

# Hovertrans® air cushion systems

*Using proven technology  
to improve the economic  
viability of developing fields in  
remote areas*



*Edmonton, May 2009*

- About Hovertrans
- Previous Projects
- What is a Hoverbarge?
- Hoverbarge Propulsion
- Video
- The 2500t payload Hoverbarge
- Heavy load access to the Oil Sands
- Summary

- Formed by the original founders of Mackace
- Over 30 years experience
- The only successful Hoverbarge company in operation
- Continuous design development
- World wide experience
- International offices

- All of our Hoverbarges have been successful in their application. We conduct the following:
  - ✓ Route Surveys
  - ✓ Feasibility Reports & detailed scope
  - ✓ Outline Design (including FEA)
  - ✓ Detailed Design
  - ✓ Manufacture
  - ✓ Training



# Previous Projects



450T Payload under construction



160t Ferry Crossing



50t Bog Drilling



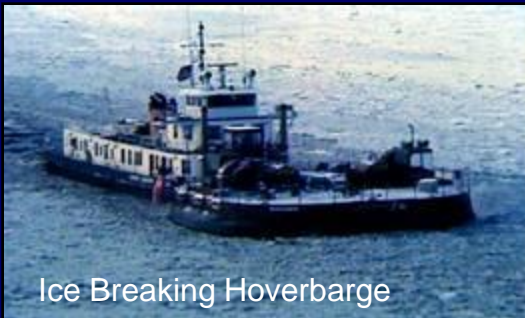
200t Siberian – Available Now



250t Deep Sea



30t Core Sampling



Ice Breaking Hoverbarge



330t swamp drilling



50t Core Sampling



# What is a Hoverbarge?

- A standard barge, built to marine rules with an air cushion system to provide lift.



## Hovercraft Characteristics

- Noisy
- High Speed
- Lightweight
- Gas turbine engines
- Complex operation
- Limited payload
- Small deck area

## Hoverbarge Characteristics

- Low noise
- Low speed / stable
- Solid structure
- Diesel engines
- Simple operation
- Huge payload
- Large deck area



- Truck to site
- Sledgehammer & spanner
- Re-use at different location
- 50 ton payload takes 3 men 12 hours



Modular Hoverbarge made from flexi / uni floats



*Yukon Princess - 160 Ton Payload*

- Increased payload
- Can be built on-site
- Ideal for long term contracts
- Built to Lloyds / ABS certification



- Maximum deck area
- Engines skid mounted for easy removal





# Hovertrans Skirt System

- Different to high speed craft
- Only 1 psi
- Toughened material
- No loop section
- Up to 10% loss
- Easy maintenance



- Swamp / Ice / Water / Land
- Reduce Environmental damage
- Movement across gullies/ditches
- Hover over stumps



Damage - Tractor Tracks

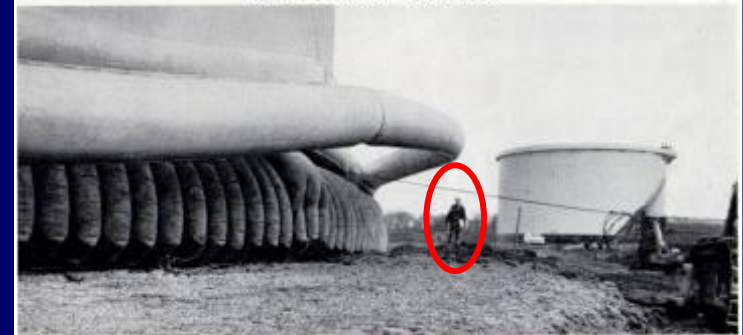




- Best application for air cushion technology
- Moving a 250 ton oil storage tank soon led to a 4000 ton tank being relocated
- The Sea Pearl could lift the cross channel Hovercraft on its back

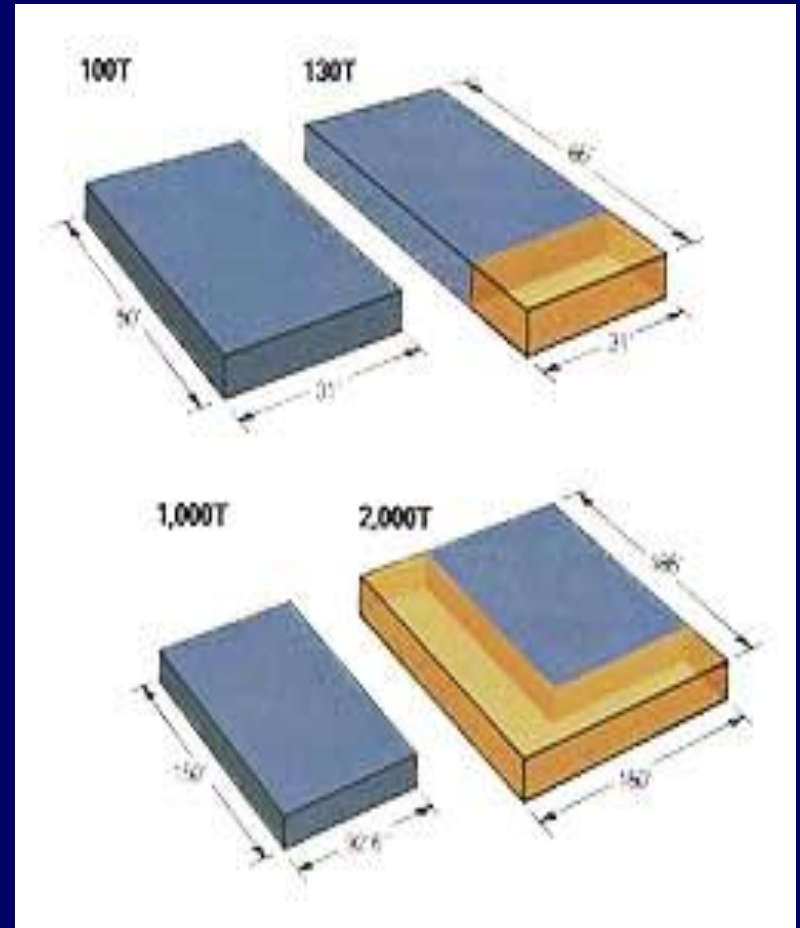


*An 8-ton winch for pulling and a 4-ton winch for side restraint were used for moving this 250-ton tank on the Stanlow, Cheshire, Refinery of Shell U.K. Ltd.*



*Tank on hover with air hoses and skirt segments fully inflated.*

- Larger deck area = higher payload
- Main cost in air cushion system
- Larger the size - better the economy



# Hoverbarge Propulsion

Methods of propulsion include:

- Amphibious tractors
- Tugs
- Winching
- Ducted Fans (for smaller Hoverbarges)





# Previous Self Propelled Hoverbarges

## Wheels



Self propelled Hoverbarges are not a new concept. Hovertrans engineers used hydraulically driven wheels to propel Hoverbarges over 30 years ago.



# Ground Contact Self Propulsion



## Self Propulsion Design – Based on the Worse Case

Calculations have been performed on worse case soil conditions, plus a 1.7 factor of safety

Thrust calculations include driving into a 18 knot headwind at 11kph

Redundancy has been built in to avoid any downtime in the event of individual drive failure

Designed with interchangeable parts

System designed for a 2500t payload Hoverbarge



# 2500t Payload Hoverbarge

Designed for moving large Heavy Modules

Making remote fields more economical



# Historic Increases in Size



**SRN 5 1964**  
Length 12.7m  
Width 7m  
All up Weight 6.6t  
Payload 2.6t



**SRN4 1968 (Mk 1)**  
Length 39.68m  
Width 23.77m  
All up Weight 167.8t  
Payload 64.5t

**10.6 x increase in size (area) and 25 x increase in weight**



**Modular Hoverbarge 1974**  
Length 24.34 m  
Width 13.4m  
All up Weight 110t  
Payload 50t



**Sea Pearl 1976**  
Length 55m  
Width 24m  
All up Weight 750t  
Payload 250t

**4.04 x increase in size (area) and 6.8 x increase in weight**

# Proposed Increase in Size

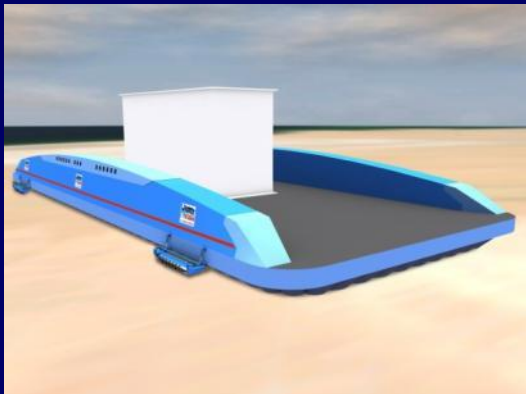


## Toucan I

Length 51m  
Width 27m  
All up Weight 900t  
Payload 330t

## Monty (under construction)

Length 67m  
Width 45m  
All up Weight 1,100t  
Payload 450t



**1200t Payload**  
Length 155m  
Width 52m  
All up Weight 5,400t  
Payload 1,200t

**2500t Payload**  
Length 177m  
Width 75m  
All up Weight 10,000t  
Payload 2,500t

**2.67 x increase in size (area)**    **4.40 x increase in size**  
**4.9 x increase in weight**        **9 x increase in weight**

The proposed increase in Hoverbarge size is in similar proportion to size increases already made by the British Hovercraft Corporation and Hovertrans.

# 2500 tonne payload

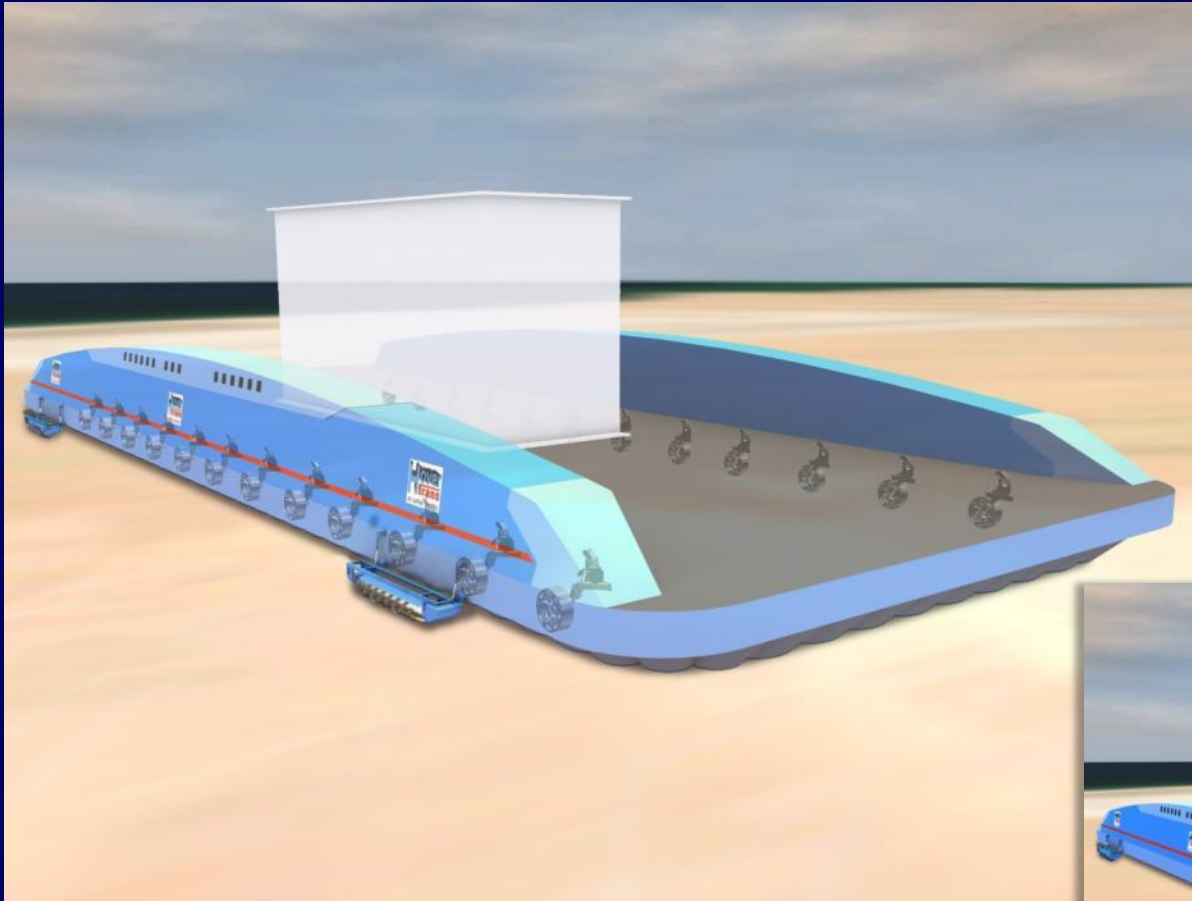
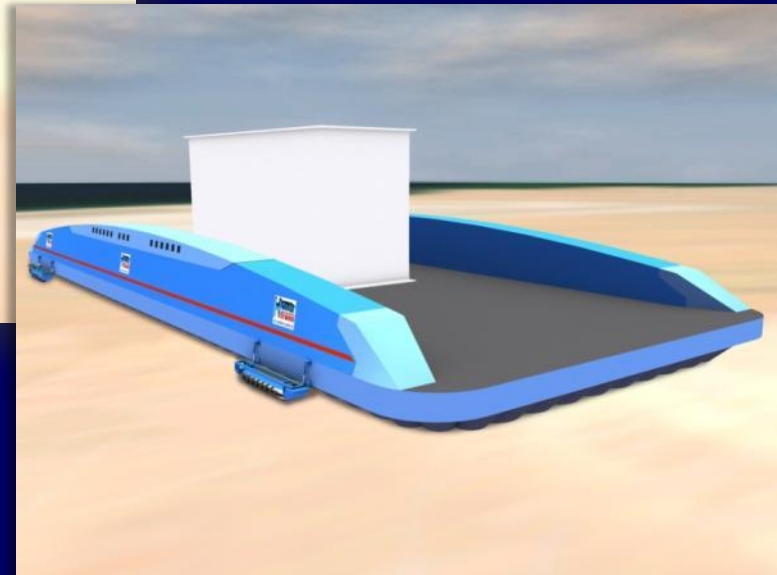
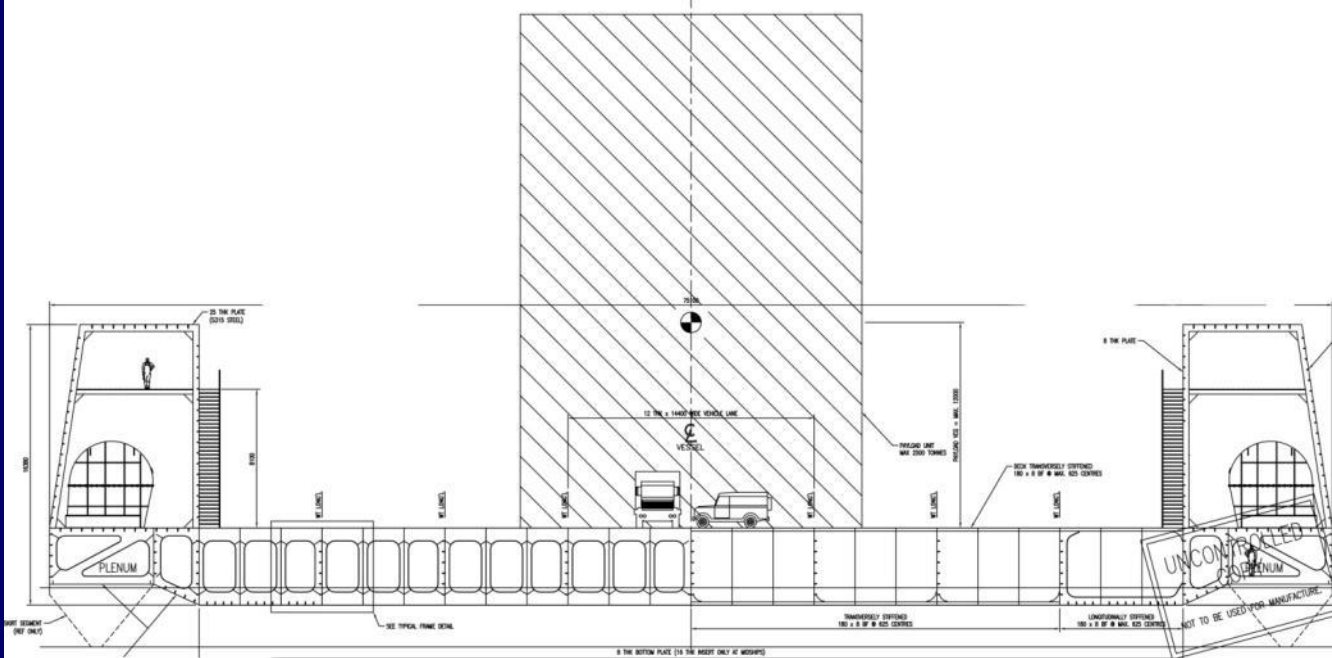


Image shows  
Hoverbarge ground  
contact self propulsion.

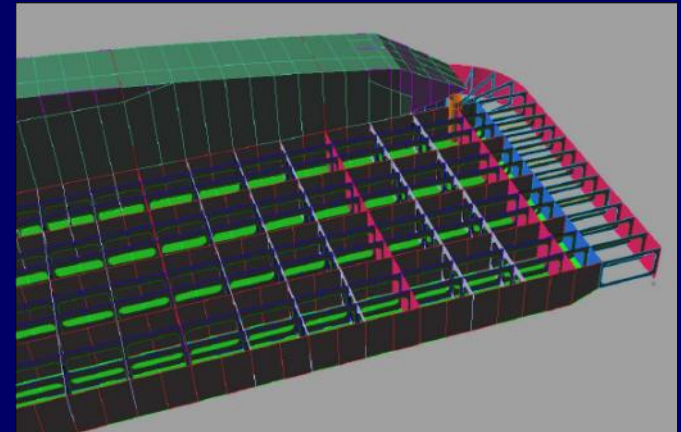
This system received a  
low/medium risk score  
from a DNV risk analysis



Length = 177m  
Width = 75m  
Payload = 2500t



The 2500t outline structural design has been FEA approved allowing progression to the detailed design stage.



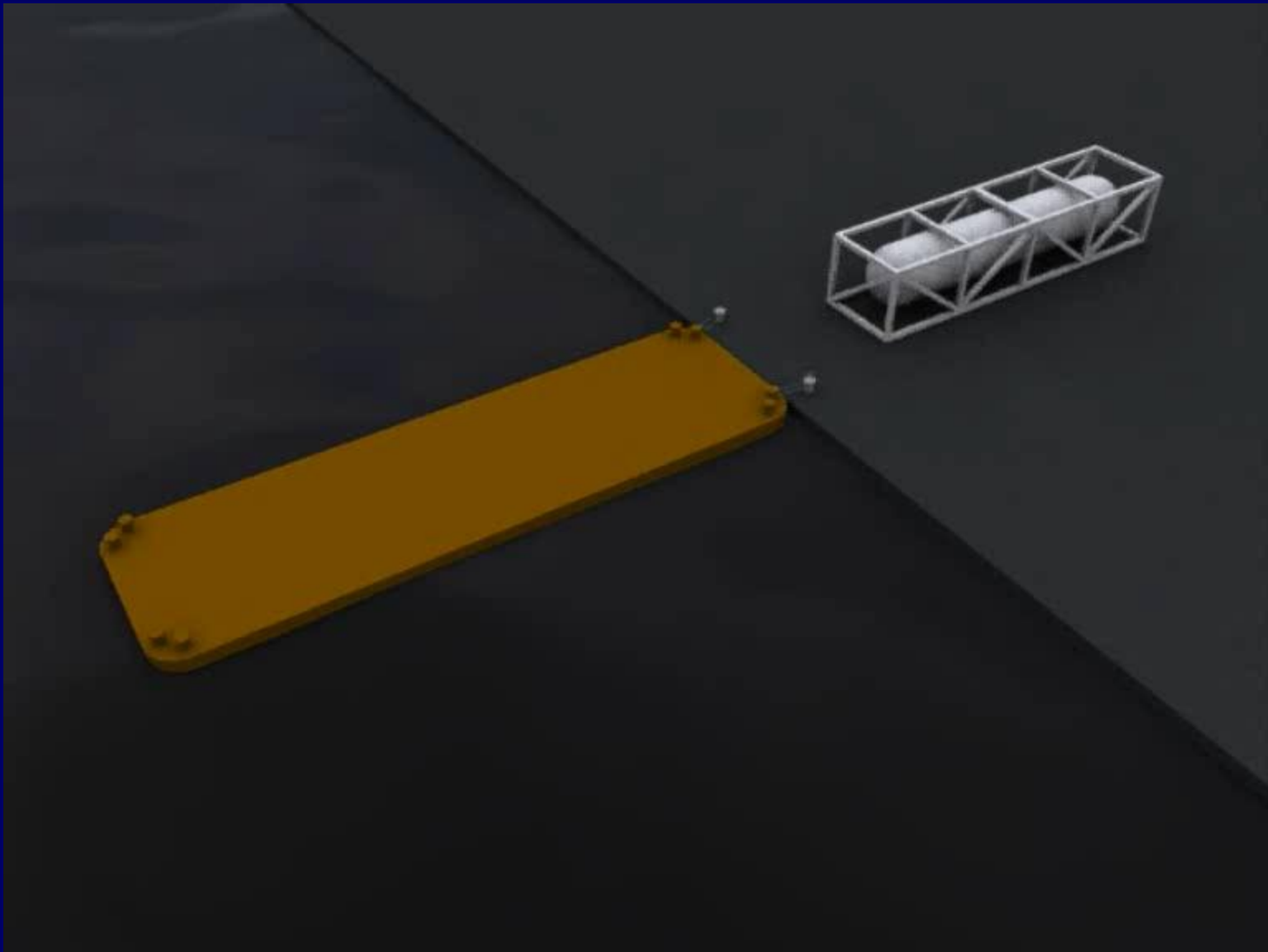
- Hovertrans conducted a route survey and feasibility report for Colt in 2003
- The Hoverbarge enables prefabricated modules to be transported from China to the Oil Sands site
- The Hoverbarge is Amphibious, expanding the access season

One Hoverbarge option is to transport modules from China to the Oil Sands.

This animation shows one of the options, using a Hoverbarge and a Semi Submersible Ship.



# The Hoverbarge Solution



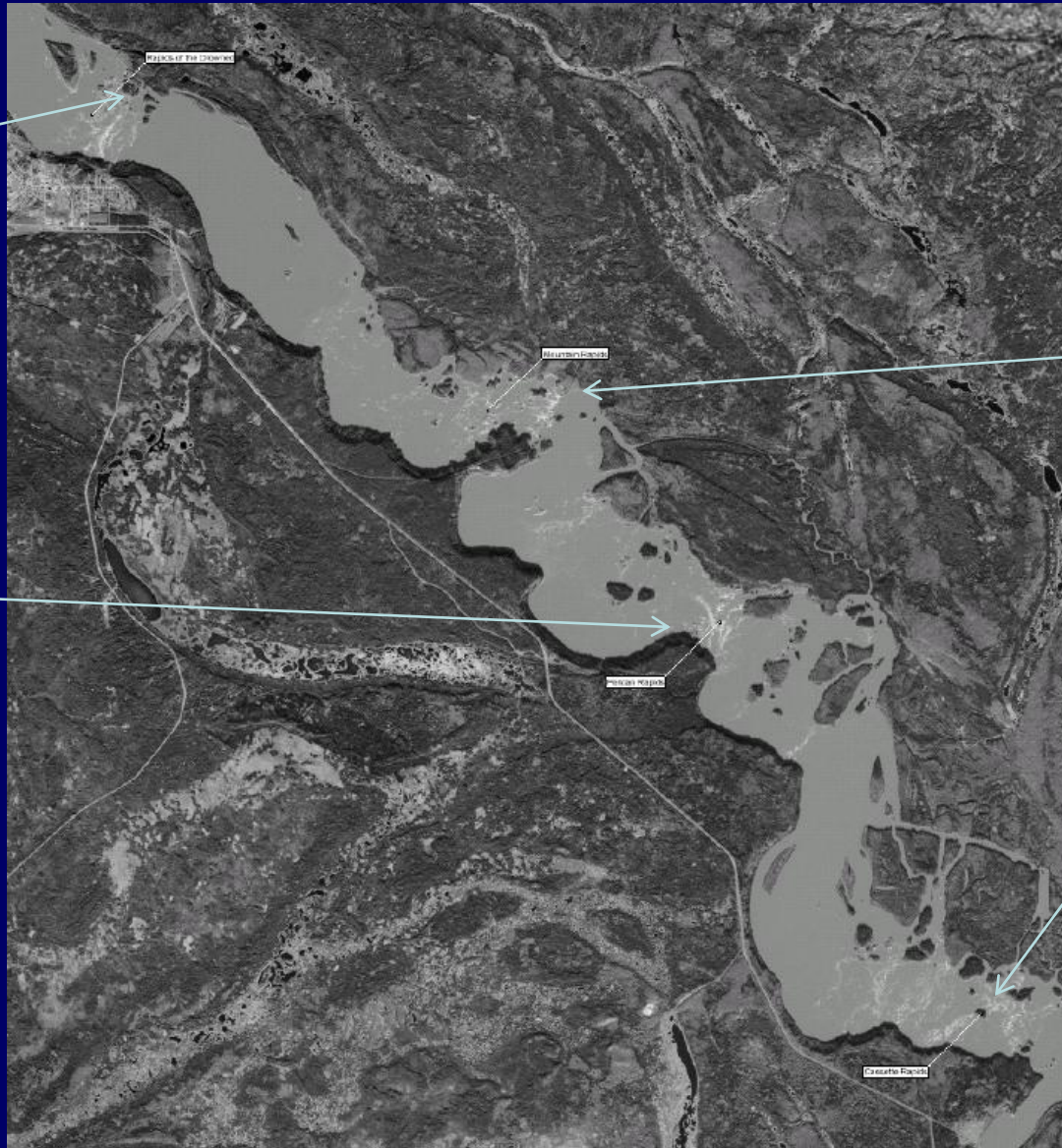
# Four Rapids at Fort Smith

Rapids of the Drowned

Pelican Rapids

Mountain Rapids

Cassette Rapids



# The Rapids

## Rapids of the Drowned



## Mountain Rapids



# Fort Smith Rapids

## Pelican Rapids



## Cassette Rapids





# Lake Athabasca Estuary





# Small Islands in the Athabasca



- Hovertrans is the most experienced Hoverbarge designer and manufacturer in the World
- The new 2500t payload Hoverbarge has been proven to be a viable concept
- Heavy Prefabricated modules can be transported to the oil sands region using Hoverbarges
- Smaller Hoverbarges could be used for supplies
- The operating and access season would be extended using Hoverbarges

# Any Questions?

For a copy of this presentation and further information please see me at the Hovertrans booth.

[www.hovertrans.com](http://www.hovertrans.com)