

TRANSIENT STABILITY ANALYSIS AND LOAD RELIEF SCHEME AT PT. PERTAMINA INTERNATIONAL RU-VI BALONGAN REFINERY POST RDMP PHASE I PROJECT

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ABSTRACT

Phase I RDMP (refinery development master plan) project carried out by PT. The Pertamina International RU-VI Balongan Refinery is a project that aims to increase the production capacity of the CDU (crude distillation unit) unit. So by increasing the capacity of this CDU unit, it is hoped that it will be able to produce more fuel oil, special fuel, residue and petrochemical products to meet the needs of DKI Jakarta, Banten, parts of West Java and surrounding areas which are Indonesia's national business centers. In order to support the operations of production units at the refinery, RU-VI Balongan uses 5 thermal power plant units with a capacity of 27.5 MVA for each plant. To determine the level of stability of the electric power system at PT. KPI RU-VI Balongan after the Phase I RDMP project, it is necessary to analyze the transient stability of the electric power system when there is a disturbance in the generator which causes the generator to trip. The analysis was carried out by modeling the electric power system in ETAP 19.0.1 software and applying case studies of generator trips and load shedding, then looking at the frequency and voltage stability response on each bus. The results obtained from the simulation show that when 2 or 3 generators trip, the system needs to release the load as needed so that the frequency and voltage remain stable. However, in the case of 4 generator trips, even though load shedding had been carried out, the system frequency experienced oscillations for 34.48 seconds and then returned to steady state. Meanwhile, the voltage on the bus experiences voltage sags and then steady state at a figure below 95% of the nominal voltage. This condition is not recommended and further measures need to be taken to overcome this problem.

Keywords: *Stability, Load Shedding, Generator, Frequency, Voltage.*