Mackenzie Valley Environmental Impact Review Board

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Date:	September 3, 2003	Pages:	13 including this page
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Re:	**Notes from August 13 Information Session - Paramount Cameron Hills Extension EA**		

NOTES:

Dear Interested Parties:

For the benefit of those parties that could not attend the information session on August 13 in Yellowknife I have attached brief notes. They may not be complete and if anyone wants to add to them, please feel free to. Also, please let me know asap if I have misrepresented anything.

Regards
Martin Haefele

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Distribution List **Paramount Resources Ltd – Cameron Hills Expansion Environmental Assessment**

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Notes from Paramount Information Session August 13, 2003

Paramount's History in Cameron Hills

- 1st well by Paramount in 1979, other companies were active prior to that.
- Paramount holds a Significant Discovery Licence (SDL) since 1987.
- There has been a lot of 3D seismic, 1240 ha.
- 2D seismic indicates that on west side of current SDL area there will not be much development
- So far 29 wells have been permitted, of those 5 have not yet been drilled.
- Of the 24 wells drilled 12 have been tied into the gathering system, the other 12 are permitted for tie in.
- Paramount anticipates up to 48 additional wells and hopes to tie in 60 to 70 % of those.
- The geology of the area does not allow the 3D seismic to resolve the target zone enough to predict the success of wells. This introduces a fair amount of uncertainty about which wells will be tied in.
- Oil wells are spaced more dense because the oil is less mobile than the gas. Other than that the environmental effects of oil or gas wells are pretty much the same. Oil wells are spaced approximately one per quarter section, gas wells at approximately one per section.
- Winter access opens usually in mid December, in summer access is by helicopter only.
- Access is needed to every well site in winter to re-supply chemicals needed to dry the gas.

Q: What is the timeline of the extension project.

A: About 10 years. Three to eight wells per year, depending on success in previous years.

Q: Is this a winter only project? Will well testing occur in summer

A: All wells are drilled and tested in winter, testing may not occur in the same winter.

Q: Are you planning to use in-line testing instead of flaring?

A: If there is a pipeline close enough we will only run short tests and then tie the well in right away rather than waste product. If we have to build several kilometers of pipeline we need to flare longer.

Proposed Methods for Cumulative Effects Assessment

Daryl Johannesen from Golder Assoc. presented a number of slides and explained how they propose to do the assessment. Then the participants commented on the proposed approach. Afterwards Mr. Johannesen went through the slides again so participants could add things that may have been missed or that they only became aware of after they heard all the comments.

Timelines

Generally these times will be used:

- Pre-project case: 1960
- Baseline case: 2003 *[Note: MVEIRB considers the "baseline" for the EA to be prior to any development]*
- Application case: 2003 plus 5 wells and 22 km of pipeline
- Potential development case: 48 additional wells and pipeline to tie in.

Assessment Boundaries

Boundaries will vary with the ecosystem component looked at:

- Air: same as used in previous assessments
- Terrain: approximately the size of the home range of a caribou
- Aquatic: Cameron River water shed and drainage towards Hay River.
- Socio-economic: towns that may be affected, not finalized yet.

Air Quality

- Run air quality model for 46 wells, then place remaining 2 wells into worst possible location and run model again.

Terrain

- Use various GIS overlays
- Map out sensitive areas
- Predict disturbance

Aquatic

- Assume 5 wells per year
- Create a water budget
- Compare water budget to DFO protocol to determine if identified sources are sufficient
- Predict effects on Cameron River
- Look at water quality, siltation, and spills

The ALCES model may be used for some things. It is not applicable to all issues, however.

Discussion/Suggestions

RWED: increase area for air quality modeling to include nearby communities. Env. Canada supports.

socio-economic assessment, particularly harvesting should also include people on the Alberta side.

Erosion following oil and gas development in the Cameron Hills has been a concern in previous years.

What are the recovery rates in the area? When and how will the area go back to a state comparable to pre-development?

Paramount needs to demonstrate that the NWT air quality standards will be met. Paramount should further demonstrate that pollution has been minimized, i.e the lowest possible level is reached, rather than just meeting the standards.

All potential air pollution sources should be included (not only flaring) and all applicable pollutants should be modeled, e.g. acid and particles.

On-site metereological data would be helpful.

Prediction models are helpful, but the results must be followed up and verified in the field.

NEB: likes the approach taken

Because there are no thresholds for acceptable disturbance, the project should be designed to minimize disturbance as much as possible.

Regeneration of disturbed areas is important.

Cumulative impacts are hard to quantify

This is a relatively predictable project in technical terms, but Paramount must also look at what the people in the region want.

DIAND Will future wells require another EA? *Paramount hopes not; they will work with a worst case scenario and no further EA should be required unless plans change significantly.*

CPAWS CPAWS participates as observer

How will the company present the information to the communities?

CPAWS is interested in thresholds of acceptable development.

How will regeneration be included into the EA?

Maps would be helpful.

CPAWS used the GLOBEBIO model approach together with CARC in the Liard area and found that people were concerned and wanted to know

	what is done to mitigate the impacts and how the land will look like once the oil and gas development is all done. And how long will it take? *Paramount agreed to predict duration of disturbance.*
DIAND	DIAND Water Resources interested in finding out about use of water, disposal of waste, adherence to DFO protocol, sewage treatment, etc.
	What happens to drilling waste, how many sumps will there be? Will eight well per year mean eight sumps per year?
	Pipelines can affect permafrost, result in changes to the drainage pattern, and cause erosion.
Paramount:	How can we benefit from the work already done for previous EAs or Land Use Permit applications in the area?
RWED:	Paramount must include old developments because cumulative effects may make mitigation measures inadequate over time.
DIAND:	What is area for socio ecomomic assessment?
	There are no local people here today, that is a concern.
	Paramount has not yet discussed their information sources. E.g. will the Deh Cho Land Use Planning Committee be involved?
	Information/data should be gathered and presented so it can be a common resource, rather than be in a project specific and proprietory format.
	There should be a gap analysis in the end. What have we learned.
Env. Canada:	The cumulative effects concerns are driven by public concern. The old EA material should be made accessible to the public.
	Migratory birds seem to be missing from Paramount's plan for theEA. Why limit to riparian song birds? Consult with EC staff.
	Water quality and waste are important issues, particularly drilling waste.
	There should be long term monitoring of waste deposits.
	There should be an inventory of past and present sumps.
	Sump failures in the past often resulted from salt and permafrost interaction. It happens over decades, not a couple of years.
DIAND	Consultation with communities is important. See how it is done in other parts of the NWT.
	Can measures of existing Permits be integrated into the cumulative effects assessment? [*Note: The Terms of Reference basically require it*]
	DIAND likes to see maps, would like to see more detail and would like to see a rational for the boundaries chosen.
	What is the science behind the analysis? Simple overlays? Formulas? What are the models used based on?

	Paramount may want to run several development scenarios rather than just a single "worst case" one.
RWED:	Paramount proposes to predict a lot of effects. What monitoring will be done to see if these effects are felt in reality?
	Adaptive management should be build into the project plan.
	Snap Lake Report of EA is a good source for government vs. proponent responsibilities.
	The company cannot be held responsible for all social ills in the area, but it's socio economic assessment should contain some relevant statistics.
Paramount:	There is a report to DIAND under the Benefits Plan. About 50% of field operators are northerners (i.e. 2).
DFO:	Erosion and waste disposal are of concern. Another big issue is water withdrawal.
	DFO is open to collaboration on the fish study to get the necessary data. DFO recognizes its own responsibility to learn more.
	DFO protocols need to be used with caution. It may be better to withdraw more water than normally allowed from a lake without fish and leave a fish lake alone instead.
Paramount:	Golder Assoc found in the field that many lakes that are connected on the map don't seem to be connected at all.
Env. Canada:	Monitoring is required to confirm predicted impacts.
	Paramount should report changes that may impact their predictions. E.g. previous air quality models assumed burning sweet gas, but in reality Paramount burns sour gas.
	Where possible in the DAR old material should not be repeated.
	Paramount should assume high H_2S contents in the gas to accommodate natural fluctuations and uncertainties in making predictions.
MVEIRB:	MVEIRB staff only participates as observer and to provide advice on the EA process. The MVEIRB must provide a fair process to all parties in the EA and cannot discuss matters of substance with only selected parties. The MVEIRB must make a decision in the end and to do so is looking for clear evidence. There will be a public hearing for this EA in Kakisa.
RWED:	RWED suggest to have a second public hearing, e.g. in Yellowknife, where government departments and others can present their views.
NEB:	The ALCES model may be more misleading than it is producing useful data.
Paramount:	Will not use the GLOBEBIO model.
DFO:	Add species composition and habitat use.

Draft
Cumulative Effects Assessment Discussion Paper for Paramount Cameron Hills Project

August 2003

Paramount Resources Ltd.
and
Golder Associates Ltd.

Outline

- Background on EAs in the Cameron Hills
- EAs
  - Cases, components, study areas, VECs
- Approaches for the various components
  - Baseline tasks, CEA case

Assessment History

- Two previous EAs
- Individual project components were not likely to have a significant effect on environment
- Latest proposed project sent to EA based on cumulative effects

Assessment Cases

EA will make comparisons of several cases:

- Pre-project case
- Baseline case
- Application case
- Potential development case

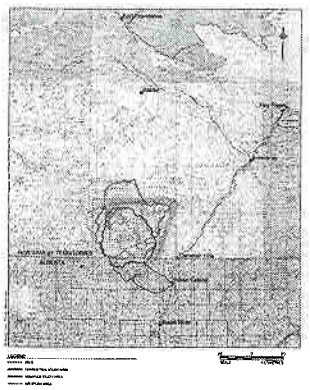
Assessment Components

The major components of the EA are:

- Air
- Terrestrial
- Aquatics
- Socio-Economics

Cumulative Effects Study Areas

•Cumulative Effects Study areas are discipline specific



Valued Ecosytem Components

- **Air** – SO_2 , NO_2, emissions from flaring, and greenhouse gases
- **Terrain** – permafrost and landforms
- **Soils** – soil disturbance and erosion potential
- **Wildlife** – moose, caribou, fisher, riparian song bird

VECs Cont'd

- **Vegetation** – community composition and fragmentation parameters
- **Surface Water** – water bodies, watercourses, and water quality
- **Groundwater** – quantity and quality
- **Fish** –habitat and abundance

VECs Cont'd

- **Cultural and Heritage Resources** – individual resources
- **Traditional Harvesting** – traditional land use
- **Health, Social and Economic Factors** – use of social services, NWT economy and community economy

Air Study Approach

- Use ISCST3 Model
- SO_2 and NO_2 from the various cases
- SO_2 from well test flaring
- Discuss Kyoto and global warming

Terrain Study – Baseline Tasks

- Summarize existing conditions
- Use Landsat vegetation map and Soil Map of Canada to produce a terrain map
- Map terrain types where permafrost is expected

Terrain Study – CEA Approach

- Landforms will be classified into common units and the disturbance predicted
- Potential area of disturbance in permafrost areas will be quantified and assessed

Soils Study – Baseline Tasks

- Summarize existing conditions and residual impacts
- Utilize Landsat vegetation map and Soil Map of Canada to produce a soil map
- Map soil erosion risk

Soils Study – CEA Approach

- Soil types and development disturbances will be overlaid on the soil map.
- Areas of disturbance will be quantified
- Erosion potential will be predicted
- Impact of development disturbances will be predicted

Surface Water Balance

- Estimate water usage
- Evaluate lake water balance
- Predict effect of withdrawals on the Cameron River

Water Quality

- Will be a component of surface water and groundwater sections as appropriate

Groundwater – Baseline Tasks

- Examine surficial and geologic maps for hydrostratigraphic units of interest
- Evaluate information from the existing water well

Groundwater – CEA Approach

- Discussion of potential for spills or leaks and the related potential for contamination
- If there is a potential for additional groundwater extraction as a drilling fluid source, the potential impacts will be discussed

Fish Studies – Baseline Tasks

- Evaluate existing fisheries resources based on past EA work and existing literature
- Summarize predicted effects of stream crossings and potential spills

Fish Studies – CEA Approach

- Assess effects of stream crossings (plus related direct and indirect effects)
- Integrate information from the surface water and water quality sections
- Potential fish bearing water bodies and watercourses will be identified and discussed

Wildlife Study – General Approach

- Discuss species protected under the Species at Risk Act
- Habitat effectiveness determined for each VEC (i.e., quantity and quality of habitat)
- Fragmentation parameters

Wildlife Study – Baseline Tasks

- Summarize existing information
- Model habitat under different cases and estimate available habitat (ha), habitat effectiveness and fragmentation parameters

Wildlife Study – CEA Approach

- Integrated approach between traditional habitat suitability index (HSI) approaches and potentially ALCES

Traditional HSI Approach

- HSI Models with spatial components (i.e., buffering) for VEC species to determine changes in habitat availability and quality;
- Use GIS to determine changes in fragmentation levels for VECs; and
- Compare results generated with baseline values

Vegetation Study – Baseline Tasks

- Summarize existing information from previous EAs and monitoring programs; and
- Summarize vegetation VECs from landsat imagery and generate fragmentation indices for cases

Vegetation Study – CEA Approach

Use traditional approach and potentially ALCES.

Traditional

- overlay project footprint at various project cases and measure vegetation VEC variables
- compare results between each case

Vegetation Study – CEA Approach Cont'd

IF ALCES USED:

- ensure all vegetation related variables are user-defined and document assumptions
- generate vegetation variables for each case

Cultural and Heritage Resources – Baseline Tasks

- Summarize results of previously conducted heritage inventory work
- Evaluate the potential of the terrain, proximity to the Cameron River, Traditional Knowledge and heritage resource monitoring results

Cultural and Heritage Resources – CEA Approach

- Identify sensitive terrain features
- Assess the potential for heritage resources based on terrain features

Traditional Harvesting Study – Baseline Tasks

- Establish a baseline level of traditional harvesting (hunting, fishing and trapping)
- Use information from Traditional Knowledge study

Traditional Harvesting Study – CEA Approach

- Predict effects of the project cases
- ALCES model may be used to track harvest rates (sport, aboriginal, poaching)
- Information from the wildlife assessment will be used to supplement this section

Health, Social and Economic Factors Study

- Review EAs in the area, as well as other documentation (e.g., records of consultation)
- Update the data on affected communities.
- Scope the CEA issues
- Qualitative and quantitative analysis to identify potential cumulative impacts
- Summarize existing mitigation and monitoring
- Assess residual cumulative effects