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Presentation to Ontario Energy Board

re: Energy East Project

By the

Northwestern Ontario Municipal Association

At the

OEB Stakeholder Forum

on

TransCanada's Energy East Proposal

**Iain Angus
NOMA VP
January 29, 2015
Ottawa, Ontario**

Presentation to Ontario Energy Board re: Energy East Project

The Northwestern Ontario Municipal Association (or NOMA) welcomes the opportunity to provide the Ontario Energy Board with our region's municipal perspective on the proposed conversion of one of the existing TransCanada Pipeline's natural gas lines to crude oil and the construction of a new line in Northeastern Ontario.

The Northwestern Ontario Municipal Association represents the interests of 36 municipalities from Kenora and Rainy River in the west to Hornepayne and White River in the east.

Our mission is "to provide leadership in advocating regional interests to all orders of government and other organizations."

NOMA approaches the Energy East project from three perspectives:

1. What is the alternative,
2. The protection of the natural environment and our citizens
3. Who pays

1) The Alternatives

Whether it is being transported by rail or by pipeline crude oil will traverse Northwestern Ontario. By and large, the watercourses that CN and CP's main sets of tracks cross are the same ones that the current buried TransCanada Pipeline crosses today. Each mode of transport of oil is subject to accidents and failures.

There are 28 NOMA member communities located immediately adjacent to or are divided by CN and CP's main line tracks here in the Northwest. A lesser number are downstream from the crossings of the TransCanada Pipeline.

There is a total population of 165,294 people who live in those communities. Over and above those numbers are the people who live in a number of First Nation Reserves and in the townships without municipal organization who also either straddles the tracks, live beside them or downstream from the watercourses that wind their way through the region.

The vast majority of the population of the Northwest are exposed on a daily basis to the hundreds of rail cars carrying some form of fossil fuel beside their homes and businesses. These cars travel within 100 feet of residential and institutional neighbourhoods. As we all have seen in the last year, rail accidents involving a cargo of fossil fuel can have devastating results – with significant loss of life. We must be as concerned with the health and safety of our residents as we are of the natural environment!

As municipal leaders it is our responsibility to do what we can to minimize the dangers to our residents and the people who visit and/or work in our communities.

We do this every day as we identify risks to the people in our community and determine the best way to protect them within the resources we have available. Whether it is how best to maintain our streets during the winter months, or to keep our swimming pools

safe for the users or protect our drinking water from external contamination, municipalities are on the front line when it comes to making decisions affecting our families.

Shipping crude oil by pipeline has been clearly identified as a much safer way of transporting such a commodity than by rail car or truck. According to Natural Resources Canada

“In Canada, the NEB regulates over 73,000 kilometres of pipelines that move approximately 1.3 billion barrels of oil per year. According to the NEB, these pipelines spilled an average of about 883 barrels per year between 2011 and 2013. This means that 99.999% of the crude oil and petroleum product transported on federally regulated pipelines arrives safely. Furthermore, 100% of any liquids released over this period was completely recovered.”¹

News reports suggest that the amount of crude that Canadian Pacific transports has doubled in the past few years and is expected to increase again to somewhere in the range of 300,000 tanker cars a year.²

Separate news reports indicate that CN's shipments will grow from 130,000 in recent years to 200,000 in 2015 and an additional 100,000 cars a year by 2017.³ That means that majority of the 600,000 tanker cars will be travelling through our communities.

At the same time the current use of rail for this commodity means that there is less capacity for other significant commodities such as grain, which is extremely important to the economy of Northwestern Ontario, the Seaway and the Prairies.

For these reasons the Northwestern Ontario Municipal Association supports the conversion of the natural gas line to transport crude oil. This position was adopted at the 2014 Annual General Meeting held in April in Fort Frances.⁴

General Observations

Let us now turn to the actual conversion itself.

NOMA has been pleased to confirm from TransCanada Pipelines that 100% of the existing natural gas pipeline is located below grade – that is it is buried. The only above ground pipe will be within the pump station sites, valve station sites, metering facilities and tank facilities.

From our perspective that situation significantly reduces the threat to the environment, either through the failure of the pipe or through external human activities.

¹ Government of Canada <http://www.nrcan.gc.ca/energy/infrastructure/5893#h-3-1>

² Kristine Owram | November 12, 2014 Financial Post

³ Ross Marowits, The Canadian Press Published Tuesday, January 6

⁴ Resolution attached as Appendix A

We are also pleased to learn that TransCanada is committed to the following improvements:

- TransCanada utilizes a state-of-the-art leak detection system which can isolate any section of pipe by remotely closing valves and shutting down pump stations.
 - These valves will be installed on both sides of significant water crossings to immediately isolate the section of pipe in the unlikely event of a leak.
- This system and the highly trained staff that monitor it 24 hours a day ensure that the pipeline will be shut down at the first sign of a potential problem.
- Frequent visual inspection of the pipeline route by TransCanada personnel
- Aerial inspections by TransCanada and industry partners

NOMA believes that these aforementioned improvements need verification as the planning and implementation process proceeds. We encourage the OEB to recommend to the National Energy Board key strategies for the confirmation and monitoring of these commitments by TransCanada Pipelines.

NOMA also understands that the nature of the fuel to be carried on the converted natural gas pipeline does not have the same volatility as the contents of the rail cars that caused the explosion at Lac-Mégantic. Never the less, in order to ensure that the safety of the transportation of that commodity is minimised it is important that there be a reduction in the movement of all commodities by rail.

In the past year, as a result of the bumper grain crop on the Prairies and the decision by the Government of Canada to institute financial penalties for rail companies who are unable to deliver grain in a timely manner, rail traffic through our towns has increased considerably. With every increase in traffic, the potential for accidents continues to rise.

The shift of a part of the rail traffic to pipeline will reduce the potential for accidents involving all cargo – especially hazardous goods such as volatile petroleum products.

The volume of crude oil being proposed to be transported by pipeline (1.1 million barrels) is equivalent to 4400 truckloads on our highway each and every day or 1,571 rail tank cars over that same 24 hour period.

Northwestern Ontario believes that it is important to reduce the risk to our communities and our neighbourhoods by finding the right method of transporting substances through or adjacent to our communities in a way that minimizes risk to the environment and our residents.

2) The Protection Of The Natural Environment & Our Citizens

a) Pipeline Integrity

Members of NOMA attended the second series of public consultation sessions hosted by the Ontario Energy Board in Kenora and Thunder Bay earlier this month. We have reviewed the two summary documents⁵ distributed at those sessions and available on the OEB's web site. We appreciate the work done for the OEB in examining the extensive documentation submitted by TransCanada and in sharing the assessment with the public. This is an important step given that the citizens of Northwestern Ontario do not have a history of involvement in NEB applications and processes.

A key item that was identified in the OEB sponsored analysis was the existence of 4 sections of the line totalling 99 kilometers in length that

“are coated with polyethylene tap and would not meet TransCanada's current coating specifications for [a] new pipeline, nor would those sections represent the highest technical standard for coatings. The tape-coated sections are more susceptible to external corrosion and the environmentally assisted cracking phenomenon of stress corrosion cracking.”⁶

The OEB paper recommended that the four sections be “hydrostatically tested prior to operation to verify the findings from the planned crack detection in-line inspections.”⁷

NOMA notes that in the DNV GL paper on pipeline safety that

“There are existing ILI technologies than can reliably detect and size corrosion, and thus this threat can be effectively managed.”⁸

The paper goes on to say that

“While there are also ILI technologies that can detect and size cracks on pipelines, these technologies in certain circumstances have been shown to be less reliable than those used for corrosion. Accordingly, the primary integrity-related issue for the Energy East pipeline in Ontario is the potential for stress corrosion cracking on tape-coated sections.”⁹

⁵ Attached as Appendix B and C

⁶ Pipeline Safety Document, Ontario Energy Board, prepared by DNV GL

⁷ IBID

⁸ IBID

⁹ Pipeline Safety Document, Ontario Energy Board, prepared by DNV GL

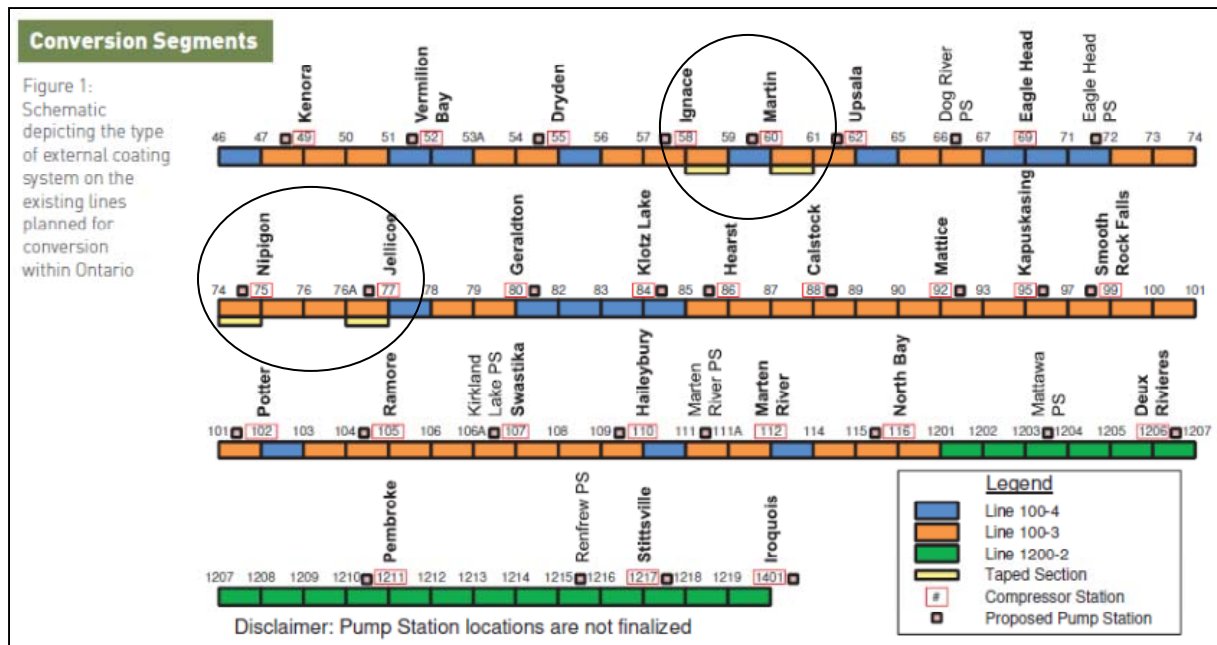


Figure 1 DNV GL Pipeline Safety Paper prepared for the OEB

NOMA requests that the Ontario Energy Board recommend to the NEB that prior to the completion of the hearings into the Energy East Application that the testing noted above be completed and the results reported to the NEB for consideration in arriving at a decision on the application.

Secondly, NOMA requests that the Ontario Energy Board recommend to the NEB that should the application be approved, and should the taped sections be found to meet the safety requirements of the NEB that the NEB require that TransCanada continue to conduct hydrostatically testing on the taped sections of the line on an annual basis.

b) Significant Water Crossings

A key area of concern across the Northwest from all sectors is the definition of a 'significant water crossing.' Nowhere in the Energy East documentation is there currently a definition that will assist residents in determining what may be at risk in the event of a failure of the line.

The Northwest is a vast area of the Province of Ontario. It is literally five times the size of southern Ontario and is larger than many European countries combined. It also consists of a massive amount of surface water and wet lands. Our watercourses range from meandering rivers and streams to rushing white water channels. Historically much of our hydroelectric power has come from the damming of these key watercourses signifying the power and speed of the water.

When one looks at the Northwest from a high level, as is shown on the Ontario Road maps you get the impression of a few major watercourses and a lot of bush.



Figure 2 Northwestern Ontario

However when one looks closely a lot more water quickly becomes visible as is shown in TransCanada’s map of the Greenstone section of the existing pipeline, and a lot of it is immediately adjacent (and downstream) from the line.



Figure 3 Lakes and Watercourses in Greenstone

We also, on average have experienced high water levels every four years since 1996.¹⁰

Many of our communities derive their potable water, either directly from a nearby river, stream or lake or indirectly via groundwater that is fed by those same watercourses.

As well our residents rely on those watercourses for their recreation – cottages, fishing (both summer and winter), swimming, canoeing and kayaking.

We do not take lightly the potential for contamination of any of these watercourses. Our residents have suffered because of mercury contamination along the English Wabigoon River System through industrial discharge over 4 decades ago. The impact of that contamination continues today.

¹⁰ Source: Ontario Power Authority

It is essential that before the National Energy Board approves the conversion that it is clear to all concerned what the definition of a 'significant water crossing' will be applied to this project and whether that is acceptable to the residents of Northwestern Ontario.

The width of a watercourse cannot be the only measure to use in defining 'significant'. What's downstream from the pipeline crossing is as important as the width. The volume of the water, and therefore its capacity for carrying crude, is also extremely important. The speed of the water flow will also have a bearing on how fast a spill can be transported. What the water course is used for – from drinking to fish habitat are also important considerations. These and other variables must form part of the definition of 'significant.'

At last year's OEB session in Thunder Bay, NOMA asked that the OEB

“Recommend that, irrespective of the role of the National Energy Board, TransCanada Pipeline conduct a consultation with the communities in the Northwest to assist them in defining what they mean by a “significant water crossing” so that when they do seek final approval from the National Energy Board it is done with a comfort level here in the Northwest.”

We are now of the opinion that we would prefer that an independent third party conduct such a consultation. That way the region can be assured as to the process and the final product.

To this end, Common Voice Northwest, an independent not-for-profit organization has submitted an application to the National Energy Board for funding to conduct such a consultation process with the results submitted directly to the National Energy Board

As a result in the change in procedures before the NEB, Common Voice Northwest has been asked to resubmit their application and will do so before the February 23 deadline.

NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not proceed to a hearing until TransCanada has published their definition of a 'significant' water crossing, and

And further NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not be approved unless there is a clear definition of a 'significant' water crossing approved by the NEB following further consultation by the NEB with the residents of Northwestern Ontario.

And further NOMA requests that the Ontario Energy Board recommend to the NEB that the Common Voice Northwest application for funding under the Participant Funding program be approved in order that an independent community consultation on the definition of a significant water crossing can be carried out across Northwestern Ontario.

c) Shutoff Procedures

DNV GL's Pipeline Safety paper includes the following statement:

"Valve type and placement are critical in determining the volume of product released as a result of a pipeline rupture. In its application, TransCanada states that mainline valves will be installed to allow sections of the pipeline to be isolated in a controlled manner for normal operation and maintenance activities, or to minimize the effects of an accidental release. Valve assemblies will be specifically positioned to protect significant water crossings and limit the worst case discharge volume. All mainline valves will be remotely controlled and monitored [with the exception of check valves at certain river crossings, which automatically prevent backflow in the event of a failure.]"¹¹

NOMA assumes that these backflow check valves will prevent crude oil on the downstream side of any break at a river crossing from spilling back up the line into the breach and welcomes that provision.

NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not proceed to a hearing until TransCanada has identified all of the locations of the backflow valves and that information has formed part of public consultation led by the NEB in and for Northwestern Ontario,

And further NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not be approved unless there has been a clear determination of the location and functionality of the backflow valves to the satisfaction of the NEB and that the installation and maintenance of the backflow valves be a condition on any approval of the Energy East application.

As referenced earlier

"TransCanada states that mainline valves will be installed to allow sections of the pipeline to be isolated in a controlled mannerto minimize the effects of an accidental release."¹²

NOMA does not yet have a level of comfort that TransCanada will be able to act quickly enough to close a valve located ahead of a leak or rupture. At the same time it does not have the expertise to recommend how best to deal with such a situation. That being said, NOMA wonders if there is a form of backflow valve that can be installed ahead of the watercourse that will automatically close off the line should there be a drop in pressure.

NOMA requests that the Ontario Energy Board conduct its own research into the nature of the valves available to the pipeline industry to determine which valve or other devices will ensure that in the event of any leak or rupture at a significant water crossing (or other sensitive location) that the contents of the pipeline is immediately brought to a halt,

¹¹ Pipeline Safety Document, Ontario Energy Board, prepared by DNV GL

¹² Pipeline Safety Document, Ontario Energy Board, prepared by DNV GL

And further NOMA requests that the Ontario Energy Board inform the NEB of their findings,

And further NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not be approved unless the highest form of immediate shut off technology is deployed adjacent to all water crossings and sensitive areas.

d) Emergency Response Capabilities

NOMA recognizes that in spite of all efforts to the contrary, a spill or spills are likely to occur over the life of the project. It is essential that the tools and people be in place to respond in a timely manner regardless of the location of the breach.

NOMA has reviewed TransCanada's document: The New Regime in Pipeline Emergency Response Planning, Niki Affleck dated Sept. 24, 2014. The document¹³ includes a reiteration of the requirements of the National Energy Board related to Emergency Response Planning:

“The National Energy Board (NEB) requires pipeline operators to: anticipate, prevent, manage and mitigate conditions that could adversely affect property, the environment or the safety of workers or the public.

The NEB requires that companies design management systems for:

- Emergency Management (including continuing education)
- Safety
- Environmental Protection
- Security Management
- Integrity

The NEB requires companies minimize impacts and compensate affected parties in the event of an emergency.”

TransCanada has laid out the general principals they will follow in engaging the communities in the area the pipeline traverses.

“We prepare by developing and delivering:

- Comprehensive Emergency Response Plans in consultation with communities
- Training with our response partners
- Internal and external response resource capabilities to a worst case scenario “

¹³ See Appendix D attached

NOMA welcomes the commitment by TransCanada for a partnering process with the communities and the First Responders but wants to be assured that Emergency Response Plans are clearly documented and required as part of the NEB approval process.

NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not be approved unless there has been a formal Emergency Response Plan filed with the NEB, and that such plan identifies each community and/or partner along the pipeline who will participate in an emergency response and the details of such plan, and that the NEB approve such plans.

3) Who Pays

NOMA understands that there has been some public discussion regarding who will pay the cost of all of the elements of the Energy East Project. Without getting into the details, it is the opinion of the Northwestern Ontario Municipal Association that if new pipelines are required to replace the existing natural gas line that is being converted to carry crude oil, then those new lines should be paid for by the Energy East proponent and not by the rate payers who utilize natural gas.

NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not be approved unless the costs of implementation are borne entirely by TransCanada.

The second cost issue is that of ensuring that sufficient funds are available for external parties to clean up and remediate after a pipeline breach and spill in the event that TransCanada fails to adequately complete a cleanup. TransCanada should be required to post a bond with a value of \$500 million that can be drawn down by the Federal Government in order to pay for additional cleanup and remediation.

NOMA requests that the Ontario Energy Board recommend to the NEB that the Energy East Application not be approved unless a \$500 million bond is deposited with the NEB.

Conclusion

We recognize that TransCanada Pipeline has yet to file all of its documents with the National Energy Board in support of its application. We also recognize that the NEB has yet to call for interventions into the application. When it does, NOMA will request intervener status in order to make sure that should the conversion be approved that the maximum protection for our citizens and our natural environment will be a requirement of the NEB.

We thank the Ontario Energy Board for the opportunity to make our views known in this forum.



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Resolution #: 2014-12

SUPPORT OF TRANSCANADA PIPELINES ENERGY EAST PROJECT

Submitted by: NOMA Resolutions Committee

Background

WHEREAS there are 28 NOMA member communities located immediately adjacent to or are divided by CN and CP rail in the Northwest; and

WHEREAS there is a total population of 165,294 people who live in those communities and this number increases with the inclusion of First Nations communities and unincorporated areas; and

WHEREAS the vast majority of the population of the Northwest are exposed on a daily basis to the hundreds of rail cars carrying some form of fossil fuel beside their homes and businesses; and

WHEREAS rail accidents involving cargo of fossil fuels have had devastating results including significant loss of life; and

WHEREAS shipping crude oil by pipeline is a much safer way of transporting such a commodity than by rail car or truck and

WHEREAS the pipeline that TransCanada is proposing to convert from natural gas to crude oil is buried underground throughout its entire length through Northwestern Ontario with the exception of pumping stations, valves etc.

Resolution

THEREFORE BE IT RESOLVED THAT the Northwestern Ontario Municipal Association hereby requests that the National Energy Board (NEB) approve TransCanada Pipelines Energy East Project provided that the following are included:

TransCanada to utilize a state-of-the-art leak detection system which can isolate any section of pipe by remotely closing valves and shutting down pump stations.

Valves to be installed on both sides of significant water crossings to immediately isolate the section of pipe in the unlikely event of a leak.

That TransCanada install double walled pipe with leak detecting devices when passing through significant water crossings and that this double walled pipe would extend 100 meters on either side of the significant waterway.

A comprehensive public consultation on the definition of a 'significant water crossing' be undertaken to by TransCanada Pipelines throughout Northern Ontario prior to the NEB approval

This system is to have highly trained staff that monitor it 24 hours a day ensure that the pipeline will be shut down at the first sign of a potential problem.

Frequent visual inspection of the pipeline route be completed by TransCanada personnel.

Aerial inspections by TransCanada and industry partners be undertaken, and

The process for verification of the above requirements form part of the NEB decision.

Approved April 2014

NATURAL ENVIRONMENT IMPACTS



Overview

The Ontario Energy Board (OEB) asked Det Norske Veritas (Canada) Ltd. (www.dnvgl.com) to review TransCanada's Energy East Application (the Application) and provide advice with respect to impacts on the natural environment in Ontario.

We reviewed about 2,500 pages of the Application and associated Environmental and Socio-Economic Effects Assessment (ESA) to assess how well the Application addressed industry best practice and environmental issues raised by First Nations and the general public.

Preliminary Assessment

What guided our work

The Application was reviewed in regards to:

- » the six principles stated in the Minister's letter;
- » the Part One Public Consultation Report by Swerhun Inc.;
- » the Part One First Nations and Metis Report by Counsel Public Affairs;
- » the Background Environmental Considerations Report prepared by TERA;
- » the NEB Filing Manual; and
- » professional judgement.

Was the information we need supplied in TransCanada's Application?

The Application is incomplete. Additional information to be filed includes numerous Technical Data Reports (TDRs) for a number of environmental and socio-economic disciplines, additional information supporting

ESA Volume 6 Accidents and Malfunctions and additional project description information on the converted pipeline. TransCanada committed to file this additional information in Q4 2014 but will now file it in 2015. Additional site specific environmental protection information is to be filed in Q1 2015. Thus it is only possible to conduct a high level assessment of the Application at this time.

The natural environment-related information in the part of the Application pertaining to the 1928 km of the converted portion of the pipeline:

- » is narrowly limited to 28 new pump stations and access roads, 2 new trenchless river crossings (Madawaska and Rideau) and pipeline operations and maintenance; and
- » provides no distinction in route selection criteria between an oil and a gas pipeline. In the Enbridge Northern Gateway Panel Report, the NEB recognized the importance of route selection in mitigating environmental impacts of an oil pipeline.



NATURAL ENVIRONMENT IMPACTS (CONTINUED)



The ESA addresses spills during operations (on both the converted and new construction portions of the pipeline) only in Volume 6 Accidents and Malfunctions, which as stated earlier is incomplete.

With an incomplete Application, it is premature to assess:

- » the Application's general conclusion of "no significant adverse environmental effects";
- » if the Application meets "the highest available technical standards for environmental protection"; or
- » if the Application reflects "world leading contingency planning".

Key Observations

Impacts on Water

- » The Application is incomplete with respect to impacts on drinking water.
- » Trout Lake, Rideau River, Private Well Clusters in Rideau Area and water wells are properly addressed but information on surface water intakes and springs on 95% of the route is absent.
- » The Application commits to provide alternative sources of drinking water in the event of a spill.
- » Of 102 water crossings on the 104 km new pipeline segment in eastern Ontario, the Application proposes 7 to be crossed using trenchless technology, 49 to be crossed using the isolation method and the remainder to be open cut if dry or frozen. At a high level, this proposal appears to be consistent with industry best practice.
- » Routing in proximity to the St. Lawrence River is not addressed. A potential alternative route along a railway right-of-way further north is not discussed, even though it is shorter, crosses fewer watercourses, encounters fewer environmentally sensitive features and increases the separation distance from the pipeline to the River, which would assist with emergency response efforts in the event of a spill.

DNV GL puts forward the following for consideration:

- » Undertaking full-bore rupture modelling to demonstrate potential spill paths into watercourses for each 1-kilometre long segment of the converted and new pipeline in Ontario.
- » Mapping of all surface water intakes and springs within areas of potential spill paths.
- » Consulting the public, First Nations and agencies regarding water use, including recreation.
- » Rerouting the pipeline where too close to sensitive water resources or justifying why rerouting is not necessary to protect sensitive water resources.
- » Rerouting the new pipeline to follow the railway route north of the St. Lawrence River or justifying why rerouting is not necessary.
- » Using above information to inform designation of "significant water crossings", reroutes, valve spacing, contingency plans and emergency response plans (ERPs).
- » Preparing source water protection plans for high profile areas including Trout Lake, the Rideau River and Nepean and Oxford Aquifers.
- » Preparing Watercourse Crossing Management Plans for all crossings prior to pipeline operation.



NATURAL ENVIRONMENT IMPACTS (CONTINUED)



Impacts on Rideau Canal

» The Application recognizes the Rideau Canal as a National Historic Park and UNESCO World Heritage Site. The Rideau River is recognized as a Canadian Heritage River. The Application proposes a trenchless crossing technique with a contingency open-cut.

DNV GL puts forward the following for consideration:

» Preparation, implementation and monitoring of a detailed Rideau Canal Trenchless Crossing Environmental Protection Plan complete with contingency open-cut crossing protection measures if the trenchless crossing methodology proves infeasible.

Impacts on Fish and Wildlife Habitat

» The Application predicts no significant effects on fish and wildlife habitat except the potential for cumulative effects on woodland caribou habitat at two pump stations (Smooth Rock Falls and Potter) in the Kesagami Range.

» Offset measures consistent with the Woodland Caribou Recovery Program are proposed in the Application to compensate for the permanent loss of woodland caribou habitat; however details are not provided.

Impacts on Provincial Parks, Conservation Areas and other natural areas

» The converted pipeline crosses 8 Provincial Parks, 4 Conservation Reserves and 4 Conservation Areas, but there is no detail on impacts or mitigation.

» Wetlands are addressed at a high level but there is no detail on impacts or mitigation.

DNV GL puts forward the following for consideration:

» Preparing detailed protection plans for Provincial Parks, Conservation Reserves and Conservation Areas.

» Conducting proper wetland study to address avoidance, function, mitigation, monitoring and compensation for wetland loss.

Impacts on Agricultural Resources

» Agricultural soils and land use are described and mapped in the Application. No detailed ERPs for land based spills are provided. No drain tile are noted on new pipeline segment.

DNV GL puts forward the following for consideration:

» Mapping and repairing any agricultural drain tiles crossed on the new construction segment.

» Developing an approved project specific ERP to address land based spills.

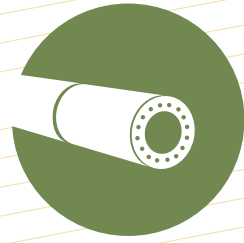
Other Considerations

» Completing Traditional Ecological Knowledge (TEK) and Traditional Land Resource Use (TLRU) studies and demonstrating how this new information has been integrated into the ESA and changed project planning.

» Studying the 125+ km of power lines (that will serve pump stations and remotely controlled mainline valves) and other ancillary facilities and incorporating mitigation into this Project.



PIPELINE SAFETY



Overview

Who we are

DNV GL is the world's leading ship and offshore classification society, the leading technical advisor to the global oil and gas industry, and a leading expert for the energy value chain including renewables and energy efficiency. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.

What the OEB asked us to do

The OEB retained DNV GL to provide independent expert advice on the pipeline safety considerations that relate to the Energy East Pipeline project. Our work focused on two main aspects of pipeline safety: pipeline integrity and emergency management.

Preliminary Assessment – Pipeline Integrity

What guided our work

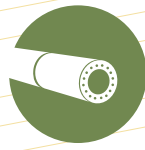
» During the Part One consultations, Ontarians expressed concerns about the integrity of the existing gas pipeline that was proposed for conversion to oil service. In assessing the Energy East application, we were guided by the principle set out in the Minister's letter that "Pipelines must meet the highest technical standards for public safety and environmental protection."

Was the information we need supplied in the Energy East application?

» In general, there was sufficient information provided in the Energy East application to identify the key issues pertaining to the suitability of the existing gas pipeline for conversion to oil service. However, more detailed information would be required to allow for an assessment against the principle set out in the Minister's letter.



PIPELINE SAFETY (CONTINUED)



Key Observations

Overall Assessment

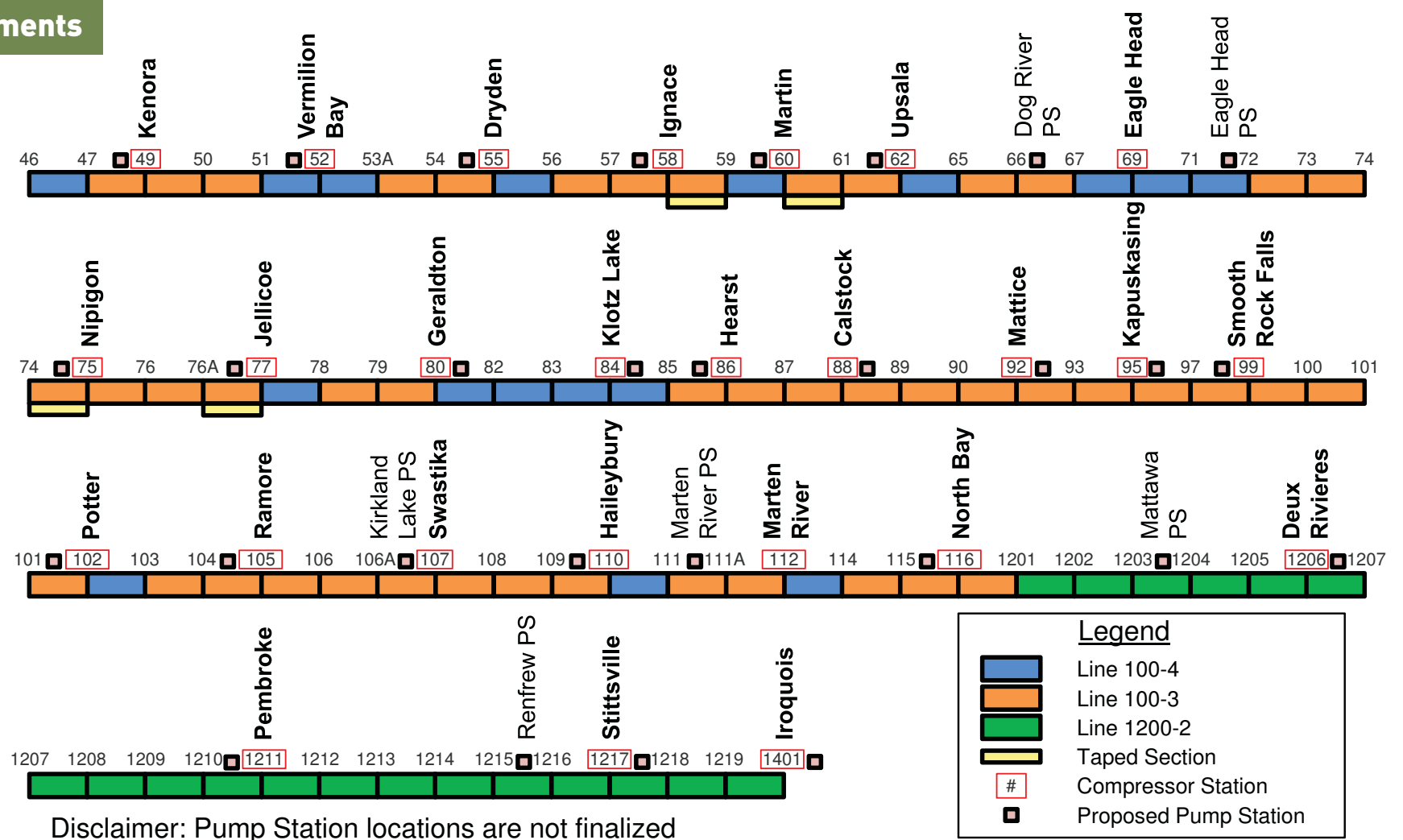
The Ontario portion of the Energy East Project comprises approximately 1930 km of gas pipeline to be converted to oil service and approximately 104 km of new pipeline.

» The specifications for the new pipeline meet or exceed the requirements of the national standard, CSA Z662 Oil and Gas Pipeline Systems. After construction, the operation and maintenance (including integrity management) will be in accordance with the requirements of the NEB Onshore Pipeline Regulations and CSA Z662.

» With respect to the conversion section, the existing lines inherently have a higher resistance to fracture initiation and propagation than would a new oil pipeline manufactured in accordance with the current standard. However, 4 valve sections (approximately 99 km in length), are coated with polyethylene tape and would not meet TransCanada's current coating specifications for the new pipeline, nor would those sections represent the highest technical standard for coatings. The tape-coated sections are more susceptible to external corrosion and the environmentally assisted cracking phenomenon of stress corrosion cracking (SCC).

Conversion Segments

Figure 1: Schematic depicting the type of external coating system on the existing lines planned for conversion within Ontario



PIPELINE SAFETY (CONTINUED)



Mechanical Properties of the Pipe

The mechanical property (i.e. yield and tensile strength) requirements for the existing gas pipelines planned for conversion would meet current requirements as set out in CSA Z662 Oil and Gas Pipeline Systems national standard.

CSA Z662 requires that pipelines that are constructed for natural gas service (such as the pipeline that Energy East is proposing to use) have proven notch toughness (i.e. resistance to fracture initiation and propagation). CSA Z662 does not require that pipelines constructed for low vapour pressure (LVP) liquid petroleum products (i.e. transporting oil as proposed by Energy East) have any proven notch toughness; thus, the existing lines would inherently have a higher resistance to fracture initiation and propagation than would a new liquid pipeline manufactured in accordance with the current standard.

Coating System

The portions of Line 100-3, 100-4 and 1200-2 planned for conversion to liquid service were all externally coated with plant-applied Fusion Bond Epoxy (FBE) coating system, with the exception of 4 valve sections on Line 100-3 (refer to Figure 1). These 4 sections (totaling < 5.2% of the total length of Energy East within Ontario) were externally coated with a double wrap polyethylene tape coating.

Plant-applied FBE is considered a superior external coating for buried pipelines (refer to Figure 2 for an example of FBE coated pipe). Polyethylene tape coating systems in general have not historically performed as well as plant-applied FBE coating systems. They have been more susceptible to disbondment during application, backfilling and while in service. The potential for external corrosion and SCC is increased when the piping is coated with polyethylene tape as opposed to plant-applied FBE.



Figure 2: FBE Coated Pipe



Figure 3: Field applied polyethylene tape coating



PIPELINE SAFETY (CONTINUED)



Welding-related Defects

The existing lines planned for conversion were all manufactured using the double submerged arc welding (DSAW) process which is much less prone to welding related defects than the electric resistance welding (ERW) process and flash butt welding (FBW) process, both of which have been associated with a number of in-service and hydrostatic test failures throughout the industry.

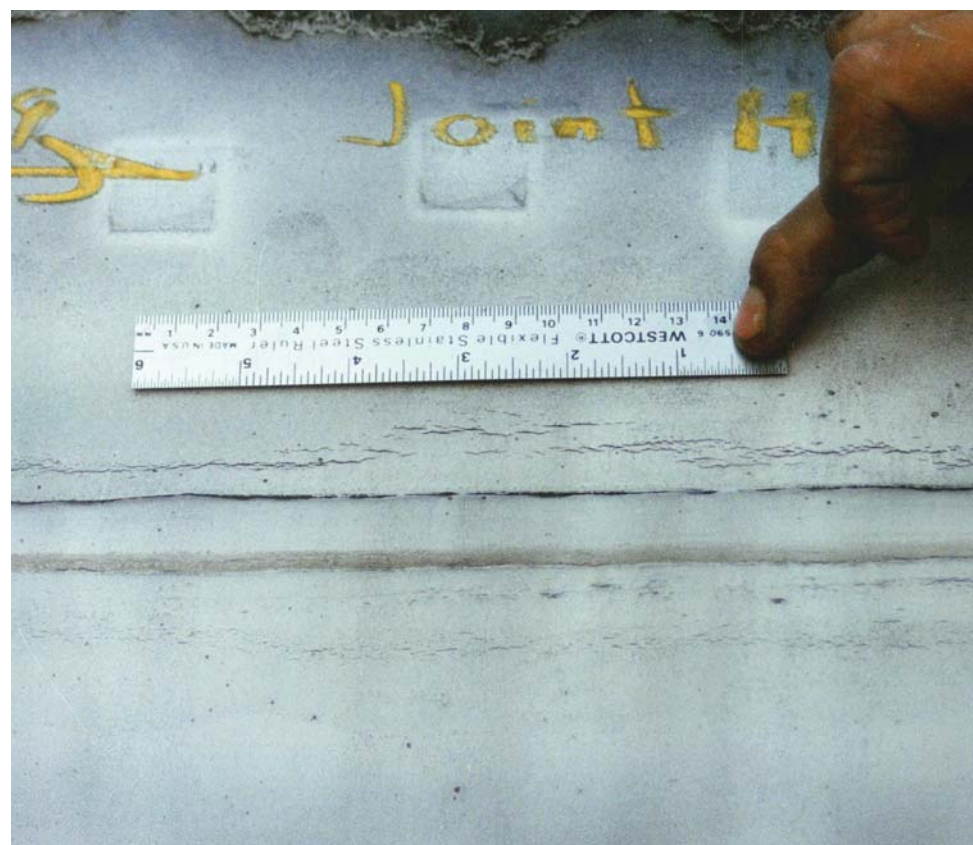


Figure 4: Example of Stress Corrosion Cracking

In-Line Inspection (ILI)

As previously noted, the 4 valve sections coated with double wrapped polyethylene tape coating are considered particularly susceptible to external corrosion and SCC (refer to Figure 4).

There are existing ILI technologies that can reliably detect and size corrosion, and thus, this threat can be effectively managed.

While there are also ILI technologies that can detect and size cracks on pipelines, these technologies in certain circumstances have been shown to be less reliable than those used for corrosion. Accordingly, the primary integrity-related issue for the Energy East pipeline in Ontario is the potential for stress corrosion cracking on tape-coated sections.

For Consideration

DNV GL puts forward for consideration that Line 100-3 between MLV 58 and 59 be hydrostatically tested prior to operation to verify the findings from the planned crack detection in-line inspections.



PIPELINE SAFETY (CONTINUED)



Preliminary Assessment – Emergency Management

What guided our work

» During the Part One consultations, Ontarians expressed concerns about TransCanada’s ability to detect leaks and the adequacy of emergency response measures in the event of a spill. In assessing the Energy East application, we kept these concerns in mind, and were guided by the principle set out in the Minister’s letter that “pipelines must have world leading contingency planning and emergency response programs.”

Was the information we need supplied in the Energy East application?

In general, there was sufficient information provided in the Energy East application to identify the key issues pertaining to a pipeline operator’s ability to minimize the consequences of a failure on an oil pipeline, including valve type and placement, leak detection system, and emergency response. However, more detailed information would be required to allow for an assessment against the principle set out in the Minister’s letter.

Key Observations

Overall Assessment

The commitments and processes described in the Energy East application are acceptable and consistent with good industry practice; however, in the absence of specific information regarding valves, leak detection and emergency response, it is difficult to assess whether the Energy East application satisfies the principle that pipelines have world leading contingency planning and emergency response programs.

Valve type and placement

Valve type and placement are critical in determining the volume of product released as a result of a pipeline rupture. In its application, TransCanada

states that mainline valves will be installed to allow sections of the pipeline to be isolated in a controlled manner for normal operation and maintenance activities, or to minimize the effects of an accidental release. Valve assemblies will be specifically positioned to protect significant water crossings and limit the worst case discharge volume. All mainline valves will be remotely controlled and monitored (with the exception of check valves at certain river crossings, which automatically prevent backflow in the event of a failure). The application does not provide a definition for “significant water crossings” or a list of the water crossings that will be protected by additional valves.



PIPELINE SAFETY (CONTINUED)



TransCanada describes the Valve Siting Optimization Process used to determine the preliminary placement of mainline valves. Valve site locations will be confirmed during detailed design, taking into consideration site-specific factors and feedback from regulatory authorities, landowners, stakeholders and Aboriginal communities.

The Valve Siting Optimization Process is intended to arrive at a valve configuration that effectively mitigates risk, and takes into consideration factors such as release volume analyses, local topography, local feedback, and existing land use. However, the application does not specify the criteria (e.g. maximum outflow), if any, used in the selection of valve locations.

Leak Detection System

A pipeline's Supervisory Control and Data Acquisition (SCADA) system and Leak Detection system are critical in determining an operator's ability to respond to a pipeline failure in a timely manner.

The SCADA system is a computer-based data acquisition system that gathers operating data from geographically remote field locations and transmits the data via communication links (i.e. underground fibre and/or copper cable, satellite, cellular radio tower) to a control center for display, control and reporting. The SCADA system enables the control center operators to remotely control the pipeline by adjusting pump station pressures, starting and stopping pumping units, and opening and closing remotely controlled valves.

The application states that Energy East will implement a leak detection strategy that meets current regulatory requirements and industry standards, using both real-time (SCADA) and non-real-time (e.g. ILI, right-of-way patrols) methods. It is unclear whether the leak detection system will meet the Recommended Practice set out in Annex E of CSA Z662-11. Further, the application does not provide sufficient information on the performance metrics (i.e. reliability, sensitivity, accuracy, robustness) to be considered in the selection of the leak detection system.

Regarding the time for the control room to detect and respond to a leak, the Energy East application states that:

- » If an alarm cannot be conclusively explained as a non-leak within 10 minutes, a pipeline shutdown is immediately initiated; and
- » Based on current design information, pipeline shutdowns, including pump shutdown and valve closure, are expected to be completed within 12 minutes of the initiation of a shutdown.

Therefore the maximum length of time from initial alarm to the isolation of a ruptured section would be 22 minutes.

The theoretical maximum volume release would include the initial volume released until the pump shutdown and valve closure and the volume released from drain down after the pump shutdown and valve closure.



PIPELINE SAFETY (CONTINUED)



Emergency Response

The application includes a description of the basic components of TransCanada's emergency management system (EMS) and provides an overview of TransCanada's commitments in respect of the Energy East Emergency Response Program and spill-response resources. It also describes strategies for containment, recovery and reclamation in the event of releases to soil, waterways, groundwater, urban areas, etc. Lastly, six representative hypothetical spill response scenarios are described in the application.

Emergency response plans (ERPs) will be developed specifically for the Energy East Project in accordance with TransCanada's existing EMS, and will incorporate all of the EMS's basic components, including strategic location of equipment, spill response tactics, and consultation and co-ordination. TransCanada has committed to developing emergency response plans in consultation with emergency service agencies and communities along the route. The application states that Energy East will file the final ERPs with the National Energy Board and distribute them to applicable emergency service agencies, as necessary, before Project commissioning.

For Consideration

DNV GL puts forward the following for consideration:

- » With respect to valve placements, demonstrate that potential release volumes are as low as reasonably practicable;
- » Provide a list of water crossings in Ontario that will be protected by additional valves;
- » Confirm conformance with CSA Z662 Annex E Recommended practice for liquid hydrocarbon pipeline system leak detection;
- » Provide performance specifications for the leak detection system and provide evidence that specifications are met or exceeded in operation;
- » Conduct detailed analysis of potential spill release and trajectory for critical locations in Ontario and perform a response capability assessment to demonstrate that TransCanada will be able to respond effectively and that impacts can be mitigated to acceptable levels; and
- » Demonstrate financial capability (\$1 Billion) to respond to a pipeline failure and remedy the situation.





Energy East Pipeline

The New
Regime in
Pipeline
Emergency
Response
Planning

Niki Affleck
Sept. 24, 2014



Presentation Overview



The New Regime in Pipeline Emergency Response Planning

- **An introduction to the Energy East Pipeline Project**
- **An introduction to the new regime**
- **Changing public expectations about safety**
- **What the regulator expects**
- **EMR planning in today's regulated environment**
 - **Life Cycle Pipeline Safety**
 - **Proven response approaches**
 - **New industry approaches**
 - **Importance of community partners**
 - **TransCanada's approach**
- **TransCanada's approach to pipeline safety**
 - **Right training, right roles, right time**

- **Q & A**

EE4721-TCPL-PR-PN-0089

The Energy East Pipeline Project



Energy Transportation in Today's World



- Today pipeline emergency response planning is more complex than ever.
- In order to be effective, a plan must be accepted and understood by key stakeholders and by those who will activate the plan.
- Emergency response planning involves a continuous consultation process rather than an end product.
- The process results in:
 - Sharing information
 - Stronger relationships between TransCanada and communities
 - Education of all stakeholders to each other's capabilities, resources & concerns
 - A transition from a focus of danger to a focus on actions
 - Establishing credibility of the program process and players

The Old Regime vs. The New Regime

- **Today pipeline emergency response planning is more complex than ever**
 - Increased number of involved parties
 - Increased number of people affected
 - Higher public expectations due to high-profile incidents
 - Increased visibility through digital technology

Gap in Public Perception



VS.



**What the public sees in the media and fears
will happen in their own communities**

EE4721-TCPL-PR-PN-0089

**What emergency response personnel know
and understand**

Public Perceptions, Expectations & Concerns About Personal Safety

Public Perception:

- *2 in 5 Canadians do not trust energy companies to “do what’s right” when it comes to consumer protection.*
 - 2014 Edelman Trust Barometer

Public Expectation:

- *That the regulators work to protect the public and fulfill their mandate to instill confidence in the public regarding the safe transportation of materials via marine, pipeline, rail and air modes.*

Public Concerns:

- *Safe transport of oil*
 - Margo McDiarmid, Environment Unit, CBC News
- *Safe water - Water contributes to Canadians health, security and prosperity. It has a role in supporting critical ecosystems that lay the foundation for Canadians’ livelihoods and thriving communities.*
 - Canada’s Premiers Water Stewardship Council



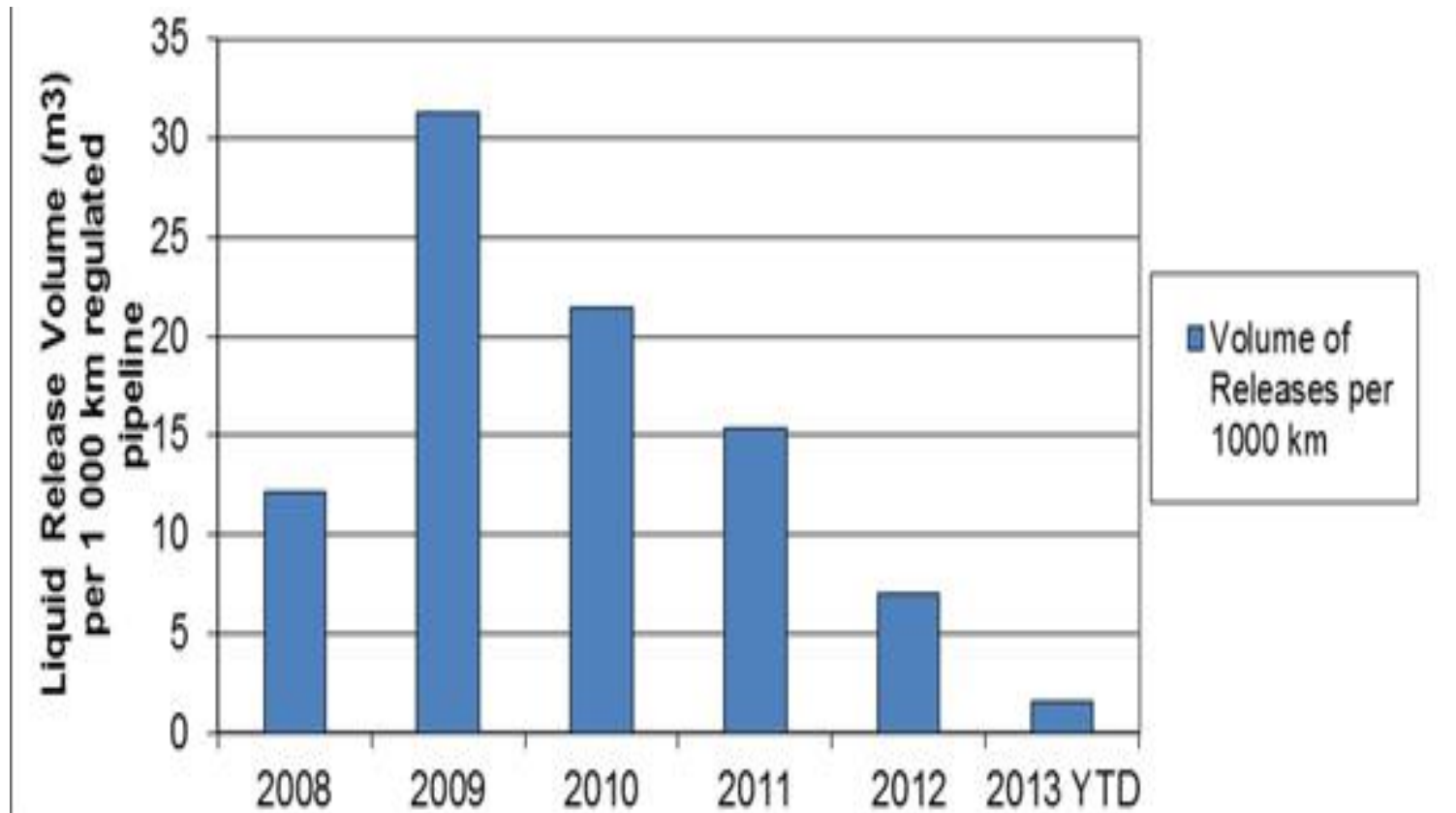
What The Regulator Expects



- The National Energy Board (NEB) requires pipeline operators to: anticipate, prevent, manage and mitigate conditions that could adversely affect property, the environment or the safety of workers or the public.
- The NEB requires that companies design management systems for:
 - Emergency Management (including continuing education)
 - Safety
 - Environmental Protection
 - Security Management
 - Integrity
- The NEB requires companies minimize impacts and compensate affected parties in the event of an emergency.



National Energy Board Pipeline Incidents – Heading in the Right Direction



Planning in Today's Regulated Environment

Life Cycle Pipeline Safety

Design



Build



Operate

- Risk Assessment
- Route selection
- Codes, standards & regulations
- Leak Detection Systems
- SCADA
- Shut Off Valves
- Overpressure Protection
- Pipe & Material Specifications
- Engineering Quality Control

- Pipe Manufacturing Quality Control
- Pipe transportation & handling
- Depth of Cover
- Erosion Control
- Water Crossings (incl. Stream bed preservation & Horizontal Directional Drilling)
- Welding process control and inspection
- Coating application specifications & inspection
- Lowering In and Backfill Inspection
- Right of Way reclamation/revegetation
- Material traceability/records
- Post construction hydrotests
- Post construction inspections (in line)
- Construction Worker Qualifications
- Signage

- 24/7 Control Center Monitoring
- Leak Detection
- Aerial Surveillance & Ground Patrols
- Facility Site Inspections
- Preventive Maintenance
- Public Awareness Program
- Call Before You Dig Program
- Operator Qualifications
- **Emergency Preparedness & Response**
- Pipeline Integrity Program

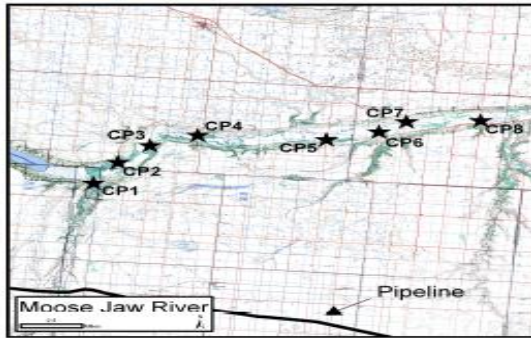
Planning in Today's Regulated Environment



Emergency Response Planning



Moose Jaw River: CP1 Nicolle Flats Interpretive Area



RESPONSE STRATEGY

Nearest Response Equipment:

Access to Area:

- Take Canada 1 to HWY 301, proceed North. Take your seventh RIGHT, take road to "Y" and take the left fork. Follow road all the way to

Location of Staging Area / Boat Launch:

- Stage on the gravel road.
- A launch is N/A for this site.

Description of Watercourse

- The water has a depth of 1-4', the width is approximately 20' across and the river flows in a general direction of NE.

Bank Characteristics:

- South: 8-12' Banks, Dirt and Grass with low brush.
- North: 8-12' Banks, Dirt and Grass with low brush.

Environmental Sensitivities:

- Farm / Park

Decontamination Areas:

- Dry Decon
- 150 yds X 600 yds

Comments:

- Decon / Staging / ICP in Park

Note: This tactical Control Plan is provided as general guidance tool for response to an incident emanating from this location. The selection of response strategy equipment, manpower and deployment site may vary based on actual field conditions (e.g. terrain, weather conditions, product type/volume) and incident details.

Tactical Control Plan

INFORMATION	
Latitude/Longitude: 50 33.4504N* 105 17.26	Key Map Location:
Location/Site: Moose Jaw River: CP1 Nicolle	Landowner:
Upstream Control Point:	Phone:
Downstream Control Point: CP1	

EQUIPMENT			
Equipment	Quantity	Location	ETA
Absorbent Trailer	1	Staging Area	4 Hrs
10" Containment Boom	500	Staging Area	4 Hrs
Response Trailer	1	Staging Area	4 Hrs
Frac Tanks	1	Staging Area	4 Hrs
Personnel	10	Staging Area	4 Hrs
Roll off Boxes	1	Staging Area	4 Hrs
Vacuum Truck	2	Staging Area	4 Hrs

RESPONSE OBJECTIVES

- Deploy 10" Containment Boom
- Deploy Shoreline Protection
- Stage Vacuum Operations
- Set up staging area
- Set up storage containers
- Set up storage containers

SAFETY

- Conduct Operational Risk Assessment and put proper controls in place to protect the community and workers.
- Conduct tailgate safety meeting before and after each shift; modify Site Safety Plan, as appropriate.
- Produce a Traffic Control Plan, if applicable.
- Caution: Wildlife, topography, and seasonal issues.
- Require the wearing of a Personal Flotation Device within 5' of water's edge and 3' deep.

Developed by:
 Response Management Associates
 8620 Cypresswood Drive, Spring TX 77379
 Phone 281-320-9756 <http://www.rma-world.com> Date: 07/15/2008

Planning in Today's Regulated Environment

Proven Approaches



Planning in Today's Regulated Environment



Industry Initiatives

Canadian Energy Pipeline Association (CEPA) Emergency Response Initiatives:

- Industry Mutual Emergency Assistance Agreement (MEAA) (Dec 2013)
 - During a significant emergency situation, CEPA member companies can call upon each other to share additional resources
- Industry Joint Emergency Response Functional Exercise (Sept. 24, 2014)
 - Exercise to test capabilities of member participants to respond to an emergency when the MEAA is activated
 - Taking place this morning in Edmonton, AB



Planning in Today's Regulated Environment

Industry Initiatives

CEPA Integrity First®

- **Industry – wide initiative focused on enhancing safety, environmental and socio-economic performance:**
 - Leading to zero incidents
 - Adopt leading practices & lessons learned
 - Track and report on performance
 - Promote public education and understanding
 - Continual improvement

Planning in Today's Regulated Environment

Importance of community partners

- First responders are our “partners” in pipeline safety
- We want to earn your trust and social licence to work along side you in your communities
- We will consult and work with first responders to understand your community and develop an appropriate response capability
 - In Ontario, New Brunswick and Quebec 23 meetings were held between April and June 2014, involving hundreds of participants from numerous agencies.



TransCanada's Approach to Pipeline Safety

Response Preparedness and Transparency

- Emergencies are unlikely to happen but we must be prepared for any potential circumstance
- We prepare by developing and delivering:
 - Comprehensive Emergency Response Plans in consultation with communities
 - Training with our response partners
 - Internal and external response resource capabilities to a worst case scenario



TransCanada's Approach to Pipeline Safety

Control Center Operations

- Sophisticated monitoring system
- System is monitored 24/7
- Controllers operate the pipeline, perform leak detection monitoring and pipeline shut down
- Control center activates an emergency response
- Detects leaks and shuts down pipeline within minutes



Control center in Calgary Alberta

TransCanada's Approach to Pipeline Safety

Isolation Points – Motor Operated Valves (MOV)



- Remotely monitored and can be closed by Control Center within minutes
- Located along the pipeline, at major water crossings and other sensitive areas as required

TransCanada's approach to Pipeline Safety

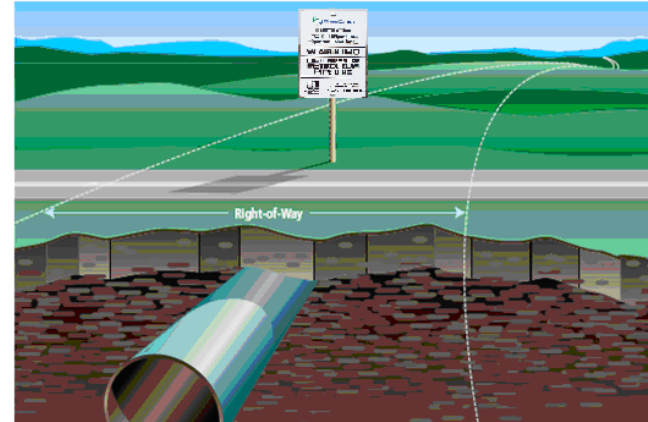
Pipeline Warning Signs and Marker Posts

Pipeline location will be marked at a minimum at

- Roads
- Canals
- Railroads
- Other areas deemed necessary

Pipeline markers must contain

- Emergency Contact numbers for the Pipeline Operator
- Product being transported
- Company information



Line Marker

TransCanada's Approach to Pipeline Safety

Energy East procedures in the event of an oil spill

- Shut down the pipeline and valves, isolating pipeline segments
- Confirm that appropriate emergency services and community officials are notified and involved and provided with the appropriate MSDS
- Ensure employees, contractors and equipment are dispatched
- Establish and activate required facilities such as an Incident Command Post and Emergency Operations Centers
- Assess and monitor hazards
- Contain and recover oil
- Consult with local to federal authorities
- Keep the community informed of emergency response activities
- **Assume the role of the Responsible Party**



Right Training, Right Info, Right Roles, Right Time

Emergency Response Planning in Your Communities

Consultation:

- Emergency contact and protocols
- Sensitivities requiring additional protection
- Equipment Resources
- Training
- Use of Incident Command System
- Emergency Operations Centers
- Incident Command Posts
- Unified Command
- Mutual Aid



Right Training, Right Info, Right Roles, Right Time

First Responder Actions

- **Local emergency service agencies are not expected or required to attempt to contain and recover any spilled product**
- **Protect yourselves and the public. Respond with full PPE**
- **Join TransCanada in a Unified Command – Be our partner in pipeline safety**
- **Conduct evacuations if necessary**
- **Isolate area and restrict access to public**
- **Allow TransCanada clear access to the emergency site**

Right Training, Right Info, Right Roles, Right Time

Emergency Preparedness Training

Pipeline Emergencies Training Portal

- International Association of Fire Chiefs/National Association of State Fire Marshalls
- www.nasfm-training.org

Collaboration in Training

- Incident Command System (ICS)
- Hazwoper
- Table top exercises
- Deployment drills
- Full scale exercises



Right Training, Right Info, Right Roles, Right Time

Ongoing First Responder Training & Communications

On-going annual training and communications with emergency services along the length of the pipeline system

- At minimum it will include emergency contact information and what to do in the event of an emergency
- Joint training opportunities



Questions & Discussion



Thank you!



Contact us

→ We encourage your input and invite interested stakeholders to contact us.

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