

CANADA-NOVA SCOTIA BENEFITS

2011 ANNUAL REPORT

Encana Corporation Halifax, Nova Scotia

March 31, 2012

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I. Executive Summary

In 2011, significant milestones were achieved in preparation for first gas from Deep Panuke including:

- The arrival in Nova Scotia of the production field centre (PFC) and its subsequent installation in the field at Deep Panuke;
- Start of hook-up and commissioning activities for the PFC;
- Completion of the subsea program to prepare facilities offshore for first gas;
- Completion of the rock placement program offshore: and.
- Completion of work at Goldboro, NS to prepare the gas export pipeline to accept natural gas from the project.

The following report provides an overview of Encana's activities in Nova Scotia from January 1, 2011 until December 31, 2011.

Highlights of the report include:

- Total spending by Encana on Deep Panuke was \$169 million Canadian dollars.
- 740,538 person hours of work by Nova Scotians.
- 104,975 person hours of work by Canadians from other provinces.
- 925,662 person hours of work carried out within Nova Scotia.

Person Hours (January-December 2011) & Cumulative Hours

	2011	CUMULATIVE
CATEGORY BY	PERSON HOURS	PERSON HOURS
RESIDENCE		
Nova Scotia Residents	740,538	2,850,658
Canadian Residents from	104,975	434,224
other provinces		

Note: Table above includes all Nova Scotian and all Canadian Person Hours for all elements of the project.

II. Introduction

The following report is filed in compliance with Condition 10 (Monitoring, Reporting and Auditing) of the Canada-Nova Scotia Benefits Plan Decision Report ("the Decision Report") for the Deep Panuke Offshore Gas Development as issued by the Canada-Nova Scotia Offshore Petroleum Board.

This report covers the period from January 1, 2011 to December 31, 2011.

Encana's Deep Panuke contracting opportunities are comprised of six key elements:



- Element 0 project management;
- Element 1 drilling and completions;
- Element 2 subsea;
- Element 3 export pipeline;
- Element 4 production field centre and
- Element 5 ready for operations and operations.

Reference is made in this report to the various project elements.

II.I Local Office

Encana's local office for the Deep Panuke project is located in Founders Square at 1701 Hollis Street in Halifax. Resident in the office is the project general manager and an interdisciplinary project management team, supported by teams of staff and contractors.

Appropriate levels of decision-making are directed from or take place in the office including project management, engineering, procurement, commercial arrangements, accounting, human resources, legal, regulatory, communications and community relations, drilling and completions and environment, health, safety and quality.

Work continued at the offshore supply base in Dartmouth, NS until the end of February 2011 to close out the Deep Panuke drilling and completions program. Effective March 1, 2011, Blue Water Agencies began operating the offshore supply base at the site on behalf of Encana and ExxonMobil.

In May 2011, Encana PFC contractor Single Buoy Moorings (SBM) established a new office in Dartmouth, NS near the offshore supply base.

In June 2011, SBM established a site office at Mulgrave, NS. The office served as a base for SBM and its subcontractors as well as Encana and its contractors to carry out the final preparations for the PFC prior to its tow and installation in the field in July 2011. Subsequently SBM demobilized its site office at Mulgrave at the end of August 2011.

Deep Panuke contractors Tideway and Subsea 7 also established temporary offices at Mulgrave to support their 2011 work programs. The Tideway office was demobilized in mid-August 2011 following completion of the rock placement program and the Subsea 7 office was demobilized at the end of November 2011 following completion of the subsea program.

At December 31, 2011, the total complement of Encana employees and contract staff supporting the Deep Panuke project was 58. During the year, personnel worked at the Encana office or SBM office in Halifax/Dartmouth, at the PFC construction site in Abu Dhabi, offshore at the PFC in the Deep Panuke field or at Mulgrave, NS.



III. Business Opportunities & Supplier Development

III.I Communication of Business Opportunities

In 2011, Encana shared business opportunities at Deep Panuke with the local supply community utilizing recognized channels of distribution. Information regarding Expressions of Interest (EOI), Bidders' Lists and Contract Awards were included in postings to the Business Opportunities section of the Deep Panuke pages on the Encana website (http://www.encana.com/communities/canada/atlantic/business-opportunities/) postings to the electronic bulletin board BIDS Nova Scotia, an email distribution list comprised of disadvantaged group representatives and newsletter distribution.

To augment the ongoing channels of distribution of information regarding business opportunities, in 2011 Encana used Twitter to notify followers of Expressions of Interest and Bidders' Lists released by Encana for Deep Panuke.

Deep Panuke business opportunities are also frequently reported through third party organizations. For example, information on EOIs, Requests for Proposal (Bidders' Lists) and Contract Awards typically are posted the day of issue in the Maritimes Energy Association (formerly OTANS) Daily Bulletin to members. Media in Nova Scotia have frequently reported on Encana business opportunities as well.

To help alert suppliers to business opportunities at Deep Panuke, Encana inserted a Procurement Update in the March 2011 newsletter. The March newsletter also included procurement opportunity information for SBM. Approximately 5,500 hard copies of each edition of the newsletter are circulated as well as being posted to the Deep Panuke pages on the Encana website at www.encana.com/deeppanuke. By December 15, 2011, there were 539 individuals registered to receive an e-copy of the newsletter.

In parallel to Encana's activities, contractors to Deep Panuke such as SBM and Subsea 7 released 14 Deep Panuke-related business opportunities to the local supply community in 2011 via the BIDS Nova Scotia portal. Distribution of opportunities via BIDS is often supplemented by a listing of the opportunities in the Daily Bulletin circulated to Maritimes Energy Association members and media coverage.

To help liaise with members of the supply community in Nova Scotia, in July 2011 Encana supported the Strait of Canso Superport Days conference where major Deep Panuke contractors (Tideway and SBM) gave presentations on their scopes of work in 2011. As well, Encana supported the CORE offshore conference in October 2011 where Dave Kopperson, the vice-president for Deep Panuke, provided an update on the project and work activities in 2011.

III.II Stakeholder Communications

One of the key Project Management Principles contained in The Benefits Plan (Volume 3, Deep Panuke Development Plan Application) described Encana's commitment to developing relationships with stakeholders to fully inform and involve them in the Deep Panuke project.



In 2011, Encana continued to liaise with stakeholders to share information on Deep Panuke. Methods of liaison included face to face meetings, presentations and/or participation at conferences and workshops, open houses in Mulgrave and Goldboro, NS, phone calls, email notices, social media (Twitter and Facebook) information mailings, print material distribution, media relations, advertising, participation and/or support of community events and website updates to www.encana.com/deeppanuke (Deep Panuke pages).

During 2011, four project newsletters (March, June, September and December 2011) were distributed to provide stakeholders with updated information on Deep Panuke.

Each edition of the newsletter is:

- posted to the Deep Panuke pages on the Encana website at www.encana.com/deeppanuke;
- inserted in the weekly Guysborough Journal to help ensure circulation in Guysborough County;
- dropped by Canada Post to mailboxes in Guysborough County;
- distributed to representatives of local, provincial and federal government, fisheries organizations, environmental groups, suppliers and other diverse stakeholders on a large mailing list; and,
- distributed directly to participants at meetings, conferences and other business and/or community events attended by representatives of Encana or supported by Encana.

The Deep Panuke web pages include information on project procurement activities, community information and links to relevant web sites. For Deep Panuke, revised Codes of Practice for Sable Island, Country Island and the Gully Marine Protected Area were posted to the Encana website in January 2011. In July 2011, Atlantic Towing was added as a major project contractor to the Major Contractor page for Deep Panuke. In October 2011, refreshed biographies were posted for participants in the Developing Skills Initiative and the first gas date for Deep Panuke was updated to 2012.

In December 2011, a renewed Encana website was launched. For the Deep Panuke pages, new photographs from the project and project activities are featured at www.encana.com/deeppanuke.

Through 2011, there were 11,087 unique visitors and 14,896 visits (includes repeat visitors) to Deep Panuke web pages on the Encana website. The web pages recording frequent visits during the period were those for the most current project newsletter, the Business Opportunities pages (where Expressions of Interest, Bidders' Lists and Contracts Awarded are posted), Filings and Applications pages and Community Information pages.

The general project information email box (dpinfo@encana.com) is monitored on a daily basis. In 2011, queries were received in the mailbox from:

- the general public
- contractors seeking business opportunities



- individuals seeking employment opportunities
- representatives of business organizations seeking updates on the status of Deep Panuke
- individuals or organizations requesting community sponsorships
- media.

In addition, members of the Deep Panuke team regularly respond to unsolicited inquiries about employment and business opportunities with the project.

III.III Contracts Awarded

Among the contracts Encana awarded for Deep Panuke in 2011, included contracts related to the operations at Deep Panuke such as safety, a standby vessel, field survey support services, the offshore supply base and offshore environmental effects monitoring:

Standby vessel

Peer Safety Review

Supply Base

Field Survey Support

Offshore Environmental Effects Monitoring

J. Ray McDermott Canada

Worley Parsons

Blue Water Agencies

DOF Subsea Canada

McGregor GeoScience

III.IV Business Expenditures

The total expenditure for Deep Panuke during the period of January 1- December 31, 2011 was \$169 million Canadian.

IV. Project Employment

IV.I 2011 Person Hours

Total Nova Scotia Person Hours from January 1 to December 31, 2011 for Deep Panuke were 740,538 and Other Canadian hours were 104,975 with 925,662 hours of work performed within the Province of Nova Scotia during the period.

The cumulative Nova Scotia Person Hours to date are recorded as 2,850,658. Total cumulative hours of work performed within the Province of Nova Scotia was 3,798,308.

IV.II Update on Activities

Encana is fully committed to employing a competitive, open and fair recruitment process for Deep Panuke, with full and fair opportunity for Nova Scotians and all Canadians, and with first consideration to qualified Nova Scotians. Foreign workers will be hired when specialized knowledge or experience is required and when qualified Canadian workers are not available.

The Encana Project Management Team supporting Deep Panuke was comprised of 58 individuals at the end of 2011.



Significant Nova Scotia person hours were recorded through 2011 to support the hookup and commissioning of the Deep Panuke production field centre and for ongoing project management.

In 2011, Encana advertised for six additional contract positions to support safety, construction (subsea, onshore and offshore), offshore hook-up and commissioning and offshore production operations. In Nova Scotia, the positions were advertised at www.careerbeacon.com, a well recognized website for local opportunities in the offshore oil and gas industry, in the Chronicle Herald and for positions affiliated with onshore scopes of work at Goldboro, NS, in the Guysborough Journal. As well, notices for the positions appeared in the careers section (now called the Work for Us section) on the Encana website at www.encana.com.

In May 2011, Reliance Offshore, advertised for catering positions available at the Deep Panuke production field centre under Entier for SBM. The advertisement appeared in the Chronicle Herald on May 21 and was circulated to representatives of disadvantaged groups in Nova Scotia and other interested stakeholders via an e-distribution list.

In September 2011, Encana participated in the Halifax Career Fair to explain employment opportunities for students at Encana.

Since May 2007, 34 students have joined the Deep Panuke team, generally on a four-month basis, with 3 of the 34 students participating in 2011. To date, students in the program have been enrolled at Acadia, Dalhousie and Mount Saint Vincent universities, as well as the Nova Scotia Community College, in engineering, commerce and public relations fields of study.

V. Disadvantaged Groups

V.I Sharing Business and Employment Opportunities

As directed by the CNSOPB in the Decision Report, the four disadvantaged groups engaged for the Deep Panuke project are:

- Aboriginal people
- Members of visible minorities
- Persons with disabilities
- Women

Regular contact is maintained with groups and organizations representing the business, employment and educational/training interests of these groups including the Black Business Initiative, the Encana Native Council Opportunities Fund, Entrepreneurs with Disabilities Network, the Centre for Women in Business at Mount Saint Vincent University, Nova Scotia Advisory Council on the Status of Women, the Mi'kmaq Rights Initiative and Immigrant Settlement and Integration Services or ISIS.



During 2011, to directly share information on Deep Panuke contracting opportunities with disadvantaged groups, 31 opportunities were emailed by Encana via a distribution list to immediately alert key representatives of these groups to the issuing of an EOI, RFP or Contract Award by Encana or major project contractors such as SBM, Tideway and Subsea 7.

The established process continued in 2011 to share employment opportunities at Deep Panuke with representatives of disadvantaged groups via fax and email distribution lists. During the year, Encana shared information on six Encana employment opportunities as well as employment opportunities on behalf of SBM and Reliance Offshore for Entier under SBM.

To supplement direct notifications of business and employment opportunities, in 2011, Encana placed advertising in local publications focusing on disadvantaged groups: the Black to Business magazine, Entrepreneurs with Disabilities newsletter, Centre for Women in Business Biz Beat Online newsletter, Mi'kmaq Maliseet Nations News and Taliaq, the newsletter of the Native Council of Nova Scotia. The advertising directed readers to where the Deep Panuke business and employment opportunities are posted on the Encana website.

In 2011 Encana continued to support the four designated disadvantaged groups and their delivery of core programs and services to members by purchasing tickets for or donating items to be auctioned at fundraising events and activities, or donating goods or services to be used by the organization. Among the groups receiving support in 2011 were:

- Black Business Initiative
- Easter Seals
- Canadian National Institute for the Blind
- Dress for Success
- Bridgeway Academy
- Heart and Stroke Foundation
- Entrepreneurs with Disabilities Network
- Encana Native Council Opportunities Fund
- Canadian Paraplegic Association
- Immigrant Settlement and Integration Services
- The Arthritis Society of Nova Scotia
- Atlantic Provinces Special Education Authority
- Micmac Benevolent Society
- L'Arche
- Mi'kmaq Native Friendship Centre
- Alice Housing
- Learning Disabilities Association of Nova Scotia
- Bonny Lea Farm
- Special Olympics



V.II Aboriginal Liaison

Encana liaises regularly with representatives of the Mi'kmaq Rights Initiative and the Encana Native Council Opportunities Fund to facilitate the communication of business and employment opportunities at Deep Panuke.

Encana continued to monitor the progress with the Encana Native Council Opportunities Fund (ENCOF), a fund established to help off-reserve Aboriginal people in Nova Scotia engage in employment and business opportunities related to the offshore oil and gas industry. Under the ENCOF in 2011, there were 21 individuals undertaking postsecondary training (including University, Nova Scotia Community College, & Atlantic Petroleum.) in fields related to the offshore oil and gas industry such as Bachelor of Roughneck/Floorhand. Process Operations. and Construction/Industrial. Building on established communications channels, in 2011 ENCOF representatives began a process of direct contact to potential students through guidance counsellors and Aboriginal support workers at high schools in Nova Scotia serving large communities of off reserve Aboriginal persons. As well, information sessions on ENCOF were held with members of the Native Council across Nova Scotia. ENCOF representatives also continued to meet with potential employers, training schools and labour organizations of relevance to the offshore oil and gas industry to develop potential partnerships. Encana participated in two ENCOF-organized career fairs held in Truro and Dartmouth, NS in March 2011, with two additional career fairs taking place in Sydney (February 2011) and Bridgewater (March 2011). As well, the Native Council continued to profile the work of ENCOF, and included information on the application process for educational grants from the Fund, in all editions of the newsletter Taliaq in 2011.

Encana maintains contact with the Mi'kmaq Energy Advisor working with the Kwilmu'kw Maw-klusaqn Negotiation Office (KMKNO) on behalf of the Assembly of Mi'kmaq Chiefs and with KMKNO's Mi'kmaq Benefits Officer, engaging with these individuals regarding Deep Panuke opportunities for the benefit of Mi'kmaq companies and individuals.

The Mi'kmaq Benefits Officer was hired in August 2011 to advance the four main components of the five-year agreement between Encana and the Assembly of Mi'kmaq Chiefs regarding education and training and related opportunities from the Deep Panuke project. The four components are: the Mi'kmaq Business Growth Initiative; the Mi'kmaq Developing Skills Initiative; the Mi'kmaq Research and Development Initiative; and the Mi'kmaq Science, Culture and Technology Initiative.

To support Mi'kmaq and Aboriginal community development, Encana supported National Aboriginal Day at the Glooscap Heritage Centre in Truro, NS on June 21, 2011.

As well, a representative of Encana attended a seminar in November 2011 hosted by the Nova Scotia Office of Aboriginal Affairs on the role of proponents in Crown consultation with Aboriginal peoples.

V.III Persons with Disabilities



During 2011, Encana continued to work closely with the Entrepreneurs with Disabilities Network (EDN). EDN promotes and facilitates entrepreneurship among people with disabilities and has approximately 500 members across Nova Scotia. Encana's support in 2011 was directed to an emerging entrepreneur award initiated by EDN and EDN's small business week held in the fall.

Encana also liaised with representatives of the Canadian National Institute for the Blind (CNIB), Easter Seals and the Canadian Paraplegic Association, providing support for annual fundraising activities for these organizations and sharing information on the development of the Deep Panuke project.

In May 2011, Encana provided funding such that 10 student delegates from Mount Saint Vincent University (MSVU) could attend the Atlantic Conference on Learning Disabilities held at MSVU.

In December 2011, a representative of Encana attended the Inclusive Education and Employment Symposium in Halifax and met with a representative of EDN to provide an update on Deep Panuke.

In 2011, Encana continued to utilize the services of New Leaf Enterprises, a division of Easter Seals Nova Scotia, to coordinate the mail-out of the four quarterly Deep Panuke project newsletters distributed in March, June, September and December 2011. As well beginning in early May, New Leaf was contracted to recycle coffee pods from the Deep Panuke office in Halifax.

Encana's support for New Leaf also led to improvements in the function of the New Leaf job skills training through the purchase of new equipment. With this support, New Leaf was able to enhance the functioning of the training program and better meet the needs of the 40 plus youth and adults with disabilities who are clients. Easter Seals reports that Encana's support provided much needed assistance to develop the work, educational and social skills training in this important program.

V.IV Members of Visible Minorities

In 2011 to date, Encana engaged with representatives of the Black Business Initiative (BBI), Immigrant Settlement and Integration Services (ISIS), Imhotep Legacy Academy and the Black Educators Association to support their programming and to share information on Deep Panuke.

A representative of Encana attended the annual meeting for the BBI in June 2011 and provided funding such that youth involved in the BBI's Business is Jammin' program (supporting young business entrepreneurs) could attend annual meeting activities. Further support in the fall of 2011 from Encana allowed Business is Jammin' participants to attend the BBI's 15th anniversary activities including the launch of the organization's updated Business Directory.

Encana worked with ISIS in 2011 to identify opportunities for networking and dialogue with companies providing supplies and services to the offshore oil and gas industry. The work included facilitating a liaison for ISIS with the CORE energy conference in October



2011, whereby ISIS clients moderated conference sessions and had the opportunity to engage with delegates and speakers. As well, in 2011 a member of the Deep Panuke team became a volunteer mentor with ISIS.

Encana's work with ISIS in 2011 also included support for two teams of students to participate in Junior Achievement's company program, thus helping to foster entrepreneurial and business skills among immigrant youth. Building on the success attained, Junior Achievement expanded this model in late 2011 to include the YMCA Immigrant Program.

A major initiative supported by Encana in 2011 was the expansion of the Imhotep Legacy Academy to Antigonish, NS. The program encourages youth of African Nova Scotian heritage to pursue careers in sciences, technology, engineering and mathematics, fields that are key to careers in the offshore petroleum industry in Nova Scotia and areas of study in which African Nova Scotian youth are under represented. Hosted at Saint Andrew Junior School, the Imhotep program ran from January to May 2011 and subsequently resumed in the fall of 2011 for a second year.

As well, Encana's support for the SuperNOVA program at Dalhousie University in 2011 led to the development of summer science camps for students of African Nova Scotian heritage in four Nova Scotian communities. SuperNOVA worked closely with existing community programs like Imhotep to recruit participants for the camps.

V.V Women

In 2011, Encana continued to work with the Centre for Women in Business (CWB) at Mount Saint Vincent University (MSVU) to assist in developing awareness of opportunities in the offshore oil and gas industry among the female entrepreneurs associated with the Centre. Encana's support included a presentation on procurement at Deep Panuke and for the Nova Scotia offshore during the Supplier Diversity Conference held at MSVU in February 2011. An article summarizing the presentation was later included in a CWB newsletter to members.

To share information with female business owners on contracting at Deep Panuke, Encana also facilitated a presentation by SBM on their Deep Panuke activities. The presentation was delivered in September 2011 as part of an entrepreneurship conference hosted by WEConnect Canada and the CWB.

In November 2011, Encana supported the CWB Watch Us Grow conference, enabling the participation of small business owners and students to attend. Through the conference, Encana shared information on business and employment opportunities at Deep Panuke.

Recognizing that attracting more women to careers in sciences, trades and technology will help to increase their participation in the offshore oil and gas industry, Encana engaged in several initiatives aimed at achieving this goal.

Encana continued to fund in 2011 the Bread and Roses bursary fund at the Nova Scotia Community College (NSCC) aimed at supporting female students interested in trades



and technology careers. Students receiving the bursary have pursued studies in fields such as welding, power engineering, marine geomatics and geographic sciences. The fund supports students at College campuses across the province.

As well, progress continued on the Women in Action web video series in 2011 under the Techsploration program. Techsploration encourages girls in Nova Scotia to consider educational paths in sciences, trades and technology that could lead to a career in the offshore oil and gas industry. The videos, supported by Encana, profile women in sciences, trades and technology careers, utilizing a medium preferred by youth to convey career and educational information. In 2011, nine new videos were posted, including a profile of a female Encana drilling engineer who also volunteered as a Techsploration mentor. The videos are now available via the renewed Techsploration website at www.techsploration .ca, which was launched in December 2011. In late 2011, a loss control engineer at Deep Panuke became a new mentor to the Techsploration program, continuing Encana's longstanding volunteer contribution to the program.

In 2011, Encana also liaised with the Nova Scotia Advisory Council on the Status of Women. These discussions led to Encana's support for Women Unlimited (http://weesociety.ca/index.php/site/womenunlimited/), an organization supporting women pursuing trades and technology careers, to participate in an offshore oil and gas industry networking event in the spring of 2011.

V.VI Diversity Training and Reporting

In 2011, new hires to Deep Panuke were required to participate in on-line Aboriginal Awareness Training offered by Encana.

VI. OSEA

VI.I Update on Activities

During 2011, further progress was made on the Offshore Strategic Energy Agreement (OSEA) commitments with the Province of Nova Scotia.

From January 1 to December 31, 2011, 191,642 hours of work were conducted in Nova Scotia with 182,092 of these hours being Nova Scotia Person Hours. From the commencement of the OSEA, 1,875,979 hours of work have been conducted in Nova Scotia with 1,689,693 of these hours being Nova Scotia Person Hours.

In addition to the OSEA hours, additional Nova Scotia hours were recorded in 2011 for work activities supporting the development of Deep Panuke. During this period, 734,021 hours of work were conducted in Nova Scotia with 558,446 of these hours being Nova Scotia Person Hours.

Activities on the following OSEA commitments have been completed, thus updates on these activities are not provided: subsea protection structures, export pipeline coating and the flare tower.



Engineering, Procurement and Management Activities

Encana's office in Halifax continues to be the centre of project management activity for Deep Panuke, as well as engineering and procurement management.

Offshore Supply Vessel

The Atlantic Condor platform supply vessel was built by Irving Shipbuilding in Halifax for Atlantic Towing. The vessel came under hire to Encana in February 2011. In 2011, the vessel commenced its work as an offshore supply vessel for Deep Panuke, completing supply trips to and from the Deep Panuke PFC. As well, the vessel can serve as the stand-by vessel at the Deep Panuke PFC. The vessel also completed a subsea asset survey for Encana at Deep Panuke in advance of construction programs offshore during the summer and fall of 2011. Atlantic Towing operates the vessel on long term contract with Encana for the operations phase of Deep Panuke.

Onshore Drilling Rig Program

As part of Encana's OSEA commitments, Encana agreed to facilitate the development of the capability of an onshore drilling rig manufacturing operation in Nova Scotia.

To December 31, 2011, Encana provided approximately \$4.6 million in funding to support the Onshore Drilling Rig Program, including the manufacture of components for drilling rigs and two complete rigs for Nabors. One rig fabricated in Nova Scotia began drilling operations in North Dakota in the first six months of 2011. Fabrication of the second rig was completed in mid-2011 and then this rig also was deployed to North Dakota. As well, a drafting project for the rigs – including comprehensive drawings and 3D models – was completed in 2011.

The Onshore Drilling Rig Program has fostered the transfer of skills and technologies to Nova Scotia related to the fabrication of the rigs and rig components, and has led to new oil field supply opportunities for Nova Scotia fabricators.

Encana's support for the Onshore Drilling Rig Program wrapped up at the end of 2011.

Developing Skills Initiative

Of the 11 individuals who participated in the Developing Skills Initiative, by December 31, 2011, seven had assumed new roles in the oil and gas industry, building on the skills and expertise from their work on the Deep Panuke project. One of the seven accepted an engineering position with Encana in Calgary.

VII. Education & Training/ Research & Development

In 2011, Encana continued to invest in research and development, education and training initiatives in Nova Scotia with a focus on advancing the development of the offshore oil and gas industry.



VII.I Petroleum Research Atlantic Canada (PRAC)

PRAC was a regional industry-funded, not-for-profit R&D management organization. Prior to closing its Nova Scotia office in April 2011, PRAC managed the first two Deep Panuke Calls for Proposals under Deep Panuke Education & Training and Research & Development Fund (the Fund). PRAC managed the second call under the theme of offshore safety and risk that was launched in late 2010 until the closing of the Nova Scotia office. Encana completed the call and awarded grants to the selected projects.

VII.II Offshore Energy Technical Research Association (OETR)

To find a replacement contractor for the research management work conducted by PRAC, in 2011 a dialogue was initiated between Encana and OETR to reach an agreement on OETR managing future Deep Panuke Calls for Proposals on Encana's behalf. An agreement was reached in the fall of 2011 and a new call was subsequently launched by OETR on the theme of geosciences for Nova Scotia's offshore.

VII.III Deep Panuke Education & Training and Research & Development Fund

To the end of 2011, Encana confirms spending of approximately \$5.5 million to date on education & training and research & development projects under the Fund.

VII.IV Deep Panuke Education & Training and Research & Development Fund – R&D Calls for Proposals

The second Call for Proposals under the Deep Panuke Education & Training and Research & Development Fund (the Fund), on the theme of offshore safety and risk, was launched in late 2010. A total of 15 Letters of Intent (LOIs) were received from university and private sector researchers in Nova Scotia. In early 2011, full proposals were requested from nine of the proponents based on the LOIs submitted. Of the nine full proposals, six were recommended for funding and grants were subsequently awarded.

The third Call for Proposals under the Fund on the theme of geosciences for Nova Scotia's offshore was launched in November 2011. A total of eight Letters of Intent (LOIs) were received from university and private sector researchers in Nova Scotia. A review committee was struck to review the LOIs. In early 2012 the committee will recommend the proposals that should advance to full submissions.

Encana was the sponsor of a Maritimes Energy Association breakfast for the offshore supplier community in April 2011 where it was announced that geosciences would be the theme for the third Call, building on recommendations from the Province of Nova Scotia's Play Fairway Analysis on offshore geology.

Information on the R&D Calls for Proposals is posted on the Encana website at: http://www.encana.com/communities/canada/atlantic/training-research-fund.html



VII.V Education & Training Funded Projects

The following updates are provided for selected education & training initiatives approved by the CNSOPB under the Fund:

Techsploration

Encana continued to provide core funding support for the Techsploration program that encourages young girls in Nova Scotia to consider careers in sciences, trades and technology - skills that are key to a career in the offshore oil and gas industry. With Encana's support, Techsploration expanded its learning materials via the development of the Women in Action web video series featuring women in non-traditional careers. The videos form a readily accessible library of up-close, personal interviews with women who are working in science, trade or technology fields. By December 31, 2011, 23 career videos were posted in the series including a profile of a female Encana drilling engineer who also participated in 2011 as a Techsploration team role model mentoring students from Middleton Regional High School. In late 2011, a female Encana loss control engineer assumed the volunteer position with Techsploration and will be mentoring students from Prince Arthur Junior High School in Dartmouth, NS. The video project was profiled at major Techsploration conferences in 2011 and other external events/conferences to ensure that students, teachers, parents, potential employers and stakeholders are aware of this valuable resource. To date, the videos have received approximately 16,000 hits. As well, the video featuring a physicist from Acadia University has been added to the Best **Physics** Videos blog http://bestphysicsvideos.blogspot.ca/2011/09/dr-svetlana-barkanova-physicist.html To view the videos, please visit the website at www.techsploration.ca and click on the link for the Women in Action Web Video series.

Imhotep Legacy Academy

With support from Encana, this science and mathematics enrichment program for students of African Nova Scotian heritage expanded to Antigonish, NS in 2011. Participating students attended Saint Andrew Junior School at the junior high school level. During the program, the students participated in weekly hands-on science activities and were provided with mathematics homework support. Feedback on the first year has been positive, with all eligible first-time participating students indicating that they wanted to continue with the program in the fall of 2011. As well, younger students below Imhotep's target grade (Grade 7) have indicated their interest in having the program made available to them, and/or joining Imhotep when they reach the eligible grade level. Starting in the fall of 2011 at the high school level, a virtual tutoring program is being offered daily to students attending Dr. John Hugh Gillis Regional High School in Antigonish. Some of the participants in this program are graduates of the Imhotep after school program from Saint Andrew Junior School. Imhotep encourages participants to consider careers in science, technology, engineering and mathematics fields, core fields for a career in the offshore oil and gas industry in Nova Scotia

Regional Science Fairs



In 2011, Encana provided support to the provincial gathering of regional science fair winners and to regional fairs in Halifax and the Strait area. The provincial gathering, called the Nova Scotia Science Fair Showcase, took place in May 2011 at Saint Mary's University. The showcase displays winning science fair projects from across Nova Scotia prior to the students competing at the Canada-Wide Science Fair. Encana awarded three Youth Science Awards at the showcase, an annual award to student(s) selected by his or her peers at the showcase. Encana supports science fairs as a means to encourage science, technology and engineering-minded students in Nova Scotia to continue their studies at the post-secondary level. Studies in these areas are among those that are key to career opportunities in the offshore oil and gas industry.

Youth Projects – Skills Canada-Nova Scotia

Encana supported Skills Youth Projects offered by Skills Canada-Nova Scotia at the Nova Scotia Community College (NSCC) to encourage high school students from across the province to consider a skilled trade or technology career – a key educational path for work in the offshore oil and gas industry. Each Youth Project is a full day, interactive applied learning workshop. Participating students have the opportunity to work with a college instructor and a student mentor who is currently enrolled in a skilled trade or technology program at the college. From January 1, 2011 to December 31, 2011, Encana supported five TechShops, one Young Women's Conference and one African Nova Scotia Youth Conference, for a total of seven Youth Projects. Five TechShop events were held at the NSCC Lunenburg, Akerley, Truro, Pictou and Cumberland campuses. A total of 261 students from grades 10 to 12 participated. An additional TechShop event with 75 students registered, which was planned for the fall of 2011, was postponed until April 2012 due to poor weather conditions.

The Young Women's Conference was held in March 2011 at the NSCC Burridge campus in Yarmouth, NS and was attended by 44 grade 9 girls from the Tri-County School Board. The African Nova Scotia Youth Conference was held in February 2011 at the NSCC Kingstec campus in Kentville, NS, and was attended by 33 students in grades 9 through 12. During both events, students were introduced to skilled trade and technology careers and participated in a range of interactive and hands-on workshops. In a survey completed by the students prior to each event, 62 percent indicated that they were interested in a skilled trade or technology career, while 33 percent were not interested. At the end of each Youth Project, students completed the same survey and the results indicated that 77 percent of students were now interested in a skilled trade or technology career, while only 17 percent were not interested.

Encana High School Scholarship

All eight public school boards in Nova Scotia have participated in the program in 2011, with each board selecting one graduating student to receive the \$2,500 annual scholarship renewable for up to four years. Of the eight students selected by the school boards for 2011, seven are pursuing university level studies in engineering and one is pursuing engineering technology studies.



SuperNOVA

In 2011, SuperNOVA at Dalhousie University moved forward with a program to work with predominantly African Nova Scotian communities to provide youth with meaningful interactions in science, engineering and technology. Encana's support for SuperNOVA in 2011 assisted directly in the development and delivery of four, week-long science day camps and two after school clubs for African Nova Scotian youth. By partnering with other community groups focus on reaching these youth, SuperNOVA was able to engage them in hands-on learning in a comfortable and familiar environment. SuperNOVA supported 42 young scientists through the camps hosted in Halifax, East Preston, Antigonish and Sydney during the summer of 2011. To continue engaging African Nova Scotian youth throughout the school year, SuperNOVA offered weekly after school clubs for youth in the north end of Halifax and East Preston which brought hands-on learning to 197 youth.

Math-On Olympiad

The provincial Olympiad is a math competition aimed at encouraging the exploration of mathematics by students at the junior high school level in Nova Scotia. Across Nova Scotia, 41 schools and more than 500 students competed in March 2011 to attend the Olympiad. Eighty-four students from schools in Halifax, Dartmouth, Bridgewater and Cape Breton then advanced to the competition held May 7 at Dalhousie University. Also included in the program that day was a top individual team challenge. Mathematical aptitude is a core skill for work in the offshore oil and gas industry.

Energy for Students (EFS)

Energy for Students is an educational program that shares energy-related information, particularly information about the offshore oil and gas industry, to educators and students in Nova Scotia. The goal is to inform program participants of careers in the industry, and the educational pathways required for those careers. During the 2011 year the EFS program was presented to 193 teachers and approximately 670 students. Presentations included the province-wide professional development conference for science teachers at Halifax West High School in October 2011, St. Margaret Centre's Energy Camp, St. Francis Xavier University, Dartmouth High School, Sir John A Macdonald High School in Upper Tantallon, West Kings in Auburn and Citadel High School in Halifax. As well, representatives of EFS attended a skills and career event at the Nova Scotia Community College, Kentville campus. Encana's support for the EFS program includes the distribution of a monthly newsletter about energy-related topics. featuring news from the offshore oil and gas industry in Nova Scotia. In 2011, ten monthly newsletters were distributed to 887 recipients. Encana also supports the EFS website, particularly the oil and gas subsection, as well as the energy map. In January 2011, former Nova Scotia Energy Minister Bill Estabrooks officially launched the map during an EFS program for 200 students and teachers at Sir John A Macdonald High School. The map, designed for educators and students, depicts major aspects of energy infrastructure including Nova Scotia's offshore oil and gas industry. The EFS website had 18.203 visitors in 2011.



The Discovery Centre – Science on the Road Program

The Science on the Road (SOTR) program is a science-oriented outreach program aimed at enriching science education for elementary school students across Nova Scotia through in-school demonstrations and hands-on workshops. SOTR is tied to science curriculum for the Province of Nova Scotia, and is offered in both French and English. From January 1 to December 31, 2011, SOTR reached 15,042 educational contacts in Nova Scotia at 66 schools across seven public school boards. With Encana's support in the past three years, SOTR has visited 215 schools and reached more than 58,200 educational contacts across the province. Because of the support from Encana, Discovery Centre has experienced a significant increase in the number of schools the program has been able to visit by on average 13 additional schools per year. Feedback from both students and teachers is extremely positive regarding the impact of Discovery Centre's SOTR program. In particular, from schools in small communities that often do not have the resources for additional programming.

Scientists and Innovators in Schools (SITS)

SITS is a science promotion program administered by the Atlantic Science Links Association, a not-for-profit organization dedicated to nurturing relationships between educators and scientists, technology, engineering and mathematics communities in Nova Scotia. SITS seeks to inspire Nova Scotia students when they are developing key attitudes towards science and technology, and are beginning to think about careers in these fields. In 2011, with Encana's support, SITS volunteers delivered 90 presentations in classrooms across the province. They also judged fifteen science fairs, mentored students, and shared their scientific expertise with teachers. Scientists from SITS shared their knowledge with nearly 100 teachers via presentations and activities through workshops and conferences. Approximately 3100 students were provided with the opportunity to make connections between what they learn in the classroom and the work and research being done by scientists in Nova Scotia. Including 30 new additions made in the fall of 2011, SITS now maintains a database of 280 science volunteers among them scientists, engineers, IT specialists, mathematicians and others from the public and private sectors, universities and not-for-profit organizations. SITS reports that teacher feedback has been positive regarding the program. In the 2010-2011 school participating classes who completed vear. teachers with and returned evaluation/feedback forms rated the program an average of 4.8 out of 5.

Ducks Unlimited – Project Webfoot

Project Webfoot is a science educational program that aims to communicate the value of wetlands to elementary school-aged children. In the 2010/2011 school year (September 2010-June 2011), Encana funding helped to support programming and field trips for 16 classes representing 374 students at 10 schools in Guysborough, Antigonish and Halifax counties. In June 2011, with Encana's support, a new field trip location opened at the Dagger Woods Marsh near Antigonish, NS for schools in Northeastern Nova Scotia. The establishment of the field trip site will allow participating classes to benefit from the complete Project Webfoot program, which includes class and field components. In June 2011, eight classes from six schools attended a field trip to Dagger Woods. As well in June 2011, 17 students from Imhotep's Legacy Academy in



Antigonish, a program to encourage students of African Nova Scotian heritage to consider careers in science, technology, engineering and mathematics, attended a field trip to the Dagger Woods. In the fall of 2011, 16 classes from nine schools representing 382 students received the Project Webfoot classroom resource kit. These classes will participate in a field trip in the spring of 2012, with more than half expected to visit the Dagger Woods site.

Robotics Programming – Acadia University

Robotics Programming is designed to encourage student interest in math, science, engineering and technology. The 2010-2011 season ended with the competitions held at Acadia on January 29, 2011 involving more than 300 students from junior and senior high schools across Nova Scotia. Following the competitions, focus shifted to competition analysis, planning and outreach for the 2011-2012 school year. Leveraging the funding from sponsors, Robotics Programming obtained an additional grant to establish a Robot Lending Library. Working with the Nova Scotia Community College, 50 robots were distributed to new teams across Nova Scotia. In addition to school teams, trainers from community youth groups and a museum have received robots and five robots were distributed to Imhotep's Legacy Academy for teaching science to students of African Nova Scotian heritage. As well, one team worked with the Discovery Centre to showcase their research project and their robot programming. For more information on the competitions, visit http://cs.acadiau.ca/rpc

Dalhousie Remote Operated Vehicle (ROV) Team

Encana's support for the Dalhousie ROV team contributed to the team's success at the Marine Advanced Technology Education (MATE) International ROV competition in June 2011, where student teams competed to complete interactive real-world challenges similar to what industrial ROVs are used for in the offshore oil and gas industry. Dalhousie placed 7th out of 30 teams during the competition and received 1st place in the engineering evaluation. The engineering evaluation award is given to students who earn the highest score for the presentation and explanation of their design in front of a panel of judges.

Bread and Roses

Encana funded the bursaries for the second consecutive year in 2011. The bursaries, offered through the Nova Scotia Community College (NSCC) Foundation, are aimed at supporting women pursuing science, trades or technical training at NSCC campuses across Nova Scotia. Over the two years of support, 40 women have benefited (with 20 of that number in 2011), pursuing studies in fields related to the development of the offshore oil and gas industry such as welding, power engineering, marine geomatics and geographic sciences.

VII.VI Other Education & Training

In 2011, Encana continued its focus on supporting initiatives and programs that encourage Nova Scotia youth to consider careers in science, trades and technology,



engineering and mathematics, the educational pathways of particular relevance to the offshore oil and gas industry.

To help educators better understand the offshore oil and gas industry and the careers open to students in the industry, Encana has developed an Energy Information Kit that includes publications from the Petroleum Human Resources Council of Canada, the Atlantic Geoscience Society (AGS), the Canadian Association of Petroleum Producers and the Canadian Centre for Energy. In 2011, Encana distributed 65 of the kits to teachers and public libraries in Nova Scotia. Teachers requesting the kits attended the provincial Science Fair Showcase, supported by Encana, at Saint Mary's University from May 5-7, 2011 and the provincial science teachers' conference at Halifax West High School in October 2011. A representative of Encana's Halifax office attended both the showcase and the conference.

Contractors to Encana's Deep Panuke project are required to submit on a quarterly basis a report summarizing their investments in education & training and research & development.

In the area of education & training, in 2011 contractors reported 294 positions totaling \$415,597 for the following:

- Transportation of Dangerous Goods (air & ground)
- Troubleshooting, repair and maintenance of ROV robotic arm
- Customs Brokers certification course
- Marine security officer training
- High-resolution wave climate monitoring
- Basics of non-destructive testing
- Master of Science in Environmental Science
- Basic Survival Training
- H2S Alive
- Confined Space Entry
- First Aid in various environments
- Other safety training

VII.VII Research & Development Funded Projects

The following section provides an update on selected R&D projects approved under the Fund.

Produced Water – Dalhousie University

Examination by researchers at Dalhousie University of chemical-free electro-coagulation (EC) technology with proven success in treating wastewater discharge, and adapting that EC technology to separate and remove dissolved hydrocarbons from produced water streams. The interim report on the research was submitted to PRAC in March 2011. A final report on the research for dissemination is expected by the end of April 2012.



Produced Water – Pro-Oceanus

A three-year research project led by Pro-Oceanus of Bridgewater, NS, including partners at the Centre for Offshore Oil Gas Energy Research (COOGER), to develop a new system to track oil dispersion from spills in the ocean using ultraviolet fluorescence spectroscopy. The project was finalized in the fall of 2011 and was expected to begin in January 2012.

Salt Chair

At Dalhousie University, the recruitment process to fill the complex salts chair continued through 2011. Following a recruitment process earlier in 2011, in November 2011 Dalhousie nominated a candidate for the chair to the Natural Sciences and Engineering Research Council (NSERC). At year end, Dalhousie awaited feedback from NSERC on the candidate. Approval of the candidate would then trigger a full application to NSERC to support the chair, funding that is in addition to the support offered by Encana. It is anticipated that the chair will be in place in early 2013.

 A Functional Test Analysis of Lifeboat/BA (Breathing Apparatus) Integration Skills

Following dissemination of the research findings at conferences and via the Survival Systems website in 2010, the research was submitted to the journal Occupational Ergonomics in January 2011. At year end, the authors awaited a decision from the journal regarding publication.

Coastal Island Bird Surveys – Maritime Breeding Bird Atlas

The Atlas has the goal of determining the distribution, abundance and status of all bird species breeding in Nova Scotia, New Brunswick and Prince Edward Island. Information gathered will be compared to that collected during the first Breeding Bird Atlas (1986-1990) to examine changes in species abundance and distribution, and will be used to set conservation priorities and objectives for the next 20 years. As there was very little data for coastal and island-nesting birds, with Encana's support, the 2010 survey project focused on coastal islands and inaccessible coastline in Nova Scotia using Breeding Bird Atlas methods. The data collected will facilitate the development of environmental impact assessments by offshore oil and gas industry explorers and operators working in Nova Scotia. From January to June 2011, island and coastal data collected in 2010 were added to the database for the Atlas. As well, island and coastal records, including rare and unusual records, were reviewed to ensure they were complete. From July 1 to December 31, 2011, draft relative abundance maps for coastal and island breeding bird species were created by Bird Studies Canada geographic information systems and mapping specialists. In addition, species accounts for a number of coastal and island breeding bird species that will appear in the upcoming book were drafted by volunteer species account authors, using some of the results from breeding bird surveys that were funded by Encana in 2010.



• Integrated Bird Management at Offshore Installations

Between January 1 and December 31, 2011, Acadia University, Encana and the Canadian Wildlife Service launched a new study investigating potential bird-platform interactions at Encana's Deep Panuke PFC. In the spring, radio tags were deployed on birds at Country Island and Sable Island, and VHF receivers were installed on Country Island, Sable Island, and various offshore support/study vessels to track bird movements between colonies and around the offshore platforms. In the summer of 2011, the group submitted a proposal to the Natural Sciences and Engineering Research Council (NSERC) for a grant matching the funding and in-kind funding contributions from Encana. This grant was approved in early 2012, thereby extending the project until May 2013.

VII.VIII Other Research & Development

In 2011, Encana continued to provide funding and/or participation through a number of task forces and committees on safety and environmental issues linked to the offshore, such as the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative, the Sable Island Stakeholder Committee and the Gully Advisory Committee.

Encana has continued to participate in several technical advisory groups from the Environmental Studies Research Fund and represents the Canadian Association of Petroleum Producers as part of the Canada-Nova Scotia Offshore Petroleum Board's SARA (Species at Risk) Working Group.

As well, in 2011 Encana has supported:

 2011 Collaborative Lobster Science Workshop and Fishermen and Scientists Research Society 18th Annual Conference

VIII. Activity Forecast for January to June 2012

In 2011, Encana focused on:

- Safe and successful completion of the subsea and rock placement programs offshore at Deep Panuke;
- Wrap up of activities at Goldboro, NS to ensure readiness of the Deep Panuke gas export pipeline to accept natural gas from the project; and,
- Ongoing work with SBM leading to the successful transport of the PFC to Nova Scotia, its subsequent installation in the field and ongoing activities related to the hook-up and commissioning of the facility.

Project activity at Deep Panuke is organized into functional elements. The following section describes activity anticipated from January 1 to June 30, 2012 for each of these elements.



VIII.I Project Management Element

Encana's Deep Panuke project team in Halifax will continue to manage and monitor progress on all project elements, including the execution of scopes of work being undertaken by major project contractors and subcontractors leading to first gas. In addition, the project team will continue transitioning to the operations phase of the project, working closely with SBM as the operations contractor for the offshore production facility.

VIII.II Element 1 – Drilling and Completions

With the transition from construction to operations at Deep Panuke, any activities under this element are now captured under Element 5, Ready for Operations and Operations.

VIII.III Element 2 - Subsea

Final commissioning activities for the subsea control system, subsea isolation valve (SSIV) and trees are expected to be completed in 2012. The SSIV will be operated under accumulator power alone, which is the test to ensure the valve will function in the event of power loss from the production platform. All five trees, which are the control modules on the wells (four production wells and one disposal well), will be commissioned shortly before first gas.

VIII.IV Element 3 – Export Pipeline

Construction and pre-commissioning work was completed on the export pipeline in 2011. In 2012, the communications link from the project's onshore facilities at Goldboro to the platform will be commissioned and function tested from the PFC by SBM. The subsea section of the export pipeline is subject to Encana's ongoing integrity management plan for Deep Panuke, thus subsea inspections utilizing tools such as a remotely-operated vehicle will be scheduled as required.

VIII.V Element 4 – Production Field Centre (PFC)

Work continues offshore on the PFC with the focus on readiness activities for the introduction of hydrocarbons later in 2012. The project construction team is continuing on the completion of the offshore hook-up and commissioning work. Work continues on the key remaining activities to ensure that all final offshore piping connection spools are in place, piping systems are clean and tested, and equipment is energized.

The offshore and onshore operations teams are also now in place and are progressively accepting the systems as they are completed in readiness for first gas. Maintenance routines are now being carried out for those systems which have been handed over to ensure that they are ready for the intended service.

The pipeline and all production wells are now hooked up to the platform but remain in a preserved state until the PFC is ready to accept hydrocarbons.



VIII.VI Element 5 – Ready for Operations (RFO) and Operations

The RFO team is involved in monitoring operational readiness activities in preparation for final assessments prior to the start of production operations. The operations team supports the hook-up and commissioning work program for the PFC. Particular focus on managing the provision of logistics services includes helicopter transport, support vessels, ROV services and supply base.

After completing the recruitment drive in 2011, the SBM Operations team will utilize the first half of 2012 to complete facility specific training modules and competency assessments. In addition to ongoing support to the commissioning activities the operations team are also implementing the remaining components of the facility management system and asset integrity programs.

The Atlantic Condor continues to be the primary supply vessel in support of the hook-up and commissioning program. The vessel's ROV spread has been utilized for subsea asset integrity inspections and post storm surveys. The Ryan Leet continues as the primary stand-by vessel for the field.

Cougar Helicopters continue to provide helicopter transport services to the Deep Panuke field. Cougar averages four to five flights per week in support of the multi-disciplined hook-up and commissioning program at Deep Panuke.

