



CONNECTION ASSESSMENT & APPROVAL PROCESS

Connection Assessment Report for

*Markham MTS#3
Install New LV Shunt Capacitor
CAA ID 2003-EX132*

Connection Applicant: Markham Hydro

Final Report

Prepared by
Long Term Forecasts & Assessments Department &
Consistent Information Set Department

July 31, 2003

Markham MTS#3 – LV Shunt Capacitor Installation

Disclaimers

IMO

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IMO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IMO should issue a notice of approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Approval of the proposed connection is based on information provided to the IMO by the connection applicant and the transmitter(s) at the time the assessment was carried out. The IMO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by the transmitter(s) at the request of the IMO. Furthermore, the connection approval is subject to further consideration due to changes to this information, or to additional information that may become available after the approval has been granted. Approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed facility to the IMO-controlled grid. However, connection approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IMO in accordance with Chapter 4, section 6 of the Market Rules. The IMO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IMO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IMO provides a draft of this report to the connection applicant, you must be aware that the IMO may revise drafts of this report at any time in its sole discretion without notice to you. Although the IMO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that it is using the most recent version of this report.

1.0 Project Description

Markham Hydro is proposing to install a new low voltage shunt capacitor at their Markham MTS#3 to correct the load power factor and support the station voltage.

The new shunt capacitor will be connected directly to the 27.6 kV E bus at Markham MTS#3 via two series connected disconnect switches, one vacuum circuit breaker and a third disconnect switch, as shown in Figure 1. A grounding switch will be installed between the shunt capacitor and the first disconnect switch.

The scheduled in service date for this project is Q3 2003.

The specifications of major electrical components are:

- Capacitor Bank:

Capacitance	19.6 Mvar @27.6 kV
Rated Operating Voltage	27.6 kV
Configuration	Double-Wye
Discharge Time	5 minutes to 50 V

- Circuit Breaker

Type	Primary SC1
Interruption Medium	Vacuum
Maximum Voltage	38 kV
Rated Continuous Current	1200 A
Rated Symmetrical Short Circuit Capability	25000 A
Interrupting Time	50 ms

2.0 Assessment and Requirements

This assessment concluded that the addition of the LV shunt capacitor at Markham MTS#3 has no adverse effect on the reliability of the IMO-controlled grid and provides improvement to the load power factor and station voltage.

Markham Hydro is required to provide on-line monitoring facilities for the shunt capacitor isolating breaker status.

3.0 Notification of Approval

It is thus recommended that notification of approval be granted for the installation of an LV shunt capacitor bank at Markham MTS#3.

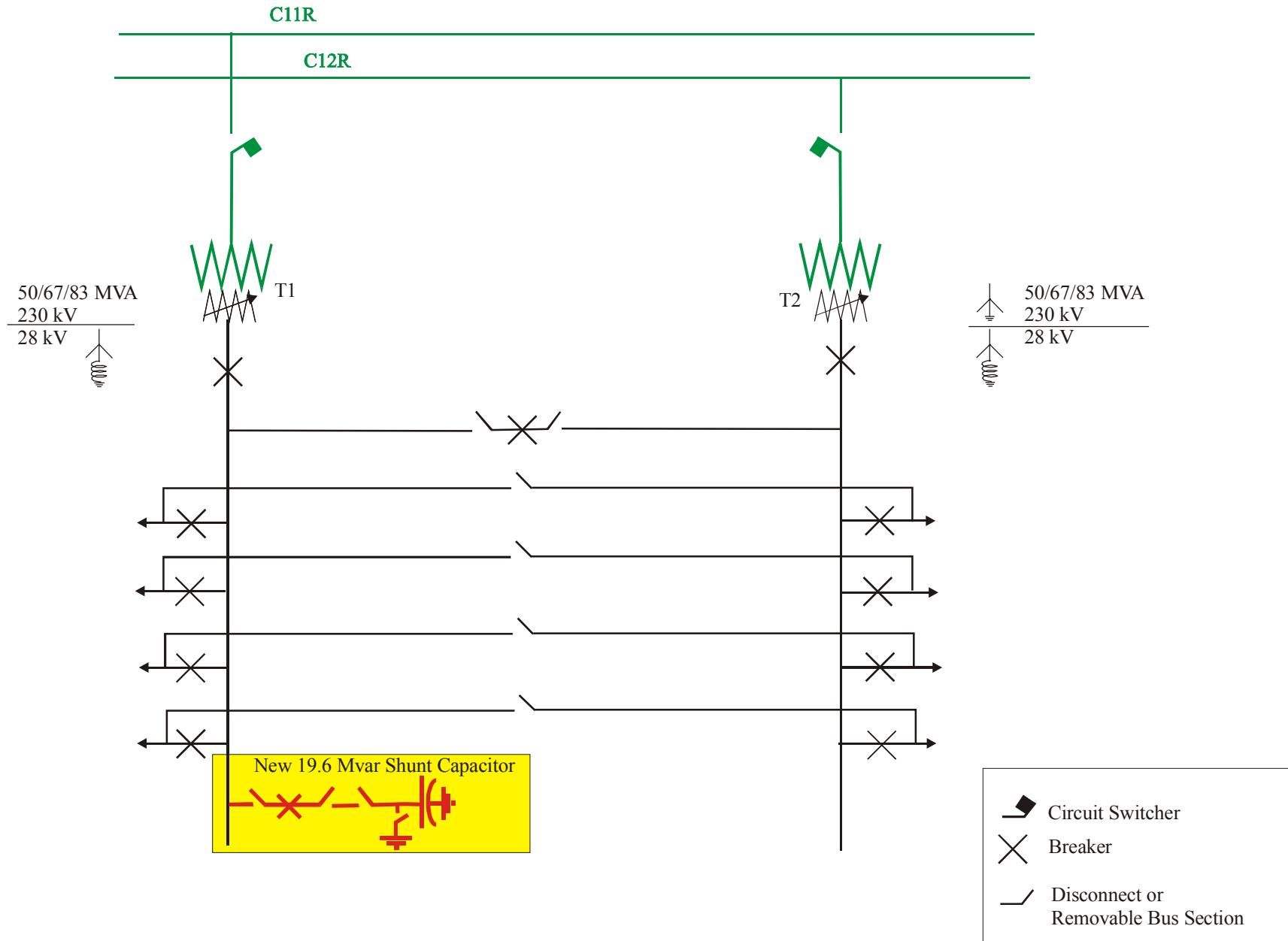


Figure 1. Markham MTS#3 Single Line Diagram