

Coolkeeragh 110kV Fault Level

Needs Report

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SUMMARY

The rating of some switchgear and structures is below 40kA.

This report sets out the case of need to increase the fault rating at Coolkeeragh 110kV due to the high loading against existing switchgear rating to allow for connection of future projects including system service requirements in the area.

1. INTRODUCTION

The Coolkeeragh 110kV double busbar switchboard was constructed in 1966. The 110kV double busbar switchboard was extended and refurbished between 2005 and 2010. Most of the switchgear within the substation was changed to a rating of 40kA, however, one circuit breaker, several earth switches and disconnectors, some concrete structure and all CTs have a lower fault rating.

2. DESCRIPTION OF NEED

All the equipment in the substation, including main busbars, is rated at 40kA except for the following:

- All current transformers (CTs) - rated at 31.5kA
- Circuit breaker 15H0 in capacitor bank bay - rated at 31.5kA
- Disconnector 15H3 in the capacitor enclosure - rated at 35.3kA
- Earth switches EH151 and EH152 associated with the capacitor, rated at 33.1 kA
- Earth switch EH101 at the GT8 compound, rated at 15.3kA¹

The fault level is currently 89% of the 31.5kA rating of the CTs. One set of CTs is owned by ESB (Bay 5 for the steam turbine).

There are three concrete support structures within the 110kV substation that were not replaced during the previous refurbishment. NIE Networks have assessed similar concrete structures within 275kV substations and have found the fault rating to be lower than previously thought. While no assessment has been made specifically of the structures in the Coolkeeragh 110kV substation, the same issues are believed to exist for these three concrete support structures.

3. CONCLUSION

There is a need to increase the fault rating at Coolkeeragh 110kV due to the high loading against existing switchgear rating to allow for connection of future projects including system service requirements in the area.

¹ Double primary portable earths are currently required at the substation.