

Power System Security.

An operationally "secure" power system is one with low probability of system black out or equipment damage. If the process of cascading failures continues the whole sys or its major parts may completely collapse. This is normally known as sys. black out.

- An important part of security study, move around the power system's ability to withstand the effects of contingencies. Most power systems are operated in such a way that any single contingency will not leave other components heavily overloaded, so that cascading failures are avoided.
- System Security can be comprise of 3 major fn:

- 1) System monitoring
- 2) Contingency analysis
- 3) Corrective action analysis

→ System monitoring supplies information of the power sys. on real time basis as load & generation change. Telemetry sys measure, monitor & xmit the data like voltage, current, current flow & the status of c.B & switches in every s/s in xmission n/w. also xmit critical o/p & xmer tap positions.

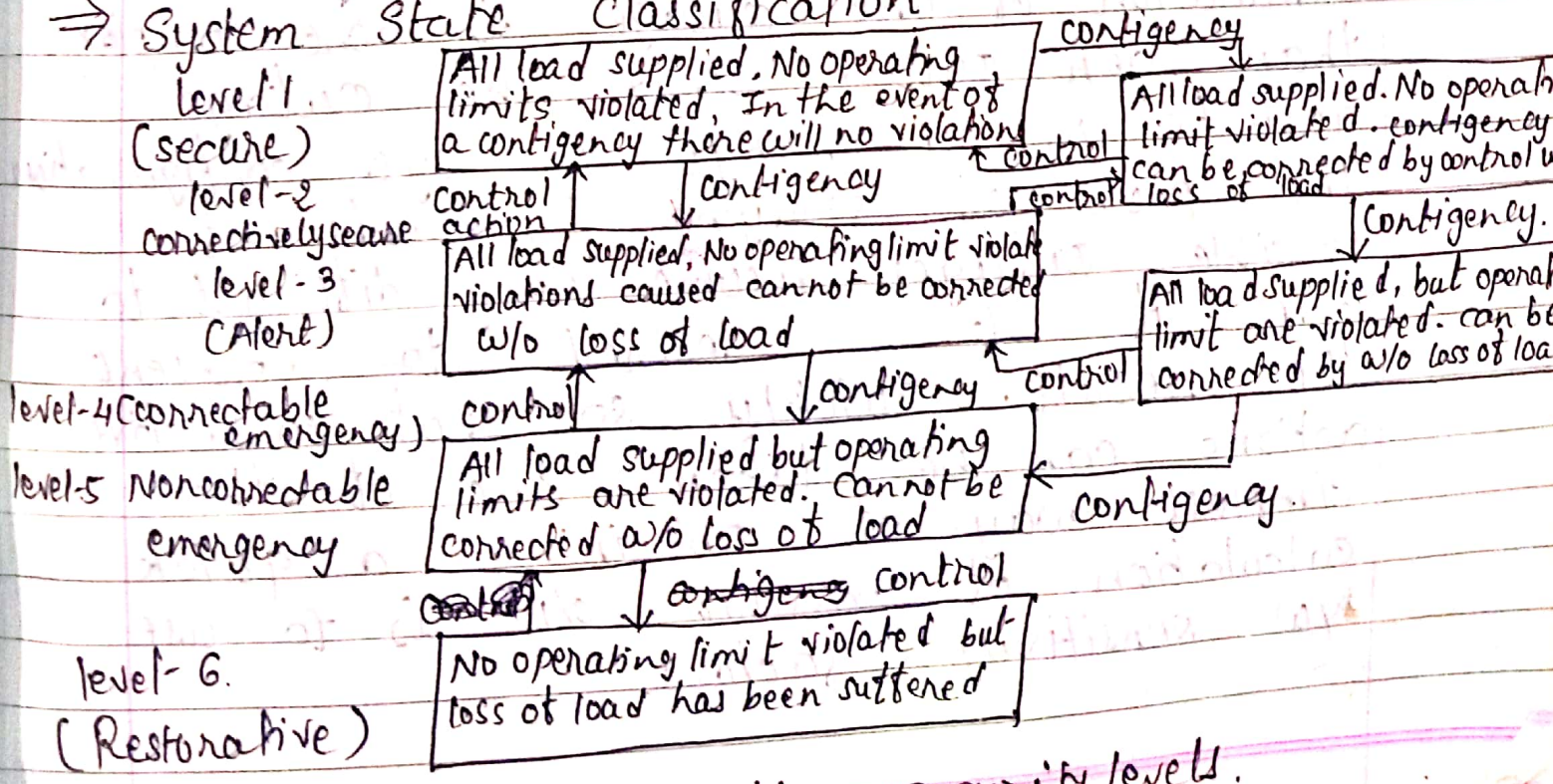
- Digital computer in a control centre will process the telemetered data & give indication to operator in

an overload on out of limit vol. Alarms or warnings may be given if req.

→ Second major fn is contingency analysis. Modern operation comp. have contingency analysis prog. stored in them. These forecast possible sys. troubles before they occur. They study outage events and alert the operator to any overload or series vol. violations. Thus contingency analysis carries out emergency identification

→ Third major security fn is corrective action analysis permits the operator to change the operation of the power sys if a contingency analysis prog. predicts a serious problem in the event of the occurrence of a certain outage. This provides preventive & post-contingency control.

⇒ System State Classification



power sys. static security levels.