



**Encana Corporation
Expression of Interest (EOI)**

Integrated Wellbore Plug and Abandonment (P&A) Equipment and Services

BIDS Category: 0203, 0206, 0209, 0245, 0257, 0283, 0410, 0510, 0525, 0812, 0815, 0830, 0840, 0921, 0924, 0954, 0957, 0960, 0963

Reference: EOI DC02
Issue Date: September 13, 2017
Closing Date: September 27, 2017

GENERAL

Encana Corporation (Encana) is the owner and operator of the Deep Panuke natural gas project in Nova Scotia's offshore. The project includes facilities required to produce natural gas from the Deep Panuke field, located approximately 175 kilometres offshore Nova Scotia. Natural gas from the Deep Panuke Development is processed offshore and transported, via subsea pipeline, to Goldboro, Nova Scotia for further transport to market via the Maritimes & Northeast Pipeline.

The Development includes the following major infrastructure (the "facilities"):

- Production Field Centre (PFC);
- Five (5) - subsea wells, trees, and protection structures;
- Infield flowlines and umbilicals;
- Gas export pipeline and onshore metering facility;

The Deep Panuke reservoir fluids contain H₂S and CO₂ which are removed from the fluid stream during processing on the PFC and disposed of into a dedicated subsea acid gas injection well. The sales ready product is exported from the PFC via an export pipeline.

Encana's strategy towards the decommissioning of the Deep Panuke facilities will include cost efficient solutions that minimize risk to personnel, provide the least impact on the environment, and utilize proven technology. It is currently Encana's plan that the suspension and decommissioning of the Deep Panuke Development will generally be completed as follows:

- Suspension of Production Operations;
- Decommissioning of the subsea and onshore facilities and PFC removal; and
- Well Abandonment and Final Field Survey.

It is important to note that Encana has not set a date for the cessation of production operations or for the formal commencement of suspension and decommissioning activities.

Respondents are advised that the Work carried out on Deep Panuke shall comply fully with Canada-Nova Scotia Offshore Petroleum Board Regulations and all regulatory requirements. Respondents shall also be required to comply with the Canada Nova Scotia Offshore Petroleum Resources Accord Implementation Act including but not limited to the Benefits requirements as set out in Section 45.

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 where competitive on a best value basis, and first consideration to Nova Scotians. 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.

Encana is a leading North American energy producer that is focused on growing its strong portfolio of diverse resource plays producing natural gas, oil and natural gas liquids. By partnering with employees, community organizations and other businesses, Encana contributes to the strength and sustainability of the communities where it operates. Encana common shares trade on the Toronto and New York stock exchanges under the symbol ECA. Further information on Encana Corporation is available on the company's website, www.encana.com. Further information on Deep Panuke is available at www.encana.com/deeppanuke

SCOPE OF WORK

Encana is seeking qualified companies interested in the provision of a fully Integrated Wellbore Plug and Abandonment (P&A) Equipment and Services solution across the five (5) subsea well locations addressing Encana's four (4) subsea sour gas production wells and one (1) subsea acid gas injection well (the "Work").

Respondents to this EOI shall be capable of fully designing, planning/executing and evaluating all aspects of the wellbore abandonment scope. The Work will be conducted by the successful Contractor from a Harsh Environment Jack-Up, Mobile Offshore Drilling Unit (MODU), under contract to Encana, capable of working year-round in 30 – 65 meters of water at the Deep Panuke field location offshore Nova Scotia, Canada. The wellbores will be accessed with a high-pressure riser system attached to the horizontal subsea trees and tied back to a conventional surface BOP stack located on the MODU.

Environmental data and technical requirements for the offshore equipment are summarized in Appendix One attached to this Expression of Interest.

The Work shall include but not be limited to:

- The provision of all necessary personnel, equipment and materials as may be required for the successful completion of the Work;
- Project management and planning, and necessary engineering personnel to support detailed work from concept stage to final well P&A design. Competency in all aspects of well design, log evaluation and extensive experience with best practices in well abandonment are key requirements for the Work. Early integration of Contractor personnel into Encana's Project team in Halifax, Nova Scotia will be required and will continue until all P&A work has been successfully completed.
- All personnel, equipment and materials as may be required to fully and successfully execute the well P&A program onboard the MODU, including but not limited to:
 - Cement bond logging, perforating and production logging tools;
 - Tubing and casing cutting/punching and recovery equipment (4 ½" to 30" conductor);
 - Mud logging services;
 - Milling/section Milling, casing recovery tools and cementing in place alternatives to full casing recovery;
 - Fishing tools inventory covering all identified contingencies;
 - Coiled tubing equipment including reeling, injection, fishing and pressure control equipment;
 - Swarf management system with NORMS monitoring and mitigation;



- Slickline/wireline unit/units complete with all associated tools and pressure control equipment;
- Cement systems complete with mixing and pumping equipment;
- All required pressure pumping iron, filtering, manifolds and ancillary equipment;
- Tubing control line recovery reelers;
- Bridge plugs, inflatable packers, mechanical storm packers and tubing plugs;
- Nitrogen pumping equipment and liquid nitrogen supply;
- Inhibited completions fluids systems;
- Rental tubing and drill strings;
- Power tongs and specialty tubing handling services;
- All required well control equipment for each service specific application;
- All equipment must be compliant with MODU interface and space requirements;
- All equipment must be certified to work offshore Eastern Canada;
- Annular Velocity Control (AVC) or floating mud cap well control strategies complete with all associated sea water lifting, mixing, pumping and well control (RBOP) equipment; and
- Well flow back/production testing equipment.

Encana reserves the right, at its sole discretion, to modify, add or subtract from the scope of work elements comprising the above well P&A program.

Schedule for the Work:

No date for cessation of production of the Deep Panuke field has been identified.

Encana is issuing this Expression of Interest to identify the availability of suitable companies, equipment and services to conduct the Work in the offshore Nova Scotia location during the 2019-2021 timeframe. The preferred window for carrying out the Work is between the months of May and September. Any decisions on specific timing will be made at a later date.

The pre-planning and engineering effort is expected to take up to one (1) year prior to commencement of field operations.

Responses to this Expression of Interest must contain the following information:

- A: Confirmation of Respondent's North Atlantic harsh weather experience including references to previous projects similar to the Work. Information provided by Respondent should include but not be limited to the following:
- Project management, and engineering experience;
 - Integrated wellbore project execution experience; and
 - Available proven technologies and emerging technology potential.
- B: Confirmation of equipment and personnel availability (identifying the time frame that the equipment would be available for the Work), current location and present contract status of proposed equipment. Respondent should include the proposed structure of the services package to successfully accomplish the Work indicating all subcontracts and any preferred vendors.
- C: Details of the make-up of Respondent's early planning team complete with a detailed description of the core competencies of any nominated personnel. This should include details of Respondent's plan to integrate into Encana's Project team in Halifax, Nova Scotia.



D: A duly completed Pre-Qualification Questionnaire.

GENERAL REQUIREMENTS

Technical requirements for the Integrated Wellbore Plug and Abandonment (P&A) Equipment and Services are included in Appendix One attached to this Expression of Interest.

EOI respondents are required to have an implemented EH&S Management System and a registered Quality Management System (complete with a current certificate issued by a recognized third party that certifies that the Quality Management System meets the requirements of the ISO 9001). Respondents are also notified that the Work carried out on Deep Panuke shall comply fully with Canada-Nova Scotia Offshore Petroleum Board Regulations and all regulatory requirements.

Respondents are requested to provide a brief Company profile, contact details, managers and key personnel and a summary of related experience on past projects which are similar in scope including details of Respondent's Nova Scotia and Canadian capabilities.

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 the email 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 the Encana website website and other industry websites such as the Maritimes Energy Association bulletin.

Encana is under no obligation to proceed with a Request for Proposal as a result of this Expressions of Interest. Only those respondents deemed acceptable by Encana will be invited to participate in the event Proposals are solicited. Encana also reserves the right to award more than a single contract resulting from a Request for Proposal.

Expressions of Interest must be received on or before **September 27, 2017, 1:00 PM Atlantic time**.

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

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Senior Contract Specialist
Deep Panuke Project
Suite 700, Founders Square
1701 Hollis Street
Halifax, Nova Scotia, Canada B3J 3M8

Tel: 902-492-5415 / Fax: 902-492-5255
Email: john.nowlan@encana.com



APPENDIX ONE
Technical Requirements for Integrated Wellbore Plug and Abandonment (P&A)
Equipment and Services

The Offshore Equipment will meet the following criteria:

1. Capable of working year-round in the general Sable Island area of Nova Scotia, Canada.
 Seasonal temperature in this area ranges of -20C to +35C, average annual snowfall amounts of ~1.2m and the following environmental load conditions:

Wind Statistics at Deep Panuke

Parameter	1 year	10 year	100 year	Other
WINDS				
1-hr wind speed at 10 metres above MSL (m/s)	27.1	35.8	41.6	-
1-min wind speed at 10 metres above MSL (m/s)	28.5	37.6	43.7	-
3-second gust speed at 10 metres above MSL (m/s)	36.3	48.0	55.7	-
Upper 95% wind speed at 10 metres above MSL for all directions (m/s)	-	-	-	13.9
Upper 95% wind speed at 10 metres above MSL for NE, E, SE sectors combined (m/s)	-	-	-	14.0
Annual Mean Wind Speed at 10 metres above MSL (m/s)	-	-	-	7.9

Wave Statistics at Deep Panuke

Parameter	1 year	10 year	100 year
Significant wave height (Hsig) (m)	9.3	11.5	13.7
Maximum wave height (Hmax) (m)	17.5	21.5	25.6
Peak period associated with Hsig (Tp) (sec)	12.6	14.8	17.0

Seaspray and Atmospheric Icing criteria

The Deep Panuke field is located in the designated area of Eastern Canadian waters where severe ice accretion is expected to occur. This phenomenon is seasonal and its severity depends on the combination of wind speed and air temperature.



Expected Ice Accretion at Deep Panuke Location

Height above sea level m	Seaspray Icing*		Atmospheric Icing*	
	Thickness mm	Density kg/m ³	Thickness mm	Density Kg/m ³
5.0 – 10.0	80	850	10	900
10.0 – 25.0	Linear reduction from 80 to 0	Linear reduction from 850 to 500	10	900
Above 25.0	0	0	10	900

*Annual probability of exceedance 10⁻²

2. All equipment must be certified to work offshore Eastern Canada.
3. Capable of managing an Annular Velocity Controlled (AVC) work program. The MODU will be equipped with an 18-3/4” 10,000psi BOP system. To be AVC capable, the MODU will require the installation of a rotating BOP (RBOP) and associated equipment between the BOP and Diverter Housing.
4. All personnel and equipment must be qualified and certified to meet the Canadian Association of Petroleum Producers (CAPP) requirements for working offshore Nova Scotia, including but not limited to, the “Atlantic Canada Offshore Petroleum Industry Standard Practice for the Training & Qualifications of Personnel” requirements for working offshore Nova Scotia (see www.capp.ca/publications-and-statistics/publications/223065) and the “Atlantic Canada Offshore Safe Lifting Practices” (see www.capp.ca/publications-and-statistics/publications/226080)