Electric Airship Transportation System

Team: Buoyant Aircraft Systems International, Inc.
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70 percent Canada’s landmass lacks access to all-season roads

“It’s BIG and has lots of Stuff, but we can’t get there”

- A treasure chest of minerals remain locked in the North
- Remote communities have deplorable living conditions

And things are getting worse …

- Canadian sovereignty threatened by warming Arctic Seas
- Ice roads becoming unreliable because of climate change
- A lower cost, year-round mode of transportation is needed.

“If some countries have too much history, we have too much geography.”

W.L. MacKenzie King (1874-1950)
former Prime Minister of Canada
The airship will do for the North, what the railways did for Western Canada 125 years ago.

Before the railway, Winnipeg was a small fur-trading village.

After the railway, Winnipeg became the Chicago of the North.

Before airships:
Poverty & Impassable landscapes.

After airships:
Access & Economic development.

19th century

21st century
Broad impacts of an Electric Cargo Airship for Canadians and the Canadian economy

- Year-round transportation to remote northern communities
- Improved health, education and standard of living for northerners
- National security, search and rescue
- Enhanced exports and international reputation
- Employment in a brand-new industry
- Creation of new economic opportunities
- Sustainable economic development
- Zero-carbon emissions, climate change solution
- Mineral Exploration and Mining Development
- Northern Food Security
## Benefits of Cargo Airships

| Employment Gains                  | • 1,000 manufacturing jobs  
|                                  | • 9,000 in operations and indirect jobs |
| Mining                           | • $7.5 billion GDP increase (5% of mining’s current contribution to GDP) |
| Government                       | • Increased taxes (25% of GDP rise)  
|                                  | • Reduced subsidies to North |
| Northern Sovereignty             | • Ability to increase presence and stretch military budgets |
| Investment and GDP               | • Annual sales of 36 airships at $30 million each: $1.08 Billion |
| Export Sales                     | • 50% of airship sales exported to Brazil, Russia, Southeast Asia, etc. |
| New Economic Opportunities       | • Transport of longer wind turbine blades |
| Remote Areas                     | • Increased economic activity  
|                                  | • Food security and better housing |
| Climate Change                   | • Replace Ice Roads  
|                                  | • Reduce GHG emissions of aircraft |

$10 Billion increase to the Canadian Economy
Customers
- Airlines
- Leasers
- Truckers

Supply-Enablers
- Resupply/Expeditors
- Aboriginal Housing/Nutrition North
- Freight

End-Users
- Defense
- Mining
- Project Freight

Market Participants

Financiers
- Private Investors
- Institutional Investors
- Pension Funds

Consortium Members
- Input Suppliers

Public Support
- Carbon Tax Credits
Buoyant Aircraft: Technical Feasibility

- Intersection of proven physics and new material and methods
- Required technologies already exist

Economic Feasibility

- Unique capabilities/high margins
- Built for Canada, marketable anywhere in the world
- Cruise speed 145 kmph - competitive with alternatives
- High rate of return on investment
Cessna Caravan

Today

Tomorrow

Buoyant Aircraft

1.5-tonnes lift @ $2/kg

15-tonne lift @ $1/kg

Lower costs and Unique Capabilities for Northern Transportation

Low Density and Delicate Freight

Awkward and Over-sized Freight

Cheerios

Ferris Bueller

Cranes
Infrastructure Costs: Gravel Roads Versus Cargo Airships

- Inuvik to Tuktoyaktuk completed in 2017 at cost of $3 million/kilometer
- @ $335,000 per person

The same investment in a cargo airship:
- Could replace 1,500 km of ice roads that serve 8 remote communities
- @ $40,000 per person

$300 million to replace 100-km ice road with a gravel road

- Inuvik to Tuktoyaktuk completed in 2017 at cost of $3 million/kilometer
- @ $335,000 per person

Ontario: 7,500 people
Estimated demand for remote locations

Canada:
- Resource development: 250
- Northern Re-supply: 65%
- Project freight: 15%
- Defence and Public Works: 10%

International demand:
- Brazil: 200
- Russia: 200
- Southeast Asia: 200
- Africa: 150
- Australia: 50
- Alaska: 30
- Europe: 20

Additional demand for intercontinental transport, with up to 10,000 km range

Source: BASI estimate
Timelines for privately-financed airship development

Engineered Prototype 24 months

Test Flights & Certification 24-36 months

Full Scale Manufacturing 24 months - ∞

Publicly-provided infrastructure requirements

Buoyant Aircraft Rotating Terminal (BART)
- Last mile transfer to trucks
- Safe and efficient ground handling
- Ballast transfer, fuel storage and power supply
- Minimized cost for regular delivery service

Airdock
- Annual inspections and heavy overhauls
- One airdock for every 25 operating airships
The Electric Cargo Airship is a “big idea” both literally and figuratively.

Major innovations in transportation are “disruptive technologies.”

Nation-building: improves connectivity for 70% of Canada’s land mass without roads

Innovative: zero-carbon form of freight and passenger air transport

Economic impact: new aerospace manufacturing and northern resource development

Social impact: ends of food insecurity in the North and hope to better lives

Environmental impact: replaces melting ice roads).

Made in Canada solution to a chronic transportation problem. Canadians can take the lead in buoyant technology and export it around the world.

Norge, 1926

First aircraft to cross the North Pole

This is not rocket science. It’s just balloon science!