

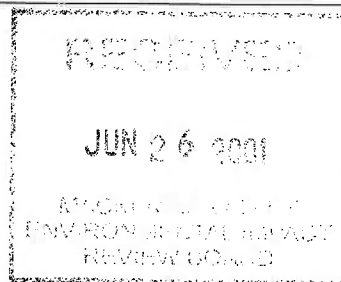


Paramount
resources ltd.

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tel 403 290 3600 fax 403 262 7994

June 15, 2001

Mackenzie Valley Environmental Impact Review Board
Box 938
200 Scotia Centre (5102 - 50 Avenue
Yellowknife, NT
X1A 2N7



Via Fax: (867)920-4761

Attention: Joe Acorn, Environmental Assessment Officer

Dear Sir:

**Re: Paramount Resources Liard East Environmental Assessment
EA Report Conformity
Your File EA00-003**

On June 14, 2001 Paramount Resources Ltd. ("Paramount") received the conformity analysis submissions from the Department of Indian Affairs and Northern Development ("DIAND"), Environment Canada ("EC") and the Government of the Northwest Territories ("GNWT"). The following information is being provided in response to those conformity analysis where questions or issues appeared..

Response to GNWT Summary of Conformity

GNWT CONFORMITY RESPONSE	PARAMOUNT ADDITIONAL INFORMATION
4.9 Air Quality and Climate This item is not in conformity - gas compositions from all existing wells are not provided. Nevertheless, RWED believes that the conservative modeling approach adopted by Paramount utilizing worst case results is an acceptable alternative for the prediction of air emissions.	Future wells - gas composition does not exist as wells have not yet been drilled. Existing Wells - N-60 gas composition is sweet gas (ie: no hydrogen sulphide) Some wells were drilled underbalanced therefore, representative gas analysis were unattainable as formation gas was combined with injected CO ₂ to facilitate underbalanced drilling. Other wells have not yet encountered measurable quantities of formation gas to facilitate gas analysis.

	Recognizing these data limitations, Paramount chose to model the P66A scenario as it represents the highest H ₂ S gas composition known in the region.
4.9 Air Quality and Climate The proponent should provide a brief description of the design standards and operating procedures intended to prevent accidental releases.	In addition to AEUB Guide 60 and Paramount's Task Competency Manual, Paramount also adheres to design standards and operating procedures specified in Alberta Recommended Practices Volume 4 - Well Testing and Fluid Handling. Industry and regulatory agencies endorse this document.
Limited data on current concentrations of SO ₂ in the Community of Fort Liard are available from RWED, and could be used as an approximation of baseline air quality data for the project site.	As the projects are located in remote areas, Paramount feels that SO ₂ values from a community would not be representative of baseline air quality data for the Project site.
Baseline data on employment and other socio-economic parameters for Fort Liard are available from the GNWT, and in a variety of public reports.	Baseline socio-economic data was detailed in Paramount's Fort Liard NEB Pipeline Application dated July 1999 and forms the basis of all subsequent evaluations.
Paramount has not provided a rolled up summary of total employment on the project, nor have they estimated the number of northerners who might obtain employment on the project. This should be possible based on Paramount's past experience working in the Liard area.	<p>Paramount will not determine the final project scope or scheduling until just prior to project initiation. Total employment requirements are difficult to predict with certainty.</p> <p>The project scope is subject to each prior well's success, weather conditions and equipment availability. If two wells are drilled and evaluated, we recommend the numbers presented in Table 2 be multiplied by two.</p> <p>Northern content will be determined when the project scope is finalized, and an evaluation of northern goods and services available at that time to meet equipment, timing and bidding specifications are known</p>

Response to DIAND Summary of Conformity

DIAND CONFORMITY RESPONSE	PARAMOUNT ADDITIONAL INFORMATION
4.7 Paramount states in the "environmental impacts that could result from an accident or malfunction include direct releases of gas to the atmosphere and spills of drilling fluids, chemicals or fuel". These are not impacts. Impacts would be decreased air quality, surface water contamination etc. Paramount should specifically state which impacts could result.	For clarification, the potential impacts to the environment in the event of an accident during drilling and evaluations could be related to release of gas to the atmosphere and spills of drilling fluids, chemicals or fuel. The direct potential environmental impacts would be the resulting interactions with water, vegetation, wildlife, fisheries and air. These potential impacts and their significance are discussed in our EIA in Response to the TOR sections 9 - 17.
4.11 Water Quality and Quantity It should be noted that earlier reviews of licence and permit applications through the preliminary screening process did not indicate a lack of information or specific concerns in the area of water quality/quantity. Water issues were not cited as a reason for referral	Response not required
4.15 Land and Resource Use The potential impacts of the development on land and resource use (not including residual impacts) are not discussed. The EIA only mentions that if area trap lines are affected, the trappers will be compensated.	Response addressed in our EIA in Response to the TOR section 15
4.17 Cumulative Impacts The spatial boundaries set in the EIA only include the project area. No consideration of surrounding projects was made. Further, some discussion or explanation should be provided on the criteria for the determination of whether an impact is significant or not.	The cumulative effect area was intended to incorporate all project components while maintaining a viable study area size. However, dispersion modeling incorporated activity northwest of Fort Liard. Please refer to Appendix II for assessment criteria for determination of significance.

Response to EC Summary of Conformity

EC CONFORMITY RESPONSE	PARAMOUNT ADDITIONAL INFORMATION
Three references relating to air issues were missing: specifically references for Alberta Environment 2000a, Alberta Environment 2000b and for Stroscher 1996. Without these references it is difficult to assess the relevance of the literature cited.	AENV 2000a and 2000b should read AENV 2000. References are as follows: AENV 2000. Air Quality Model Guidelines. Science and Technology Branch, Environmental Sciences Division, Alberta

	Environment, 20980-002, Edmonton, Alberta Stroscher, M. 1996. Investigation of Flare Gas Emissions in Alberta. Environmental Technologies Alberta Research Council, November.
Paramount indicates that a spill plan will be in place prior to project initiation. This spill plan should be submitted for review to ensure they are adequate	This Plan is on file with Mackenzie Valley Land & Water Board and the National Energy Board and has been reviewed for completeness. Updates are submitted to these Boards as required.

In addition, Joe Acorn requested additional information supporting Paramount's justification on minimum wellsite sizes. Please refer to the attachments

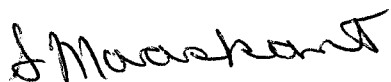
- Spacing regulations complete with a spacing diagram taken from Alberta Energy Utilities Board Guide 36 - Drilling Rig Inspection Manual
- Schedule II, Equipment Spacing For Well Servicing Conventional Wells from Alberta Energy Utilities Board Guide 37 - Service Rig Inspection Manual
- Typical Lease Layout diagram

In particular, please note Schedule II, Equipment Spacing For Well Servicing Conventional Wells which indicates that a minimum 50 meters on each side of the wellhead is required to space the rig tank and production or test tanks. This 100 meter distance in addition to space required for clearance from the edge of the lease (ie: buffer zone from tree line), berms and work space supports a minimum lease size of 110 x 110.

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

Yours truly,

PARAMOUNT RESOURCES LTD.



Shirley Maaskant
Regulatory & Community Affairs Coordinator

Encl:

Alberta Energy Utilities Board

Guide 36

Excerpt from Drilling Rig Inspection Manual

Section

Subject

CONDUCTING THE INSPECTION

SPACING REGULATIONS

**Well to Flame-type Equipment
(8.090)**

1. No flame-type equipment shall be placed or operated within 25 m (75 feet) of a well, oil storage tank, or other source of ignitable vapour (except water injection wells).
 - Flame-type equipment is any fired heating equipment using an open flame, which includes a space heater, torch, heated process vessel, boiler, and an electric arc or open-flame welder. *Including wellsite shacks and trailers etc. with stoves, pilot lights, etc.*
 - Drills, grinders or other portable type tools must not be used within 25m of the wellbore without shutting in the wellbore first.

Welding

2. Special circumstances may necessitate welding within 25 m (75 feet) of a well. Strict safety procedures must be adhered to, which include closing the applicable BOPs. Under no circumstances is welding to be carried out while drilling ahead.

**Well to End of Flare
Line
(8.080, 8.134)**

3. The flare pit and the termination of all flare lines shall be at least 50 m (150 feet) from a well (see Section 320(2) for method of handling deficiency).
4. The flare pit shall
 - be excavated to a depth of not less than 2 m,
 - have side and back walls rising not less than 2 m above ground level,
 - be constructed to resist the erosion of a high-pressure flow of gas or liquid,
 - be shaped to contain all liquids.
 - The use of a "flare tank" is permitted when environmental restrictions will NOT allow a flare pit. The tank must be suitable to contain fluids, have an open top, or venting provision which will NOT create back pressure and be spaced at least 50 m from the wellbore. The line must be secured to the tank.

Section

Subject

CONDUCTING THE INSPECTION SPACING REGULATIONS

There is no size requirement for the tank but it must be appropriate for the volume of fluid expected as would be the flare pit above.

**Well to Rubbish Burn Pit
Site, and Waste Disposal
(8.090)**

5. All rubbish must be transported to a suitable disposal site or be burned in an incinerator at least 50 m (150 feet) from the well (see Section 320(2) for method of handling deficiency).
 - All burning must be carried out according to AEUB Informational Letter IL 81-10, Disposal of Campsite and Well Site Waste, and according to Alberta Environment's Clean Air Act.
 - Rubber, plastic, or any other material containing or coated with rubber or plastic is considered "prohibited debris" and must not be burned.
 - *Disposal/storage of waste lubricants, oil, glycol, oilfield wastes, must be done in accordance with the "Oilfield Waste Management Requirements". (IL 93-8) refer to Appendix 1100.*

**Well to Crude Oil
Storage Tank**

6. No oil storage tank shall be located within 50 m (150 feet) of a well, unless approved by an AEUB (8.090) representative. This particular concern is more applicable to service rigs, but a problem may be encountered if oil is recovered during a drill-stem test (see Section 320(2) for method of handling deficiency).

The use of oil based fluids for drilling mud and the use of crude oil for "spotting" to release stuck drill pipe must be considered as potentially hazardous and the on site safety of this procedure must be addressed before commencing operations.

**Rigs Employing DC
Electric Motors**

7. Diesel electric rigs employ DC electric motors for operating their drawworks, rotary table, and mud pumps. Because of their location and the fact that electric arcing occurs during their operation, these motors must be purged (with the air intake 20 m from the wellbore) in

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CONDUCTING THE INSPECTIONSPACING REGULATIONS

compliance with the regulations adopted under the Electrical Protection Act.

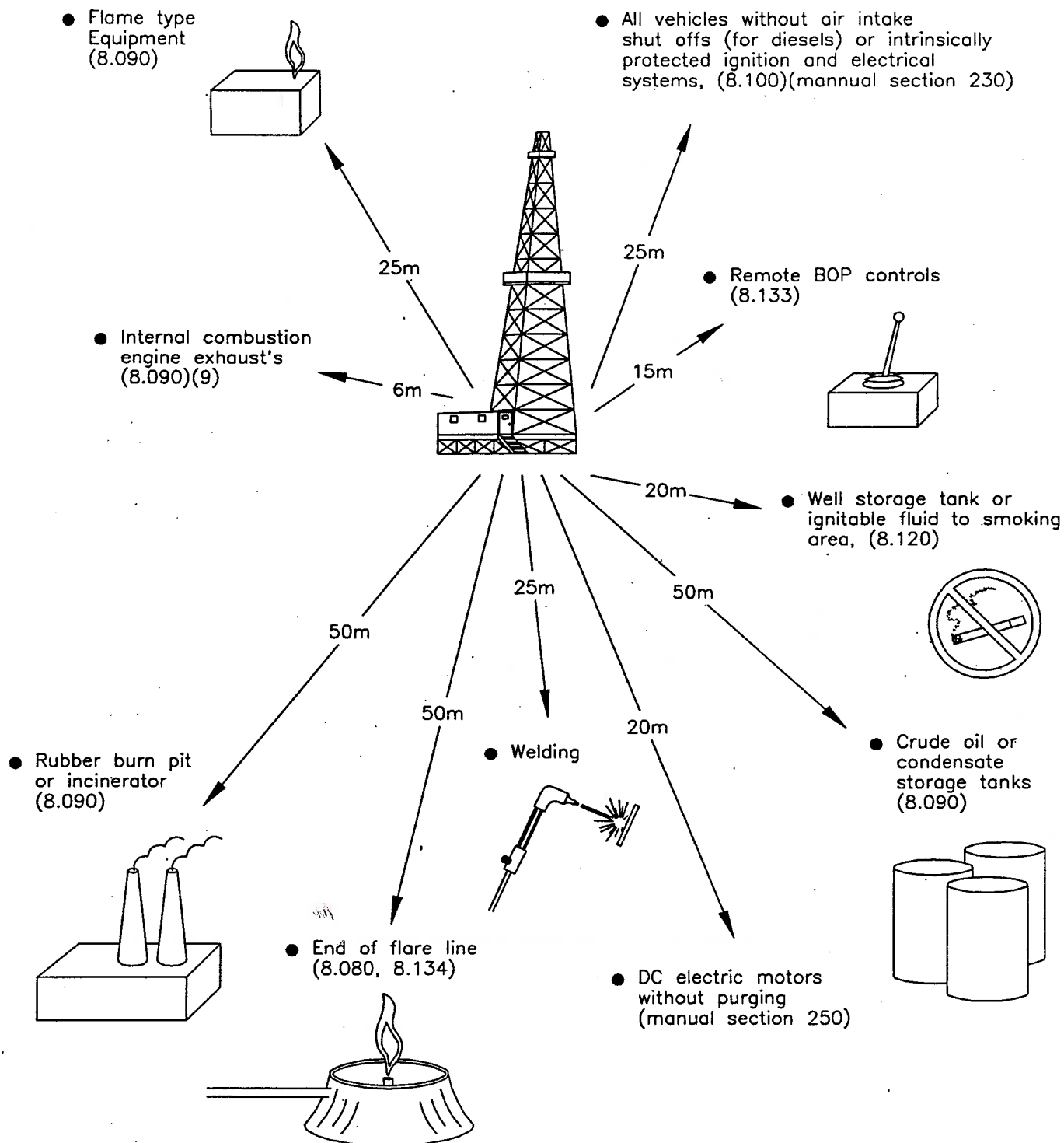
Deficiencies noted with these motors should be mentioned to the operator and contractor and followed up with an advisory to the Electrical Protection Branch of Alberta Labour. The inspection report should not be marked unsatisfactory - a comment in the Remedial Action section of the report is all that is necessary. (See Section 015 Electrical Protection Policy).

Spacing exemptions may be granted by Area Office staff provided the operator discusses its spacing needs with the appropriate Area Office before commencing operations.

Section

Subject

APPENDIX



Alberta Energy Utilities Board

Guide 37

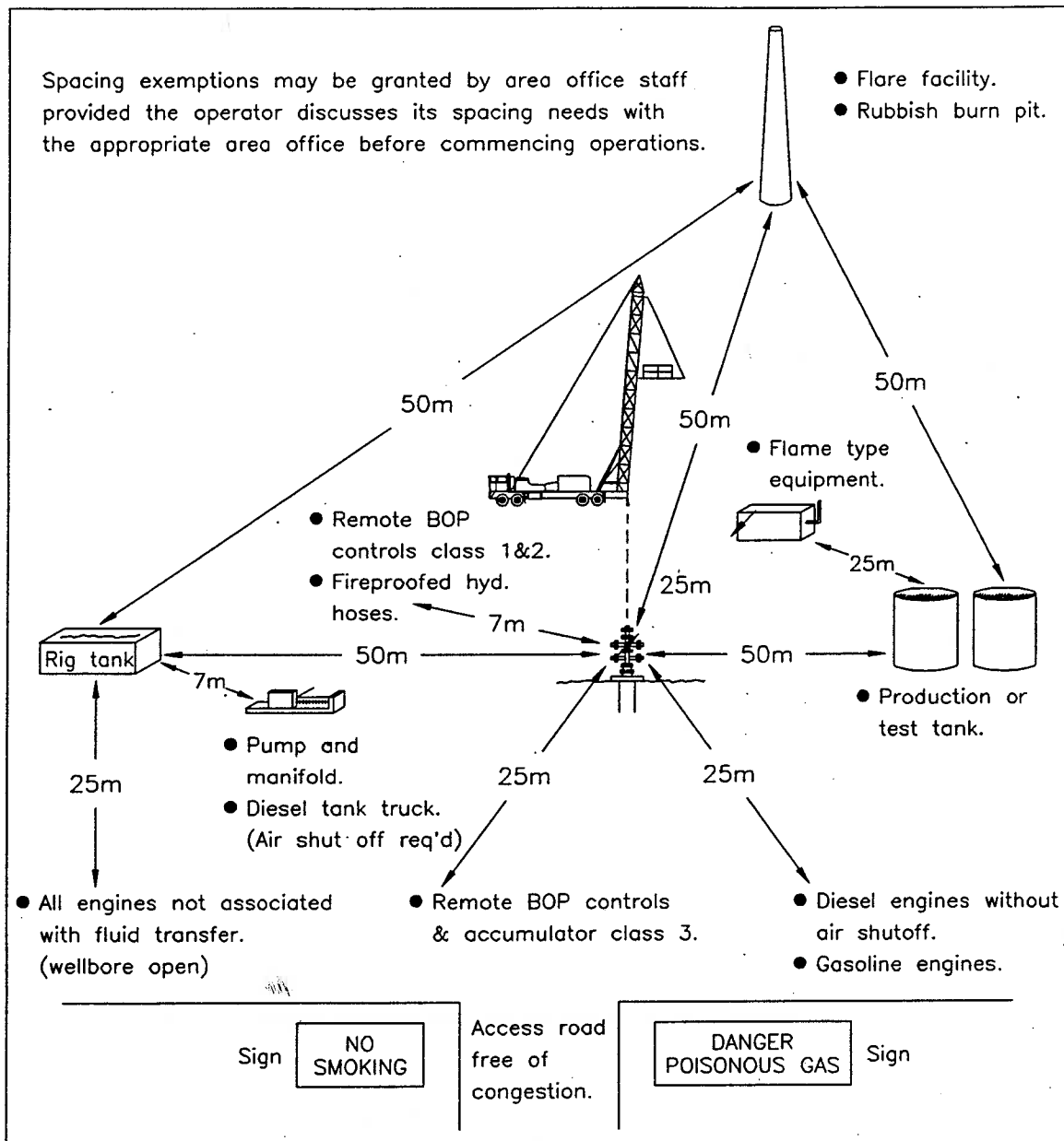
Excerpt from Service Rig Inspection Manual

Section

Subject

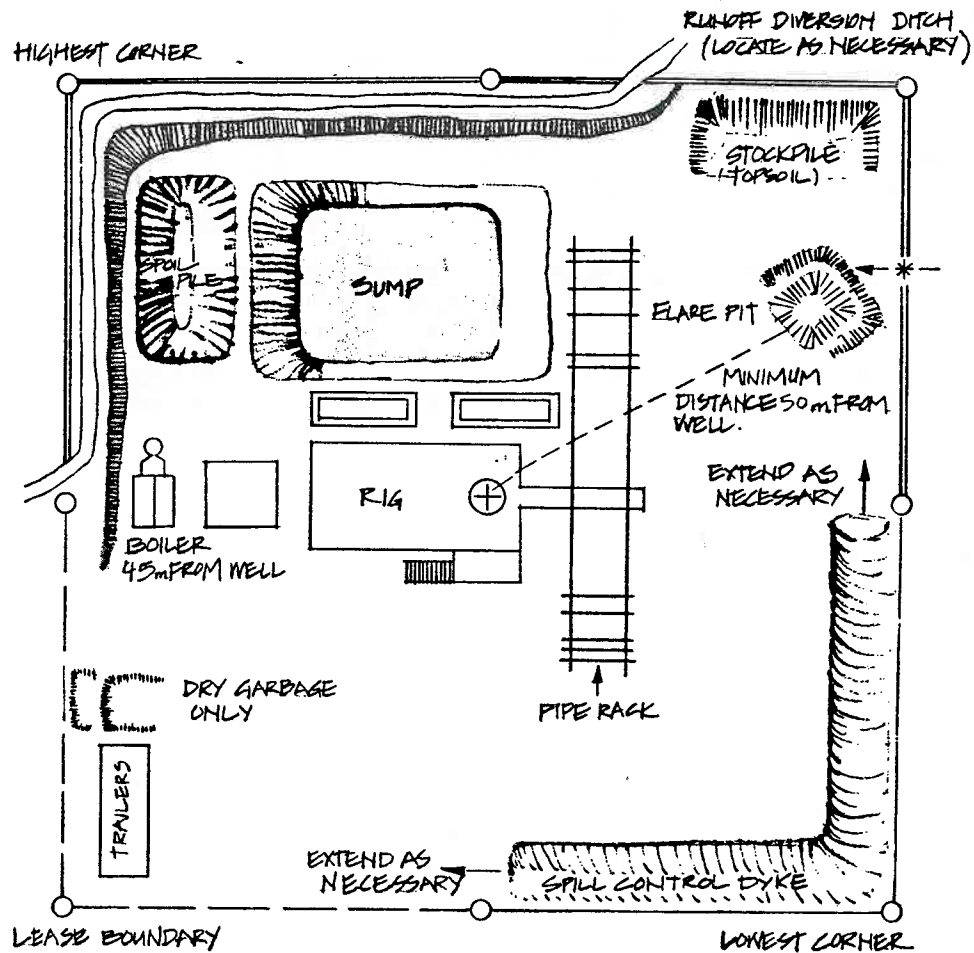
APPENDICES

WELL SERVICING EQUIPMENT CODE

SCHEDULE 11**REFERRED TO IN SECTION 8.148 OF THE OIL AND GAS CONSERVATION REGULATIONS
EQUIPMENT SPACING FOR WELL SERVICING CONVENTIONAL WELLS**

NOTE: The doghouse and light plant must be positioned in accordance with smoking and open flame regulations, and regulations under the Electrical Protection Act.
All distances shown are minimum distances.

Typical Lease Layout



* INSURE ADEQUATE CLEARANCE BETWEEN FLARE PITS AND TREES IN FORESTED AREAS

LEGEND

- — ○ NO ACCESS ROAD ENTRANCE ALONG THIS SIDE OF LEASE
- — ○ OPTIONAL ACCESS ROAD ENTRANCE ALONG THIS SIDE
- — ○ PREFERABLE ACCESS ROAD ENTRANCE ALONG THIS SIDE

Figure 4.2 TYPICAL LEASE LAYOUT



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July 9, 2001

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Via Fax: (867)920-4761

Attention: Joe Acorn, Environmental Assessment Officer

Dear Sir:

**Re: Paramount Resources Liard East Environmental Assessment
EA Report Deficiency Statement
Your File EA00-003**

Paramount Resources Ltd. ("Paramount") is submitting this information in response to your July 2, 2001 letter which identified deficiencies in our Environmental Impact Assessment in Response to the Terms of Reference for the subject Project, and subsequent Information Requests.

GNWT Information Request #1

Request: Please provide the 24 hour ground-level results for concentrations of sulphur dioxide and hydrogen sulphide.

Response: The terms of reference for the Liard East Drilling Project, clause 4.9 specifically identified the need to simulate and comply with the NWT 1-hour standard for SO₂. The results presented in Table 9-17 were aimed at responding to this request. The following table provides both the maximum 1-hour and 24-hour concentrations of both SO₂ and H₂S for each of the well evaluations.

Environment Canada Information Request #4

Request: Section 9.3.4 Environmental Impact Assessment states that the model inputs listed in Table 9-11 are used for each well test. If the same inputs are being used please explain the wide variations in modeling results. For example in Table 9-12 the predicted maximum 1 hour SO₂ concentration for M-23 (260.3 ug/m³) is more than 5 times higher than at P-57 (50.2 ug/m³).

Response: As noted in the response to the previous question, the topography in the region of the proposed well evaluations is varied. For this reason, the ISCST3 dispersion model was run in the complex terrain mode. Digital topographic data were obtained from Natural Resources Canada and used to develop the receptor elevations used in the modelling. The differences in the maximum ground-level SO₂ concentrations listed in Table 9-12 (page 39), reflect the effect of the local topography on the dispersion of emissions during the well evaluations.

In the case of the M-23 well, the site is located at a relatively low elevation (278 m above sea level) near to the Liard River. The modeled terrain rises nearly 470 m (1,542 ft) above the base elevation of the flare at M-23. In contrast, the P-57 well site is located near the top of a ridge, at an elevation of 670 m above sea level. The modeled terrain rises no more than 78 m (256 ft) above the base elevation of the P-57 flare. Predicted ground-level concentrations from sources with the same emission characteristics can be very different when terrain is considered

Mackenzie Valley Environmental Impact Review Board Information Request #1

Request: Please provide detailed descriptions, calculations and diagrams that demonstrate why Paramount is requesting minimum well site sizes of 110 m x 110 m.

The Review Board expects Paramount's response to this IR to provide evidence of reduction of environmental impact and demonstrate efficient land use. The objective is to have minimal environmental disturbance while allowing a safe work environment on the well site.

Some questions/issues that will need to be addressed in the response to this IR include the following:

1. A typical well site size in Alberta is 100 m x 100 m, which is accomplished with a minimum spacing requirement of 50 m from the wellhead to the flare stack. Given that the NEB only requires 40 m minimum spacing from the wellhead to the flare stack in the NWT, why can't the proposed well sites be smaller in the NWT than in Alberta?
2. The typical lease layout diagram that Paramount provided contains a sump, which occupies a significant portion of the well site. Given that

Paramount is using remote sumps for disposing of the drilling fluids (as stated in the documents *Environmental Report for the Fort Liard East Drilling Program 2000/2001* and *Environmental Report for the C-51 or G-51 Drilling Program 2000/2001*), the Review Board would expect the absence of a sump to allow reductions in the well site size.

3. The AEUB's Information Letter IL 96-9 - Revised Guidelines for Minimizing Disturbance on Native Prairie Areas states that "...modifications to lease size and shape to reduce surface impact should be considered." Indian and Northern Affairs Canada's Environmental Operating Guidelines: Hydrocarbon Well-sites in Northern Canada states that "The facilities layout is important for industrial safety reasons as well as environmental protection. The well-site area does not have to be square or rectangular." The Review Board expects to see the environmental protection principles of the above documents demonstrated in the response to this IR.

Please note that until sufficient quantitative justification for the requested well-site sizes is provided, the Review Board staff will be unable to efficiently advance the environmental assessment process.

Response: To add clarification it should be noted that there is no "typical well site size" in Alberta, but rather an often used well site size is 100 m x 100 m in the white zones. The wells being proposed in the Liard East Project Area are normally deeper targets (i.e. + or - 3500 m). Therefore they require much larger drilling rigs, more related equipment including tanks for storage of greater fluid requirements, and the wells are typically drilled during the winter season where additional space is needed not only to store the stripped soil horizons, but the initial and subsequent snow covers. Further, the NWT leases are typically located in forested (Green Zone) areas, which for fire protection require additional buffer or setback spacing. Another consideration is depending upon the terrain encountered additional space would be required for back-sloping soil. As the requirements are not totally known until the time of lease construction and depending upon the circumstances encountered, it may be possible to support a lease size of 110 m x 90 m.

The primary mitigative option for environmental protection is typically related to siting of the lease away from environmentally sensitive areas (e.g., at least 100 m from a drainage). The secondary mitigative option is limit the size of the lease to the extent feasible, based on the: geological and geophysical subsurface target considerations; H₂S content; drilling days; rig size; sump size estimates; type of solids removal equipment; fluid recycling processes employed; required equipment placement and equipment set-backs; the minimum cleared area required for safe and efficient operations; and, consideration of topographical or site-specific habitat features.

The lease is the area where all of the activities related to the lease clearing, material storage, pad construction, equipment movement, equipment set-up, equipment take-down, water hauling, waste removal, and project management must occur, and within which that work must be completed safely. As such, the lease size primarily addresses regulated equipment spacing, and an adequate area to physically complete the work in a safe manner, recognizing environmental considerations.

The size of a lease is related to regulations and specifications related to drilling activities, service rig activities and testing activities – not just drilling the well. Each of these stages required to bring-on a well, uses different equipment that have varying spacing requirements for the safe completion of the project.

Clearing of the tree and shrub cover from the lease is the first step. A bulldozer typically pushes the trees over, and pushes them into a windrow along one edge of the lease. The volume of this windrow is dependant on the number and type of trees within the lease, and whether or not there has been any timber salvage. To protect the standing timber adjacent to the lease from mechanical damage (i.e., equipment or the cut trees damaging live trees), a buffer of at least 2-3 meters is typically left between the windrow and live trees. This buffer also provides protection from the live trees in the unlikely event of a fire in the windrow, as well as provides an area for equipment to get in behind and push the slash back over the lease during reclamation.

A level surface for the drill rig is required to safely and accurately drill the well. This may require that an area around the well centre, of 30 m x 50 m be stripped of organic material and leveled. The organics are stripped, and stored in a windrow that must be kept separate (approximately 2 m) from any standing timber or windrowed timber, and on the high side of the lease so that it is not lost and can be used during reclamation. Where grading is required, the subsoil would then be graded to construct the level pad. Any excess subsoil would have to be stored on the lease, again with a 2 m separation from stored organic material, slash storage or standing timber. Where feasible snow and ice would be used for leveling purposes, but depending on the winter (i.e., temperature and snowfall), this is not always practical.

As the well drilling and testing typically occurs during the winter, an area is required for snow storage so that men, equipment and trucks can move safely about the lease. The space required for snow storage would vary, depending on the snowfall amounts during that particular winter.

Depending on the topography, and the potential for off-lease migration of spilled and/or leaked material, a berm of snow or subsoil may have to be constructed on the low-side of the lease. This berm would catch any spills and allow a quick response to prevent disturbance to habitat adjacent to the lease.

Once the lease has been prepared, the drilling rig components are transported to the lease by trucks. For some of the components, a laydown area is required to store it, prior to the assembly of the rig. Further, when the trucks are unloading the equipment there must be a separation between the equipment and the windrows or standing timber, as well as the other equipment components. Further, when the trucks unload, it is typically done by winching and pulling the rig components off the transport truck. For example, when unloading the drilling base, there must be enough room for a truck or cat to pull on the base, the base itself, once it comes off the haul truck, and the truck that the base was unloaded from. In addition, there needs to be room for these trucks to pull away from the base once it is unloaded, and have a safe turning radius so that they can turn around once the base is unloaded. This process would be completed in reverse during the rig move once the well was drilled.

The AEUB Guide 36 notes that the flare pit and the termination of all flare lines shall be at least 50 m from a well, while the NEB regulations call for a setback distance of at least 40 m between the well bore and the flare stack. However, there must be a separation between the flare pit and the adjacent trees, or the windrowed slash, to prevent a fire. This separation is typically at least 10 m, and could be more depending on the lay-out of the lease and the size of the trees adjacent to the lease (see discussion below on Guide 40 requirements).

During the drilling, there needs to be room for observation shacks and transportation vehicles to park, and maneuver safely for crew changes while drilling is on-going. Further, there must be room for the water trucks and pump trucks to safely get to the water tanks, and above-ground sumps, respectively. This recognizes that there are workers walking around completing various tasks required to keep the drill rig operating. These operations could be happening at the same time, and/or at the same time that a fuel truck is delivering fuel. The access and exit must be free of congestion so that access or egress is not impeded in the event of an emergency. As such, there must be room for vehicles (e.g., vacuum trucks, helicopter) to get in and out safely, in the event of an emergency (e.g., spill or human injury).

Ideally if soil conditions are conducive to an on-lease sump environment (i.e. good clay base); it is the most economical and environmentally protective option to use. It eliminates additional clearing and access requirements for a remote sump and potential of an unplanned occurrence in transporting off lease to another location. If a sump was required on a lease for the Liard East program, the size of the sump would be such that a 90 m x 110 m lease would be the minimum consideration, and a larger lease may likely be required to be applied for with a quick turnaround. Where invert mud is used a sump will be required for surface hole. Paramount is proposing to use above-ground tanks for storing hydrocarbon contaminants for transportation to an approved disposal location. As discussed earlier, the deep target, the larger rig size and additional equipment required to

reach that target, and the applicable safety setback distances were all considered in determining the size of the lease.

The flare stacks that are proposed for the Liard East drilling project are 25 m in height, and will require cranes to erect them in a safe manner. Further, stabilizing guy wires will also be required to ensure that the stack is secure. In the EUB Guide 40, Pressure and Deliverability Testing Oil and Gas Wells, it is noted that the following requirements are defined in the Forest and Prairie Protection Regulations (AR 135/72): areas within 30 m of flare pits must be cleared of all combustible debris; clear, bare mineral soil surface must be maintained within 8 m of flare pits; and, in forested areas, flare stacks must be located at least 2.5 times the stack height, or such other distance as prescribed by a forest officer, from combustible debris. The combustible debris would include the salvaged slash from the lease, and the adjacent forest cover. For the Liard East wells, this would mean that a flare stack would have to be 50 m from a well head, and a minimum spacing of 2.5 x 25 m or 62.5 m from the edge of the forest.

From the above discussion, it can be seen that the lease sizes are designed to accommodate several different stages and regulations that are required for the completion of the drilling and evaluation of the well in a safe and environmentally responsible manner. The disturbance and protection is not just related to the cleared area of the lease, but extends to adjacent trees and forests that could be affected in the event of a spill or a forest fire.

The level of disturbance to the edges and corners of the well lease is limited to material storage (e.g., slash, snow), limited truck traffic, including turn-around space, unloading space, and parking. The level of ground disturbance in these areas is typically low, as the space is required for a short-term during unloading, loading of equipment, and is not chronically disturbed during the drilling and testing. These low disturbance areas typically have good natural revegetation potential. These areas along the edges of the lease are typically not required for use during the operation of a well. Depending on the type of well and the required production equipment (e.g., pigging facilities, dehydration unit) the operations disturbance is often restricted to the access and a tear-drop turn-around that encircles the equipment, and an area that allows enough space for a service rig to access the well head. Those areas of the lease not required for production would be allowed to revegetate.

The typical well-site layout provided to the MVEIRB by Paramount in the June 15, 2001 was modeled after the typical well-site layout (non-permafrost) suggested in the Indian and Northern Affairs Canada's Environmental Operating Guidelines: Hydrocarbon Well-sites in Northern Canada. In Paramount's view, the rectangular or square lease provides the opportunity for maximum use of a given area, particularly in treed areas, respecting safety setback requirements. However, in the event that there is an environmental advantage to creating a non-square lease (e.g., round the corners), Paramount will evaluate that option against the

required setback distances to determine the feasibility. It may be that more area might have to be cleared to achieve a non-square lease that meets the safety setback distances.

Mackenzie Valley Environmental Impact Review Board Information Request #2

Request: Please explain and provide substantive assurance of the proposed procedure for the handling and disposal of drilling fluids.

Response: Paramount may use different drilling mediums, including: a Gel caustic mud system for the surface hole; an oil mud system for intermediate holes, and a polymer system for the main hole portion of the well. The type of drilling fluid used will depend on the formation that is being drilled, the depth of the hole, pressure control, and the risk of washouts or cave-ins, and which fluid is best suited to maintain the hole and bring the cuttings to the surface.

Above ground tanks will be utilized to contain hydrocarbon contaminates which, in turn, will be transported to an approved disposal site. Gel-chem will be disposed of by mix, bury and cover in the sump used for surface hole. Oil-based drilling waste (i.e. drill cuttings) will be transported to B.C. (Rudager Enterprises Ltd., Fort St. John - Silverberry facility) for testing and composting. Oil-based drilling muds will be reused during the drilling season and at the completion of drilling will be stored in an approved site in Fort Liard or on-site in a bermed and lined location.

Mackenzie Valley Environmental Impact Review Board Information Request #3

Request: Please explain if Paramount has decided to use a sump-less system to dispose of drilling fluids for the wells included in this environmental assessment and its willingness to make this decision.

If a sump-less system is to be used, explain the procedure that will be used.

If a sump system is to be used, provide quantitative justification specific to environmental considerations for selecting a sump system. Explain fully the advantages and disadvantages of both a sump system and a sump-less system.

Response: Due to the quantities of fluids required to drill the total depth of the Liard East wells, a sump will be required. Whether the sump can be on the lease or remote depends on the near surface soils. Paramount prefers to have a sump at each lease, where the conditions are appropriate. Where there are competent clays (i.e., no migration of fluids occurs) in which to build an on-lease sump this option is preferred. However, in instances where the lease is built on soils containing sands, gravel or on muskeg, there is a potential for the fluids to leach out of a sump built in this type of material. In these instances a remote sump that is

EA02

From: Shirley Maaskant [Shirley.Maaskant@paramountres.com]
Sent: Friday, July 27, 2001 4:10 PM
To: EAO2@mveirb.nt.ca
Subject: Re:

Yes Joe, use our Fort Liard response on wellsite site for the Cameron Hills response. As I mentioned to you on the telephone, the Cameron Hills wells are typically more shallow than the wells in Fort Liard, therefore, if smaller drilling equipment can be used, we will alter the wellsite size accordingly.

>>> EAO2 <EAO2@mveirb.nt.ca> 07/26/01 11:24AM >>>
Hi Shirley,

I got your messages. Sorry for the delay in responding but I haven't been around this week. I officially joined the Review Board today as permanent employee. The last few days I have been cleaning up loose ends at my previous job. I am also in the middle of moving.

For a theoretical schedule for a Cameron Hills pipeline EA, you are going to have to just rely on previous EAs to guide you as I cannot be any more specific. If you want to talk about it in more detail, please call Vern.

For the Cameron Hills drilling EA, I want to get some more info on the Public Registry regarding well site sizes. If you do not object, can I put your response to the Review Board's IR on well site sizes for the Liard East EA on the public registry for the Cameron Hills EA as well? I am assuming that your answer would just be the same if I were to give you the same IR again for Camerin Hills. If your answer would be different, please let me know and I will issue a well site size IR to you for the Cameron Hills EA and you can submit another response.

Thanks,

Joe Acorn
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