It has proven to be an ever-changing and expanding industry that has presented the promise of future opportunities for the country and transformed the face of Atlantic Canada. “It” is, of course, the region’s offshore oil and gas industry, an industry that has pumped billions of dollars into the Canadian economy and provided thousands of employment opportunities both federally and provincially.

Canada’s first offshore well was drilled between 1943 and 1945 in eight metres of water, 13 kilometres off Prince Edward Island. Hillsborough No. 1 was drilled from an artificial island made of wood cribbing, rock and concrete, and reached a depth of 4,479 meters before it was abandoned without encountering oil or natural gas. A half-century of effort was invested before the first commercial quantities of crude oil were produced off Nova Scotia in 1992 from the Cohasset-Panuke project.

Nearly 20 years later, offshore petroleum development is considered one of the fastest growing sectors in the country. To date, there are four major oil fields currently producing in the Atlantic Canada offshore and the future is brighter than ever before.

The past fiscal year has brought many changes and new discoveries for the oil and gas industry. Here are a few of the year’s highlights.
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t is the foundation of the Newfoundland and Labrador oil and gas industry, an industry which is powering the provincial economy. The Hibernia oilfield is located in the Jeanne d’Arc Basin on the Grand Banks, about 315 km east-southeast of St. John’s. As the oldest and largest operating field, the $5.8-billion development is now considered the crown jewel of the industry.

Early engineering analyses concluded that the most appropriate drilling platform for the field would be in the form of a gravity base structure (GBS) because the Hibernia field is located in an environment that is subject to extreme weather conditions consisting of thick fog, rogue waves, hurricanes and nor’easter winter storms.

When development of the oilfield was approved in 1986, it was estimated to contain 522 million barrels of recoverable crude. The Canada-Newfoundland and Labrador Offshore Petroleum Board listed the total oil field production at 716.1-million barrels as of March 2011. The update also listed the estimated reserves as being 1,395 billion barrels of oil.

The development of Hibernia laid the ground work for the development of Terra Nova and White Rose, the province’s two other offshore oil projects currently in operation on the Grand Banks.

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SUPPLIERS OF CABLE TO ALL MAJOR PROJECTS IN ATLANTIC CANADA

NR20 | NATURAL RESOURCES MAGAZINE | March/April 2012
Hibernia was discovered in 1979 and produced first oil on November 17, 1997.

It consists of two principle reservoirs: Hibernia and Ben Nevis/Avalon.

It is operated by Hibernia Management and Development Company Ltd. (HMDC) which is owned jointly by ExxonMobil Canada (33.125 per cent), Chevron Canada Resources (26.875 per cent), Suncor (Petro-Canada) (20 per cent), Canada Hibernia Holding Corporation (8.5 per cent), Murphy Oil (6.5 per cent) and Statoil Canada Ltd. (five per cent).

Hibernia produces conventional light crude oil.

According to the C-NLOPB, it holds an estimated 1.395 billion barrels of oil, of which 736.1-million barrels were produced as of March 21, 2011.

Hibernia produced an average of 153,000-million barrels of oil per day in 2010-2011.

Hibernia has seen many updates in the past year: industry officials approved a DPA (Decision Report 2010.02) that allowed development of the Hibernia Southern Extension. The approval also granted approval for the staged development of the Cape Island and Catalina secondary reservoirs.

Four new wells were drilled from the existing Hibernia platform in 2010-11, including the B-16 56, which is the longest well drilled to date. This fiscal year also saw the completion of Hibernia B-16 52 and B-16 54V, a producer and injector pair in the Hibernia South AA2 Block. The Hibernia B-16 48Y well was also completed. The blocks are estimated to contain more than 48-million barrels of oil.

Industry officials reported expenditures of $486 million for the 2010-2011 fiscal year, with 76 per cent Canadian content including 49 per cent Newfoundland and Labrador content. As of March 31, 2011, total direct employment in the province in support of the Hibernia project was reportedly 1,690 people, though this number was not confirmed by HMDC.

The blocks are part of the main Hibernia field and are estimated to contain more than 48-million barrels of oil.

Hibernia originally had an estimated lifespan of 20 years. It is anticipated that it will continue to produce until 2040.

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Located 350 km east-southeast of St. John’s, Newfoundland and 35 km southeast of Hibernia, the Terra Nova oil field was first discovered in 1984 by Petro-Canada. Field reserves have been estimated at 516 million barrels (operator estimate, year end 2010). The $2.8-billion project began production in 2002, and has a maximum approved production rate of 28,620 cubic metres of crude oil per day. As of December 31, 2011, total production was reported to be 327 millions barrels of oil.

Terra Nova is subdivided into three major structural blocks: the Graben, the East Flank and the Far East. The peak annual average oil rate was 134,000 barrels per day in 2003. A total of 30 wells are planned for Terra Nova, including 17 production wells, 10 water-injection wells and three gas injection wells.

Suncor Energy reported expenditures of $249 million for the fiscal year 2010-11, with 76 per cent Canadian content including 59 per cent Newfoundland and Labrador content. As of March 31, 2011, total employment in support of the Terra Nova project was 841 persons.
• The Terra Nova oilfield was discovered in 1984 and produced first oil on January 20, 2002.
• It’s operated by Suncor Energy.
• It is located on the Grand Banks in the Jeanne d’Arc Basin, about 350 km east-southeast of St. John’s.
• Terra Nova is owned jointly by Suncor Energy (37.675 per cent), ExxonMobil Canada Properties (19 per cent), Statoil Canada Ltd. (15 per cent), Husky Oil Operations Ltd. (13 per cent), Murphy Oil Company Ltd. (10.475 per cent), Mosbacher Operating Ltd (3.85 per cent) and Chevron Canada Resources (one per cent).
• It produces conventional light crude oil.
• Terra Nova produced 25-million barrels of oil in 2010 (68 thousand barrels of oil per day).
• Terra Nova produced 16-million barrels of oil in 2011 (43 thousand barrels of oil per day).
• It has an estimated lifespan of 25 years.
• In 2012, Terra Nova will move off-station for an at-shore turnaround. This will enable Suncor to replace the water injection swivel and perform H2S remediation work in the field.
Husky Energy is the operator of the White Rose field and satellite extensions which include North Amethyst and West White Rose. Husky holds a 72.5 per cent working interest in the main White Rose field (Suncor 27.5 per cent), and a 68.875 per cent working interest in the White Rose satellite fields at North Amethyst and West White Rose. Suncor holds 26.125 per cent and Nalcor Energy five per cent.

The White Rose field was first discovered in 1984. It is located 350 km east of Newfoundland, approximately 50 km from both the Terra Nova and Hibernia fields. The $2.35-billion project began production in 2005.

In May 2010, Husky began production from the first satellite tieback offshore Newfoundland and Labrador, North Amethyst, which was discovered in 2006. Initial development has been from the Ben Nevis/Avalon reservoir, and in December 2011, Husky filed a Development Plan Amendment, seeking approval to develop the reserves located in a second, lower formation. These Hibernia formation reserves were confirmed during development drilling.

In September 2011, Husky began production from a two-well pilot program at West White Rose.

According to huskyenergy.com, industrial benefits resulting from offshore petroleum projects range from taxation and royalty revenues to employment and business development opportunities. “More than 16 million person-hours went into the construction phase of White Rose. Of that, more than 75 per cent were from Newfoundland and Labrador, and the rest of Canada. More than 80 per cent of the person-hours for topsides manufacturing and installation was carried out in the province.”

To the end of 2011, more than 181-million barrels of oil had been produced from the White Rose, North Amethyst and West White Rose fields.
The White Rose oilfield was discovered in 1984 and produced first oil in late November, 2005.

It is located on the Grand Banks in the Jeanne d’Arc Basin, about 350 km east of St. John’s.

Partners at White Rose include Husky Energy (72.5 per cent) and Suncor (27.5 per cent).

Partners at the White Rose satellite extensions include Husky Energy (68.875 per cent); Suncor (26.125 per cent) and Nalcor Energy (five per cent).

It produces conventional light crude oil.

Production to date has focused on the Ben Nevis/Avalon reservoir.

The White Rose field has 21 development wells.

To date, more than 181-million barrels has been produced from White Rose, North Amethyst and West White Rose.

Industry officials estimate oil reserves and resources at the White Rose Field to be 305-million barrels of oil, which includes the main White Rose Field, the South White Rose Extension and the West White Rose and North Avalon pools.

During 2010-11, industry officials approved a DPA (Decision 2010.01) that allowed development of the West White Rose area. This amendment proposed a two-well pilot scheme to further assess the feasibility of a full field development in the West White Rose area.

Husky Energy re-entered and completed four wells in the North Amethyst Field utilizing the MODU GSF Grand Banks. Under this program, two producers, North Amethyst G-252 and G-253 and two water injectors, North Amethyst G-251 and G-254 were drilled and completed during 2010-11.
The Deep Panuke natural gas field is located 250 km southeast of Halifax on the Scotian Shelf in 45 metres of water. It was discovered in 1998 and has been in development for more than 10 years. Calgary-based Encana Corporation announced its decision to develop Deep Panuke in 2007. Encana hired Single Buoy Moorings (SBM) to build and operate the production platform at the Deep Panuke gas field.

Delays aside, project-related activity ramped up significantly over the past year and a half. In 2010 alone, Encana spent $305-million on Deep Panuke, followed by another $54 million in the first half of 2011.

The Strait Superport at Mulgrave, N.S. was the centre for Deep Panuke marine programs in 2011, hosting vessels for the subsea and rock placement programs as well as the PFC before its installation offshore at the end of July.

Natural gas from Deep Panuke has been sold to Repsol, a Spanish oil and gas company with the majority ownership of the liquefied natural gas terminal in Saint John.
Deep Panuke is Nova Scotia’s newest offshore project. It was discovered in 1998 and is expected to produce its first gas in 2012. Encana owns the project. The development will produce natural gas. The field has an estimated lifespan of 13 years with an estimated 632-billion cubic feet of recoverable sales gas. The production platform has a design capacity of 300 MM cf/day (300-million cubic feet per day) of natural gas - that’s enough natural gas every day to heat about 500,000 homes. The cost to develop Deep Panuke, not including expenses on a go-forward basis, is an estimated $960-million. The project will have four producing wells and one injection well. Encana contracted Netherlands-based Single Buoy Moorings to operate the PPC for eight years. The gas from Panuke has been sold to Repsol YPF, a Spanish oil and gas company.

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SABLE OFFSHORE ENERGY PROJECT

The Sable Offshore Energy Project is located near Sable Island, 10 km to 40 km north of the Scotian Shelf, in water depths ranging between 20 and 80 metres. The Sable Offshore Energy Project consists of five gas fields: Venture, South Venture, Thebaud, North Triumph and Alma. Together, they contain about 85-billion cubic metres of recoverable gas reserves. The Sable Project is projected to last until the year 2025. An estimated 28 production wells are anticipated for the project.

- The Sable Offshore Energy Project was discovered in 1972 and produced first gas on December 31, 1999.
- It is located near Sable Island, approximately 225 km off Nova Scotia’s east coast.
- Five fields within the Sable development currently produce gas: Venture, South Venture, Thebaud, North Triumph and Alma.
- Alma is owned by ExxonMobil (50.8 per cent), Imperial Oil Resources Ltd. (9.0 per cent), Mosbacher Operating Ltd. (0.5 per cent), Emera Offshore Inc. (8.4 per cent) and Shell Canada (31.3 per cent).
- The other four fields are owned by ExxonMobil (50.8 per cent), Imperial Oil Resources Ltd. (9.0 per cent), Mosbacher Operating Ltd. (0.5 per cent), Pengrowth Corporation (8.4 per cent) and Shell Canada (31.3 per cent).
- Sable produces natural gas.
- It contains an estimated 85-billion cubic metres of recoverable gas reserves.
- Sable has produced 48.2-billion cubic metres of gas as of March, 2011.
- It has an estimated lifespan of 25 years.
- Sable produced an average of 8.7-million cubic metres of gas per day during the 2010-11 fiscal year.
- Sable will stay the course through 2012 and continue producing from its five existing fields.
Hebron is an undeveloped oilfield located offshore Newfoundland and Labrador in the Jeanne d’Arc Basin, 350 kilometres southeast of St. John’s. It was first discovered in 1981. The Hebron field is estimated to have 581-million barrels of recoverable resources.

During the 2010-11 fiscal year, ExxonMobil continued to make progress with its development application. WorleyParsons Canada was awarded the Topsides FEED/EPC contract at an estimated value of $346 million and Kiewit-Aker Contractors was awarded the GBS FEED/EPC contract at a value of $140 million.

ExxonMobil reported expenditures of $93.2 million for the calendar year, with 40 per cent Canadian content including 34 per cent Newfoundland and Labrador content.

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