

July 17, 2009

Mr. Karl Buchanan
Integrity Specialist, Eastern Region Integrity
TransCanada Pipelines Ltd.
3390 Hwy. 15, RR#6
Kingston, ON
K7L 4V3

Dear Mr. Buchanan

***Shannonville Compressor Station 139 Upgrade
Notification of Conditional Approval of Connection Proposal
CAA ID # 2009-EX428***

Thank you for the detailed information regarding the upgrade at the Shannonville Compressor Station #139.

We have concluded that the proposed changes will not result in a material adverse impact on the reliability of the integrated power system.

The IESO is therefore pleased to grant **conditional approval** for the modification detailed in the attached assessment report. Any material changes to your proposal may require re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

Final approval to connect the facility to the IESO-controlled grid will be granted upon successful completion of the IESO Market Entry process including, without limitation, satisfactory completion of the requirements set out in the System Impact Assessment report. During this process you shall demonstrate the requirements have been fulfilled and the equipment installed has characteristics no worse than those in the proposal assessed by the IESO. Please contact market.entry@ieso.ca if you have not received a Facility Registration Summary package within the next 10 days.

For further information, please contact the undersigned.

Yours truly

Barbara Constantinescu
Manager – Market Facilitation
Telephone: (905) 855-6406
Fax: (905) 855-6372
E-mail: barbara.constantinescu@ieso.ca
cc: IESO Records

ASSESSMENT SUMMARY
TransCanada Pipelines Ltd.

1.0 GENERAL DESCRIPTION & PROPOSED MODIFICATIONS

TransCanada Pipelines is planning to upgrade their Shannonville Compressor Station #139 (TCPL Shannonville) by replacing the 115 kV fuses on the high side of the transformers with SF6 circuit breakers and a protective relaying scheme. The expected in-service date is July 31, 2009.

Shannonville Compressor Station #139 is fed from the 115 kV circuit Q6S via a 115 kV disconnect switch 139A-L.

The station load is fed by two 115/4.16 kV transformers each rated at 3 MVA. No changes to the transformers or the load pattern will occur with these modifications.

2.0 TECHNICAL SPECIFICATIONS

The technical specifications of the new circuit breakers are given in Table 1 below.

New Circuit Breakers Shannonville Compressor Station #139	
Designation	52-T1 and 52-T2
Configuration	3 phase
Maximum Continuous Rated Voltage	145 kV
Load Interrupting Current	1200 A
Interrupting Media	SF6
Short Circuit Symmetrical Duty Rating	40 kA

Table 1 – Specifications of New Circuit Breakers at Shannonville Compressor Station #139

The proposed protection scheme is based on parallel “A” and “B” protections for each transformer with full redundancy off all elements with the exception of a single common station battery, DC PDP and charger. The “A” protections will be based on SEL-751A feeder protection relays while the “B” protections are based on Areva P122 over-current relays.

Both “A” and “B” protections are equipped with 50/51, 50N/51N and 50G (transformer T1 and T2 secondary ground fault detection) and breaker failure protection.

3.0 REQUIREMENTS

The proponent must notify the IESO as soon as it becomes aware of any changes to the assumptions made in the connection assessment. The IESO will determine whether these changes require a re-assessment.

Maximum Voltage Requirements

Appendix 4.1, reference 2 of the Market Rules states that equipment on the 115 kV grid in the south may be exposed to voltages as high as 127 kV. In addition, some recognized contingencies (e.g. load shedding, open line end) can cause a temporary voltage increase above the maximum continuous voltage. For these conditions, connection equipment may be exposed to voltages approximately 5% above the maximum continuous operating voltage for the period of time that it takes the IESO to direct operations to restore a normal voltage profile and to prepare for the next contingency. This re-preparation period will be as short as possible but it should not take longer than 30 minutes. Therefore, the IESO requires that 115 kV connection equipment in southern Ontario:

- must have a maximum continuous voltage rating of at least 127 kV; and
- must be able to remain in-service at voltages up to 133 kV for up to 30 minutes.

If revenue metering equipment is being installed as part of this project, please be aware that revenue metering installations must comply with the appropriate Measurement Canada requirements as well as the Market Rules for the Ontario electricity market. For more details the applicant is encouraged to seek advice from their Metering Service Provider (MSP) or from the IESO metering group.

Maximum Fault Levels

The Transmission System Code (TSC), Appendix 2 establishes maximum fault levels for the transmission system. For the 115 kV system, the maximum 3 phase symmetrical fault level is 50 kA and the single line to ground (SLG) symmetrical fault level is 50 kA.

The Transmission System Code (TSC) requires that new equipment be designed to sustain the fault levels in the area where the equipment is installed. If any future system enhancement results in an increased fault level higher than the equipment's capability, the applicant is required to replace the equipment at their own expense with higher rated equipment capable of sustaining the increased fault level, up to the TSC's maximum fault level of 50 kA for the 115 kV system.

Protection Requirements

New protection systems must be coordinated with existing protection systems and must be designed to satisfy the requirements of the Transmission System Code (TSC). Facilities designated as essential to power system reliability must be protected by two redundant protection systems according to section 8.2.1a of the TSC.

These redundant protection systems must satisfy all requirements of the TSC but in particular they may not use common components, common battery banks or common secondary CT or PT windings.

As currently assessed, this facility is not designated as essential to power system reliability and therefore the above requirements do not apply. In the future, as the electrical system evolves, this facility may be designated as such and at that time the above requirements will apply.

Telemetry Requirements

Appendix 4.17 of the Market Rules lists the requirements for telemetry data that must be provided to the IESO by connected wholesale customers and distributors. Since this facility consumes less than 20 MVA there are no telemetry requirements.

Provided that the TSC requirements are satisfied, the IESO does not have additional requirements.

4.0 ASSESSMENT & CONCLUSIONS

The new SF6 circuit breakers will meet the maximum voltage and short circuit requirements stated above.

This expedited System Impact Assessment concludes that the installation of the new SF6 circuit breakers and protective relaying scheme at TransCanada Pipelines' Shannonville Compressor Station #139 is not expected to have a material adverse impact on the IESO-controlled grid.