

Applicant's estimate of the materiality of not compensating the STx Meters for load losses caused by the STx in SGT1

The losses we have considered are the SGT1 Losses caused by the Station Tx1 load when the GEN/PUMP 1 & 2 circuits and the Excitation Tx 1& 2 Circuits are inactive. This is necessary because the Station Tx metering is not at the defined metering point at 275kV. The losses of the Station Tx are not considered as the Station Tx metering is on the 16kV side.

In the above scenario, the Fe Losses of SGT1 will be measured by the GEN/PUMP 1 & 2 metering; therefore loss compensation on the Station metering is not necessary.

The Cu losses associated with SGT1 caused by the Station Tx1 load in the above scenario is shown to be negligible as per the below calculations:

SGT DETAILS

ASSOCIATED SGT:	SGT1
MANUFACTURER:	SIEMENS
SERIAL No:	110791
RATING:	190 MVA
HV VOLTAGE	275 kV
LV VOLTAGE	16 kV
SGT Cu LOSS at Tx RATING (SGT FL Cu Loss)	739.7 kW
FULL LOAD CURRENT FOR SGT (I_{SGTFL})	6856.03 A

STATION Tx CIRCUIT DETAILS

STATION Tx CIRCUIT	Tx1
VT PRIMARY VOLTAGE	16 kV
VT SECONDARY VOLTAGE	110 V
CT PRIMARY CURRENT	100 A
CT SECONDARY CURRENT	5 A
METER RATED LOAD	2771.281292 kVA
METER ERROR @ STN Tx RATING DUE TO SGT Cu LOSS	0.0007 %

SGT LOSS ASSOCIATED WITH STATION Tx LOAD

STATION Tx RATING	1000 kVA
CURRENT @ STATION Tx RATING (I_{STX})	36.1 A
SGT Cu Loss @ STN Tx Rating ($(I_{STX}/I_{SGTFL})^2 * \text{SGT FL Cu Loss}$)	20.49 W

ENERGY CONSUMPTION OF SGT LOSS @ STATION Tx FULL LOAD

STATION ENERGY CONSUMED/ DAY @ Tx RATING	24 MWh
SGT Cu LOSS / DAY @ STN Tx RATING	0.49 kWh
	£ 0.0
SGT Cu LOSS COST / DAY @ STN Tx RATING (£50/MWh)	2
SGT Cu LOSS COST / YEAR @ STN Tx RATING (£50/MWh)	£ 8.9