



CANADA-NOVA SCOTIA BENEFITS

2012 ANNUAL REPORT

Encana Corporation
Halifax, Nova Scotia

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I. Executive Summary

In 2012, progress continued in preparation for first gas from Deep Panuke including:

- Project transition from construction to operations phases.
- With Single Buoy Moorings (SBM), the ongoing hook-up and commissioning activities on the Deep Panuke production field centre (PFC) offshore.
- Completion of the 2012 subsea asset integrity survey.

The following report provides an overview of Encana's activities in Nova Scotia from January 1, 2012 until December 31, 2012.

Highlights of the report include:

- Total spending by Encana on Deep Panuke was \$55 million Canadian dollars.
- 781,538 person hours of work by Nova Scotians.
- 114,554 person hours of work by Canadians from other provinces.
- 986,312 person hours of work carried out within Nova Scotia.

Person Hours (January-December 2012) & Cumulative Hours

	2012	CUMULATIVE
CATEGORY BY RESIDENCE	PERSON HOURS	PERSON HOURS
Nova Scotia Residents	781,538	3,632,196
Canadian Residents from other provinces	114,554	548,778

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 (CNSOPB). This report covers the period from January 1, 2012 to December 31, 2012.

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 employees and contract staff.

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, and environment, health, safety and quality.

Through 2012, Encana PFC contractor SBM maintained its office in Dartmouth, NS near the offshore supply base.

At December 31, 2012, the total complement of Encana employees and contract staff supporting the Deep Panuke project was 45. During the year, Encana personnel worked at the Encana office, at Deep Panuke pipeline landfall in Goldboro, the offshore supply base in Dartmouth or offshore at the PFC in the Deep Panuke field.

III. Business Opportunities & Supplier Development

III.I Communication of Business Opportunities

In 2012, Encana and SBM shared business opportunities for Deep Panuke activities 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, postings to the electronic bulletin board BIDS Nova Scotia and an email distribution list comprised of disadvantaged group representatives.

The link to the Encana website for Deep Panuke business opportunities is <http://www.encana.com/communities/canada/atlantic/business-opportunities/>. Beginning in May 2012, Encana added a section to these web pages for SBM supplier opportunities.

To augment the ongoing channels of distribution, in 2012 Encana used social media, particularly Twitter, to notify followers of business opportunities released by Encana for Deep Panuke.

Deep Panuke business opportunities are also 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 by The Maritimes Energy Association for its members. Media in Nova Scotia have reported on Deep Panuke business opportunities as well.

To liaise with the Nova Scotia supply community, Encana supported the Core energy conference in October 2012. The Core program included an update to delegates by Mike Selleck, the Vice-President responsible for Deep Panuke. An Encana representative also assisted with programming for Core. As well, Encana supported the Strait Superport conference in July 2012.

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 inform and involve them in the Deep Panuke project.

In 2012, 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, phone calls, email notices, social media (Twitter, Facebook and Linked In), 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 2012, four project newsletters (March, June, September and December) 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, and distributed to a wide audience through mailings and insertion in publications as well as distribution 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. In 2012, updates were posted to the Developing Skills Initiative section, the Business Opportunities pages, the Major Contractor page and the page for the Deep Panuke Education & Training and R&D Fund. As well, offshore video from Deep Panuke and new photographs of the project were posted to the Encana Multimedia Gallery at <http://www.encana.com/news-stories/multimedia-gallery/>

Through 2012, there were 13,635 unique visitors and 17,560 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 project business opportunities, project newsletters, contact information, filings and applications and community information.

Encana also monitors a general project information email box (dpinfo@encana.com), and members of the Deep Panuke team respond regularly to unsolicited inquiries about employment and business opportunities with the project.

IV. Business Expenditures and Project Employment

IV.I Business Expenditures

The total expenditure for Deep Panuke during the period of January 1-December 31, 2012 was \$54.9 million Canadian.

IV.II 2012 Person Hours

Total Nova Scotia Person Hours from January 1 to December 31, 2012 for Deep Panuke were 781,538 and Other Canadian hours were 114,554 with 986,312 hours of work performed within the Province of Nova Scotia during the period.

In 2012, Nova Scotia person hours focused on support for the hook-up and commissioning of the Deep Panuke production field centre, and for ongoing project management.

The cumulative Nova Scotia Person Hours to date are recorded as 3,632,196. Total cumulative hours of work performed within the Province of Nova Scotia was 4,784,620.

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

In 2012, regular contact has been 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, Nova Scotia Advisory Council on the Status of Women, the Centre for Women in Business at Mount Saint Vincent University, the Mi'kmaq Rights Initiative and Immigrant Settlement and Integration Services or ISIS.

During 2012, to directly share information on Deep Panuke contracting opportunities with disadvantaged groups, notifications of business and employment opportunities were emailed by Encana directly via a distribution list to immediately alert key representatives.

To supplement direct notifications of business and employment opportunities, in 2012, Encana placed advertising in local publications focusing on disadvantaged groups: the Black to Business magazine, Entrepreneurs with Disabilities 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 October 2012, Encana supported the participation of representatives of the Centre for Women in Business, the Black Business Initiative and the Entrepreneurs with

Disabilities Network at the Core energy conference in Halifax, a networking and learning opportunity regarding the offshore oil and gas industry.

As well, in 2012, 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. Among the groups receiving support in 2012 were:

- Easter Seals
- Atlantic Provinces Special Education Authority
- Canadian Paraplegic Association (Nova Scotia)
- The Marguerite Centre
- Encana Native Council Opportunities Fund
- AIDS Coalition of Nova Scotia
- L'Arche Halifax
- Bridgeway Academy
- Sunnyville Multicultural Festival
- Canadian Cancer Society
- Learning Disabilities Association of Nova Scotia
- Strive Learning Centre for Children
- Special Olympics
- Mi'kmaq Benevolent Society

In addition, to support organizations representing members of disadvantaged groups, a representative of Encana attended the event held March 29 in Halifax on the United Nations Convention on the Rights of Persons with Disabilities held in commemoration of the International Day for the Elimination of Racial Discrimination. The event was organized by the Nova Scotia Human Rights Commission.

V.II Aboriginal Liaison

Encana liaises with representatives of the Mi'kmaq Rights Initiative, the Encana Native Council Opportunities Fund and the Nova Scotia Department of Energy (Aboriginal Business Development Officer) to facilitate the communication of business and employment opportunities at Deep Panuke.

Through 2012, 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. During the year, the focus for ENCOF was on tuition disbursements for technical schools and university studies. As well, networking increased in 2012 between ENCOF and programs and organizations related to trades apprenticeships. In 2012, there were 17 individuals undertaking post-secondary training (including University, Nova Scotia Community College, Atlantic Petroleum Training College, Commercial Safety College, Operating Engineers Training Institute and Maritime Environmental Training Institute) in fields related to the offshore oil and gas industry such as Bachelor of Arts – Aquatic Resources, Natural Resources

Environmental Technology, entry level floorhand, electrician apprenticeship, environmental health and safety and marine engineering. ENCOF representatives continued to support careers fairs, and made presentations at Native Council zone meetings and other community gatherings to explain ENCOF and the educational opportunities that could be supported by it. ENCOF representatives continued to meet with potential employers and labour organizations of relevance to the offshore oil and gas industry to share employment information on students who have completed training and to discuss possible partnerships and employment requirements. ENCOF representatives also continued to meet with representatives of training organizations such as Survival Systems, the Atlantic Petroleum Training College and the Operating Engineers Training Institute to discuss entrance requirements and training programs offered. Encana participated in an ENCOF-organized career fair held in Dartmouth, NS in March 2012. Other career fairs and careers exploratory gatherings attended by ENCOF took place in Sydney and Truro in April 2012, as well as information sessions under the Building Aboriginal Skills to Employment program in Truro, Dartmouth and Halifax in September 2012 and Bridgewater, Sydney and Eskasoni, NS in October 2012.

Encana maintains contact with the Kwilmu'kw Maw-Klusaqn Negotiation Office (KMKNO) Mi'kmaq Benefits Officer on behalf of the Assembly of Nova Scotia Mi'kmaq Chiefs (the Assembly). In 2012, the officer helped to advance the five-year agreement between Encana and the Assembly regarding education and training and related opportunities from the Deep Panuke project. During the year, application guidelines and processes were established for funding requests under the agreement. Information on the guidelines and process were then shared with all communities and organizations. Three applications for funding were approved in 2012. One application, made by KMKNO and the Mi'kmaq Employment Training Secretariat (METS) is for the creation of a skills database of Mi'kmaq individuals and businesses. This database will assist with tracking capacity and training to respond to the needs of the offshore oil and gas industry by readily knowing what and who is available for contracting and/or employment opportunities. Discussion regarding the database is taking place with Mi'kmaw organizations. Funding for the initiative is being sought from the federal and provincial governments to supplement this project. The second application by METS supports a welding program for the Mi'kmaw at the Nova Scotia Community College, with the goal of graduating 15 students by October 1, 2013. Recruitment for the program is under way. The third application by Wagmatcook supports tuition for 15 students in Unama'ki to participate in an electrical construction and industrial program run by the Nova Scotia Community College. As well, a meeting was held with SBM to discuss future contracting and employment needs related to Deep Panuke, and what requirements would be for Mi'kmaq businesses and individuals to bid on work or to attain employment.

Encana also provided information on Deep Panuke and the offshore oil and gas industry, including key industry partners, to the Aboriginal Business Development Officer at the Nova Scotia Department of Energy. As well, an Encana representative attended the energy seminar in November 2012 hosted by the Nova Scotia Office of Aboriginal Affairs.

V.III Persons with Disabilities

In 2012, Encana continued to work with the Entrepreneurs with Disabilities Network (EDN). EDN promotes and facilitates entrepreneurship among persons with disabilities and has approximately 500 members across Nova Scotia. Encana's support in 2012 was directed to EDN's emerging entrepreneur award and small business week activities. The entrepreneur award event was attended by 71 EDN members (with a total of 147 members and community partners attending) while the small business week activities directly helped 31 EDN members. Encana also supported three EDN members to attend a Centre for Women in Business event, assisting them with the continued development of their businesses.

In December 2012, a representative of Encana attended the 5th Annual Symposium on Inclusive Employment and Education in Halifax. Encana also supported participation by three clients of EDN at the symposium.

Encana also liaised with representatives of Easter Seals in Nova Scotia and the Canadian Paraplegic Association (Nova Scotia) to provide support for annual fundraising activities. In 2012, Encana continued to utilize the services of New Leaf Enterprises, a division of Easter Seals that works with adults with physical disabilities to develop job skills and to support employment opportunities. New Leaf coordinates the mail-out of the quarterly Deep Panuke project newsletters.

V.IV Members of Visible Minorities

In 2012, Encana engaged with representatives of the Black Business Initiative (BBI), Immigrant Settlement and Integration Services (ISIS) and Imhotep Legacy Academy to support their programming and to share information on Deep Panuke.

A representative of Encana attended the BBI's Business Summit in June 2012 and supported the participation by representatives of ISIS at an entrepreneurship expo in Halifax in April 2012. Encana's work with ISIS in 2012 also included support for two teams of students (one for the 2011-2012 school year and one for the 2012-2013 school year) to participate in Junior Achievement's Company Program, thus helping to foster entrepreneurial and business skills among immigrant youth. The participating students attended Ridgecliff Middle School, Citadel High School and Halifax West High School in Halifax, NS.

In May 2012, a representative of Encana attended the school year closing event for the Imhotep program. Encana's support for Imhotep saw the program delivered at Saint Andrew Junior School in Antigonish, NS, with students in Grades 6 to 8 participating, and at Sir John Hugh Gillis Regional High School. The Imhotep 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.

In September 2012, a representative of Encana met with the new executive director of the Black Business Initiative to share information on Deep Panuke.

As well, Encana's support for the SuperNOVA program at Dalhousie University in 2012 supports the delivery 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

Recognizing that attracting more women to careers in sciences, trades, technology and engineering will help to increase their participation in the offshore oil and gas industry, Encana engaged in several initiatives in 2012 that were aimed at achieving this goal.

Encana continued to fund in 2012 the Bread and Roses Bursary at the Nova Scotia Community College (NSCC) to support female students interested in science, trades and technology careers. Students receiving the bursary have pursued studies in fields such as welding, metal fabrication and occupational health and safety. The fund supports students at College campuses across the province.

As well, new funding from Encana for Techsploration's Women in Action web video series saw one new video added to the series in 2012. The video is of a tugmaster working at the Strait of Canso, NS. 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 utilize a medium preferred by youth to convey career and educational information. Encana profiled the Techsploration program, and the activities of the volunteer mentor based in the Deep Panuke office, on the Encana website at <http://www.encana.com/news-stories/our-stories/community-techsploration.html>

In 2012, a representative of Encana met with the new executive director for the Centre for Women in Business at Mount Saint Vincent University to provide an update on Deep Panuke and a representative of Encana attended the 14th National Conference of the Canadian Coalition of Women in Engineering, Science, Trades and Technology in May 2012 in Halifax.

As well, in 2012 a female engineer in the Deep Panuke office became a volunteer for programs organized by the Chair's office, Women in Science and Engineering (WISE) Atlantic Region based at Mount Saint Vincent University.

V.VI Diversity Training and Reporting

In September 2012, Encana conducted a voluntary diversity survey of the workforce in the Halifax office supporting Deep Panuke. The following table explains the results of the survey.

Survey Group	# Responses Received	Percentage
Aboriginal persons	0	0
Women	22	34%
Members of visible minorities	2	3%
Persons with disabilities	2	3%
None of the groups apply	31	48%
No response	8	13%

In 2012, new hires to Deep Panuke were required to participate in on-line Aboriginal Awareness Training offered by Encana.

Data from Encana's contractors for 2012 with respect to diversity is reported as the following:

Group	Number of Positions
Aboriginal persons	2
Women	41
Members of Visible Minorities	7
Persons with Disabilities	
TOTAL (January-December 2012)	50

VI. OSEA – Offshore Strategic Energy Agreement

VI.I Update on Activities

The OSEA signed between the Province of Nova Scotia and Encana in 2006 outlined certain commitments made by Encana with respect to specific industrial and employment opportunities for Nova Scotians resulting from the development of the Deep Panuke project.

From January 1 to December 31, 2012, 133,050 hours of work were conducted in Nova Scotia with 121,578 of these hours being Nova Scotia Person Hours on initiatives described in the OSEA. From the commencement of the OSEA, 2,009,029 hours of work have been conducted in Nova Scotia with 1,811,271 of these hours being Nova Scotia Person Hours.

In addition to the OSEA hours, additional Nova Scotia hours were recorded in 2012 for work activities such as helicopter and supply vessel support for offshore hook-up and commissioning. During this period, 853,262 hours of work were conducted in Nova Scotia with 659,960 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: offshore supply vessel, onshore drilling rig program, 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.

- Developing Skills Initiative

The Initiative proved to be a successful mechanism to provide Nova Scotians early in their careers with relevant and marketable experience in the offshore oil and gas industry. Of the 11 individuals who participated in the Developing Skills Initiative, by December 31, 2012, 10 had assumed new roles in the oil and gas industry, building on the skills and expertise from their work on the Deep Panuke project. Two of the 10 accepted engineering positions with Encana at Deep Panuke. These developments in 2012 close out Encana's support for the Initiative.

VII. Education & Training/ Research & Development

In 2012, 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 Deep Panuke Education & Training and Research & Development Fund (the Fund)

To December 31, 2012, Encana confirms spending of approximately \$7.0 million to date on education & training and research & development projects under the Fund.

VII.II Calls for Proposals

In November 2012, the fourth call under the Fund was launched under the theme of environment for the offshore oil and gas industry. Applicants were invited to propose research aimed at reducing environmental risk to any aspect of petroleum exploration, development and production operations offshore Nova Scotia. Submissions were also welcome on developing made-in-Nova Scotia, cost effective approaches to improve environmental performance and efficiencies related to the offshore. A total of 13 submissions were received from researchers in Nova Scotia in response to the call. An expert review committee was established to review the submissions in Q1 2013, with awards under the call expected to be made in the spring of 2013.

Also in 2012, grants were awarded to two research projects at Saint Mary's University under the third Call for Proposals under the Fund. The call had launched in November 2011 under the theme of geosciences for Nova Scotia's offshore.

Information on all Calls for Proposals under the Fund is posted on the Encana website at:

<http://www.encana.com/communities/canada/atlantic/training-research-fund.html>

VII.III Education & Training Funded Projects

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

- Graduate Offshore Surveyor Training

An initiative to provide funding for new graduates from the Centre of Geographic Sciences (NSCC) in Lawrencetown, NS to participate in work terms during Encana's 2012 subsea asset survey. Two graduates, employed by DOF Subsea, were posted to the Atlantic Condor offshore supply vessel during the summer of 2012 while the survey was being conducted over the Deep Panuke natural gas export pipeline and other subsea assets. The work on board the Condor provided the graduates with relevant, hands on experience conducting offshore surveys, an important monitoring activity for an offshore oil and gas project like Deep Panuke.

- Techsploration

Encana is supporting a three-year extension to the Women in Action web video series featuring women in fields where they are under-represented, in particular careers related to the offshore oil and gas industry. In 2012, video preparations and shooting commenced for three of the nine new videos being produced over three years, with one new video of a tugmaster added to the series by the end of the year. As well, during 2012, filming was completed for the videos of the former President of ExxonMobil Canada and a marine survey technician. When completed, the videos will be added to the readily accessible online library of interviews with women who are working in science, trade or technology fields – fields of relevance to offshore oil and gas development in Nova Scotia. By December 2012, there were approximately 50,000 hits on the series. It is anticipated that the number of hits will increase going forward as the video series is now housed on the Nova Scotia Department of Education's servers, allowing for viewing in schools. As well, through the first six months of 2012, a female Encana loss control engineer mentored students from Prince Arthur Junior High School in Dartmouth, NS, escorting them during a tour of the offshore supply base in Dartmouth, NS and the Atlantic Condor supply vessel. The mentor also visited the school and spoke with students in grade nine about their high school course selections. Her mentorship of a new Techsploration team will continue for the 2012-2013 school year. 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 Saint Andrew Junior School in Antigonish, NS. Imhotep encourages participants to consider careers in science,

technology, engineering and mathematics fields (STEM), core fields for a career in the offshore oil and gas industry in Nova Scotia and fields in which African Nova Scotians are under-represented. During the 2011-12 school year, seven students in Grades 6 to 8 participated at Saint Andrew. As well, 11 students participated in a virtual tutoring program 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. Four students from Antigonish had the opportunity to participate in Imhotep's First Lego League summer camp at the Faculty of Engineering and Faculty of Computer Science at Dalhousie University. The camp was an opportunity for students to develop programming and presentation skills for upcoming team competitions. At the start of the new school year in the fall of 2012, eight students from grades 6-8 at Saint Andrew participated in the Imhotep program under the leadership of three science students from St. Francis Xavier University. Building on the success of the program in Antigonish, one student participating in Imhotep at Saint Andrew has been selected for a post-secondary scholarship to pursue a STEM-related program at Dalhousie University.

- Regional Science Fairs

In 2012, 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 2012 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 two Youth Science Awards at the showcase, an annual award to student(s) selected by his or her peers at the showcase. As well, an Encana loss control engineer at Deep Panuke provided a keynote address to students on engineering careers in the offshore oil and gas industry. 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. 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. In 2012, Encana supported six TechShops, one Young Women's Conference and one African Nova Scotia Youth Conference. A total of 576 students from grades 9 to 12 participated. The Young Women's Conference was held in March 2012 at the NSCC Burrige campus in Yarmouth, NS and was attended by 52 grade 9 girls from the Tri-County Regional School Board. The African Nova Scotia Youth Conference was held in February 2012 at the NSCC Kingstec campus and was attended by 40 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.

- Encana High School Scholarship

Funding from Deep Panuke will support students from six public school boards in Nova Scotia to receive the scholarship beginning in the fall of 2012. Each of six public school boards selected one graduating student to receive the \$2,500 annual scholarship renewable for up to four years. All six students are pursuing studies in engineering at Nova Scotia universities.

- SuperNOVA

In 2012, SuperNOVA at Dalhousie University moved forward with the second year of four, week-long science day camps and completed two after school clubs directed to African Nova Scotian youth. The camps, in July and August 2012, took place in Halifax, East Preston, Antigonish and Sydney with participation by 102 students. Camp participants in Halifax, Antigonish and Sydney were recruited through the Imhotep Legacy Academy program, ensuring continuity for these students in STEM-related activities throughout the year. Students of African heritage are under-represented in STEM fields. The SuperNOVA programming is focused on supporting students with demonstrated interest in STEM, which is a key area of study for careers 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. Encana's support for the EFS program in 2012 focused on the distribution of a monthly newsletter about energy-related topics, featuring news from the offshore oil and gas industry in Nova Scotia. In 2012, nine monthly newsletters were distributed to 958 recipients. In 2012, Encana also assisted EFS with editorial updates to the EFS website, particularly the offshore oil and gas subsection.

- 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 June 22, 2012, SOTR reached 10,150 educational contacts in Nova Scotia at 68 schools across seven public school boards. With Encana's support in the past three years, SOTR has reached more than 68,300 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.

- 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. Studies in these fields are key to careers in the offshore oil and gas industry. In 2012, with Encana's support, SITS volunteers delivered presentations in classrooms across the province. The majority of requests were received from schools in the Halifax Regional School Board (46 per cent) and the Chignecto Central Regional School Board (24 per cent). By subject, the most frequently requested presentations were in biology, geology, environment, physics and weather. SITS volunteers also judged 12 science fairs (75 judges from SITS judged 800 students) and mentored 170 students. Scientists from SITS shared their knowledge with nearly 200 teachers via presentations and activities through school visits and workshops. In total, approximately 5,100 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. SITS now maintains a database of 325 active (45 recruited in 2012) science volunteers - among them scientists, engineers, IT specialists, mathematicians and others from the public and private sectors, universities and not-for-profit organizations.

- Ducks Unlimited – Project Webfoot

Project Webfoot is a science educational program, with classroom and field components, that aims to communicate the value of wetlands to elementary school-aged children. For the 2011/2012 school year, Encana's support for Project Webfoot meant 20 classes from 14 schools representing 468 students received the program's classroom resource kit. These classes subsequently participated in a field trip in the spring of 2012 as part of the program, with more than half the students visiting the Dagger Woods site near Antigonish. The Dagger Woods site, also developed with Encana's support, enables students from Northeastern Nova Scotia to benefit from the field component of the Project Webfoot program.

- Dalhousie Remotely-Operated Vehicle (ROV) Team

Encana's support for the Dalhousie ROV team was directed to assist with the team's participation at the Marine Advanced Technology Education (MATE) International ROV competition in June 2012. At the competition, student teams competed in interactive real-world challenges similar to what industrial ROVs are used for in the offshore oil and gas industry. Prior to participating in the competition, team members visited the Deep Panuke ROV on the Atlantic Condor supply vessel and talked with the representatives of Oceaneering who operate the ROV.

- Bread and Roses Bursary

The bursaries, offered through the Nova Scotia Community College (NSCC) Foundation, are aimed at supporting women pursuing an education in trades, technology or science at NSCC campuses across Nova Scotia. Studies in these areas are relevant to careers in the offshore oil and gas industry. Over three years, with Encana's support for the bursaries, a total of 55 women have benefited (with 20 of that number in 2012), pursuing studies in fields related to the development of the offshore such as welding, metal fabrication and occupational health and safety.

VII.IV Other Education & Training

Encana actively supports local universities through the employment of students enrolled in co-op programs at Nova Scotian institutions. Since May 2007, 38 students have joined the Deep Panuke team, generally on a four-month term. In January 2012, Encana advertised at Dalhousie University for a co-op engineering student position for the May-August 2012 work term. In May 2012, Encana posted an opportunity for student co-op positions for a business/commerce and engineering student co-op position for the September-December 2012 work term. 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.

In addition, a production engineering representative from Deep Panuke participated in the Halifax Career Fair in September 2012 as part of the Encana team to share information on engineering careers in the oil and gas industry.

A representative of Encana attended the provincial science teachers' conference at Halifax West High School in Halifax, NS in October 2012 to provide energy information kits to educators. The kits include information on geology, careers in the offshore oil and gas industry and science education. Materials from the Atlantic Geoscience Society, the Canadian Centre for Energy, the Canadian Association of Petroleum Producers and the Petroleum Human Resources Council of Canada are included in the kit. Since 2008, Encana has distributed more than 200 kits to educators in Nova Scotia.

To support the development of staff at Deep Panuke, Encana funded training totaling \$64,603 from January 1 – December 31, 2012. Cumulative training now totals \$422,874. Funded training in 2012 included:

- MSc Engineering – process safety
- Society of Petroleum Engineers – evaluation of Canadian oil and gas properties
- PetroSkills Canada – gas production engineering
- Petroleum engineering software training
- Schlumberger asset modeling
- ISO 9001: 2008 standards
- Project management essentials

- Petroleum Institute for Continuing Education – oil & gas pipeline systems code
- Evaluation of Oil & Gas Properties

In the area of education & training, in 2012 contractors reported 298 placements for training totaling \$171,828. Funded training included:

- Online modules regarding safe food handling and health and safety
- Safe handling of chemicals, sea water tanks and lab instrumentation
- Methanol training
- Wilderness first aid
- MSc in Environmental Science
- Confined space entry and rescue
- Geomatics
- Mechanical Engineering

VII.V 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 project was completed in 2012.

- Produced Water – Pro-Oceanus

A project led by Pro-Oceanus of Bridgewater, NS, including partners at the Centre for Offshore Oil, Gas Energy Research (COOGER), to develop a new ultraviolet (UV) fluorometry system to track oil dispersion in the ocean. Results from a first round of experiments suggest that at high oil concentrations (of more than 300 parts per million), a fluorescence intensity ratio (FIR) can be used as an index of how efficiently the oil is dispersed. At lower concentrations, oil can still be tracked, but FIR cannot be used to determine dispersion efficiency. Additional work is required to determine how a UV fluorometer could be deployed to track total oil and dispersion efficiency at high concentrations, and then total oil only as the oil plume spreads.

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

Following dissemination of the research findings at conferences and via the Internet, the research was submitted to the journal *Occupational Ergonomics* and was published as follows: Taber, M. J., Sayle, S. & Carroll, J. (2012). The impact of personal protective equipment and breathing apparatus on offshore lifeboat evacuation time. *Occupational Ergonomics*, 10, 189-206.

- Integrated Bird Management at Offshore Installations

In 2012, researchers from Acadia University continued to progress the study investigating potential bird-platform interactions at Encana's Deep Panuke platform. During the year, nearly 300 birds from seven different species were tagged, banded or had telemetry devices attached at Sable Island, Country Island, Bon Portage Island and in Southern Cape Breton. These tags and devices enable researchers to track bird movements during foraging trips and migration periods to identify potential interactions. To date, gull tracking has identified seasonal periods of bird associations with the platform and with supply vessels servicing the platform. Leach's Storm petrels tracked during foraging trips from Country Island also showed potential overlap with platforms in the vicinity of Sable Island. The researchers were successful in 2012 to secure extended funding from the Natural Sciences and Engineering Research Council (NSERC), matching Encana's contribution, to assist with their work. The researchers share information on the study via a blog, which also assists with receiving reports of sightings of the tagged birds. See <http://sableislandgulls.wordpress.com/>

- Beached Bird Survey on Sable Island

This long-term study of seabird oiling rates and generic identification of oil contamination found on bird plumage and/or on the beach at Sable Island provides information on background levels of oiling and possible sources. The research enables the offshore oil and gas industry to assess its potential impact on seabirds in the region, and to investigate any changes in oiling rates or oiling events that may be attributed to oil and gas activities.

- Nova Scotia Energy Research & Development Forum – May 2012

Support from the Fund was directed to an Encana panel that provided a platform for Nova Scotia researchers to explain progress with their projects. Each of the four researchers on the panel received funding under the Fund. Dr. Mark Fleming from Saint Mary's University spoke about his research into safety culture metrics and the development of a managers' guide to promote a positive safety culture on offshore facilities. Dr. Graham Gagnon, Canada Research Chair in Water Quality and Treatment from Dalhousie University, updated delegates on his research to

find a chemical-free approach to treating produced water. From St. Francis Xavier University, Dr. Edwin DeMont provided an overview of research into bio-fouling on submerged surfaces and how examining the surfaces of sea creatures such as shellfish may lead to “bio-inspired” solutions. Dr. John Kozey from Dalhousie University described his research into new 3D laser scanning techniques to measure body shapes and sizes, and how more precise measurements can impact the industrial design of equipment and facilities for the offshore oil and gas industry. To view presentations from the researchers under the Fund, see <http://www.offshoreenergyresearch.ca/Events/NSEnergyRDForum2012/tabid/454/Default.aspx>

- Climate Technical Gear (formerly Helly Hansen Canada)

Progress continued with research to study clothing system improvements to provide added safety for offshore helicopter transport suit wearers. Four prototypes have been developed and once the clothing styles are finalized, more thermal manikin testing is planned at a cold ocean research facility for various amounts of water leakage and escape buoyancy using the HTS-1 helicopter passenger transport suit. A summary of the research was included in the recent Responsible Canadian Energy report by the Canadian Association of Petroleum Producers, of which Encana is a member. The link to the report is here: <http://www.capp.ca/rce/atlantic-canada/people/safety/> Funding for the research was awarded by Encana under the second call for proposals to researchers in Nova Scotia under the Deep Panuke Education & Training and R&D Fund. The theme for the call was offshore safety and risk.

- GeoSpectrum Technologies – Alternative air gun technology

GeoSpectrum Technologies of Dartmouth, Nova Scotia, was awarded funding under the first call for proposals from the Deep Panuke Education & Training and R&D Fund for a research project to develop a viable alternative technology to replace air guns for conducting marine seismic surveys. The research project is complete. GeoSpectrum has posted information regarding the research to its website:

http://www.geospectrum.ca/index.php?option=com_content&view=article&id=71&Itemid=37

VII.VI Other Research & Development

In 2012, 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. The ESSIM initiative ended with a final evaluation and review session held in May 2012. Encana awaits next steps regarding integrated ocean management on the Scotian Shelf.

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 CNSOPB's SARA (Species at Risk) Working Group.

In addition, representatives of Encana and SBM attended the 2nd Annual Nova Scotia Oceans Industry Research Connections Session in Halifax in January 2012. Encana also supported the annual meeting of the Fishermen and Scientists Research Society, held in February 2012 in Truro, NS and the Atlantic Universities Geoscience Conference hosted at Dalhousie University in October 2012.

VIII. Activity Forecast for January to June 2013

In 2012, Encana focused on:

- Project transition from construction to operations.
- With SBM, the ongoing hook-up and commissioning activities on the Deep Panuke PFC.
- Completion of the 2012 subsea asset integrity survey.

Project activity at Deep Panuke is organized into functional elements. The following section describes activity anticipated from January 1 to June 30, 2013 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. 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 interfield flowlines, umbilicals and the trees are expected to be completed in the first half of 2013. The trees, which are controlled from the PFC and control the flow of fluids from the wells, will be commissioned shortly before first gas. The subsea equipment (i.e. flowlines, umbilicals, trees and wellhead and subsea isolation valve structure) is subject to Encana's ongoing asset integrity management plan for Deep Panuke, thus subsea inspections utilizing tools such as a remotely-operated vehicle will be started in the first half of 2013.

VIII.IV Element 3 – Export Pipeline

In 2013, final commissioning punch list items for the export pipeline and inshore facilities will be cleared. Gas will be shipped through the pipeline from the Maritimes & Northeast Pipeline located in Goldboro to the PFC which will be utilized for final commissioning activities of the PFC equipment. The subsea section of the export pipeline is subject to Encana's ongoing asset integrity management plan for Deep Panuke, thus subsea inspections utilizing tools such as a remotely-operated vehicle will be started in the first half of 2013. The onshore facilities will continue to be monitored and inspected in accordance with Encana's ongoing asset integrity management plan for Deep Panuke.

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

Work continues on final construction and commissioning activities with continued focus on readiness for the introduction of hydrocarbons. Construction activities are nearing completion with final leak testing, insulation of piping systems and completion of remaining systems and equipment. Commissioning work continues as systems are tested and then handed over to Operations.

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

All remaining production equipment including the pipeline and subsea equipment is ready and 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 continues to make progress on operational readiness activities in preparation for the start-up of production operations. The operations team continues to support the hook-up and commissioning (HUC) work program for the PFC. Particular focus is on managing the provision of logistics services including helicopter transport, support vessels, ROV services and supply base. During the first half of 2013, the team will be focused on the close-out of actions from a series of ready for operations audits in preparation for the safe start-up of the facilities.

The SBM Operations team continue to be engaged in the operation and maintenance of the PFC utilities systems in support of the HUC work force. These activities continue through to the completion of the commissioning program. In addition to ongoing support to the remaining commissioning activities, the operations team continues with implementation 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.