

# Atlantic Canada's Oil & Gas Industry: Responding to Regulatory Change

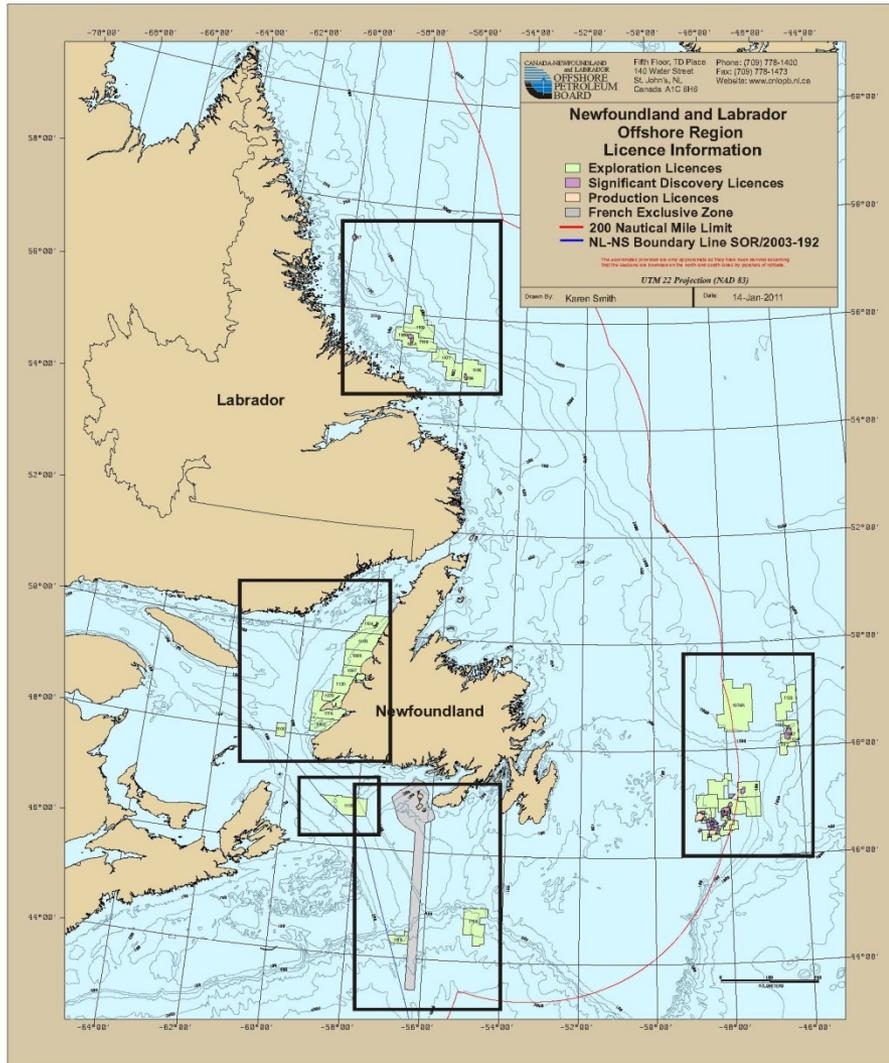
*Presentation to the Society of Petroleum Engineers*

*Paul Barnes  
Manager, Atlantic Canada*

*August 16, 2011*



- **The Atlantic Canada Offshore - Context**
- **Helicopter Incident (Newfoundland) – Flight 491**
  - Background
  - Regulators' Response
  - Industry Response
- **Deepwater Horizon (Gulf of Mexico) Incident**
  - Regulators' Response
  - Industry Response



## • NL: Offshore Oil

- There are 3 producing oil projects:
  - Hibernia, Terra Nova, White Rose
- 35% of Canada's conventional light crude production
- The Hebron project will be the fourth major oil development

## • NS: Offshore Natural Gas

- One producing natural gas field (Sable). Gas transport to NE U.S.
- Second producing natural gas field (Deep Panuke) to come onstream near the end of 2011
- Multiple layers of Regulation

# Offshore Newfoundland is a Challenging Environment



- **NL Production facilities located > 300 km offshore**
- **Travel time by helicopter = 2 hrs**
- **Travel time by supply vessel = 16 hrs**
- **Mean annual temp = 5.8°C**
- **Fog**
  - 40% Winter
  - 84% June/July
- **Severe Seas in Winter**
- **Waves up to 30 m reported**
- **Winds up to 224 kph**
- **412 icebergs (avg #/year)**
  - 600,000 tonnes (avg)
  - 10,000,000 tonnes (max)

# Helicopter Incident – Flight 491

- On March 12, 2009 Cougar Helicopters Flight 491, a Sikorsky S-92 helicopter, was traveling to the Hibernia and White Rose oil fields offshore NL; 16 passengers and two crew onboard
- After experiencing a loss of main gearbox oil pressure, Flight 491 prepared to ditch but later crashed into the ocean approx. 30 nm from land
- One passenger survived, remainder drowned



Sikorsky S-92 helicopter (Cougar Helicopters)

# Helicopter Incident – Flight 491



Right side of the 'upper deck' and fuselage structure (photo: TSB)



Wreckage layout and reconstruction (photo: TSB)

- **Transportation Safety Board (TSB) launches full investigation into root cause**
- **Commission of Inquiry called to investigate offshore helicopter passenger safety**

- **Lead investigator into the incident**
- **Mandate is to advance transportation safety in the marine, pipeline, rail and air modes of transportation by:**
  - conducting independent investigations into selected transportation occurrences in order to make findings as to their causes and contributing factors;
  - identifying safety deficiencies, as evidenced by transportation occurrences;
  - making recommendations designed to eliminate or reduce any such safety deficiencies; and
  - reporting publicly on investigations and on the findings

- Eight days after the incident the TSB announced the discovery of a broken main gearbox filter bowl assembly mounting stud on the helicopter (two of three studs broken)
- As a result, a worldwide directive was issued to ground all Sikorsky S92 A helicopters, until all titanium studs are replaced with steel mounting studs



Oil filter housing showing broken and missing mounting stud (photo: TSB)

### **In the months that followed the TSB continued to examine a number of related issues regarding survivability:**

- passenger immersion suit and crew flight suit effectiveness
- adequacy of survival training and use of underwater breathing devices
- adequacy of general ditching procedures
- Functionality of personal locator beacons
- weather/sea state flight limitations
- Sikorsky S-92A flotation system

### TSB Issued final report with 4 main recommendations in February, 2011:

- The FAA, Transport Canada and the European Aviation Safety Agency remove the “extremely remote” provision from the rule requiring 30 minutes of safe operation following the loss of main gearbox lubricant for all newly constructed Cat. A transport helicopters and, after a phase-in period, for all existing ones
- The FAA assess the adequacy of the 30 minute MGB run dry requirement for Category A transport helicopters
- Transport Canada prohibit commercial operation of Cat. A transport helicopters over water when the sea state will not permit safe ditching and successful evacuation
- Transport Canada require that supplemental underwater breathing apparatus be mandatory for all occupants of helicopters involved in overwater flights who are required to wear a Passenger Transportation Suit System

- In June, 2011 Transport Canada responded to the TSB recommendations with a commitment to undertaken immediate action
- The FAA responded that they will assess the adequacy of the 30-minute loss of oil requirement, and would propose a rule change to either clarify or eliminate the 'extremely remote' provision in its regulations; it does not believe that it is practical or necessary to require that all existing and newly manufactured transport Cat. A helicopters be equipped with MGBs that meet the 30-minute "loss of lubrication" requirement

- On April 16, 2009 the offshore regulator, the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) appointed a Commissioner for the *“Inquiry into Matters Respecting Helicopter Passenger Safety for Workers in the Newfoundland and Labrador Offshore Area”*
- Purpose: to determine what improvements can be made so that the C-NLOPB can determine that the risks of helicopter transportation of offshore workers is as low as is reasonably practicable in the Newfoundland and Labrador Offshore Area

## **Inquiry occurred in two phases:**

- Phase I: Commissioner solicited the views of the public and gathered information through research studies, consultations, inspections and investigations, written submissions and informal or formal hearings
- Phase II: Upon completion of the TSB investigation, the commissioner undertook a review of the TSB report and advised the Board on which actions from the report should be taken by the C-NLOPB or other legislative/regulatory authorities

- **Phase I began with public hearings for parties with standing on October 19, 2009; public hearings concluded on February 18, 2010**
- **Parties with standing for Phase I included the offshore regulator (C-NLOPB), offshore operators, helicopter operators and Sikorsky, families/estates of deceased passengers, union, and CAPP**
- **Key issues raised during Phase I included:**
  - Implementation of HUEBA (length of time it took)
  - Helicopter passenger transportation suits (fit issues)
  - Search and Rescue
  - Night Flying
  - Training Standards

- **On February 8, 2010 the Commissioner made interim recommendations to the Regulator which in his view required the immediate attention of the Board:**
  - He noted the discrepancy between first response Search and Rescue in other jurisdictions and the NL offshore area (one hour wheels up in NL vs. 15-20 minutes in other areas)
  - He advised of his belief that night flying should be revisited and possible restricted until a first response helicopter with auto hover is in service
- **The Regulator agreed with recommendations and restricted night flights except in emergency circumstances until a First Response SAR provided by industry can be properly equipped; ordered operators to immediately develop an implementation plan to appoint a full-time dedicated and fully equipped response helicopter (with auto-hover and forward-looking infrared radar)**
- **The operators complied immediately with the directions**

## Commissioner released Phase I Report in November, 2010

- **The list of 29 recommendations included:**
  - Relationship between the Regulator and Industry
  - Communication with workforce
  - Training (who should be responsible, funding etc.)
  - Responsibilities and independence of the Regulator
  - Clothing (survival suits etc.)
  - Helideck standard/lighting
  - Location of auxiliary fuel tanks
  - Stability devices and rescue
- **CNLOPB struck teams which included industry, workforce, 3<sup>rd</sup> party expertise to begin implementing**

## Commissioner released Phase II report on August 15, 2011

- **Key recommendations were:**

- Alert Service Bulletins be posted to the helicopter operator's website;
- Passenger suits be certified as aviation immersion suit (flight suit) only (not aviation and marine);
- Support for TSB recommendations on helicopter operation, run-dry, sea states, and underwater breathing apparatus) and adoption by Transport Canada; and
- Independent offshore safety regulator be given a new and expanded mandate, strengthened by an Advisory Board.

# Helicopter Incident - Industry Response



- Immediately following the accident, Operators in Atlantic Canada grounded the helicopter fleet and transported their people on supply boats while a full assessment of helicopter safety could be completed
- Operators established a task force to review all aspects of helicopter and worker safety issues. Helicopter transport did not resume until the recommendations of that task force were reviewed and implemented
- Improvements were made in personal protective equipment and training
- Industry fully participated in the TSB investigation and in the Inquiry and continued to dedicate resources to ensuring the implementation of the Inquiry's recommendations
- Everyone travelling offshore now has a properly fitted suit and an air supply

# Deepwater Horizon Incident (DHI)



- The Macondo Prospect (Mississippi Canyon Block 252 - MC252) was an oil and gas prospect in the United States Exclusive Economic Zone of the Gulf of Mexico, off the coast of Louisiana
- On April 20, 2010, there was an explosion and blowout on the drilling rig Deepwater Horizon, killing 11 workers
- The well was sealed off from flow on August 4, 2010

- The Canadian Senate – committee undertook a study into the state of the Canadian offshore oil industry to inform Canadians about the work being done in their offshore oil industry, focusing particularly on the east coast. Industry and regulators asked to appear before the committee. Found that the facts do not justify banning Canada's current offshore drilling operations
- Canadian House of Commons - committee began to investigate Canadian offshore oilspill preparedness and response practices. Industry and Regulators appeared before the committee. Investigation eventually put aside as a result of findings in the US govt report on incident and Cdn Senate report
- Province of NL hired consultant to undertake an assessment of the offshore oil spill prevention and response in place off Newfoundland and Labrador (Turner Report)

The Senate Committee's report key findings are:

- **Canada's offshore industry is subject to a regulatory regime that is modern, up-to-date and among the most efficient and stringent in the world, as compared with those in effect in other nations with active offshore industries**
- **R&D should be increased with emphasis on new and better technology for dealing with deepwater blow-outs and responding to catastrophic spills**
- **Canada's laws governing the liability and responsibility for loss and damage, including economic loss and environmental cleanup expenses following a major oil spill arising during an offshore drilling are somewhat confused and conflicting. Recommended a careful review be undertaken**
- **The committee concluded they could not identify any justification for a temporary or permanent ban or moratorium on current offshore operations and that Canada's regulatory regime is a good one, which is continually subject to updating**

### Turner Report:

- **The report highlighted several key findings and made 25 recommendations for improvement**
- **That the regulatory regime related to spill prevention and response in NL is robust**
- **That NL compares well with other jurisdictions in terms of response capability and oversight**
- **That the Regulator (C-NLOPB) is generally doing a good job, especially in relation to implementing international best practices**

- The DWH incident provided an opportunity to look at industry offshore operations in eastern Canada closely to review state of prevention, preparedness, and response capability
- Industry conducted a complete review of their drilling programs, including the casing and cementing programs, and the operations plan for the BOP
- Many added an additional ROV onboard drilling rigs which enhanced the ability to operate the BOP under a wider range of operating conditions
- Carrying out additional safety and spill response drills, equipment inspections and tests, safety audits, and senior leadership rig visits
- Participating in global well capping and containment discussions
- Discussions with regulators on dispersants approval and R&D

- Industry continues to work closely with government and regulators as they adjust the regulatory regime governing the offshore in Atlantic Canada
- Industry considers safety and environmental protection to be the top priority and is committed to a goal of zero harm to people and the environment
- Committed to continuous improvement that builds upon lessons learned from recent incidents and to understand and adopt international best practices