

# Exploration

## The key to industry continuity

Newfoundland & Labrador has welcomed many intrepid adventurers to its shores. The Norse arrived at about 1000 AD setting the stage for the expeditious explorers for centuries to come. In 2009 we celebrate the 100th anniversary of Captain Bob Bartlett's expedition to the North Pole with Robert Peary. With true grit and tenacity, Bartlett made twenty-eight excursions into the Arctic. He has been quoted as saying, "The truth was I could not stop myself in pursuit of adventure. I was committed to the Arctic. I'd got the poison in my veins."

Ever since Bartlett's heroic voyage, Newfoundland & Labrador remains an area ripe for adventure and exploration. This is especially true in the oil & gas industry. With growing global energy demands and decreasing production from mature petroleum basins, 21st century explorers have been looking increasingly to Newfoundland & Labrador to help meet the world's energy requirements.

Petroleum exploration in the province dates back to the 1830s when oil seeps were discovered by British Settlers at Parson's Pond in Western Newfoundland. 1966 saw the first offshore activity with the two wells drilled on the Grand Banks by Amoco Canada. Except for one oil show in 1973, the first 40 wells on the Grand Banks were dry. But all good explorers, like Bartlett know that persistence is key.

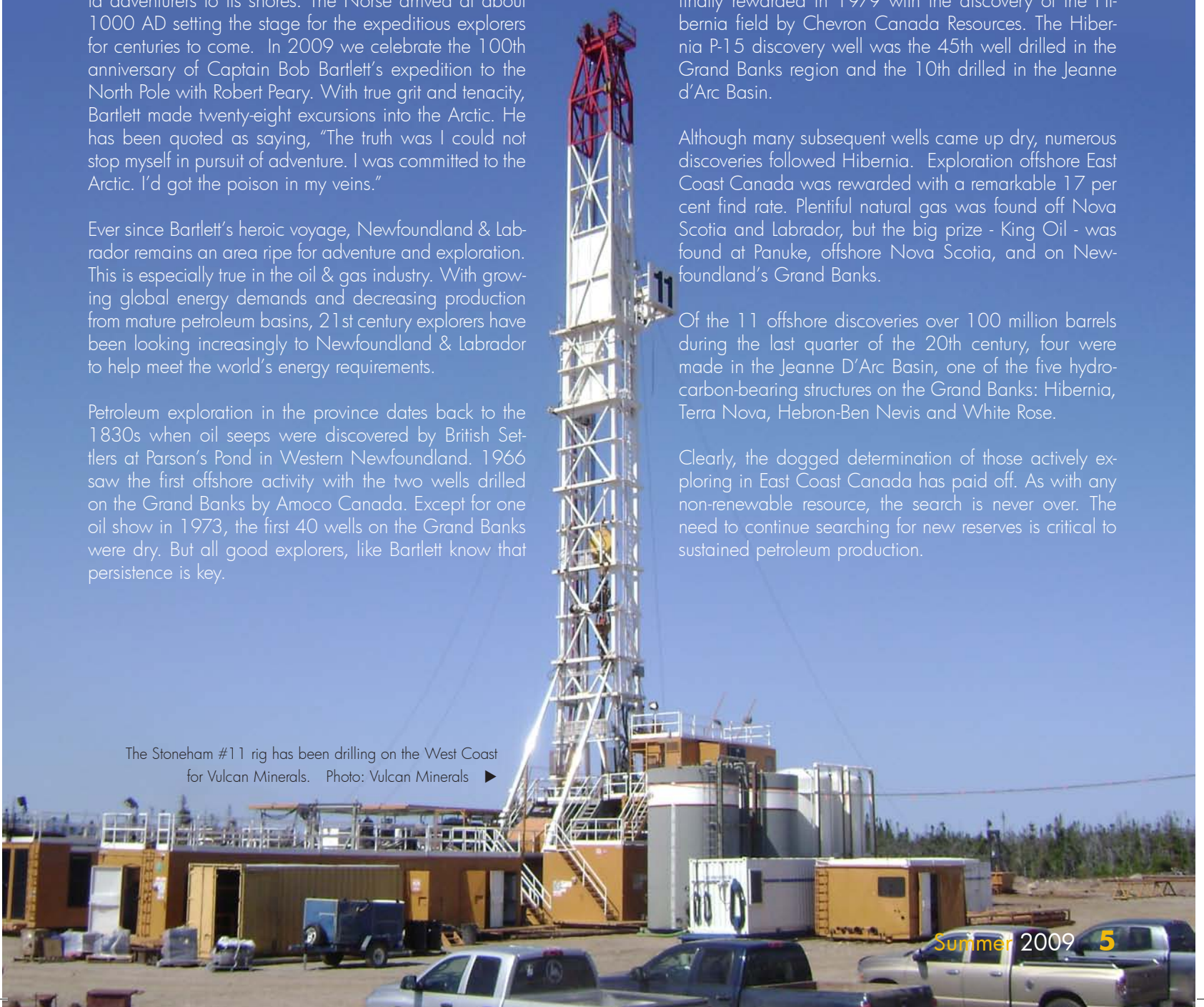
The persistence of oil companies drilling in the area was finally rewarded in 1979 with the discovery of the Hibernia field by Chevron Canada Resources. The Hibernia P-15 discovery well was the 45th well drilled in the Grand Banks region and the 10th drilled in the Jeanne d'Arc Basin.

Although many subsequent wells came up dry, numerous discoveries followed Hibernia. Exploration offshore East Coast Canada was rewarded with a remarkable 17 per cent find rate. Plentiful natural gas was found off Nova Scotia and Labrador, but the big prize - King Oil - was found at Panuke, offshore Nova Scotia, and on Newfoundland's Grand Banks.

Of the 11 offshore discoveries over 100 million barrels during the last quarter of the 20th century, four were made in the Jeanne D'Arc Basin, one of the five hydrocarbon-bearing structures on the Grand Banks: Hibernia, Terra Nova, Hebron-Ben Nevis and White Rose.

Clearly, the dogged determination of those actively exploring in East Coast Canada has paid off. As with any non-renewable resource, the search is never over. The need to continue searching for new reserves is critical to sustained petroleum production.

The Stoneham #11 rig has been drilling on the West Coast for Vulcan Minerals. Photo: Vulcan Minerals ▶



## On the trail What are they looking for?

Exploration begins with geology. Petroleum geologists seek particular conditions for an oil trap - the right source rock, reservoir rock and entrapment. They also look at the age of rocks, the relative sequence of their deposition and the time period to which they belong. They are mainly interested in rocks from the Mesozoic and Paleozoic eras since almost all of the oil and gas found so far is contained within these rocks.

Most of the offshore east coast exploration wells have been drilled within the Mesozoic sediments of the Jeanne d'Arc Basin although some 20 other basins and sub-basins ranging in age from Early Paleozoic to Cenozoic are located in and around Newfoundland & Labrador. The most successful plays to date have been Cretaceous faulting which has provided the trapping mechanism for all of the major discoveries including Hibernia, White Rose and Hebron, and has combined with a stratigraphic pinch-out to trap the hydrocarbons at Terra Nova. A "pinch-out" is when an oil trap tapers out and seals against a non-porous rock, like shale; this creates a more favorable hydrocarbon trap.

Recent seismic work and land sales have created interest in exploring areas outside the Jeanne d'Arc Basin, such as the Flemish Pass, Orphan and Laurentian Basins.

## Looking to the Horizon Scoping the potential

Operators continually build their knowledge base to identify new exploration targets. Improved seismic capabilities and understanding of complex reservoirs, for instance, have

## Breakdown of Geologic Time

In geology, time is divided into eons (largest), eras, periods, epochs and ages (smallest). The two eons are Precambrian and Phanerozoic. For the purposes of oil and gas discussion here, we are dealing with the more recent Phanerozoic eon, which started about 543 million years ago.

This eon is then divided into three eras. The Paleozoic era (also referred to the "age of the fishes") refers to the first 300 million years of the eon. This rock formed at this time is important because much of the limestone we use to build structures and the coal found in Europe and the US was formed during this era.

The Mesozoic era was next (248-65 million years ago.) This era is perhaps most popular for the emergence and eventual extinction of the dinosaur, and it was also an era that saw a great change in the world's vegetation. As indicated in the article, the oil and gas found offshore NL is found in sediment from the Mesozoic era. The Cretaceous period was at the end of the Mesozoic era, preceded by the Triassic and Jurassic periods.

The final era is the Cenozoic era, or "Age of the Mammals," which started 65 million years ago and continues to present day.

resulted in increased reserve/resource estimates for already discovered fields.



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According to the Government of Newfoundland & Labrador's, *The Economy 2009*, released earlier this year, approximately 2.84 billion barrels of oil and 10.85 trillion cubic feet of natural gas have been discovered off the province's shores and the resource potential is considerably higher. Geoscientific data indicates that another six billion barrels of oil and 60 trillion cubic feet of natural gas remain undiscovered.

## Exploring the resource potential

The first step in exploration is land sales. The Canada-Newfoundland & Labrador Offshore Petroleum Board (C-NLOPB) puts out a call for bids for companies to purchase the right to explore on a parcel of land. At the end of 2008 there were 22 active Exploration Licences offshore and total outstanding work commitments were in excess of \$850 million.

While much of the exploration effort to date has focused on the Grand Banks, home to the Jeanne D'Arc Basin, in more recent years companies have been extending their search to

the Labrador Shelf and the West Coast of Newfoundland. In the Labrador land sale last year, work expenditure bids totaled \$186.4 million which represented the third largest Call for Bids (based on total dollar value) received in the province for a land sale. The successful bidders included new and existing players to Newfoundland & Labrador's offshore.

The C-NLOPB 2009 Land Sale announced in May includes four parcels of land in three separate regions, a parcel each in the Jeanne d'Arc Basin and Western NL Offshore region and two parcels in the Laurentian Subbasin. The four parcels comprise 513,769 hectares. The Call for Bids closes on November 19, 2009.

The exploration activity comes next, generally in the form of seismic data collection and drilling programs (detailed in "Exploration Tools"). There are 342 wells in total offshore NL; that includes exploration, delineation and production wells, and this activity has resulted in 50 Significant Discovery Licences being issued in 24 areas including five on the Labrador Shelf and 19 on the Grand Banks.



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## Exploration Tools

### Seismic

Acquisition and analysis of seismic data has been a popular exploration tool as operators look to pinpoint the best possible drilling targets.

- In 2008: A total of 6800 km of new 2D seismic and 129,406 km of new 3D were acquired offshore Newfoundland & Labrador.
- This brings the total amount of offshore 2D seismic completed to 649,619 km and 3D to 1,432,834 km.

#### ***The individual programs conducted in 2008 were as follows:***

- StatoilHydro: 3D seismic survey covering 52,779 CMP (common mid point) km over the Terra Nova production licences, in which StatoilHydro holds a 15 per cent interest, and Exploration Licences (EL) 1100 and 1101 in the Jeanne d'Arc Basin, in which they are the lead representative.
- Husky Energy: 3D survey covering 76,627 CMP km over portions of the White Rose field and land covered under their EL 1099.
- In total 129,406 CMP kilometers of 3D seismic data was acquired using the vessel *M/V CGG Veritas Vantage*.
- In addition to these large 3D surveys, a 123 km 2D well site survey was conducted for Petro-Canada over EL 1092.
- Geophysical Services Incorporated: 4,121 line km 2D program offshore Labrador.
- Western Newfoundland saw the acquisition of 1,056 line km of 2D onshore seismic data and 2,555 line km 2D seismic offshore. Additional seismic work is planned for later this year by Deer Lake Oil and Gas pending approvals, vessel availability and weather conditions.

### Drilling Programs

Exploration and development activity offshore is often limited by the availability of drilling rigs capable of operating in the environment and deep waters of the region. However, several companies have conducted drilling programs this since last year. As part of the rig share agreement the semisubmersible drill rig, *Henry Goodrich* has been working offshore since 2008 and will continue until sometime in 2010.

#### ***Programs include:***

- A pair of delineation wells for Husky in the White Rose Extension fields (2008).
- An exploration well in the Flemish Pass for StatoilHydro at their Mizzen prospect (late 2008 – early 2009).
- Petro-Canada is now using the rig to drill the only offshore exploration well planned on the Grand Banks this year.

The Ballicatters well has dual geological targets in the Ben Nevis/Avalon and mid-Avalon targets (EL 1092 and EL 1113).

Alan Brown, Vice-President, East Coast, for Petro-Canada, said this type of well will take longer to drill and is more complex, but overall it is more effective and efficient.

"We're happy that we're able to pursue innovative approaches," said Brown.

Following Petro-Canada's work, the *Henry Goodrich* will be handed back to Husky for the duration of the contract. Brown said Husky has several drill ready prospects including the Wild Rose (EL 1067) and the Primrose (EL 1089) in the Jeanne d'Arc Basin.



◀ The Henry Goodrich will be operating off our coast until sometime in 2010.  
Photo: Greg Locke

## Leading the way Frontiers Areas

Recent land sales and the expansion of geophysical and exploration drilling programs show that explorers are looking at areas previously thought to be too difficult to explore and develop. Enhanced technology and experience operating in harsh environments are making these areas more accessible and investors are increasingly interested in the vast unexplored potential.

### Flemish Pass Basin

Despite favourable geological conditions, the deep waters of the Flemish Pass Basin have seen sparse exploration activity to date. The Flemish Pass is similar in size to the Jeanne d'Arc Basin, but its waters are much deeper, in the 1100-2000 m range compared to 100 m or less in the Jeanne d'Arc Basin.

Previous seismic work and drilling programs have demonstrated similar aged reservoirs and source rock to the Jeanne d'Arc Basin and the presence of large structures, including Cretaceous fault blocks. The C-NLOPB estimates undiscovered hydrocarbon resources in the basin to be 273 million m<sup>3</sup> (1.7 billion barrels) at a 50 per cent probability with expected field sizes ranging from 44 to 528 million barrels.

First drilled in 1979, the earliest wells did not make a discovery, but did confirm the presence of an active hydrocarbon system. Interest grew earlier this year with StatoilHydro's discovery at EL 1049, the Mizzen Prospect. Erik Abrahamsen, formerly StatoilHydro Canada's Vice-President of East Coast Operations indicated that the well was very challenging to drill but that everyone involved did a great job.

"We are very pleased with the way that the rig, its crew and the local supply community successfully met the challenges," said Abrahamsen.

The effort certainly paid off. The operator confirmed that hydrocarbons were encountered, and further analysis of the well results will be undertaken to determine the potential. An application for a Significant Discovery License (SDL) will be filed over the coming months.

### Orphan Basin

The deep waters of the Orphan Basin have also been the subject of exploratory work in recent years. Mark Macleod, Atlantic Canada Manager of Chevron Canada Ltd., told NOIA Conference delegates that the partners consider this basin to have "high potential with high risk and high cost." Chevron Canada Ltd. has a 50 per cent stake in two licences in the area totaling some 4 million acres.



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A 3D seismic program conducted in 2004-2005 obtained 9000 km<sup>2</sup> of data to aid in understanding the basin. An exploratory well was subsequently drilled in 2006-2007. The Great Barasway F-66 well was drilled in 2338 m of water, taking longer to complete and costing more to drill than anticipated, due to mechanical difficulties and problems associated with harsh winter weather conditions. Although F-66 was a dry hole, Macleod said "a great deal was learned from the well".

"We're not discouraged, in fact we're encouraged. We obtained information that was critical to further evaluation of the region," said Macleod.

Additional exploratory work in the Orphan Basin is once again underway. A controlled source electromagnetic survey is being conducted in the basin this summer by Exxon-Mobil Canada, while Chevron is in the planning stages for a possible second exploration well in 2010, subject to regulatory approval and rig availability.

**Laurentian Basin**

The Laurentian Basin off Newfoundland's south coast is another frontier region receiving recent interest. Conoco-Phillips Canada has just secured the drillship Stena Carron to spud its first well in the Newfoundland portion of the basin later this year or early next.

Ian Way, Vice-President of business development for Cono-

coPhillips, said the area is "very high risk from a geological perspective, but they are hopeful that any initial drilling might lead to follow up work".

**Western Newfoundland**

There are currently nine onshore exploration permits and one onshore production lease in western Newfoundland. A total of 228,500 hectares is held under permit.

Vulcan Minerals is engaged in an onshore exploration drilling program at the Robinson's #1 drill site in the Bay St. George Basin. It has plans for an additional one or two exploration wells in the area.

Leprechaun Resources also has exploration drilling plans on its onshore properties in the Parson's Pond area. It has three proposed drilling locations under review and plans to begin a drilling program late in 2009 pending rig availability and finalization of financing.

There are currently nine active licences in the Western Newfoundland offshore area. Work is ongoing on several of these licences to analyse existing data, determine future drilling targets, and to secure funding for further exploration work.

*For additional information, please see West Coast Sector profile on page 12*

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## The search continues If you don't look, you can't find

The land and waters of Newfoundland & Labrador have attracted explorers going as far back as the arrival of the Norse around 1000 AD. Despite the challenges posed by harsh weather and environmental conditions, these adventurers, like Bartlett, have persevered and found ways to harness the province's resource potential.

This determination to overcome the challenges presented by the environment has meant that Newfoundland & Labrador has become one of the 'go-to' centres for learning about harsh conditions. Explorers and developers come here from around the world to learn the latest in harsh environment

technology, anything from how to move icebergs, the best method of development in permanent ice conditions, how to operate in seasonal pack ice, or what to do about fog and difficult metocean conditions.

Teamed up with favourable geology, a stable political regime, and innovative partnership agreements, the Newfoundland & Labrador petroleum industry has much to offer explorers seeking to meet world energy needs. Our harsh environment expertise is sought out worldwide and our resource potential is attracting increased interest from current and new players.

## Exploration elsewhere on Canada's East Coast

### Nova Scotia

Calgary-based junior PetroWorth Resources recently conducted a 2D seismic survey onshore Nova Scotia. The 80-kilometre survey on the Lake Ainslie licence in Cape Breton was carried out by Conquest Seismic Services.

BEPCo just secured two parcels in the most recent land sale (NS08-02) and is trying to secure a rig to drill an exploration well approximately 200 km off the coast Nova Scotia.

### New Brunswick

Corridor Resources has been drilling exploration wells on some of its licences in New Brunswick. Programs in the Sussex/Elgin subbasins have encountered hydrocarbons, and analysis is ongoing to determine if any of the encounters are commercially viable.

GLJ Petroleum Consultants of Calgary estimated shale gas resources to be 67.3 TCF. The results of this study are based on all available seismic and well information within the study area provided by Corridor to GLJ. The results will assist Corridor in developing a longer term plan for the appraisal and potential development of this resource.

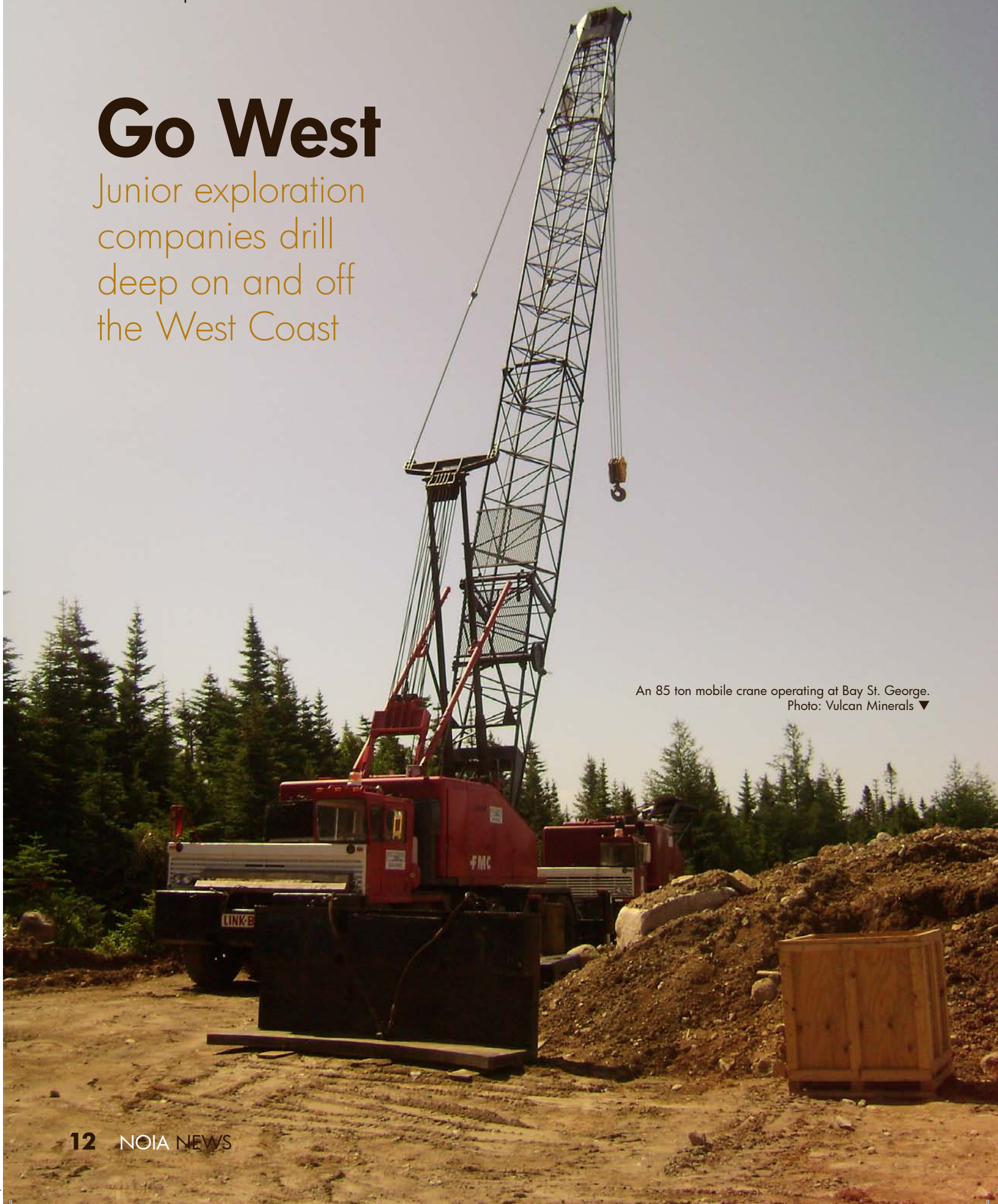
Early in 2009, Contact Exploration Inc. reported that the Stoney Creek N78-2328 well has tested at a rate of 200 barrels of crude oil per day. The well was spudded on November 23, 2008 and reached a total depth of 1115 m.

### Prince Edward Island

Corridor and PetroWorth hold 2 and 5 exploration licences respectively and have an agreement in place to share seismic information acquired in this region. There is currently no exploration underway or planned for this year.

# Go West

Junior exploration companies drill deep on and off the West Coast



An 85 ton mobile crane operating at Bay St. George.  
Photo: Vulcan Minerals ▼

**W**estern Newfoundland's petroleum potential first surfaced some 150 years ago when the residents of Parson's Pond gathered oil from surface seeps for local usage. The first well was drilled in 1867. Since then, mining test holes and 27 shallow wells have produced a total of 6,000 barrels of oil from this area. Roughly 60 wells were subsequently drilled in five areas of Western Newfoundland before 1974, with shows in more than half.

But with a lack of seismic work, it wasn't until recent years that explorers began investigating the area's potential once again. Improved geological understanding of the area, closeness to markets and a favorable regulatory and operating environment are contributing to renewed interest, despite a challenging global investment climate for the junior exploration companies working in this area.

Wes Foote, Assistant Deputy Minister, Petroleum Resource Development Energy Branch, with the Newfoundland & Labrador Department of Natural Resources, updated this year's NOIA Conference delegates on activity in Western Newfoundland, explaining that "favourable geology has been a significant attraction for explorers".

Western Newfoundland is part of the Appalachian Structural Front which stretches from the southern United States through the eastern seaboard, Quebec, and the Atlantic Provinces and into Western Newfoundland.

Land around the Western Region is contained mainly within the Anticosti and Maritimes Basins. Together, these two basins cover an area approximately half the size of Alberta. These Paleozoic basins also extend eastward into the province's onshore area and to the northeast into the St. Anthony Basin and beneath the Mesozoic sediments of the Labrador Sea. This is significant as a considerable part of Canada's light oil and gas production is derived from Paleozoic sedimentary rocks and over 20 per cent of world oil reserves originate in Paleozoic strata.

### Basins in the Gulf of St. Lawrence

Two basins often mentioned when discussing oil and gas in the Western Region of NL are:

- The Anticosti Basin, named after Anticosti Island, of Ordovician to Silurian age (510-415 million years old), is found under the northern part of the Gulf of St. Lawrence.
- The Maritimes Basin is under the southern portion of the Gulf of St. Lawrence, and encompasses the Cabot Strait, the continental shelves offshore southern and northeastern Newfoundland, as well as adjacent onshore areas of the five eastern Canada provinces. The basin is about 250,000 km<sup>2</sup> in size and contains three major depocenters; the Magdalen, Sydney and St. Anthony basins.

With the known potential of these rocks elsewhere in the world, several areas of Western Newfoundland, each with its own distinct prospects, are now being explored.

### Flat Bay/Bay St. George

There are three separate operators active in the Flat Bay/Bay St. George area. Vulcan Minerals Inc. holds three onshore permits while B.G. Oil & Gas Ltd. and Corridor Resources Inc. each hold one offshore Exploration Licence.

#### **Vulcan Minerals Inc.**

Vulcan Minerals is a local diversified junior exploration company focused on petroleum and mineral exploration in Newfoundland & Labrador.

In addition to its eight previously drilled onshore wells and single test hole, two more test holes were drilled this year in its Flat Bay shallow oil deposit. Both wells encountered the oil-bearing Fischell's Brook Formation. Representative sections are being analyzed to measure reservoir characteristics. This information will be integrated into the company's ongoing evaluation of the Flat Bay oil deposit.

Work is ongoing at the Robinson's #1 drill site in the Bay St. George Basin. Stoneham Rig 11 spudded the well June 30. The Robinson's #1 well is proceeding on target to its planned total depth of 3600 metres. The well is expected to take 10-12 weeks to drill and will be the first deep well in the Bay St. George Basin.

It is being drilled pursuant to a joint venture with Investcan Energy Corporation. This year's drilling budget of \$15 million also includes plans to drill one additional well following Robinson's #1, with the option for a third well depending on budgets and results. Stoneham Rig 11 will be with Vulcan until October or November, at which time it might possibly be used by another Western Newfoundland operator.

Vulcan Minerals President, Patrick Laracy said his company is pleased it found a partner to help execute some of its exploration goals. "The fact that they share our enthusiasm for the petroleum potential of this area is very gratifying for us because it means that we can accelerate our pace of exploration here," said Laracy.

### **Corridor Resources Inc.**

Corridor Resources Inc. is a junior resource company based in Eastern Canada.

Corridor was granted an offshore exploration licence (EL 1105) in January 2008 with a bid amount of over \$1.5 million.

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The prospect is generally referred to as the Old Harry prospect. It has simple four-way closure covering an area of more than 20,000 hectares and is one of the largest undrilled prospects in Eastern Canada. Corridor remains committed to carrying out an exploration program to further their knowledge on the prospect.

### **B.G Oil and Gas Limited**

B.G. Oil & Gas Limited is a local junior exploration company and licence holder for one offshore parcel in this region. In March 2008 Deer Lake Oil and Gas Ltd. acquired a 25 per cent working interest in the licence.

A significant amount of 2D seismic has been completed on the area and the two companies are currently working to secure additional investment to conduct exploration work. A project registration has been filed with the Canada-Newfoundland & Labrador Offshore Petroleum Board (C-NLOPB) under the Canadian Environmental Assessment Act for the acquisition of seismic in one area of the licence.

Deer Lake Oil and Gas believes that there may be salt-associated hydrocarbon plays, similar to that of the Old Harry prospect. They propose to use PGS owned dual sensor Geo-Streamer acquisition technology, which is particularly suited for imaging of salt-related structures, for this project.

The proposed survey plans to encompass between 2000-5000 km of 2D seismic data. Activities are planned to be completed between September and December of this year, depending on approvals, vessel availability and weather conditions.

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### Port au Port

Two operators hold land parcels in the Port au Port region. PDI Production Inc. (PDIP) is the operator of onshore petroleum production lease 2002-01. PDIP was also awarded an offshore Exploration Licence (EL 1116) in the C-NLOPB 2008 Calls for Bids. ENEGI Inc. holds the second offshore Exploration Licence (EL 1070).

### PDIP Production Inc. (PDIP)

PDIP is a local independent oil and gas company and a wholly owned subsidiary of Enegi Oil PLC. PDIP holds a production license for an onshore property located on the Port au Port Peninsula which was originally discovered by Hunt Oil in 1994 when the #1 well tested at rates over 2,000 bopd. PDIP became sole operator of the lease in early 2008 and drilled a third sidetrack well using the Nabors #45 rig. During the drilling of the well, and the subsequent flow test, over 6,000 barrels of high quality crude oil were produced as well as associated gas. This brought the total produced from the original well and its sidetracks to over 31,000 bbls of oil and 102 MMscf of gas.

Line cutting has been completed for a proposed 115 km 2D survey at Garden Hill North this summer, with the environmental review process currently underway.

Offshore, PDIP was awarded an offshore licence (EL 1116) on January 15, 2009. They placed a successful bid of \$600,000 on Parcel 1 in Call for Bids NL08-04, which encompasses nearly 212,000 ha. The company believes that some of the onshore geological structures that they are evaluating at Garden Hill extend into the offshore. As the successful bidder on the adjacent offshore parcel, they now have rights to evaluate and explore what they believe to be the whole structure.

### Enegi Inc.

Enegi Inc. is an independent oil and gas group, currently focused on four prospects around the Port au Port Peninsula. It is the representative for an offshore block (EL 1070) just north of the Port au Port Peninsula. A farm-in agreement is in place with Shoal Point Energy Limited (SPE), an exploration and development company based in Calgary. SPE operated the Shoal Point 2K-39 onshore to offshore well that was drilled last year.

The Shoal Point onshore to offshore K-39 well was drilled in 1999 to test a large offshore structure. Auditing, reprocessing and reinterpretation of seismic data in the area led to the conclusion that the K-39 well did not test the prospective target. SPE then drilled the 2K-39 well using the Nabors #45 rig in the summer of 2008 from the same drilling pad as the original K-39 well.

Drilling operations concluded in July 2008, validating EL 1070 until January 15, 2011. A preliminary interpretation of the logs in the St. George's Group did not identify the presence of any economic hydrocarbons. However, significant shows of gas were encountered while drilling the Green Point shale in the intermediate part of the hole. The company intends to do further evaluation of the gas shows and also pursue the Lourdes play lead in the north-western part of EL1070 which is in a different, less complex structural domain than Shoal Point.

◀ A 26-inch tri-cone drill bit, being used to drill the Robinson's #1 well. Photo: Vulcan Minerals



### Deer Lake

The Deer Lake area consists of three onshore exploration permits owned by Deer Lake Oil and Gas Inc., a St. John's-based oil and gas exploration company active in Western Newfoundland, particularly in the onshore Deer Lake Basin where it holds 90,239 contiguous hectares (222,890 acres). The company holds 100 per cent working interest in the three onshore exploration permits as well as smaller interests in several onshore blocks in Parsons Pond and also in B.G. Oil and Gas' offshore block.

Of the seven wells that have been drilled so far in the Deer Lake Basin, five have encountered oil and/or gas. Work continues to finalize and implement a field delineation plan and the company continues to seek investors to assist with further exploration and development.

### Parsons Pond/Bay of Islands

The Parsons Pond/ Bay of Islands area consists of three onshore permits and four offshore exploration licences.

### NWest Energy Inc.

NWest Energy Inc. is a Canadian-based resource company focused on exploration, acquisition and advancement of oil and gas properties primarily along the West Coast of Newfoundland & Labrador. They hold four offshore land parcels located between Corner Brook and Port au Choix covering almost 660,000 hectares. All four properties were previously explored in the 1990's during the downturn in the industry's cycle by multinationals like Mobil Oil and BHP Exploration. The company says all properties have defined seismic targets along with considerable exploration potential to host large oil and gas reservoirs.

A report completed by Sproule Associates which interpreted 5,000 km of 2D seismic data, provided an estimate of the significant potential in the area.

A 500 km<sup>2</sup> seismic program was conducted between September and December 2008. It concluded in December when adverse weather conditions made further seismic acquisition impractical.

The program completed 100 per cent of the southern prospect and 40 per cent of the central zone. Processing of the data was completed in May 2009 and interpretation of the results is ongoing to aid in identifying drilling prospects.

### Leprechaun Resources Ltd.

Leprechaun Resources Ltd. is a junior oil production and exploration company focused on operations in Atlantic Canada. It is the representative and operator for three onshore permits near Parson's Pond. One well was drilled by Contact Exploration in the area in 2004.

Leprechaun has completed detailed mapping based on seismic work that has been conducted in the area and has three proposed drilling locations under review. The northernmost location has cleared an environmental assessment review. Issues with access and road construction have been identified for the two southern locations, resulting in a requirement for further study and analysis before they can proceed in these areas. The company hopes to begin a drilling program late in 2009 pending rig availability and finalization of financing.



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## Attracting Exploration

Western Newfoundland may see additional exploration in the future, once the C-NLOPB 2009 Call for Bids closes November 19, 2009. It includes one parcel of land totaling 140,210 hectares located in the Paleozoic Anticosti Basin. The minimum work commitment bid for this parcel is \$250,000.

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The Call also includes two parcels in the Mesozoic Laurentian Basin. ConocoPhillips Canada Resources Corp. already has significant land interests in this basin which it hopes to begin exploring in the near future. The closing date for these parcels is also November 19, 2009, pending completion of a Southern Newfoundland Strategic Environmental Assessment. The minimum work commitment bid is \$1 million.

Ongoing geoscience initiatives may further enhance the exploration attractiveness of this region. The Department of Natural Resources’ Geological Survey Division has just released a series of high-resolution aeromagnetic maps of the province’s west coast. These maps are essential tools used to geologically identify key areas of interest for potential mineral and petroleum exploration.

Fourteen maps were produced as part of this survey and cover seven National Topographic System (NTS) areas. This survey complements additional aeromagnetic surveys completed by the department’s Energy Branch in Western Newfoundland over the last year as part of the \$5 million Petroleum Exploration Enhancement Program (PEEP), announced in 2007 as part of the Energy Plan. These results will be made public later this year.

Business leaders in the region are also actively promoting the region’s petroleum potential with the 4th International Symposium on Oil and Gas Resources of Western Newfoundland, scheduled for September 11-13, 2009 at Marble Mountain Ski Resort.

Despite the challenges of operating in a frontier environment, explorers are enthusiastic that their efforts will one day be rewarded.

“It’s been quite an effort,” said Patrick Laracy of Vulcan’s most recent exploration well. “Any time you try to drill a big well in a frontier area requires a lot of coordination and planning because you don’t have any infrastructure in terms of a supply and service industry that caters to onshore drilling programs,” said Laracy. “So it’s challenging, it’s exhilarating, it’s exciting and it’s great stuff.”



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