

Addendum to 2006-EX314 – revised May 6, 2011

Waterloo North Hydro Inc.

1.0 GENERAL DESCRIPTION

Waterloo North Hydro has decided to use an on-load tap changer with no off-load tap changer. The revised specifications are highlighted in yellow in the table below.

2.0 PROPOSED MODIFICATION

A comparison of the technical specifications between the existing and replacement transformers is given below.

Rush MTS	Original T1	Original T2	Replacement T1 & T2
Configuration	three phase	three phase	three phase
Transformation (kV)	110 / 14.2	110 / 14.2	110 / 14.2
Winding Configuration	delta / wye	delta / wye	delta / wye
Thermal Rating	20.00 ONAN 26.67 ONAF 33.33 ONAF	20.00 ONAN 26.67 ONAF 33.33 ONAF	30 ONAN 50 ONAF
Continuous Thermal Rating (summer 30°C)	33.33 MVA	33.33 MVA	50 MVA
15 Minute Thermal Rating (summer 30°C)	Not applicable	Not applicable	Not applicable
10 Day Thermal Rating (summer 30°C)	41 MVA	41 MVA	75 MVA
Positive Sequence Impedance (H-X)	R = not available X = 13.6% on 33.3 MVA base	R = not available X = 13.6% on 33.3 MVA base	R = 0.452% (typical) X = 12.3 to 13.6% on 30 MVA base ¹
Impedance to Ground	Solidly grounded	Solidly grounded	Solidly grounded
Under-load tap-changer (ULTC)	14.2 ± 1.42 kV 16 steps	14.2 ± 1.42 kV 16 steps	14.2 ± 2.84 kV 16 steps
Off-load tap-changer (OLTC)	Tap 1 121.0 kV Tap 2 118.25 kV Tap 3 115.5 kV Tap 4 112.75 kV Tap 5 110.0 kV	Tap 1 121.0 kV Tap 2 118.25 kV Tap 3 115.5 kV Tap 4 112.75 kV Tap 5 110.0 kV	None
In service off-load tap position	Tap 3	Tap 3	Not applicable

¹ The positive sequence impedance values of 12.3 to 13.6% are the expected values of the replacement transformers which have not yet been ordered.