16.3 m^3
16.3	m^3 x 50 % excess	=	24.5 m^3
24.5	m^3 / 0.76 m^3/t	=	32.2 tonnes

Para et al Cameron
60° 10' North, 117° 15' West

Surface Casing Procedure

1. Make up float equipment and centralizers as required on surface casing and run in to total depth.

2. Break circulation and condition hole and drilling fluid as required prior to cementing.

3. Rig in a Sanjel twin cementing unit, surface casing treating lines and a 219.1 mm plug loading head to casing.

4. Pump a 3.0 m^3 fresh water preflush and pressure test surface treating lines to 21 MPa.

5. Mix and pump 32.2 t 0:1:0 'G' + 1.50% CaCl2 at 1901 kg/m^3.

6. Drop a 219.1 mm rubber top plug and displace to floats with water. Bump with a minimum of 3.5 MPa over final pumping pressure.

7. Hold pressure for 2 minutes, then bleed back casing pressure to ensure float is holding.

8. If float does not hold, install a pressure gauge on the plug loading head and maintain 500 kPa pressure over final pumping pressure for a minimum of 4 hours.

9. W.O.C. a minimum of 8 hours prior to drillout.

PRODUCTION CASING DETAILS:

Setting depth: 1589 mKB

Production Casing Specifications:

Size:	139.7 mm O.D.		
Nom. Weight:	20.83 kg/m	Collapse Rating:	21510 KPa
Grade:	J-55	Burst Rating:	29440 KPa
Connection:	8rd, ST&C	Body Yield:	98800 daN
Type – IPSCO.	ERW	Tensile Rating:	76100 daN
Connection		Conn. Torque:	Opt.: 2330 NM
O.D.	139.7 mm		Min.: 1750 NM
Inside Dia.:	127.7 mm		Max.: 2920 NM
Drift Dia.:	124.1 mm		

DESIGN CRITERIA:

Maximum expected pressure of 11500 kPa (from offset data)
Assumed gas gradient of 2.26 kPa/m.
Drilling mud gradient of 11.0 kPa/m (assuming 1120 kg/m^3 drilling mud).
Collapse gradient of 11 kPa/m (assuming 1120 kg/m^3 drilling mud).
Burst gradient of 11 kPa/m.

SAFETY FACTORS:

TD = 1589 mKB
Burst SF (**min = 1.0**): 21510 kPa / (11500 kPa - (1589 m * 2.26 kPa/m)) = **2.71**
Collapse SF (**min = 1.0**): 21510 kPa / (1589 m * 11 kPa/m) = **1.23**
Tensile SF (**min = 1.6**): 76100 daN / (1589 m * 20.83 kg/m * 0.9806 daN/kg) = **2.35**

CEMENTING DETAILS:

To be cemented to surface with 19.2 t ThixLite + 1% SMS (from surface to 1100 m) followed by 11.6 t Expandomix LWL + 0.1% CFL-3 + 0.2% LTR + 0.2% SPC-II (from 1100 m to TD).

Production Casing

Hole Size:	200.0	mm
Casing Size:	139.7	mm
Depth:	1465	m
Annular Capacity:	0.0161	m^3/m
Excess (Lead):	30 %	(Gauge), 20 % (Caliper)
Excess (Tail):	30 %	(Gauge), 20 % (Caliper)

Cement Blends

Lead Cement	Thixlite + 1.00% SMS 1000 m to Surface = 1000 m
Tail Cement	Expandomix LWL + 0.10% CFL-3 + 0.20% LTR + 0.20% SPC-II 1465 m to 1000 m = 465 m

Cement Data BHST: 45°C BHCT: 35°C

		Lead Cement	Tail Cement
Water Requirement	:m^3/t	0.81	0.55
Yield	:m^3/t	1.20	0.88
Density	:kg/m^3	1507	1770
Thickening Time	:hrs:min	6:21	4:05
Compressive Strength	:MPa/hrs	1.2/16	2.0/8
		3.8/24	4.8/16
		6.8/48	9.2/48
Temperature	:°C	30	45
Fluid Loss	:cc/ 30 min	30	16
Free Water	:%	0.30	0.00
Critical Pump Rate	:m^3/min	0.5 (Plug)	0.5 (Plug)

Calculations

Lead Cement

0.0161	m^3/m x 1000 m	=	16.1 m^3
16.1	m^3 + 30 % excess	=	20.9 m^3
20.9	m^3 / 1.2 m^3/t	=	17.4 tonnes

Tail Cement

0.0161	m^3/m x 465 m	=	7.5 m^3
7.5	m^3 + 30 % excess	=	9.8 m^3
9.8	m^3 / 0.88 m^3/t	=	11.1 tonnes

Production Casing Procedure

1. Make up float equipment as required on 139.7 mm casing and run in to total depth.

2. Break circulation and condition hole and drilling fluid prior to cementing.

3. Rig in Sanjel single cementing unit, surface treating lines and a 139.7 mm plug Loading Head to casing.

4. Fill surface treating lines with water and pressure test to 21 MPa.

5. Drop a bottom rubber wiper plug and mix and pump the following:

    A. 3.0 m^3 fresh water preflush
    B. 3.0 m^3 scavenger slurry mixed at 1250 kg/m^3
    C. 17.4 t Thixlite + additives mixed at 1507 kg/m^3.
    D. 11.1 t Expandomix LWL + additives mixed at 1770 kg/m^3.

6. Drop a top rubber plug and displace to float collar with water at 0.8 m^3/min. Bump plug with a minimum of 3.5 MPa over final pumping pressure.

7. Hold pressure for 2 minutes, then bleed back casing pressure to ensure float is holding.

8. If float does not hold, install a pressure gauge on the cementing head and maintain 500 kPa pressure over final pumping pressure for a minimum of 4 hours.

9. W.O.C. a minimum of 24 hours.

PENDEMAK IND.

VAREL

ROCK BITS

Company: Paramount Resources Ltd.
Well Name: Para et al Cameron A-03
LSD: 60 deg.,2',12.7" 117deg.,30',6.1"

Prepared For: Dave Block
Prepared By: Rod MacKenzie
Date: 13-Jan-07

PENDEMAK INDUSTRIES
PROPOSED BIT PROGRAM

COMPANY:	Paramount Resources Ltd.
DATE:	13-Jan-07
WELL NAME:	Para et al Cameron A-03
LSD:	60 deg.,2',12.7" 117deg.,30',6.1"
PREPARED FOR:	Dave Block
PREPARED BY:	Rod MacKenzie

OPERATING COST PER HOUR	$1,000.00
BIT COST	$31,140.00
ROTATING HOURS	94
ROTATING DAYS	5.2
TRIP HOURS	8
TRIP DAYS	0.4
RUN CASING, CEMENT AND WOC DAYS	1.0
DAYS FROM SPUD TO TD	6.7

RUN NO.	SIZE	TYPE	DEPTH OUT	METERS	ESTIMATED RECOMMENDED					BIT COST	$/ METER	$/ METER TO DEPTH
					HRS	TOTAL HOURS	ROP	WOB	RPM			
1A	311	CH04JMRSV	425	425	24	24	17.7	4/15	100/140	$19,500	$106.35	$106.35
1	200	MKS65	1589	1164	70	94	16.6	4/8	40/80	$11,640	$75.60	$83.82

Comments:

Surface: Surface hole will probably encounter gravel and/or some harder drilling. To drill surface use a **Varel CH04JMS (4-1-7 type insert bit)** with expected ROP's of around 25m/hr. This bit should drill 2 to 3 more surface holes and replace two retipped surface bit rentals per well. The CH04JMS will also continue drilling when gravel is encountered whereas a tooth bit will dull down and slow.

Main Hole: To drill out use a Varel PDC such as the **MKS65**, which should take you down to TD in the Keg River. For this run we would charge $10/meter plus 50/50 bit risk. Slow RPM's just prior to formation changes particularly before the Slave Point, the Sulphur Point and the top of the Muskeg and Keg River. Harder cap rock will usually be encountered at these formation changes. If drilling into the Precambrian at TD use a 5-2-7 type insert bit.

Please refer to the attached technical spec sheets for information on all products recommended here.

BHA for PDC

Bit, 1 Near Bit Stabilizer (6-10 mm undergauge),1 Drill Collar,1 String Stabilizer (6-10 mm undergauge),1 Shock Tool (if desired), 4 – 6 Drill Collars,1 Drilling Jar (use and placement of Jar will be operators responsibility) ,9 – 12 Drill Collars

REQUIRED FLOW RATES: 1.35m3/min to 1.6m3/min.

We request a 72-hour advance notification at our Edmonton, Alberta Office please call (780) 435-5706 (24-hour number) for mobilization of men and tools.

Geological Prognosis

Para et al Cameron A-03

K.B. est.	773.8	K.B. Act.
G.L. est.	770.0	G.L. Act.

	Prognosed			Actual		
Formation	**Drill Depth**	**Subsea**	**Isopach**	**Drill Depth**	**Subsea**	**Isopach**
Wabamun	556.8	217.0	166.0		0.0	0.0
Fort Simpson	722.8	51.0	601.6		0.0	0.0
BhL	1324.4	-550.6	23.4		0.0	0.0
Slave Point	1347.8	-574.0	41.3		0.0	0.0
F4	1389.1	-615.3	7.0		0.0	0.0
Watt Mountain	1396.1	-622.3	4.0		0.0	0.0
Sulphur Point Lst.	1400.1	-626.3	18.0		0.0	0.0
Sulphur Point Dol.	1418.1	-644.3	12.8		0.0	0.0
Muskeg	1430.9	-657.1	98.0		0.0	0.0
Keg River	1528.9	-755.1	19.9		0.0	0.0
Base Keg Porosity	1548.8	-775.0	40.0		0.0	0.0
T.D.	1588.8	-815.0				

Comments: Primary Target is Keg River Porosity - well is for water disposal purposes
No Cores or DST's planned

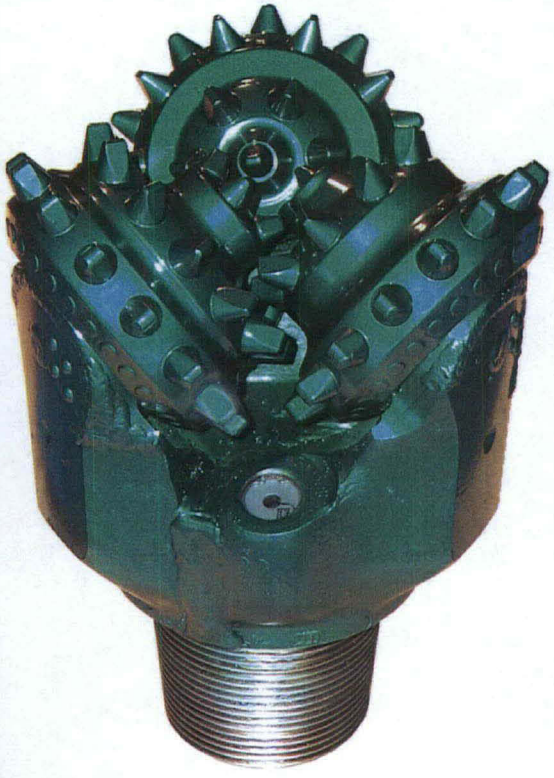
Prepared by L.L. Williams
December 15, 2006

PERFORMANCE BY VAREL ROCK BITS "Challenger Series" Bit Technology

311.2mm CH04MS

IADC Code: 417X

PENDEMAK IND.
VAREL
ROCK BITS



DESIGN DATA

Total Inserts: 80
Inner Row Insert Shape: Chisel
Gage Row Insert Shape: Chisel
Heel Row Protection: Flat Carbide Inserts
Offset: 3.5°
Bearing: Floating Bushing - **Motor Bearing**
Cone Retention: Ball Bearing
Seal: High Aspect Ratio - Flat Gland Seal
Pin Connection: 6 5/8" API Regular
Make Up Torque: 3870 - 4420 m – kg.

OPTIMUM RUN PARAMETERS

Weight On Bit: 8,000 - 27,300 daN
RPM Range: 70 - 250 RPM

FEATURES

M: Motor Hardfacing on Shirttails
S: Shirttail Inserts

ENGINEERING COMMENTS

This bit was designed to be run on surface hole and replace several tooth bits for a savings of rig time. It has a low insert count and high offset to maximize rates of penetration as well as **very** large diameter inserts for durability in drilling sands and some gravel. The CH04MS also has the Challenger Motor Bearing Package as well as motor hardfacing (M feature) and raised shirttail inserts (S feature) for extended high RPM runs.

PENDEMAK INDUSTRIES LTD.

9926 29th Avenue Edmonton, AB **Ph. 1-888-988-4988**
310, 510 5th Street S.W. Calgary, AB **Ph. (403) 266-5801**

200mm MKS65

IADC Code: M333
Assembly A06332

PENDEMAK IND.
VAREL
ROCK BITS

PERFORMANCE BY VAREL ROCK BITS - "K" Series Bit Technology





PRODUCT SPECIFICATIONS

Body Type:	**Matrix**	Number of Nozzles:	**7**
Profile:	**Short Parabolic**	Open Face Volume:	**1027 cm^3**
Cutter Type:	**16 mm Premium**	OFV Ratio:	**55%**
Cutter Back-up:	**Shock Studs**	Junk Slot Area:	**106.5 cm^2**
Total Cutter Count:	**35**	Gage Length:	**63.5 mm**
Face:	**25**	Gage Type:	**PDC and TCI**
Gage:	**10**	Shank Length:	**111mm**
API Pin Connection:	**4 1/2" Reg.**	Make Up Length:	**276mm**
Shank Diameter:	**146mm**		

RECOMMENDED OPERATING PARAMETERS

Weight On Bit:	**4,000-11,000 daN**	Maximum WOB:	**13,000 daN**
Rotary Speed:	**40 To DHM**	Max TFA:	**961.9 mm^2**
Flow Rate:	**1.3 to 1.7m^3/min**		

The VAREL MKS65 has 5 spiral blades, 7 nozzles and uses 16mm **Varel Alpha 12™ PDC Cutters**. It was designed to drill low to moderate compressive strength rock such as shale, limestone and sandstone with very high rates of penetration. It typically has 48% higher diamond volume over comparable 13mm cutter bits giving it superior durability for drilling stringers and some higher compressive strength rock. The MKS65 is completely force balanced and hydraulically modeled in three dimensions yielding lower torque, increased shear efficiencies and superior blade cleaning to prevent balling when drilling soft plastic shales.

Pendemak Industries Ltd. – 9930 – 29 Ave., Edmonton, Alberta, T6N 1A2
Toll Free 1-888-988-4988

PENDEMAK INDUSTRIES

METRIC BIT RECORD

OPERATOR	PROV	FIELD	LOCATION	LICENSE #	STATUS
Paramount Resources Ltd.	NWT	CAMERON	C-74 60° 10´, 117° 15´	1939	

CONTRACTOR	RIG #	MAKE	SPUD	TD/RELEASE	DEPTH	SUPERVISION
PRECISION D	117		02/26/2002		1,625	Brian Neigum

PUMP 1	MODEL	LINER	PUMP 2	MODEL	LINER	MUD TYPE	WELL TYPE	TOOLPUSH	LAST EDIT	
TSN	D-500	152					Vertical	Brian Jones	12/17/2003	6

REMARKS

BIT# / RR	SIZE	MGF / IADC	BIT TYPE / FEATURES	JETS	DEPTH OUT	MTR	HRS	CUM HRS	ROP	WOB	RPM	DEV	PRESS X 000	SPM	MUD VIS	DULL CONDITION I	O	D	L	B	G	O	RP
1A	342.9	ST	DSJ	14.3 14.3 14.3	199	183	13.50	13.5	13.6	4	160	0.50	5.		1,010		8			8	I		
RT		111								10					30								
2A	342.9	HC	GTX-1	12.7 12.7 12.7	430	231	12.25	25.8	18.9	6	150	0.75	6.		1,090		4			3	I		
RT		114		12.7						10					75								
1	222.3	VAR	555	12.7 12.7 12.7	1,616	1,186	66.25	92.	17.9	6	80	1.00	7.5		1,100								
		PDC		12.7 12.7						10					66				40%				
2	222.3	VAR	ETD28	14.3 14.3 14.3	1,625	8	6.25	98.3	1.3	14	80	0.75	6.8		1,100		8			8	0		
		527								16					66								

FORMATION TOPS c-074-K, 094-B-09	
BLUESKY	1267
GETHING	1283
CADOMIN	1397
NIKANASSIN	1438
FERNIE	1523
NORDEGG	1611
PARDONET	1636
BALDONNEL	1641

PENDEMAK INDUSTRIES

METRIC BIT RECORD

OPERATOR	PROV	FIELD	LOCATION	LICENSE #	STATUS
Paramount Resources Ltd.	NWT	CAMERON	F-19 60° 10′, 117° 30′	2000	

CONTRACTOR	RIG #	MAKE	SPUD	TD/RELEASE	DEPTH	SUPERVISION
PRECISION D	247		02/04/2004	02/09/2004	1,481	Meril Schrader

PUMP 1	MODEL	LINER	PUMP 2	MODEL	LINER	MUD TYPE	WELL TYPE	TOOLPUSH	LAST EDIT	
EMSCO	F800	165					Vertical	Carl Pashko	4/13/2004	6

REMARKS: NWT SPUD TIME JAN24/04@12:00hrs. DROP DERRICK ON RIG MOVE WAIT ON REPAIRS.

BIT# / RR	SIZE	MGF / IADC	BIT TYPE / FEATURES	JETS	DEPTH OUT	MTR	HRS	CUM HRS	ROP	WOB	RPM	DEV	PRESS X 000	SPM	MUD VIS	DULL CONDITION I	O	D	L	B	G	O	RP
1A	311.2	HC	X1C	12.7 12.7 12.7	255	255	11.00	11.	23.2	10	180	0.25	4.5		1,140	6	6	WT	A	4	I		PR
RT		115													50								
2A	311.2	HC	X1C	12.7 12.7 12.7	431	176	7.00	18.	25.1	8	220	1.50	5.		1,140	4	4	WT	A	4	I		TD
RT		115		12.7											70								
1	200.0	VAR	MKS55	498.4 TFA	1,481	1,050	45.50	63.5	23.1	10	75	0.75	7.8		1,120	1	1	BT	A	X	I		TD
		PDC													84				GOOD				
2	200.0	VAR	L115	15.9 15.9 15.9	1,481	0	0.00	63.5	0.0				.										
		115																	CLEAN OUT TRIP				

FORMATION TOPS c-074-K, 094-B-09	
BLUESKY	1267
GETHING	1283
CADOMIN	1397
NIKANASSIN	1438
FERNIE	1523
NORDEGG	1611
PARDONET	1636
BALDONNEL	1641

PENDEMAK INDUSTRIES LTD.

DISTRIBUTORS OF
VAREL ROCK BITS
PREMIUM ROLLER CONE AND DIAMOND PRODUCTS

PENDEMAK LTD VAREL ROCK BITS

UNITS: HOLE SIZE mm WOB daN GAGE mm
NOZZLES AND TFA mm MUD WEIGHT kg/m^3
ROP m/hr PRESSURE kpa

PENDEMAK INDUSTRIES

METRIC BIT RECORD

OPERATOR	PROV	FIELD	LOCATION	LICENSE #	STATUS
Paramount Resources Ltd.	NWT	CAMERON	K-19 60° 10′, 117° 30′	2004	

CONTRACTOR	RIG #	MAKE	SPUD	TD/RELEASE	DEPTH	SUPERVISION
PRECISION D	247		02/12/2004	02/19/2004	1,484	Meril Schrader

PUMP 1	MODEL	LINER	PUMP 2	MODEL	LINER	MUD TYPE	WELL TYPE	TOOLPUSH	LAST EDIT	
EMSCO	F800	165					Vertical	Carl Pashko	5/2/2005	6

REMARKS: NWT SPUD TIME JAN22/04@12:00hrs

BIT# RR	SIZE	MGF IADC	BIT TYPE FEATURES	JETS	DEPTH OUT	MTR	HRS	CUM HRS	ROP	WOB	RPM	DEV	PRESS X 000	SPM	MUD VIS	DULL CONDITION I	O	D	L	B	G	O	RP	FORMATION TOPS c-074-K, 094-B-09	
1A	311.2	HC	XV	12.7 12.7 12.7	273	273	9.75	9.8	28.0	10	220	0.50	5.		1,150	5	5	WT	A	4	I		PR	BLUESKY	1267
RT		214	C	12.7											42									GETHING	1283
2A	311.2	VAR	CH1G	12.7 12.7 12.7	431	158	5.00	14.8	31.6	10	220	0.25	5.		1,150	4	4	WT	A	4	I		TD	CADOMIN	1397
RT		117	MS												52									NIKANASSIN	1438
1	200.0	VAR	MKS55	498.4 TFA	1,193	762	34.75	49.5	21.9	10	75	1.00	9.5		1,120	1	0	BT	NS	X	I		PR	FERNIE	1523
		PDC													60									NORDEGG	1611
2	200.0	VAR	MKS55	679.0 TFA	1,264	71	7.75	57.3	9.2	10	75	0.75	10.		1,140	0	0			X	I		PR	PARDONET	1636
		PDC													60									BALDONNEL	1641
3	200.0	VAR	CH18	15.9 15.9 15.9	1,394	130	19.75	77.	6.6	15	80	1.00	9.		1,160	4	4	WT	A	2	I		PR	CHARLIE LAKE	1714
		517	S												60									COPLIN	1806
4	200.0	VAR	MKS55	679.0 TFA	1,484	90	10.75	87.8	8.4	10	75	1.00	9.		1,170	2	1	WT	A	X	I	BT	TD	BLUEBERRY	1837
		PDC													60									HALFWAY	1937

PENDEMAK INDUSTRIES LTD.

DISTRIBUTORS OF
VAREL ROCK BITS
PREMIUM ROLLER CONE AND DIAMOND PRODUCTS

PENDEMAK IND. VAREL ROCK BITS

UNITS: HOLE SIZE mm WOB daN GAGE mm
NOZZLES AND TFA mm MUD WEIGHT kg/m^3
ROP m/hr PRESSURE kpa

Run Reference : Run 1
Well Name : Para et al Cameron A-03
Operator : Paramount Resources Ltd.
Rig Name : Precision 220

Hydraulics Calculation Data

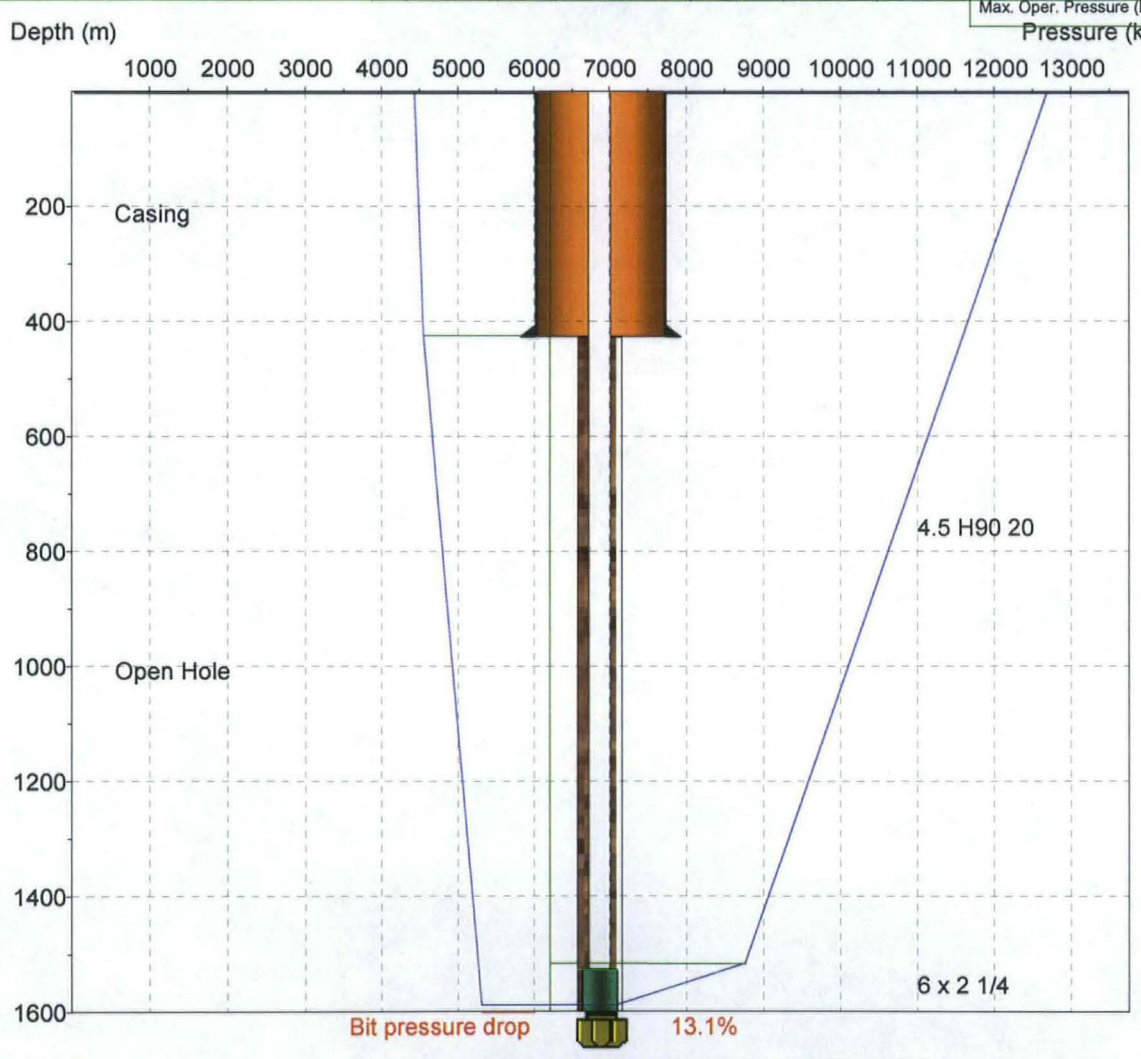
VAREL

Bit Settings	
Type	MKS65
Size (mm)	200
T.F.A. (mm2)	416
Jets (mm)	7x8.7

Motor Settings				
Motor Type				
Lower bearing Flow Bypass		10%		
Surface Eqpt	StandPipe	Hose	Swivel	Kelly
Eq. Length(m)	12	14	1	12
Eq. ID(mm)	76	51	51	57

Pump Type	Stroke(mm)	Rod Size	Liner (mm)	Eff. (%)	Booster
GD PZ-8-750	203		165	85%	

Max. Oper. Pressure (kPa) : 160



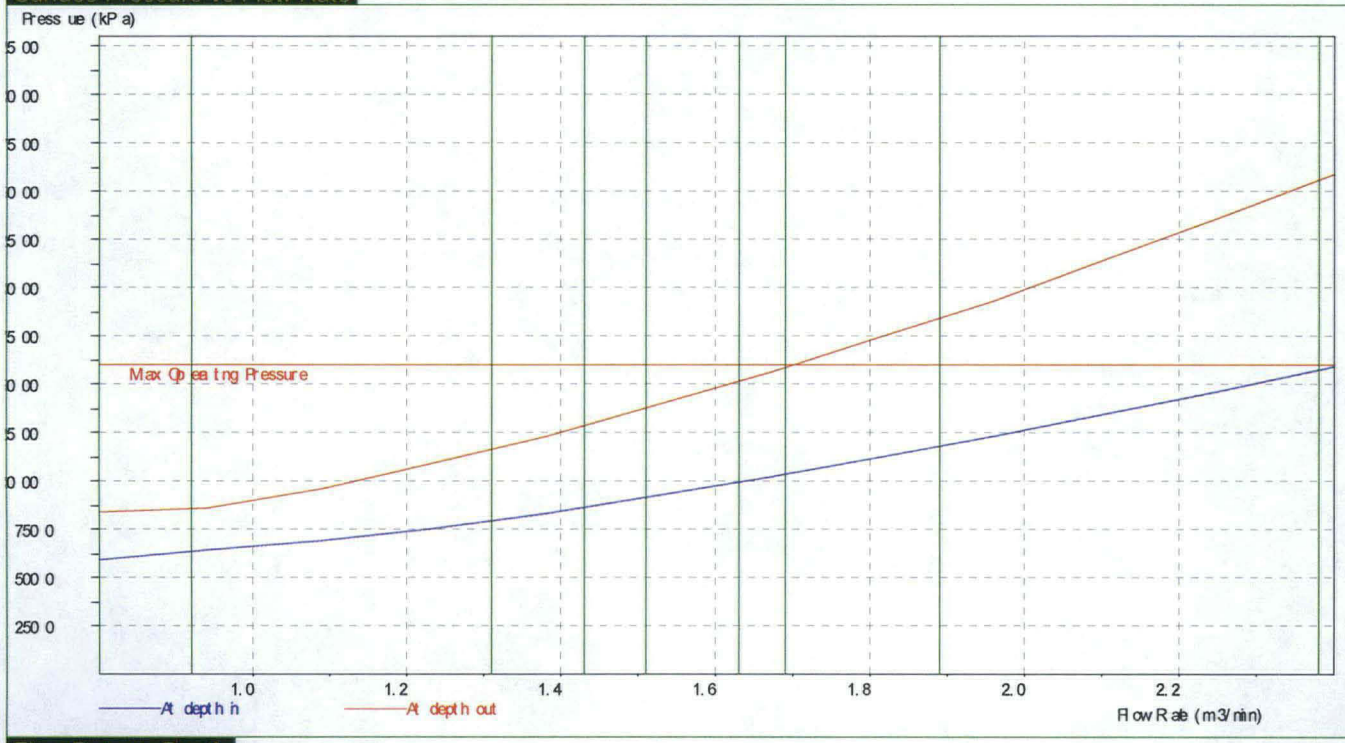
Method:Bingham	IN		OUT	
Depth (m)	425		1589	
TVD (m)	425		1589	
Mud Weight (kg/m3)	1000		1100	
Plastic Visc. (mPa.s)	25		25	
Yield Point (Pa)	10.0		10.0	
Flow Rate (m3/min)	1.600		1.500	
Pumps SPM	144		135	
Bit Flow Rate (m3/min)	1.440		1.350	
Pressure Drops	(kPa)	%	(kPa)	%
Surface Equipment	999	10.3	958	7.0
4.5 H90 20	953	9.8	3928	28.8
6 x 2 1/4	1735	17.9	1665	12.2
DownHole Tools	0	0.0	0	0.0
Motor	4028	41.4	4431	32.5
Bit	1844	19.0	1783	13.1
Annular Open Hole	0	0.0	766	5.6
Annular Casings	160	1.6	116	0.9
Annular Riser	0	0.0	0	0.0
Total	9719	100.0	13646	100.0
Bit Hydraulics				
Bit H.H.S.I. (kW/mm2)	1054.55		955.81	
Bit Jet Veloc. (m/sec)	57.7		54.1	
Bit Impact Force (N)	1379.35		1333.55	
Hydr. HP @ Bit (kW)	44.3		40.2	
Annular Velocities (m/min)				
Minimum DP	59.9		56.1	
Maximum DC	85.4		113.9	
Minimum Riser	0.0		0.0	
Equivalent Circulating Densities (kg/m3)				
@ Casing Shoe	1038		1128	
@ Bit	1038		1157	

Run Reference : Run 1
Well Name : Para et al Cameron A-03
Operator : Paramount Resources Ltd.
Rig Name : Precision 220

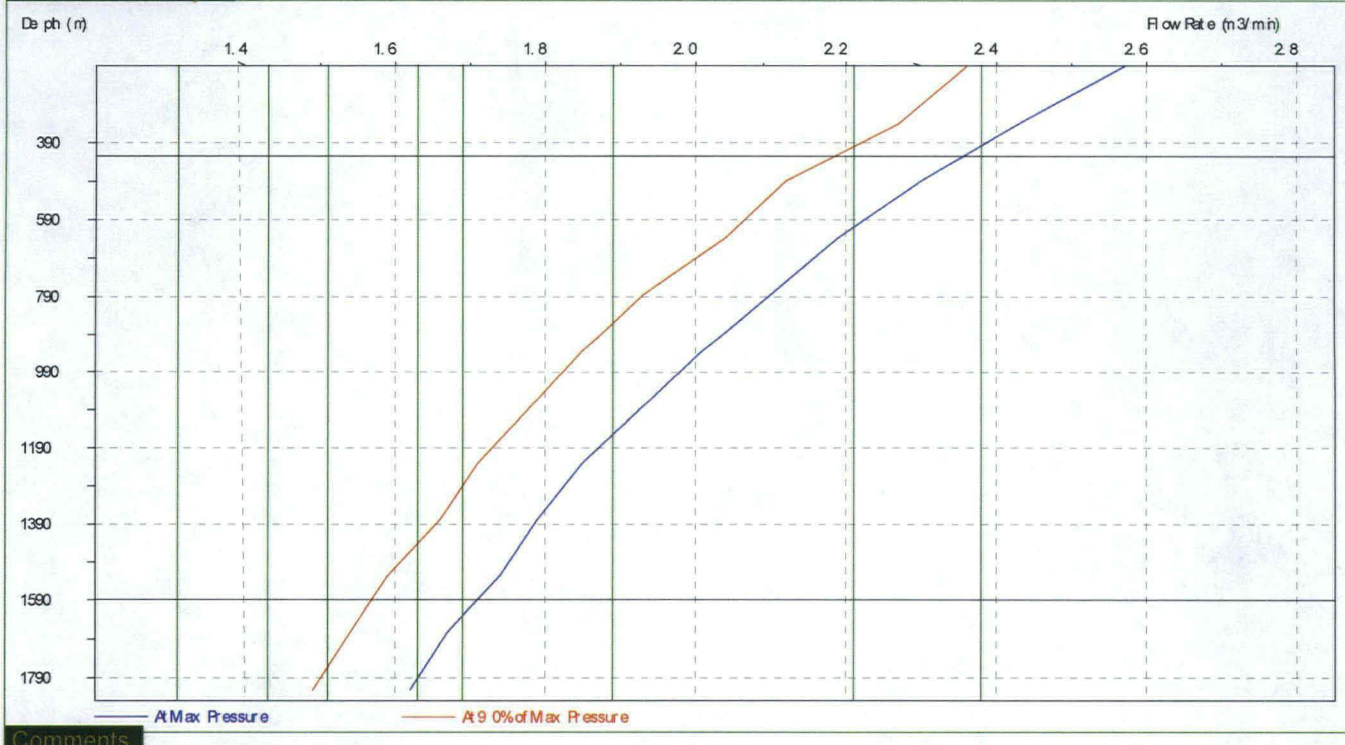
Hydraulics Calculation Graphs

VAREL INTERNATIONAL

Surface Pressure vs Flow Rate



Flow Rate vs Depth



Comments

18. WELL CONTROL PROCEDURES

DRILLING RIG INFORMATION

a. Contractor:

i) PRECISION DRILLING LTD
4400, 150 – 6TH Ave. S.W.
Calgary, Alberta
T2P 3Y7
(403) 264-4882

b. Rig # 220 - Plans and Diagrams:

Rig inventory, specifications, and layout drawings follow.

Rig certifications have been submitted separate from this application.

Precision Drilling

Rig Inventory and Layout

Rig #	220	**Rig Type**	Cantilever Double
Superintendent	Glenn Hill	**Operation Centre**	2
Category	Mechanical	**Rig Type Code**	D
Loads Winter (include boiler)	24	**Class**	Doubles
Rated Depth (m)	2400	**with Drill Pipe (mm)**	

DRAWWORKS

M/E	M	**Auxiliary Brake**	
Drawworks	SUPERIOR 400-PSD	**Rated Power kW (hp)**	300 (400)
Drawworks Capacity (daN)	93 600	**with Number of lines**	8
Drawworks Drive (Quantity)	CAT 3406 (2)	**Rating kW (hp) - Each**	345 (460)

MAST

Mast Type	Cantilever Double	**Manufacturer**	RUDD & HODGSON
Mast Clear Height (m)	32.0		
Static Hook Load (daN)	124 600	**Number of lines**	8
Drill Line Size (mm)	28.6	**Number of lines**	8
API SF=2 (daN)	194 700	**API SF=3 (daN)**	130 000

SUBSTRUCTURE

Substructure Type	One Piece	**Manufacturer**	RUDD & HODGSON
Floor Height (m)	4.37	**Kelly Bushing to Ground (m)**	4.90
Clear Height (m)	3.81		
Rotary Capacity (daN)	133 500	**Setback Capacity (daN)**	89 000

HOISTING AND ROTATING EQUIPMENT

Hook Model	IDECO UTB-160	**Hook Capacity (daN)**	142 400
Block Model	IDECO UTB-160-4-30	**Block Capacity (daN)**	142 400
Swivel Model	OILWELL PC-150	**Swivel Capacity (daN)**	133 500
Top Drive Model	NOT APPLICABLE	**Top Drive Capacity (daN)**	N/A
Rotary Table	IDECO SR-175	**Rotary Table Capacity (daN)**	289 300
		Rotary Table Clearance (mm)	521

▼MUD PUMPS AND MUD SYSTEM

MUD PUMP 1

Manufacturer & Model	BPMMP - BSF-800 (TRIPLEX)	**Rated Power kW (hp)**	600 (800)
Stroke (mm)	229		
Mud Pump Drive (Quantity)	CAT 3412 HEUI (1400 RPM) (1)	**Rating kW (hp) - Each**	470 (625)

MUD PUMP 2

Manufacturer & Model	GARDNER DENVER - PZ-7 (TRIPLEX)	**Rated Power kW (hp)**	410 (550)
Stroke (mm)	178		
Mud Pump Drive (Quantity)	CAT D379 (1)	**Rating kW (hp) - Each**	410 (550)

MUD SYSTEM

Mud Tank Total Volume (m^3)	65.0	**# of Mud Tanks**	1
Premix Tank Volume (m^3)		**Pill Tank Volume (m^3)**	20.0
Trip Tank Volume (m^3)	1.7	**TripTank Surface Area (m^2)**	
Centrifugal Pump Quantity:	3	**Centrifugal Pump Size**	5 x 6
Shale Shaker Quantity	1	**Shale Shaker**	SWACO LINEAR MOTION
Desilter(s)		**Degasser**	Single - Atmospheric 762 mm OD 102 mm Inlet 152 mm Vent Line
Additional Information			

▼WELL CONTROL SYSTEM

BOP Stack Diameter (mm)	229	**BOP Pressure Rating (kPa)**	21 000
Trim Type		**BOP Additional Infomation**	
Accumulator Manufacturer	VALVECON	**Remote Panel Type**	
Accumulator Volume (l)	454	**# of Stations:**	5
Choke Manifold Style (mm)	51 x 76 x 51	**Pressure Rating (kPa)**	21 000

Well control equipment listed is rig's normal inventory. Well control equipment is subject to change; Operator should confirm current configuration and specific requirements with the Precision Drilling Contracts Representative.

▼ELECTRICAL POWER

Power Distribution Type

POWER GENERATION

Quantity 1	**Generator Drive**	CAT 3406	**Generator Size (kW)**	200
Quantity 1	**Generator Drive**	CAT 3406	**Generator Size (kW)**	305
Quantity	**Generator Drive**		**Generator Size (kW)**	
Quantity	**Generator Drive**		**Generator Size (kW)**	

▼MISCELLANEOUS EQUIPMENT

Winterization	Boiler w/Steam Lines Prefabs Rig Shelter	**Boiler Rating kW (hp)**	75 (100)
Fuel Tank Qty	1	**Total Fuel Tank Capacity (l)**	18 000
Water Tank Qty	1	**Total Water Tank Capacity (l)**	45 000
Special Equipment	Pipe Spinner		

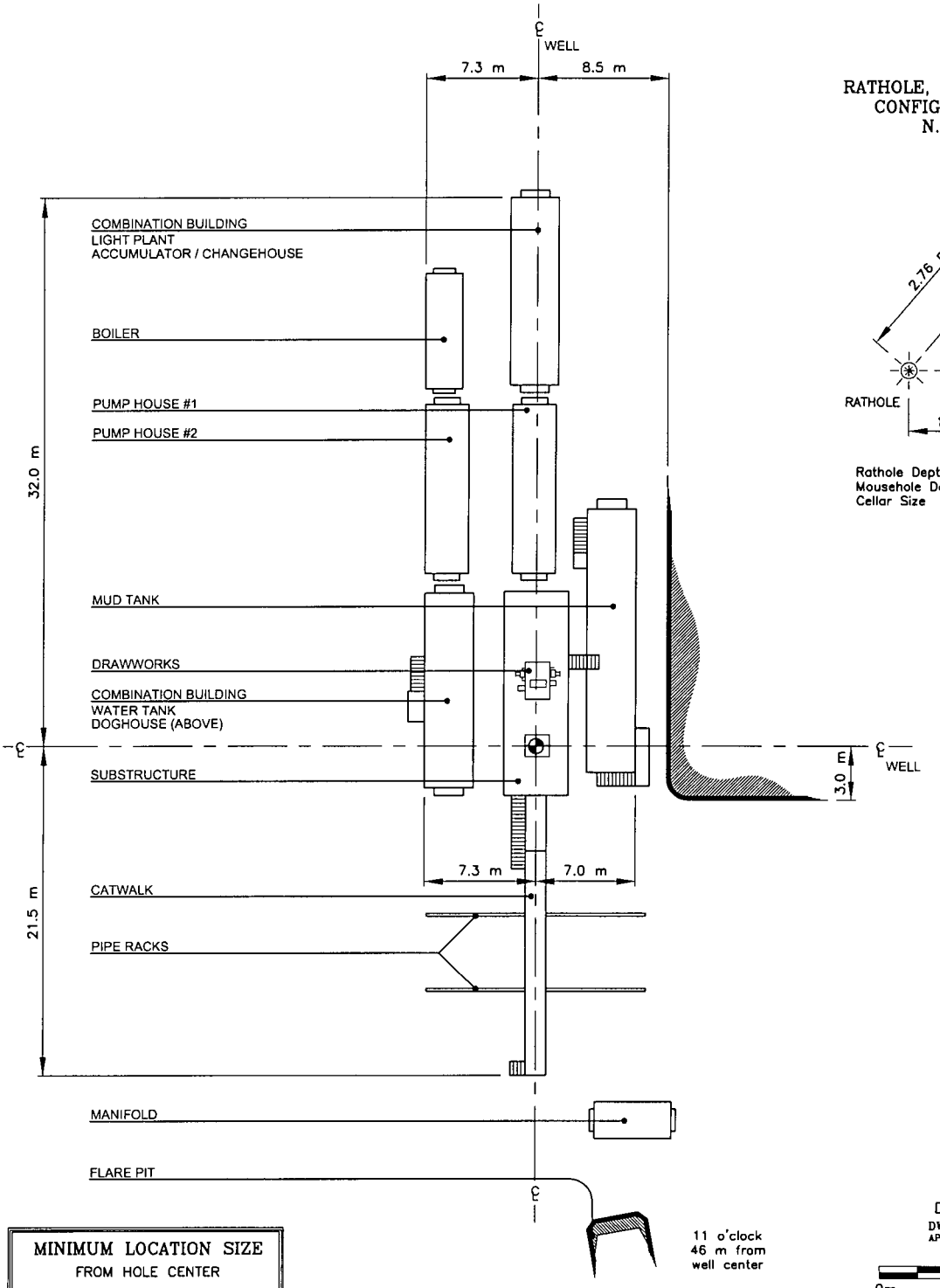
▼NOTES

TUBULARS

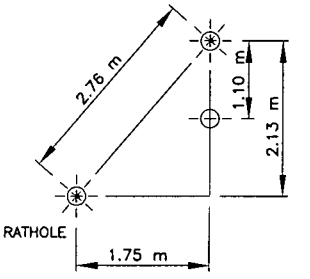
Rig carries sufficient tubular inventory of drill collars and drillpipe to drill 75% of rated depth. Exact quantities and descriptions of tubulars on the rig are available on request. Specific requirements for different types or quantities of BHA components and/or additional drillpipe above that normally carried as part of the rig inventory, are to be discussed with the Contracts Representative of Precision Drilling.

RIG LAYOUT

RIG 220D



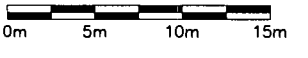
RATHOLE, MOUSEHOLE
CONFIGURATION
N.T.S.



Rathole Depth	7.7 m
Mousehole Depth	5.5 m
Cellar Size	1.0 m deep 1.8 m dia

MINIMUM LOCATION SIZE	
FROM HOLE CENTER	
TO CROWN END	50 m
TO BACK OF RIG	50 m
TO DOG HOUSE SIDE	30 m
TO SUMP SIDE	30 m

DATE: 11/09/00
DWG No.: 851-220D-I2
APPROVED BY GRANT HUNTER



PRECISION DRILLING

CALGARY, ALBERTA, CANADA

17. WELL CONTROL EQUIPMENT

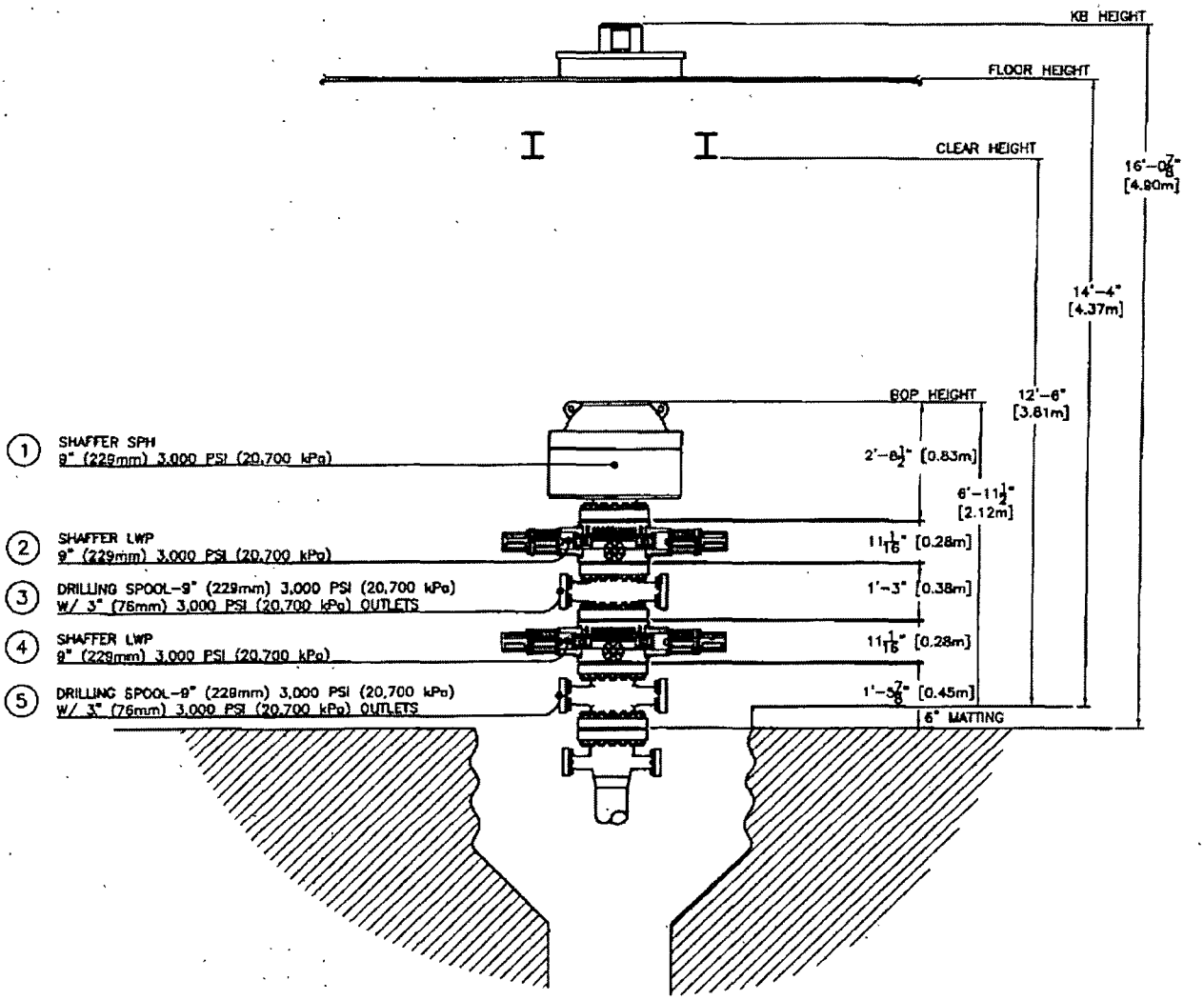
WELL CONTROL EQUIPMENT

The pages that follow document the well control equipment that comes as standard equipment with Precision Rig #220. This equipment will be supplemented / modified as follows to meet the Canada Oil and Gas Drilling Regulations.

- Block T's will be used or flexible pressure hose will be utilized to eliminate 90^0 bends.
- A sour service choke manifold will be used that incorporates a remotely operated choke.

BOP LAYOUT

RIG 220D



NOTE: CASING BOWL SET AT GROUND LEVEL AND ⅛" ALLOWANCE FOR RING GASKET GAP.

STACK COMPONENTS REPRESENTED ARE SUBJECT TO AVAILABILITY. PLEASE CONFIRM WITH WELL CONTROL DEPARTMENT MANAGER.

EQUIPMENT REPRESENTATION ONLY
NOT DRAWN TO SCALE

PRECISION DRILLING

CALGARY, ALBERTA, CANADA

DATE: 2007/01/02
DWG No.: WELL-220-STND-W2

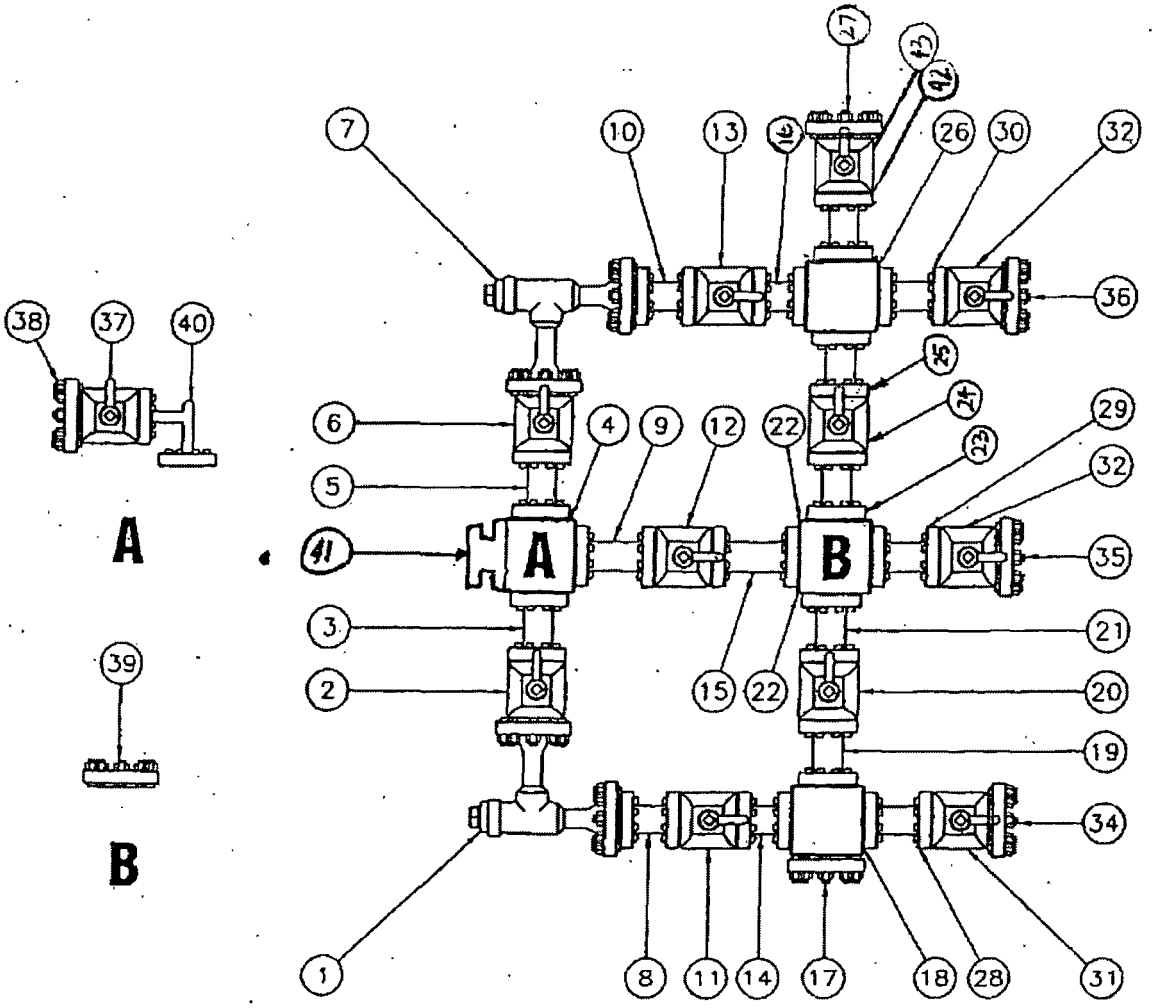
RIG # 220D

Item No.	Qty	Description	ID No.	Co No.
		BOP Configuration		
1	1	9" (229 mm) 3,000 psi (20,700 kPa), Shaffer SPH Annular Preventer	**SPH-2180**	**297**
2	1	9" (229 mm) 3,000 psi (20,700 kPa), Shaffer LWP Single Blowout Preventer	**4187**	**1951**
3	1	Drilling Spool, 9" (229 mm) 3,000 psi (20,700 kPa) with (2) 3 1/8" (76 mm) 3,000 psi (20,700 kPa) Outlets	**9975-1**	**346**
4	1	9" (229 mm) 3,000 psi (20,700 kPa), Shaffer LWP Single Blowout Preventer	**1727**	**670**
5	1	Drilling Spool, 9" (229 mm) 3,000 psi (20,700 kPa) with (2) 3 1/8" (76 mm) 3,000 psi (20,700 kPa) Outlets	**22245**	**1014**
		BOP Accessories		
	1	Adapter Spool, 9" (229 mm) 3,000 psi (20,700 kPa) X 9" (229 mm) 2,000/3,000 psi (13,800/20,700 kPa)	**15601**	**1435**
	1	Adapter Spool, 9" (229 mm) 3,000 psi (20,700 kPa) X 11" (279 mm) 2,000/3,000 psi (13,800/20,700 kPa)	**150262**	**352**

MANIFOLD LAYOUT

CO# 237

3 1/8" 3600 x 2" 3600 NATIONAL NACE TRIM SINGLE GUT MANIFOLD



EQUIPMENT REPRESENTATION ONLY
NOT DRAWN TO SCALE

PRECISION DRILLING

CALGARY, ALBERTA, CANADA

DATE: 03/10/04
DWG No.: WELL-XXX-STND-WY
DWG BY: GL

6011 - 87 A Street
Edmonton, AB T6E 5W6

Bus. (780) 490-0161
Fax: (780) 466-8836

3 1/8" x 2"3000 NACE Trim Ball Valve Single Gut Manifold
CO#237

1.	2"3000 Willis M-2 Choke	TVS-10626-M2
2.	2"3000 Torcana Ball Valve	2030-0023-BV
3.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10628-SS
4.	3 1/8 x 3 1/8x 2 x 2 x 1 ½ 3600 5-Way Block	TVS-10629-5WB
5.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10630-SS
6.	2"3000 Torcana Ball Valve	2030-0020-BV
7.	2"3000 Willis M-2 Choke	TVS-10631-M2
8.	2"x2"3000 x 7 3/4"OAL Spacer Spool	TVS-10632-SS
9.	3 1/8 x 3 1/8 3600 x 8"OAL Spacer Spool	TVS-10633-SS
10.	2"x2"3000 x 7 3/4"OAL Spacer Spool	TVS-10634-SS
11.	2"3000 National Ball Valve	TVS-10635-BV
12.	3 1/8 3600 National Ball Valve	TVS-10636-BV
13.	2"3000 National Ball Valve	TVS-10637-BV
14.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10638-SS
15.	3 1/8 x 3 1/8 3600 x 8"OAL Spacer Spool	TVS-10639-SS
16.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10640SS
17.	2"3000 Blind Flange	TVS-10641-BF
18.	2 x 2 x 2 x 2"3000 4-Way Block	TVS-10642-4WB
19.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10643-SS
20.	2"3000 Torcana Ball Valve	2030-0019-BV
21.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10644-SS
22.	3 1/8 x 3 1/8x 2 x 2 x 1 ½ 3600 5-Way Block	TVS-10645-5WB
23.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10646-SS
24.	2"3000 Torcana Ball Valve	2030-0018-BV
25.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10647-SS
26.	2 x 2 x 2 x 2"3000 4-Way Block	TVS-10648-4WB
27.	2"3000 Blind Flange	TVS-10649-WNF
28.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10650-SS
29.	3 1/8 x 3 1/8 3600 x 8"OAL Spacer Spool	TVS-10651-SS
30.	2"x2"3000 x 7"OAL Spacer Spool	TVS-10652-SS
31.	2"3000 National Ball Valve	TVS-10653-BV
32.	3 1/8 3600 National Ball Valve	TVS-10654-BV
33.	2"3000 Torcana Ball Valve	2030-0022-BV
34.	2"3000 x 3"SCH80 Weld Neck Flange	TVS-10655-WNF
35.	3 1/8 3600 X 3"SCH80 Weld Neck Flange	TVS-10656-WNF
36.	2"3000 x 3"SCH80 Weld Neck Flange	TVS-10657-BF
37.	2"3000 National Ball Valve	TVS-10658-BV
38.	2"3000 x 2"LP Companion Flange	TVS-10659-CF
39.	1 ½ 3000 Blind Flange	TVS-10660-BF

6011 - 87 A Street
Edmonton, AB T6E 5W6

Bus. (780) 490-0161
Fax: (780) 466-8836

40. 1 ½ x 2" 3000 x 7"OAL Spacer Spool	TVS-10661-SS
41. 3 1/8 3000 x 3 1/8 3600 Adapter Flange	TVS-10662-AF
42. 2 x 2" 3000 x 7"OAL Solid Spacer	TVS-10663-SS
43. 2"3000 Torcana Ball Valve	2030-0021-BV

RIG # 220D

Item No.	Qty	Description	ID No.	Co No.
		LINES		
		Choke Lines		
1	1	Flanged Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa) x 242" OAL	N-10228-3	12435
2	1	Flanged Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa) x 248 ¾" OAL	N-10229-3	12443
3	1	Flanged Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa) x 270 ½" OAL	N-9320-3	11594
4	1	Flanged Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa) x 128" OAL	N-10706	12684
5	1	Flanged Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa) x 12" OAL	N-11695	13238
6	1	Flanged Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa) x 24" OAL	N-11714-2	13533
		Accessory Lines		
7	1	Flange x Hub Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-9302-5	11571
8	1	Flange x Hub Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-9302-1	11567
9	1	Flange x Hub Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-9431	11646
10	1	Flange x Hub Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-9431	11647
11	1	Flanged Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-09982	12289
12	1	Flange x Hub Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-7593-1	10129
13	1	Flange x Hub Single Turn Choke Line, 3 1/8" (76 mm) – 3,000 psi (20,700 kPa)	N-7593-2	10130

18. WELL CONTROL PROCEDURES

WELL CONTROL PROCEDURES

Post MACP in the manifold shack and the doghouse. Record reduced pump speed and pump pressures daily in the tour reports for each crew.

Function test the Annular and Pipe Rams daily, record closing and opening times for each specific item. On trips, function test Blind Rams, record closing and opening times. Weekly function test HCR and record times. Weekly check all studs and nuts on BOP stack for tightness and record.

Proper hole fill and recording procedures will be followed on all trips in and out of the hole. Hole fill records will be signed by Drilling Supervisor and will be kept by Rig Manager.

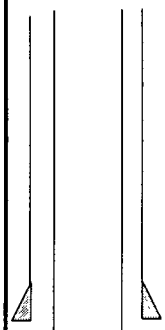
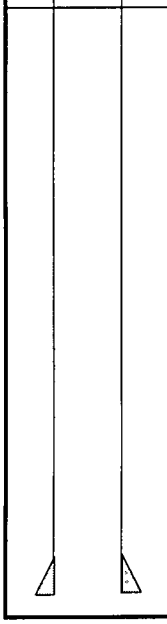
The Wellsite Supervisor and Rig Manager will have a valid PITS "Well Control" Certification and "H2S Alert". All Drillers will have a valid PITS "first Line supervisors" Certificate and "H2S Alert".

19. WELLBORE DIAGRAM AND DRILL CURVE

DRILLING PROGRAM SUMMARY

Well Name: **Para et al Cameron A-03** Well Type: Vertical
Authorized T.D.: 1589 mKB AFE No.:
Estimated Days: 14 days Cost Estimate: $1,500,000
Est. Ground Elevation: 700.0 m Estimated KB Elevation: 773.8 m Actual Ground Elevation: 700.0 m
Tight Hole Status: Company Confidential

ALL DEPTHS IN mKB

Well Diagram	TOPS * - Primary Target ** - Secondary Target	Problems	Hole ,Casing and Cementing Details	Program
	**Surface Hole:** T.D. 425	**Surface Hole:** Lost circulation can begin immediately. Sand and gravel Deviation Totco Survey every 30 m, 1°/30 m maximum. Ground water 250 m GL Ground water to be covered by cement returns to surface.	**Surface Hole:** **HOLE SIZE:** 311 mm **MUD:** 0 - 425 m Gel-Slurry, +/- 100 kg/m³ Fl-natural. **CASING:** 0 – 425 m, 219.1 mm, 35.7 kg/m, J-55, ST&C **CEMENT:** 0 – 425 m 32.2 Tone Class G + 1.5% $CaCl_2$ (50% excess) Yield 0.76 m3/Tonne, Mix Water 0.44 m3/Tonne.	**Surface Hole:** **See Details Attached.** **SURFACE CASING BOWL:** Size: 229 mm Press. Rating 21,000 kPa This BOP stack conforms to AEUB Class _____ Leak off gradient is _____kPa If no leak off gradient is shown, assume 18 kPa/m. Were cement returns received at surface Yes ____ No _____
	**Main:** Formation / Depth mKB TVD Wabamun 557 Fort Simpson 723 BHL 1324 Slave Point 1348 F4 1389 Watt Mountain 1396 Sulphur Point LS 1400 Sulphur Point Dol 1418 Muskeg 1431 Keg River 1529 Base of Keg Porosity 1549 T.D. 1589mKB	**Main:** **H_2S: Expected in the Slave Point and Sulphur Point Formations** **DEVIATION:** Possibly some deviation in the Fort Simpson. **LOST CIRCULATION**: Some Minor Lost circulation Incidents in the Muskeg and Slave point. **PRESSURES:** **Formation / Pressure (EMD kg/m³)** Slave Point 974 Watt Mountain 762 Sulphur Point 971 Muskeg 999 EMD (kg/m³) = Pressure (kpa)/ depth (m) / 0.00981 Pressure (kpa) = EMD (kg/m³) * depth (m) * 0.00981	**Main:** **HOLE SIZE:** 200mm **MUD:** 425– 1200 mKB water/Polymer 1200 mKB - 1521 mKB MD Gel – Chemical, Fluid Loss < 10 cc's/30 min. **CASING:** 0 –1589 mKB, 139.7 mm, 20.83 kg/m, J-55, ST&C **CEMENT:** Cement Top: Surface Lead: 1100 mKB - Surface: 19.2 t ThixLite Tail: 1100 - 1589 mKB: 11.6 t Expandomix LWL. See attached cement program for blends.	**Main:** **DIRECTIONAL:** This is a vertical well. **CORES:** None. **LOGS:** Yes. **DST's:** None.

LICENCE and MAPS/SURVEY

A well licence application is submitted with this binder. An area map and a copy of the survey are enclosed in the pocket at the end of this binder.

CONSUMABLES INVENTORY

At the start of the well ensure that a hi boy trailer is on site loaded with at least the following:
-168 sacks of Barite
-200 sacks of Bentonite
-50 sacks of Cellophane
-80 sacks of Primaseal Medium
-300 sacks of Sawdust
After completion of drilling of each well review the amount of material used and restock the trailer as required.

At the start of the well ensure that a freshly stocked mud van is on site with at least the following:
-10 sacks of Alcomer 120
-10 sacks of Alkapam A1103D
-160 sacks of Bentonite
-20 sacks of Bicarb of Soda
-20 sacks of Desco CF
-10 X 18.9 liter containers of Drilling Detergent
-20 sacks of Drispac Regular
-80 sacks of Envirofloc
-30 sacks of Enviroplug Medium
-60 sacks of Primaseal Medium
-10 sacks of SAPP
-75 sacks of Sawdust
-60 sacks of Soda Ash

The drilling rig has fuel capacity for 11500 liters of fuel storage. That gives them approximately three days of operating time with their own storage. Additionally set another tank of 13600 liter capacity on site to ensure another 3.5 days of operating time. Always ensure that adequate fuel is on location for at least three days operating time. Ensure that any fuel storage tank on site is double walled.

There are no plans to store cement on site but cement when required will be coming from BJ Services or Sanjel in High Level.

13.0 HYDROGEN SULPHIDE SAFETY

Hydrogen sulphide (H_2S) is perhaps the single most dangerous hazard faced by oilfield personnel.

A concentration of a few hundredths of one percent higher than that causing irritation can cause asphyxia and death. There is a very narrow margin between consciousness and unconsciousness; between unconsciousness and death.

The principal hazard to personnel is respiratory arrest. Spontaneous breathing will not resume without artificial respiration. After breathing has stopped, the heart may continue to beat for 4 - 6 minutes. Prompt rescue and resuscitation may save the victim's life.

13.1 PURPOSE

This section provides guidelines for all company and contract personnel required to work in areas where H_2S is present.

Personnel may also use applicable parts of this section as a Safe Work Guideline for working alone.

All workers should be aware that production (and other) buildings are potential confined spaces. These buildings may have restricted access and egress, and a leak of sweet or sour product could render the atmosphere Immediately Dangerous to Life and Health. The guidelines in this section will improve the safety of personnel working in these buildings.

13.2 H_2S CHARACTERISTICS

- Hydrogen sulphide is a highly toxic gas. In high concentrations it can kill in seconds by paralysing the respiratory system.
- H_2S is colourless, flammable, heavier than air and highly soluble in water. In low concentrations it smells like rotten eggs; in moderate concentrations it quickly deadens the sense of smell.

13.3 H_2S DETECTION

Only approved H_2S detectors will be used. These detectors may include tube type detectors, personal monitors or continuous monitors. H_2S ampoules will not be used. Breathing apparatus will be used when checking for H_2S.

Detection equipment will be tested and calibrated as directed by the manufacturer and, if applicable, will be zeroed in fresh air before use.

HYDROGEN SULPHIDE (H_2S) INFORMATION

- Characteristics and Dangers of H_2S [1]
  - Found in decaying organic matter, crude oil and natural gas.
  - Found as a gas at temperatures above $-60^{o}C$.
  - Colourless.

- Flammable; burns to form Sulphur Dioxide (SO_2).
- Odour of rotten eggs at low concentrations; kills all sense of smell at higher concentrations.
- Will tend to disperse more slowly in sheltered, calm or low lying areas.
- Extremely toxic.
- At lower concentrations (20-50 ppm) irritates mucous membranes of the eyes, throat and lungs, causes headache, dizziness, nausea, and may cause pulmonary edema (fluid in the lungs) upon prolonged exposures.
- High concentrations (500-1,000 ppm) cause paralysis of the respiratory control centre in the brain; breathing stops and suffocation occurs.

- General Health Effects of H_2S [1] and Provincial Standards

Concentration

% by Volume	(PPM)*	Effects
.001-	.01-.3	Lower odour threshold.
.005	1-5	Moderate to strong offensive odour may create nausea, tearing of the eyes, headaches or loss of sleep upon prolonged exposure; effects are moderate.
.010	10	8 hour occupational exposure limit.
.0015	15	15 minute occupational exposure limit.
.002	20	Ceiling occupational exposure limit, evacuation level.
.01	100	Eye and lung irritation.
.015	150	Deadens the sense of smell; severe eye and lung irritation.
.65	500	Serious damage to the eyes within 30 minutes; severe lung irritation; unconsciousness and death within 4 to 8 hours.
1000		Breathing stops with one or two breaths.

(PPM)* - A common scale used for measuring H_2S, (ppm) parts per million equals parts of (H_2S) gas per million parts of atmosphere by volume.

13.4 H_2S TOXICITY TABLE

% BY VOLUME	CONCENTRATION (PPM)	EFFECTS
0.000001 - .00003%	0.01 - 0.3	Odour threshold.
.010%	10	8 hour occupational exposure limit.
.015%	15	15 minute occupational exposure limit.
.002%	20	Occupational exposure limit ceiling; no workers may be exposed to 20 ppm H_2S at any time.
.01%	100	***Immediately Dangerous to Life and Health.*** Loss of smell in 2-15 minutes. May burn throat, cause headache and nausea.
.02%	200	Sense of smell lost rapidly. Burns eyes and throat.
0.05	500	Loss of reasoning and balance. Respiratory arrest in 2 to 15 minutes. Prompt resuscitation needed.
0.07%	700	Immediate unconsciousness. Causes seizures, loss of bladder and bowel control. Breathing will stop and death will result if not rescued promptly. Immediate resuscitation needed.
0.1%	1000	Causes immediate stoppage of breathing. Death or permanent brain damage will result unless rescued promptly. Death from cardiac arrest or permanent brain damage will result within 4 to 6 minutes after breathing stops.

13.5 RESPONSIBILITIES OF FACILITY AND FIELD OPERATORS

Operators shall:

- Maintain safe and efficient operations by keeping all equipment under close surveillance.
- Maintain a high level of general lease housekeeping. All work crews shall clean up after themselves.
- Report problems. Correct the problem, if trained.
- Note any unauthorized commercial or non-commercial activities or traffic within the field area and report it to the field foreman.
- Maintain close surveillance of contract crews under their supervision.
- Prevent the development of hazardous conditions by knowing the condition, function and possible weaknesses of every piece of equipment under their operating jurisdiction.

13.6 GENERAL FIELD OPERATIONS

13.6.1 Operating Personnel

Operating personnel shall:

- Mask up for work if the potential H_2S environment may exceed 10 ppm.
- Implement the buddy system, whenever mask up may be required. The buddy system provides a back-up person to perform a rescue.
- Inform the Paramount representative of any changes, problems or variations from normal conditions encountered during their shift.
- Note any work requiring the attention of a maintenance crew and report it to the Paramount representative who will initiate corrective measures.
- Report all leaks regardless of how minor they may appear to be.
- Conduct a complete inspection of the field truck and safety equipment at the beginning of each shift.
- Know:
  - How to use the self-contained breathing apparatus and be aware of its location,
  - Emergency rescue procedure,
  - Emergency blowout and evacuation procedure,
  - The operation of safety equipment on operating and maintenance vehicles,
  - The location of all wells and installations in their area of operation,
  - The basic operation of all field installations with their safety features and safety shutdown capabilities and controls.
- Obtain H_2S Alive training and certification as soon as possible after hire.
- Trim head and facial hair to prevent interference with respiratory protective equipment.

13.6.2 Lease Conduct

Before entering a lease, the operator shall check for:

- Wind direction,
- Gas contamination of the atmosphere,
- Abnormalities about the lease and equipment.

If operating conditions appear normal:

- Enter the lease. Turn vehicle around to face the lease exit.
- Slowly open and lock open both doors to the building, downwind door first.
- Allow building to ventilate.
- Proceed with work if conditions inside are safe.

In the event that gas is detected the operator shall:

- Make radio contact with the Paramount representative, telling him of the situation and requesting backup assistance.
- Not enter without the use of breathing apparatus and a standby person.

13.7 MAINTENANCE PERSONNEL

- Maintenance personnel shall adhere to lease entry and conduct procedures.
- All maintenance work on sour operating leases shall involve two or more workers.
- Only operating personnel shall shut in and start up wells and equipment for purposes of maintenance.
- When maintenance work requires that both members of the crew wear breathing apparatus, a third worker shall be called in to act as watchperson.
- Contract personnel working on or near lease equipment must be equipped with their own breathing apparatus and be qualified in its use. They will be accompanied by a watchperson with breathing apparatus and a radio or telephone-equipped vehicle. The watchperson is not required when the well is shut in by locked master valves and all sour gas lines on the lease are de-pressured and purged. In this case only periodic surveillance is necessary.
- Contract personnel working on an H_2S producing lease, but not on or near lease equipment, shall:
  - Not enter a lease without being accompanied by a site representative, foreman or operator.
  - Be familiar with field safety regulations and have a good understanding of H_2S and its dangers.
  - Leave the lease immediately if they notice anything unusual about the lease or equipment and report the situation to a Paramount representative. When the lease has been proven safe the Paramount representative may leave, but must maintain periodic surveillance of the operation throughout the day. An emergency phone list, including key Paramount phone numbers, will be on location (see Section 2.2.1).
- Fittings and pipe used in repairs or modifications shall conform to original construction specifications with respect to working pressures and material.

13.8 TECHNICAL PERSONNEL

Technical personnel shall not enter a producing sour lease unless:

- The well has been shut in by master valve and lines de-pressured by the operators, or
- They are accompanied by operations personnel, or

- They adhere to the procedures regarding lease entry, or
- There is respiratory and H_2S detection equipment on lease, and
- They are trained to use the respiratory and detection equipment.

The engineer or technologist is responsible to ensure that contract workers adhere to the rules laid down in:

- This guide,
- General Safety Regulations for Contractors,
- Occupational Health and Safety Act and Regulations.

13.9 COMMUNICATIONS

In order to contact outside help in an emergency, each facility operator or designated site representative will have a means of communicating with other off site personnel or emergency services.

When a facility operator or designated site representative is not present at a worksite, the contractor will have a radio or telephone capable of communication with off site personnel or emergency services. All on-site personnel will be informed of the location of the radio or telephone.

Company and site-specific emergency services telephone numbers and clear directions to the location will be posted near all telephones or provided to each contractor representative and designated site representative.

13.10 HANDLING AND TRANSPORT OF SOUR BULK PRODUCT

Paramount personnel shall, at regular intervals, confirm that:

- Waybills and TDG placarding requirements are observed.
- While loading, a bonding cable is connected between the load line and the truck tank.
- Drivers use breathing apparatus if the H_2S level exceeds 10 ppm.
- Tank trucks are equipped with positive air shutoffs.
- Truck drivers wear appropriate personal protective equipment and clothing.
- Drivers remain near their trucks while loading or unloading.
- Drivers do not perform any vehicle maintenance while loading or unloading product.

13.11 EMERGENCY RESCUE PROCEDURES

When attempting rescues in H_2S areas, use breathing apparatus. Workers should make use of all rescue equipment on location: safety harnesses, ropes, slings and stretchers. At least two people should perform a rescue. It is much safer for the rescuer and, in most cases, two people can get a victim to safety quicker than one. Rescuers must take precautions against falling or dropping victims.

When performing a rescue, workers shall:

- Get out of the hazard area.
- Call for assistance.
- Put on breathing apparatus.
- Check windsocks and streamers to determine where you will take the victim.
- Remove the victim to a pre-determined (upwind) safe area.

13.12 TREATMENT FOR H_2S POISONING

- Begin artificial respiration as soon as you reach a safe area. If a resuscitator is available, direct another worker to get and prepare it for use.
- Treat for shock; keep victim warm and comfortable.
- Keep the victim at rest.
- Get the victim to medical aid. Victims of poisoning should always be treated by a physician. The effects of H_2S may not be apparent for many hours.

Safety Plan
for
Simultaneous A-03 Drilling and H-03 Production Operations

INTRODUCTION

This safety plan is intended to specify roles and responsibilities for Paramount Resources Ltd's (Paramount) employees and services while Paramount carries out its planned drilling operations Para et al Cameron A-03 well while simultaneously carrying out production operations at the H-03 production facility (plant). The well and production facility share a common lease.

Safely carrying out the simultaneous drilling and production operations will require communication and coordination. The production operations will be directed by Paramount's Production Lead Operator while the drilling operation will be directed by Paramount's Wellsite Supervisor. These two individuals will be required to coordinate their operations such that they do not impact the other operation. They will be required to be in constant communication so that all situations can be evaluated and discussed prior to problems arising. The communication will be either by the daily safety meeting or by handheld radio.

OPERATOINAL, INSPECTION, MONITORING, AND MAINTENANCE PROCEDURES

The plant is equipped with a system of gas detectors and alarms that will notify the operator with a DCS (Digital Control System) of any plant malfunctions. The production facility will be manned 24 hours per day while the drilling operations are being carried out.

The rig will be equipped with gas detectors that will sound an alarm if sour gas is detected at the wellsite.

If either location detects a problem the other location will be immediately notified such that current operations can be suspended and, if required, the emergency response plan can be put into effect.

FACILITIES, EQUIPMENT, TRAINING AND QUALIFICATIONS

The Wellsite Supervisor will possess a valid PITS Second Line BOP certificate, a valid H_2S Alive certificate, and a valid first aid certificate. All rig personnel will possess valid H_2S Alive certificates. There will at least one self contained breathing apparatus or one supplied air breathing apparatus for each employee on the rig floor. There will be at least

two additional readily available self contained breathing apparatuses available at the site. There will be at least one 40 BC rated fire extinguisher on the rig floor and at the choke manifold and at least one 80 BC rated fire extinguisher available at the wellsite. All wellsite personnel will be trained in the proper use of this fire fighting equipment.

OCCUPATIONAL HEALTH AND SAFETY MATTERS

There will be an onsite paramedic available at all times during the drilling operation.

OTHER RELEVANT MATTER

Prior to start of the operations a "Hot Work Permit" will be issued by the Production Operations group. The issuance of this permit will require a joint tailgate meeting, thus ensuring that both groups are aware of the nature and timing of the other group's operations.

GENERAL CONTINGENCY PLANS

(refer to the "NWT – Cameron Hills AREA EMERGENCY RESPONSE PLAN" - July 2005 for specific details)

1.0 Serious Injury or Death

1.1 Serious Injury (ERP Level II Accident, see: ERP section 2.10, page 7)

- Assess patient's situation.
- Notify on-site paramedic of accident.
- Ensure the safety of yourself, patient and others.
- If in a sour environment employ SCBA, personal gas monitor and use "buddy system" to move patient to safety. If no immediate dangers exist (i.e. H_2S, oxygen deficiency, fire or threat of explosion), do not move the patient.
- Shut down all sources of power, extinguish any fires, and stabilize any equipment that could move.
- Attend to medical needs of patient, providing first aid care to the level that you are trained. Priority of care must be in this order:
  - Airway — Is the airway open and clear? If not, you must clear.
  - Breathing — Is the patient breathing? If not, you must provide artificial respiration (CPR).
  - Circulation — Does the patient have a pulse? If not, you must do chest compressions and artificial respiration (CPR).
  - Deadly Bleeding — Does the patient have major bleeding? If patient is bleeding, it must be controlled. Measures to control bleeding are direct pressure, elevation, pressure points and tourniquet.
  - Treat For Shock — Continue to monitor above, control bleeding and keep patient calm and warm.

- Rapid Transport is necessary if the patient exhibits any of the following:
  - Symptoms of shock (pale, cool and clammy).
  - Difficulty breathing
  - An altered level of consciousness
  - Bilateral femur fractures or an unstable pelvis.
  - Distension of the abdomen.
  - Flail chest or a sucking chest wound.

  NOTE: Patients should only be moved by a trained rescuer using the proper equipment, but if the patient is not breathing and you are all he/she has to provide aid, use any means to save life.

- Call Air Ambulance (Northern Dispatch - 24 hr - 1-800-661-3822), Hay River Hospital (1-867-874-7100), or the High Level Hospital (1-780-926-3791) as needed.
- Contact immediate supervisor in the Calgary Office who will in turn contact the Corporate Incident Commander at Head Office.
- As best as is possible, protect accident scene from disturbance until investigators have given clearance.
- Record the name of witnesses and gather information to complete a company Incident or Accident Report form (ERP Appendix 3, Form 10)
- Report accident to the NEB - Rick Turner (1-403-299-3868), the NWT Worker's Compensation Board - Yellowknife (1-867-920-3888), and Occupational Health and Safety - Yellowknife - 24 hr (1-800-661-0792).

1.2 Fatality/Death (ERP Level III Accident, see: ERP section 2.10, page 7)

- Ensure the safety of yourself and others.
- Notify on-site paramedic of accident.
- Call for On-Scene Commander to take charge of situation.
- Attend to any medical needs of injured workers, as outlined above under "Serious Injury".
- Call RCMP - Hay River (1-867-874-1111) - to report the fatality.

- Report accident to the NEB - Rick Turner (1-403-299-3868).
- Call ambulance or hospital as needed.
- Contact Emergency Manager at Head Office.
- Upon pronouncement of death by qualified person (i.e. doctor, medical examiner) the On-Scene Commander shall advise Occupational Health and Safety - Yellowknife - 24 hr (1-800-661-0792).
- As best as is possible, protect accident scene from disturbance until investigators have given clearance.
- Record the name of witnesses and gather information to complete a company Incident or Accident Report form (ERP Appendix 3, Form 10).
- Make record of victim's belongings to be turned over to the RCMP or Medical Examiner.
- Follow procedure for Notification of Next-of-Kin (ERP Section 10.4, Page 7).

2.0 Fire and Explosions

2.1 Fire- Rig (ERP Section 10.19, Page 79 and Section 10.20, Page 80)

- Activate the alarm (radio call "Fire, Fire, Fire").
- Evacuate personnel to predetermined safe area or upwind alternate area and take head count. Establish an On-Scene Commander.
- Recognize the problem (i.e. Forest Fire or Equipment Fire).
- Evaluate the hazards – threats to people and property.
- If someone is missing, establish response team for search and rescue.
- Attend to any medical needs.
- Employ personal protective equipment necessary to protect workers.
- Shutdown operations.
- Notify fellow workers and identify resources needed.
- Isolate and control the fire to crew's level of safety and confidence.
- Ensure all fuel sources are removed.
- Eliminate further ignition sources – shut-off power, fuel to heaters, and dissipate static charges by holding on to metal structure for 10 seconds.
- Eliminate oxygen – use steam, chemical, foam, dry powder, CO_2, dirt.

- Always stay away from ends of tanks. Use water to cool equipment and tanks. Fight fire from maximum distance, 1500 meters if noises from venting devices or tank discoloration.
- Contact Hay River Fire Department (1-867-874-2222) if additional resources are required to fight the fire.
- Contact immediate supervisor in the Calgary Office who will in turn, if required, contact the Corporate Incident Commander at Head Office
- Report incident to the NEB - Rick Turner (1-403-299-3868) and DIAND – Andrew Forbes (1-867-874-6994).
- Prepare Paramount Incident/Accident Report Form and other forms as required.
- **If Alone:**
    - Take immediate action on the fire if you believe you can control it yourself (i.e. if the fire is quite small and is spreading very slowly).
    - Use personal gas monitor, personal protective equipment and always stay upwind.
    - If the fire is beyond your ability, contact Cameron Hills Plant, Hay River Fire Department and DIAND for help. **Do not take action on an intense fire by yourself.**

2.2 Fire- Camp (ERP Section 10.19, Page 79 and Section 10.20, Page 80)

- Evacuate camp – head count at meeting place.
- Ensure that all window covers are open (window covers are always to be kept open and should be inspected daily).
- Contact rig for fire fighting resources.
- Contain fire/shut-in propane and other flame sources.
- Alert on-site paramedic.
- If applicable, contact Hay River Fire Department (1-867-874-2222) for assistance.
- Report incident to immediate supervisor in Calgary.
- Report incident to the NEB - Rick Turner (1-403-299-3868).

- Prepare Paramount Incident/Accident Report Form and other forms as required.
- **If Alone:**
  - Take immediate action on the fire if you believe you can control it yourself (i.e. if the fire is quite small).
  - **Do not take action on an intense fire by yourself.**

2.3 Explosion (ERP Section 10.20, Page 77)

- Activate the alarm (radio call "Fire, Fire, Fire")
- Evacuate personnel to predetermined safe area or upwind alternate area and take head count. Establish an On-Scene Commander.
- Recognize the problem (i.e. determine location and severity).
- Evaluate the hazards – threats to people and property.
- If someone is missing, establish Response Team for search and rescue.
- Attend to any medical needs.
- Employ personal protective equipment necessary to protect workers.
- Shutdown operations.
- Identify resources needed and evacuate any unnecessary personnel.
- Isolate the area of explosion and attempt to control any fires. Personal gas monitors must be worn at all times to detect explosive atmospheres. Appropriate personnel equipment must be worn. Personnel must be equipped with two-way radios (intrinsically safe).
- Isolate and shut-off all sources of fuel and ignition.
- Always stay away from tank ends.
- Use water to cool equipment.
- Report incident to the NEB - Rick Turner (1-403-299-3868) and DIAND – Andrew Forbes (1-867-874-6994).
- Prepare Paramount Incident/Accident Report Form and other forms as required.
- Prepare necessary internal and regulatory reports.

3.0 Loss of Support Craft (i.e. Aircraft):

- Notify Canadian Transportation Board (24 hr. at 780-495-3999), Transport Canada Civil Aviation Duty Officer (Pager 204-932-2751) or NAV Canada (1-877-992-6853).
- Notify on-site paramedic.
- Notify external support agencies as required.
- Notify immediate supervisor in Calgary office.

4.0 Loss or Disablement of Rig:

- Shut-in well.
- If required, evacuate rig - head count at meeting place.
- Commence remedial actions.
- Notify immediate supervisor in Company Office.

5.0 Uncontrolled Flow (BLOW OUT):

Refer to the ERP Section 10.20, page 77.

- Evacuate rig – head count at meeting place.
- Rescue downed or injured workers if and when it is safe to do so.
- Block access roads.
- Notify immediate supervisor in Calgary office to set up Emergency Operations Center.
- Notify NEB and DIAND personnel.
- Establish On-Site Command Post (OSCP).
- Evaluate situation and order equipment/services as required.
- Ignite well if required (ERP section 10.17 "Ignition").

6.0 Relief Well Drilling Arrangements:

If a relief well is necessary, another drilling rig would be mobilized in from Alberta. Paramount's plan would be to first canvas drilling rig contractors to determine if there were any suitable drilling rigs available that could be quickly mobilized on short notice.

If no rig can be immediately sourced, Paramount will move one of its currently contracted rigs from the Bistcho or Kaybob areas up to Cameron Hills. During the upcoming 2005 / 2006 winter drilling season, Paramount plans to have Precision #250 (2000 meter capability) and Precision #220 (2400 meter capacity) working in the Cameron Hills / Bistcho aresa. Trinidad #71 (3200 meter capacity), Trinidad #43E (3500 meter capacity) and Precision #519 (3660 meter capability), and possibly other rigs, will be working in the Kaybob area. Ensign #78 (3200 meter capacity) will be working in the Grande Prairie are. If there is an emergency situation and a relief well needs to be drilled, Paramount will determine which rig could most easily shut down. Operations at a Bistcho or Kaybob site will be shut down as quickly as possible and the drilling rig will immediately be moved to Cameron Hills to commence the drilling of a relief well.

The kill technique will be dictated by the condition of the original well. The relief well will have surface casing set at 425m. Directional drilling will be used to intersect the original wellbore near the blow out depth. Heavy mud or cement will be used as a kill fluid.

7.0 Evacuation/Muster Points

Prior to the start of the job, decide on an appropriate meeting place in the event that the wellsite or camp has to be evacuated. Ensure that all personnel are aware of the meeting place(s) and that they are also aware of the emergency escape route from the work site.

8.0 Hazards Unique To the Site:

This work will be completed during the winter season. Icy roads, icy lease, and icy walkways and stairs are all obvious hazards. The amount and size of equipment on the lease creates hazards as well as the workers' need to be reminded of the risks of working on a busy work site. Ensure that workers take regular breaks and during severely cold weather watch for signs of frostbite. Watch for other these and other hazardous situations and discuss them at the regular safety meetings (see ERP Section 1.4, Page 4).

9.0 Spills of Liquid or Solid

Refer to the ERP Section 10.10 page 26 "Hazard Material Spill contingency Plan" for specific procedures to follow if a major spill occurs.

9.1 Major Spills Including Fuel Truck Rollover

- Identify spill product, assess hazards, and evaluate danger to life/environment.
- Alert paramedic and safety staff.
- Contain spill (build dyke using clay or bags of sawdust).
- Contact NEB 24 hour spill line.
- If required, arrange for fire protection.
- Contact Area 'A' Spill Co-op Northwest AB if their assistance is required.
- Commence clean up and disposal in accordance with Federal Regulations.
- Notify immediate supervisor in Calgary office, NEB, DIAND.
- Complete Paramount's Spill/Release Report form (ERP Appendix 3, Form 14).

9.2 Minor Spills:

- Identify spill product, assess hazards, and evaluate danger to life/environment.
- Contain spill (build dyke using snow, clay, or bags of sawdust).
- If required, arrange for fire protection.
- Contact Area 'C' Spill Co-op Northeast BC if their assistance is required.
- If spill is greater than 100 litres, contact NEB 24 hour spill line.
- Commence clean up and disposal in accordance with Federal Regulations.
- Notify immediate supervisor in Calgary office.
- Complete Paramount's Spill/Release Report form (ERP Appendix 3, Form 14).

GENERAL HEALTH AND SAFETY

The NEB shall be notified in all cases of hazardous occurrences as prescribed in Part XVI of the Canada Oil and Gas Occupational Safety and Health Regulations.

A Rig Rat system will be utilized to detect the presence of any hazardous gases.

There must be a minimum of five self contained breathing apparatus (SCBA) or a supplied air apparatus with at least five face masks on the drill floor at all times. There must be a minimum of four SCBA's located at the camp at all times.

There must be at least two portable H_2S gas detectors and at least two portable combustible gas detectors on the drill floor at all times.

Each drilling rig is to have a paramedic with a fully equipped ambulance at the location. The ambulance must be capable of carrying a stretcher. There will be a designated first aid room in the drilling rig camp.

When operating with only one rig there will be only one paramedic at the site. In the event that the paramedic has to leave the area to transport an injured worker to a medical facility, operations will be shut down until the paramedic returns to the site. When there are multiple rigs are operating in an area, there will be two or more paramedics at the site. If one of the paramedics has to leave the area to transport an injured worker to a medical facility, operations may continue with the remaining paramedic(s) covering the locations for the period of time that the paramedic is off site.

In the event of a medical emergency requiring the transport of an injured/sick worker various options are available for transport. Prior to the airstrip being useable transport can be achieved by 1) helicopter service, 2) paramedic's ambulance, or 3) pickup truck transport (for non-emergencies). If the airstrip is useable, fixed wing transport will also be available. The onsite paramedic will be the person responsible to make the decision on the best means of transport.

Safety personnel and equipment will be onsite as required for operations such as drill stem testing to provide H_2S supervision. As well, safety meetings will be carried out to review specific operations such as drill stem testing, coring and running casing.

At least one dry chemical or equivalent non-freezing type fire extinguisher, having a U.L.C. rating of not less than 40 BC be positioned at the boiler, drill floor or doghouse, choke manifold, any enclosure housing fuel fire engine or heating unit, and any welding unit.

At least one dry chemical or equivalent non-freezing type fire extinguisher, having a U.L.C. rating of not less than 80 BC be available at the location.

A camp facility is planned to be located a safe distance from the drilling operation. The crew consisting of cooks and assistants will not be exposed to any drilling hazards.

Adequate fire fighting equipment, including axes and U.L.C. class A, B, and C extinguishers to be located at the rig camp.

All window shutters are to be open at all times when the rig camp is operating. They are to be closed only when in transport.

CORING

There is no coring planned for the well.

From: Adrian Paradis [mailto:adrian@mvlwb.com]
Sent: Wednesday, January 24, 2007 10:16 AM
To: 'Shirley Maaskant'
Cc: 'mccowann@inac-ainc.gc.ca'; 'lvanham@neb-one.gc.ca'; 'Warne Rhoades (warne.rhoades@paramount.res.com)'
Subject: RE: Cameron Hills

Shirley, I have no concerns with Paramount drilling an injection well on H-03. The use is scoped under the renewal land use permit MV2006P0033 (previously MV2000P0055) and water license MV2006L1-0010 (previously MV2000L1-0014).

Adrian Paradis
Senior Regulatory Officer - Oil & Gas
Mackenzie Valley Land and Water Board
wk. 867-766-7473
fax. 867-873-6610

-----Original Message-----
From: Shirley Maaskant [mailto:Shirley.Maaskant@paramountres.com]
Sent: Tuesday, December 12, 2006 12:06 PM
To: Adrian Paradis
Cc: mccowann@inac-ainc.gc.ca; lvanham@neb-one.gc.ca
Subject: Cameron Hills

Adrian
Further to our telephone conversation of last week and again December 11, 2006 - Paramount is planning on applying to the National Energy Board to drill an injection well and install surface related equipment on the existing built battery site commonly referred to as H-03 60 10, 117 30.

The Mackenzie Valley Land and Water Board have confirmed that his type of activity was contemplated and scoped within Paramount's existing land use permit MV2000P0055 and water licence MV2000L1-0014 and as such will be conducted under these permits. These permits currently expire January 17, 2007, however new applications have been submitted to the MVLWB and are referred to as land use permit MV2006P0033 and water licence MV2006L1-0010.

Thank you for your time and assistance.

LAND USE PERMIT

Permit Class	Permit No	Amendment No
A	MV2006P0033	

Subject to the Mackenzie Valley Land Use Regulations and the terms and conditions in this Permit, authority is hereby granted to:

Paramount Resources Ltd.

Permittee

To proceed with the land use operation described in application of:

Signature	Date
Shirley Maaskant	October 18, 2006
Type of Land use Operation	
Oil and Gas	
Location	
Cameron Hills	

This permit may be assigned, extended, discontinued, suspended or cancelled pursuant to the Mackenzie Valley Land Use Regulations.

Dated at Yellowknife this 21 day of December , 2006

Signature Chair

Signature Witness

Commencement Date
December 21, 2006

Expiry Date
December 20, 2011

NOTE

IT IS A CONDITION OF THIS PERMIT THAT THE PERMITTEE COMPLY WITH ANY OTHER APPLICABLE ACT, REGULATION, ORDINANCE BY-LAW OR ORDER. DEFAULT HEREOF MAY RESULT IN SUSPENSION OR CANCELLATION OF THIS PERMIT.

CONDITIONS ANNEXED TO AND FORMING PART OF LAND USE PERMIT NUMBER MV2006P0033

Part A: Scope of Permit

1. This permit entitles Paramount Resources Ltd. to conduct the following activities:

   Access to the Cameron Hills project area for well sites, roads, bridges, pipelines, power lines, and fuel lines on existing right-of-way, airstrip, campsites, borrow pits/water wells, a satellite site, a battery site and a radio communication system with towers, to conduct oil and gas related activities such as drilling, completion, re-entry, evaluation, tying-in of wells, construction of pipelines, fuel lines and production operations. This permit includes the following well sites locations:

Min: 60° 00', 117° 15' Max: 60° 20', 117° 45'

A-73: 60° 20' N; 117° 30' W
C-50: 60° 10' N; 117° 30' W
N-28: 60° 10' N; 117° 30' W
J-37: 60° 10' N; 117° 30' W
B-38: 60° 10' N; 117° 30' W
C-19: 60° 10' N; 117° 30' W
A-05: 60° 10' N; 117° 30' W
B-25: 60° 10' N; 117° 30' W
L-47: 60° 10' N; 117° 30' W
L-44: 60° 20' N; 117° 30' W
F-19: 60° 10' N; 117° 30' W
K-19: 60° 10' N; 117° 30' W
O-19: 60° 10' N; 117° 30' W
K-74: 60° 10' N; 117° 15' W
C-74: 60° 10' N; 117° 15' W
2C-74: 60° 10' N; 117° 15' W
I-74: 60° 10' N; 117° 15' W
I-73: 60° 10' N; 117° 15' W
M-73: 60° 20' N; 117° 15' W
2M-73: 60° 10' N; 117° 15' W
F-73: 60° 10' N; 117° 15' W
2F-73: 60° 10' N; 117° 15' W
C-75: 60° 10' N; 117° 15' W

2. The Permit is issued subject to the conditions contained herein with respect to the use of land for the activities and area identified in Part A, Item 1 of this permit.

3. Compliance with the terms and conditions of this permit does not absolve the Permittee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

Part B: Definitions

"Act" means the *Mackenzie Valley Resource Management Act*;

"Board" means the Mackenzie Valley Land and Water Board established under Part 4 of the *Mackenzie Valley Resource Management Act*;

"Drill Waste" means all materials or chemicals, solid or liquid, associated with the drilling of boreholes and include borehole cuttings;

"EA03-005" means, for the purpose of this Permit, the totality of the Mackenzie Valley Environmental Impact Review Board (MVEIRB) Public Registry as established under Part 5 of the MVRMA for this Permit application, this includes everything that was submitted by Paramount Resources Ltd. to the MVEIRB, the scope of which is consistent with the Land Use Permit and Water License application;

"Inspector" means an Inspector designated by the Minister under the *Mackenzie Valley Resource Management Act*;

"Sewage" means all toilet wastes and grey water; and

"Sump" means a man-made pit, trench hollow or cavity in the earth's surface used for the purpose of depositing waste material therein.

Part C: Conditions Applying to All Activities (the headings correspond to Subsection 26 of the Mackenzie Valley Land Use Regulations)

26(1)(a) LOCATION AND AREA

1.	The Permittee shall not conduct this land use operation on any lands not designated in the accepted application.	PLANS
2.	The Permittee shall locate all camps one (100) hundred metres from water on gravel, sand or other durable land.	CAMP LOCATION
3.	The Permittee shall, accompanied by an Inspector, conduct a joint inspection of the selected wellsite(s), remote Sump(s), campsite(s) and quarry site(s) prior to any clearing or use of the sites taking place.	INSPECT LOCATIONS
4.	The Permittee shall not conduct a quarry operation within one hundred (100) metres of the ordinary high water mark of any water body unless otherwise authorized in writing by an Inspector.	LOCATION OF OPERATION

26(1)(b) TIME

5.	The Permittee's Field Supervisor shall contact an Inspector at (867) 874-6995 at least forty-eight (48) hours prior to the commencement of this land use operation.	CONTACT INSPECTOR
6.	The Permittee shall advise an Inspector at least ten (10) days prior to the completion of the land use operation of (a) the plan for removal or storage of equipment and materials, and (b) when final clean-up and restoration of the land used will be completed.	REPORTS BEFORE REMOVAL

7. The Permittee shall provide in writing to the Board and Inspector, at least forty-eight (48) hours prior to commencement of this land use operation, the following information: IDENTIFY AGENT
   (a) person, or persons, in charge of the field operation to whom notices, orders, and reports may be served;
   (b) alternates; and
   (c) all methods for contacting the above person(s).

8. The Permittee shall contact the Inspector weekly by phone with a progress report during the land use operation. PROGRESS REPORT

9. The Permittee shall submit a progress report to the Board every (14) days during drilling operations. PROGRESS

10. The Permittee shall notify an Inspector at least ten (10) days prior to backfilling any Sump. BACKFILLING NOTIFICATION

11. The Permittee shall not conduct any overland movement of equipment and vehicles after 0800 hours local time on April 1st, unless otherwise authorized in writing by an Inspector. SHUT-DOWN DATE

12. The Board, for the purpose of this operation, designates April 1st, as spring break-up. SPRING BREAK-UP

13. The Permittee shall, prior to spring break-up, complete all clean up, camp Sump closures, snow fill removals, ice bridge removals, brush and timber disposal, erosion control activities and all other restoration required by conditions of this land use permit or ordered in writing by an Inspector. RESTORATION

14. The Board and/or Inspector reserves the right to impose closure of any area to the Permittee in periods when dangers to natural resources are severe. CLOSURE

26(1)(c) TYPE AND SIZE OF EQUIPMENT

15. The Permittee shall not use any equipment except of the type, size, and number that is listed in the accepted application, unless otherwise authorized in writing by an Inspector. ONLY APPROVED EQUIPMENT

16. The Permittee shall ensure that all contractors and subcontractors construction equipment is clean (free of mud and weed seeds) and in good working order (free of oil and hydraulic leaks) prior to arriving and working in the Cameron Hills area. CLEAN EQUIPMENT ONLY

26(1)(d) METHODS AND TECHNIQUES

17. The Permittee shall construct and maintain winter roads with a minimum of ten (10) centimetres packed snow at all times during this land use operation. If this cannot be done, then the Permittee shall construct Ice Roads in a manner authorized by an Inspector. SNOW ROADS/ ICE ROADS

18. The Permittee shall construct winter snow roads in accordance of the methodology and guidelines identified in the Department of Transportation (DOT) Handbook, 1993 and any subsequent revisions. — SNOW ROAD / ICE ROAD CONSTRUCTION

19. The Permittee shall not store material other than that required for immediate use on the ice surface of water bodies. — STORAGE ON ICE

26(1)(e) TYPE, LOCATION, CAPACITY AND OPERATION OF ALL FACILITIES

20. The Permittee shall not locate any sump within one hundred (100) metres above the ordinary high water mark of any water body. — SUMPS FROM WATER

21. The Permittee shall maintain all Drill Waste at least one point two (1.2) metres above the ordinary high water mark of any waterbody, unless authorized in writing by an Inspector. — FREEBOARD OF SUMPS

22. The Permittee shall, using a backhoe, restore all sumps by mixing the sump fluid with excavated material until it is solid enough to support the weight of the backhoe. A cap of excavated material will then be placed over the sump. This cap shall extend a minimum of two (2) meters above the contiguous surrounding ground surface and overlap the edges of the sump by a minimum of two (2) meters. — SUMP RESTORATION

23. The Permittee shall remove all temporary construction buildings and equipment prior to spring break up of each year. — REMOVAL OF TEMPORARY STRUCTURES

24. The Permittee shall restrict its activities to designated Right-of-Ways, approved extra workspaces, existing roads and appropriate detours. — RESTRICTION OF CONSTRUCTION TRAFFIC

26(1)(f) CONTROL OR PREVENTION OF PONDING OF WATER, FLOODING, EROSION, SLIDES AND SUBSIDENCE OF LAND

25. The Permittee shall slope the sides of excavations and embankments except in solid rock to a horizontal/vertical ratio of two (2) horizontal to one (1) vertical, unless otherwise authorized in writing by an Inspector. — EXCAVATIONS AND EMBANKMENTS

26. The Permittee shall minimize approach grades on all winter lake and/or stream crossings. — MINIMIZE APPROACH

27. The land use operation shall not cause obstruction to any natural drainage. — NATURAL DRAINAGE

28. The Permittee shall not cut any stream bank, unless authorized in writing by an Inspector. — STREAM BANKS

29. The Permittee shall not use any material other than water in the construction of ice bridges. — ICE BRIDGE MATERIAL

30. The Permittee shall not use any material other than snow in the construction of snow fills. — SNOW FILLS

31.	The Permittee shall construct berms and/or ditches across the right-of-way at intervals of not less than thirty (30) metres on slopes exceeding five per cent (5%) prior to the commencement of the first spring break-up after construction of the right-of-way.	EROSION CONTROL RIGHTS-OF-WAY
32.	The Permittee shall construct dykes and diversion ditches as authorized in writing by an Inspector.	DYKES/ DIVERSION
33.	The Permittee shall suspend overland travel of equipment or vehicles at the first sign of rutting.	SUSPEND OVERLAND TRAVEL
	26(1)(g) USE, STORAGE, HANDLING AND ULTIMATE DISPOSAL OF ANY CHEMICAL OR TOXIC MATERIAL	
34.	The Permittee shall not use chemicals in connection with the land use operation that were not identified in the accepted application.	APPROVAL OF CHEMICALS
35.	The Permittee shall deposit all non-toxic Drill Waste into a Sump.	DRILL WASTE
36.	The Permittee shall not allow any Drill Waste to spread to the surrounding lands.	DRILL WASTE CONTAINMENT
37.	The Permittee shall supply to the Inspector, prior to rig removal, a list of mud components used during the drilling operation.	MUD COMPONENTS
38.	The Permittee shall dispose of all combustible waste petroleum products by incineration or removal.	WASTE PETROLEUM DISPOSAL
39.	The Permittee shall dispose of all fluids used to wash machinery and equipment in a sump, unless authorized by an Inspector.	RIG WASH DISPOSAL
40.	The Permittee shall report all spills immediately to the 24 hour Spill Report Line (867) 920-8130, which is in accordance with instructions contained in "Spill Report" form N.W.T. 1752/0593.	REPORT CHEMICAL AND PETROLEUM SPILLS
	26(1)(h) WILDLIFE AND FISHERIES HABITAT	
41.	The Permittee shall minimize damage to wildlife and fish habitat in conducting this land use operation.	HABITAT DAMAGE
42.	The Permittee shall construct and maintain all structures placed in streams frequented by fish, in such a manner that will not obstruct passage of fish.	FREE FISH MOVEMENT
43.	The Permittee shall construct and maintain the water intake with an adequate screening device to prevent entrainment of fish.	PREVENT ENTRAINMENT
	26(1)(i) STORAGE, HANDLING AND DISPOSAL OF REFUSE OR SEWAGE	
44.	The Permittee shall dispose of all sewage and grey water into a sump.	SEWAGE IN SUMP

45. The Permittee shall remove all non-combustible garbage and debris, including plastics from the land use area to a disposal site as specified in the accepted application. — REMOVE GARBAGE

46. The Permittee shall use a forced-air fuel-fired incinerator to burn all combustible garbage except plastics. — INCINERATORS

47. The Permittee shall keep all garbage and debris in a covered metal container on site until disposed of. — GARBAGE CONTAINER

48. The Permittee shall remove all scrap metal, discarded machinery, parts, barrels kegs, plastics, and building materials as specified in the accepted application. — REMOVE WASTE MATERIAL

26(1)(j) PROTECTION OF HISTORICAL, ARCHAEOLOGICAL AND BURIAL SITES

49. The Permittee shall not operate any vehicle within thirty (30) metres of a known or suspected archaeological site. — OPERATE VEHICLE

50. The Permittee shall not knowingly remove, disturb, or displace any archaeological specimen or site. — DISTURBANCE OF SITE

51. The Permittee shall immediately suspend operations and notify the Ka'a'Gee Tu First Nations at (867) 825-8000, the Mackenzie Valley Land and Water Board at (867) 669-0506 and the Inspector at (867) 874-6995 should an archaeological site or specimen be encountered or disturbed by any land use activity. — CONTACTS

52. The Permittee shall ensure that all persons working under authority of the permit are aware of these archaeological land use conditions. — NOTIFICATION TO EMPLOYEES

26(1)(k) OBJECTS AND PLACES OF RECREATIONAL, SCENIC AND ECOLOGICAL VALUE

26(1)(l) SECURITY DEPOSIT

53. The Permittee shall deposit with the Minister, prior to commencing land use operations a security deposit in the amount of $ 25, 000 per well pursuant to Section 32 of the Mackenzie Valley Land Use Regulations. — SECURITY DEPOSIT

26(1)(m) FUEL STORAGE

54. The Permittee shall not place any fuel storage containers or refuel any vehicles within one hundred (100) metres of the normal high water mark of any water body, unless otherwise authorized in writing by an Inspector. — FUEL BY STREAM

55. The Permittee shall not allow petroleum products to spread to surrounding lands or into water bodies. — FUEL CONTAINMENT

56. The Permittee shall construct an impermeable dyke around each stationary fuel container or group of stationary fuel containers where any one container has a capacity exceeding 4 000 litres. DYKE FUEL CONTAINERS

57. The Permittee shall construct an impermeable dyke around each stationary container which contains hydrocarbons (including associated water), or group of stationary containers where any one container has a capacity exceeding 4 000 litres. DYKE HYDROCARBON CONTAINERS

58. The volume of the dyked area shall be ten per cent (10%) greater than the capacity of the largest fuel container placed therein. CAPACITY

59. A competent steel double-walled tank will be deemed to satisfy requirements of an impermeable dyke. DOUBLE WALLED TANKS

60. The Permittee shall ensure that adequate contingency plans and spill kits are in place, prior to commencement of operations, to respond to any potential spills. SPILL RESPONSE

26(1)(n) METHODS AND TECHNIQUES FOR DEBRIS AND BRUSH DISPOSAL

61. The Permittee shall store all brush and debris cleared from right-of-ways, the airstrip, camps, wellsites, central battery, quarry/borrow sites and staging areas by: BRUSH STORAGE
    (a) windrowing the debris and brush to the side of the line or clearing; and
    (b) making breaks in the windrow of at least ten (10) metres wide at intervals of not more sixty (60) metres.

62. The Permittee shall dispose of the brush and debris along the right-of-ways, the airstrip, camps wellsites, central battery, quarry/borrow sites and staging areas by: BRUSH DISPOSAL
    (a) rolling it back on the line or clearing to help minimize erosion; and/or
    (b) using it for corduroy material; and/or
    (c) burning.

63. The Permittee shall only clear vegetation identified in the accepted application unless authorized writing by the Inspector. NO CLEARING

26(1)(o) RESTORATION OF THE LANDS

64. The Permittee shall establish vegetation on all areas stripped of vegetation during this land use operation to a minimum of seventy per cent (70%) ground cover. REVEGETATE STRIPPED AREA

65. Where seeding is done, the Permittee will use certified Canada #1 seed and the appropriate seed certificates will be made available to the Inspector. SEEDING

66. Where organic soil has been stripped from quarry/borrow sites, wellsites, temporary camps and staging areas, it shall be saved and protected by windrowing or stockpiling it on the up slope side of the clearing and allowed to naturally revegetate. — PROTECT ORGANIC SOIL

67. The Permittee shall place the organic soil stripped from the excavation area over the disturbed area prior to the expiry date of this Land Use Permit. — SAVE AND PLACE ORGANIC SOIL

68. The Permittee shall complete all clean-up and restoration of the lands used prior to the expiry date of this Land Use Permit. — CLEAN-UP

69. The Permittee shall strip the overburden from borrow pit and remote sump sites prior to excavation of material. The overburden is to be stockpiled or windrowed outside of the work area in a manner that will protect and facilitate future spreading of the material back over the sites at the end of the operation. — DISPOSAL OF OVERBURDEN

70. The Permittee shall place the overburden over the disturbed portions of the borrow pits & remote sumps at the end of the operation or when directed to do so by an Inspector. — PLACE OVERBURDEN

71. Where organic soil has been stripped from the pipeline right-of-way, it shall be saved by windrowing or stockpiling it on the spoil side of the trenchline. — SAVE ORGANIC SOIL, RIGHT-OF-WAY

72. Spoil material excavated from the trench shall be saved by stockpiling it separately from the organic soil. — SAVE SPOIL MATERIAL

73. Spoil material excavated from the trench will be backfilled by compacting and the last lifts will be crowned over the trenchline to compensate for settlement of the disturbed area prior to reestablishing vegetation. — BACKFILL SPOIL MATERIAL

74. Where organic soil has been stripped from the right-of-way, it shall be placed over the disturbed area prior to reestablishing vegetation. — PLACE ORGANIC SOIL, RIGHT-OF-WAY

75. The Permittee shall backfill and restore all sumps prior to the expiry date of this Permit. — BACKFILL SUMPS

76. The Permittee shall limit surface disturbances, such as grading and vegetation clearing, to the location described in the accepted application, unless authorized in writing by an Inspector. — MINIMIZE CLEARING AND DISTURBANCE

77. The Permittee shall utilize existing linear disturbances wherever practical thereby reducing additional clearing. — MINIMIZE CLEARING

78. The Permittee shall re-establish pre-disturbance bank profiles if the drainage has been disturbed. — RE-ESTABLSH BANKS

26(1)(p) DISPLAY OF PERMITS AND PERMIT NUMBERS

79.	The Permittee shall display a copy of this Permit in each campsite established to carry out this land use operation.	DISPLAY PERMIT
80.	The Permittee shall keep on hand, at all times during this land use operation, a copy of the Land Use Permit.	COPY OF PERMIT

26(1)(q) MATTERS NOT INCONSISTENT WITH THE REGULATIONS

81.	The Permittee shall ensure that all persons working under the authority of the Land Use Permit are aware of and will adhere to the conditions as stated in the Land Use Permit.	NOTIFICATION TO ALL EMPLOYEES/ CONTRACTORS
82.	The Permittee shall notify Traditional Users prior to preparing access roads. While preparing the access road, the Permittee shall make every effort to avoid covering or destroying traps or snares that may be found along these routes.	TRAPS PROTECTION
83.	The Permittee shall restore any trails used by trappers or hunters along access routes by slashing any and all trees that may fall across these paths or trails and by removing any other obstructions such as snow piles or debris that may be pushed across the trails.	TRAILS RESTORATION
84.	The Permittee shall construct all pipelines crossing the Cameron River and its major tributary, above ground by hanging the pipe from bridges.	PIPELINE CROSSING CAMERON RIVER
85.	The Permittee shall construct Pipeline Right-of-Ways along existing constructed access roads, where possible, to minimize the total cleared area and limit the number of waterbody crossing points.	PIPELINE ROW
86.	The Permittee shall conduct regular maintenance of wells and facilities that require heavy equipment during frozen ground conditions.	MAINTENANCE DURING FROZEN GROUND
87.	The Permittee shall adhere to the Operating Guidelines for Permafrost as described in Appendix II of EA03-005.	OPERATING IN PERMAFROST
88.	The Permittee shall adhere to the mitigative measures for minimizing disturbances resulting from the construction of the satellite and well sites as described in the Developers Assessment Report for EA03-005 on pages 64 & 65.	CONSTRUCTION PRINCIPLES
89.	The Permittee shall adhere to the mitigation measures for minimizing disturbances for routing as described in the Developers Assessment Report for EA03-005 on pages 65 & 66.	ROUTING PRINCIPLES
90.	The Permittee shall construct pipeline crossings using the methods described in the Developers Assessment Report for EA03-005 on pages 66 & 67.	PIPELINE CROSSINGS

91.	The Permittee shall adhere to the mitigative measures for minimizing the construction of gathering flowlines and water disposal pipelines using the methods described in the Developers Assessment Report for EA03-005 on pages 70-73.	CONSTRUCTION PRINCIPLES FOR FLOWLINES AND WATER DISPOSAL PIPELINES
92.	The Permittee shall adhere to the mitigative measures for minimizing the construction of pits using the methods described in the Developers Assessment Report for EA03-005 on page 74.	PIT CONSTRUCTION
93.	The Permittee shall adhere to the mitigative measures for construction and operation of temporary campsites as described in the Developers Assessment Report for EA03-005 on pages 75-76.	TEMPORARY CAMPS
94.	The Permittee shall adhere to the mitigative measures for the construction of the airstrip as described in the Developers Assessment Report for EA03-005 on page 78.	AIRSTRIP
95.	The Permittee shall adhere to the mitigative measures for the minimizing ground disturbances as described in the Developers Assessment Report for EA03-005 on pages 83 & 84.	GROUND DISTURBANCE
96.	The Permittee shall construct corduroy roads and fords for ATV traffic to the satisfaction of the Inspector.	CORDUROY ROADS FOR ATV TRAFFIC
97.	The Permittee shall locate at least 50% of all proposed and planned developments in the Cameron Hills Significant Discovery License, as described in the Developer's Assessment Report from EA03-005, on areas currently disturbed (as of July 5, 2005).	DEVELOPMENT LOCATIONS
98.	In order to prevent significant environmental impacts to boreal caribou, the Permittee shall not disturb an area greater than 1.8 km per km^2 in the areas encompassed by Ecodistrict 250 and 251 in the Northwest Territories.[1]	LINEAR DISTURBANCE

[1] As described in *Terrestrial Ecozone, Ecoregions and Ecodistricts of the Northwest Territories, Canada.* Ecological Stratification Working Group. 1995. National Ecological Framework for Canada. Agricultural and Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch, Ottawa/Hull. Report and national map at 1:7,500,000 scale.

MACKENZIE VALLEY LAND AND WATER BOARD
WATER LICENSE

Pursuant to the *Mackenzie Valley Resource Management Act* and Regulations, the Mackenzie Valley Land and Water Board, hereinafter referred to as the Board, hereby grants to:

Paramount Resources Ltd.
(Licensee)

of **4700 Bankers Hall West, 888 3rd Street S.W., Calgary, AB T2P 5C5**
(Mailing Address)

Hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this License.

License Number:	MV2006L1-0010
License Type:	B
Water Management Area:	Northwest Territories 01
Location:	60° 10' 117° 15' to 60° 10' 117° 30'
Purpose:	To use water and dispose of waste and associated uses
Description:	Oil and Gas exploration
Quantity of water **not to be exceeded**:	18,000 m^3/yr
Effective Date of License:	December 21, 2006
Expiry Date of License:	December 20, 2011

This License issued and recorded at Yellowknife includes and is subject to the annexed conditions.

MACKENZIE VALLEY LAND AND WATER BOARD

Witness **Chair**

PART A: SCOPE AND DEFINITIONS

1. Scope

a) This License entitles Paramount Resources Ltd. to conduct the following activities:

Access to the Cameron Hills project area for well sites, roads, bridges, pipelines, power lines, and fuel lines on existing right-of-way, airstrip, campsites, borrow pits/water wells, a satellite site, a battery site and a radio communication system with towers, to conduct oil and gas related activities such as drilling, completion, re-entry, evaluation, tying-in of wells, construction of pipelines, fuel lines and production operations. This permit includes the following well sites locations:

Min: 60° 00', 117° 15' Max: 60° 20', 117° 45'
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F-19: 60° 10' N; 117° 30' W
K-19: 60° 10' N; 117° 30' W
O-19: 60° 10' N; 117° 30' W
K-74: 60° 10' N; 117° 15' W
C-74: 60° 10' N; 117° 15' W
2C-74: 60° 10' N; 117° 15' W
I-74: 60° 10' N; 117° 15' W
I-73: 60° 10' N; 117° 15' W
M-73: 60° 20' N; 117° 15' W
2M-73: 60° 10' N; 117° 15' W
F-73: 60° 10' N; 117° 15' W
2F-73: 60° 10' N; 117° 15' W
C-75: 60° 10' N; 117° 15' W

b) This License is issued subject to the conditions contained herein with respect to the taking of water and the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of waste that may be so deposited or under which any such waste may be so deposited, this License shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations.

c) Compliance with the terms and conditions of this License does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

In this License: **MV2006L1-0010**

"**Act**" means the *Northwest Territories Waters Act*;

"**Analyst**" means an Analyst designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

"**Artesian Aquifer**" means a water-bearing rock stratum, which when encountered during drilling operations, produces a pressurized flow of groundwater that reaches an elevation above the water table or above the ground surface;

"**Board**" means the Mackenzie Valley Land and Water Board established under Part 4 of the *Mackenzie Valley Resource Management Act*;

"**Drilling Fluid Additives**" means any chemical or physical substance which is pumped downhole as an aid to drilling; and

"**Drilling Fluids**" means any liquid mixture of clay, water or chemical additives pumped downhole;

"**Drill Waste**" means all materials or chemicals, solid or liquid, associated with the drilling of boreholes and include borehole cuttings;

"**EA03-005**" means, for the purpose of this License, the totality of the Mackenzie Valley Environmental Impact Review Board (MVEIRB) Public Registry as established under Part 5 of the MVRMA for this License application, this includes everything that was submitted by Paramount Resources Ltd. to the MVEIRB, the scope of which is consistent with the Land Use Permit and Water License application;

"**Inspector**" means an Inspector designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

"**Licensee**" means the holder of this License:

"**Maximum Average Concentration**" means the running average of any four consecutive analytical results, or if less than four analytical results collected, and submitted to the Inspector in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

"**Minister**" means the Minister of Indian Affairs and Northern Development;

"**Modification**" means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion.

"**Oil Based Drilling Muds**" means drilling fluids that use naturally occurring solutions or refined hydrocarbons as a carrier fluid;

"**Permeability**" means the capacity to transmit water through a medium;

"**Regulations**" means Regulations proclaimed pursuant to Section 33 of the *Northwest Territories Waters Act*;

"**Sewage**" means all toilet wastes and greywater;

"**Sewage Disposal Facilities**" means sump(s) and/or sewage collection tank(s) designed to hold sewage;

"**Sump**" means a man-made pit, trench hollow or cavity in the earth's surface used for the purpose of depositing waste or sewage material therein;

"**Waste Disposal Facilities**" mean all facilities designated for the disposal of Waste;

"**Waste**" means waste as defined by Section 2 of the *Northwest Territories Waters Act;*

"**Watercourse**" means watercourse as defined by Section 2 of the *Northwest Territories Water Act;*

"**Water Supply Facilities**" means the area and intake associated water intake infrastructure designed to draw water;

"**Water Use Fee**" means a fee for the use of Water as defined by Section 33 of the *Northwest Territories Waters Act; and*

"**Waters**" means any Waters as defined by Section 2 of the *Northwest Territories Waters Act.*

PART B: GENERAL CONDITIONS

Item

1. The Water Use Fee shall be paid annually in advance.

2. Prior to the use of water for this operation or the disposal of waste, the Licensee shall have posted and shall maintain a security deposit in the amount of $25,000 per well drilled pursuant to Section 17(1) of the *Act* and Section 12 of the Regulations. The security deposit shall be maintained until such time as it is fully or in part refunded by the Minister pursuant to Section 17 of the *Act.* This clause shall survive the expiry of this License. The security deposit shall be paid for each well prior to the construction of that well.

3. The Licensee shall file an Annual Report with the Board not later than March 31st of the year following the calendar year reported which shall include the best available scientific information and traditional knowledge and contain the following information:

a) a list of all wells drilled during the year or in progress during the year as well as a summary of the operation to date;

b) the monthly and annual quantities in cubic metres of fresh water obtained from all sources for each well listed in a) above;

c) the monthly and annual quantities in cubic metres of each and all waste discharged for each well active during the year;

d) summary of modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures for each well active during the year;

e) summary of modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures for each well active during the year;

f) a list of any spills and unauthorized discharges;

g) any details of work completed, including quantities and sources of material removed from or placed in or around the watercourse bed for construction, and any restoration activities carried out;

h) description of all trenches and sumps excavated;

i) any revisions to the Approved Spill Contingency Plan:

j) the disturbance to boreal caribou habitat resulting from past and current Project activities which shall include:

- state of re-growth for past disturbances,
- upcoming work for the following year, and
- the current linear disturbance within Cameron Hills significant discovery license.

4. The Licensee shall immediately report to the 24 Hour Spill Report Line (867 920-8130) any spills of Waste, which are reported to or observed by the Licensee.

5. Meters, devices or other such methods used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.

6. The Licensee shall ensure a copy of this License is maintained at the site of operation at all times.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all water for this operation from water sources described in the accepted application.

2. The annual quantity of water used for all proposes shall not exceed 18000 cubic metres.

3. The water intake hose used on the water pumps shall be equipped with a screen with a mesh size sufficient to ensure no entrainment of fish.

4. The Licensee shall adhere to the mitigative measures associated with the use of water sources as described in the Developers Assessment Report for EA03-005 on pages 74 & 75.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. If during drilling, an Artesian Aquifer is encountered producing water flowing at the surface, the Licensee shall notify an Inspector and then the Board immediately. A sample of not less than ten (10) litres shall be collected from the flowing source at the point of discharge from the well. Five (5) litres shall be made available to an Inspector for analysis, and the Licensee shall have the remaining five (5) litres analyzed for the parameters identified in Appendix A.

2. Any fluids generated to surface shall be contained and shall not be disposed of without approval of an Inspector.

3. The Licensee shall, to the satisfaction of an Inspector, contain all Drilling Waste in a Sump(s) constructed of material that normally exhibits low Permeability and in a manner that prevents intrusion of runoff water. Alternate methods of containment require the approval of the Board.

4. In the event of a licensed or unlicensed discharge from the Sump(s) or Sewage Disposal Facilities the Licensee shall identify the route that the discharge will follow and the point of outfall on any receiving waterbody.

5. The Licensee shall construct and maintain the Sump(s) and Sewage Disposal Facilities to the satisfaction of an Inspector.

6. In the event where decanting Waste or water from the Sump(s) and Sewage Disposal Facilities is required by an unanticipated event, the Licensee shall:
   a) advise an Inspector and then the Board;
   b) obtain a representative sample from the Sump(s) using the best methods available and describe in detail the prevailing conditions and how the sample was obtained. This sample should contain a minimum of five (5) litres;
   c) conduct the analysis in accordance with Part D, Item 1 of this license;
   d) submit the results of the sampling and analysis to the Board and Inspector at least 7 days prior to the requested date of commencing decant, or in the case of an unanticipated event, as soon as possible; and
   e) indicate in writing to the Board;
      1. the method of decant;
      2. the direction of flow;
      3. the location of fresh water bodies where the decanted effluent is expected to go; and
      4. any treatment that will be applied to the Sump and Sewage Disposal Facilities.

7. All analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" or by such other methods as may be approved by an Analyst.

8. The Licensee shall store all drilling-waste in on-site tanks and recycle clear fluids.

9. No oil-based drilling muds are to be disposed of on-site. Oil-based additives and drill cuttings associated with these additives are to be disposed of at an offsite location to the satisfaction of an Inspector.

10. Lost circulation of drilling muds shall be reported to the Inspector and Board at the end of drilling.

11. The Licensee shall ensure that any unauthorized wastes associated with this undertaking do not enter any waters.

12. The Licensee shall prior to abandonment of a Sump(s), obtain a representative sample from the Sump(s) using the information requirements outlined in the "Sampling and Analytical Requirements for Characterization of Sump Supernatant Fluids." (Appendix A)

13. The Permittee shall submit to the Board for approval prior to the start of well test flaring a Flaring Plan that will include but not be limited to:

    a) a post flaring assessment report;

    b) a monitoring program including meteorological monitoring to provide real time confirmation of meteorological conditions during flaring;

    c) explore and report on options considered other then flaring; and

    d) a response plan, estimating H_2S levels encountered during testing.

14. The Licensee shall direct all non-toxic drilling muds to a Sump(s) with suitable soil and groundwater conditions.

15. The Licensee shall restore all Sumps used for Sewage Disposal Facilities by treating it with lime, backfilling and compaction.

16. The Licensee shall collect all waste from hydrostatically tested flowlines and dispose of as approved of by the Inspector.

17. All sewage effluent discharged from the Sewage Disposal Facilties at E-73 main camp shall meet the following effluent quality standards:

Parameter	Max. Avg. Concentration
Faecal Coliforms	1x10(6^{th}) CFU/100ml
BOD	360 mg/L
Suspended Solids	300 mg/L
Oil & Grease	Non-visible
The waste discharged shall have a pH above 6.	

18. The Licensee shall adhere to the mitigative measures for waste handling as described in the Developers Assessment Report for EA03-005 on page 86.

19. The Licensee shall adhere to the mitigative measures for Drill Waste as described in the Developers Assessment Report for EA03-005 on page 86.

20. The Licensee shall store Drilling Waste in on-site tanks, recycling clear fluids, prior to disposing of Drilling Waste solids into a Sump(s).

21. Sewage and grey water wastes from temporary camps shall be contained in a Sump, treated, mixed, and buried on final reclamation as described in the application. Similar wastes from permanent camps shall be fully contained and pumped out to an approved wastewater disposal facility.

PART E: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out modifications to the Water Supply and Waste Disposal Facilities provided that such modifications are consistent with the terms of this License and the following requirements are met:
   a) the Licensee has notified the Board in writing of such proposed modifications at least sixty (60) days prior to beginning the modifications;
   b) such modifications do not place the Licensee in contravention of either the License or the *Act*;
   c) the Board has not, during the sixty (60) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
   d) the Board has not rejected the proposed modifications.

2. Modifications for which all of the conditions referred to in Part E, Item 1 have not been met may be carried out only with written approval from the Board.

3. The Licensee shall provide to the Board as-built plans and drawings of the modifications referred to in this License within ninety (90) days of completion of the modifications.

PART F: CONDITIONS APPLYING TO WATERCOURSE CROSSINGS

1. The Licensee shall ensure that only clean snow is used for construction of snowfills for vehicle and equipment access on all watercourse crossings and that no debris (with the exception of those items discussed in Part F, Item 3) is placed in the watercourse channel.

2. Ice and snow crossings should not impede the flow of any watercourse. These crossings shall be notched or removed before spring break-up to facilitate natural flow.

3. Any materials placed below the normal high water mark of any watercourse used in the construction of winter crossings (including log bundles, matting, or culverts), should be

free of any contaminants, debris, or fine materials and shall be removed before spring break-up.

4. All areas affected by construction or removal activities shall be stabilized and landscaped to pre-construction profiles or as approved by an Inspector.

5. The Licensee shall ensure that any watercourse bank that is open cut or modified be re-contoured and stabilized post-construction and that all substrate is returned to pre-construction state with un-contaminated materials.

6. The Licensee shall construct surface erosion controls such as diversion berms and berm breaks to maintain the integrity of the trenchline and mitigate the potential for erosion from surface groundwater flow along the right-of-way when steep slopes are encountered and use geosynthetic textile products or other appropriate controls to prevent sediment laden runoff from entering any watercourse.

7. When flowing or open-water is encountered the Licensee shall use an isolated crossing technique (dam and/or pump) or trenchless technique (horizontal directional drill) as authorized by the Inspector.

8. The Licensee shall return excavated or removed watercourse bed material (boulders and cobble) to restore the watercourse armoring characteristics without altering habitat. The banks shall be restored to a pre-disturbance profile, which may include installing rock rip-rap or other stabilization measures to protect the full channel banks that are likely to be wetted during high water events.

9. The Licensee shall ensure that any fuels, chemicals, or wastes associated with this undertaking do not enter any watercourse. All fuel is to be stored at a location that is a minimum of one hundred (100) metres from the ordinary high water mark of any water body unless otherwise authorized by an Inspector, and shall be sufficiently bermed or otherwise contained to the satisfaction of an Inspector.

10. The Licensee shall ensure that the watercourse flow is maintained at all times during and after construction, and that the reconstructed watercourse channel is constructed and maintained to pre-construction profiles of the existing watercourse bed, to the extent possible.

11. The Licensee shall not deposit any vegetation, soils, or other materials cleared from the site in any water body. All materials shall be disposed of above the ordinary high water mark to the satisfaction of an Inspector.

12. The Licensee shall ensure that downstream water flow is maintained to pre in-stream work levels for all pipeline crossings.

13. The Licensee shall complete all pipeline crossings where flowing water is encountered as quickly as possible using methods to prevent significant disruption of fish movements.

14. The Licensee shall cross, during open water conditions, large waterbodies using permanent bridges. All bridges shall be installed to the satisfaction of the Inspector.

15. The Licensee shall construct winter snow roads in accordance of the methodology and guidelines identified in the Department of Transportation (DOT) Handbook, 1993 and any subsequent revisions.

16. The Licensee shall adhere to the mitigative measures for minimizing the disturbances at water crossings as described in the Developers Assessment Report for EA03-005.

PART G: CONDITIONS APPLYING TO CONTINGENCY PLANNING

1. The Licensee shall, submit to the Board for approval a Contingency Plan in accordance with the Board's "Guidelines for Contingency Planning, January 1987", or subsequent edition.

2. The Licensee shall maintain a copy of the accepted contingency plan on site in a readily available location to the satisfaction of an Inspector.

3. If, during the period of this License, an unauthorized discharge of waste occurs, or if such a discharge if foreseeable, the Licensee shall:
   a) employ the appropriate Contingency Plan;
   b) report the incident immediately via the 24 Hour NWT Spill Report Line. Currently the number is **(867) 920-8130**; and
   c) submit to the Inspector, the Board, and the potentially affected communities, a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.

4. The Licensee shall ensure that all petroleum products, hazardous material and other wastes associated with the project do not enter any waters.

5. The Licensee shall ensure that all containment berms are constructed of an impermeable material, to the satisfaction of an Inspector.

PART H: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. The Licensee shall submit to the Board for approval an Abandonment and Restoration Plan within six (6) months of commencement of drilling operations. The Plan shall include, but not be limited to:
   a) abandonment of any Sump(s) and/or remote Sump(s) and associated Waste Disposal Facilities;
   b) contaminated site remediation;
   c) leachate prevention;
   d) an implementation schedule for site restoration/remediation;
   e) maps delineating all disturbed areas, all Sump(s), borrow material locations and site facilities;
   f) consideration of altered drainage patterns;

g) type and source of cover materials;

h) future area use; and

i) hazardous wastes.

2. The Licensee shall monitor the drilling Sump(s) after closure for a period of at least five (5) years during the thaw seasons consisting of the following measures:

a) install subsurface monitoring system designed to detect thawing of the Drilling Waste in the following manner:

I. placement of at least four (4) thermistor strings (Appendix B):

- one (1) in the centre cap of the Sump cap;
- one (1) on the lee side of the Sump with respect to the winter wind direction at the interface between undisturbed ground and the Sump cap;
- one (1) at the interface between undisturbed ground and the Sump cap where most of the drilling muds have been placed; and
- one (1) in undisturbed terrain next to the Sump to monitor background conditions.

II. mean daily temperature readings must be recorded at a minimum of 0.25, 0.5, 0.75, 1.5, 3, 6, 9, and 12 metre depths.

III. Installed thermistors must be designed to allow for manual field measurements to be taken.

b) monitor for salinity migration using electromagnetic induction; and conduct an annual inspection of the site during the thaw season, and

c) submit a written report of the inspection, including photographs of the site, to the Board by December 1st of the year the inspection is conducted.

MACKENZIE VALLEY LAND AND WATER BOARD

Witness **Chair**

APPENDIX A – SAMPLING AND ANLYTICAL REQUIREMENTS FOR CHARACTERIZATION OF DRILL WASTE

In the event that decanting a sump is required, the Licensee shall sample the sump using the following method:

Divide the sump into a grid of six equal areas; take three samples in the vertical profile (surface, mid-depth, just above the mud supernatant interface) at the centre of each area. Mix these eighteen samples together to form a single composite sample, from which as many sub-samples may be obtained as necessary for analysis. An additional sample must be taken from the surface of the sump.

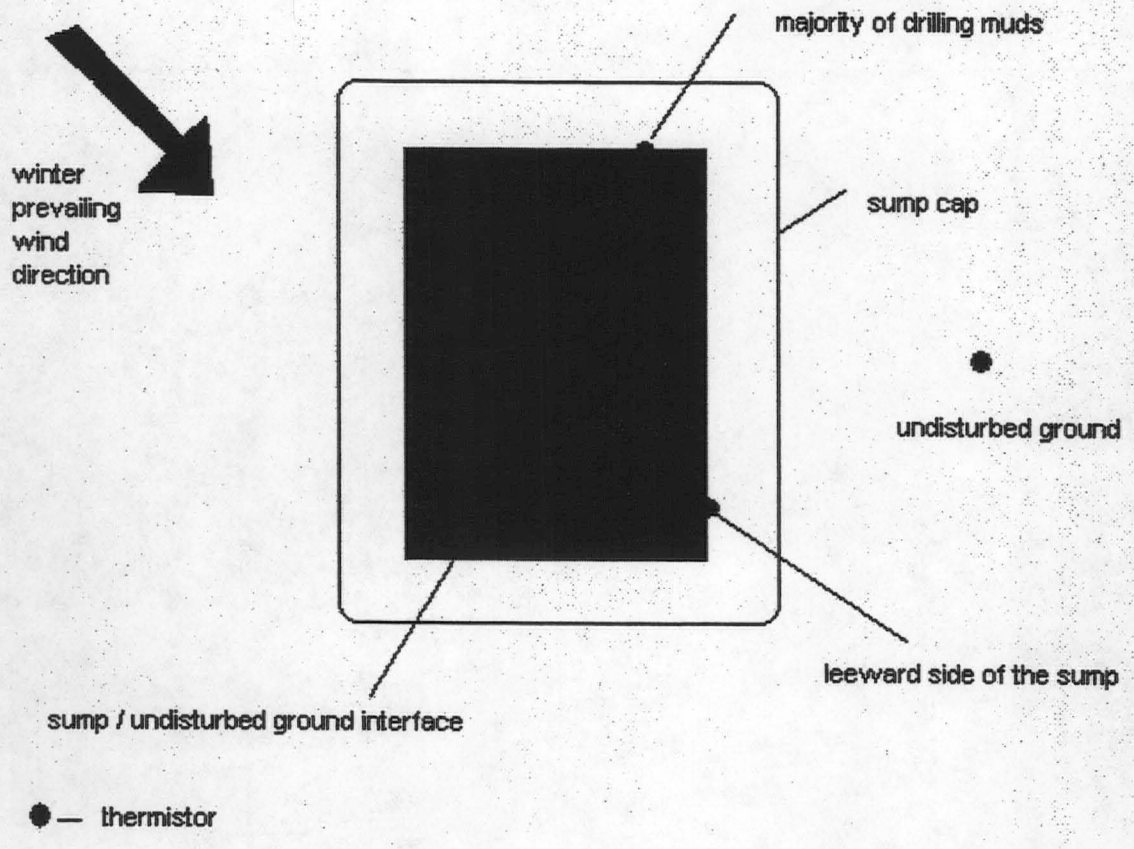
The Licensee shall have the composite sample analyzed for the following parameters:

Total and Dissolved Metals – Copper
Cadmium
Iron
Nickel
Lead
Zinc
Chromium

Sulphate
Conductivity
pH
Total Suspended Solids
Chloride
Sodium
Potassium
Calcium
Magnesium
Oil and Grease
Toxicity (96 hour LC50 using Rainbow Trout)

The surface sample should be analyzed for oil and grease.

APPENDIX B - EXAMPLE PLACEMENT OF THERMISTOR STRINGS



Paramount resources ltd.

4700 Bankers Hall West, 888 3rd Street SW Calgary, Alberta, Canada T2P 5C5 www.paramountres.com
tel 403 290 3600 fax 403 262 7994

March 30, 2001

Indian and Northern Affairs Canada
Northern Oil and Gas Directorate
6th Floor, 10 Wellington Street
Ottawa, Ontario
K1A 0H4
Original By Mail

VIA FAX: (819) 953-5828

Attention: Wayne Greenall, Benefits Advisor

Dear Sir:

Re: Cameron Hills Gas & Oil Development Project
Benefits Plan Update & Submission

Paramount Resources Ltd. has made application to the National Energy Board to amend our approved Oil Development Plan to include natural gas. Paramount is submitting this Benefits Plan Update & submission for approval under the Canada Oil and Gas Operations Act. This Benefits Plan is consistent with Indian and Northern Affairs Canada Statement of Principles.

This Plan is being submitted to the Communities in the Cameron Hills Area.

Should you require additional information regarding this Plan, please contact Shirley Maaskant at (403) 290-3618.

Yours truly,

PARAMOUNT RESOURCES LTD.

S. Maaskant

Shirley Maaskant
Regulatory & Community Affairs Coordinator

Encl:

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Paramount resources ltd.

CAMERON HILLS GAS & OIL DEVELOPMENT PROJECT

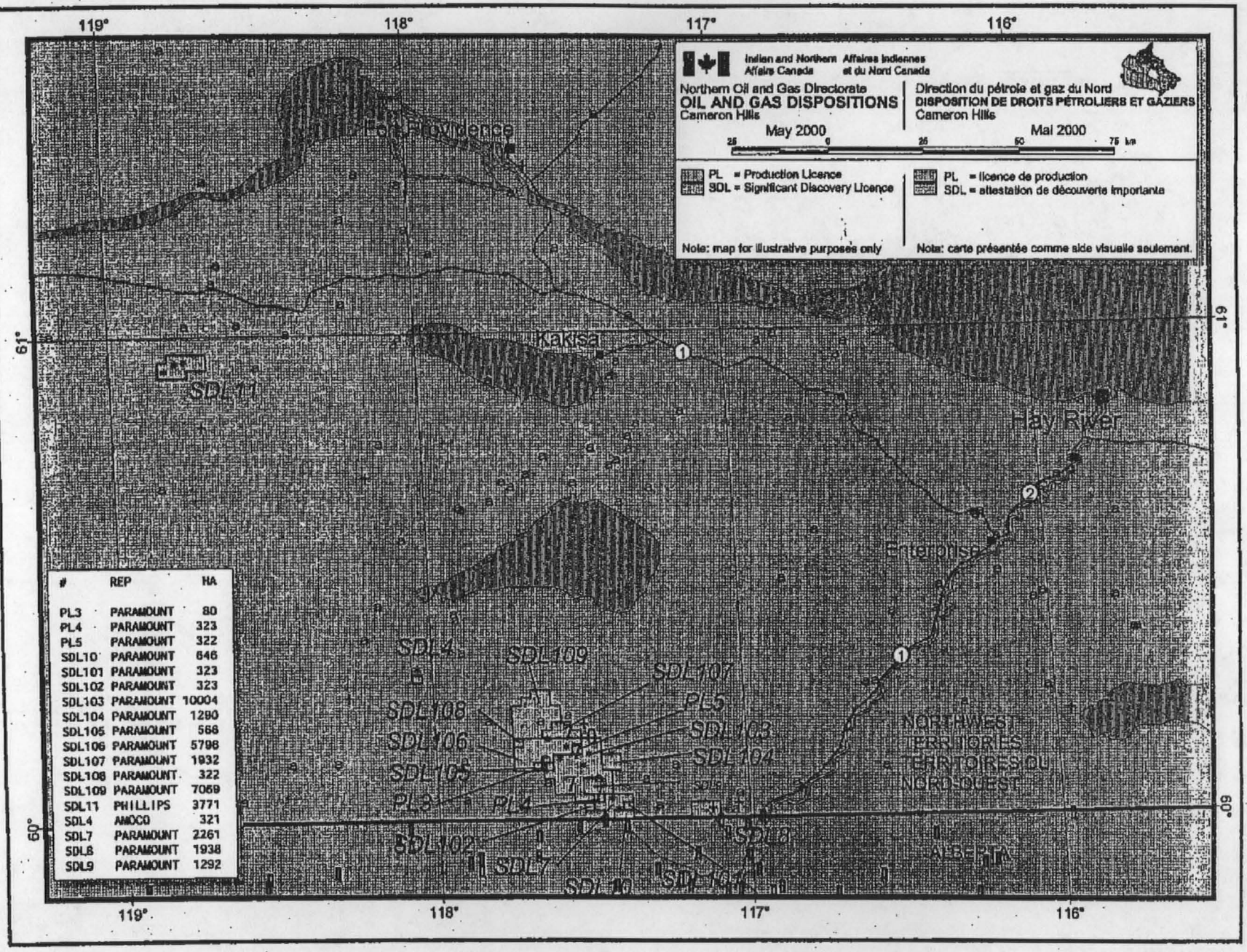
BENEFITS PLAN UPDATE & SUBMISSION

Submitted: March 2001

TABLE OF CONTENTS

	Page
AREA MAP	i
INTRODUCTION	1
CONSULTATION	2
PROJECT SCOPE	3
Project Timeline	4
Project Design	6
Project & Capital Cost Estimate	6
Seismic	7
Drilling, Completion & Flow Testing	7
Construction	7
Operating Budget	8
Canadian Content	8
Employment & Business Opportunities	9
• Estimated Short Term Employment Opportunities Drilling, Completing & Flow Testing One Well	10
• Estimated Short Term Employment Opportunities To Construct One Wellsite Facility & Gathering Line	11
• Estimated Short Term Employment Opportunities To Build The Central Oil & Gas Battery & Pipeline	12
• Estimated Short Term Employment Opportunities Seismic Acquisition	13
• Estimated Long Term Employment Opportunities	14
ANNUAL REPORTING	14
BENEFIT PLAN PRINCIPLES & POLICIES & ACTION PLAN	15

02/23/05 11:11 FAX 403 266 6032 PARAMOUNT RES. FLR 39 004



#	REP	HA
PL3	PARAMOUNT	80
PL4	PARAMOUNT	323
PL5	PARAMOUNT	322
SDL10	PARAMOUNT	646
SDL101	PARAMOUNT	323
SDL102	PARAMOUNT	323
SDL103	PARAMOUNT	10004
SDL104	PARAMOUNT	1290
SDL105	PARAMOUNT	566
SDL106	PARAMOUNT	5798
SDL107	PARAMOUNT	1932
SDL108	PARAMOUNT	322
SDL109	PARAMOUNT	7069
SDL11	PHILLIPS	3771
SDL4	AMOCO	321
SDL7	PARAMOUNT	2261
SDL8	PARAMOUNT	1938
SDL9	PARAMOUNT	1292

INTRODUCTION

Paramount Resources Ltd. ("Paramount") discovered oil and natural gas reserves in the Cameron Hills Northwest Territory area in the late 1980's and early 1990's. The Cameron Hills project area is approximately 53 kilometers southeast of the community of Kakisa and immediately north of the Alberta/Northwest Territories border.

Paramount has significant land holdings in the Cameron Hills area and is focused on the long-term development of these properties. Paramount's holdings include multiple Significant Discovery Licences, Commercial Discovery Declarations, Surface Leases and Production Licences

Paramount applied for and received Oil Development Plan approval and Benefit Plan approval on January 16, 1992. Subsequently, the National Energy Board (NEB) has determined that in order to produce the non-associated and associated gas reserves, an update to Paramount's approved Oil Development Plan must be filed. Paramount has filed the required update with the NEB and is filing this update to our approved Benefits Plan.

As mandatory under the Canadian Oil & Gas Operations Act, northern benefits plan approval is prerequisite for authorization and approvals to proceed with a project. The approved Benefits Plan and this Benefits Plan Update are consistent with the Department of Indian Affairs and Northern Development ("DIAND") Benefits Statement of Principles. The purpose of this Benefits Plan Update is to describe, in appropriate and sufficient detail, Paramount's plans during each phase of the natural gas project to:

a) Inform and consult with northern residents and northern businesses.

b) Maximize the employment and training of northern residents by ensuring that they are able to access employment and training opportunities and that they receive first consideration for hiring when qualified & competitive.

02/23/05 11:14 FAX 403 266 6032 PARAMOUNT RES. FLR 39 005

c) Facilitate the participation of northern businesses in the supply of goods and services on a fair, reasonable and competitive basis.

d) Report annually to DIAND on the implementation of the Benefits Plan.

Paramount's oil and natural gas development and production will likely occur consecutively, utilizing many of the same services and personnel and some common infrastructure. Where practical, Paramount has made reference to oil development and production requirements that may also be utilized for natural gas development and production.

CONSULTATION

Paramount's consultation in the Cameron Hills area started over twenty years ago when Paramount began exploring for oil and gas in the area. This past year, Paramount has contacted individuals, including area trappers, aboriginal groups, local hamlet representatives, Northwest Territory government representatives, federal government representatives, and regulators, to explain the Project and receive the input and suggestions of these parties. Paramount will continue a community consultation program throughout the life of this Project. Paramount has a history of working effectively with the communities in the north, encouraging and supporting training, business development and community growth. Response to the Project has been positive.

Paramount has and will continue to incorporate traditional knowledge in the selection of routes as well as incorporating and addressing any trapping, hunting and fishing activities.

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PROJECT SCOPE

The approved Cameron Hills Oil Development Benefits Plan provides for moving through a three-stage development plan for the oil reserves at Cameron Hills in Grid Areas 60^0 10' N, 117^0 15' W; 60^0 10' N, 117^0 30' W; 60^0 20' N, 117^0 30' W. Paramount is currently in the pilot project stage of Phase I of this Plan. After completing most of the activity outlined for the extended testing phase, Paramount is proposing to construct a trans-border pipeline to transport liquid hydrocarbons and raw sour gas to gathering facilities in Alberta. Tank trucks and an all-weather road were previously proposed to transport the hydrocarbon liquids. Continued drilling for both gas and oil in the Cameron Hills Significant Discovery Area will lead to further construction activities throughout the productive life of the field.

This Benefits Plan Update encompasses:

a) Natural gas delineation and/or development drilling, completion, testing, and workovers of existing and/or new wells within the Paramount Significant Discovery and/or Commercial Discovery Licences.

b) Seismic acquisition for natural gas reserves.

c) The natural gas portion of the central battery, gathering line and wellsite facility construction and their long-term operation. The central oil & gas battery includes living accommodations, shop, warehouse, control systems, and aircraft access and is initially designed for 160 m^3/d liquid hydrocarbons, 215 m^3/d water and 700,000 m^3/d sour raw wet gas. The natural gas portion of this central battery includes the compression and inlet separator only.

02/23/05 11:15 FAX 403 266 6032 PARAMOUNT RES. FLR 39 007

d) Pipeline construction and its long term operation. This pipeline will transport dehydrated sour gas and liquid hydrocarbons from the central battery to a gathering system in Alberta. This Plan includes the portion of pipeline from the central battery to the Northwest Territory border only.

Project Timeline

Construction operations are performed more efficiently and effectively during winter ground conditions due to the muskeg and naturally wet terrain. Therefore, when possible, field activities are planned during the months of November to April. Paramount anticipates that several new gas wells may be drilled and both existing and new gas wells may be completed, reworked and/or flow tested over the project life. This work may start as early as the winter of 2001/2002.

Wellsite facilities, gathering lines, battery facility and pipeline will be constructed as early as 2001/2002. Wellsite facilities, gathering lines and battery modifications and additions may continue over the life of the project depending on drilling success, production and operation optimization, and other factors.

Paramount anticipates the operating phase of new wells, gathering system, battery and pipeline to continue for the economic project life of approximately 20 years. Operation of the facilities will be 12 months/year after startup.

02/23/05 11:16 FAX 403 266 6032 PARAMOUNT RES. PLR 39 008

Project Timeline (January 2001 - Project Life)

TASK	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Year 2001/02												
Applications												
• Submit				X	X			X	X	X		
• Approvals							X			X	X	
Drill, Complete, Rework Gas Wells	X	X	X	X	X							
Central Battery												
• Civil - Earthwork & Foundations			X									
• Equipment Set - Camp & Process			X	X								
• Mechanical			X	X	X	X						
• Electrical				X	X	X						
• Testing					X	X						
• Commissioning						X						
• Operational						X						
Gathering lines & Pipeline												
• Clearing		X	X									
• Stringing			X	X								
• Welding			X	X	X							
• Ditching			X	X	X							
• Test					X	X						
• Commissioning					X	X						
• Operational					X	X						
Typical Schedule For New Wells & Seismic (on any given year as required)												
Applications									X	X	X	
• Drill, complete, test	X	X	X	X	X							
• Facilities & Gathering lines		X	X	X	X	X						
• Seismic			X	X	X							

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Project Design

Project design and management, including all engineering specifications and logistics will continue to be completed by Paramount.

Access routes to new wellsites and gathering flowlines will follow existing access routes where possible. These routes will be determined incorporating traditional knowledge to ensure the best utilization of the land while minimizing interference with traditional use, trapping and the environment.

Project & Capital Cost Estimate

This estimate includes the projected cost of drilling, completing, testing, wellsite facility and gathering line for one well. Also included is the natural gas portion of the central battery and the entire cost of the Northwest Territory portion of the pipeline which will transport natural gas and liquid hydrocarbon.

Description	Proposed Expenditures ($)
Drilling, Completion & Testing (1 well)	1,350,000
Single Wellsite Facility & Gathering Line (for one well assume 2.4 kilometers of 4" line)	
• Materials	170,000
• Fabrication & Installation	212,500
• Engineering, Environmental Assessment	42,500
Central Battery (Compression & Inlet Separator for gas only)	
• Materials	440,000
• Fabrication & Installation	550,000
• Engineering, Environmental Assessment	110,000
Pipeline (to NWT Border approx 4 km)	
• Materials	386,000
• Fabrication & Installation	485,000
• Engineering, Environmental Assessment	96,000
Seismic	2,000,000
TOTAL ESTIMATED PROJECT EXPENDITURES	**5,842,000**

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Seismic

Seismic acquisition may be conducted in the future to further evaluate the hydrocarbon potential of the area.

Drilling, Completion & Flow Testing

Future natural gas wells may be drilled in the project area and may be completed and flow-tested. Workovers on these and existing wells may be required on a periodic basis. Once Paramount has determined prospective drilling locations, new wellsites and access routes will be constructed to facilitate wellbore operations.

All drilling and service rig equipment is supplied on an "as needed" basis and stockpiling is not required. Personnel would likely utilize camp facilities at the wellsites.

Construction

This phase includes all field operations required once commercial volumes of natural gas are discovered to the start of production, such as the earthwork to construct facilities and clearing of the gathering line route, the installation of facility equipment, and installation of the gathering line and pipeline.

Paramount has several existing natural gas and oil wells that may have associated gas. The construction phase of this Project will commence on existing wells with the installation of wellsite facilities, gathering lines, battery and pipeline. Future wells that are successful will also require gathering lines and wellsite facilities and possibly an expansion of the central battery. Laborers will be required for site-clearing, assistance to welders, moving pipe and blocking pipe, making up about 40% of the personnel required. An estimated 55% of the construction work would be skilled workers, such as welders, truck drivers and heavy equipment operators. The balance of the personnel required would be supervisors, foremen and inspectors.

02/23/05 11:18 FAX 403 266 6032 PARAMOUNT RES. FLR 39 011

All construction equipment is supplied on an "as needed" basis and stockpiling is likely not required. Personnel would likely utilize camp facilities located at the Project site.

Operating Budget

The wellsite facilities will be designed for an unattended operating mode. Operating personnel may be based at the central battery and would regularly check and maintain equipment at the wellsites. The Project operating costs are the aggregate of the costs associated with wellsites and gathering system to transport the wet wellhead gas and oil through flowlines to the central battery, the gas dehydration and liquid separation operating cost at the central battery and the operating costs for the trans-border pipeline situated between the central battery and the connecting Alberta gathering system. The annual operating costs for the oil and gas project are estimated to be approximately $2,000,000, with $250,000 of that attributed to the natural gas production and the balance to the oil production. Additional future gas wells will add an estimated $30,000 annually per well to the operating cost.

Canadian Content

Canadian content for the Project has been determined to be 99%. The calculation of the Canadian content regarding materials, equipment, and labour is based on information received from suppliers and an assessment of Canadian construction equipment and labour availability. Paramount intends to employ Canadian personnel.

While it is not possible to quantify the total number of Northwest Territory individuals, businesses, or services Paramount will be utilizing, the participants will endeavor to maximize the use of the available local Northwest Territory services and manpower when they are competitive and suitable for the work.

02/23/05 11:18 FAX 403 266 6032 PARAMOUNT RES. PLR 39 012

Employment & Business Opportunities

Paramount anticipates that natural gas production will not provide any new long-term employment opportunities as the personnel required to operate the central battery and oil wellsites will also operate the natural gas portion of the central battery and wellsites.

Future natural gas exploration and development would utilize available competitive northern services. It is Paramount's policy to utilize people with the appropriate skill, required to complete a project effectively and Paramount will provide opportunities to employ local northern people first. However, if local northern people cannot be recruited with the required skills, on a fair and competitive basis, Paramount will then pursue recruitment in the outlying northern communities, to access the human resources and equipment to meet the projects needs.

Paramount requires their contractors to adhere to the Benefit Plan Principles, Policies & Action Plan, ensuring northerners have an opportunity to participate in the provision of these services. These service providers are also encouraged to cooperate with the nearby communities in business development and training initiatives.

If Paramount's activities occur in the Project area under separate Benefits Plans, then services provided and the employment opportunities may overlap between projects.

02/23/05 11:19 FAX 403 266 6032 PARAMOUNT RES. FLR 39 013

Estimated Short Term Employment Opportunities
Drilling, Completing & Flow Testing One Well

# of People	Duration (days)	Type of Job	Job Details
1	2	Traditional Knowledge	Review the proposed route selections ensuring the routes minimize interaction with traditional land use and/or trapping. Participate in flight reconnaissance where required with Paramount representatives and survey crews.
1	2	Helicopter service for surveying	Provided helicopter service for Paramount, community representatives and survey crews to locate and survey in access routes and wellsites.
2	4	Environmental	Prepare site assessments
1	2	Translation Service	Provided translation service
1	4	Helicopter	Provided helicopter service for crews
3	14	1 drill camp	Supply and maintain drill camp complete with all catering and grocery transportation.
4	6	Access and wellsite construction and maintenance	Provide construction equipment and personnel to build access route and wellsite. Maintain access as required, clean up wellsite as required. • Slashing • Power saw (clearing) • Equipment operator (tractor, skidder, hoe, excavator) • General labor • Welder • Truck driver
1	3	Diesel fuel supply	Dispatch diesel fuel and transport to locations as required, • Dispatcher • Truck Driver
1	5	Trucking	General trucking services
5	20	Drilling/Service rig personnel	Rig personnel.
4	3	Flow Testing	Only required if not flow testing through pipeline • Monitor flow rates & pressures • Manage fluid volumes • Manage flow testing safety

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Estimated Short Term Employment Opportunities
To Construct One Wellsite Facility & Gathering Line

# of People	Duration (days)	Type of Job	Job Details
1	0.5	Traditional Knowledge	Participate in flight reconnaissance where required with Paramount representatives and survey crews.
2	2	Helicopter Service	Provided helicopter service to survey in facility sites, gathering lines and roads
1	2	Environmental	Prepare site assessments
5	20	Construction Camp	Provide a construction camp, personnel and camp supplies, maintain the camp complete with all catering and grocery transportation. • Cook • Cook's helper • Housekeeper • Camp maintenance • Truck Driver
20	20	Wellsite Facilities, Pipeline Construction	• Slashing • Power saw (clearing) • Equipment operator (tractor, skidder, hoe, excavator) • Welders • Pipefitters • General labor (sleeves, holiday detection, skids)
2	3	Diesel fuel supply	Dispatch diesel fuel and transport to locations as required, • Dispatcher • Truck Driver
1	3	Trucking	General trucking services

02/23/05 11:20 FAX 403 266 6032 PARAMOUNT RES. FLR 39 015

Estimated Short Term Employment Opportunities
To Build The Central Oil & Gas Battery & Pipeline

# of People	Duration (days)	Type of Job	Job Details
5	60	Construction camp	Provide a construction camp, personnel and camp supplies, maintain the camp complete with all catering and grocery transportation. • Cook • Cook's helper • Housekeeper • Camp maintenance • Truck Driver
91	10	Pipeline construction	• Slashing • Power saw (clearing) • Equipment operator (tractor, skidder, hoe, excavator) • General labor (sleeves, holiday detection, skids) • Welder • Truck driver • Warehouse person, expediter, clerk
71	30	Battery construction	• Electricians • Instrument mechanics • Welders • Laborers • Crane operators • Swampers • Non-destructive testing personnel/quality • First-aid attendants c/w ambulance (ambulance supplier to provide attendants) • Pipefitters • Supervisors
1.5	60	Diesel fuel supply	Dispatch diesel fuel and transport to locations as required, • Dispatcher • Truck Driver
10	60	Trucking	General trucking services

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Estimated Short Term Employment Opportunities
Seismic Acquisition

# of People	Duration (days)	Type of Job	Job Details
14 - 20	20	Slashing Crews	The number of people is dependant on the degree of difficulty to open lines • Operate chain saws, etc to open up lines
8	20	Heavy equipment operators	Construction operators utilizing heavy equipment to open access routes and lines
20	10	Laborers, Recording Crew Helpers	Lay out and pick up geophones
20	10	Recording Crew	• Clerk • Mechanic • Recording crew manager • Observers • Line truck drivers
11	10	Vibrator Operators	Operate the vibroseis equipment consisting of: • 8 operators • 2 technicians • 1 fuel operator
2	30	Data Processing	Download and interpret information (this is done in Calgary)
10	36	Camps & Catering	Supply living quarters and catering to crews which includes: • Cooks • Cooks helpers • Housekeepers • Camp maintenance
1	36	Fuel Supply	Supply fuel for equipment utilized • Fuel dispatcher

02/23/05 11:21 FAX 403 266 6032 PARAMOUNT RES. FLR 39 017

Estimated Long Term Employment Opportunities

No additional long-term employment opportunities will be created with the natural gas phase of production.

Paramount will be constructing a central battery under an approved Oil Development Plan. An estimated four to five long-term employment opportunities will be generated as the wellsite facilities are highly automated and the additional throughput created will not significantly increase the workload to require additional personnel. An exception would be in the instance that substantial reserves are discovered which could require battery expansion.

These long-term employment opportunities are generated through the approved Oil Development Plan and not this update, and are provided for reference only.

# of People	Duration (days)	Type of Job	Job Details
2	Long Term	On-going Operations & Maintenance - Experienced Lead Operators	• Conduct and oversee day to day production facility operation and light maintenance at the central battery, gathering system, pipeline and wellsite equipment
2	Long Term	Operator Trainees	• General Battery, gatherline line, wellsite equipment, and pipeline maintenance
1	Long Term	Road Maintenance	• On a contract basis maintain roads, wellsites, air access and rights of way.

ANNUAL REPORTING

Paramount will prepare and submit an annual report in accordance with the Benefit Principles.

02/23/05 11:22 FAX 403 266 6032 PARAMOUNT RES. FLR 39 018

PARAMOUNT RESOURCES LTD.

BENEFIT PLAN PRINCIPLES, POLICIES & ACTION PLAN

PRINCIPLES & POLICY	ACTION PLAN
Consultation	
Paramount will ensure the community, surrounding area, regulators, and governments are supplied all the necessary information concerning Paramount's operations. Paramount will make every effort to form a successful working relationship with the communities affected by our projects	Maintain an open and frank dialogue with stakeholders through public meetings and one-on-one discussions. Ensure all concerns are addressed in a timely manner.
Cross Cultural Orientation	
Ensure contractors and community representatives have access to cross-cultural sessions	Continue hosting cross-cultural sessions.
Employment & Training Opportunities	
Support relationships between the Aboriginal Community and Non-Aboriginal businesses and contractors. Require development of qualified individuals, through training and job opportunities.	Review the project to determine where local individuals may be trained to assist in the operation. Require contractors to review their manpower needs and determine where local training initiatives may be beneficial and then to implement that training.
Construction Bid Tendering Opportunities	
Provide opportunities to bid on upcoming construction contracts.	Maintain an ongoing consultation with northern companies outlining Paramount proposed activities including equipment and manpower requirements. Provide bid pre-qualification documents. Include qualified contractors on the bidder's list. On a project basis, Paramount will determine bonding requirements and notify service providers accordingly.
Skill Transfer Initiatives	
Provide opportunities to train northerners, when it is reasonable to do so, through contracted services	Inform Northerners of the types of jobs available in the oil & gas industry, the type of training needed, and sources of that training. Encourage contractors to provide training for Northerners

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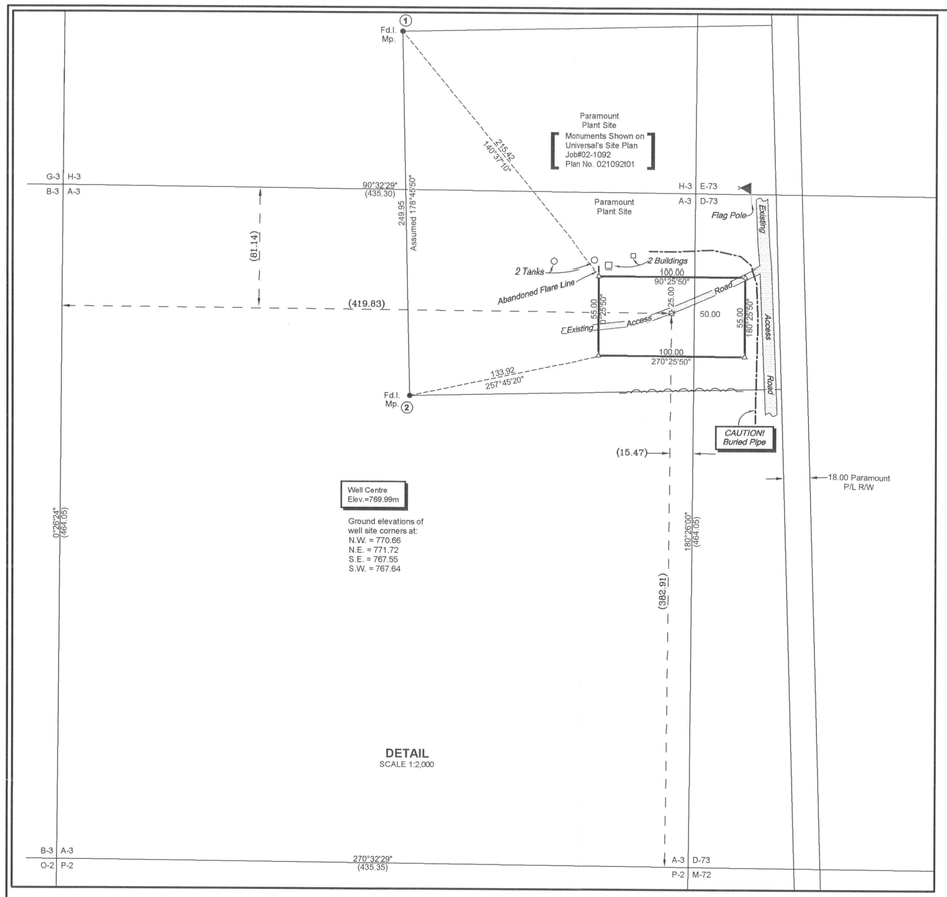
On The Job Training	
Provide an opportunity for on the job training when safety permits.	Evaluate each project and determine where on the job training may be provided in a safe and efficient environment. Require contractors to review their manpower needs for on the job training.
Safety & Workplace Hazard Awareness Training	
To maintain a safe workplace adhering to Paramount and Government regulations	Ensure contractors adhere to the Paramount policy on safety. Ensure contractors have a safety program and that they are implemented
Work Schedules & Rotation Requirements	
Aid northern communities to develop services that are reliable and available in a timely manner.	Inform northern communities of the job requirements and the need for immediate response to service requests since operations run 24 hours/day, 7 days/week.
Alcohol & Drugs	
To educate and help northern services understand Paramount's and regulatory requirements and policies	Maintain a zero alcohol and drug tolerance at Paramount operations. Encourage community employee assistance program on alcohol and drug problems. Being in possession of or under the influence of alcohol, illegal drugs or other psychoactive substances while on the work site is strictly prohibited. Personnel taking prescribed medication, which may impair their ability to work, shall advise their supervisor before reporting to work.
Tracking & Reporting	
Monitor activities to ensure that northern opportunities are optimized.	On a yearly basis, Paramount will prepare and submit an annual report in accordance with the Benefit Principles

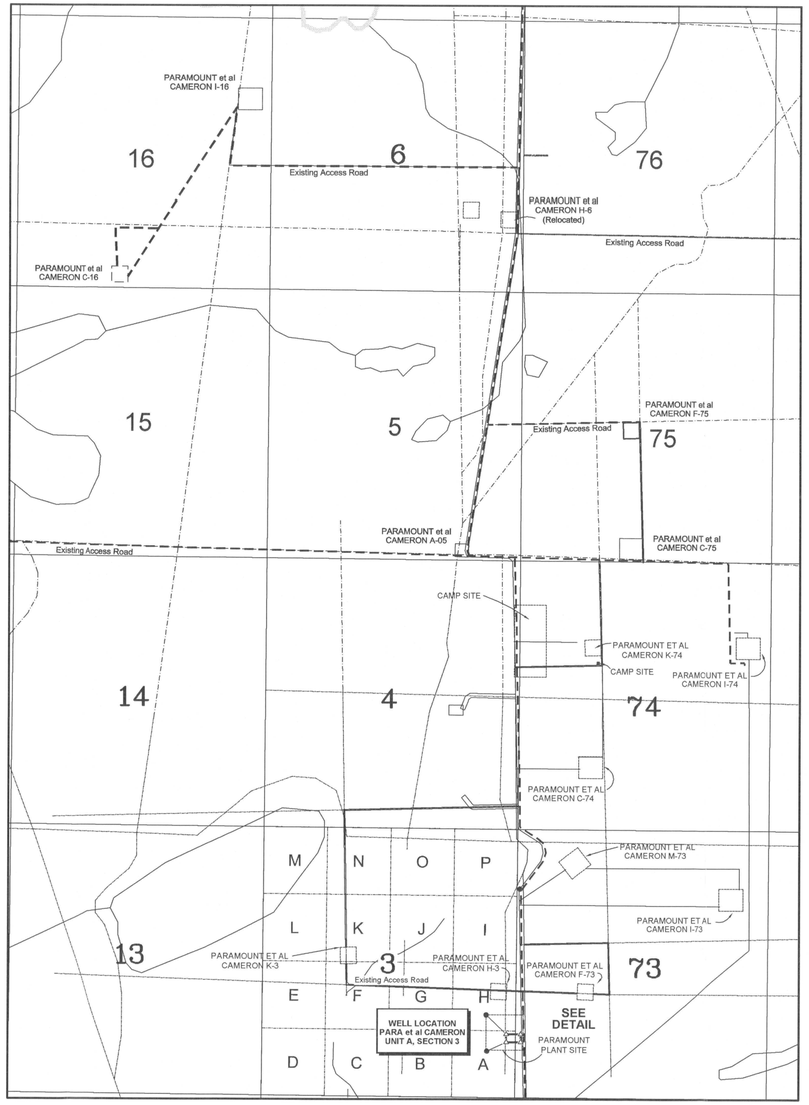
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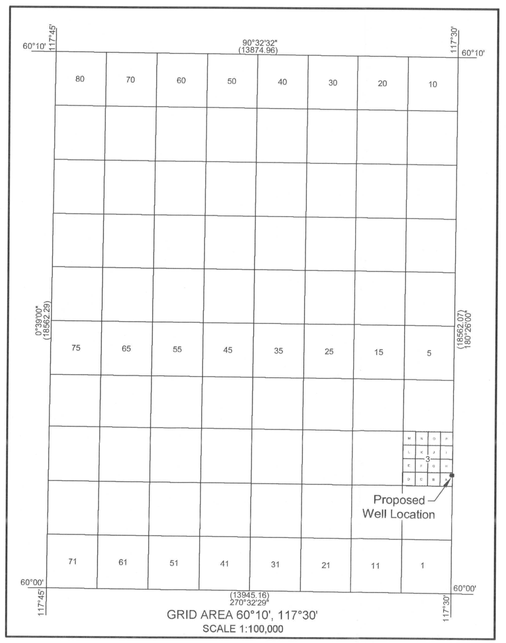
27. FINANCIAL LIABILITY

FINANCIAL LIABILITY

These activities are covered under the financial liability deposit submitted with the Cameron Hills area approved development plan.







PLAN AND FIELD NOTES

OF SURVEY OF

PROPOSED DISPOSAL WELL

PARA ET AL CAMERON

IN UNIT A, SECTION 3

GRID AREA 60° 10', 117° 30'

NORTHWEST TERRITORIES

CANADA OIL AND GAS REGULATIONS
NORTHWEST TERRITORIES

SCALE 1:20,000

400m 200 0m 400 800 1200 1600m

SURVEYED FOR

PARAMOUNT RESOURCES LTD.

AFFIDAVIT

THIS SURVEY WAS EXECUTED BETWEEN THE DATE OF DECEMBER 9, 200605 AND DECEMBER 13, 2006 BY JOHN E. LANDRY, C.L.S.

CERTIFIED CORRECT ON THE 10th DAY OF JANUARY, 2006

JOHN E. LANDRY
CANADA LANDS SURVEYOR

ASSOCIATION OF CANADA LANDS SURVEYORS — John E. Landry Comm. No. 1287

Paramount resources

AREA REQUIRED:

	Hectares	Acres
Disposal Well =	0.549	1.36
TOTAL =	0.549	1.36

LEGEND

UTM coordinates are computed for Zone 11, Central Meridian 117° W. Bearings were derived from differentially corrected GPS Observations, and are referred to meridian 117° W.

Grid Distances are expressed in metres and shown as (170.00)

Distances are expressed in metres and decimals thereof.

Distances shown in traverse are measured distances reduced to the horizontal at general ground level.

For the computation of coordinates measured distances have been reduced to the UTM plane by multiplying them by an average combined scale factor of 0.9994899.

Distances shown on grid area subdivisions are UTM plane, NAD 27 Datum. All other dimensions are based on NAD 83 Datum.

(CLS 77) Monuments found are shown thus:
12" iron spikes are shown thus:
Areas dealt with shown thus:
buried pipe lines are shown thus:
Seismic lines are shown thus:
Geographic and Utm Coordinates, (1983 Nad)
of Found Iron Post are shown thus: 1

Survey was completed prior to drilling; therefore well as drilled may not necessarily agree with proposed location.

GEOGRAPHIC AND UTM COORDINATES, (1983 NAD)

Station	Latitude(N)	Longitude(W)	Northings	Eastings	Elev.
CONTROL MONUMENTS					
Fd. I. 1	60° 02' 18.901"	117° 30' 18.213 "	6655815.64	471861.96	768.84
Fd. I. 2	60° 02' 10.830"	117° 30' 17.742"	6655565.88	471867.34	767.13
PROPOSED WELL					
WELL CENTRE	60° 02' 12.748 "	117° 30' 06.075"	6655623.85	472048.36	769.99

Elevations are derived from Mcelhanney Land Surveys LTD. Job # 321116984 [RW 36 & RW 39]

GRID AREA 60°10', 117° 30'- GEOGRAPHIC AND UTM COORDINATES, (1927 NAD)

N.E.	60°10'00"	117°30'00"	6669871.56	472250.65
N.W.	60°10'00"	117°45'00"	6670002.85	456376.31
S.W.	60°00'00"	117°45'00"	6651441.75	458165.71
S.E.	60°00'00"	117°30'00"	6651310.02	472110.25
A-3, N.E.	60°02'15.000"	117°29'59.999"	6655486.36	472141.84
A-3, S.E.	60°02'00.001"	117°29'59.999"	6655022.33	472138.34
A-3, S.W.	60°02'00.027"	117°30'28.124"	6655026.44	471703.00
A-3, N.W.	60°02'15.027"	117°30'28.124"	6655490.48	471706.57
PROPOSED WELL GEOGRAPHIC AND UTM COORDINATES, (1927 NAD)				
W/C	60°02'12.379"	117°30'00.998"	6655405.37	472125.76
LEASE CORNERS				
N.E.	60°02'13.188"	117°29'57.789"	6655429.99	472175.92
N.W.	60°02'13.187"	117°30'04.228"	6655430.74	472075.96
S.W.	60°02'11.411"	117°30'04.228"	6655375.79	472075.55
S.E.	60°02'11.411"	117°29'57.768"	6655375.03	472175.52

REV.	DESCRIPTION	BY	DATE
1	Revised Co-ordinates, Added Well Corners Elevation	DQN	January 12/07
0	PLAN ISSUED	DQN	January 10/07

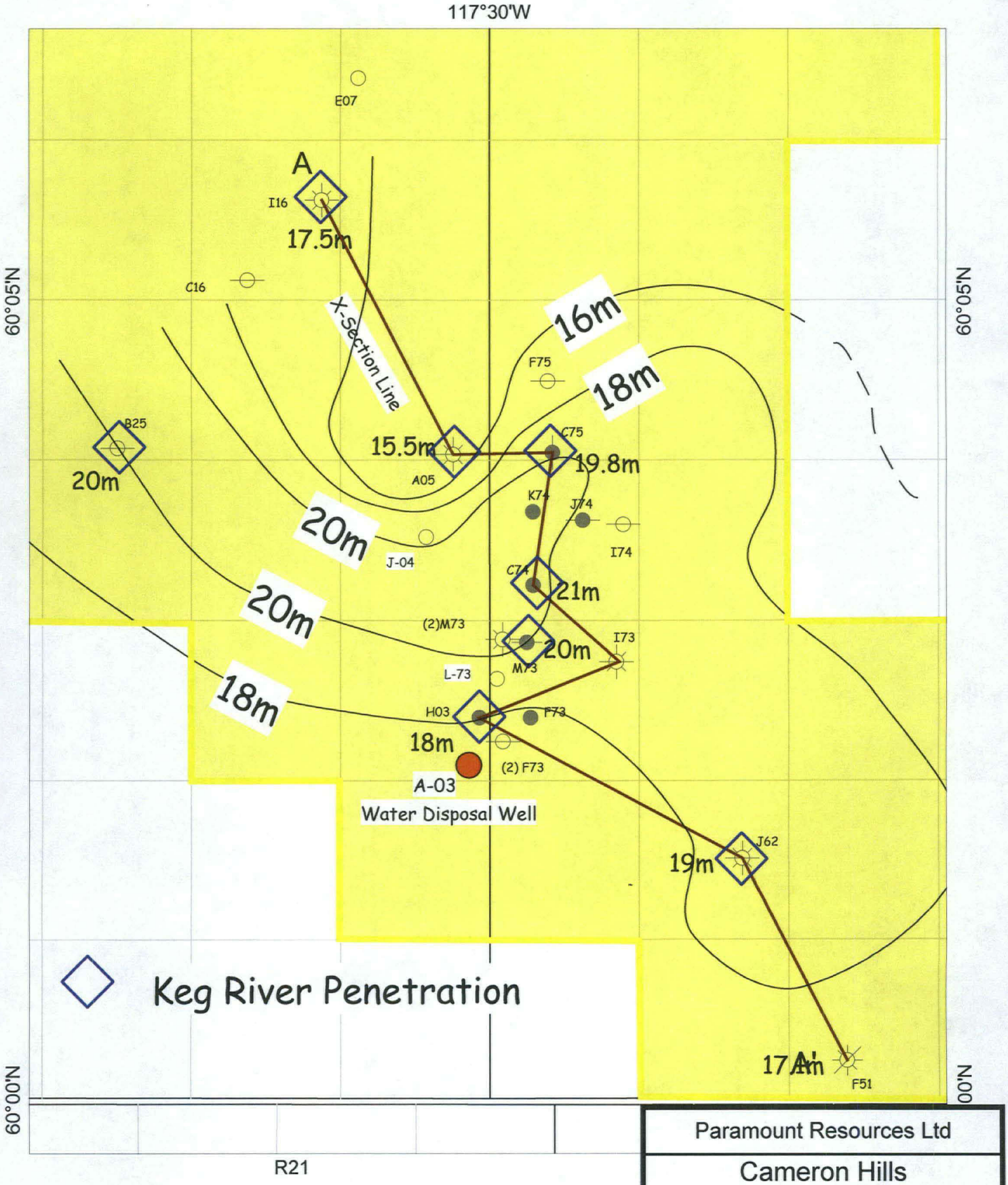
JOHN E. LANDRY
CANADA LANDS SURVEYOR

McELHANNEY LAND SURVEYS LTD.
PROFESSIONAL LAND SURVEYORS
138, 14315–118 Avenue
Edmonton, Alberta
PH: (780) 451–3420 FAX: (780) 452–7033

Date: January 10/07
Plan No.: 1 of 1
Job No.: 321119063

SCALE AS SHOWN
File No.: 19063
DQN

Plan ID E19063M52



Paramount Resources Ltd		
Cameron Hills Upper Keg River Net Porous Reservoir		
Licensed to : Paramount Resources Ltd		
geoSCOUT www.geologic.com	By :	Date : 2007/01/24
	Scale = 1:60000	Project : cam hills proj
	CI: 2m	

60°20', 117°30'

60°20', 117°15'

60°10', 117°30'

60°0', 117°15'

BORROW PIT A-73

ATV BRIDGE 27.43m

A-52

O-22

E-02

AIRSTRIP

G-21

ROY BUGGINS TRAPPING CABIN

L-40

I-10

ATV BRIDGE 57.91m

D-50

C-50

BORROW PIT

M-49

PIT

CAMP

SUMP

D-49

WATER SOURCE LAKE 2

O-19

K-19

F-19

O-09

A-19

SUMP

BORROW PIT

CAMP

AIRSTRIP C-19

N-28

P-08

STAGING AREA FOR SEISMIC

H-58

B-38

BORROW PIT

CAMP

B-08

A-68

L-47 SINGLE WELL BATTERY

J-37

CAMP

SUMPS

VEHICLE BRIDGE 57.91m

I-16

CAMP

OLD TRAPPING CABIN

H-06

C-16

F-75

C-75

BORROW PIT

A-05

B-25

CAMP

BORROW PIT

L-44

PITS

K-74

CAMP

I-74

C-74

M-73

2M-73

I-73

WATER SOURCE LAKE 3

H-03

F-73

2F-73

BATTERY SITE

CAMP

A-03

J-62

E-72

WATER SOURCE LAKE 1

CAMP/ WATER WELL/ BORROW PIT

F-51

71 61 51 41 31 21 11 1 71 61 51 41 31

80 70 60 50 40 30 20 10 80 70 60 50 40

9 8 7 6 5 4 3 2

Prepared by:

UNIVERSAL GEOSYSTEMS
A Division of Universal Surveys Inc.

HEAD OFFICE
15111 - 123 Avenue
Edmonton, AB T5V 1J7

CALGAIRY OFFICE
Suite1015, 910 - 7 Avenue SW
Calgary, AB T2P 3N8

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LEGEND:

- WELL SITES
- PIPELINE ROW
- ROAD ACCESS
- PIT

Paramount resources ltd.

REVISED:
MODEL: AsBuiltJuly2005_with6Sites

Date: 14-NOV-05
Job No.: 04-1150G
Filename: CH_BASE_NAD83.DGN

Compiled Map Showing
SIX SITES PROGRAM
with
AS-BUILT JULY 2005
Oil & Gas Activity

CAMERON HILLS AREA

Northwest Territories
NAD83 UTM Projection

SCALE 1:125 000

A

300/A-05-6010-11730/0
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Paramount Rsrcs Ltd
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300/J-62-6010-11715/0
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Paramount Rsrcs Ltd
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755.0

A'

Slave_Point
F4_Marker
Watt_Mountain
Sulph_Dol
L.SLPP_DOL
Sulphur_Point
Dkeg_rv
Dkeg_rv_L
Dgrn_wash
Dchinchga
preCamb

TD 1514.6m
TD 1590.0m
TD 1626.0m
TD 1657.0m
TD 1662.0m
TD 1638.0m

LIMESTONE
DOLOMITE

? ?

Paramount Resources Ltd
Cameron Hills
Structural Cross Section A - A'

Licensed to : Paramount Resources Ltd.
Date : 2007/01/24 | By:
Datum : Sea Level | Scale = 1:480
Interval : From Slave_Point to T.D.

geoSCOUT

1:480