

### **Development Application Additional Information Request**

On August 25, 2011 the Hebron Public Review Commissioner, Miller Ayre, requested public submissions as to whether additional information is required from ExxonMobil Canada Properties prior to the start of the Public Review Sessions.

In accordance with Sections 9a and 9c of his Terms of Reference, and based on public submissions received and comments from the Commissioner's independent specialists, the Commissioner has completed his review of the Development Application Documents. As a result of this review, ExxonMobil Canada Properties is requested to provide additional information on the topics listed below.

### **Development Approach**

As per the Development Plan Section 1.8, Preferred Concept:

"The Project Proponents evaluated the alternative modes of development, including development drilling options, and determined that the preferred concept is to develop the Hebron Asset using a stand-alone concrete GBS (no pre-drill option) and topsides, and an OLS."

As the Hebron GBS is the second GBS to be built in NL, the following questions are posed:

#### **1. Foundation Design**

1. It is noted that the Hebron GBS requires considerably less solid ballast than the Hibernia GBS. Explain the Hebron foundation design, including footprint, skirt design, grouting and solid ballast quantities in comparison with the Hibernia GBS.
2. Has the potential for seabed subsidence been evaluated, due to different reservoir pressure maintenance scenarios over life of field?

References: Development Plan (DP) 8.3.1, 8.3.2, 10.1

#### **2. GBS Design**

For Hibernia, global wave loading was found to be equivalent if not dominant over ice loads. Model testing also revealed wave run-up and slamming underside of the deck became a design issue.

1. EMCP is requested to list the type of model tests that will be performed as part of the Hebron design process, indicating which tests will be performed as part of FEED and detail design, and which shall be accomplished in NL and/or Canada.

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2. Local ice contact pressure criteria have significant impact on concrete wall design. Provide a comparison of local ice pressure criteria (pressure versus area curve) that will be used for Hebron versus Hibernia curve, including an explanation and justification of the differences.

References: DP 9.2.3, 9.2.4, 9.2.4.2, 9.2.4.4

### 3. Project Design and Execution

1. What design approach for the GBS, topsides and utilities processing modules (UPM) will be utilized to maximize the number of specialty skids, major package supply, construction material supply and construction services that can be sourced from local and national companies?
2. Provide a list of candidate facilities considered qualified to undertake the fabrication of the UPM, drilling support module, drilling derrick, living quarters, flare boom, helideck and lifeboat stations.
3. What is the base plan for items to be fabricated at Bull Arm?
4. From where will the materials for the concrete (cement, aggregate, rebar, additives) be supplied?
5. Is the plan to stick build GBS outfitting in place, or fabricate modules, lift, install and interconnect?

References: DP fig. 10.4.1-1, 10.4.1.2, 10.4.1.3, 10.4.1.4, 10.4.2, 10.4.4

### 4. Project Schedule

1. The overall schedule is shown as 60 months from sanction to first oil. Benchmark and rationalize this duration against similar EPC and industry projects.

Reference: DP 10.2

## **Benefits Approach**

### **5. Pool 3**

As per the Hebron Development Plan Section 1.9.5, Subsea Production and Injection Systems:  
“A full development option of Hebron Pool 3 is as a subsea tie-back to the Hebron GBS (Option 3).”

As per the Hebron Benefits Agreement Section 5.12(C), Agreement on Benefits:  
“notwithstanding any other provision in this Agreement, industrial and employment benefits relating to any exploration, development or production of oil or gas from the Lands by any stand-alone development (other than the GBS), subsea development and tie-back to the GBS or by any other infrastructure other than the GBS, will be the subject of a separate development plan and fundamental decision under the Accord Acts, which development plan and fundamental decision under the Accord Acts shall not in any way be affected by this Agreement.”

1. Is EMCP seeking approval to proceed with the Pool 3 option within the Hebron Development Application?
2. Does the Benefits Plan cover Pool 3? If so, specify expected local benefits attributable to Pool 3 including labour/employment, procurement, R&D. If Pool 3 is not covered in the Benefits Plan, provide rationale.
3. Provide the CAPEX and OPEX profiles for the main field development (Pools 1, 4, 5) and Pool 3 under both upside and downside production scenarios.

References: Benefits Agreement (BA) 5.12(C); Canada-Newfoundland Atlantic Accord Implementation Act, (S.C. 1987, c. 3, s. 45)

### 6. R&D

As per the Benefits Agreement, Section 5.9(A):

"The Proponents shall invest one hundred twenty million dollars (\$120,000,000) in Research and Development during the life of the Hebron Project."

1. What oil prices and production profiles were used to arrive at the number of \$120,000,000?
2. Is this the estimate that would be derived following the C-NLOPB's 2004 Benefits Plan Guidelines? If not, will the full amount of R&D and E&T commitments be spent following the guidelines? In other words, if the amount of R&D and E&T expenditure calculated by following the guidelines exceeds the \$120 million estimate, which will take precedent?

As per the Benefits Plan Section 3.3.5, Research and Development:

"A process for identifying and raising awareness of potential R&D projects, and give priority to undertaking R&D in the Province, where effective and competitive."

3. Clarify that R&D and E&T expenditures will take place in NL as per the Benefits Plan Guidelines Section 3.1, and what is meant by "where effective and competitive"? In order to be eligible, R&D and E&T expenditure must occur in the Province of Newfoundland & Labrador.

References: BA 5.9; Benefits Plan Guidelines (BPG)

### 7. Employment Percentages

The Benefits Plan contains internal inconsistencies with regard to the absolute value and range of values for local employment. The overt or extrapolative numeric values for local content are variously reported as 11 million work hours, 6 -10 million work hours, or (adjusted for accuracy disclaimer) 4.5 - 12.5 million work hours. EMCP also states that the Benefits Plan responds to, and is consistent with, employment undertakings of the Benefits Agreement. The Benefits Agreement prescribes minimum employment values for certain activities, the aggregate of which is 6.35 million work hours, while pledging unspecified levels of local labour for other activities.

1. With the benefit of FEED, procurement planning, and procurement activities completed to date, give an updated base case estimate for local and Canadian employment content and confirm a prospective range of values above and below this estimate.
2. Confirm or restate the estimated work hours by skills classification and year, and provide an estimate of the local employment content for each topside and GBS related activities.
3. Do the 30-50 % and 15-25 % employment estimates relate to pre-production CAPEX, total CAPEX, or total project employment (CAPEX and OPEX)?
4. Clarify the range of benefits with and without +/-25% contingency.
5. Do these estimates include Pool 3? Provide these estimates with and without Pool 3.

References: Benefits Plan (BP) 4.2.5, 4.2.6.1, 4.4, Appendix C; BA; Socio-Economic Impact Statement (SEIS) 4.3.1

### 8. Local Expenditure Content

1. Provide the specific analysis that demonstrates that 35-55% of project expenditure will occur in NL and 15-30% of project expenditure will occur elsewhere in Canada.
2. Do the 35-55% and 15-30% expenditure estimates relate to pre-production CAPEX, total CAPEX, or total project employment (CAPEX and OPEX)?
3. Clarify the range of benefits with and without +/-25% contingency.

References: BP 4.4

### 9. Procurement and Contracting

The Hebron Construction Sequence provides high-level definition of the project's Work Breakdown Structure. The Benefits Plan discusses aspects of the contracting strategy that are designed to enhance local participation.

1. What minimum targets have been set for the use of local and rural goods and services? How will these quantifiable local benefits targets be tracked and publicized?
2. What approach will be implemented to encourage principal contractors to consider and award to local and national companies? Is a Vendor Development Program under consideration?
3. What steps will be taken to ensure that local enterprises have access to information, such as shop drawings, operations and maintenance manuals, to improve the training of the local supply chain and their ability to service equipment?
4. What specific technology transfer opportunities are being made available for local companies?
5. Elaborate on the prequalification and bidding strategy for the Utilities Processing Module (UPM) and confirm any local opportunities for UPM construction and sub-contracting opportunities for the local service and supply communities.
6. What commitment has been made towards the consistent scalability of bid packages so that smaller local and rural supply and service enterprises can fully participate in the project?
7. Will a preferred supplier be listed in specifications for major contracts? If so, will there be a targeted effort to identify and qualify local and national companies?
8. Will the Project Management Team (PMT) have a procurement function to handle Owner Furnished Equipment (OFE)? If so, what items are expected to be procured directly by PMT and what percentage of project value will OFE represent? Comment on potential opportunities for local and rural procurement of OFE.

References: BA 5.5(D); BPG 3.5, 5.0, 5.1.1; BP 3.2, 4.0, 4.2.4.5

## **10. Assembly and Fabrication Yards**

1. Comment on the support for supplier development initiatives at Marystown and Cowhead and assess the prospect of full utilization of the facilities to meet the needs of the Hebron project.
2. Provide additional detail regarding the planned scope and cost of improvements to the Bull Arm facilities, including accommodations, offices, support and shop spaces, steel fabrication yards, concrete construction capabilities, and a drydock, as well as any further permanent improvements which are planned at Bull Arm to serve as a legacy for NL.
3. What specific steps will be taken to ensure that the drilling support module and the drilling derrick are built at local facilities?

Reference: DP 10.4.2.5, 10.4.4.3; BP 4.2.4.1, 4.2.4.5, 5.2.4; SEIS 4.1.3, Development Plan Guidelines (DPG) 1.3.3

## **Human Safety**

### **11. Safety Management System**

1. In accordance with the proposed 'Step Change in Safety', what initiatives are planned to mitigate risk to human safety in the construction, operations, and removal phases of the project that go beyond regulatory requirements and follow lessons learned from other projects in the C-NL offshore and in other jurisdictions, with regards to:
  - 1.1. choice of transportation vessels (ice-classed) at the deep water site (DWS);
  - 1.2. winter driving conditions faced by off-shift workers at the Bull Arm site;
  - 1.3. changes to working hours and/or provision of transport or onsite accommodations at Bull Arm to mitigate traffic accidents due to fatigue;
  - 1.4. special considerations for safe winter employment;
  - 1.5. construction barge safety management to ensure integrity of support craft and worker safety including size of construction barges, outfitting for mooring, escape routes, use of safe haven barge; and
  - 1.6. criteria to which components and equipment are engineered in relation to deterioration of weather windows during the execution of marine operations at the DWS.
2. Explain how contractor safety down the supply chain, including required Canadian statistics, will be monitored /audited by and/or reported to EMCP.
3. Will statistics for "offsite" incidents (travel to Bull Arm) be monitored and reported?
4. How will 'near misses' be captured within EMCP's safety program, and what incentives will be offered to achieve safety goals during all phases of the project with all contractors?

References: DP 9.2.4, 10, 10.4.2.2, 12, 14, 14.2; SEIS 5.3.3.3; Newfoundland Offshore Petroleum Installations Regulations (NOPIR) SOR/95-104 s. 43(1); L-HE-CNO-11804-03 EMCP Letter August 14, 2011; Offshore Helicopter Safety Inquiry (OHSI) Implementation Team Advice to C-NLOPB dated August 17, 2011



### **12. Personnel Transport**

1. Discuss the basis for designating helicopter as the primary means of transport to the offshore in terms of the following risk reduction criteria:
  - 1.1. risk assessment for air and marine transport to the offshore;
  - 1.2. the planned number of flights and passengers to the offshore and the percentage of flights that operate on schedule, operate with delay, and are cancelled due to weather and/or sea state (providing statistics of this transport for review);
  - 1.3. the number of trips and passengers carried by marine vessel (providing statistics of this transport for review);
  - 1.4. average cost per person per trip by helicopter or marine vessel;
  - 1.5. environmental and seasonal parameters and constraints, with special consideration of number of fog days per year;
  - 1.6. logistical constraints of each transport method; and
  - 1.7. method of dis/embarkation from transport vessel to platform.

References: DP 1.12.2; OHSI Implementation Team Advice to C-NLOPB May 19-August 17, 2011

### **13. Safety in Design**

1. Clarify what type of H2S detectors will be installed as part of the initial design and at what threshold level will these alarms be set.
2. There is one TSR (Temporary Safe Refuge) and two lifesaving stations/muster points planned. What thought has been given to increasing the firewall rating around these areas to more than the mandated two hours?

References: DP 9.2.4.2, NOPIR SOR/95-104 s. 32(1)

#### **14. Evacuation Fatality Rate**

1. It is assessed in the Concept Safety Analysis (CSA) that a 3% fatality rate may result from a precautionary evacuation by lifeboat, including *'fatalities due to failure of the evacuation systems and fatalities whilst rescuing personnel from lifeboats or survivors from the sea'* (CSA 12.2). Please provide clarification on this percentage and a definition of what is meant by precautionary evacuation and the parameters under which one might be ordered.

References: Comprehensive Safety Analysis (CSA) 7.7.5, 8.7.4, 12.2

## **Environmental Protection**

### **15. Gas Compression and Flaring**

1. Describe the approach to gas compression design, minimizing the start-up compression time so that flaring is also minimized. What lessons have been learned from other Jeanne d’Arc Basin projects in this regard?
2. Are there any reservoir characteristics that pose issues for rapid introduction of gas injection?

Reference: Comprehensive Study Report (CSR); Air Emissions Modelling Appendix

### **16. Water ReInjection**

1. The CSR states that produced water re-injection is an “unacceptable risk” unless a series of technical issues can be resolved. Assuming that these issues cannot be resolved, what lessons have been learned with respect to produced water treatment arising from incidents experienced by other operators in the Jeanne d’Arc basin and what is planned from a design and operations perspective to account for those lessons?
2. Dispersion modeling for produced water discharge has been presented for a discharge configuration comparable to Hibernia. However, other modeling approaches, i.e., Dream Modeling, have not been addressed. From the perspective of produced water management is the intent to use a similar approach to other Jeanne d’Arc Basin operators to minimize the toxicity of its produced water effluent?

References: CSR & Drill Cuttings, Produced Water & Storage Displacement Water Modeling Appendix; PW Management Strategy CAHE-ED-SRZZZZ-10-684-001 Rev 0 21 Apr 11

### **17. GBS Storage and Discharge**

1. Have studies/testing been done with Hebron oil to confirm that oily discharge from buffer cells will not exceed environmentally acceptable limits?
2. How is the level of expected discharge compare to actual discharge levels experienced at Hibernia?
3. Have studies/testing been done with Hebron oil to see how it will behave in terms of emulsion-layer behaviour, paraffin build up on GSB wall, quantification of sediments etc.
4. Has the additional weight from sedimentation in the storage cells been accounted for in the end of life salvage plan?

Reference: DP 9.1.1.3

### **18. Hydrocarbon Spill**

1. What is the approach to oil spill preparedness for both the construction and operations phases of the project, in light of any lessons learned from recent major spills in other jurisdictions?
2. Provide copies of the spill response plans and the spill environmental effects monitoring plans for current construction and proposed operations activities.
3. Both the Comprehensive Study Report and the Concept Safety Analysis consider spill risks, however, the calculated probabilities of same do not appear to be consistent. Explain how the two documents relate to each other and rationalize the apparent differences and their implications for Target Levels of Safety with regard to spills and the implications of same.

References: CSR 14; SEIS 4.3.3.2; DPG 5.3.3, 5.4; CSA

### **19. Pipework**

1. What is the strategy and plan for preservation of pipe work and minimizing the risk of corrosion issues for project components fabricated elsewhere or in advance of installation on the platform? If preservation chemicals are used, what is the strategy for managing contaminated water?

### **20. EPM Oversight**

1. How will EMCP oversee its contractors at Bull Arm and other construction and installation sites to ensure Environmental Protection measures and policies are implemented and committed to as planned?

References: CSR 16; DP 11.1.7

### **21. Observation and Monitoring**

1. Describe the plans to engage regulatory and other stakeholders in the design and implementation of seabird observation studies including the approach to recruiting and training seabird observers to support these programs. Has any thought been given to establishing a bird monitoring base in close proximity to the seabird colonies?
2. Similarly, what will be the comparable approach for the program proposed to monitor marine mammals during construction operations in Bull Arm particularly during the use of underwater explosives and pile driving operations? Comment on the timing of blasting operations as compared to times of migration of marine mammals.

Reference: CSR 15

### **22. Documents Required**

1. A complete listing of the Part 2 documentation provided to the C-NLOPB.
2. The capacity studies conducted by Kellogg Brown and Root (2005), and Strategic Concepts Inc. (2005, 2008, and 2010) referenced in Benefits Plan 4.0.
3. CAHE-ED-FPRSK-00-000-0001 Project Risk Assessment Plan
4. As construction activities have commenced at Bull Arm, please provide:
  - 4.1. a copy of the Environmental Audit, Inspection Plan and the organization charts for both EMCP's and its EPC contractors showing the functional and reporting relationships for environmental staff for this facility and
  - 4.2. a copy of both EMCPs and EPC contractor(s) final, approved environmental protection and/or management plan for this facility