

Year 2009 PJM Bulk Power Multiple Facility Trip and Protection System Misoperation Summary

Categories: The following categories apply in regard to MFT's and Misoperations:

RELAY – a defective relay of any type

COM – mal-operating pilot channel, direct transfer trip channel, multiplex equipment, tone equipment, etc.

EQPT – defective equipment other than that covered by RELAY or COM

DESIGN – an error in the initial design, programming, setting, or installation of a protection or control system

PERS ERR – an error made by utility personnel during operation, testing or maintenance which either causes an immediate misoperation or sets up a later misoperation

CONTR ERR – an error made by a contractor which either causes a misoperation or sets up a later misoperation

EXT – problems occurring outside the transmission owner's jurisdiction or control

UNK – a problem which has resisted all attempts to diagnose, or which there has as yet been no opportunity to investigate fully

Eight-year performance comparison

Failure category/Year	2002	2003	2004	2005	2006 (legacy)	2006 (total)**	2007 (legacy)	2007 (total)**	2008 (total)**	2009 (total)**
RELAY	16	12	10	21	9	39	11	25	34	25
COM	5	10	19	5	12	28	3	8	22	37
EQPT	12	11	23	19	9	16	14	23	18	15
DESIGN	28	18	20	27	22	39	19	34	37	45
PERS ERR	13	20	13	12	13	20	22	28	28	45
CONTR ERR	0	2	1	0	2	3	6	7	6	4
EXT	0	3	0	1	2	4	6	15	3	1
UNK	21	12	11	16	16	16	9	5	3	9
Failures/Events*	95/71	88/65	97/74	101/79	85/66	165/133	90/79	145/134	151/142	181/129
MFT'S	28	20	16	7	17	47	25	37	63	35
MISOPERATIONS	68	63	73	77	64	125	77	137	142	129
OVERTRIPS	20	20	28	20	24	55	27	45	55	34
RECLSG PROBS	13	16	13	11	15	24	11	16	11	12

*A given event can have more than one associated failure, e.g., overtrips in multiple locations, multiple breakers failing to reclose for unrelated reasons, etc.

** This column includes available data from AEP, APS, ComEd, and Dominion Virginia Power, in addition to PECO, PSE&G, BG&E, Delmarva Power, Atlantic City Electric, PEPCO, First Energy, and PP&L.

Note: Excludes ComEd for 2009