

## **EXPRESSION OF INTEREST (EOI)/PREQUALIFICATION**

Engineering, Procurement and Commissioning of Subsea Trees and Wellheads

BIDS Category: 0200/0227/251, 2800/2805, 8100/8124, 9100/9122

Reference: EOI S2007011PK

Issue Date: April 5, 2007

Closing Date: April 24, 2007

## **INTRODUCTION**

EnCana Corporation is proposing to develop its Deep Panuke gas prospect located offshore Nova Scotia. The Project Field Center, which will contain all of the main facilities, will be located approximately 250 km southeast of Halifax, approximately 47 km west of Sable Island and in 44 metres water depth. Development of the Project is subject to regulatory approval and EnCana Corporation Project sanction.

The Deep Panuke Project will generate important activity and provide significant opportunities within Nova Scotia and Canada. In recognition of this, EnCana Corporation is committed to using and encouraging capable and competitive Nova Scotian and Canadian companies for the provision of the high quality goods and services required in these activities.

The Project Field Center will be capable of producing  $8.5 \times 10^6$  m<sup>3</sup>/day (300 MMscfd) of natural gas from an initial five (5) subsea wells. Each subsea well will have its own dedicated flowline and umbilical. The Deep Panuke reservoir fluids contain H<sub>2</sub>S and CO<sub>2</sub> which will be removed from the fluid stream during processing on the Field Center and disposed of into a dedicated subsea acid gas injection well. The sales ready product will be exported from the Field Center via an export pipeline.

## **SCOPE OF WORK**

EnCana is seeking EOIs and Prequalification responses from interested firms for the Engineering, Procurement and Commissioning of the following components:

- Subsea Wellheads
- Subsea Trees
- High Pressure Riser
- Control System
- Over-Trawl Protection Structures.

The Project will comprise five (5) production wells and one (1) acid gas injection well. Each well will be fitted with a wellhead, subsea tree and a protection structure.

Contractor shall provide the necessary interfacing, project management, personnel, equipment, materials and services to perform the following:

- Engineering, including design of the wellheads, tieback between the mudline suspension equipment and subsea wellhead system, wellhead adapters, subsea trees, high pressure riser, control systems, SSIV and protection structures.
- Procurement of the required equipment and materials, including wellheads, subsea trees, high pressure riser, control systems, SSIV and protection structures.
- Delivery of wellheads, subsea trees, high pressure riser, control systems, SSIV and protection structures to Halifax, NS.
- Supply and delivery of temporary installation and workover control systems (IWOCS).
- Supply and delivery of subsea test tree system including valves, tieback riser, control system, and ancillary handling equipment.
- Commissioning of the control systems.

The wellheads, subsea trees and protection structures will be installed by EnCana's selected drilling contractor. The topsides subsea control equipment will be installed by EnCana's Field Center contractor.

## **Wellheads**

Four of the producing wells for Deep Panuke have been previously drilled from a jack-up rig with surface wellheads and subsequently suspended for development. The wells have been suspended by isolating the producing interval with bridge and cement plugs. The surface and production casing (13-3/8" & 9-5/8" respectively) tie-backs to the wellhead on the drilling unit have been removed from the FMC SD-1 mudline suspension equipment and temporary abandonment caps set in place. The 30" conductor pipe was backed off at various depths for each well above the mudline using a Dril-Quip H-90D Box Up Left Hand Connector.

The development plan for Deep Panuke requires converting each of these suspended wells to subsea producers. The conversion will be done using the FMC SD-1 mudline hangers and supporting the 18" subsea wellhead from the 762mm (30"), 38.1mm WT (1.5"), X-52 conductor pipe. Once the conversion is completed a completion guidebase will be run and a 5K horizontal subsea tree with an 18" collet type subsea connector will be installed on the subsea wellhead. Wellhead will have H-4 external profile. The completions are expected to be 177.8mm (7") tubing with two 3/8" control lines for the SCSSSV as well as two independent electrical data transmission lines for downhole permanent gauges. The subsea tree will be connected back to the drilling unit for completion with an 18" collet type subsea connector run on a high pressure riser (HPR) with an 18-3/4" 10K surface BOP stack connected to the top of the riser. The HPR will be held in tension by the rig and will be required to withstand environmental loading as well as the internal pressure loads resulting from a well control situation or for pressure testing requirements. The produced fluid for Deep Panuke is sour gas with 2000 ppm H<sub>2</sub>S and 3.5% CO<sub>2</sub> and therefore the HPR and flow wetted components of the wellhead will be required to comply with NACE requirements as well as API Specifications. The maximum expected shut-in wellhead pressure is 30 MPa (4350 psi). As the water depth is relatively shallow, installation will be completed using a jack-up drilling rig.

Two additional new drill wells are required for the field development, one as a producing well and the other an acid gas disposal well with similar completion to the existing re-entry wells. Similarly, the new wells will be equipped with a sub sea wellhead, hanger and tree system. Three further production wells may be required depending on the reservoir performance after start-up.

## **Subsea Trees**

The Subsea Trees shall comprise the following;

- 5 ea production horizontal trees
- 1 ea acid injection horizontal tree

Each tree will have a subsea step acting choke with retrievable insert. Choke on acid injection tree will have to control flow in opposite direction to production trees. Each tree will require a flowline connection system. Production flowlines will be 8 inch nominal. Acid gas injection flowline will be 3.5 inch nominal. All trees will be "HH" trim per API 17 and API 6A and will be required to comply with NACE requirements and API Specifications for sour gas service.

## **Subsea Controls**

Controls are expected to include:

- Each tree to have an electro-hydraulic multiplexed (EHMUX) subsea control module (SCM)
- Each tree to have appropriate pressure temperature monitoring devices

- Controls to include umbilical terminations and/or electrical and mechanical flying leads at each tree
- Controls to include the termination on the umbilical controlling the 22" SSIV on the export pipeline and the junction plate on the SSIV itself
- Topside umbilical termination assembly or assemblies
- Topside hydraulic power unit (HPU)
- Topside electrical power unit (EPU)
- Master Control Station
- Interface between Master Control Station and MOPU Main Control System.

### **High Pressure Riser**

High Pressure riser system to include the following:

- 18 \_" Collet connector with an H4 Profile
- High pressure riser joints (preliminary calculations indicate 24" OD, 19.25" ID, 75Ksi with deepwater drilling riser connectors) – approximately 300 ft with appropriate pup joints required
- Tensioning ring
- API Flange connection for an 18 \_" Surface BOP Stack

### **Subsea Test Tree System**

The Subsea Test Tree System shall comprise the following major components;

- 1 ea 7" 5ksi (min) subsea test tree (SSTT). SSTT will have failsafe ball valve capable of cutting slickline, braided line and coiled tubing.
- 100m 7-5/8" Landing String, premium thread
- Adapters and Crossovers
- Tubing Hanger Adapter to interface SSTT to tubing hanger
- Ported Slick Joint
- HPU, Control Panel, Umbilical on reel, Sheaves

Note that a special configuration will be necessary due to use of surface BOPs and shallow water depth.

### **Over-Trawl Protection Structures**

Protection structure to provide protection from all anticipated fishing activity in the area as well as dropped object protection for future workover operations. Structure to allow retrieval/installation of tree, flowline connections and umbilical connections with structure in place.

As part of EnCana's commitments to Nova Scotia, EnCana signed an Offshore Strategic Energy Agreement (OSEA) with the Province of Nova Scotia. Pursuant to the OSEA, EnCana has agreed to perform design, procurement and fabrication activities, with respect to subsea over-trawl protection structures for the subsea well locations, in Nova Scotia. Interested companies should clearly indicate their ability to perform this portion of the Scope of Work in Nova Scotia.

## **PROJECT SCHEDULE**

A Request for Proposal will be issued in May 2007. It is anticipated the contract will be awarded following Project sanction, which is anticipated 3<sup>rd</sup>/4<sup>th</sup> quarter 2007.

The wellheads and subsea trees are required to be ready for installation by EnCana's drilling contractor commencing in 4<sup>th</sup> quarter 2008.

## **GENERAL REQUIREMENTS**

EOI respondents are required to have an implemented Quality Management System that complies with the requirements of the ISO-9000 series of Standards and Safety Management System(s). Respondents are also notified that the Work carried out on the Deep Panuke Project shall comply fully with Canada Nova Scotia Offshore Petroleum Board Regulations.

Respondents must be qualified and demonstrate that they have suitable engineering, procurement and commissioning capability to conduct the entire scope of work within the Project Schedule dates outlined above. They must also be able to demonstrate previous experience on similar projects.

EnCana is committed to providing opportunities for Nova Scotian and Canadian companies through employment, procurement and contracting on an internationally competitive basis, with full and fair opportunity for Nova Scotians and Canadians, and first consideration to Nova Scotians where competitive on a best value basis. Pre-qualified companies will be required to complete a Canada–Nova Scotia Benefits Questionnaire, and demonstrate their commitment to and compliance with EnCana's requirements regarding Canada–Nova Scotia Benefits, during the tender process.

Interested firms are requested to demonstrate their capabilities and experience via a formal response to this EOI and the Prequalification Questionnaire, which can be obtained from BIDS Nova Scotia at the address provided below.

EnCana will select qualified bidders using the respondents to this EOI as a guide. Any eventual list of Bidders will be posted on BIDS Nova Scotia's website.

EnCana is under no obligation to proceed with a Request for Proposal as a result of this call for Expressions of Interest. Only those respondents deemed acceptable by EnCana will be invited to participate in the event Proposals are solicited.

Expressions of Interest must be received on or before April 24, 2007, 1:00 PM Atlantic Daylight Saving time.

All inquires and Expressions of Interest must be clearly marked with the EOI reference number and should be directed to:

Clarence Hewitt, P. Eng.  
Contracts Specialist  
Deep Panuke Project  
Suite 700, Founders Square  
Halifax, NS  
B3J 3 M8  
Fax: 902-425-2766  
clarence.hewitt@encana.com

### **IN ADDITION:**

**POTENTIAL SUPPLIERS FOR THIS PROJECT, IF THEY HAVE NOT ALREADY DONE SO, MUST REGISTER THEIR COMPANIES BY CONTACTING BIDS NOVA SCOTIA AT:**

Phone: 902-462-4824  
1-800-397-0393  
Email: bids@istar.ca