

SPAR Basic Event Unavailability Data and Results
2010 Parameter Estimation Update

Train Unavailability Event	Train Description	Data Source	Industry-average Probability Distribution (note a)					Effective Date
			Distributio n	Mean	α	β	Error Factor	
ZT-DGN-TM	Diesel Generator Test And Maintenance	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.44E-02	3.7	254.7	2.2	Feb-2012
ZT-EDP-TM	Engine Driven Pump Test And Maintenance	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.19E-03	44.2	6106.0	1.3	Feb-2012
ZT-EDP-TM(FWS)	EDP-TM(FWS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	3.18E-02	13.7	418.3	1.5	Feb-2012
ZT-HTX-CCW-TM	Heat Exchanger Test Or Maintenance (CCW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	8.54E-03	1.0	116.1	4.3	Feb-2012
ZT-HTX-TRAIN-BWR-RHR-TM	Heat Exchanger And Pump Train Test Or Maintenance (RHR-BWR)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	2.36E-03	2.0	848.3	2.8	Feb-2012
ZT-MDP-TM(SDC)	Motor Driven Pump Test And Maintenance (SDC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	2.36E-03	2.0	848.3	2.8	Feb-2012
ZT-HTX-TRAIN-PWR-RHR-TM	Heat Exchanger And Pump Train Test Or Maintenance (RHR-BWR)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.20E-04	2.9	24482.9	2.4	Feb-2012
ZT-MDP-TM(AFW)	Motor Driven Pump Test And Maintenance (AFW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	3.98E-03	4.0	1010.7	2.1	Feb-2012
ZT-MDP-TM(BCW)	Motor Driven Pump Test And Maintenance (BCW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CCS)	Motor Driven Pump Test And Maintenance (CCS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CDS)	Motor Driven Pump Test And Maintenance (CDS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CHW)	Motor Driven Pump Test And Maintenance (CHW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CMS)	Motor Driven Pump Test And Maintenance (CMS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CPC)	Motor Driven Pump Test And Maintenance (CPC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CRD)	Motor Driven Pump Test And Maintenance (CRD)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CSR)	Motor Driven Pump Test And Maintenance (CSR)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CSS)	Motor Driven Pump Test And Maintenance (CSS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(CTS)	Motor Driven Pump Test And Maintenance (CTS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(DWP)	Motor Driven Pump Test And Maintenance (DWP)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(EPS)	Motor Driven Pump Test And Maintenance (EPS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(FWS)	Motor Driven Pump Test And Maintenance (FWS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(LCS)	Motor Driven Pump Test And Maintenance (LCS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(LPI)	Motor Driven Pump Test And Maintenance (LPI)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(MFW)	Motor Driven Pump Test And Maintenance (MFW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(QSS)	Motor Driven Pump Test And Maintenance (QSS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(RSS)	Motor Driven Pump Test And Maintenance (RSS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(SFW)	Motor Driven Pump Test And Maintenance (SFW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(SSM)	Motor Driven Pump Test And Maintenance (SSM)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	7.12E-03	1.2	160.9	3.9	Feb-2012
ZT-MDP-TM(ACW)	Motor Driven Pump Test And Maintenance (ACW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(CCW)	Motor Driven Pump Test And Maintenance (CCW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(DHC)	Motor Driven Pump Test And Maintenance (DHC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(ECW)	Motor Driven Pump Test And Maintenance (ECW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012

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			Distribution	Mean	α	β	Error Factor	
ZT-MDP-TM(EHV)	Motor Driven Pump Test And Maintenance (EHV)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(ESR)	Motor Driven Pump Test And Maintenance (ESR)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(NSC)	Motor Driven Pump Test And Maintenance (NSC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(RBC)	Motor Driven Pump Test And Maintenance (RBC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(SAC)	Motor Driven Pump Test And Maintenance (SAC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(TBC)	Motor Driven Pump Test And Maintenance (TBC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	4.79E-03	1.2	245.5	3.8	Feb-2012
ZT-MDP-TM(CWS)	Motor Driven Pump Test And Maintenance (CWS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(ESP)	Motor Driven Pump Test And Maintenance (ESP)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(ESW)	Motor Driven Pump Test And Maintenance (ESW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(EWS)	Motor-Driven Pump Test or Maintenance (ESW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(ICW)	Motor Driven Pump Test And Maintenance (ICW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(MCW)	Motor Driven Pump Test And Maintenance (MCW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(NSR)	Motor Driven Pump Test And Maintenance (NSR)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(RCW)	Motor Driven Pump Test And Maintenance (RCW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(RWS)	Motor Driven Pump Test And Maintenance (RWS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(SCW)	Motor Driven Pump Test And Maintenance (SCW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(SRW)	Motor Driven Pump Test And Maintenance (SRW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(SSF)	Motor Driven Pump Test And Maintenance (SSF)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(SWS)	Motor Driven Pump Test And Maintenance (SWS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.32E-02	1.0	74.6	4.3	Feb-2012
ZT-MDP-TM(HPCS)	Motor Driven Pump Test And Maintenance (HPCS)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	6.82E-03	11.8	1722.0	1.6	Feb-2012
ZT-MDP-TM(CVC)	Motor Driven Pump Test And Maintenance (CVC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	3.88E-03	3.1	804.3	2.3	Feb-2012
ZT-MDP-TM(HPSI)	Motor Driven Pump Test And Maintenance (HPSI)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	3.88E-03	3.1	804.3	2.3	Feb-2012
ZT-MDP-TM(DHR)	Motor Driven Pump Test And Maintenance (DHR)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	5.37E-03	3.3	607.0	2.3	Feb-2012
ZT-TDP-TM(AFW)	Turbine Driven Pump Test Or Maintenance (AFW)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	5.39E-03	3.2	589.9	2.3	Feb-2012
ZT-TDP-TM(HPCI)	Turbine Driven Pump Test Or Maintenance (HPCI)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.13E-02	12.8	1120.0	1.5	Feb-2012
ZT-TDP-TM(RCIC)	Turbine Driven Pump Test Or Maintenance (RCIC)	2010 Update to the Parameter Estimation Component Unavailability Data Sheets; Section 1, Table 1-1	Beta	1.10E-02	6.7	608.8	1.8	Feb-2012
ZT-ACX-TM	Air Handling Unit Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	2.50E-03	0.5	199.5	8.4	Feb-2012
ZT-BAC-TM	Bus (AC) Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	2.00E-04	0.5	2499.5	8.4	Feb-2012
ZT-BAT-TM	Battery Test or Maintenance	Letter: Generic Test and Maintenance Unavailability Values, JCN W6467 - MBS-02-99	Lognormal	2.72E-03	8.4	0.0	8.4	Feb-2012
ZT-BCH-TM	Battery Charger Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	2.00E-03	0.5	249.5	8.4	Feb-2012
ZT-CCP-TM	RPS CH-A IN T&M	RPS Study NUREGs; NUREG/CR-5500, Vol 2,3,10, and 11	Beta	5.00E-03	0.5	47.8	8.3	Feb-2012
ZT-CHL-TM	Chiller Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	2.00E-02	0.5	24.5	8.2	Feb-2012
ZT-CTF-TM	Cooling Tower Fan Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	2.00E-03	0.5	249.5	8.4	Feb-2012
ZT-CTG-TM	Combustion Turbine Generator Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	5.00E-02	0.5	9.5	7.7	Feb-2012
ZT-DDC-TM	Diesel Driven Compressor Fails Due To T&M	NUREG/CR-6928 Appendix B, Section B.4	Beta	1.30E-02	0.5	41.2	8.3	Feb-2012
ZT-EDC-TM	Engine-Driven Compressor Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	1.20E-02	0.5	41.2	8.3	Feb-2012

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ZT-EPV-TM	Explosive-Operated (SQUIBB) Valve Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	6.00E-04	0.5	832.8	8.4 Feb-2012
ZT-FAN-TM	Fan Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	2.00E-03	0.5	249.5	8.4 Feb-2012
ZT-HTX-TM	Heat Exchanger in Test or Maintenance	SPAR (IPEs)	Beta	2.50E-03	0.5	119.7	8.4 Feb-2012
ZT-MDC-TM	Motor-Driven Compressor Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	1.20E-02	0.5	41.2	8.3 Feb-2012
ZT-MDP-TM(SLC)	Positive Displacement Pump Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	3.00E-03	0.5	166.2	8.4 Feb-2012
ZT-PDP-TM	Positive Displacement Pump Test or Maintenance	NUREG/CR-6928 Appendix B, Section B.4	Beta	3.00E-03	0.5	166.2	8.4 Feb-2012
ZT-TFM-TM	Startup Transformer Test or Maintenance	Letter: Generic Test and Maintenance Unavailability Values, JCN W6467 - MBS-02-99	Lognormal	1.75E-03	8.4	0.0	8.4 Feb-2012

Acronyms - AFWS (auxiliary feedwater system), BWR (boiling water reactor), CCW (component cooling water), EPS (emergency power system), ESW (emergency or essential service water), HPCI (high-pressure coolant injection), HPCS (high-pressure core