

Appendix I Presentations from Community Technical Meetings



ENBRIDGE
NORTHERN
GATEWAY PIPELINES

Enbridge Northern Gateway Project

Community Technical Meetings

September 21st, 22nd, 23rd – Terrace, Kitimat, Burns Lake



Meeting Format and Rules of Engagement

- Enbridge presentations followed by audience question and answer period;
- Questions can be from the floor, written or from Webcast (Burns Lake)
- Respect the speaker: listen respectfully and ensure whomever is speaking has the opportunity to be heard
- **Agenda - Observe time constraints – be succinct in questions and answers**
- Plan for a short coffee refresh at 8:30 pm
- Meeting will adjourn at 9:30 pm

Tonight's Agenda

- **6:55pm** **Welcome and Introductions**
- **7:05pm** **Michele Perret – Enbridge Pipelines Update**
- **7:10pm** **Jody Whitney – Aboriginal Relations Program**
- **7:20pm** **Ray Doering – Pipeline Routing**
- **7:30pm** **Ray Doering – Marine Safety**
- **7:40pm** **Mike McManus – Pipeline Integrity and Risk Management**
- **7:50pm** **Lori Campbell – Skills Development and Employment Initiatives**
- **8:00pm** **Question and Answer Period**
- **8:45pm** **Coffee/Tea Break**
- **9:00pm** **Resume Question and Answer Period**
- **9:25pm** **Last question – wrap up**

If you do not get the opportunity to raise your question, please write your question on one of the cards and hand it in with your evaluation form. Questions and answers will be posted on the Project website at www.northerngateway.ca



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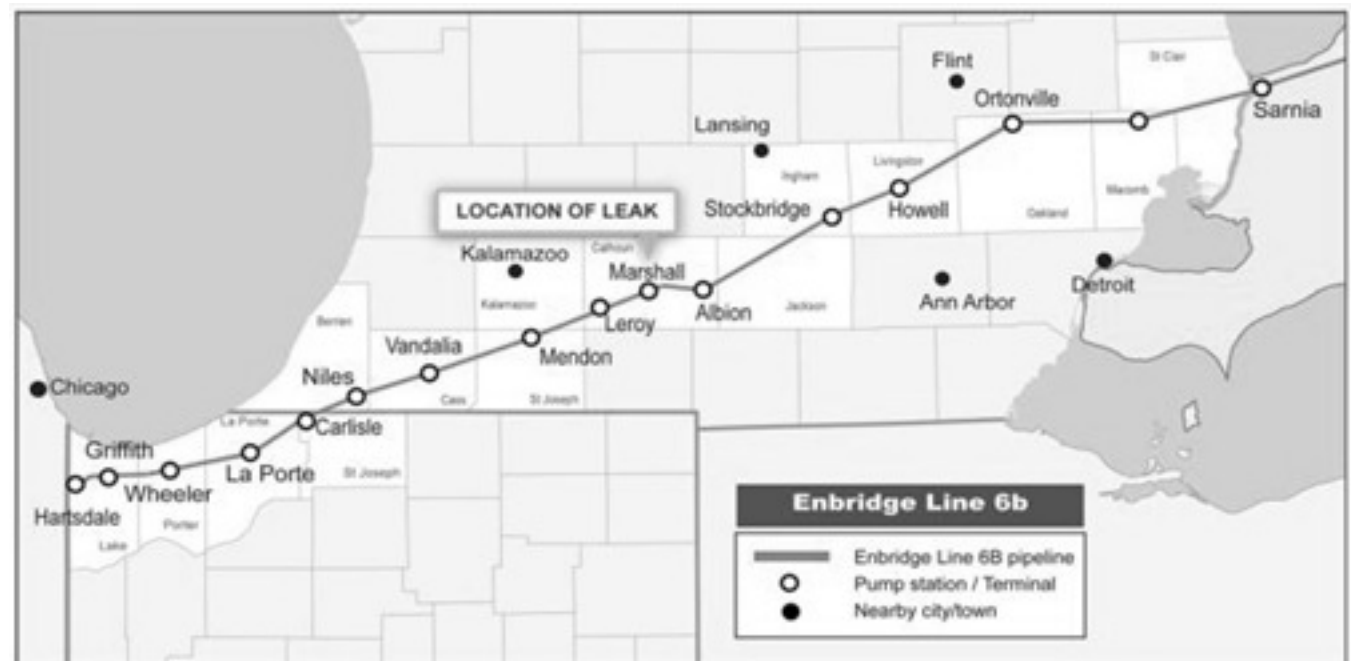
Enbridge Pipelines Corporate Update

September 2010



Marshall, Michigan Incident

- On July 26, 2010 a leak was detected on a pipeline on the Enbridge Lakehead System near Marshall, Michigan pump station
- Approximately 19,500 barrels of crude oil released
- Oil entered Talmadge Creek and from there into the Kalamazoo River
- Cause of leak is under investigation by the National Transportation Safety Board



Key Statistics - as of Sept 23

- Number of people on site: More than 1,800 employees and contractors
Length of boom: More than 123,000 ft of containment and absorption boom at 23 boom sites
- Status of cleanup: Cleanup progressing well. Working towards safely meeting the Environmental Protection Agency's Sept. 27 cleanup deadline.



PHOTO TAKEN AUGUST 8, 2010

Response Progress

- Clean-up continues along Talmadge Creek and is well underway along the Kalamazoo River (Sept 27 deadline)
 - 306 animals currently in care at the Wildlife Response Center and 1,347 have been safely rehabilitated and released since the spill
- Two Community Centres have been set up in Battle Creek and Marshall, MI
- Backfilling, contouring and seeding is currently taking place
- Cleanup done under the oversight and guidance of the Environmental Protection Agency
 - Working with municipal, state and federal officials





response.enbridgeus.com



Rigorous, fair and open public review process

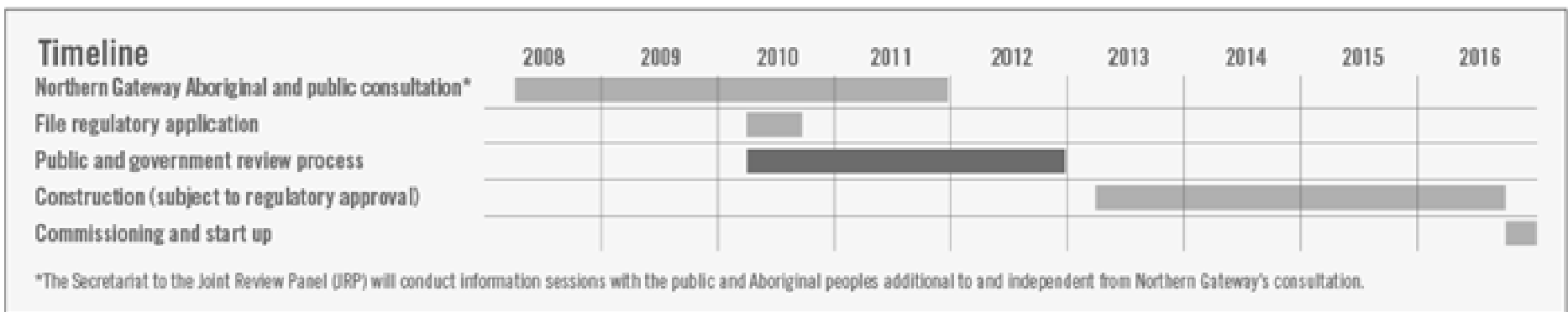


Public joint regulatory review (JRP)* led by:

- Canada’s National Energy Board (NEB)
 - Economic & technical feasibility, socio-economic & environmental protection
- Canadian Environmental Assessment Agency (CEAA)
 - high-quality environmental assessments in support of sustainable development

Additional agencies, including:

- Transport Canada
- Department of Fisheries and Oceans
- Indian and Northern Affairs
- Natural Resources





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Aboriginal Community Engagement Overview

September 2010



Enbridge Aboriginal and Native American Policy



- Ensure forthright and sincere consultation with Aboriginal peoples
- Facilitate a shared understanding of interests and appropriate courses of action
- Respect for Aboriginal peoples' traditional ways, land, heritage sites, and the environment



Aboriginal Engagement – Fall 2010

- Continue to develop and sustain effective working relationships with Aboriginal Groups
- Ensure Aboriginal Groups have access to Project information
- Introduce Community Opportunities Information
- Ongoing Aboriginal Traditional Knowledge Studies



Aboriginal Opportunities - Overview



- Equity Offering – total of 10% of Project equity for participating Aboriginal groups
- Community Trust – founded on sound operating principles, funded through profits earned by NGP owners
- Branded Programs - Neutral Footprint Program, Natural Legacy, Safe Community, Schools Plus
- Aboriginal Procurement, Employment and Training – develop business and capacity inventory
- Marine Services Portfolio - Tender for JV between participating Coastal First Nations and Marine Services Providers

Opportunities to Aboriginal Groups

- Working to build new partnerships:
 - 30+ protocol and capacity agreements
 - 34 traditional use studies
 - 25+ open houses
 - 50+ technical workshops
 - 10+ skills development workshops
- Aboriginal equity ownership of pipelines and Kitimat marine terminal
- Employment and ownership in tug operations and marine first response
- Aboriginal employment and procurement throughout construction
- Additional initiatives include capacity building, training, community investments and environmental stewardship

Aboriginal Traditional Knowledge

- Eliminate or minimize impact to traditional way of life and culturally sensitive areas:
 - Discuss Project effects and ways to reduce impacts
 - Identify areas that must be protected
 - Share information to help in Project planning
 - Provide information that may not otherwise be available through technical scientific methods



Study Area

- focuses on 1 km pipeline corridor and other relevant areas of cultural interest
- Traditional Land Use areas and sites
- Traditional Environmental Knowledge
- Recommendations - In relation to concerns raised, Aboriginal groups can provide recommendations to Enbridge Northern Gateway Pipelines as to how to develop the project in an environmentally responsible manner



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Pipeline Design and Marine Safety

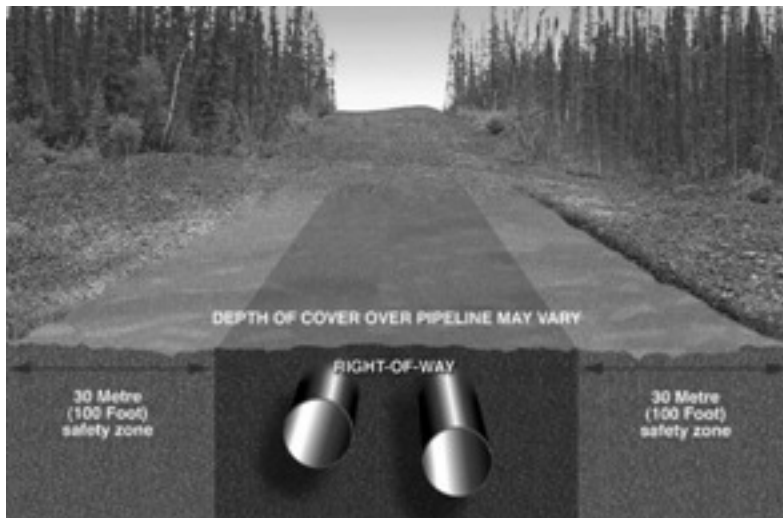
September, 2010



Northern Gateway Project Scope



- The two pipelines:
 - to be constructed over 5 seasons (minimum of 12 spreads)
 - cross 773 watercourses (33 trenchless) over 1170 km of right of way
 - Over 80 remotely operable strategic isolation valves for each pipeline
 - Valve locations determined with consideration of engineering, environmental sensitivity, geotechnical factors, elevation profile, accessibility, cultural and regulatory input.
- Pipeline to cross 2 mountain ranges (Rocky Mountains and Coast Mountains)
- Two tunnels constructed using tunnel boring machines through the Clore River and Hault Creek Valleys
- Kitimat Terminal will include 14 tanks and 2 ship berths
 - 5.6MM barrels of tank capacity



- Construction ROW width ~50 m
- Permanent ROW width ~25 m
- Where appropriate, route will parallel existing pipeline rights-of-ways, roads and power lines
- Minimum 0.9 m depth of cover (overland)
- Pipelines typically constructed with 8 to 10 m separation

Route Selection



- Community and pipeline safety are top priorities
- Construction and operations challenges are limited by avoiding complex terrain or areas that will be too difficult to restore as much as possible
- Contact with environmentally sensitive areas such as parks, protected areas and special areas, is limited
- Route selected to minimize sensitive water crossings and avoid critical habitat

Watercourse crossing approach

- An integrated multi-disciplinary team ensures measures are feasible and practical
- Methods are considered in relation to design and operational aspects
- Continuous generating, evaluating, selecting and refining alternatives
- Ensuring habitat receive the appropriate protection
- All water crossing techniques will be approved by Department of Fisheries and Oceans and NEB



Watercourse Crossings

- 773 watercourse crossings
 - 690 low sensitivity routine crossings
- Significant timing constraints and out of sequence construction
- Open cut/trenched crossings
- Augered or bored crossings (19)
- Directionally drilled crossings (10)
- Aerial crossings (4)



Crossing the Coast Mountains



- Challenges:
 - To find a safe, constructible and operable pipeline route through the Coast Mountain Range
- Solutions:
 - Considered many route alternatives over and through the mountains
 - Selected route includes two 6.5 km long tunnels through the mountains providing safe direct route
 - Tunnels will be approx. 5.5 m diameter providing access for inspection and maintenance vehicles
 - Low elevation tunnels provide significant hydraulic improvement

Kitimat Terminal Site



- Challenges:
 - Select a location along the shores of Kitimat Arm suitable for a 220 Ha tank terminal and 2 marine berths
- Solutions:
 - Tank terminal site underlain by bedrock. Avoids environmentally sensitive areas. Location above the terminal. Allows for gravity loading of tankers. Requires extensive grading to develop tank and loading facilities

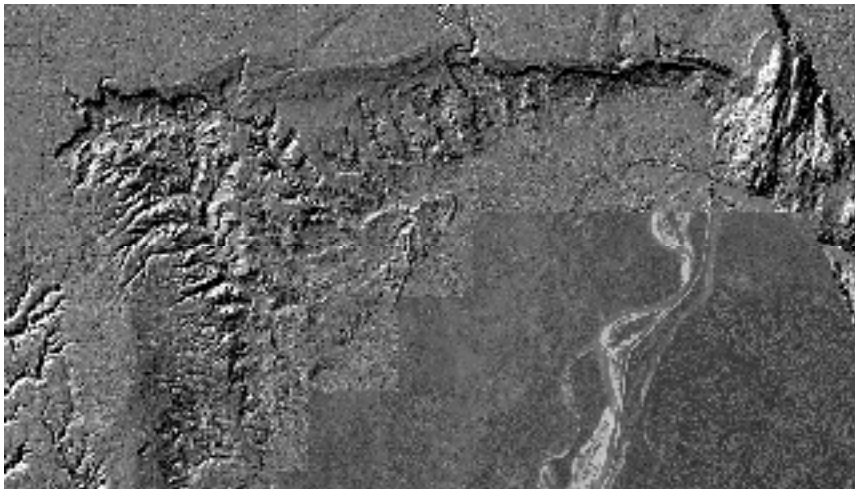


Tanker Berth Location

- Selected site has excellent location for development of the dual berths
- In excess of 2 km channel width,
- unrestricted approach to berths
- Winds will be aligned with the channel and parallel to the berths
- Steeply sloped seabed suitable for VLCC's
- Solid bedrock for anchoring loading platforms and structures

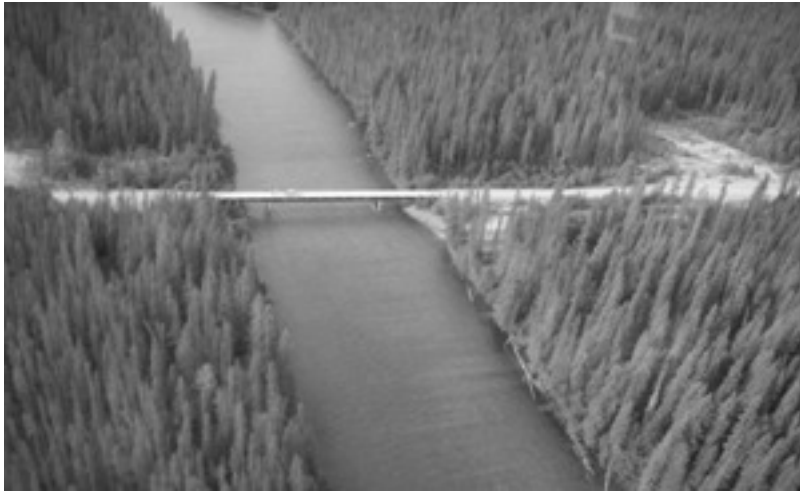


Unstable Slopes and Terrain



- Challenges:
 - Identify and avoid unstable slopes and terrain often associated with watercourse crossings
- Solutions:
 - Use expert multidisciplinary team
 - Use aerial imagery, LiDAR imagery and ground reconnaissance to identify issues and find suitable route locations
 - Certain rivers and large marine clay deposits north of Kitimat required significant reroutes to avoid issues

Crossing Sensitive Rivers



- Challenges:
 - Fisheries sensitivities
 - Government agencies, Aboriginal interests and public concerns must be considered
- Solutions:
 - Variety of options will be used to address the challenges
 - Trenchless crossings (10 HDD, 19 Bore, 4 Aerial) with back-up plan
 - Constructing outside of sensitive timing periods
 - Detailed site evaluations by discipline experts
 - Negotiation with stakeholders

Significant Economic Benefits World-class Environmental and Safety Standards



- Project safety and environmental protection are paramount and world-class standards will be implemented
- Overall BC North Coast navigation and first response times will improve
- Canada has tremendous opportunities to expand its market access to Asia
- The project requires approval from a rigorous public review process
- This \$5.5 billion project will provide benefits to BC, Alberta and Canada through employment, business opportunities and government revenue
- Canada and its communities will benefit through increased employment, tax revenues and GDP growth
- As demonstrated through our track record, Enbridge will continue to partner with communities for the life of the project



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Marine Systems

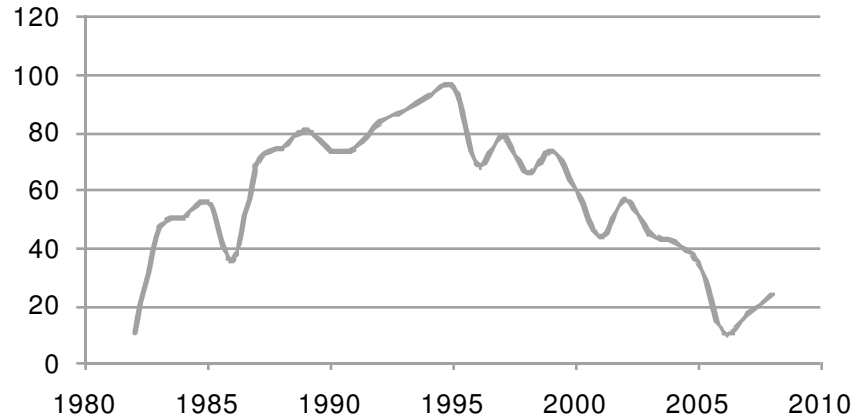
Safe, existing shipping routes

- Deep sea tankers currently travel safely to ports along the BC coast
- Water depths typically exceed 300 metres
- Navigable channels are several kilometres wide
- Narrowest navigable channel sections are 1.4 km in width (at Emilia Island and in Principe Channel)
- Full mission bridge simulation used to confirm viability of the tanker routes (in association with BC Coast Pilots)



Traffic to and from Kitimat Terminal

**Tanker Calls to Kitimat
(1982 to 2008)**



- Kitimat ship traffic peaked in 1993 at 279 ship calls - Tanker traffic peaked in 1995 at 95 calls
- Average of 220 tankers forecast to call at the Kitimat terminal annually
- Compared to current levels, reporting traffic will increase in the Kitimat area as follows:
 - Douglas Channel - 86%
 - Wright Sound - 13%
 - BC north coast - 3%

Vessel Class		Average Number Per Year		
Name	DWT	Oil	Condensate	Total
Aframax	80,000 (min.)	33	17	50
Suezmax	160,000 (avg.)	65	55	120
VLCC	320,000 (max.)	50	0	50

Terminal Facilities

- 14 tanks (each 500,000 bbls capacity), 11 oil tanks and 3 condensate tanks
- 2 Main Berths c/w vapour recovery and treatment unit plus a utility berth.
- Designed for simultaneous loading of oil and each berth can receive condensate
- Electronic sensors, automatic shut-off valves and emergency release coupling on loading arms



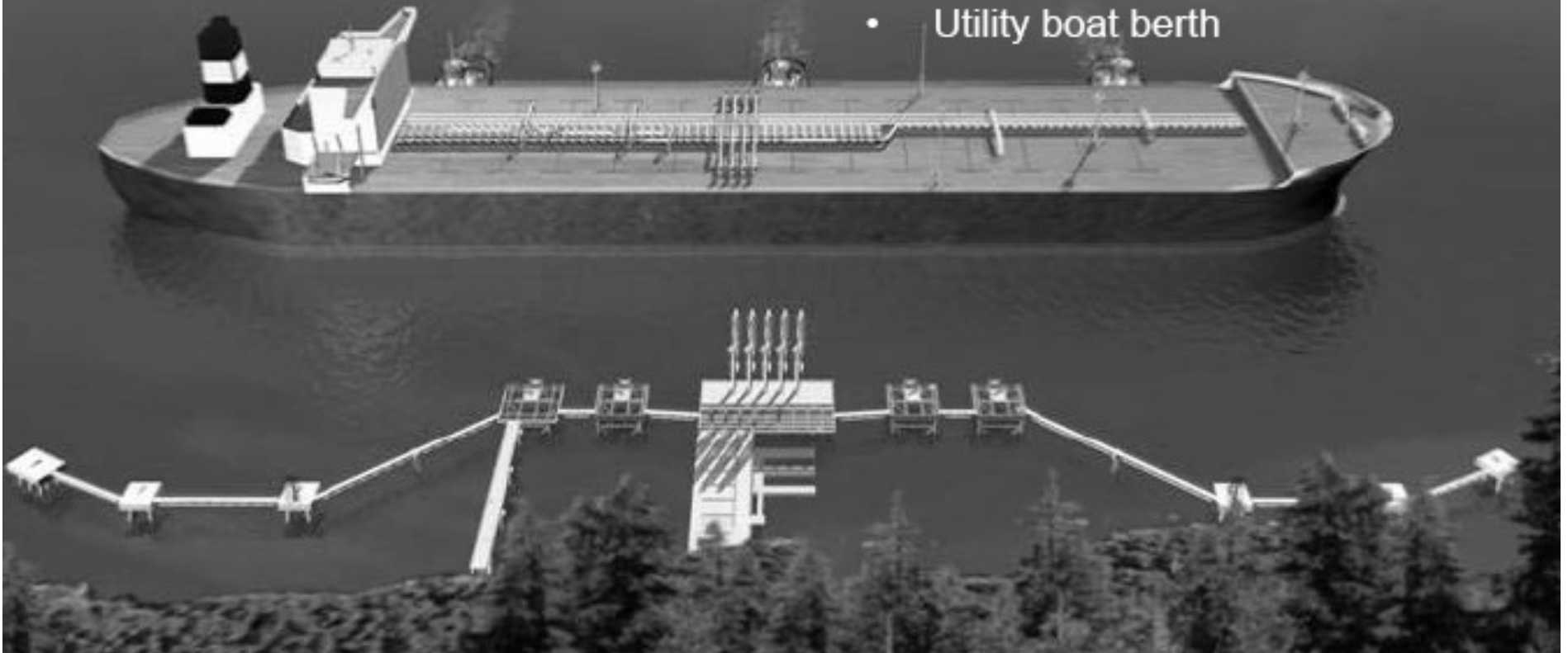
Tanker Berth
with containment boom

Control Facilities

Tank Terminal
11 oil, 3 condensate

Conceptual berth arrangement

- VLCC berth - 320,000 DWT
- Condensate Berth - 160,000 DWT
- Construction Berth
- Central loading/unloading platform
- 4 berthing dolphins
- 6 mooring dolphins
- 2 access trestles
- Utility boat berth



Implementing world-class safety standards



- Vetting of ships and crew
- Double hulled ships
- Tug escort operations (tethered towing)
- Compulsory pilotage using local BC pilots
- Pilot-carried electronic navigation systems
- Improved navigational aids, including new radar installations
- Ship Ballast Water mid ocean exchange per IMO and Canadian Shipping Act regulations
- Weather monitoring criteria for ship transit limits
- Reduced vessel speeds in the marine channels
- Closed Loading and containment booms
- Emergency preparedness and response planning

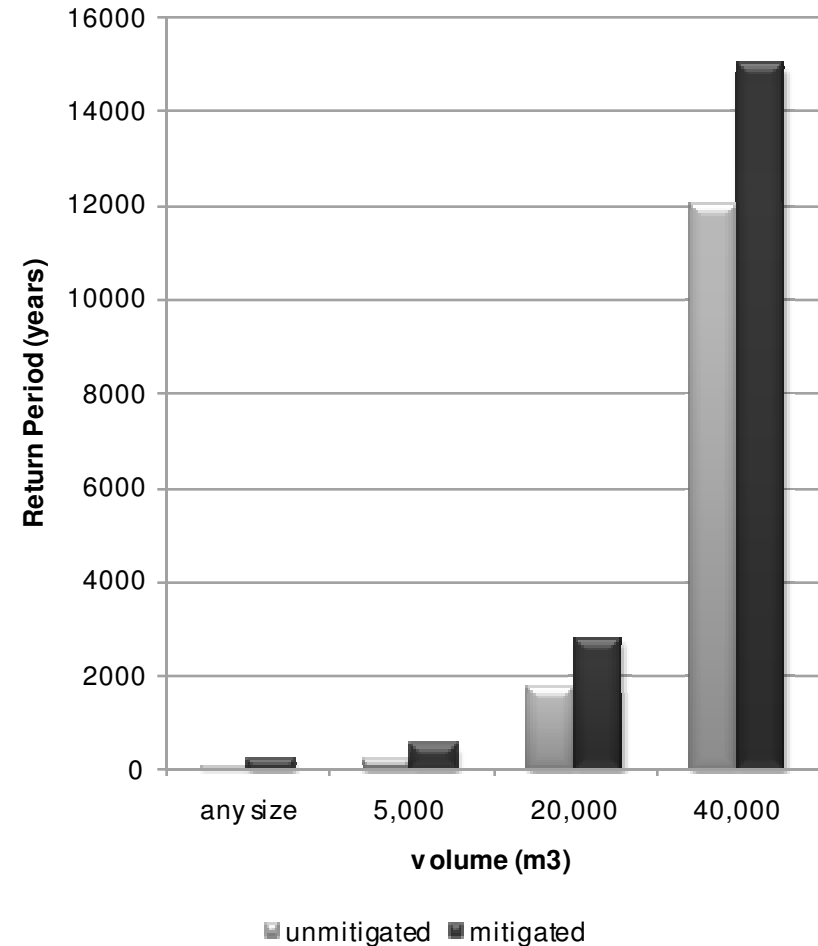
Custom-built escort tugs

- Custom-built escort tugs will be in close escort with all tankers, and a tethered tug will escort all loaded tankers to ensure safe passage through existing coastal shipping routes.
- Tugs will have firefighting and first response capabilities and at least one tug will be designed to have ocean rescue capability.



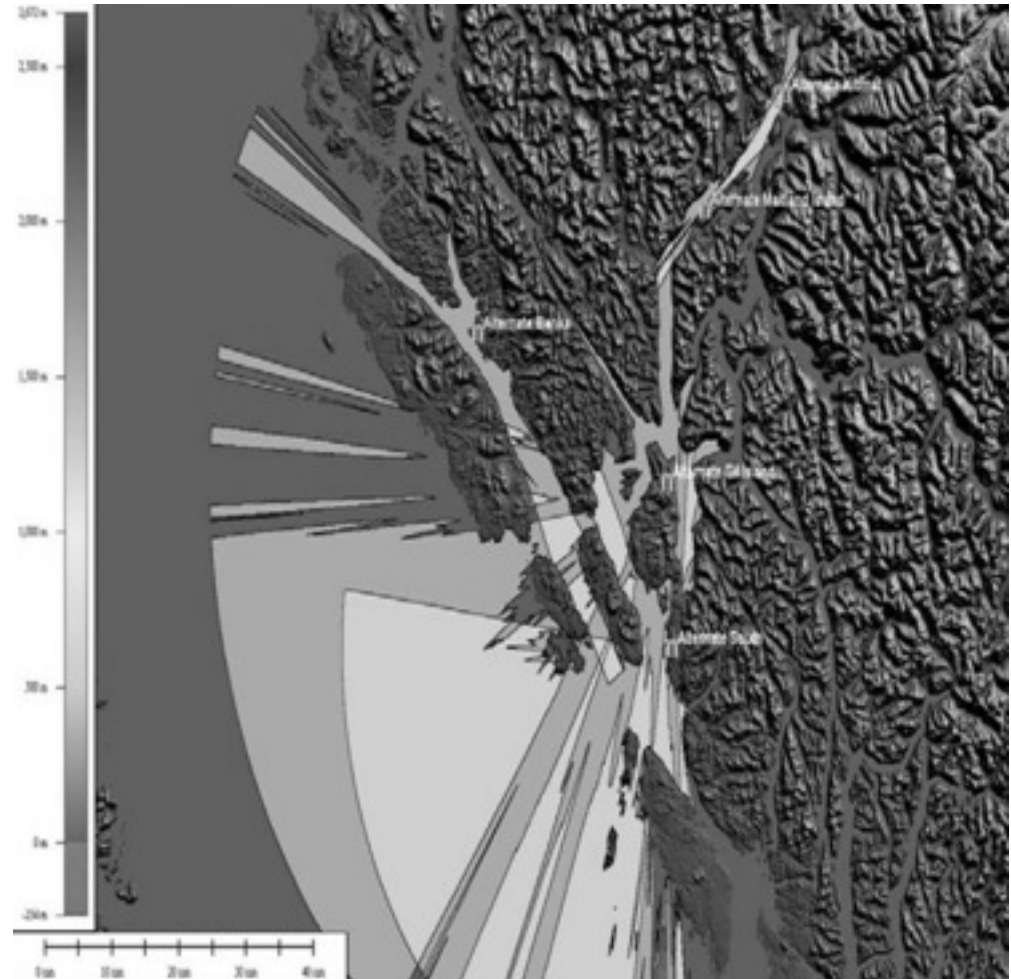
Tanker Safety (QRA Assessment)

- The unmitigated risk of a spill from a tanker is estimated to be equal to the current world average
- With mitigation measures, the risk of a spill from a tanker is estimated to be one third the current world average
- The overall risk is comparable to other marine tanker / terminal operations with similar best practice operating conditions
- The mitigated return period (or estimated average time between events) for a spill of any size is 250 years and increases to 15,000 years for a spill size of 40,000 m³.



Navigational Aids - Overview

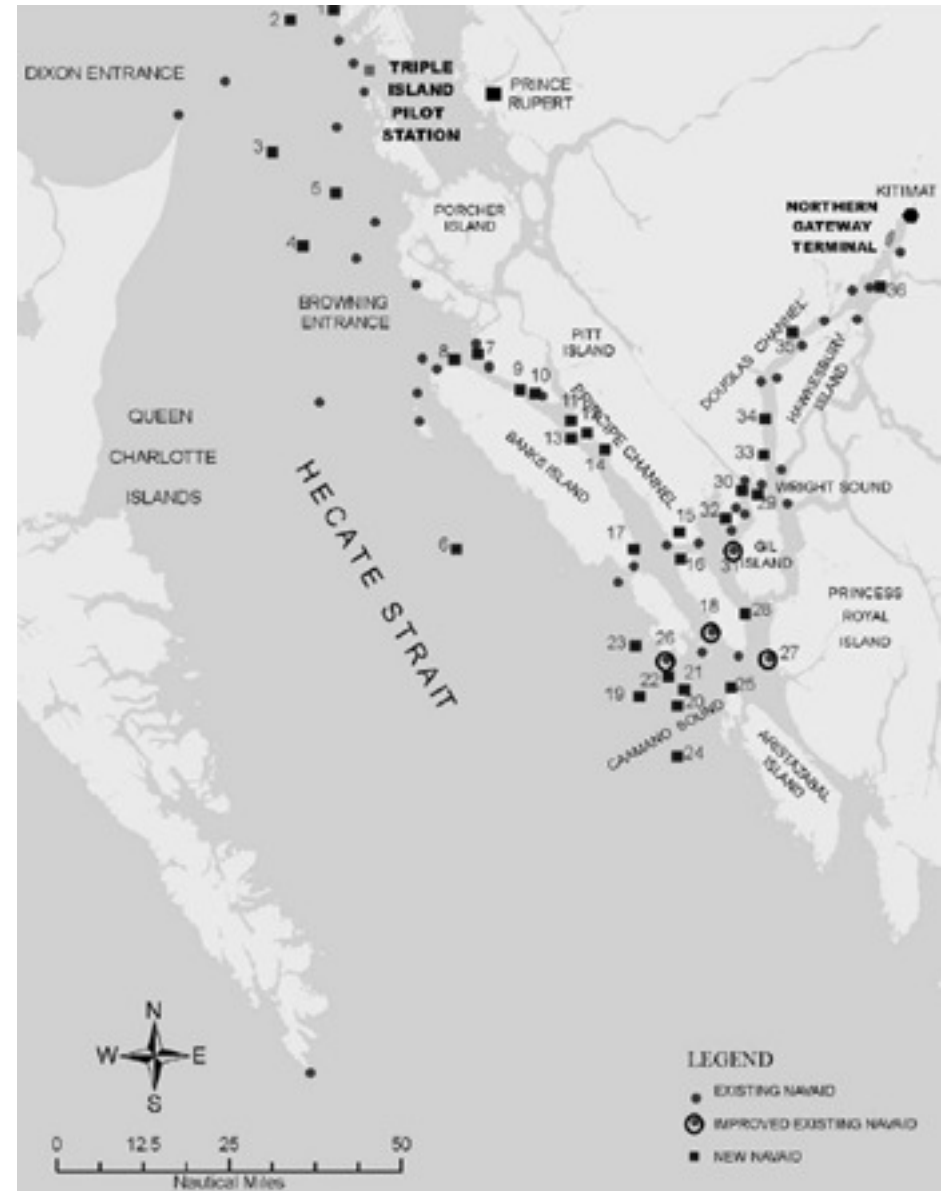
- Upgrades/Enhancement to navigational aids (based on NG specialists and BC Coast Pilots review) will include;
 - Approximately 4 or 5 additional radar/communication stations in proximity to vessel routes
 - Uplinking of radar data to Prince Rupert MCTS and to Kitimat Terminal control centers.



Navigational Aids - Overview

Approximately 30 navaid units
(buoys & beacons)
including

- 4 to 5 new major installations
- 20 new minor installations
- 5 upgrades to existing installations



World-Class First Response

- NGP will exceed Canada Shipping Act legal requirements
- Will reduce North Coast response time for all vessels
- New weather monitoring stations and criteria for ship transit limits
- Ships must contract with federally certificated response organization
- Will integrate NGP first response organization with local communities



3 Major Response Centers



- ~10,000 m³ Response Capacity
 - Prince Rupert
 - Kitimat
 - Shearwater

 - 50 nm response radius
 - 75 nm response radius
- Optional local response centers at local communities (subject to community agreement to participate) are under review



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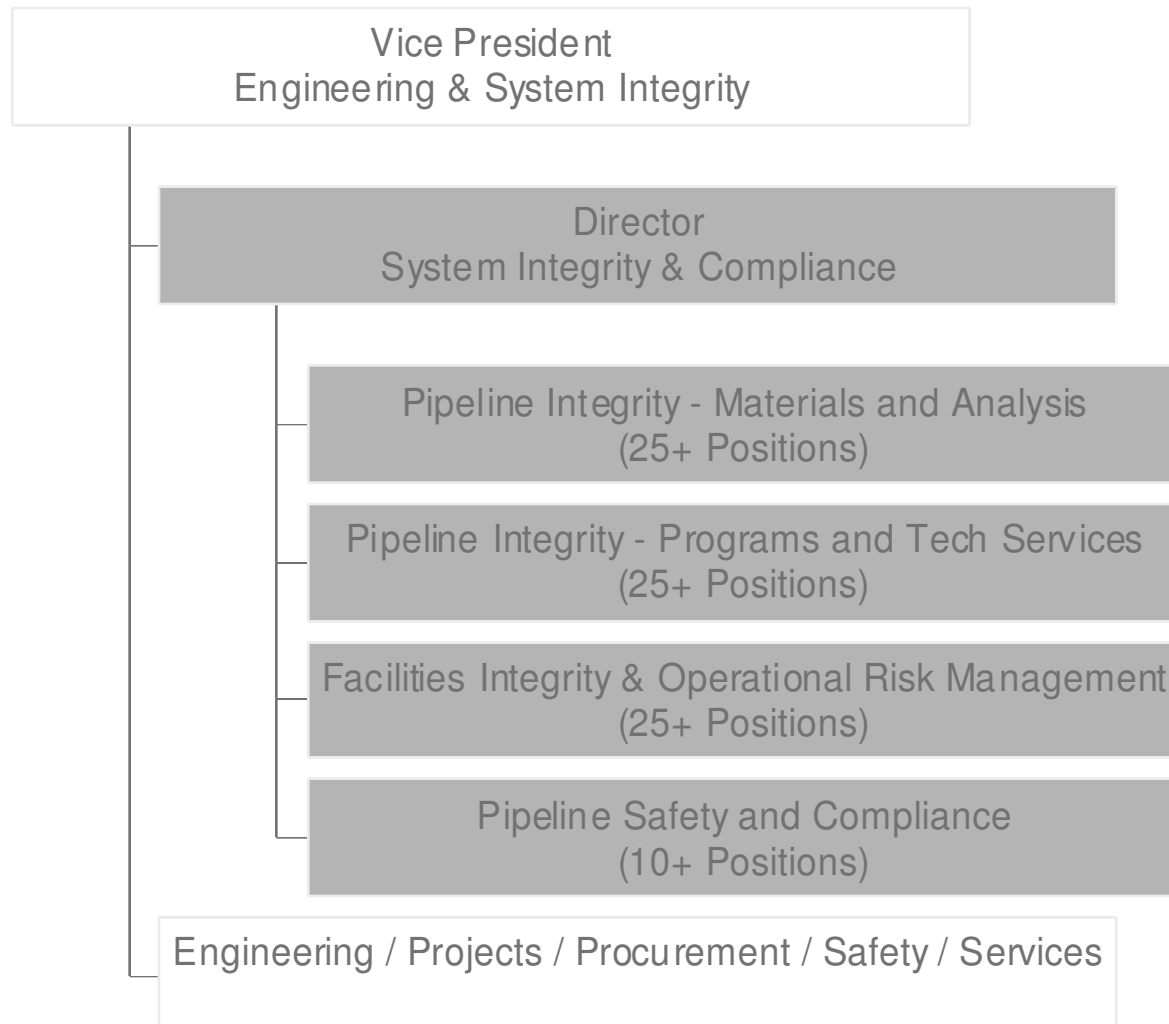
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Pipeline Integrity Risk Management

September, 2010

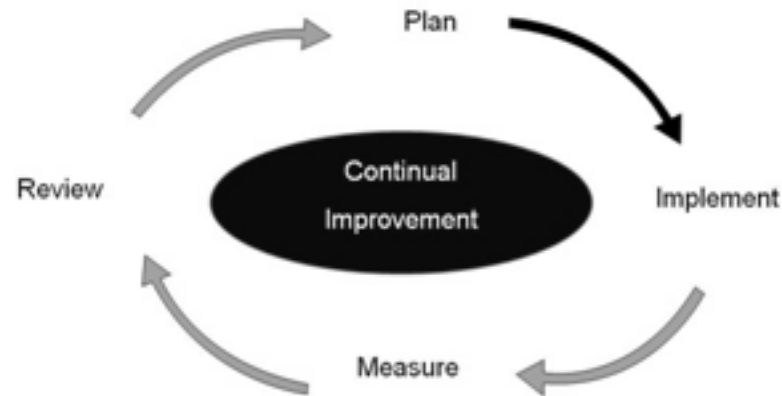


Liquids Pipelines Engineering & System Integrity Overview



Enbridge Integrity Management Objectives

- Safety of employees and the public
- Protect the environment
- Strive to achieve “0” pipeline leaks or ruptures
- Reliable and minimal customer impact
- Maintain asset as a long-life asset
- Optimize and continually improve performance

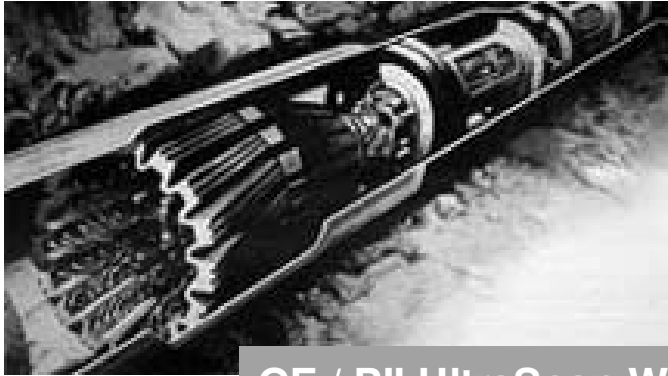


In-Line Inspection

- “Smart pigs” are sophisticated electronic tools that move inside the pipe along with the oil to obtain detailed measurements of the pipe condition.
- Each tool is designed to measure a certain defect:
 - internal corrosion
 - external corrosion
 - cracks
 - dents, buckles, gouges



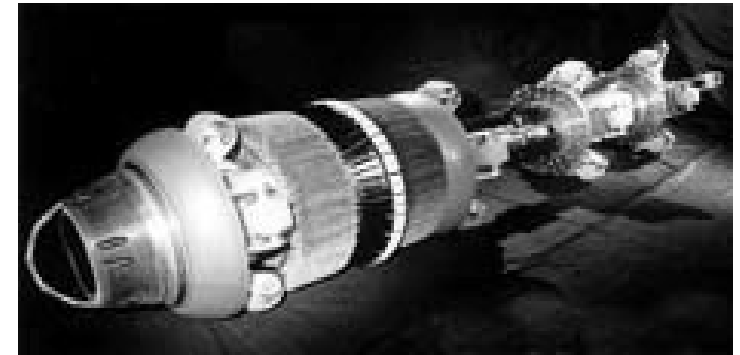
Metal Loss (Corrosion) Tools



GE / PII UltraScan WM

- The ultrasonic wall measurement tool measures corrosion, gouges, and pipe wall thickness.

- Magnetic Flux Leakage (MFL) corrosion (metal loss) tool.
- Robust design. This MFL tool uses new generation sensors and technology.



BJ Vectra™

GE / PII MagneScan



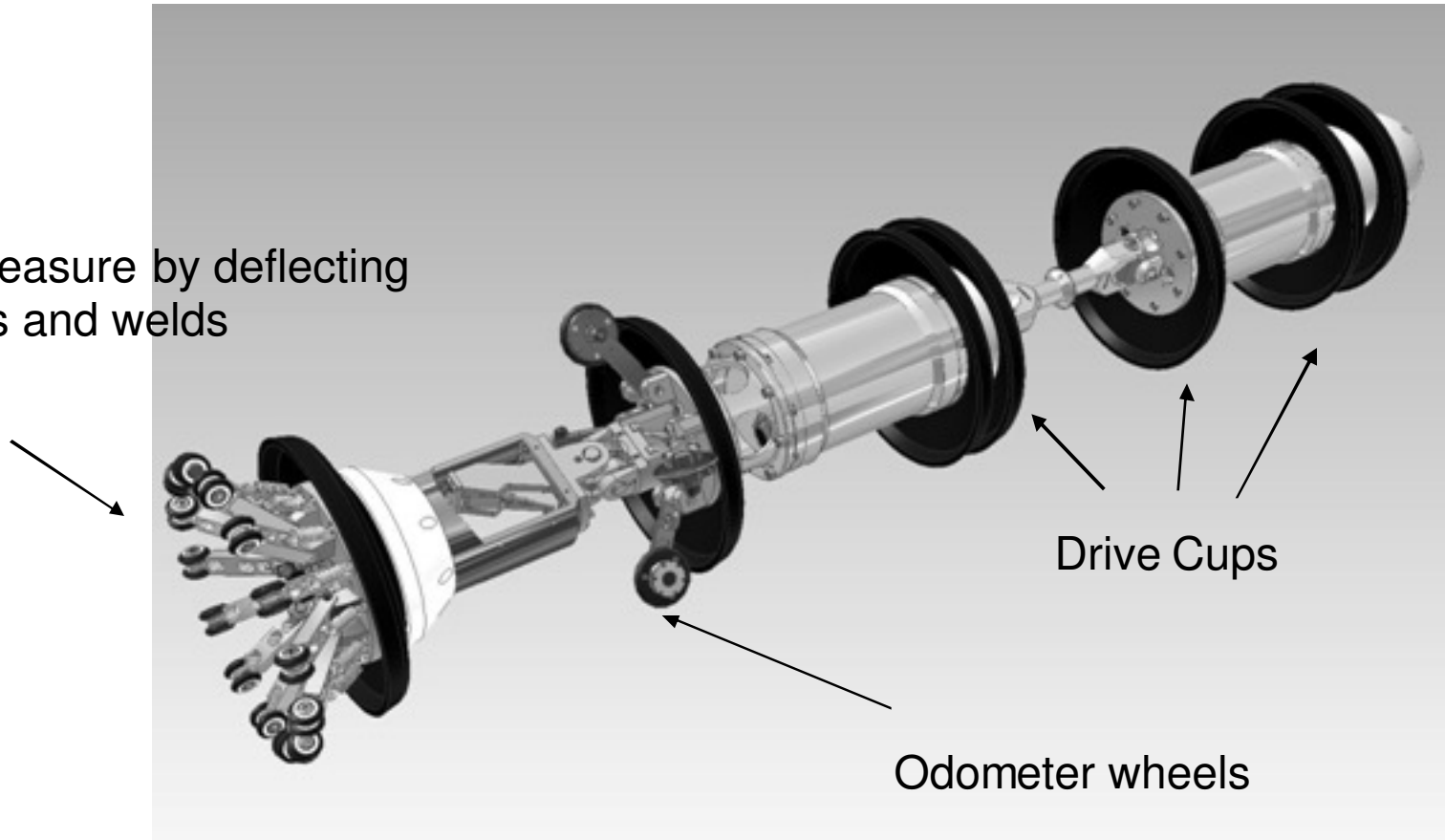
- Magnetic Flux Leakage (MFL) corrosion (metal loss) tool
- Dual Diameter and single diameter tools use this technology

Corrosion Inspection Tool Launch



GE CaliPPer Tool

Fingers measure by deflecting over dents and welds



Excavate & Repair

Following an analysis of the data, any anomalies will be reviewed further:

- Pressure Restrictions
- Excavate & Assess
- Repair
 - Grinding
 - Sleeve
 - Pipe Replacement
 - Others
- Recoat



Pipeline Integrity Risk Management

- Pipelines are one of the safest ways to transport large volumes of crude oil and petroleum products
- A proactive and industry-leading approach, in conjunction with continuous improvement, are of paramount importance at Enbridge
- Pipeline Integrity personnel use the most sophisticated technologies and engineering practices available to ensure the safety of the public, our employees, and the protection of the environment.





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Enbridge Northern Gateway Project

Local Opportunities

September, 2010



Presentation Overview



- Role of Community Skills and Employment Initiatives
- Strategic approach to employment and skills development
- Key activities
- Communication with stakeholders
- Examples of Employment and Business Opportunities

Northern Gateway Skills and Employment Strategy is designed to maximize economic development opportunities along the proposed pipeline.

Training **Employment** **Business**

Our Objective

To maximize the capacity and potential of individuals and communities to participate in the Northern Gateway project, leaving a legacy of employability and economic development in communities along the Right-of-Way.



Three Key Questions

- What are the jobs?
- When will they be available?
- How do I get them?

Local Opportunities



The proposed Northern Gateway Pipeline will provide:

- ❖ Over 4,100 person-years of on-site employment and 31,300 person-years of off-site during the pre and construction phases in BC (spin off employment)
- ❖ 400+ workers required during peak construction to build the Kitimat Marine Terminal and related infrastructure
- ❖ 560 long-term jobs created in BC with 32M/year of labour-related income
- ❖ 165 long-term jobs and 17M/year in wages created by Kitimat operations
- ❖ Thousands of indirect jobs in transportation, business, supplies, food services, accommodation...

What are the Jobs?

- General construction
- Electrical and mechanical contracting
- Transportation (air, trucking and rail)
- Clearing, logging and salvage
- Site restoration
- Supplies (concrete, gravel, building materials)
- Equipment and parts
- Fuel
- Industrial rentals, repairs
- Ancillary (food services, accommodation)
- Environmental monitoring
- Field technicians
- Stockpiling
- Surveying
- Access roads
- Construction camps and catering

What are the Jobs?

Construction

Labourers

Heavy Equipment Operators

Electricians

Camp Support

Security Officer

Operations

Pipeline Maintenance

Technician

Mechanical Technologist

Inspector

Marine

Marine Environmental
Technician

Tugboat Captain

Tug Boat Mates

Our Process (Getting the jobs))



- Assist communities in understanding the project and related opportunities.
- Provide specific information on building and supporting the project including pipelines, tunnels, terminals and operations.
- Work with communities and individuals to understand their capacity.
- Develop initiatives and strategies to maximize local opportunity.

Printed Materials

- Community Skills and Employment Initiatives Brochure
- Marine/Pipeline Construction and Operation Skills Catalogues

Online Materials

- The Learning Pipeline
- Social Media/Facebook

Supporting Initiatives

- Offline Activities
- Online Activities

TRADES

LABOURER – VARIOUS POSITIONS



There are various labourer positions available on the Enbridge Northern Pipeline Project, including:

SWAMPERS help drivers and heavy equipment operators with loading and unloading goods, attaching chokers and chains, and cleaning equipment.

OILERS make sure that all mechanical equipment is properly lubricated.

NOZZLEMEN operate the sandblaster nozzle used in preparation of the pipe.

FIRST AID WORKERS may have certification as emergency medical responders and be responsible for first contact with any injured workers. (➔ First Aid Certification Required)

MEASUREMENTS assist the bending engineer with pipe measurements to ensure the proper bend is put into the pipe so it fits into the trench.

WELDER HELPERS/MECHANIC HELPERS assist journeymen with equipment, tools and clean up.

Other labourer positions include driller helpers, power sawers and rodmen.

ARE YOU RIGHT FOR THIS JOB?

You are seeking an entry-level labourer position that will challenge and motivate you. You are in excellent physical condition and have good vision, depth perception and hand-foot coordination. You have a strong work ethic and take a methodical approach to your work. You like a challenge and enjoy trouble-shooting problems.

As the successful applicant you are comfortable working in remote work camps in all types of weather. You enjoy working as part of a team and are able to take direction and follow instructions. You follow safety procedures and work with caution and care.



TRADES

ROLLING STOCK DRIVERS



Class 1
Drivers Licence

Drivers are responsible for moving supplies, equipment and people to and from construction sites. They operate various vehicles including water trucks, fuel trucks, gravel trucks and dump trucks.

ARE YOU RIGHT FOR THIS JOB?

You are physically fit and have good vision. You have the ability to learn how to use on-board computer devices and other specialized equipment. You are able to remain alert and maintain a high level of concentration that is required to be a driver. You have a positive attitude and enjoy working with others. You are calm in emergency situations and maintain good judgment while under pressure.

As the successful applicant, you are comfortable working long hours and travelling at night. You can drive in all weather, traffic and road conditions. You are willing to work in remote locations where you may be exposed to extreme weather conditions as well as dirt, dust, noise and fumes. In addition, you are comfortable being away from home for extended periods of time and living and working in close contact with others in a work camp.



Laying the Foundation

- Trade Routes Mobile Training Unit
- Community Learning and Economic Asset Mapping
- Supporting community based educational initiatives (Go Karts for Girls)
- Safety training (First Aid and H2S Alive)
- Petroleum Human Resource Council of Canada partnership
- Indigenous Young Women's Circle of Leadership Program
- Training partnerships: Skill Builder, Colleges, Unions and other labour organizations
- Database for business and resume registration
- Workshops and presentations

Feedback & Questions?

Please visit our website www.northerngateway.ca

Toll Free Number: 1-888-434-0533

Email: info@northerngateway.ca





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**Thank you for your
interest and participation**