Sarah Walsh
Director, Regulatory Affairs

Gas Regulatory Affairs Correspondence
Email: gas.regulatory.affairs@fortisbc.com

Electric Regulatory Affairs Correspondence
Email: electricity.regulatory.affairs@fortisbc.com

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (778) 578-3861
Cell: (604) 230-7874
Fax: (604) 576-7074
www.fortisbc.com

September 7, 2023

British Columbia Public Interest Advocacy Centre
Suite 803 470 Granville Street
Vancouver, B.C.
V6C 1V5

Attention: Leigha Worth, Executive Director

Dear Leigh Worth:

Re: FortisBC Energy Inc. (FEI)

Application for a Certificate of Public Convenience and Necessity (CPCN) for Approval of the Interior Transmission System Transmission Integrity Management Capabilities Project (Application)

Response to the British Columbia Public Interest Advocacy Centre representing the British Columbia Old Age Pensioners' Organization, Active Support Against Poverty, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, Tenant Resource and Advisory Centre, and Together Against Poverty Society (BCOAPO) Information Request (IR) No. 3

On September 20, 2022, FEI filed the Application referenced above. In accordance with the further regulatory timetable established in British Columbia Utilities Commission Order G-115-23, FEI respectfully submits the attached response to BCOAPO IR No. 3.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Commission Secretary
Registered Interveners

13.0 Reference: Exhibit B-18, Pages 2, 3, 4, 5 and 6

Topic: Feasibility of Expedited Installation of PRS at Yahk Station

Preamble:

"…FEI cannot rely on the fact that vendors will inform it of instances of severe cracking "soon after" completing an ILI run…FEI currently assumes a vendor reporting timeframe of up to 180 days (6 months) for EMAT ILI runs on the CTS." **(Exhibit B-18, FEI Rebuttal Evidence, A5, Page 2)**

"…FEI estimates that it will take approximately 30 to 60 days (1 to 2 months) for FEI to complete its initial review of the vendor's initial report and identify potentially injurious cracking on the pipeline requiring a pressure reduction." **(Exhibit B-18, FEI Rebuttal Evidence, A7, Page 3)**

"…the 35-day estimate does not include the time it would take to contract, schedule and mobilize a construction contractor to complete the work on short notice. FEI estimates that it may take several weeks to coordinate resources and mobilize to the Yahk Station, extending the completion of the PRS installation to approximately 60 days." **(Exhibit B-18, FEI Rebuttal Evidence, A9, Page 4)**

"…Based on the weather in the region where the YAH TRA 323 pipeline is located, suitable hydraulic conditions to run ILI tools are generally available between late-March and late-October, although in the operational history reviewed by FEI (from the past approximately 10 years) FEI has only performed tool runs on this pipeline between April and May." **(Exhibit B-18, FEI Rebuttal Evidence, A11, Page 5)**

"As shown in the table below, there are no feasible scenarios as either:

1) the EMAT ILI tool cannot be run due to hydraulic conditions (January, February, November, and December); or

2) if the tool run can be completed, there is a possibility that PRS will be required when it is not feasible to install (December to April). FEI expects that it could identify cracking requiring a pressure reduction, and would need to respond by reducing the pressure, any time between the earliest and latest dates, thus making each scenario not feasible.

As such, FEI cannot wait until after the EMAT ILI run to install the PRS at Yahk Station." **(Exhibit B-18, FEI Rebuttal Evidence, A11, Pages 5 to 6)**

FEI provides a Table that illustrates the feasibility of Yahk Station PRS installation based on its asserted timelines. **(Exhibit B-18, FEI Rebuttal Evidence, A11, Table 1, Page 6)**

13.1 In evaluating the feasibility of deferring the installation of PRS at Yahk Station until after an initial EMAT ILI run as recommended by REL, FEI has analyzed the timelines into the following four components (1) ILI tool run; (2) vendor identification of cracking requiring a pressure reduction; (3) FEI identification/confirmation of cracking requiring a pressure reduction; and (4) installation of the PRS. Please provide a detailed explanation as to the steps that FEI could take to expedite (i) the vendor ILI tool run and vendor reporting/identification of cracking requiring a pressure reduction; (ii) its own identification of cracking requiring a pressure reduction; and (iii) installation of the PRS.

Response:

While responding to this information request, FEI noticed an omission in A11 to FEI's Rebuttal Evidence. FEI has issued an Errata to A11 to FEI's Rebuttal Evidence filed concurrently with these responses, which clarifies that suitable hydraulic and operational conditions must be available to run the ILI tool. While hydraulic conditions to achieve the optimal target ILI tool velocities on the YAH TRA 323 pipeline can generally be achieved year-round, operational conditions preclude running ILI tools in January, February, November and December for the following reasons:

- **The system operating configuration required to achieve target EMAT ILI tool velocities results in the inability to supply gas to the CTS during colder months:** Gas generally flows from the YAH TRA 323 onto the Oliver to Trail 273 mainline (comprised of the OLI GRF 273 and GRF TRA 273 pipelines) to supply gas west towards the South Okanagan region. However, if ILI (pigging) activities on the YAH TRA 323 pipeline were undertaken in colder months, FEI would need to reduce flow through the YAH TRA 323 pipeline to achieve optimal EMAT ILI tool velocity (1-2 m/s). As such, gas supply to the Oliver to Trail 273 mainline would need to be supplemented by the YAH OLI 610 pipeline at Oliver. Under this operating scenario, and on days colder than -17°C, FEI would be unable to supply the maximum of 105 MMSCFD at Kingsvale, which is needed to support demand on the CTS. As FEI requires the full 105 MMSCFD to meet winter demand on the CTS, FEI could be required to source the balance of gas for the CTS on the open market, thus resulting in higher gas costs borne by customers.
- **Inclement weather during colder months creates challenging working conditions:** ILI runs on FEI's ITS pipelines can take approximately two weeks to complete, requiring

significant effort and coordination of internal and contract resources. ILI (pigging) activities can include site preparation, running cleaning tools and/or sizing tools through the pipeline prior to smart ILI tools, running the smart ILI tool(s) (e.g., EMAT, MFL-C, MFL-A), and site clean-up. The YAH TRA 323 pipeline is 163 km and spans from the Yahk Station to the SN-17 Trail Lateral Tap, making it the longest of FEI's pipelines proposed for EMAT ILI. During the ILI run, Operations resources require the ability to travel to remote sites along the pipeline for reasons such as modifying pipeline operating conditions to maintain tool velocity or prevent tool stoppages (e.g., by opening or closing manually operated valves) and tracking the ILI tool (i.e., at listening spots). Heavy snowfall and inclement weather in the East Kootenay region during colder months adversely impact working conditions and can make pipeline access for pigging activities challenging or, at worst, unsafe or impossible. Further, if certain activities, such as modifications to pipeline operating conditions during the ILI run, cannot be completed or cannot be completed in time, it can result in poor data collection by the ILI tool (i.e., speed excursions, tool stoppages).

In addition, under the *PRS is Operational* section of Table 1 in A11 of the Rebuttal Evidence, FEI corrected the rating for November from orange to red to reflect the difficulties with performing construction work at the Yahk Station due to weather conditions at this time of year. This correction has not resulted in any changes to the feasibility of installing the PRS under this scenario (i.e., it still remains not feasible).

As described below, FEI has taken reasonable steps and made reasonable assumptions in its estimated timelines for the four components referenced by the IR.

(i) Vendor ILI tool run and vendor reporting/identification of cracking requiring a pressure reduction:

The period in which the vendor ILI tool run can take place is based on when operational conditions are suitable, as informed by historical mean temperature data for the area and FEI's local knowledge and past experience with running ILI tools on this pipeline. In its identification of the months in which an ILI tool could be run on the YAH TRA 323 pipeline, FEI identified October and March as potentially feasible, even though FEI has not undertaken ILI tool runs in these months over the past approximately 10 years.

With respect to vendor reporting/identification of cracking requiring a pressure reduction, FEI provided an optimistic yet realistic timeline of 4 to 6 months based on FEI's discussions with vendors and peer transmission pipeline operating companies. Vendor reporting timeframes could increase beyond 6 months at the time of the baseline ILI runs on the ITS due to increased demand for EMAT ILI within the industry and EMAT vendor resource constraints.

(ii) FEI's identification of cracking requiring a pressure reduction:

FEI also provided an optimistic yet realistic timeline of 1 to 2 months for it to identify cracking requiring a pressure reduction. Once FEI receives the preliminary report from the ILI vendor, FEI must perform various activities to assess the information. This assessment could result in the further identification of cracking requiring a pressure reduction. As described in A7 of FEI's Rebuttal Evidence, these activities include performing initial integrity digs to expose the pipeline and assess cracking indicated in the report (potentially requiring cut-outs and third-party lab testing if cracking cannot be safely repaired by grinding in the ditch), comparing the information collected from the pipeline digs or testing to the vendor ILI report to validate the performance of the EMAT ILI tool, as well as reviewing other previous ILI tool reports to determine if there is cracking interacting (coincident) with any other integrity features, such as corrosion, that could result in the crack being more critical than estimated by the ILI vendor.

While these activities will continue for more than 2 months after it receives the preliminary report, FEI has estimated that potentially severe cracking will be identified within the 1 to 2 month range noted in FEI's Rebuttal Evidence. As explained in the response to CEC IR3 3.1, this range already presumes increased staffing hours and adding external expertise. FEI does not consider that it is responsible to plan based on a higher degree of optimism than it already has.

(iii) Installation of the PRS:

In its evaluation of the time required to install the PRS, FEI considered the use of contract construction crews as it considers this to be the most likely scenario. However, as discussed in A9 of FEI's Rebuttal Evidence, the use of internal construction crews may expedite timelines by up to 15 days. However, by diverting internal crews to install the PRS, integrity digs to respond to crack indications may be delayed.

13.2 Please provide an alternate Table 1 (as presented on page 6 of FEI's rebuttal evidence) that illustrates and assesses the feasibility of the steps that FEI could take to expedite the four components of the timelines based on FEI's response to BCOAPO 13.1.

Response:

Please refer to the response to BCOAPO IR3 13.1.

14.0 Reference: Exhibit B-18, Pages 6 and 8

Topic: Inclusion of Yahk Station PRS in Sustainment Capital

Preamble: FEI states:

> "...FEI requires the PRS for maintenance flexibility and ongoing operational reasons." **(Exhibit B-18, FEI Rebuttal Evidence, A11, Page 6)**
>
> "The installation of independent pressure control on the YAH TRA 323 will provide FEI with improved operability, reliability and resiliency on its YAH TRA 323 and YAH OLI 610 pipelines, and will also allow for more efficient and economic operation of these pipelines over the long-term…the flexibility provided by the PRS is also important for FEI's operations and FEI would prioritize installing independent pressure control on the YAH TRA 323 pipeline through Sustainment Capital, independently of the ITS TIMC Project." **(Exhibit B-18, FEI Rebuttal Evidence, A12, Page 8)**

14.1 Given FEI's position that the PRS on the YAH TRA 323 pipeline as noted in the preamble to this question, please explain why FEI included the PRS as part of the scope of the ITS TIMC Project CPCN Application.

Response:

Please refer to the response to BCUC IR3 28.1.

14.2 Would FEI prioritize the PRS on the YAH TRA 323 over other sustaining capital expenditures in the event that the BCUC does not accept this PRS as part of the ITS TIMC Project CPCN? Please explain.

Response:

Please refer to the response to BCUC IR3 28.1.

15.0 Reference: Exhibit B-18, Page 14

Topic: Cost Estimates for Options to Responding to ILI Blind Spots

Preamble:

> FEI provides a table that compares (Pro's and Con's) options to respond to potential blind spots in the ILI runs related to three heavy-wall pipe segments on the SAV VER 323 and KIN PRI 323 pipelines, including the proposed option (proactive heavy-wall replacement before the EMAT ILI tool run) and three options after the EMAT ILI tool run: (1) reactive heavy-wall replacement; (2) pipeline exposure and recoat (PLE); and (3) pipeline replacement (PLR). In this table, FEI lists the reactive heavy-wall replacement cost as a potential Con (higher costs than proposed) and PLE and PLR costs as potential Pro's (lower costs than proposed). **(Exhibit B-18, FEI Rebuttal Evidence, A16, Table 2, Page 14)**

15.1 Please provide (i) FEI's cost estimate or range of cost estimates for each of the three options after EMAT ILI tool run options (reactive heavy-wall replacement, PLE and PLR) provided in Table 2 of the FEI rebuttal evidence; and (ii) a comparison of the cost estimate/range of cost estimates of these three options and the proposed option.

Response:

Please refer to the tables below for the range of cost estimates for each of the options available to mitigate cracking in blind spots at Event 1, 29 and 31 after the EMAT ILI tool run, as well as the cost estimate range for the proactive heavy-wall replacement proposed in the Application. In preparing estimates for these options, FEI considered the following:

- For the reactive heavy-wall replacement option, FEI considered that it would re-run the EMAT ILI tool in advance of its next scheduled re-inspection following the heavy-wall replacement to ascertain the missing cracking information on the downstream impacted pipe. As provided in the response to BCUC IR2 20.4, the cost of an ILI run is approximately $1.5 to $2.5 million. For the purposes of the Class 3 estimate, FEI considered an average ILI tool run cost of $2 million.
- For the PLE and PLR options, FEI considered the length of the downstream pipe impacted by the speed excursion to be the same as observed in the MFL-C tool as indicated in Table 5-4 on page 91 of the Application.
- For all options provided, the cost estimates include base costs and owner's costs. The cost estimates do not include contingency, escalation, management reserve or AFUDC.

- Class 5 cost estimates range between -50% and +100% of the sum of the base costs and owner's costs as per Table 1 of *AACE 97R-18 Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Pipeline Transportation Infrastructure Industries*.
- Class 3 cost estimates range between -7% and +30% of the sum of the base costs and owner's costs based on Table A in Appendix H-3: Validation Estimating Contingency Report.

EVENT 1 – SAV VER 323

In considering a PLE alternative to mitigate cracking on the downstream impacted pipe following the Cherry Creek heavy-wall crossing, FEI considered two scenarios based on identifying that the Trans-Canada Highway crossing downstream of Event 1 is cased:

- **PLE of the entire length of impacted pipe, including the Trans-Canada Highway crossing:** This option involves open cutting highway, removing the casing pipe, removing the pipeline coating to inspect the pipeline for cracking, re-coating the pipeline, installing a new casing, and re-paving the highway, all whilst working in and around the live pipeline. While this option is technically feasible, it would require a partial or full closure of the highway and requisite approvals from the Ministry of Transportation and Infrastructure (MOTI).
- **Replacement of the Trans-Canada Highway crossing, and PLE for the remaining length of impacted pipe:** This option involves completing a new bored crossing of the Trans-Canada Highway within the existing right-of-way, and adjacent to the existing line, and then abandoning the existing crossing. Abandonment the pipeline would need to follow MOTI policies. For the remainder of pipeline (starting at the bends east of the highway), FEI would expose the pipeline, remove the coating, inspect the pipeline for cracking, recoat the pipeline and restore cover. It is noted that FEI's preference is to have uncased crossings, as casings can interfere with the cathodic protection on the pipeline.

Table 1: EVENT 1 – SAV VER 323

Option	Length of Pipe	Estimate Range ($M)	Estimate Class	Event 1 – SAV VER 323 ($ millions)																	
				$0.0	$0.5	$1.0	$1.5	$2.0	$2.5	$3.0	$3.5	$4.0	$4.5	$5.0	$5.5	$6.0	$6.5	$7.0	$7.5	$8.0	$8.5
Proactive heavy-wall replacement as proposed (causing speed excursion)	60-80 m	$2.4-$3.4	3 (-7% to +30%)																		
Reactive heavy-wall replacement with additional EMAT tool run (causing speed excursion)	60-80 m	$4.3-$6.0	3 (-7% to +30%)																		
PLE (downstream impacted pipe)	193 m	$2.2-$8.6	5 (-50% to +100%)																		
PLE with replacement of Trans-Canada Highway crossing (downstream impacted pipe)	PLE: 93 m PLR: 100 m	$1.7-$6.8	5 (-50% to +100%)																		
PLR (downstream impacted pipe)	193 m	$1.5-$5.9	5 (-50% to +100%)																		

Based on the table above, FEI makes the following observations:

- PLE has the potential to be the highest cost alternative due to the complexities of the cased crossing and open cutting the Trans-Canada Highway.
- PLR is expected to be similar in cost to PLE with replacement of the Trans-Canada Highway crossing.
- A proactive heavy-wall replacement of Event 1, as proposed, falls within the lower range of cost estimates for both PLE scenarios and the PLR alternative.

FEI has proposed proactive replacement of the heavy-wall pipe at Event 1 for the following reasons:

- This segment of pipeline must operate without a pressure reduction in the winter of the baseline run year in order to maintain capacity, requiring FEI to complete cracking repairs on approximately 64 km of pipeline.
- Replacement of the heavy-wall pipe causing speed excursions supports optimal tool velocity for all ILI tool runs, including EMAT ILI, which could lower lifecycle integrity management costs for all ILI-monitored threats as degraded data requires conservative response.
- Proactive replacement can be completed with sufficient resources and planning horizon and without interruption of or impact to other operational activities.
- The cost of proactive replacement is within the lower range of estimated costs for both PLE options and the PLR alternative.

If FEI were required to perform cracking mitigation after the EMAT ILI tool run, FEI would need to proceed with planning and preparing for a trenchless crossing of the Trans-Canada Highway to avoid lengthy expose and recoat work within the highway.[1] The remainder of the pipeline could either be exposed and recoated (PLE) or replaced (PLR). While the PLE or PLR activities could be completed simultaneously with the trenchless highway crossing to expedite the work, this work would require two crews to be working at this site, which could result in delays in performing

[1] In A16 of FEI's Rebuttal Evidence, FEI stated that it expected that, due to time constraints to restore pressure in this segment of pipeline prior to winter, the only available option to mitigate cracking in the downstream impacted pipe following the EMAT ILI tool run would be PLE. However, at the time of writing its Rebuttal Evidence, FEI did not consider the extensive challenges associated with inspecting the cased Trans-Canada Highway crossing. It is FEI's current preference to have uncased crossings for future access and inspection purposes. Following more detailed analysis of post-ILI mitigation options at this location, FEI's view has changed in that a complete PLE alternative is likely not available given the time constraints, and instead FEI would need to plan to replace, at minimum, the Trans-Canada Highway crossing.

integrity digs to inspect and repair other cracking indications on the segment of pipeline required to operate without a pressure reduction.

Ultimately, a reactive response to mitigating cracking after the EMAT ILI run is expected to be more costly and time-consuming than a proactive approach, and would result in additional pressure in completing FEI's operational strategy outlined in the response to BCUC IR1 1.2.1.

Table 2: EVENT 29 – KIN PRI 323

Option	Length of Pipe	Estimate Range ($M)	Estimate Class	Event 29 – KIN PRI 323 ($ millions)													
				$0.0	$0.5	$1.0	$1.5	$2.0	$2.5	$3.0	$3.5	$4.0	$4.5	$5.0	$5.5	$6.0	$6.5
Proactive heavy-wall replacement as proposed (causing speed excursion)	5 m	$1.9-$2.7	3 (-7% to +30%)														
Reactive heavy-wall replacement with additional EMAT tool run (causing speed excursion)	5 m	$3.8-$5.3	3 (-7% to +30%)														
PLE (downstream impacted pipe)	112 m	$0.5-$2.0	5 (-50% to +100%)														
PLR (downstream impacted pipe)	112 m	$0.7-$2.9	5 (-50% to +100%)														

Based on the table above, FEI makes the following observations:

- A reactive heavy-wall replacement of Event 29 is expected to be the highest cost option. However, cost efficiencies for a single EMAT ILI re-run may be realized if reactive heavy-wall replacements were undertaken at both Event 29 and 31 within a similar timeframe.
- PLE and PLR options may be comparable in cost.
- A proactive heavy-wall replacement of Event 29, as proposed, falls within the middle and upper range of cost estimates for the PLR and PLE alternatives, respectively.

As the estimated range of costs for proactive heavy-wall replacement overlaps the estimated range of costs for the PLE and PLR alternatives, and for the reasons outlined in Table 2 of A16 of FEI's Rebuttal Evidence, FEI has proposed proactive heavy-wall replacement at Event 29. However, if required to perform cracking mitigation at Event 29 after the EMAT ILI tool run, FEI would likely propose the PLE alternative if the length of downstream impacted pipe were comparable, or shorter than, that observed in the MFL-C tool run.

1 **Table 3: EVENT 31 – KIN PRI 323**

Option	Length of Pipe	Estimate Range ($M)	Estimate Class	Event 31 – KIN PRI 323 ($ millions)													
				$0.0	$0.5	$1.0	$1.5	$2.0	$2.5	$3.0	$3.5	$4.0	$4.5	$5.0	$5.5	$6.0	$6.5
Proactive heavy-wall replacement as proposed (causing speed excursion)	15 m	$1.4-$2.0	3 (-7% to +30%)														
Reactive heavy-wall replacement with additional EMAT tool run (causing speed excursion)	15 m	$3.3-$4.6	3 (-7% to +30%)														
PLE (downstream impacted pipe)	223 m	$0.9-3.8	5 (-50% to +100%)														
PLR (downstream impacted pipe)	223 m	$1.2-$4.8	5 (-50% to +100%)														

2

Based on the table above, FEI makes the following observations:

- Reactive heavy-wall replacement has the potential to be the highest cost option. However, cost efficiencies for a single EMAT ILI re-run may be realized if reactive heavy-wall replacements were undertaken at both Event 29 and 31 within a similar timeframe.
- PLE and PLR options may be comparable in cost.
- A proactive heavy-wall replacement of Event 31, as proposed, falls within the lower range of cost estimates for the PLE and PLR alternatives.

As the estimated range of costs for the proactive heavy-wall replacement falls within the estimated range of costs for the PLE and PLR alternatives, and for the reasons outlined in Table 2 of A16 of FEI's Rebuttal Evidence, FEI has proposed proactive replacement of the heavy-wall valve assembly at Event 31. However, if required to perform cracking mitigation at Event 31 after the EMAT ILI tool run, FEI would likely propose the PLE alternative if the length of downstream impacted pipe were comparable, or shorter than, that observed in the MFL-C tool run.

16.0 Reference: Exhibit B-18, Page 20

Topic: Reasons to Proactively Replace Heavy-Wall Pipe Segments

Preamble: FEI states:

> "FEI has identified the following reasons supporting the need to proactively replace the heavy-wall pipe segments at Events 29 and 31…First…FEI relies on the KIN PRI 323 and PRI OLI 323 pipelines to provide gas from TC energy to the CTS…if these pipelines were operated at a reduced pressure, FEI would not be able to deliver up to a maximum of 105 MMSCFD of gas to the CTS and, depending on the time of year, would need to source additional supply in the open market at higher cost to replace the balance of the gas…Third, if FEI could not mitigate cracking on the downstream impacted pipe prior to winter and a pressure reduction were required to remain in place throughout the winter, FEI would incur unplanned and much higher gas costs to secure the balance of supply for the CTS, which would be borne by customers." **(Exhibit B-18, FEI Rebuttal Evidence, A16, Page 20)**

16.1 Please explain whether the first and third reasons for the asserted need to proactively replace the heavy-wall pipe segments at Events 29 and 31 quoted in the preamble to this question are identical, or explain the differences between them.

Response:

FEI has re-phrased the first and third reasons to clarify the intended differences between each, and considers the third reason to be a subset of the first reason. FEI expects the outcome of each to be the same; namely, an increased risk of reduced gas supply at Kingsvale leading to incurrence of higher costs to customers to secure the balance of supply.

Re-phrased Reason Supporting Proactive Replacement	Outcome if Proactive Replacement is Not Undertaken
First reason: FEI relies upon both the KIN PRI 323 and PRI OLI 323 pipelines to be able to provide gas to the CTS and other communities between Kingsvale and Huntingdon year-round. If a reduced pressure is required for any reason, such as to perform an unplanned repair or during an emergency response undertaking, a reduction in operating pressure during a winter period would have a capacity and corresponding gas supply impact. In off-peak seasons, a reduction in operating pressure would limit FEI's ability to respond to unexpected circumstances.	Increased risk of reduced gas supply and incurrence of higher costs to customers.

Re-phrased Reason Supporting Proactive Replacement	Outcome if Proactive Replacement is Not Undertaken
Third reason: Following its EMAT tool runs, FEI may have large numbers of cracking features that require digging, inspection, repair, and potential cut-out. If a pressure reduction is required due to cracking that could not be addressed prior to the winter period, a reduction in operating pressure during a winter period would have a capacity and corresponding gas supply impact.	Increased risk of reduced gas supply and incurrence of higher costs to customers.

1