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A Diversified Metals & Mining Company



## **Polaris Operations From Discovery to Closure**

Northern Mines Ministers Conference  
November 26, 2004, Ottawa

# Presentation Overview

- Discovery
- Development
- Engineering Innovation
- Living on Top of the World
- Socio-Economic Action Plan
- Decommissioning
- Farewell to Polaris



# Polaris Location



# Discovery

- 1960 - during exploration for oil permits
- 1970 - gravity survey by Cominco (now Teck Cominco)
- Surface drilling and underground exploration
- 1973 - reserves estimated at 25 million tons grading 14% zinc and 4% lead



# The Orebody

- Sulphide minerals – sphalerite (zinc) and galena (lead)
- High grade
- Excellent metallurgy
- Underground within permafrost
- Porous but pores filled with ice
- Ground conditions good as long as kept frozen



# Development

- Feasibility, engineering and environmental studies
- Export agreements, shipping arrangements
- Financial resources for capital costs
- Sales contracts with European smelters
- November 5<sup>th</sup>, 1979 - decision
- November 1981 - first concentrates

# Facilities

- Decline to underground workings
- Underground crushing
- Processing plant
- Powerhouse
- Concentrate storage
- Conveyer ship loader system, dock
- Airstrip
- Accommodation complex

# Engineering Innovation

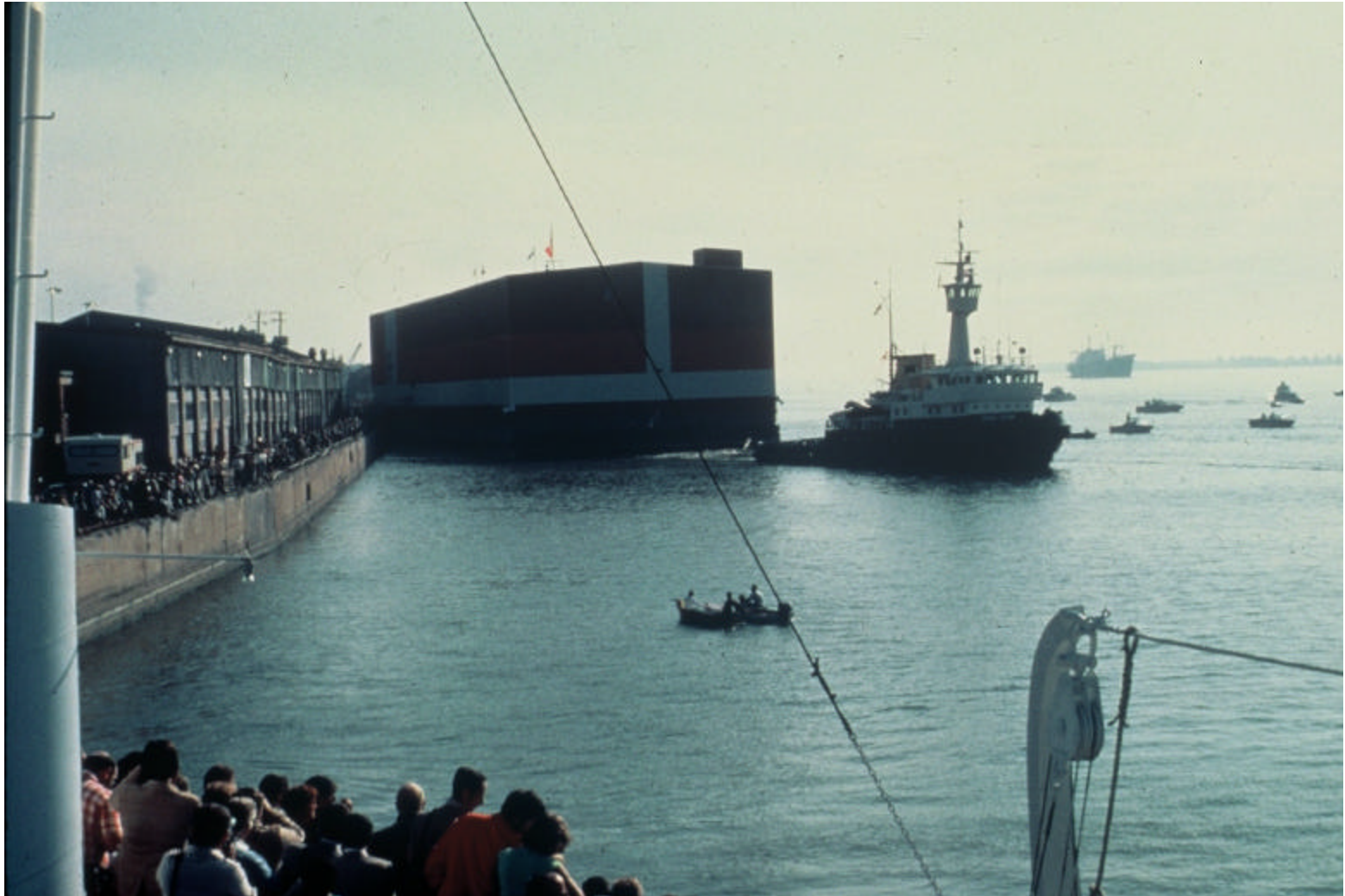
- Preserving the Permafrost:
  - Ventilation
  - Drilling
  - Back fill
  - Surface buildings
- Energy efficiency, heat recovery
- Short shipping season
- High cost of transport



# Polaris Process Barge



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July 1981



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# Shipping



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# Compact Operation



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# Tailings Management

- 1 million tons/year processed by grinding and flotation
- Garrow Lake – 4 km from site
- Meromictic, bottom zone devoid of aquatic life
- Pipeline, thickener, water recycled to mill for reuse



# Living on Top of the World

- Fly-in fly-out mine
- Of 250 employees, about 190 on site
- Various rotation schedules
- Hiring policies and leave programs
- High rates of pay and gainshare program
- Excellent accommodation, recreational facilities



# Aerial View



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# Socio-Economic Action Plan

- Employment and training for Native people of NWT
- Employment for residents of NWT
- Sensitive work rotation schedules for Inuit employees, adjust to mitigate negative impacts
- NWT business to participate in supply of goods and services
- Maximize benefits and minimize adverse social and cultural impacts

## Socio-Economic Action Plan (con't)

- Written communication in Inuktitut and English
- Translator at community meetings
- Assist in promoting effective law enforcement
- Monitor and report on measures
- Contractors to conduct operations consistent with spirit and intent of MOU

# Neighbour to Resolute



- On-site activities and progress were communicated regularly
- Concerns addressed at village council
- Children and residents were able to enjoy the facilities
- Local charities and community programs were supported



# Decommissioning

- Detailed planning for closure since 1997
- Environmental work 1999-2000
- Extensive regulatory and public consultations, approvals issued
- Production ceased September 2002
- Demolition, reclamation work commenced immediately
- Program completed, September 2004
- Ongoing monitoring



November 1981-September 2002



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September 2004



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# Farewell to Polaris

- A unique model for excellence in mining innovation
- Achievements due to dedication of employees

