ENBRIDGE NORTHERN GATEWAY PIPELINE PROJECT

By Vicky Gao
PIPELINE

- Usually transport oil and raw natural gas
- With related equipment (pump stations)
- Pump station (pumps keep oil and gas flowing through pipelines)
BACKGROUND

- Alberta -- the largest producer of oil and gas in Canada
- Problem: the surrounding countries (such as US) are becoming less dependent on imported energy sources
- Solution: find the new export markets
- Enbridge northern gateway pipeline project can solve the problem (open Asia markets)
Enbridge Company Proposal
Twin pipeline
1,177 km each
Bruderheim, AB, to Kitimat, BC
  • 520 km run in AB
  • 657 km run in BC

West bound pipeline
  • AB to BC
  • 36 inches diameter

East bound pipeline
  • BC to AB
  • 20 inches diameter
West Bound Pipeline

- Transport diluted bitumen, crude oil and other petroleum products

Bitumen
- viscous (thick and sticky)
- not flow easily through pipelines

Diluted bitumen (blend with condensate and bitumen)
- flow relatively easily
EAST BOUND PIPELINE

- Transport condensate only
- Condensate
  - from natural gas production
  - limited supply of condensate in Western Canada
  - High demand for condensate in AB
  - Import condensate from Middle East and the Asia-Pacific region
Not just pipeline

- In the Kitimat terminal
  - two tanker berth platform
  - Very Large Crude Carriers (for exporting oil to Asia market)
  - Suezmax-type condensate tankers (for importing condensate)
Costs

- High construction and maintenance costs
- Impact on the ecosystem
- Impact on Aboriginal groups
- High risk of oil spill
HIGH CONSTRUCTION AND MAINTENANCE COSTS

- $7.9 billion to build
  - pre-development costs and marine navigation enhancements
- 220 tankers would call annually
- Maintenance costs for 1,177 km long each pipeline
IMPACT ON THE ECOSYSTEM

- Route crosses the Northern Rockies of AB and the Coast Mountains of BC (also crosses about 800 streams and rivers)
  - remove trees
  - affect the habitat of animals and plants
  - pollute waters and soil
  - have devastating impacts on animals
IMPACT ON THE ECOSYSTEM

JUST ONE SPILL IS ALL IT TAKES TO CAUSE A CATASTROPHE

Northern Gateway
Tanker Traffic Routes

Anticipated Area of Devastation
from an Oil Spill

Important Bird Areas
Oil Spill Spread Area
Oil Tanker Routes

Maps Courtesy of Raincoast Conservation Foundation and Living Oceans Society
IMPACT ON ABORIGINAL GROUPS

- Route cross lands used by Aboriginal groups
- People may need to move
- Potentially cause health issues
- Impacts on fishermen
## Table 1. Total Spills on Enbridge Pipelines (Canada and U.S.), 1999 - 2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of spills</th>
<th>Quantity of barrels spilled</th>
</tr>
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<tbody>
<tr>
<td>1999</td>
<td>54</td>
<td>28,760</td>
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<tr>
<td>2000</td>
<td>48</td>
<td>7,513</td>
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<td>2001</td>
<td>34</td>
<td>25,980</td>
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<td>2002</td>
<td>48</td>
<td>14,683</td>
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<tr>
<td>2003</td>
<td>62</td>
<td>6,410</td>
</tr>
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<td>2004</td>
<td>69</td>
<td>3,252</td>
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<tr>
<td>2005</td>
<td>70</td>
<td>9,825</td>
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<tr>
<td>2006</td>
<td>68</td>
<td>5,734</td>
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<tr>
<td>2007</td>
<td>65</td>
<td>13,777</td>
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<tr>
<td>2008</td>
<td>92</td>
<td>2,842</td>
</tr>
<tr>
<td>2009</td>
<td>103</td>
<td>8,441</td>
</tr>
<tr>
<td>2010</td>
<td>91</td>
<td>34,258</td>
</tr>
</tbody>
</table>

**Total** | **804**<br>(Approximately 25.67 million litres, or 6.8 million gallons)
BENEFITS

- Carry large quantity transportation
- The convenience of transportation
- Lessen the tax burden on resident
CARRY LARGE QUANTITY TRANSPORTATION

- Carry 525 thousand barrels of oil per day (AB to BC)
- Carry 193 thousand barrels of condensate per day (BC to AB)
- Carry 2.1 million barrels of oil each time (VLCC)
- Carry 1.17 million barrels of condensate each time (Suezmax)
THE CONVENIENCE OF TRANSPORTATION

- Not affected by weather
- The operation of the pipeline could happen anytime
Lessen the tax burden on residents

- Generate $1.2 million in tax revenues for the province over the next 30 years
- Improve the living standard of residents
**Solutions for the Project**

- At least, 20% thicker than required (steel)
  - Required standard is 16.9 mm
- X-ray or ultrasonic testing of all welds
- Require a team of experts to monitor the safety of its operations
- Build double hulls into the vessels of the oil tankers
- Reduce possibility of human error (when operating tanker)
BARRIERS TO THE SOLUTIONS

- Enbridge company
- Increase the total costs($)
- Lower willingness to carry out the solutions
RECOMMENDATION

- Change the route (avoid crossing rivers and water streams)

- Use thicker steel and build double hulls into the vessels of the oil tankers

- Work together with the provincial and local governments to improve its project
THANK YOU