

October 25, 2016

Alberta Utilities Commission
5th Avenue Place
400, 425 – 1st Street SW
Calgary, Alberta
T2P 3L8

Attention: Brian Shand, P. Eng.

**Re: ATCO Pipelines
Radiographic Weld Inspection**

2017-2018 General Rate Application (Proceeding ID 22011)

Please find attached, the ATCO Pipelines responses to the Alberta Utility Commission's information clarity request, received on September 29, 2016 regarding ATCO's radiographic weld inspections.

In a subsequent request dated October 12, 2016, the Alberta Utility Commission requested that all information previously filed with the Commission regarding the deficiencies of the radiographic inspections of its prefabricated welds, including ATCO Pipelines' outstanding responses to questions from the Commission's September 29, 2016 letter, be filed under Proceeding 22011 by October 25, 2016. To assist in the orderly presentation of AP's responses, AP has described the requested information outlined in the Commission's September 29, 2016 letter as Information Request ATCO-AUC-2016SEP29-001, with each bullet listed on pages 3-4 of the letter assigned subparts (a) through (i).

The information thus being incorporated into the record for Proceeding 22011 consists of:

1. ATCO-AUC-2016MAY13 Set of IRs (Round 1);
2. ATCO-AUC-2016JUN27 Set of IRs (Round 2); and
3. ATCO-AUC-2016SEP29 Set of IRs (Round 3).

Should the AUC request further clarification or desire further information on this matter, please contact the undersigned at 780-420-7225 or by email at graeme.feltham@atco.com.

Sincerely,

(Original Signed By)

Graeme Feltham, P. Eng, MBA
Vice President, Engineering & Construction
ATCO Pipelines

ATCO-AUC-2016SEP29-001(a)

Request:

- (a) A discussion of whether any cracks or crater cracks have been identified, and the intended approach to prioritize and deal with any cracks.

Response:

- (a) As part of a review of 12,816 previously completed radiographic inspections undertaken via a third-party radiographic reviewer at the request of Bennett Jones LLP as counsel for ATCO, it was learned that eight inspections where the potential for crack, crater cracks, or crack-like features were present.

The eight inspections were then correlated to four associated projects. Of these four projects;

- P18788: defects were identified and remediated prior to being placed in-service: complete
- P17853: in-service welds re-inspected and no cracks identified: complete
- P20616: re-inspection scheduled for Q4 2016
- P15856: re-inspection scheduled for Q4 2016

To date, ATCO's ongoing field re-inspection program has identified three cracks present in in-service welds. Of these three cracks, two have been remediated through means of replacement and one is currently scheduled for removal in Q4 2016. If additional cracks or crack-like features are identified as a result of AP's re-inspection program, those features will be prioritized for assessment and repair.

ATCO-AUC-2016SEP29-001(b)

Request:

- (b) An update on the progress of the re-inspections and repairs, particularly with respect to the larger diameter pipelines in urban areas that were planned to be completed in 2016.

Response:

- (b) Please refer to ATCO-AUC-2016JUN27-001(b) October 2016 Update for an update of all re-inspections and repairs to date. A summary of large diameter pipelines in urban areas to be completed in 2016 is presented in ATCO-AUC-2016SEP29-001(b) Attachment. The re-inspection and repair work program remains on schedule.

ATCO-AUC-2016SEP29-001(c)

Request:

- (c) Confirmation that the current approach to assess defects is by engineering critical assessment, who is completing the engineering critical assessments, the written procedures to conduct the engineering critical assessments, and a sample of any completed engineering critical assessments.

Response:

- (c) Confirmed. ATCO's current approach to assessing identified features is through engineering critical assessment. ATCO is working with Det Norske Veritas, (Canada) Ltd. (DNV GL), a qualified engineering consultant, to complete the engineering critical assessments.

Please also refer to the sample provided in ATCO-AUC-2016SEP29-001(c) Attachment.

ATCO-AUC-2016SEP29-001(d)

Request:

- (d) Further explanation of the methodology used to determine the reduced operating pressure at locations where the operating pressure has been reduced and a sample of any assessments for reduced operating pressure that have been completed.

Response:

- (d) In those instances where it is determined that a reduction in operating pressure is appropriate, such as the identification of a crack or crack-like feature, ATCO has reduced the allowable operating pressure to as low as practicable while still maintaining critical gas service.

ATCO-AUC-2016SEP29-001(e)

Request:

- (e) An explanation of the increase in locations from 378 on May 31, 2016 to 639 on July 18, 2016 and confirmation that 639 is still considered as representative.

Response:

- (e) ATCO's estimate of impacted sites at the time of the May 31, 2016 response was informed by the working postulation that a single radiography contractor was responsible for the subject films deemed unacceptable. As the investigation as requested by Bennett Jones LLP on behalf of ATCO progressed, it was determined through evaluation of the review results that two related radiographers (father/daughter), working under three radiographic service providers, had provided unacceptable work in the execution of radiographic services for ATCO. The inclusion of this second radiographer's substandard inspections in ATCO's July 18, 2016 response raised the working estimate of impacted sites to 639.

The number of projects that these two individuals are identified as having been associated with is currently 643. This number may change somewhat (increase or decrease) as the detailed review work continues.

Please also refer to ATCO-AUC-2016MAY13-001 (REVISION) (d) provided as part of ATCO's Round 2 response on July 18, 2016 and ATCO-AUC-2016JUN27-002(g).

ATCO-AUC-2016SEP29-001(f)

Request:

- (f) An explanation of how the columns in spreadsheet (a) were determined, who determined them, and how they are intended to be interpreted.

Response:

- (f) The goal of the review was to determine which radiographic inspections were completed in an acceptable manner to allow for appropriate and adequate interpretation. From the assessment of 12,816 radiographs as requested by Bennett Jones LLP on behalf of ATCO, it was determined that two radiographers consistently completed radiographic inspection work outside of acceptable industry standards.

The spreadsheet columns included in ATCO-AUC-2016JUNE27-001(a), submitted in ATCO's July 18, 2016 response, were determined in conjunction with the third-party radiographic review as requested by Bennett Jones LLP on behalf of ATCO to determine acceptability of radiographs previously completed for ATCO. These columns were determined necessary in order to ensure that the assessments made were traceable back to the radiographic film being reviewed, to determine if the radiographic film quality produced during original inspection was acceptable, and to identify potential indications of single welds being shot multiple times and presented as multiple unique welds.

ATCO-AUC-2016SEP29-001(g)

Request:

- (g) An assessment of the methodology utilized to prioritize and establish the timing for the proposed program execution including an assessment of the risk associated with the contemplated four-year program.

Response:

- (g) In assessing the prioritization and timing of the proposed program, ATCO considered the quantity of the subject radiographic inspections, the mitigating factors, the likelihood and consequence of outcomes, and the resources required to complete the program with a goal to reduce the risk to as low as reasonably practicable.

ATCO has assessed the risk associated with this program using the principles outlined in Annex B of CSA Z662-15. This included consideration of the limitations and assumptions of the analysis, identification of potential hazards, risk estimation through frequency and consequence analysis, and recommendations and mitigations to reduce the risk to as low as reasonably practicable.

Considerations for frequency analysis for likelihood of failure include:

- Consideration of operational data from the pipeline systems;
- Successful completion of a hydrostatic pressure test prior to installation;
- System operation pressures below licensed Maximum Operating Pressure; and
- System operating parameters and operating fluid with low impact to defect growth.

The Mitigations and Recommendations resulting from the risk analysis include:

- Re-inspect suspect welds as quickly as practicable, prioritized by consequence;
- Perform engineering critical assessments to determine fitness-for-service on identified defects;
- Consider immediate action (such as Normal Operating Pressure lowering) when cracks are identified;
- Complete repair/replacement work as quickly as practicable, prioritized based on defect severity and consequence of failure;
- Report progress regularly; and

- Perform a reassessment of this risk after a significant number of re-inspections are completed (recommended in Q1 2017).

ATCO-AUC-2016SEP29-001(h)

Request:

- (h) A current work plan describing the steps being undertaken to identify and remedy weld defects, who is undertaking the steps, and their timing.

Response:

- (h) The work plan associated with ATCO's weld integrity program is as follows:

Identification of potential weld defects is achieved via non-destructive re-inspections. The re-inspections are being performed by qualified and competent contract radiograph or Non-Destructive Testing inspectors. Any cracks or crack-like features identified will be prioritized for prompt remediation.

Defects identified by re-inspection will be assessed via engineering critical assessment, by ATCO in consultation with industry experts, to determine fitness-for-service.

If, through engineering critical assessment, it is determined that a weld defect requires remediation, ATCO will initiate a project to either repair or replace the defective weld. The crews performing the repairs or replacements may consist of ATCO personnel, contractors, or both.

The re-examinations and repairs are prioritized and sequenced based on risk.

ATCO-AUC-2016SEP29-001(i)

Request:

- (i) Quarterly updates of spreadsheet (b).

Response:

- (i) Confirmed. Quarterly updates of the spreadsheet provided in ATCO-AUC-2016JUN27-001(b) will be provided by ATCO (October, January, April, and July) until the completion of the program.

Please refer to ATCO-AUC-2016JUN27-001(b) October 2016 Update.