



File OF-Fac-Oil-D128-2011-01 01  
11 February 2016

Mr. Chris Horne  
Director, Environment and Regulatory  
Plains Midstream Canada ULC  
607-8th Avenue S.W., Suite 1400  
Calgary, AB T2P 0A7  
Facsimile 403-298-2177

Dear Mr. Horne:

**Plains Midstream Canada ULC (Plains)  
Windsor Sarnia Pipeline Reactivation  
Order MO-011-2012 (Order)  
Plains' Final Reports pursuant to Conditions 4, 5 and 6 of the Order**

**Background**

On 8 May 2012, the Board issued the Order granting Dome NGL Pipeline Ltd. (Dome) leave to reactivate the Windsor-Sarnia Pipeline subject to conditions that included a pressure restriction on the pipeline's operation until such time as the results of:

- a depth of cover survey and proposed mitigation measures for areas of shallow depth of cover were filed with the Board (hereinafter "Condition 5"); and
- an in-line inspection program was filed with the Board ("hereinafter Condition 6").

These results were to be filed within 365 days from the date of the Order.

On 16 April 2013, Plains applied to vary the regulatory authorizations applicable to the Windsor-Sarnia Pipeline to reflect a name change from Dome to Plains. The Board granted Plains' request. Plains then commenced filing information with the Board pursuant to Condition 5 and Condition 6 of the Order. The information filed with the Board included a:

- 2011-2012 depth of cover survey of the entire Windsor-Sarnia Pipeline;
- 2013 prioritization report for areas of shallow depth of cover;
- 2014 high-vapour-pressure class assessment study;
- 2014 updated class location analysis; and
- 2015 depth of cover re-survey.

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On 9 October 2015, Plains made an updated filing on Condition 5 and requested that the Board provide an expeditious decision on its earlier request to lift the pressure restriction. On 16 December 2015, Plains filed its last submission for Condition 5 following a field inspection conducted by the Board's Staff. Plains had earlier made its final filing with respect to Condition 6.

### **Condition 5: Depth of Cover Survey**

The Board has reviewed Plains' filing and finds that the level of accuracy of the data provided is not sufficient to provide information for reliable evaluation. The Board is of the view that Plains' proposed mitigation measures are insufficient to compensate for the pipeline's shallow, and in certain locations nonexistent, depth of cover. Accordingly, the Board has decided to issue a safety order to Plains as described below.

The Board notes that there are a high number of discrepancies between the 2011-2012 depth of cover survey and the 2015 depth of cover re-survey. Many values in the 2015 re-survey are materially different from the 2011-2012 depth of cover survey. This is best demonstrated on the Concordance Table filed by Plains as part of its 3 September 2015 filing. Given the discrepancies, it is the Board's view that Plains' current depth of cover values may not accurately represent the actual depth of cover of the pipeline. Moreover, Plains did not re-survey the entire pipeline even though there are a high number of discrepancies between the two surveys.<sup>1</sup>

Plains' most recent class location designation analysis lowers the class location designation for a number of pipeline segments. There are 38 segments that were classified as Class 2 or higher during the 2007 survey conducted by Dome, that are now characterized as Class 1 following Plains' 2014 survey. Plains was asked to provide a detailed description of how it determined the class location designations during both 2007 and 2014 surveys for two assessment areas. For one assessment area, Plains recognized that its rationale for the class location designation could not justify its choice of class location.<sup>2</sup> For the other assessment area sampled, Plains failed to adequately explain why a Class 3 location should not be extended through a Class 2 area when the Class 3 location is adjacent to a number of dwelling units sufficient to extend the Class 3 area.

The depth of cover for a pipeline is determined by CSA Z662. Under that standard, the required depth of cover for a pipeline is determined by the pipeline's class location and the product it carries, among other things. Certain sections of the Windsor-Sarnia Pipeline have insufficient depth of cover for their CSA class location designation. Plains identified 78 such sites in the Concordance Table filed on 3 September 2015.

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<sup>1</sup> The 2015 re-survey only included areas associated with a class change, or where the reported depth of cover was unusually shallow (e.g. a very low measurement directly adjacent to normal readings).

<sup>2</sup> Plains subsequently adjusted its methodology. The class location determination stayed the same, albeit for a different reason.

There are increased risks to the pipeline and the public if a pipeline has insufficient depth of cover. These risks include surface wheel loading (that is, forces attributable to vehicles or equipment passing over the pipeline) and risks associated with third-party machinery striking the pipeline.

The Board is satisfied by Plains' surface wheel loading calculations, showing that the pipeline can withstand the weight of known equipment crossing it. Plains has accounted for the effects of surface wheel loading in areas of shallow depth of cover through the use of a surface loading calculator. This was used to determine the acceptability of induced stresses on the pipeline due to heavy equipment crossing it. Plains concluded that all class 2 or higher locations would have sufficient depth of cover and pipe strength to withstand any anticipated induced stresses caused by equipment crossing the pipeline. Plains determined that the maximum calculated stress would be less than 90% of the pipeline's specified minimum yield strength.

Plains proposed to mitigate the risk of the third party damage to the pipeline by installing surface armouring at 5 out of the 78 identified shallow depth of cover assessment areas. The remaining 73 areas would have no mitigation solution, or the mitigation plan consisted of installation of additional signage, in conjunction with Plains' existing Damage Prevention Program. This approach does not require Plains to implement physical mitigation solutions or to sufficiently notify affected members of the public of the risk associated with the shallow depth of cover. Therefore, it is the Board's view that there is a heightened likelihood of third party damage to the pipeline.

Given its concerns with Plains' submissions, the Board conducted a field inspection to verify the implementation and effectiveness of Plains' damage prevention and mitigation activities on 10 December 2015. Plains had contended that added patrols and signage was enough to ensure the safety of the pipeline in lieu of adequate depth of cover. On its inspection, the Board observed authorized and unauthorized third party activities that were not reported by Plains' additional patrols. Accordingly, the Board is of the view that Plains' mitigation activities, undertaken as part of its Damage Prevention Program, are not adequate.

#### **Condition 6: In-line inspection results**

Plains has satisfied condition 6 of the Order. Plains conducted an in-line inspection tool run in August 2013 using the Onstream Pipeline Inspection Limited's combination of a magnetic flux leakage tool for metal loss features and a Geometry tool for pipeline deformation. Plains also completed the GE PII Pipeline Solutions' UltraScan CD tool runs in December 2013 and April 2014 to inspect crack anomalies. Plains then hired a third party contractor to provide a quality review of the in-line inspection data, assess the significance of the tool-reported anomalies, assess the Corrosion Growth, develop an effective long-term integrity dig program for internal and external metal loss anomalies, and determine the remaining lives of tool-reported crack anomalies. The Board has reviewed this information and accepted Plains' submissions.

### **Request to withdraw 30 July 2015 filing**

On 14 August 2015, Plains asked that the Board rescind its 30 July 2015 filing made in respect of condition 5 from the Board's electronic repository. Plains did not provide any justification to support its request. The Board has decided to deny Plains' request.

### **Safety Order**

Based on the foregoing, the Board has decided to rescind the Order and issue Safety Order SO-P384-001-2016. The new safety order continues the pressure restriction on the Windsor-Sarnia Pipeline and, among other things:

1. requires Plains to notify affected landowners, occupants and land users of the pipeline's shallow depth of cover and requires Plains to remedy the pipeline's shallow depth of cover at certain locations;
2. in light of the Board's findings about the quality of the depth of cover data provided, the Board requires Plains to file updated Depth of Cover and Class Location survey results of the entire Windsor-Sarnia Pipeline; and
3. requires Plains to increase the frequency of ground patrols and provide additional training for its staff and contractors conducting ground patrols.

If you have any questions about this decision, please contact the Integrity Management Team at the Board by calling 1-800-899-1265.

Yours truly,

*Original signed by L. George*

for  
Sheri Young  
Secretary of the Board



**ORDER SO-P384-001-2016**

**IN THE MATTER OF** the *National Energy Board Act* (NEB Act) and the regulations made thereunder;

**IN THE MATTER OF** Order MO-011-2012, as amended, issued by the National Energy Board (Board) under File OF-Fac-Oil-D128-2011-01 01;

**AND IN THE MATTER OF** promoting the safety and security of the Windsor-Sarnia Pipeline operated by Plains Midstream Canada ULC (Plains) under the Board's jurisdiction;

**BEFORE** the Board on 11 February 2016.

**WHEREAS** on 8 May 2012, the Board issued Order MO-011-2012 (Order) to Dome NGL Pipeline Ltd. (Dome), requiring specific safety and security measures in respect of the reactivation of the Windsor Sarnia Pipeline, including a pressure restriction of 7944 kPa;

**AND WHEREAS** on 30 April 2013, the Board approved the transfer of Certificate OC-52, applicable to the Windsor-Sarnia Pipeline, from Dome to Plains;

**AND WHEREAS** on 1 August 2013, the Board issued Order AO-001-MO-011-2012 to reflect the name change from Dome to Plains;

**AND WHEREAS** on 26 June 2014, the Board issued Order AO-002-MO-011-2012, imposing a further pressure restriction on the Windsor-Sarnia Pipeline to 6580 kPa;

**AND WHEREAS** on 20 February 2015, Plains requested that the Board rescind the pressure restriction on the Windsor-Sarnia Pipeline to allow the pipeline to return to its previously approved maximum operating pressure of 8688 kPa (Application);

**AND WHEREAS** on 10 December 2015, the Board conducted an inspection of the Windsor-Sarnia Pipeline;

**AND WHEREAS** the Board has considered the Application, subsequent submissions by Plains and the results of the field inspection of the Windsor-Sarnia Pipeline;

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**IT IS ORDERED THAT**, pursuant to subsection 21 (1) of the NEB Act, Order MO-011-2012, as amended, is hereby rescinded in its entirety;

**IT IS FURTHER ORDERED THAT**, pursuant to subsections 13(a) and 48(1.1) of the NEB Act, and section 6 of the *National Energy Board Onshore Pipeline Regulations*, the operating pressure of the Windsor-Sarnia Pipeline must not exceed 6,580 kPa until Plains meets the following conditions to the Board's satisfaction, unless the Board otherwise directs:

1. Plains must conduct updated Depth of Cover and Class Location surveys of the entire Windsor-Sarnia Pipeline that meet the requirements of CSA Z662-15.
2. For all Class 1 locations (obtained pursuant to Condition 1 of this Safety Order) with a measured depth of cover less than 0.9 meters:
  - a) Plains must implement an effective procedure that will not authorize the operation of vehicles on the pipeline right of way, which exceeds the wheel-loading rating for the pipeline;
  - b) Plains must provide written confirmation that it has:
    - i. Installed additional signage indicating that there is a shallow pipeline in the immediate area;
    - ii. Contacted the respective landowners, occupants and land users to inform them in writing that:
      - A. Specified sections of the Windsor-Sarnia Pipeline do not meet the regulatory requirement stipulated by CSA-Z662-15 for pipeline original design depth of cover; and
      - B. No one must conduct mechanical excavations or any type of ground disturbance, including agricultural operations such as plowing or disking, on the pipeline right of way, without first notifying and obtaining leave from Plains.
3. For all Class 2 locations (with a concentration of people greater than 20), and all Class 3 and 4 locations (obtained pursuant to Condition 1 of this Safety Order) with a measured depth of cover less than 1.2 meters, Plains must provide:

- a) Written confirmation that Plains has contacted the respective landowners, occupants and land users in writing to inform them that:
    - i. Specified sections of the Windsor-Sarnia Pipeline do not meet the regulatory requirement stipulated by CSA-Z662-15 for pipeline original design depth of cover; and
    - ii. No one must conduct mechanical excavations or any type of ground disturbance, including agricultural operations such as plowing or disking, on the pipeline right of way, until the shallow depth of cover is remediated.
  - b) Written confirmation that it has increased the depth of cover to a minimum of 1.2 meters for Class 2 or higher locations, by lowering the pipeline or providing additional cover in the subject areas. For areas where these solutions are not practicable, Plains may install appropriate physical mitigation solutions such as culverts, steel plates or concrete slabs.
4. Plains must file with the Board for approval, within 90 days of the date of this Safety Order:
- a) The results of the surveys requested in Condition 1 of this Safety Order; and
  - b) An Engineering Assessment that meets the requirements of CSA Z662-15, demonstrating that conditions 2 to 3 of this Safety Order have been met and that the pipeline is safe for a continued operation.
5. Plains must:
- a) Conduct daily ground patrols (by walking or driving the right of way) of all Class 2 and higher locations on the Windsor-Sarnia Pipeline until conditions 1 to 4 of this Safety Order are satisfied. Once those conditions are satisfied the ground patrols must be conducted weekly, at a minimum;
  - b) Conduct weekly ground patrols for all Class 1 locations along the Windsor-Sarnia Pipeline;
  - c) Provide refresher right of way inspection training for all of its employees and contractors involved in right of way patrols, including pilots and spotters. Plains must confirm that this training has taken place within 30 days following the receipt of this Safety Order (unless the Board otherwise directs); and
  - d) Provide the NEB with summary results, on a quarterly basis, of its damage prevention activities, conducted from 1 February 2016 to 31 January 2017. These must include the results of its public awareness activities, and aerial and ground patrols.

NATIONAL ENERGY BOARD

*Original signed by L. George*

for  
Sheri Young  
Secretary of the Board

**ORDER SO-P384-001-2016**