Overcurrent Relay Simulation Report

This project simulates an overcurrent relay protection system using PSCAD Free Edition (v5), focused on detecting and isolating a single-phase line-to-ground (LG) fault.

Simulation Summary:

- A 230 V, 50 Hz AC source supplies a line represented by lumped RLC components.
- A fixed LG fault is hard-connected to simulate fault condition at t = 0 s.
- The overcurrent relay (type 50) detects current > 15 A and trips after 0.05 s.
- A transistor simulates breaker behavior, disconnecting the load after relay trip.

Limitations of PSCAD Free Edition:

- No support for step/pulse/logic blocks to control fault timing.
- No logic-controlled breaker available.
- Fault block cannot be dynamically enabled or disabled.
- No graph plotting inside PSCAD.
- Manual waveform export required.

Workarounds:

- Fault is considered always active.
- Constant block and relay used to simulate control logic.
- A transistor was used to mimic a controllable breaker.

Despite restrictions, the simulation successfully demonstrates protective relay operation in response to a fault.