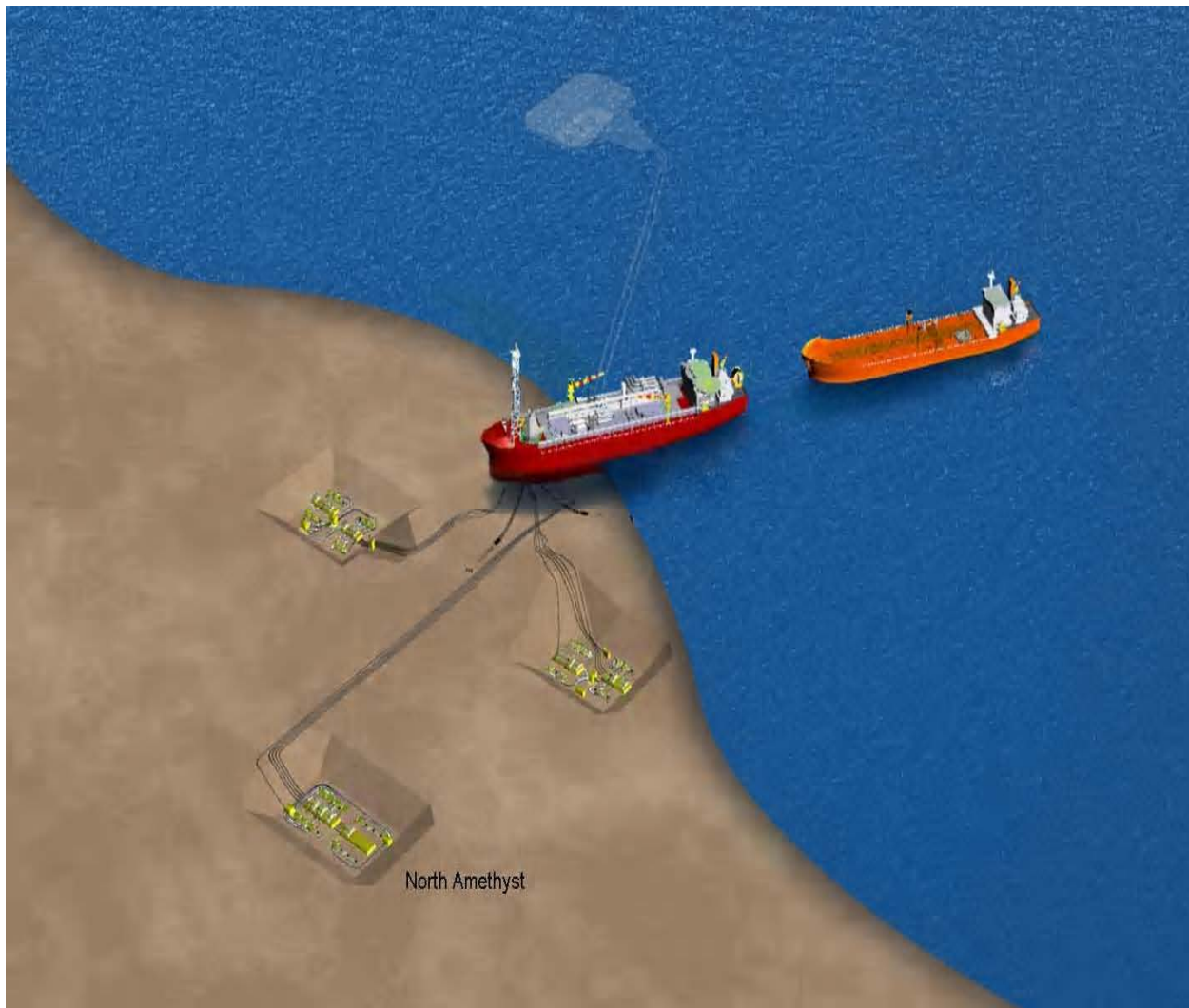


**North Amethyst Satellite Tie-back**  
**Canada Newfoundland and Labrador Benefits Plan Summary**



Cover graphic: Tie-back Option A

August 2007

Husky Document No. SR-SRT-RP-0010

---

**Table of Contents**

<b>1.0</b>	<b>Introduction.....</b>	<b>4</b>
<b>2.0</b>	<b>Development of the North Amethyst Satellite Tie-back .....</b>	<b>6</b>
<b>2.1</b>	<b>Design Criteria .....</b>	<b>6</b>
<b>2.2</b>	<b>Alternative Modes of Development.....</b>	<b>6</b>
<b>2.3</b>	<b>Production and Transportation System .....</b>	<b>6</b>
<b>2.4</b>	<b>Construction and Installation.....</b>	<b>7</b>
<b>2.4.1</b>	<b>Glory Hole Construction.....</b>	<b>7</b>
<b>2.4.2</b>	<b>Subsea Equipment Installation .....</b>	<b>7</b>
<b>2.4.3</b>	<b>Drilling and Completions.....</b>	<b>9</b>
<b>2.4.4</b>	<b>FPSO Modifications .....</b>	<b>10</b>
<b>2.5</b>	<b>Production Operations .....</b>	<b>10</b>
<b>2.6</b>	<b>Development Costs .....</b>	<b>10</b>
<b>3.0</b>	<b>Canada Newfoundland Benefits Plan – Statutory Requirements.....</b>	<b>12</b>
<b>3.1</b>	<b>Introduction .....</b>	<b>12</b>
<b>3.2</b>	<b>Office in the Province.....</b>	<b>12</b>
<b>3.3</b>	<b>Canada-Newfoundland Benefits Commitments.....</b>	<b>12</b>
<b>3.4</b>	<b>Full and Fair Opportunity and Competitive Basis .....</b>	<b>13</b>
<b>3.5</b>	<b>Research and Development and Education and Training.....</b>	<b>14</b>
<b>3.6</b>	<b>Disadvantaged Individuals or Groups.....</b>	<b>14</b>
<b>3.7</b>	<b>Collective Agreements .....</b>	<b>14</b>
<b>4.0</b>	<b>Policies and Procedures .....</b>	<b>15</b>
<b>4.1</b>	<b>Project Management.....</b>	<b>15</b>
<b>4.2</b>	<b>Supplier Development .....</b>	<b>15</b>
<b>4.3</b>	<b>Procurement and Contracting Strategy .....</b>	<b>15</b>
<b>4.3.1</b>	<b>Marine Support Vessels.....</b>	<b>16</b>
<b>4.3.2</b>	<b>Helicopter Support.....</b>	<b>16</b>
<b>4.3.3</b>	<b>Shorebase Facilities .....</b>	<b>16</b>
<b>4.3.4</b>	<b>Warehouse Facilities.....</b>	<b>16</b>
<b>4.3.5</b>	<b>Voice and Data Communication Services.....</b>	<b>16</b>
<b>4.3.6</b>	<b>Drilling and Completions.....</b>	<b>17</b>
<b>4.4</b>	<b>Employment and Training .....</b>	<b>17</b>
<b>4.5</b>	<b>Research and Development .....</b>	<b>17</b>
<b>4.6</b>	<b>Disadvantaged Individuals and Groups .....</b>	<b>17</b>
<b>4.6.1</b>	<b>Employment .....</b>	<b>18</b>

---

<b>5.0</b>	<b>Capacity of Newfoundland and Labrador and Canadian Economies To Meet the Requirements of the North Amethyst Satellite Tie-back Development.....</b>	<b>19</b>
<b>5.1</b>	<b>Subsea Construction for North Amethyst Satellite Tie-back.....</b>	<b>19</b>
5.1.1	Goods and Services.....	19
5.1.2	Employment.....	21
<b>5.2</b>	<b>Production Operations.....</b>	<b>23</b>
5.2.1	Goods and Services.....	23
<b>6.0</b>	<b>Consultation, Monitoring and Reporting.....</b>	<b>24</b>
<b>6.1</b>	<b>Consultation.....</b>	<b>24</b>
<b>6.2</b>	<b>Monitoring and Reporting.....</b>	<b>24</b>
<b>6.3</b>	<b>Summary of Benefits Commitments.....</b>	<b>24</b>
<b>7.0</b>	<b>Conclusion.....</b>	<b>25</b>
<b>8.0</b>	<b>Glossary and Acronyms.....</b>	<b>26</b>

#### List of Figures

<b>Figure 1.1</b>	<b>Location of North Amethyst Satellite Tie-back.....</b>	<b>5</b>
<b>Figure 2-1</b>	<b>Option A - North Amethyst Satellite Tie-back (Direct to FPSO).....</b>	<b>8</b>
<b>Figure 2-2</b>	<b>Option B - North Amethyst Satellite Tie-back Via Central Drill Center.....</b>	<b>8</b>
<b>Figure 2-3</b>	<b>Option B - North Amethyst Satellite Tie-back Via Southern Drill Center.....</b>	<b>9</b>

## 1.0 Introduction

Husky Oil Operations Limited (Husky), as the Operator and in joint-venture with Petro-Canada, submitted a Development Application (DA) for the White Rose Development to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) in January 2001. The DA was prepared pursuant to the *Canada-Newfoundland Atlantic Accord Implementation Act* and the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act*. The C-NLOPB approved the White Rose DA in December 2001. The Production License PL 1006 applies to the existing White Rose Development.

This document provides a description of the project and summary of the benefits associated with the potential work Husky and its co-venturer Petro Canada proposes to undertake within the area covered under (Significant Discovery License 1024, Production License 1006 and Exploration License 1045 for development of the North Amethyst Satellite Tie-back to the *SeaRose FPSO*. Specifically, the tie-back will consist of construction of a new glory hole with a capacity of up to 16 wells. The tie-back is expected to require from seven to ten wells consisting of four production and three to six water injection wells. Further field optimization and planning will determine the final well count.

The flow line routing for the tie-back is subject to FEED Engineering and Flow Assurance studies. The results of these studies will determine the exact routing from the North Amethyst glory hole to the *SeaRose*. The field will, therefore, either be tied back from the glory hole directly via new flow lines and new dedicated riser systems (Option A) or via new flow lines to the existing subsea infrastructure (Option B).

Details of the North Amethyst reservoir and depletion planning, glory hole construction, and subsea installation activities are provided in the document *North Amethyst Satellite Tie-back to the SeaRose FPSO Development Plan* (Husky Document No. SR-SRT-RP-0002). Required modifications to the *SeaRose FPSO* in support the North Amethyst Satellite Tie-Back are detailed in *White Rose Development Plan Amendment SeaRose FPSO Modifications* (Husky Document No. SR-SRT-RP-0003). These documents have been submitted to the C-NLOPB concurrently with this Benefits Summary.

The location of the North Amethyst Satellite Tie-back is indicated in Figure 1.1.

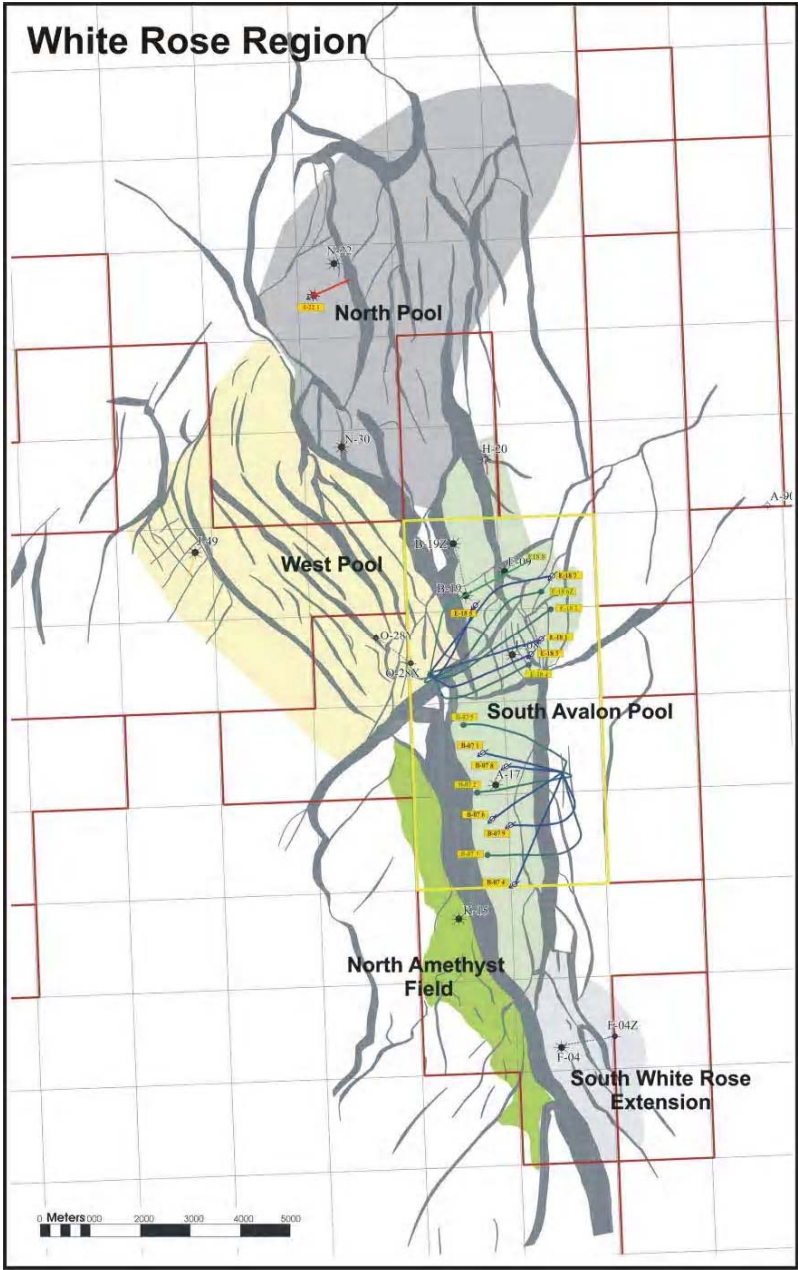


Figure 1.1 Location of North Amethyst Satellite Tie-back

## **2.0 Development of the North Amethyst Satellite Tie-back**

### **2.1 Design Criteria**

The North Amethyst facilities will be designed and fabricated such that they comply with codes and standards, and regulatory requirements of the authorities having jurisdiction in the Newfoundland and Labrador offshore area.

The facilities design will meet the following additional requirements that are consistent with the present White Rose design and operating philosophies:

- Subsea installations designed for 20-year minimum service life;
- Cathodic protection systems for subsea equipment;
- Subsea equipment designed to withstand exposure to hydrogen sulfide; and
- Facilities designed using the same environmental criteria developed for White Rose including data on wind, waves, currents, ice, seismic, and seawater properties and ambient temperature.

### **2.2 Alternative Modes of Development**

Husky identified two options for development of the North Amethyst field: a subsea tie-back system to the existing *SeaRose* FPSO facility or a subsea system to a new steel ship-shaped FPSO facility. Husky investigated options for a new build FPSO versus a tanker conversion and compared key risks, schedule impacts and development costs for each alternative. The investigation concluded that the North Amethyst field should be developed by subsea tie-back to the *SeaRose*. Further information can be found in the document *North Amethyst Satellite Tie-back to the SeaRose FPSO Development Plan* (Husky Document No. SR-SRT-RP-0002).

### **2.3 Production and Transportation System**

The production and transportation system that will be used for the North Amethyst Satellite Tie-back project will be the same as that employed for the existing White Rose Development. Specifically, oil produced from the new North Amethyst wells will be brought back to the *SeaRose* FPSO for processing and storage. The oil will be offloaded from the *SeaRose* to tankers for transport to market as is currently done with White Rose oil.

## **2.4 Construction and Installation**

### **2.4.1 Glory Hole Construction**

The North Amethyst glory hole was constructed in 2007 using similar construction methods as those employed for development of the White Rose Development glory holes. A trailing suction hopper dredging vessel was used to dredge the glory hole. This type of dredger is a self-propelled ship which fills its hold or hopper during dredging while following a pre-set track. Dredged material was disposed of in the approved spoils disposal area used during construction of the glory holes for White Rose. The North Amethyst glory hole is slightly deeper and of different dimensions than the glory holes constructed for the White Rose Development in order to allow remotely-operated vehicles and divers easier access to equipment in the glory holes.

### **2.4.2 Subsea Equipment Installation**

The subsea facilities at North Amethyst will include all equipment necessary for the safe and efficient operation and control of the subsea wells and transportation of production and injection fluids between the wells and the *SeaRose*. It is expected that two 10" oil production flowlines, one 9" water injection flowline, and one 4.25" gas lift flowline will be routed from the North Amethyst Drill Centre (NADC) either directly back to the *SeaRose* FPSO via new flow lines and new dedicated riser systems (Option A) or via new flow lines to the existing subsea infrastructure (Option B).

The North Amethyst Satellite Tie-back is primarily a subsea development with components similar to the subsea components of the original White Rose Development. The subsea configuration being considered for Option A is presented in Figure 2-1 and the configurations being considered for Option B are presented in Figures 2-2 and 2-3.

The umbilical and flowlines utilized for North Amethyst will be of similar design and specifications as those installed during the initial development. Much of the infrastructure created both offshore and onshore during the original White Rose Field Development will now be utilized to reduce the cost of the North Amethyst Satellite Tie-back.

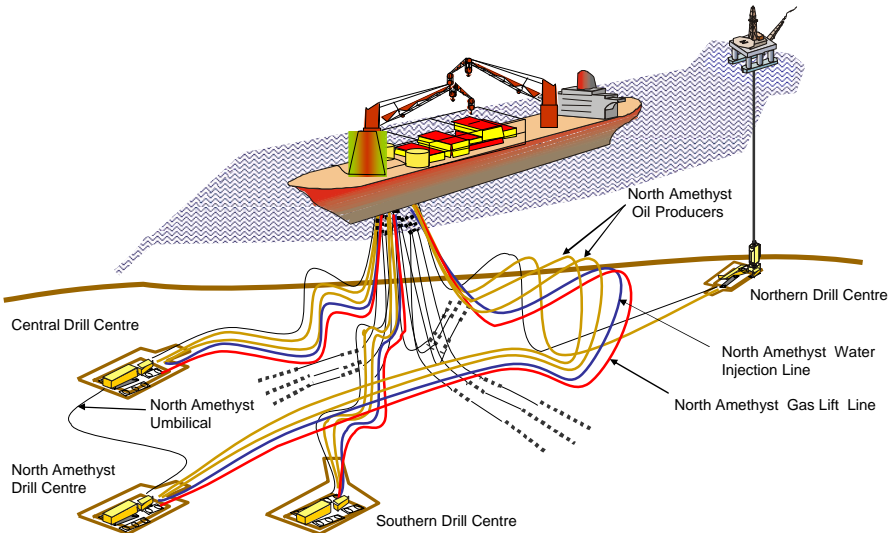


Figure 2-1 Option A - North Amethyst Satellite Tie-back (Direct to FPSO)

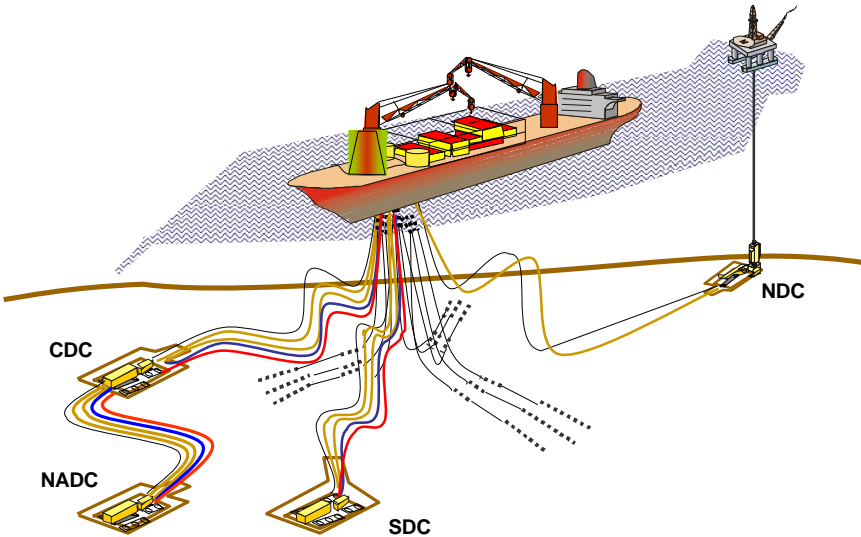
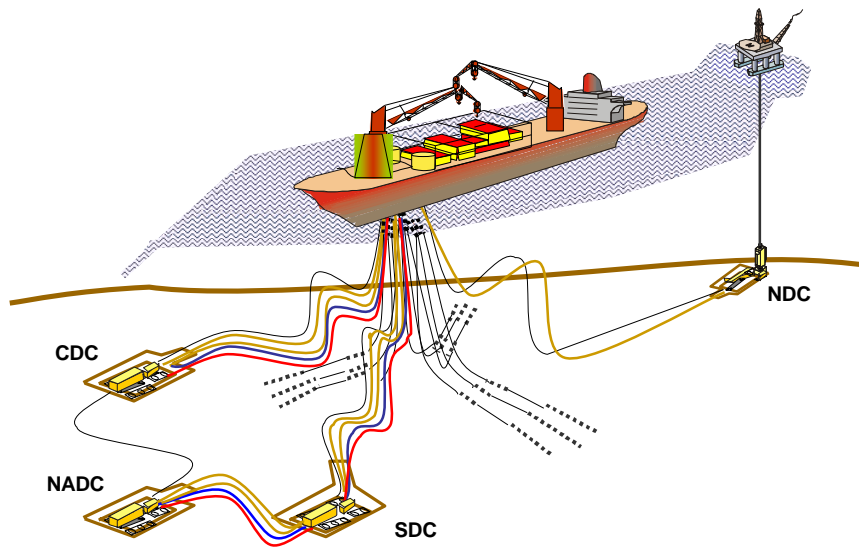


Figure 2-2 Option B - North Amethyst Satellite Tie-back Via Central Drill Center





**Figure 2-3 Option B - North Amethyst Satellite Tie-back Via Southern Drill Center**

Similar to the White Rose Development, flowlines for North Amethyst will be laid on the seafloor and will be insulated for temperature and flow assurance purposes. Verification of the exact flowline design, internal diameters and length will be determined during the Front End Engineering Design (FEED) process.

Procedures for installation of subsea facilities and subsequent operations for North Amethyst are anticipated to be similar to those currently employed for the initial phase of White Rose Development. Iceberg protection measures applied to the current White Rose Development will also be applied to North Amethyst.

### **2.4.3 Drilling and Completions**

It is anticipated that Drilling and Completions activities will be carried out using existing White Rose processes and systems. The North Amethyst Satellite Tie-back will utilize well templates and wellhead systems similar to those used on the White Rose Development. At this time it is anticipated that the NADC will require seven to ten wells

(four production and three to six water injection). The drill centre will be designed to hold up to sixteen wells.

#### **2.4.4 FPSO Modifications**

Should North Amethyst be tied directly back to the *SeaRose* (Option A), modifications to the FPSO turret, spider buoy and topsides will be required. This scope would include installation of control valves, pipe work, and instruments and controls comprising two oil production flowlines, one water injection flowline, one gas lift flowline and chemical injection and subsea controls. Alternatively, if North Amethyst is tied back through existing infrastructure (Option B), onshore modifications to *SeaRose* will not be required to tie in North Amethyst. There will be no requirement for modifications to the hull of the *SeaRose* to accommodate the North Amethyst Satellite Tie-back.

### **2.5 Production Operations**

There will be a requirement to shut down production during installation and commissioning of the new NADC drill centre and for implementation of the *SeaRose* modifications if North Amethyst is tied directly back to *SeaRose*. Should onshore modifications be required, the *SeaRose* will be taken off station and brought to a shore-based facility. It is anticipated that the *SeaRose FPSO* would be at shore for a period of four months during which time there would be no production from the White Rose Development. However, installation activities in the NADC would proceed during the period that the *SeaRose* is at shore. Following return of the *SeaRose* to the White Rose field, the NADC drill centre would be commissioned and brought on line.

The existing organizational structure (offshore and onshore) will not be impacted as a result of development of the North Amethyst Satellite Tie-back. The existing Operating and Maintenance Procedures will be reviewed and revised as required to include the operation and maintenance requirements of North Amethyst.

The Ice Management Plan will also be reviewed and updated or modified as required to reflect the additional “target” for icebergs as a result of the development of the satellite drill center. Logistics, Communications and Contingency Plans should not be impacted as a result of development of the North Amethyst Satellite Tie-back.

### **2.6 Development Costs**

The capital cost estimate for components of the North Amethyst Satellite Tie-back is approximately \$1.3 billion (CDN) for either Option considered. The North Amethyst Satellite Tie-back will not significantly increase White Rose operating costs. However, in addition to fixed OPEX, the addition of a new drill centre, nine additional wells, and new flowlines and umbilical will result in additional costs for inspection, maintenance and repairs. Subsea inspections will increase proportionately to the count of drill centres and

flowlines. Also allowances must be made for well interventions and increased chemical usage due to the flow assurance challenges associated with the longer tie-back.

### **3.0 Canada Newfoundland Benefits Plan – Statutory Requirements**

#### **3.1 Introduction**

Husky recognizes that the Atlantic Accord Implementation Acts provide the legislative basis for the development of the oil and gas resources offshore Newfoundland to benefit Canada as a whole and, in particular, the Province of Newfoundland and Labrador. The Atlantic Accord also recognizes the right of the Province to be the principal beneficiary of the oil and gas resources off its shores. Husky strongly believes in this assertion, and the success of the White Rose project is evidence of its commitment to delivering substantial benefits to the Province of Newfoundland and Labrador.

Husky's approach to benefits has remained consistent since it established operations in the Province. Early in the planning phases of the White Rose Development, Husky adopted a set of Canada-Newfoundland and Labrador Benefits Guidelines as a governing document. This document has been integrated into the Canada Newfoundland Benefits Reporting and Procedure Manual which continues to guide how Husky and its contractors conduct business.

Accordingly, the policies and procedures outlined in the original White Rose Benefits plan are still relevant in 2007 and will remain unchanged as the company pursues other opportunities in the Newfoundland offshore area. These governing documents are also aligned with Husky's premise in 2000 that production facilities can be designed to accommodate multi-pool or expanded development concepts. Such is now the case with the North Amethyst Tie-back. Further detail and supporting documentation on information provided in this Benefits Summary can be found in the document *Canada-Newfoundland and Labrador Benefits Plan North Amethyst Satellite Tie-back* (Husky document number SR-SRT-RP-0006) and its associated appendices.

#### **3.2 Office in the Province**

A separate project office, staffed by senior management personnel, engineers, technicians and support people has been established in St. John's to manage the entire North Amethyst Satellite Tie-Back Project.

#### **3.3 Canada-Newfoundland Benefits Commitments**

While the scope of the North Amethyst Tie-back is significantly smaller than the base White Rose Development, the original Husky Canada-Newfoundland Benefits Plan will continue to apply, and in particular:

§ Key functions will be performed in Newfoundland and Labrador.

- § Goods and services must be acquired on a best value basis.
- § Canada-Newfoundland benefits will be a factor in procurement.
- § Husky will provide identification of opportunities for the supply of goods and services required for the project and work with governments and industry organizations to jointly identify potential Newfoundland and Labrador suppliers.
- § Husky will also work with governments and industry organizations to improve local supply capability by providing information about the project requirements and specifications in a timely manner.
- § Project management and Front End Engineering Design (FEED) and detailed engineering work for the North Amethyst Tie-back will take place in Newfoundland and Labrador.
- § Individuals resident in the Province will be given first consideration for training and employment opportunities with the development.
- § All contractors and subcontractors will be contractually obligated to adhere to Husky's benefits philosophy, as detailed in the White Rose Reporting and Procedures Manual
- § Husky will continue to support and encourage initiatives in the areas of Technology Transfer and Research and Development.

### **3.4 Full and Fair Opportunity and Competitive Basis**

Husky recognizes and commits to providing full and fair opportunity to manufacturers, consultants, contractors and service companies in the Province and other parts of Canada to participate on a competitive basis in the supply of goods and services that will be used in the development of the North Amethyst Satellite Tie-Back Project. For further information refer to Husky's Canada Newfoundland and Labrador Benefits Guidelines which are included as Appendix III in the document *Canada- Newfoundland and Labrador Benefits Plan North Amethyst Satellite Tie-back* (Husky document number SR-SRT-RP-0006).

### **3.5 Research and Development and Education and Training**

Husky recognizes the importance of R&D and Education and Training to ensure the sustainability of the oil and gas industry in the Province and commits to making expenditures in these areas consistent with the CNLOPB Guidelines.

### **3.6 Disadvantaged Individuals or Groups**

Husky values diversity in the workplace and is committed to building a work force that represents individuals from all sectors of society. The original White Rose Diversity Plan will also apply to the North Amethyst Satellite Tie-Back Project. For further information refer to Appendix VI in the document *Canada- Newfoundland and Labrador Benefits Plan North Amethyst Satellite Tie-back* (Husky document number SR-SRT-RP-0006).

### **3.7 Collective Agreements**

Husky acknowledges that consistent with provisions in the Atlantic Accord Implementation Acts, a collective agreement may not frustrate access to training and employment opportunities for residents of the Province and that this applies particularly to disadvantaged individuals or groups.

## **4.0 Policies and Procedures**

### **4.1 Project Management**

Husky has identified the East Coast as a core business area for the company. The project management team will be located in Newfoundland and Labrador and has the responsibility for development plan execution and ensuring that all operations are conducted safely, in an environmentally responsible manner, and in accordance with all corporate and regulatory policies. Husky, as the White Rose Operator, will manage the development of the tie-back to the FPSO and subsequent operations. The Operator's authority, role, responsibility and reporting requirements are outlined in the Agreement that is already in place between the project partners.

### **4.2 Supplier Development**

Husky and its contractors were involved in many proactive supplier development initiatives during the White Rose Project and will continue with similar initiatives for the North Amethyst Satellite Tie-Back. Bid lists for contracts and quarterly forecasts will be advertised on the Husky website and in the NOIA Bulletin. Expressions of Interest and Requests for Proposals will also be advertised on the Husky website and other local media such as the Telegram and the NOIA Bulletin. Husky commits to holding supplier development information sessions during the project to provide the local business community with an opportunity to learn about procurement opportunities. Husky's main sub-contractors will also be involved in similar activities as well; including advertising of all procurement opportunities on a timely basis. Where possible, Husky will identify areas where there may be a potential for technology transfer and work with the local business community, governments and educational institutions to explore and develop these opportunities. For further information on benefits philosophies and strategies refer to Appendix III in the document *Canada- Newfoundland and Labrador Benefits Plan North Amethyst Satellite Tie-back* (Husky document number SR-SRT-RP-0006).

### **4.3 Procurement and Contracting Strategy**

Procurement and contracting activities will be conducted consistent with the strategies employed on the original White Rose Development and which are described in the Husky Canada Newfoundland Benefits Guidelines. Husky intends to continue the practices established in the past and ensuring bid specifications and packages are released to the business community on a timely basis and structured in a manner that will enable a broader participation. As in the past, communication of Husky's bid procedures to qualified Newfoundland and Labrador and other Canadian suppliers and manufacturers will be on a timely basis. Procurement offices of Husky and its contractors will be located in Newfoundland and a listing of key procurement personnel will be

published on the Husky website and that of our contractors as well as in other media such as the NOIA Bulletin.

Husky contracts awarded for the development and production phase of White Rose made provision for increased work scope that could result from activities associated with future tie-back developments. In this context the following is a description of Husky's procurement and contracting strategy for some of the carry over services anticipated during the development of the project.

#### **4.3.1 Marine Support Vessels**

Husky's existing fleet of Anchor Handling Tug Supply (AHTS) and Supply/Standby vessels will be used to support the offshore construction and installation operations associated with this project. However, depending on the type of drill rig used the number of vessels may need to be supplemented. These vessels are and will be Canadian Flagged, crewed and will be managed from the Contractor's office in St. John's, Newfoundland.

#### **4.3.2 Helicopter Support**

Helicopter support based in the St. John's area will be required during the offshore construction, installation and commissioning phase. Cougar Helicopters Inc. (CHI) have been contracted to provide helicopter support to service the company's requirements. Cougar Helicopter Inc. will also provide all auxiliary flight services.

#### **4.3.3 Shorebase Facilities**

Marine base facilities will be required to support the North Amethyst Satellite Tie-back activity with appropriate wharfage for a dredge vessel and capability of servicing multiple operations. A. Harvey and Company Ltd. will provide marine base facilities to support tie-back activity and to the extent necessary it is anticipated that Pier 17 will provide the appropriate wharfage for the dredge vessel.

#### **4.3.4 Warehouse Facilities**

Warehouse facilities will be provided by Husky's contracted warehouse provider (ASCO) and existing contractors as required and will consist primarily of storage for tubular goods, and the equipment belonging to the rig contractor which can be stored onshore.

#### **4.3.5 Voice and Data Communication Services**

Operation and co-ordination service of voice and data communication services from offshore installations and vessels will be provided from the central facility of Stratos Wireless Communications in St. John's.



#### **4.3.6 Drilling and Completions**

Husky's current drill rig contractor or a replacement drill rig contractor (in the event the existing drill rig is taken off hire in favour of a different rig) will operate a Mobile Offshore Drilling Unit (MODU) to drill the wells associated with the North Amethyst Satellite Tie-back.

#### **4.4 Employment and Training**

Offshore development activity generates both direct and indirect employment opportunities. For the North Amethyst Satellite Tie-back, employment opportunities will be concurrent with the general increase in offshore activity, through increased drilling, supply vessel and other support activity. Depending on the modification requirements, fabrication opportunities could provide work for local tradespersons. Whenever feasible, training and development activities will be designed to take place in the Province.

Husky commits to maximizing to the extent possible, the number of Newfoundland and other Canadian residents employed on the project. The project office will be located in St. John's and all recruitment will be carried out locally. Husky commits to work with government departments and private and public training institutions to identify and develop programs that not only are related to the project, but also for the operations phase and the industry in general.

#### **4.5 Research and Development**

The North Amethyst Tie-back development is based on proven technological solutions, hence there are few related R&D activities. However, Husky will continue to support capacity development in regional R&D facilities and will consider the use of facilities and institutions in Newfoundland and Labrador and Canada for any research and development work deemed necessary for the completion of the scope of work.

#### **4.6 Disadvantaged Individuals and Groups**

Husky maintains a formal and documented Workforce Diversity Policy. The tenets of the policy are such that Husky:

- is committed to building a work environment that is free of discrimination and harassment;
- will ensure its employment policies are implemented in a fair manner and are free of discrimination and barriers;

- is committed to the principle of fair representation of the designated target groups (women, aboriginals, visible minorities and people with disabilities) at all levels of the organization; and
- will take special measures to facilitate the full participation of under-represented designated groups at all levels of the organization

Husky developed the White Rose Diversity Plan in 2003 (*Canada- Newfoundland and Labrador Benefits Plan North Amethyst Satellite Tie-back Appendix V* (Husky document number SR-SRT-RP-0006) and will continue to implement it and report on progress on a regular basis.

#### **4.6.1 Employment**

Extension of the production plateau from the addition of oil from the North Amethyst field will result in a continuation of employment levels at peak for an estimated four to six years. Currently the steady state employment associated with the White Rose operations is around 1000 people which include direct Husky employees as well as contractors and subcontractors.

## **5.0 Capacity of Newfoundland and Labrador and Canadian Economies To Meet the Requirements of the North Amethyst Satellite Tie-back Development**

A recent labour market availability study (Appendix VII in the document *Canada-Newfoundland and Labrador Benefits Plan North Amethyst Satellite Tie-back* (Husky document number SR-SRT-RP-0006) conducted on behalf of Husky confirms that the demand for labour to carry out the North Amethyst Satellite Tie-back can be met to a large degree from within the province. The study evaluated the affect other potential construction projects such as the LNG Transshipment Terminal at Grassy Point, the INCO Hydro-Met Plant in Long Harbour, Lower Churchill Development, and the proposed new oil refinery for the Come-By-Chance area could have on the availability of labour and fabrication facilities. For the most part it confirms the demand can be met within the Province. The only concern raised was the availability of labour and fabrication facilities if all the above noted projects were to take place at the same time. The study findings suggest this would result in a shortfall of certain trades such as insulators, coatings applicators and electrical and instrumentation specialists. Husky will monitor the status of these projects and should it become evident they will be proceeding in the same time frame as the North Amethyst Satellite Tie-back, a contingency plan will be developed to address the potential shortfall in these trades areas.

### **5.1 Subsea Construction for North Amethyst Satellite Tie-back**

Regardless of whether the North Amethyst Satellite Tie-Back is tied back directly to the SeaRose FPSO (Option A) or is brought back to the facility through existing infrastructure (Option B), there will be basically the same subsea construction requirements because a glory hole, wells and flowlines will be required for either Option. Although the North Amethyst Satellite Tie-back is relatively straightforward and will employ, for the most part, off-the-shelf components, there are potential areas for local companies to participate. A list of equipment and services that will be required is included in Table 5-1.

#### **5.1.1 Goods and Services**

On a competitive basis the following equipment could be fabricated in Newfoundland and Labrador (applicable to Option A or Option B):

- one subsea manifold foundation;
- one production manifold;
- one water injection manifold;
- two flowline end manifold modules (for tying in flowlines);

- four two-slot TGBs;
- three production rigid spools;
- two SDU foundations;
- four riser horizontal holdback gravity bases;
- six water injection rigid spools; and
- control jumpers.

**Table 5-1 Procurement Opportunities - North Amethyst Satellite Tie-back**

Major Sub-Sea Equipment Packages	Potential Supplier Locations		
	NL	Other Canada	Foreign
Tree Production			X
Tree, Water Injection			X
Temporary Guidebase	X	X	X
Permanent Guidebase	X	X	X
Manifold, Production (incl. Fdn)	X	X	X
Manifold, Water Injection (incl. Fdn)	X	X	X
SDU (incl. Fdn)	X	X	X
Flowlines, Risers and Umbilicals			X
Control Jumpers	X	X	X
Rigid Spools (Prod & WI)	X	X	X
Glory Hole Construction			X
Subsea Production Equipment Installation			X
Drilling & Completions			X
Subsea/Topsides Control Mods	X	X	X
FEED	X	X	X
Detailed Design Engineering	X	X	X
Eng. & Mgmt for HSEQ Studies/Doc Revisions	X	X	
Topsides Modifications	X	X	X
Environmental Assessment	X	X	
Seabed Environmental Sampling & Reporting	X	X	
Fish Habitat Remediation	X	X	
HSEQ Studies	X	X	
Logistics Support	X	X	
Tubulars	X	X	X
Chemicals	X	X	X
Waste Disposal	X	X	
Medical Services	X	X	
Well Services	X	X	X
ROV Services	X	X	
Printing Services	X	X	
Courier Services	X	X	
Diesel Fuel	X	X	
Custom Brokerage	X	X	

### 5.1.2 Employment

A total of 1,790,000 hours of employment is estimated to take place in Newfoundland during the engineering and construction phase of the North Amethyst Satellite Tie-back if it is tied back to the FPSO via Option A. This equates to approximately 900 person years of employment in various disciplines including management and administration, engineering, trades and offshore marine. The total hours for a tie-back through existing infrastructure (Option B) is estimated at 1,660,000. The following Table 5-2 is a preliminary estimate of the Newfoundland hours associated with completion of the North Amethyst Satellite Tie-back for both Option A and Option B.

**Table 5-2 Estimate of Person Hours to take place in Newfoundland for North Amethyst Satellite Tie-back**

Project Component	Estimated Person Hours	
	Option A (Direct to FPSO)	Option B (Existing Drill Centre)
Project Management	400,000	350,000
Drilling and Completions	900,000	900,000
Logistics	200,000	200,000
Glory Holes	30,000	30,000
Subsea Production System	180,000	180,000
FPSO Modifications	80,000	0
<b>Total</b>	<b>1,790,000</b>	<b>1,660,000</b>

The above components include the following scope:

- Project Management - FEED, Detailed design engineering, procurement, construction management, hookup and commissioning.
- Drilling & Completions - All marine and onshore activities associated with drilling and completion of 9 wells with capacity for 16 wells in total including management of a dedicated MODU and supply vessels as well as other logistical support.
- Glory Holes - Dredging activities, ROV inspection services, marine support, and modifications to glory holes, if required.
- Subsea Production system - construction of one new manifold structure, testing and installation, laying subsea lines and hookup to the *SeaRose* .
- FPSO Modifications – could include changes to the turret and associated systems to accommodate tie-in of North Amethyst. .

It should be noted that this is a preliminary high level estimate, which is subject to change as the scope is further refined in the FEED phase. With respect to employment opportunities, Husky and its contractors remain committed to the principle of first consideration for residents of the Province.

In addition to the turret and topsides modifications resulting from tie-in of North Amethyst via Option A, *SeaRose* may also undergo topsides enhancements to increase produced water and gas handling capacity when it comes ashore in the 2010 – 2011 timeframe. Refer to Section 3.5 of the document *Canada- Newfoundland and Labrador Benefits*

*Plan North Amethyst Satellite Tie-back* (Husky document number SR-SRT-RP-0006) for further details. The estimated hours associated with this upgrade are outlined in Table 5.3.

**Table 5-3 Estimated Person Hours to Carry out Modifications to SeaRose FPSO to Increase Produced Water and Gas Handling Capacity**

Project Component	Total Employment	NL Employment	Other Canadian Employment	International Employment
Eng/ PM (Topsides Upgrade Opt 2A)	550,000	550,000	0	0
FPSO (Upgrade Modifications)	450,000	450,000	0	0
<b>Total</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>0</b>	<b>0</b>

## 5.2 Production Operations

Production from North Amethyst will be tied back directly to the *SeaRose*. Opportunities associated with the production operations of the North Amethyst Satellite Tie-back will be limited to subsea inspection and maintenance and work over activities associated with the wellhead equipment and subsea lines.

### 5.2.1 Goods and Services

Goods and Services required during the production phase of North Amethyst will not differ from previous operations. North Amethyst will allow the *SeaRose* to maintain plateau production for several years and thereby ensure that the present demand for goods and services to operate the facility will continue.

## **6.0 Consultation, Monitoring and Reporting**

### **6.1 Consultation**

Husky remains responsive to community interests, and routinely consults with key stakeholder groups on operational activity. Husky also meets with stakeholder groups or individuals upon request to discuss their concerns or answer questions regarding the business or employment opportunities associated with the development of the North Amethyst Satellite Tie-back.

### **6.2 Monitoring and Reporting**

With respect to the collection and reporting of benefits (employment and expenditure) information, consistent with the White Rose Reporting and Procedure Manual, Husky will continue to work with its contractors to provide this information to regulatory agencies on a timely basis.

Moreover, Husky remains committed to maintaining its public website which provides information regarding procurement opportunities, employment opportunities and other related project information. During the course of the initial White Rose Development, systems for monitoring and reporting on Canada-Newfoundland benefits were developed and will remain in place for any future projects. The detailed reporting requirements with respect to timing and content will be determined in consultation with the C-NLOPB.

### **6.3 Summary of Benefits Commitments**

The following is a summary of benefits commitments which Husky has stated throughout this Benefits Plan:

- 1) Maximize benefits for the Province where practically and commercially achievable on a competitive basis and identify potential areas where Newfoundland companies and residents can participate in the development of this field expansion.
- 2) Locate the project office for the North Amethyst Satellite Tie-back in St. John's.
- 3) Provide full and fair opportunity to manufacturers, consultants, contractors and service companies in the Province and other parts of Canada to participate on a competitive basis in the supply of goods and services that will be used in the development of the North Amethyst Satellite Tie-Back..
- 4) Canada-Newfoundland benefits will be a factor in procurement.



- 5) Commit to making expenditures in the areas of R&D and Education and Training consistent with the C-NLOPB Guidelines.
- 6) Build a work force that represents individuals from all sectors of society.
- 7) Maximize to the extent possible, the number of Newfoundland and other Canadian residents employed on the project.
- 8) Carry out recruitment from the local office.
- 9) Establish succession plans to qualify local residents to fill positions held by expatriates, especially for longer term positions that may carry over into operations.
- 10) Work with government departments and private and public training institutions to identify and develop programs that not only are related to the project, but also for the operations phase and the industry in general.
- 11) Hold supplier development information sessions during the project to provide the local business community with an opportunity to learn about procurement opportunities.
- 12) Hire Work Term students to support the project team.
- 13) Maintain a public website which provides information regarding procurement opportunities, employment opportunities and other related project information.

## **7.0 Conclusion**

The initial portion the White Rose Development demonstrated there are substantial skills and infrastructure established in the Province to participate in offshore oil and gas development. Husky looks forward to building on this foundation as it moves forward with planning for the North Amethyst Satellite Tie-back.

## 8.0 Glossary and Acronyms

**AHTS.** Acronym for Anchor Handling Tug Supply Vessel

**C-NLOPB.** Acronym for Canada-Newfoundland and Labrador Offshore Petroleum Board

**CDC.** Acronym for Central Drill Centre

**CHI.** Acronym for Cougar Helicopters Incorporated

**Development Application.** The official title of the documentation submitted to the C-NLOPB in support of an oilfield development request.

**FEED.** Acronym for Front End Engineering Design

**FPSO.** Acronym for Floating Production, Storage and Offloading Vessel.

**Glory Hole.** Hole, excavated in the seabed, in which wellhead facilities are placed for protection from iceberg scour.

**Umbilical.** Device through which control of subsea instrumentation is maintained from the FPSO.

**Flowlines.** Pipe which conveys crude oil, water and/or gas from the well to the riser, or water or gas from the riser to the well.

**MODU.** Acronym for Mobile Offshore Drilling Unit

**NADC.** Acronym for North Amethyst Drill Centre

**NDC.** Acronym for Northern Drill Centre

**OPEX.** Acronym for operating expenditure.

**Produced Water.** Water from the producing formation that comes to surface with the oil and gas. It separates from the oil and gas at atmospheric temperatures and pressure.

**R&D.** Research and Development

**Riser.** A flowline carrying oil or gas from the seabed to the deck of a production platform or a tanker loading platform.

**ROV.** Acronym for Remotely Operated (underwater) Vehicle

**SDC.** Acronym for Southern Drill Centre

**SDU.** Acronym for Subsea Distribution Unit

**Spider Buoy.** Disconnectable interface between the risers and the FPSO.

**Template.** Device through which a group of wells is drilled and produced.

**TGB.** Acronym for Temporary Guide Base. Used for positioning drill bits in correct position on the seafloor.

**Topside (or topsides) Facilities.** The oil- and gas-producing and support equipment located on the top of an offshore structure.

**Turret.** A low, tower-like structure capable of revolving horizontally within the hull of a ship and connected to a number of mooring lines and risers. It allows the ship to rotate with the weather while maintaining a fixed mooring system.