



## **Collaborative Research and Development in the Newfoundland and Labrador Offshore Oil and Gas Industry**

**February 9, 2012  
Doug Cook**

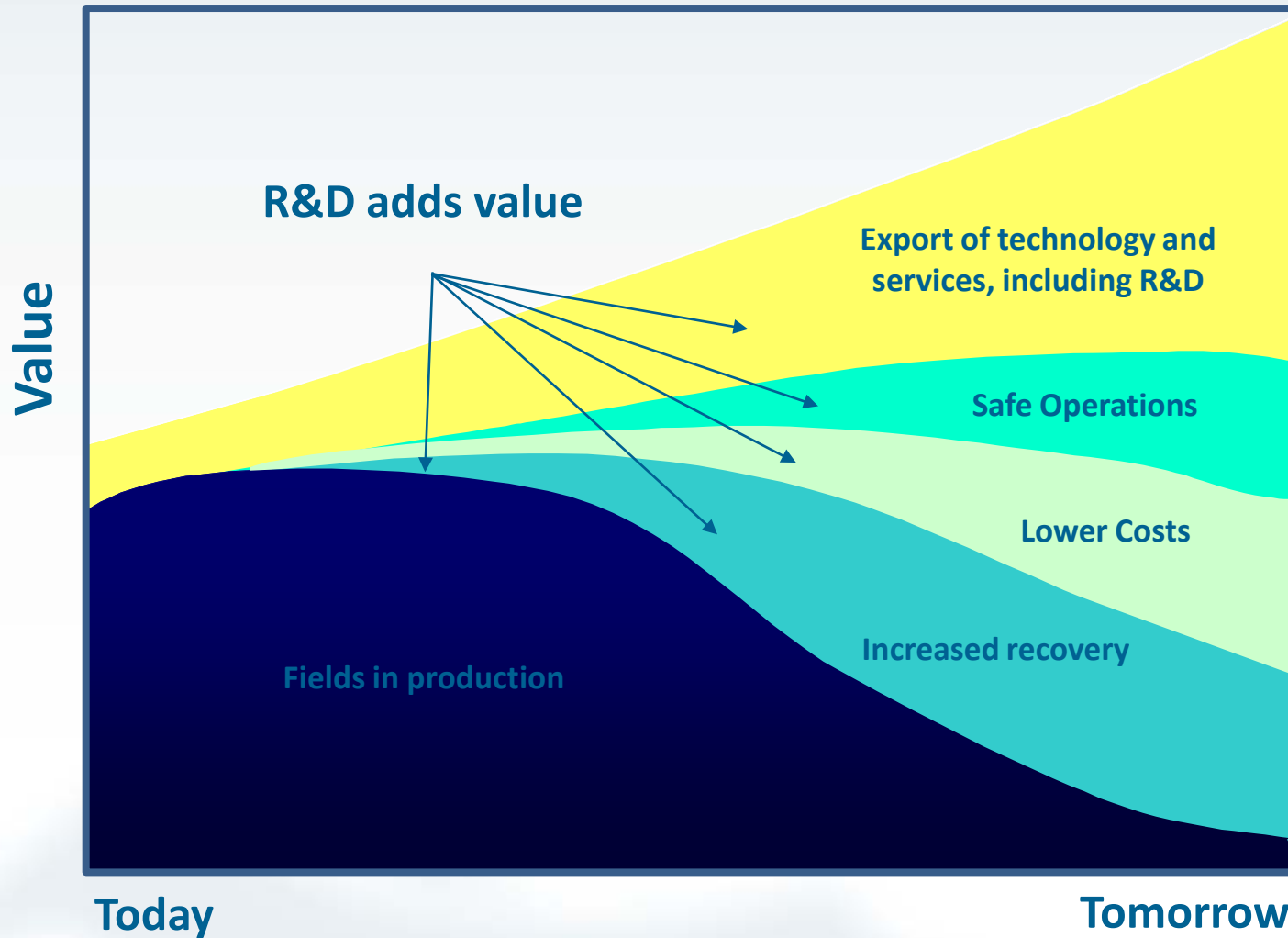
# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - ❑ Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - ❑ Seeding Programs
    - 2012 Call for Proposals
  - ❑ Unsolicited Proposals

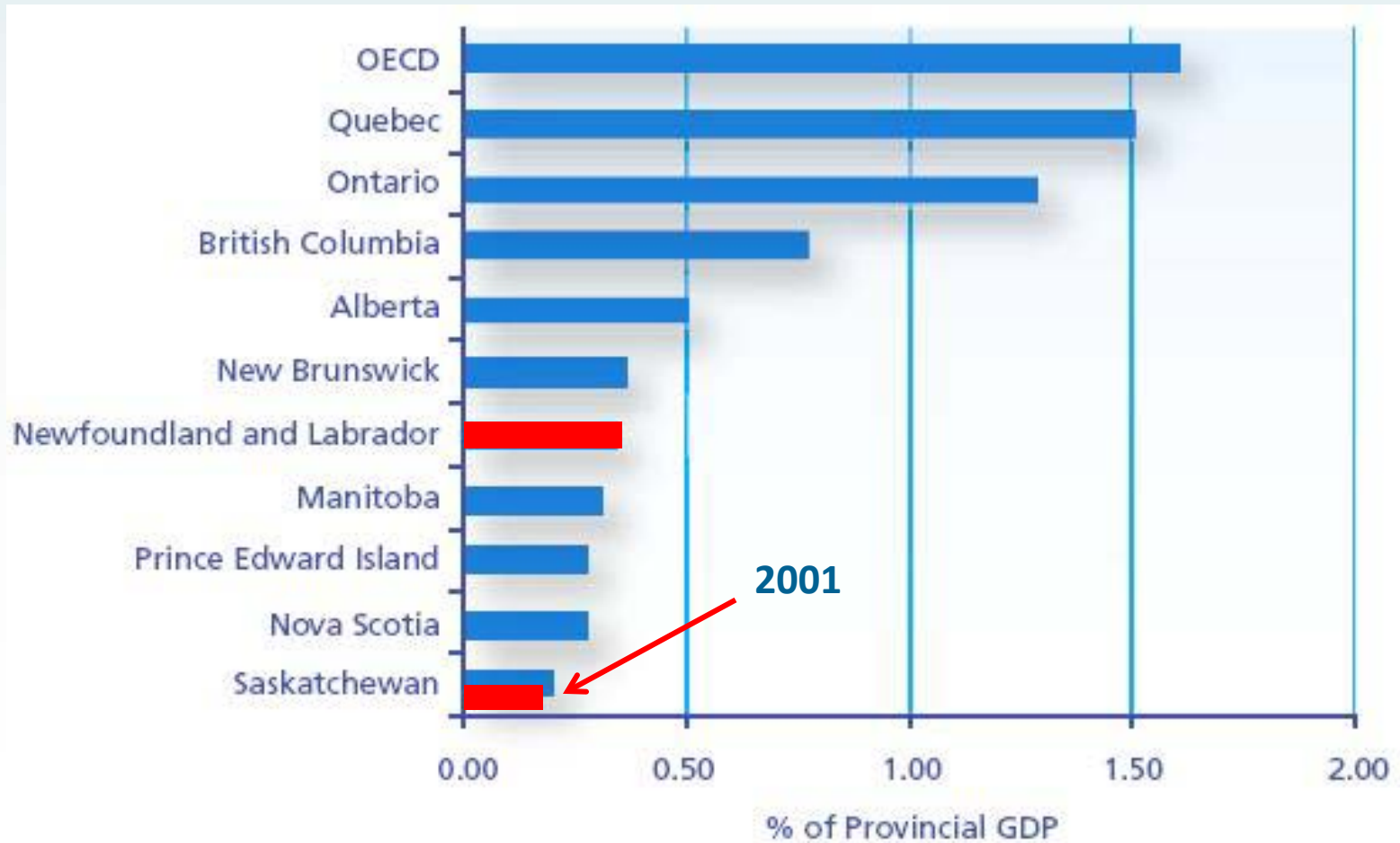
# Presentation Outline

- 
- R&D in the Newfoundland & Labrador Oil & Gas Industry
  - The Role and Structure of Petroleum Research NL
  - Petroleum Research NL Programs
    - Strategic Focus Areas
      - Arctic and Harsh Environments
        - Trenching
        - Ice Management
      - Subsurface / Advanced Well Design
      - Health, Safety and Environment
    - Seeding Programs
      - 2012 Call for Proposals
    - Unsolicited Proposals

# The Economic Value of R&D



# Innovation Competitiveness - NL



## Provincial BERD Intensities, 2008

(Source: Review of Federal Support to Research and Development, "Innovation Canada: A Call to Action – Expert Panel Report", 2011)

# C-NLOPB R&D Guidelines

$$\begin{array}{|c|} \hline \text{R\&D/E\&T Funding} \\ \hline \text{Requirement} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Gross} \\ \hline \text{Revenue} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{Five Year Average \%} \\ \hline \text{R\&D per Statistics} \\ \hline \text{Canada} \\ \hline \end{array} \text{Less} \begin{array}{|c|} \hline \text{Development Credit} \\ \hline \end{array}$$

## Key requirements:

- Eligible spending:
  - R&D/E&T activity carried out in the Province of Newfoundland and Labrador
  - Increased R&D, education and/or training capacity in the Province
- Pre-approval of R&D projects is required from C-NLOPB
- Production phase requirement is spread over each Production Operations Authorization (POA) period during production life

# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- ➔ • The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - ❑ Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - ❑ Seeding Programs
    - 2012 Call for Proposals
  - ❑ Unsolicited Proposals

# Petroleum Research Newfoundland and Labrador

## Organization Background

- Petroleum Research Newfoundland and Labrador is a federally incorporated, not-for-profit organization
- Founded in 1999 as the Atlantic Canada Petroleum Institute
- Renamed Petroleum Research Atlantic Canada in 2002
- Collaboration among academia, governments and the oil and gas industry in Atlantic Canada

# Restructuring

- Restructured to become the principal delivery agent for collaborative offshore oil & gas industry-based R&D funding in Newfoundland and Labrador
  - Closed Nova Scotia office in April 2011
  - Nova Scotia R&D projects returned to Operators
  - Funding Members are now NL industry only
  - Non-voting provincial and federal representatives on the Board of Directors

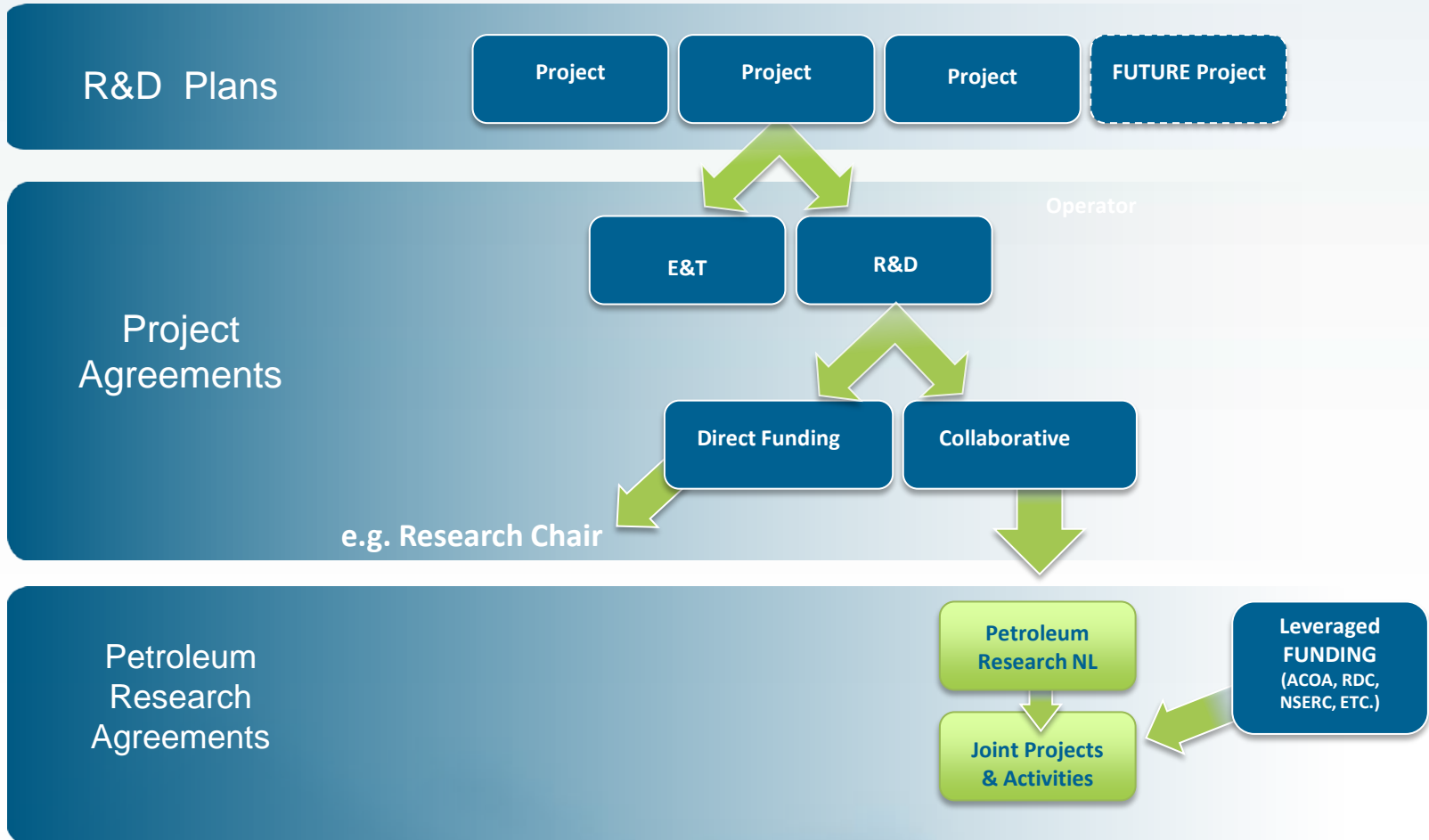
# Mission Statement

*Our mission is to identify opportunities, develop proposals, fund, and manage the execution of research and technology development projects on behalf of the Newfoundland and Labrador offshore oil and gas industry.*

# Members



# The Role of Petroleum Research NL



# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - Seeding Programs
    - 2012 Call for Proposals
  - Unsolicited Proposals

# R&D Programs Snapshot

		Directed R&D Programs	Seeding Programs
Strategic Focus Areas	Arctic & Harsh Environment	Trenching Ice Management Program	2013 Call for Proposals
	Subsurface/Advanced Well Design	Hydraulic Fracturing Chemical EOR (Enhanced Oil Recovery) Acoustic Zoom Subsea Processing	2011 Call for Proposals Other JIPs (e.g. EOR in Complex Reservoirs (MUN))
	Health, Safety & Environment	Escape Evacuation Rescue (EER) in Ice Safety & Survival Simulation	2012 Call for Proposals Other JIPs (e.g. Dive Masks)
	Other		Miscellaneous studies CREATE  Mitacs Internships

# Presentation Outline

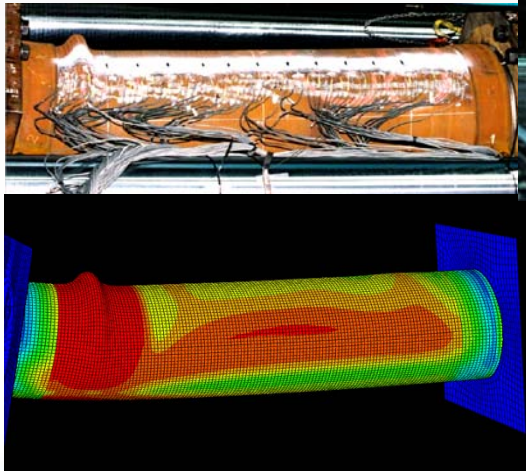
- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - ❑ Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - ❑ Seeding Programs
    - 2012 Call for Proposals
  - ❑ Unsolicited Proposals

# Petroleum Research Strategic Focus Area

## Arctic and Harsh Environments

To develop technology to reduce risk and/or cost of operation in arctic and harsh environments

# Arctic R&D Capability



**NRC-CMRC**



**MARINE INSTITUTE**

**INTECSEA**  
WorleyParsons Group



# Trenching JIP

## Objective

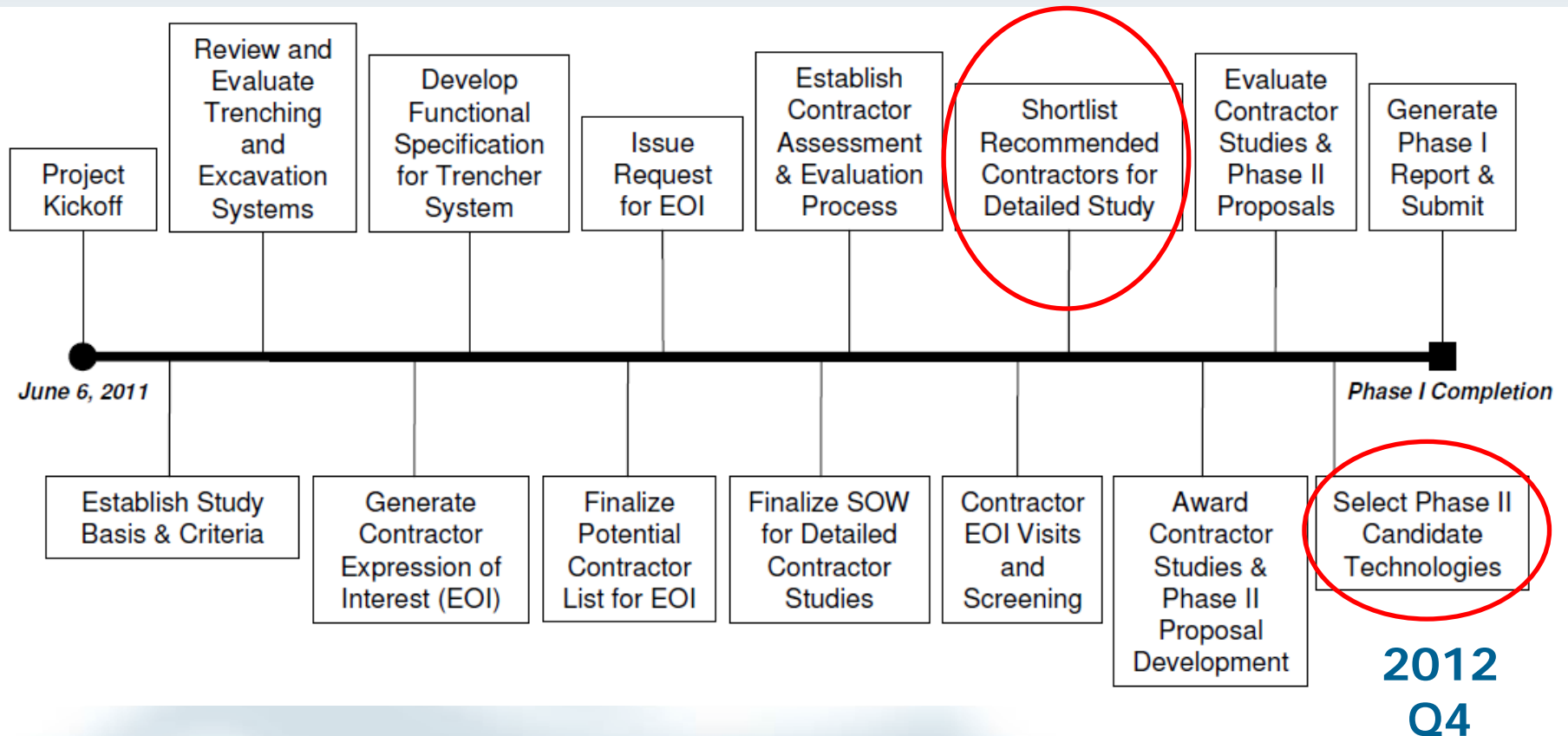
- Develop proven trenching system for protection of subsea systems against ice scouring of seafloor so future field developments can be planned based upon reliable, predictable execution of trenching effort

## Scope

- Understand trenching requirements in specific conditions
- Evaluate improved trenching technologies
- Evaluate marine infrastructure needs
- Extend trenching technology capabilities to meet requirements
- Conduct field trials to evaluate and prove capabilities

# Trenching JIP - Phase 1

2012  
Q1



# Ice Management Program

## Overall objective

- Improve ice management system to improve safety, operational efficiency and capability in existing arctic and harsh environments

## Scope

- Improved ice management performance and technologies
- Evaluate new technologies through field trials
- Integrate technologies with operations
- Train personnel in ice management technologies



Image NASA

# Potential Research Projects

Suggested Research	2012	2013	2014	2015
Ice/Iceberg Detection	Dual Pol Marine Radar			
	Advanced Satellite Radar			
	Data Fusion			
	Other Detection Technologies			
Threat Analysis & Drift Forecasting	Enhanced Iceberg Drift Models			
	Enhanced Sea Ice Drift Models			
Towing	Managing Large Icebergs			
	Managing Icebergs in Pack Ice			
Towing Automation	Iceberg Tow Automation			
Ice Management/ Pack Ice	Multi-Vessel Ice Management Performance			
	Improved Icebreaker Design			
Station-Keeping	Ice Load Prediction for Compliant Structures			
	Development of Enhanced Dynamic Positioning (DP) Systems			
	Ice-Modified Structures			

# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - ❑ Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - ❑ Seeding Programs
    - 2012 Call for Proposals
  - ❑ Unsolicited Proposals



# Petroleum Research Strategic Focus Area

## Subsurface/Advanced Well Design

Develop knowledge and technology to increase recovery from declining & future field developments, and develop marginal reservoirs

# Subsurface / Advanced Well Design

## Objectives

- Increase recovery rates from existing reservoirs
- Reduce the costs of development wells

## Scope

- Evaluate current technology and methods
- Define technology gaps, identify new technology
- Optimize new and existing technologies to be applied locally
- Improve well design solutions for reservoirs

# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - ❑ Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - ❑ Seeding Programs
    - 2012 Call for Proposals
  - ❑ Unsolicited Proposals



# Petroleum Research Strategic Focus Area

## Health, Safety and Environment

To develop technology to reduce health, safety and environmental (HSE) risks for operation in arctic and harsh environments



# Health Safety and Environment

- HSE has been a long-term focus area for Petroleum Research
- Largest funding priority historically
  - \$2.5M into 24 projects



# Some Current Projects

- Produced water monitoring and treatment
- Low-cost sensors for characterization of fugitive or flare emissions
- Simulation systems for safety training
- Escape Evacuation Rescue (EER) in Ice



# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - ➔ □ Seeding Programs
    - 2012 Call for Proposals
  - Unsolicited Proposals

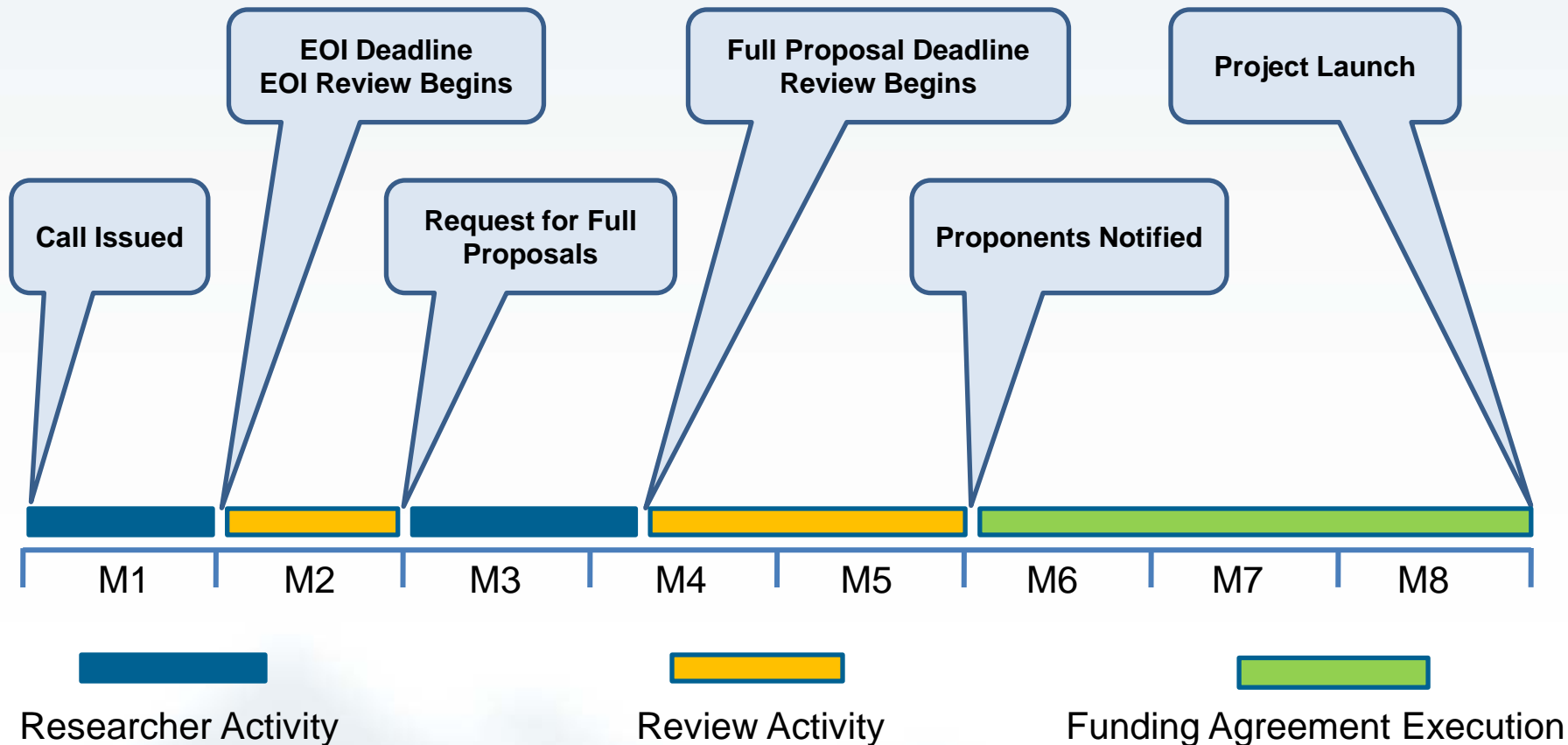
# Seeding Programs

- Objectives
  - Support capacity development in strategic focus areas
  - Initiate technology development in early part of the innovation supply chain
- Key Activities
  - NSERC-CREATE Training Program for Offshore Technology Research (MUN)
  - Mitacs Accelerate Internship Program
  - Annual Call for Proposals

# Calls for Proposals

- Objectives
  - Provide formal mechanism to hear about new ideas
  - Initiate technology development in early part of the innovation supply chain
  - Keep the funnel full
- Applicants define the scope of work and propose projects within a specified subject area
- Focused on applied R&D in conceptual development phases
- 2012 Call – (Health Safety and Environment) closes February 10, 2012

# Call Process/Timeline



# Presentation Outline

- R&D in the Newfoundland & Labrador Oil & Gas Industry
- The Role and Structure of Petroleum Research NL
- Petroleum Research NL Programs
  - Strategic Focus Areas
    - Arctic and Harsh Environments
      - Trenching
      - Ice Management
    - Subsurface / Advanced Well Design
    - Health, Safety and Environment
  - Seeding Programs
    - 2012 Call for Proposals
  - ➔ □ Unsolicited Proposals

# Unsolicited Proposals

- We accept unsolicited proposals that are aligned with our Members' interests
- Process
  - Submit Expression of Interest form found on website
  - Petroleum Research reviews submissions and advises proponents of initial decision
  - Members review selected EOIs
  - If interest exists, invitation to submit full proposal
  - Accepted proposals are subject to standard Petroleum Research agreements

# Closing Messages

- 90% efforts to Directed Research on Strategic Focus Areas (Major JIPs)
- Scale is increasing
- Project Execution and Business Savvy matter
- Confidentiality
- Intellectual Property

Thank You