Desirable qualities of protective relaying, basic terminology

- To ***sound an alarm*** or to ***close the trip circuit*** of a circuit breaker so as to disconnect Faulty Section.
- To ***disconnect*** the abnormally operating part so as to prevent subsequent faults. For e.g. Overload protection of a machine not only protects the machine but also prevents Insulation failure.

- To ***isolate*** or disconnect faulted circuits or equipment quickly from the remainder of the system so the system can continue to function and to minimize the damage to the faulty part. For example – If machine is disconnected immediately after a winding fault, only a few coils may need replacement. But if the fault is sustained, the entire winding may get damaged and machine may be beyond repairs.

- To ***localize the effect of fault*** by disconnecting the faulty part from healthy part, causing least disturbance to the healthy system.
- To disconnect the faulty part quickly so as to improve system stability, service continuity and system performance. Transient stability can be improved by means of improved protective relaying.
- To minimize hazards to personnel.

Basic terminology

Pickup level of actuating signal: The value of actuating quantity (voltage or current) which is on threshold above which the relay initiates to be operated. If the value of actuating quantity is increased, the electromagnetic effect of the relay coil is increased and above a certain level of actuating quantity the moving mechanism of the relay just starts to move.

Reset level: The value of current or voltage below which a relay opens its contacts and comes in original position.

Operating Time of Relay: Just after exceeding pickup level of actuating quantity the moving mechanism (for example rotating disc) of relay starts moving and it ultimately close the relay contacts at the end of its journey. The time which elapses between the instant when actuating quantity exceeds the pickup value to the instant when the relay contacts close.

Reset time of Relay: The time which elapses between the instant when the actuating quantity becomes less than the reset value to the instant when the relay contacts returns to its normal position.

Reach of Relay: A distance relay operates whenever the distance seen by the relay is less than the pre-specified impedance. The actuating impedance in the relay is the function of distance in a distance protection relay. This impedance or corresponding distance is called reach of the relay.