



# **Addendum to NYISO FAULT CURRENT ASSESSMENT**

**2009**

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## 1. INTRODUCTION

The following report, prepared by the NYISO Transmission Studies Staff, is an addendum to the NYISO 2009 Fault Current Assessment dated July 14, 2009.

## 2. BACKGROUND AND DISCUSSION

The NYISO 2009 Fault Current Assessment dated July 14, 2009 indicated that of 118 stations that the NYISO studied, 3 (Fitzpatick 345, Jamaica 138 and Northport 138) were identified as having a bus fault in excess of the lowest circuit breaker rating, and required an individual breaker analysis (IBA) to determine if any circuit breakers of those stations were actually overdutied. The IBA of the 3 stations with bus fault levels greater than their lowest breaker rating showed that all 3 stations have no overdutied circuit breakers.

These results were based on (1) the Astoria steam dual yard units are configured with two of Astoria dual yard units (units# 3 and 4) on the Astoria West bus, and one of Astoria dual yard units (unit #5) on the Astoria East bus and all Astoria units running, and (2) all Astoria West breakers have an interrupting capability of 63 kA.

Some generator lead breakers that are connected to Astoria West station have a lower interruption rating than 63 kA; hence, the Astoria West station has a bus fault in excess of the lowest circuit breaker rating. Consequently, the IBA is required to determine if any circuit breakers of this station were actually overdutied.

The IBA result shows that under a configuration of two of the Astoria steam dual yard units (units# 3 and 4) on the Astoria West bus, and one of the Astoria dual yard units (unit #5) on the Astoria East bus with all other Astoria units running, there are no overdutied breakers at the Astoria West station. However, under a configuration of two of the Astoria steam dual yard units (units# 3 and 5) on the Astoria West bus, and one of the Astoria dual yard units (unit #4) on the Astoria East bus with all other Astoria units running, two 138 kV 42 kA generator lead breakers, G5WN and G5WS, at Astoria West are overdutied. Astoria Generating Company L.P. plans to replace these two breakers.

When all three Astoria dual yard steam units are operating on the West bus with all other Astoria units running, two additional 138 kV 45 kA generator lead circuit breakers, G1N and G2N, at Astoria West are overdutied.

## 3. CONCLUSIONS AND RECOMMENDATIONS

In addition to the conclusions and recommendations made in the NYISO 2009 Fault Current Assessment report dated July 14, 2009, the following recommendations are presented based on the analysis and results documented in this addendum report:

**Astoria West:** When Astoria 5 and one of the other two Astoria dual yard steam units are operating on the West bus together with all other Astoria West units running, 138 kV circuit breakers, G5WN and G5WS, at Astoria West are overdutied. When all three Astoria dual yard steam units are operating on the West bus with all other Astoria West units running, two additional 138 kV circuit breakers, G1N and G2N, at Astoria West are overdutied.

As indicated by the Interim Operating Protocol for Astoria East and West Stations Fault Current Mitigation approved by Operating Committee in May 22, 2008, Con Edison will normally configure the Astoria dual yard units in order to “to prevent overduty conditions at Astoria East, no more than one (1) Astoria dual yard unit can be connected to the East bus with all other Astoria East units running”. This Interim Operating Protocol would need to be revised to be more specific or a new operating protocol would need to be approved to specify that Astoria generation shall be configured as described below when all Astoria units are running:

The normal Astoria West station configuration will be all three (3) units of the NYPA 500 MW combined cycle plant, two (2) Astoria Generating Company L.P. dual yard units 3 and 4, and the NRG GT 10-13 units, and the normal Astoria East station configuration will be all three (3) units of the Astoria East Energy 500MW combined cycle plant, one (1) Astoria Generating Company L.P. dual yard unit 5, the Astoria Generating Company L.P. Astoria 2 unit, and the NRG GT 2, 3, 4, 5, 7 and 8 units, unless for reliability reasons a different configuration for each station is required.

The above recommended configuration of Astoria would prevent potential overdutied breakers at Astoria under certain other Astoria configurations. The protocol will be revisited upon verification of the generator lead breakers being replaced by Astoria Generating Company L.P.