

## **ABSTRAK**

INNA ROCHMAWATI. Evaluasi Setting Relay OCR HV Pada Bay Trafo 1 Gardu Induk Tarik ULTG Mojokerto. Dibimbing oleh Tri Joko Pramono, S.T., M.T., IPM., ASEAN. Eng.

Selama ini, sistem proteksi di sebagian besar gardu induk masih menggunakan relay numerik tapi tanpa adanya fasilitas PSL yang berpotensi menimbulkan pemutusan berantai dan memperluas dampak gangguan karena hanya menggunakan setting relay saja yang diandalkan, seperti yang terjadi pada 7 Maret 2025 dengan trip pada PMT 70 kV dan 20 kV akibat gangguan binatang pada kubikel Incoming 20 kV, yang mengakibatkan padamnya beban sebesar 14 MW. Awal gangguan terjadi kenaikan arus di fasa R dan T dari 142 A menjadi 4,8 kA kemudian diikuti kenaikan arus fasa S 4,7 kA. Relay OCR LV kerja I>> selama 0,295 detik ( $t = 0,3$  detik). Sementara itu, di relay Differensial kerja membaca adanya gangguan eksternal kemudian diakhir gangguan terbaca arus sekunder fasa S solid, sementara arus sisi primer masih kondisi stabil sehingga relay rele mengirim perintah trip. Permasalahan utama yang dikaji meliputi kondisi eksisting sistem proteksi, kelemahan setting relay yang lama, serta potensi perbaikan melalui penerapan penggantian relay dan penambahan PSL.

Kata Kunci : PSL, Proteksi, PMT 70 kV, Gangguan Binatang, OCR HV

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So far, the protection system in most substations still uses numerical relays but without PSL facilities which have the potential to cause chain breaks and expand the impact of disturbances because only relay settings are relied upon, such as what happened on March 7, 2025 with a trip on the 70 kV and 20 kV PMT due to animal disturbances in the 20 kV Incoming cubicle, which resulted in a 14 MW load outage. The initial disturbance saw an increase in current in the R and T phases from 142 A to 4.8 kA followed by an increase in the S phase current of 4.7 kA. The LV OCR relay worked I>> for 0.295 seconds ( $t = 0.3$  seconds). Meanwhile, the Differential relay worked to read an external disturbance then at the end of the disturbance the secondary current of the S phase was read as solid, while the primary side current was still stable so that the relay sent a trip command. The main problems studied include the existing condition of the protection system, the weaknesses of the old relay settings, and the potential for improvement through the implementation of relay replacement and the addition of PSL.

Keyword : PSL, Protection, PMT 70 kV, Animal Disturbances, OCR HV