



natural gas



SCREENSHOT: ENCANNA

INSIDE

Redesigned for you

Forward-thinking design, improved navigation and new and engaging content are just some of the enhancements made recently to Encana's external website.

MESSAGE FROM THE GENERAL MANAGER

Deep Panuke: transition to operations

Hello and welcome to the March 2012 edition of the Deep Panuke newsletter. In this edition, we're pleased to share recent updates at Deep Panuke with you.

Since our last update, work has been continuing offshore through the winter months to ready the production field centre for first gas. A combined crew of more than 100 people are engaged in the completion of this work which is now expected to conclude mid-year.

As the project transitions to operations, recruitment and training of key personnel continues, as does the transition of the project team to support long-term operations.

To conduct our business efficiently, a key hub for the Deep Panuke project is the offshore supply base. Virtually all the goods and materials required offshore leave from the supply base which is located on the waterfront in Dartmouth, NS. Find out more about operations at the supply base in the Ask the Expert column inside this newsletter.

This month our Encana people profile will introduce you to Clary Kempton, CAD Technician at Deep Panuke. We'll take you step-by-step through the process in Nova Scotia to fabricate spools – the custom-built pieces of pipeline

In this issue:

Supply base operations

Pipeline progress at Goldboro

R&D update

Encana people profile

and flowlines for Deep Panuke – and we'll update you on the new research call for proposals in offshore geosciences that is supported by Encana.

As well, we'll share an update on our activity in Guysborough County where we've completed the work on the export pipeline and terminus for Deep Panuke.

To better share information on Encana, our new website was launched in mid-December to good reviews. The site includes enhanced sections for Encana's operating communities. To learn more about the new site, check out encana.com and see the article inside.

Please contact us at dpinfo@encana.com if you have any comments or feedback on this newsletter. Enjoy the read!

Sincerely,

Malcolm Weatherston
General Manager, Deep Panuke Project
Encana Corporation



PHOTO: DAVE NICHOLS, PRISMA PRODUCTIONS



Message from the Vice-President Welcome aboard!

On January 1, it was my pleasure to assume the role of the vice-president responsible for the Deep Panuke project.

As we make progress toward first gas at Deep Panuke and production operations from the project, there has been much activity both offshore and onshore in Nova Scotia.

With an ongoing shift to steady state operations as we close in on first gas, this year is one of transition for the project. One aspect of the transition to steady state will be a change in local leadership in Nova Scotia.

As of February 1, Tom Lawlor has taken on the role of Advisor, Deep Panuke, based in Halifax. In this role he will be working alongside Malcolm Weatherston, Deep Panuke's general manager, and the Deep Panuke team as we work towards achieving first gas. Upon achievement of

first gas, local leadership at Deep Panuke will transfer to Tom as Malcolm enjoys his own transition to retirement.

I would like to thank Malcolm for the diligent work he has contributed to the project so far, and for his ongoing efforts down the stretch to make first gas a reality.

The next few months are sure to be exciting ones at Deep Panuke. The continued efforts of all stakeholders to contribute to Deep Panuke makes for success.

As we usher in spring, the Deep Panuke team looks forward to continuing to work with all stakeholders as we focus on moving the project into production.

Sincerely,

Mike Selleck
Vice-President, Clearwater Business Unit
Encana Corporation

PHOTO: ENCANNA

Project update—Cool spools



PHOTO: AECON / MIRIAM BEACH

Spools are key links that connect subsea structures together at an offshore natural gas project like Deep Panuke. The spools for Deep Panuke were made by Aecon at its facilities in Pictou and Dartmouth, NS. In the photo, spools are being fabricated in Pictou, NS for the 22-inch diameter gas export pipeline (GEP) at Deep Panuke. The GEP carries natural gas from the Deep Panuke platform offshore to landfall at Goldboro, NS. To learn more about the Deep Panuke spools, how they were made and what they do, turn to the back page and read on.

PHOTO: DAVE NICHOLS, PRISMA PRODUCTIONS



You've got questions. Deep Panuke experts can answer.

Q. How are supplies shipped to Deep Panuke?

Hugh Farrell
Project Controls Manager & Operations Lead

A. Transporting materials to and from Deep Panuke centres around the offshore supply base in Dartmouth, NS.

At this busy site, container loads of materials are shipped by supply vessel to the offshore production field centre (PFC) at Deep Panuke, about 250 kilometres away (Fig. 1). At the PFC, materials that need to return to shore are placed in containers and backloaded to the supply vessel for the trip back to Dartmouth (Fig. 2).

For shipment offshore, materials are organized and loaded into the containers at the yard (Fig. 3).

Flatbed trucks take the containers from the yard to the quayside for loading to the supply vessel (Fig. 4).

On the vessel, the cargo is balanced to distribute the weight (Fig. 5) and the containers are each secured in place with heavy chains (Fig. 6).

Two offshore supply vessels, the *Atlantic Condor* operated by Atlantic Towing and the *Ryan Leet* operated by Secunda, can make the weekly run to and from Deep Panuke.

The containers are supplied by CTS Container & Trailer Services Ltd. of Dartmouth, NS.

On a weekly basis, about 150,000 pounds of goods and materials are sent in containers to Deep Panuke, ranging from food to supplies such as operational spares and consumables.

It's about a 14-hour sail from the supply base to the PFC (Fig. 7), and about 14 hours to return to shore.

The offshore supply base is operated by Blue Water Agencies on behalf of Encana and ExxonMobil, the operator of the Sable project near Deep Panuke.

Have a question? Contact us at dpinfo@encana.com



Fig. 1 Loading containers to the *Atlantic Condor* at the offshore supply base.



Fig. 2 The *Atlantic Condor* offshore supply vessel at work at Deep Panuke.



Fig. 3 Checking materials to load to a container headed for Deep Panuke.



Fig. 4 Moving containers bound for Deep Panuke from the yard to the quayside.

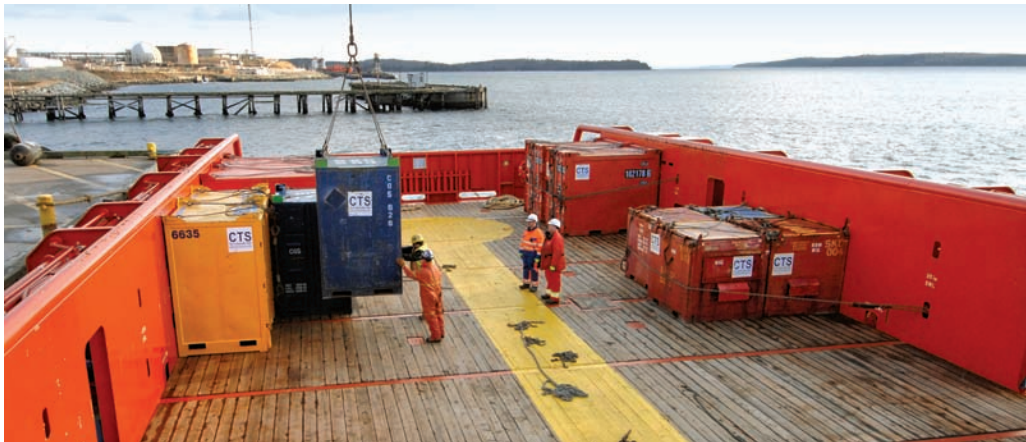


Fig. 5 Loading the *Atlantic Condor* for a supply run to Deep Panuke.



Fig. 6 Secured container on the *Atlantic Condor*.



Fig. 7 The *Atlantic Condor* at Deep Panuke.

PHOTOS: DAVE NICHOLS, PRISMA PRODUCTIONS

Guysborough County Ready to go at Goldboro



The terminus for the Deep Panuke pipeline meets up with the Maritimes & Northeast Pipeline (M&NP) system at this site in Goldboro, NS. In the background is the corridor for M&NP stretching back across Northern Nova Scotia. Work on the terminus was completed in late 2011 to prepare for first gas from Deep Panuke. Final steps to commission the facility are now taking place to lead up to first gas.



Lyll MacGregor (l), mechanical supervisor with GJ Cahill and Martin Beaver (r), also with GJ Cahill, finalize the hook-up in December 2011 at the Deep Panuke terminus facility at Goldboro, NS.

Deep Panuke project Encana people

Clary Kempton, CAD Technician

At the Deep Panuke project, Clary Kempton translates data to display.

In his role as CAD Technician, it's Clary's job to clearly communicate technical information in the form of a drawing, a map or an illustration – "virtually" and on paper.

On a daily basis, he works with members of the project team to produce piping schematics, electrical, structural and subsea drawings, maps and 3-D model applications.

Clary is a member of the Technical Integrity Group at Deep Panuke that oversees engineering, and he has been working on the project since 2001.

At Deep Panuke, he says the diverse experience of the project team provides for a vibrant working environment. "I like a new challenge, and a successful outcome," says Clary. "The diversity and complexity of the offshore oil and gas industry makes it challenging and thus very rewarding."

Clary has worked on oil and gas projects offshore Nova Scotia for 15 years, starting with a local consulting firm on the electrical design for aspects of the Sable Offshore Energy Project.

A graduate of Saint Mary's University in Halifax where he received a Bachelor of Arts concentrating in urban planning, Clary also has completed drafting courses through the Nova Scotia Community College. Originally from Liverpool, NS, Clary has lived in the Halifax area since 1976.

As part of the Deep Panuke team, Clary has volunteered with the Construction program for Feed Nova Scotia, Habitat for Humanity and the Take Our Kids to Work program for Grade 9 students.

Clary's interest in heritage preservation and urban development led to a volunteer position on the District 12 Planning Advisory Committee in the Halifax Regional Municipality from 2003 to 2010. He remains active in the effort to protect heritage buildings and promote development in Halifax.

He's also a keen supporter of all things outdoors, spending five years perfecting his massive backyard skating rink (which measured 24 x 40 feet at its peak in 2007). The rink has been featured in local media in Nova Scotia.

Over the years, Clary applied some engineering prowess to rink building since his backyard sloped nearly two feet from one end to the other. Two-by-six boards were supported by rebar to hold the frame together because about 6,500 gallons of water wanted to move downhill. The pressure was so great on the downhill side that extra bracing and bolting was required. With each section numbered to fit together like a Lego set, assembly and disassembly was a snap.

Clary also enjoys a round of golf, with the highlight of his season being the annual family Father's Day tournament. Though he's never won the trophy, Clary says it's a great day when his two sons need the final hole to determine the winner.

Maybe 2012 is Clary's year for the trophy!



"The diversity and complexity of the offshore oil and gas industry makes it challenging and thus very rewarding."

What a website!

Encana's refreshed website places more information at your fingertips.

The enhanced site reflects broader stakeholder interests and focuses on hallmarks of Encana such as corporate responsibility, innovation and operational excellence for the more than 100,000 online visitors hosted by encana.com every month.

The site includes updated information on the Deep Panuke

project in Nova Scotia's offshore, including new project photos and footage.

As well, a comprehensive section of the site explains the basics of natural gas, the fuel that will be produced at Deep Panuke.

To visit the Deep Panuke section of the website, go to www.encana.com/deeppanuke.



Research and development

Update: Offshore geosciences research

An evaluation committee is examining detailed research proposals submitted under the latest call for proposals from the Deep Panuke Education & Training and R&D Fund. The theme of the call, the third one under the Fund, is geosciences for Nova Scotia's offshore. Among the proposals under consideration are advances in salt and stratigraphic modelling techniques; improved methods in

evaluating controls on sediment delivery and reservoir quality; and, new tools to qualify overpressure conditions and risk.

For information on the call and on previous calls under the Fund, see www.encana.com/communities/canada/atlantic/training-research-fund.html. It is expected that the successful geosciences proposals will be selected in the spring of 2012.

PHOTO: DAVE NICHOLS, PRISMA PRODUCTIONS

PHOTO: DAVE NICHOLS, PRISMA PRODUCTIONS

PHOTO: DAVE NICHOLS, PRISMA PRODUCTIONS

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SUBSEA INSTALLATION UPDATE

Tooling the spools

During the installation of an offshore oil or gas project, pipelines and flowlines usually are installed in stages.

When it comes time to hook everything up so that natural gas or oil can flow, special pieces of pipe called spools are required. Spools are built specifically to precise field measurements to connect pipelines or flowlines with structures like a production facility or subsea structures such as wellheads and isolation valves.

The spools for the Deep Panuke project were fabricated by Aecon in Pictou and Dartmouth, NS

(Fig. 1). A total of 30 spools were manufactured between May and August 2011 for Deep Panuke.

The spools are assembled from sections of straight pipe and pre-made bends to be an exact fit on the seabed. Flanges welded to each spool become the bolted connection point to the next piece of pipeline or flowline (Fig. 2).

Following initial assembly in the fabrication shops, the spools were moved to the yard outside at Aecon in Pictou where assembly, weighing and pressure testing took place in the summer of 2011 (Fig. 3).

Once completed, the spools were loaded onto a barge at Pictou for the trip to Mulgrave, NS at the Strait of Canso (Fig. 4). Mulgrave was the centre for Deep Panuke marine programs in 2011.

At Mulgrave, the spools were loaded to the *Aceryg Discovery*, one of the Subsea 7 vessels used for the Deep Panuke subsea program (Fig. 5).

Offshore at Deep Panuke, each spool was overboarded to the seabed from the *Aceryg Discovery* (Fig. 6). At the seabed, saturation divers made the final alignment and bolted connections using the flanges to join all the pieces together.



Fig. 1 At the Aecon fabrication shop in Pictou, NS, the yellow spools for the production flowlines are fabricated. Special welding techniques join the pipes, bends and flanges together.



Fig. 2 Preheat is applied to the neck of a flange prior to welding.



Fig. 3 Pressure testing and weighing of the spools takes place in the yard at Aecon's shop in Pictou.



Fig. 4 A partial shipment of spools departs by barge from Pictou. The spools are enroute to Mulgrave, NS.



Fig. 5 Completed spools quayside await loading to Subsea 7's *Aceryg Discovery* at the Mulgrave Marine Terminal (part of the Strait Superport) at Mulgrave, NS. In the background is the Deep Panuke production platform, moored temporarily at Mulgrave in the summer of 2011 prior to its tow and installation in the field.



Fig. 6 The closing spool for the gas export pipeline (GEP) is overboarded from the *Aceryg Discovery*. Connecting this final spool was the last step to complete the GEP from the production platform to Goldboro, NS.

PHOTOS: AECON / MIRIAM BEACH (FIG. 1, 2, 3); ENCANA (FIG. 4, 6); DAVE NICHOLS, PRISMA PRODUCTIONS (FIG. 5)

FOR MORE INFORMATION

Contact Encana in Halifax for more information on the Deep Panuke project and other Encana activities:

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If you are interested in working on the Deep Panuke project or other opportunities with Encana, watch for postings under the Work for Us section at www.encana.com.

For information on contracting with Encana elsewhere across our operations, please visit www.encana.com.

For information on the company responsible for the provision of the production field centre at Deep Panuke, visit www.sbmoffshore.com or contact:

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For industry information, please visit The Maritimes Energy Association at www.otans.com.

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