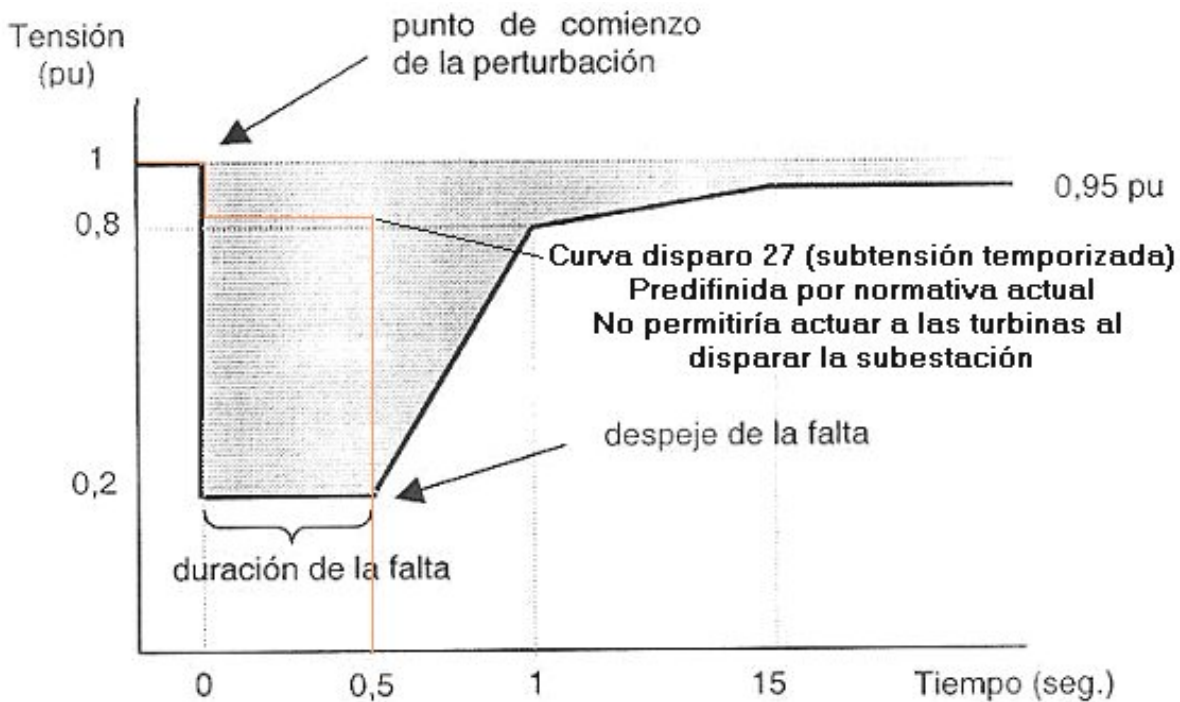


Installation protection MRN3-3. Holes of voltage

Date: 23/02/2005, new installation of the new MRN3-3 relay with oscillography facilities included.

SOTAVENTO in their innovation spirit, through the signature of electric protection **SEG**, puts in operation the first protection relay MRN3-3 against symmetric or asymmetric voltage drops that fulfils completely the tripping characteristic defined at the connection point by REE. Every trip keeps outstanding registered in order to evaluate its fault record.

The relay allows defining two different curves as alarm or trip as well as for symmetric or asymmetric faults. First of all, a starting minimum voltage must be settled as fault disturbance origin in order to evaluate the network voltage recovery inside the window time previously fixed (REE specifies that all faults must be cleared up in 500 ms as maximum delay time). Each alarm or trip characteristic has five different voltage points with their corresponding timing. Both characteristics allow establishing perfectly the recovery area of the network voltage at the connection point as REE shows in the next picture:



Furthermore, the relay stores the tripping data of voltage, frequency as well as minimum and maximum values of frequency and gradient df/dt since the last RESET took place. Additional features are implemented in the XRW1-3- relay as standard under and over voltage characteristics (27/59), under and over frequency (81M/81m) and gradient of frequency df/dt .

Information of Installation: Relay MRN3-3

Voltage Evacuation: 132 kV Voltage in secondary: 110 V Relation: $132.000/\sqrt{3} / 110/\sqrt{3}$ Connection: Star						
Adjust do trip for as FAULT ASYMMETRICAL	Start (85% Un)	U1	U2	U3	U4	U5
Voltage of phase in Vca (secondary)	54	38	38	51	54	54
Percent voltage	85 %	60 %	60 %	80 %	85 %	85 %
Time (ms)	0	0	500	1.000	15.000	60.000
Adjust trip for as FAULT SYMMETRICAL	Start (85% Un)	U1	U2	U3	U4	U5
Voltage of phase in Vca (secondary)	54	13	13	51	54	54
Percent voltage	85 %	20 %	20 %	80 %	85 %	85 %
Time (ms)	0	0	500	1.3.000	15.000	60.000
Adjust trip for undervoltage temporize actualy (27)	Start (85% Un)	U1	U2	U3	U4	U5
Voltage Vca (secondary)	54	54	54	Trip!!! Impossible to check the REE curve		
Percent voltage	85 %	85 %	85 %			
Time (ms)	0	0	500			

Foto of Instalation: Relay MRN3-3

