



Comments on Hebron Development Project Comprehensive Study Report

Presented by:

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Nature Newfoundland and Labrador

- Formerly the Natural History Society
 - Active in NL since 1910
- A Nature Canada affiliate
- Not primarily an environmental activist group
 - Makes submissions to government on key issues
- Previously undertook detailed reviews of White Rose and Terra Nova projects

CSR Presentation (good)

- Organization worked well
- Cross-referencing effective
- Metric (with industry units provided)

- Made reviewing time efficient!

CSR Presentation (bad)

- Deferring of details until “Front End Engineering Design”

“An evaluation of design loads on the Hebron Platform, due to the metocean environment and associated uncertainties, will be conducted during FEED, and further refined during detailed design.”

- The concern has been identified
- Pretty hard to assess the management

CSR Presentation (bad)

- Issues were identified in the consultations
 - But then not really addressed ...

In Table 5-2

“Provide public access to 24-hour monitoring raw data for produced water and other waste streams”

Chapter 15

I could not find any statement about publishing raw data in chapter 15

Project Need

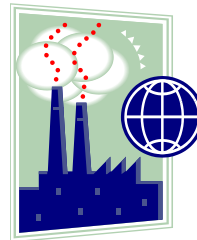
- Modern society relies on petroleum products



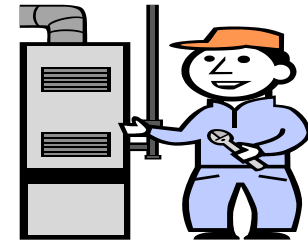
Transportation



Agriculture



Industry/Manufacturing



Heating



Plastics

- Economic benefits to NL are not the only motivation!
- **Any benefits must be balanced against environmental costs**

Earth provides enough to satisfy every man's need, but not every man's greed.--Mahatma Gandhi

Produced Water

- Hebron to generate 366 million cubic meters of produced water
 - That's a cube of 700m x 700 m x 700 m
 - 30 times the volume of St. John's harbour
 - Total OIL in produced water: 13,000 cubic meters or 80,000 bbl
- **Hebron proposes to reinject: EXCELLENT**
 - But, cannot confirm until well into project
 - Decision criterion **MUST** be presented up front
- **Environmental Impact Must be Assessed assuming reinjection is not possible!**

Produced Water

- CNLOPB produced water regulations
 - 30 mg/l average oil in water (44 mg/l max 24 hour avg.)
 - Can be “reasonably” achieved
- By comparison, bilge and deck drainage
 - 15 mg/l average oil in water (MARPOL 73/78)
 - At a fraction of the produced water volume!
 - Soluble content (aromatics) as well as other chemicals, radioisotopes not regulated
- **Regulations are not environmentally defensible**

Produced Water

- Monitoring has proven inadequate
 - Based on ocean water samples once a year!
 - Residual oil content (if high) has potential to create surface slicks that could impact seabirds

The CSR states:

“PW treatment is inherently difficult to predict, and the system has been designed based on the limited information and well samples available. Upset conditions, and operations learning-curve periods can be expected, particularly during early operations.”

- **Monitoring CONTENT at source should be part of EEM**

Accidental Spills

- Small accidental spills inevitable
- The industry through the CNLOPB reports these spills with agonizing accuracy
 - 62.83 L in spills of less than 1 L (1997-2010)
- Reporting of these spills is valuable for both safety and identifying problem areas
- There is no effective quantification of the impact

Tsunami Risk

- Tsunami risk is evaluated as “low” because:
 - Not a lot of seismicity in NL region
 - Only one historic record (1929 Burin Peninsula)
 - Bull Arm is well inshore



Tsunami Risk

- Not a lot of seismicity in NL region
 - Tsunamis cause damage long distances from their place of origin

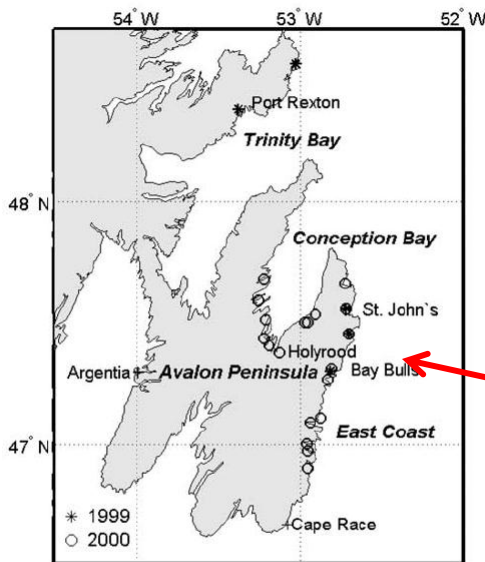


2004 Indian Ocean Tsunami!

- **Must consider tsunami risk over entire Atlantic**

Tsunami Risk

- Not a lot of seismicity in Atlantic basin
 - But tsunamis are formed by many processes



Storms moving rapidly over shelf edge

Caused tsunami like waves and damage in 1999 and 2000!

Figure 1. Southeastern Newfoundland showing locations with reports of wave events in 1999 (stars) and 2000 (circles).

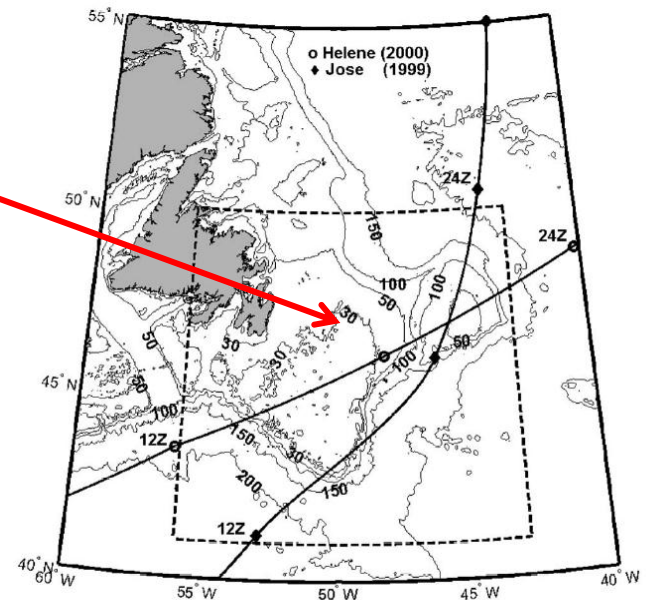
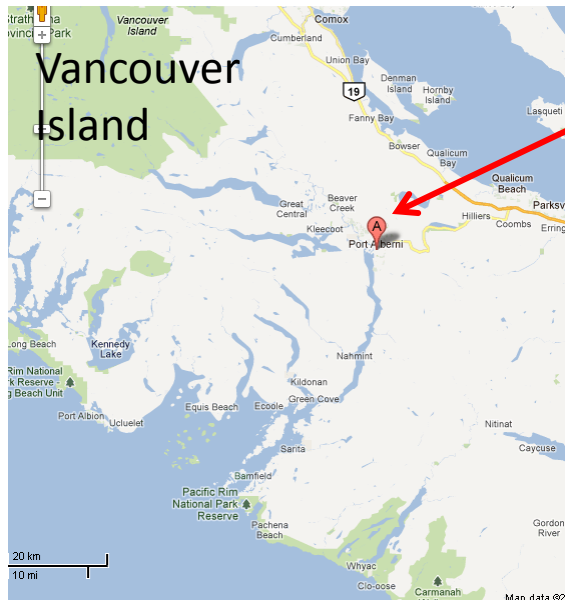


Figure 2. Map of study area. Newfoundland and Labrador are shaded. Six hourly storm positions for Tropical Storms Helene and Jose are marked by circles and diamonds, respectively (courtesy of Newfoundland Weather Centre). The contours are shallow water gravity wave speed in ms^{-1} and are related to water depth H by $c = \sqrt{gH}$. The boundary of the model domain is shown by the dashed box.

Tsunami Risk

- Bull Arm is well inshore
 - Tsunamis can travel up channels and excite “resonant” responses!



1964 Alaskan Earthquake tsunami caused significant damage to the town of Port Alberni located at the end of a 50 km long inlet!



<http://www.portalberni.ca/node/39>

Tsunami Risk

- Tsunami risk probably is “low” BUT
 - All possible causes should be considered
 - More comprehensive assessment should be provided



Noise Pollution

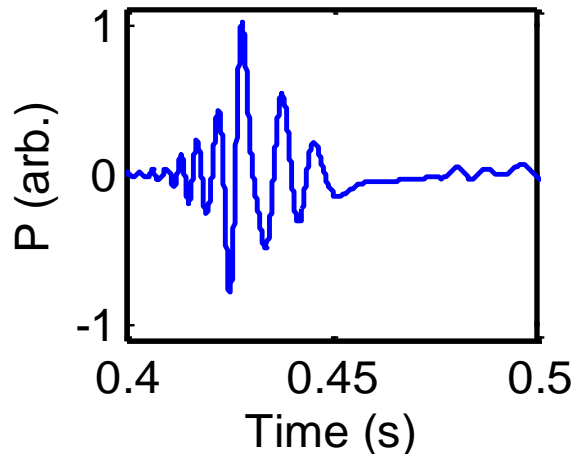
- Offshore seismic surveys
 - Chronic noise
- Ship traffic
 - Chronic noise
- Pile driving
 - Possible periods of noise
- Blasting
 - Impulsive, exceptional



Noise Pollution

- The problem (chronic noise)

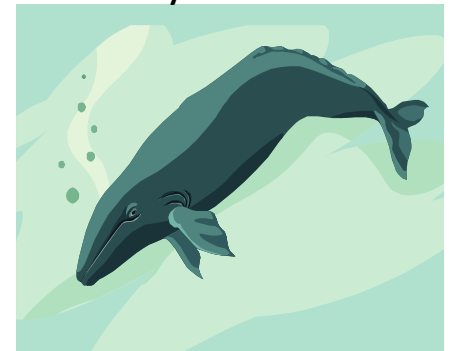
Seismic pulse, 500 m to side of source



This signal has a lot of energy at around 50 Hz

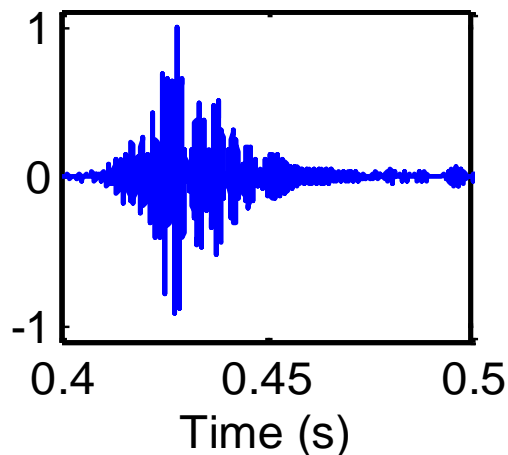


And that happens to be a frequency range used by whales



Noise Pollution

- Humans don't use 50 Hz for communication (much)
- What would it be like to have an equivalent impulsive noise at say 1000 Hz (a frequency we use)



Same “envelope”, but
now at 1000 Hz

And that happens to
be a frequency range
used by humans



Noise Pollution

- Industrial noise is inevitable
- The Grand Banks and coastal NL are not quiet places given the extensive use by shipping
- Still, it is best to minimize the impact
- Schedule noise sources for times of the year when they will have the least impact!

Light Pollution

- Of particular concern to birds

- Will soon be four permanent light sources where before there was none!

Night Lights, 2002



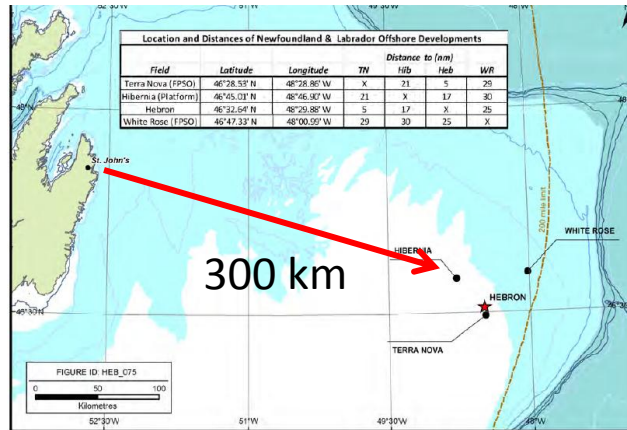
Independent Observers

1991



You can see many changes
St. John's

2011

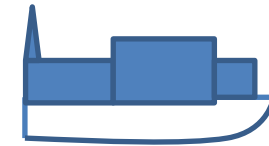


Note: The distances in the inset table above are in nautical miles (1 nm = 1.85 km)

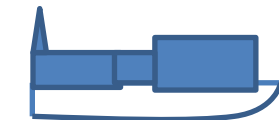
But you can't see the footprint of the industry



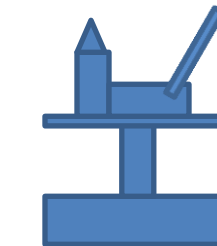
Hibernia



Terra Nova



White Rose



Hebron

Independent Observers

- Would provide added validation of the success of environmental safeguards
- Help QUANTIFY any impact, and record use of the area by (visible) animals
- Would be committed to watching for wildlife at ALL times
- Would contribute to a “culture of environmental awareness”

Recommendations

- Environmental Impact Must be Assessed assuming reinjection is not possible!
 - Decision criteria should be clearly stated in advance
- Need environmentally defensible produced water regulations
- Monitoring CONTENT of produced water should be part of EEM
- More comprehensive assessment of tsunamis
- Schedule noise sources for times of the year when they will have the least impact!
- Provide a mechanism that allows for independent observers

Thank You



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