EA03-005

February 4, 2004

Mackenzie Valley Environmental Impact Review Board
Box 938
5102 – 50 Ave.
Yellowknife, NT X1A 2N7

Attention: Kimberley Cliffe-Phillips via email

Dear Ms Cliffe-Phillips

**Re: Paramount Resources Ltd.**
**EA03-005 Hearing Presentation Speaking Notes**

The attached document contains Paramount's speaking notes for the February 18 and 19 2004 Hearing. The corresponding presentation was submitted to you earlier today in pdf format.

Please contact Shirley Maaskant if you require additional information. Thank you for your continued assistance.

Yours truly,

Shirley Maaskant
Regulatory & Community Affairs Coordinator

Encl: Speaking Notes (Slides 1 – 22)

# Paramount Resources Ltd.
# EA 03-005 Hearing Presentation Speaking Notes

**Slide One: Title Page**

- Paramount is appreciative of this opportunity to further discuss concerns and issues relating to the oil and gas development in the Cameron Hills and to enhance the understanding of that development.

**Slide Two: Overall Conclusion**

- Paramount and their representatives have completed an assessment of cumulative effects associated with past, present, and reasonably foreseeable future oil and gas development in the Cameron Hills and have concluded that no significant effects are predicted from these activities.
- It is Paramount's objective to demonstrate to the attendees of this hearing how we arrived at that conclusion.

**Slide Three: Presentation Overview**

- This presentation can be broken down into three parts: Project History, Cumulative Effects Assessment Cases, and finally the Conclusions.

**Slide Four: Area Locator Map**

- Items to note are:
  - Horizontal line in the middle of the map is the $60^{th}$ parallel.
  - Community locations are as indicated by stars.
  - Paramount's current Cameron Hills activities are confined to the Significant Discovery Licenses (SDL) area outlined in the center of the map.
  - To put a scale to the map, Kakisa is located approximately 60 km to the north and 180 km by road from the SDL area.

**Slide Five: Project History**

- Paramount has previously participated in two Environmental Assessments associated with the development of oil and gas in Cameron Hills.
  - The first was directed at flaring gas during the testing phase.
  - The second was focused on the pipelines required to gather and transport oil and gas.
  - Currently, 5 of the 9 proposed wells included in a 2002 land use permit application were referred to Environmental Assessment, based on possible cumulative effects, and a potential for public concern.

**Slide Six: MVEIRB Terms of Reference, Scope of Assessment**

- The Review Board has previously established through the past assessments that: the individual components of the development under assessment generally are not likely to have a significant adverse effect, if considered in isolation.
- Components previously considered in isolation are: Access, seismic, drilling, testing, and installation and operation of production facilities.
- The focus of this Developer Assessment Report is on the cumulative effects rather than the individual impacts.

**Slide Seven: MVEIRB Terms of Reference, Scope of Assessment (cont'd)**

- The Review Board defines cumulative effects as the effects of the proposed development in combination with effects from past, present or reasonably foreseeable developments.
- In this Developer Assessment Report Paramount has assessed effects based on a conservative assumption of the number of wells that will be included in the development, which will be discussed in more detail later in this presentation.

**Slide Eight: Cumulative Effects Assessment Cases**

- Paramount utilized four assessment cases in the Developer's Assessment Report: Environmental Setting, Baseline, Application, and Planned Development.

**Slide Nine: Environmental Setting Case**

- The setting for this case is prior to any oil and gas development existing in this area in 1960.

**Slide Ten: Baseline Case**

- The first layer displayed on the map highlights activity conducted prior to Paramount receiving the first SDL in 1987. Companies other than Paramount conducted seismic and drilled wells prior to 1987. Many of these wells were capable of production, yet none of these companies took the next step of applying for an SDL and assuming the economic risk of proceeding with the development that Paramount has.
- The next layer considers activities of Paramount and others that exist and are approved up to June 2003.

**Slide Eleven: Application Case**

- The Application Case is the 5 wells and associated infrastructure considered in the current land use application that resulted in the referral to environmental assessment.

**Slide Twelve: Planned Development Case**

- Finally the Planned Development Case:
  - This case represents the reasonably foreseeable future development of Cameron Hills as Paramount envisions it today. A total of 48 additional wells and the infrastructure required to bring those wells on production over a period of 10 years is the fabric of this case.
  - The Planned Development Case as presented is considered conservative, because it anticipates all potential drilling sites being drilled, completed and tied-in. This is not the expected outcome due to the unlikely event of all 48 wells being economically viable.
  - Paramount may not drill all 48 wells, or construct pipeline to all of the wells drilled.

**Slide Thirteen: Seismic Section**

- The purpose of this slide is to demonstrate the complexity in accurately predicting the outcome that results from the use of geological and geophysical interpreted data.
  - This slide is an actual seismic section excerpt taken from one of the Cameron Hills 3D acquisitions.
  - The changing waveform direction (left to right) indicates that the vertically traveling energy wave created at surface is passing through dissimilar material such as shale to a carbonate.
  - Fluids contained in the pore spaces of the same pool segregate from the lightest at top to the heaviest at the bottom, gas/oil/water.
  - Since F-75 is structurally higher than K-74, the expected result would be either oil or gas, not the water that was recovered from F-75. Accordingly, the pool containing C-74 and K-74 can't also contain F-75, since the fluid contacts are not common..
  - The uncertainty in the outcome, as demonstrated by the F-75 well, dictates the necessity for flexibility in the Cameron Hills development plan so that the developer can react to the new well information.

**Slide Fourteen: Map of All Cases**

- This map contains the overlain layers of the four cases previously mentioned: Environmental, Base Line, Application, and Planned Development, indicating the ability to utilize a significant portion of existing linear disturbance.

**Slide Fifteen: Terrestrial Study Area**

- This slide shows the Terrestrial Study Area (TSA), with the colors representing different vegetation types. The Paramount Significant Discovery License, is provided for perspective.

- The small blocks moving over to the right side of the slide each represent 0.2% of the TSA area; providing a visual image of the Baseline Case which represents 2.0% of the TSA or 1,918 ha.
- The smaller block represents 28 ha for the Application Case, which means that the cumulative disturbance within the TSA remains at 2.0%.
- The disturbance predicted for the Planned Development Case is represented by the final block moving over to the right of the slide; this represents 147 ha or 0.2% of the TSA. The cumulative disturbance is therefore predicted to be 2,093 ha or 2.2% of the TSA. This 2.2% has not been reduced to incorporate ongoing natural revegetation.

**Slide Sixteen: Air Cumulative Effects Assessment Conclusions**

- Air assessment included the cumulative emissions from the approved, applied for, and planned equipment in the Cameron Hills.
- The environmental consequence for sulphur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), hydrogen sulphide, fine particulates, and acid forming compounds were determined to be negligible to low.
- Modeling confirms that even under worst-case conditions, the maximum concentrations of $SO_2$ and $NO_2$ would meet the respective NWT standards and federal objectives.

**Slide Seventeen: Aquatic Cumulative Effects Assessment Conclusions**

- The surface water assessment evaluated the water volumes required for the Project, the volumes of water available from the water source lakes, and the potential for the various Project phases to affect water quality. The effects to surface water were predicted to be negligible; effects to water quality were predicted to be negligible to low.
- Groundwater was evaluated with respect to quality, by assessing the potential cumulative impacts from pits and sumps, spills, and wastewater disposal. Due to several factors, including isolation, emergency response plans, and deep well injection, the potential impacts to groundwater quality was predicted as negligible.
- As the majority of the water required for the Project will be lake water, the effects to groundwater quantity were predicted as negligible.
- No residual impacts were predicted for fish distribution and abundance, primarily related to the minimal disturbance to the drainages during gathering system construction, and attaching pipe to the bridges that cross the Cameron River and the large tributary south of the well A-73.
- Alteration to fish habitat was predicted to be negligible, related to the same mitigation described earlier.

**Slide Eighteen: Terrestrial Cumulative Effects Assessment Conclusions**

- **Soil**
  - Soil indicators were the area of disturbance and soil erosion. The area of disturbance, although presented as the entire ROW width, is typically restricted to the trench line and facility sites. Even with this exaggerated estimate, cumulative effects to soil for the Planned Development Case were predicted to be low.
  - Terrain indicators were the area of disturbance and permafrost potential. The entire disturbance footprint was used to estimate the potential for disturbance, which was predicted to be low for terrain disturbance, and negligible for permafrost.

- **Vegetation**
  - Computer models and GIS were used to evaluate the potential for vegetation loss/alteration, invasion of foreign species and fragmentation. All disturbances, even those created in the 1960s, were considered to be still disturbed, even though regeneration has taken place. Environmental consequence to vegetation VECs evaluated was predicted to range from negligible to low.

- **Wildlife**
  - The vegetation maps were used to model the potential habitat within the TSA for moose, caribou, marten and songbirds. Models and GIS were used to predict which habitat types and how much, could be impacted by the different Cases. No incremental re-vegetation was applied to past disturbances. The environmental consequences predicted for the residual impacts to wildlife are: direct habitat loss – negligible; sensory disturbance potential - low to moderate; increased predation/hunting/trapping – negligible; and, barriers to movement – low. The environmental consequence with the highest rating (moderate) was sensory disturbance potential for caribou, moose and marten.

**Slide Nineteen: Cultural Assessment**

- Results of a heritage study and monitoring during construction, and general principles related to archaeological and traditional site distributions were used to develop a series of landscape characteristics that were used to map the potential for heritage resources within the SDL. GIS was then used to evaluate the amount of moderate potential area to be disturbed by the various Cases. It was predicted that the environmental consequence would be low for heritage resources.
- The environmental consequence related to opportunities to hunt, fish, and trap, were all rated as negligible. This is primarily related to the remoteness of the Cameron Hills, and the winter-only access.
- The consequence of the Project to aesthetics was predicted to be low, primarily due to the separation distance between visual vantage points and the Project area.

**Slide Twenty: Socio-Economics**

- The Cameron Hills Extension Project is predicted to have positive, high consequence for northern employment, and low to moderate consequence for northern procurement, northern capacity, and economic benefit to the NT.
- Negative impacts to resource accessibility, workforce health and safety and social wellness were rated as negligible to low.
- Traditional values and population increases were classified as both negative and positive, with negligible consequence being predicted.

**Slide Twenty-one: Developer's Assessment Conclusions**

- Air – negligible to low
- Aquatic – negligible
- Terrestrial – negligible to moderate
- Cultural
    - Negative effects - negligible to low
    - Positive effects – low to high
- Socio-Economic – negative to positive

Overall conclusion is "No Significant Effects Are Predicted"

**Slide Twenty-two: Sustainable Development**

- Paramount has established a good working relationship with many of the agencies represented at this Hearing and has incorporated community participation and northern content into the project following consultation with surrounding communities. We continue to be committed to working with stakeholders in the pursuit of Sustainable Development.