
Neptune Thermal Power Plant Trainer

TPP

Malfunction List

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TABLE OF CONTENTS

1	DIRECTORY LIST	1
2	VARIABLE LIST PAGES	2
2.1	Page:0180 MG01** FUEL OIL SYSTEM (1)	2
2.2	Page:0181 MG01** FUEL OIL SYSTEM (2)	2
2.3	Page:0280 MG02** SECONDARY STEAM SYSTEM (1)	3
2.4	Page:0281 MG02** SECONDARY STEAM SYSTEM (2)	3
2.5	Page:0380 MG03** BURNER PLANE A (1)	4
2.6	Page:0381 MG03** BURNER PLANE A (2)	4
2.7	Page:0480 MG04** BURNER PLANE B (1)	5
2.8	Page:0481 MG04** BURNER PLANE B (2)	5
2.9	Page:0580 MG05** BURNER PLANE C (1)	6
2.10	Page:0581 MG05** BURNER PLANE C (2)	6
2.11	Page:0680 MG06** BURNER PLANE D (1)	7
2.12	Page:0681 MG06** BURNER PLANE D (2)	7
2.13	Page:0780 MG07** BOILER COMBUSTION CONTROL (1)	8
2.14	Page:0781 MG07** BOILER COMBUSTION CONTROL (2)	8
2.15	Page:0880 MG08** COMBUSTION AIR/FLUE GAS SYSTEM (1)	9
2.16	Page:0881 MG08** COMBUSTION AIR/FLUE GAS SYSTEM (2)	9
2.17	Page:0980 MG09** COMBUSTION AIR PREHEATERS	10
2.18	Page:1080 MG10** BOILER WATER SYSTEM (1)	10
2.19	Page:1081 MG10** BOILER WATER SYSTEM (2)	11
2.20	Page:1180 MG11** BOILER STEAM SYSTEM (1)	11
2.21	Page:1181 MG11** BOILER STEAM SYSTEM (2)	12
2.22	Page:1182 MG11** BOILER STEAM SYSTEM (3)	12
2.23	Page:1280 MG12** MAIN STEAM LINES (1)	13
2.24	Page:1281 MG12** MAIN STEAM LINES (2)	13
2.25	Page:1380 MG13** STEAM TURBINES (1)	14
2.26	Page:1381 MG13** STEAM TURBINES (2)	14
2.27	Page:1382 MG13** STEAM TURBINES (3)	15
2.28	Page:1480 MG14** ELECTRIC SYSTEM	15
2.29	Page:1580 MG15** COLD CONDENSER SYSTEM (1)	16
2.30	Page:1581 MG15** COLD CONDENSER SYSTEM (2)	16
2.31	Page:1582 MG15** COLD CONDENSER SYSTEM (3)	17
2.32	Page:1680 MG16** MAIN CONDENSATE SYSTEM	17
2.33	Page:1780 MG17** LOW PRESSURE FEED HEATERS (1)	18
2.34	Page:1781 MG17** LOW PRESSURE FEED HEATERS (2)	18
2.35	Page:1880 MG18** FEED WATER DEAERATOR SYSTEM	19
2.36	Page:1881 MG18** FEED WATER PUMPS (1)	19
2.37	Page:1882 MG18** FEED WATER PUMPS (2)	20
2.38	Page:1980 MG19** HIGH PRESSURE FEED HEATERS (1)	20
2.39	Page:1981 MG19** HIGH PRESSURE FEED HEATERS (2)	21
2.40	Page:2080 MG20** MAKE UP DEAERATOR SYSTEM (1)	21
2.41	Page:2081 MG20** MAKE UP DEAERATOR SYSTEM (2)	22
2.42	Page:2180 MG21** HOT CONDENSER SYSTEM (1)	22
2.43	Page:2181 MG21** HOT CONDENSER SYSTEM (2)	23
2.44	Page:2280 MG22** DIRECT HEATER SYSTEM (1)	23
2.45	Page:2281 MG22** DIRECT HEATER SYSTEM (2)	24
2.46	Page:2380 MG23** ACCUMULATOR SYSTEM (1)	24



2.47	Page:2381 MG23**	ACCUMULATOR SYSTEM (2)	25
2.48	Page:2480 MG24**	DISTRICT HEAT WATER SYSTEM.....	25
2.49	Page:2580 MG25**	SPARE.....	26
2.50	Page:2780 MG27**	SCR1 FANS.....	26
2.51	Page:2781 MG27**	SCR2 FANS.....	27
2.52	Page:2880 MG28**	SLAKE SYSTEM.....	27
2.53	Page:2881 MG28**	SLURRY FEEDER PUMPS	28
2.54	Page:2882 MG28**	ABSORBER	28
2.55	Page:2883 MG28**	PRODUCT SYSTEM	29
2.56	Page:2884 MG28**	MIXING SYSTEM.....	29
2.57	Page:2885 MG28**	PRODUCT CELL FEEDERS.....	30
2.58	Page:2886 MG28**	PRODUCT SLURRY PUMPS.....	30



1 DIRECTORY LIST

Page:0180	FUEL OIL SYSTEM
Page:0280	SECONDARY STEAM SYSTEM
Page:0380	BURNER PLANE A
Page:0480	BURNER PLANE B
Page:0580	BURNER PLANE C
Page:0680	BURNER PLANE D
Page:0780	BOILER COMBUSTION CONTROL
Page:0880	COMBUSTION AIR / FLUE GAS SYSTEM
Page:0980	COMBUSTION AIR PREHEATERS
Page:1080	BOILER WATER SYSTEM
Page:1180	BOILER STEAM SYSTEM
Page:1280	MAIN STEAM LINES
Page:1380	STEAM TURBINES
Page:1480	ELECTRIC SYSTEM
Page:1580	COLD CONDENSER SYSTEM
Page:1680	MAIN CONDENSATE SYSTEM
Page:1780	LOW PRESSURE FEED HEATERS
Page:1880	FEED WATER DEAERATOR SYSTEM
Page:1980	HIGH PRESSURE FEED HEATERS
Page:2080	MAKE UP DEAERATOR SYSTEM
Page:2180	HOT CONDENSER SYSTEM
Page:2280	DIRECT HEATER SYSTEM
Page:2380	ACCUMULATOR SYSTEM
Page:2480	DISTRICT HEAT WATER SYSTEM
Page:2580	
Page:2780	DENOX PLANT
Page:2880	DESOX PLANT



2 VARIABLE LIST PAGES

2.1 Page:0180 MG01 * * FUEL OIL SYSTEM (1)

A:			
B:	M1014	[0-1]	HFO supply pump 1 failure
C:	M1015	[0-1]	HFO supply pump 2 failure
D:	M1012	[0-100]	HFO supply pump 1 wear
E:	M1013	[0-100]	HFO supply pump 2 wear
F:			
G:			
H:	M1016	[0-100]	HFO supply discharge filter 1 dirty
I:	M1017	[0-100]	HFO supply discharge filter 2 dirty
J:			
K:	M1020	[0-1]	HFO supply pressure contr auto fail
L:	M1021	[0-1]	HFO supply pressure contr unstable
M:			
N:	M1022	[0-100]	HFO recirc valve stuck
O:			
P:	M1004	[0-100]	HFO service tank water high
Q:	M1001	[0-100]	HFO service tank heater leakage
R:			
S:			
T:			

2.2 Page:0181 MG01 * * FUEL OIL SYSTEM (2)

A:			
B:	M1030	[0-1]	HFO supply temp contr auto fail
C:	M1031	[0-1]	HFO supply temp contr unstable
D:	M1032	[0-100]	HFO supply temp contr sensor gain high
E:			
F:	M1040	[0-100]	HFO heater 1 dirty
G:	M1043	[0-1]	HFO heater 1 steam trap stuck (closed)
H:	M1044	[0-1]	HFO heater 1 steam trap stuck (open)
I:	M1045	[0-100]	HFO heater 1 steam control valve stuck
J:	M1046	[0-100]	HFO heater 1 steam control valve slow
K:			
L:	M1050	[0-100]	HFO heater 2 dirty
M:	M1053	[0-1]	HFO heater 2 steam trap stuck (closed)
N:	M1054	[0-1]	HFO heater 2 steam trap stuck (open)
O:	M1055	[0-100]	HFO heater 2 steam control valve stuck
P:	M1056	[0-100]	HFO heater 2 steam control valve slow
Q:			
R:			
S:			
T:			

2.3 Page:0280 MG02** SECONDARY STEAM SYSTEM (1)

A:
B:
C: M1200 [0-100] LP stgen sec. steam heat exchanger dirty
D: M1201 [0-100] LP stgen sec. air pressure high
E:
F: M1202 [0-100] LP stgen sec. steam safety valve leakage
G:
H: M1210 [0-1] LP stgen pressure contr auto fail
I: M1211 [0-1] LP stgen pressure contr unstable
J: M1212 [0-100] LP stgen pressure contr valve stuck
K: M1213 [0-100] LP stgen pressure contr sensor gain low
L:
M: M1215 [0-100] LP stgen water level contr valve stuck
N:
O: M1220 [0-1] LP stgen drain tank level contr auto fail
P: M1221 [0-1] LP stgen drain tank level contr unstable
Q: M1222 [0-100] LP stgen drain tank level contr valve stuck
R:
S:
T:

2.4 Page:0281 MG02** SECONDARY STEAM SYSTEM (2)

A:
B:
C: M1230 [0-1] LP stgen inspect tank level ctr auto fail
D: M1231 [0-1] LP stgen inspect tank level ctr unstable
E: M1232 [0-100] LP stgen inspect tank level ctr valve stuck
F:
G: M1234 [0-1] LP stgen inspect tank on/off ctr auto fail
H:
I: M1236 [0-100] Lp stgen drain pump wear
J:
K:
L: M1240 [0-100] Steam cooling tank safety valve leakage
M: M1241 [0-100] Steam cooling tank drain valve leakage
N:
O: M1250 [0-1] Steam cooling tank press contr auto fail
P: M1251 [0-1] Steam cooling tank press contr unstable
Q: M1252 [0-100] Steam cooling tank press contr valve stuck
R:
S: M1255 [0-100] Steam cooling tank level contr valve stuck
T:

2.5 Page:0380 MGO3* * BURNER PLANE A (1)

A:	M1400	[0-1]	Plane A burner 1 flame detector fail
B:	M1401	[0-1]	Plane A burner 2 flame detector fail
C:	M1402	[0-1]	Plane A burner 3 flame detector fail
D:	M1403	[0-1]	Plane A burner 4 flame detector fail
E:	M1404	[0-100]	Plane A burners fuel nozzle wear (all)
F:			
G:	M1410	[0-1]	Plane A fuel oil flow contr auto fail
H:	M1411	[0-1]	Plane A fuel oil flow contr unstable
I:	M1412	[0-100]	Plane A fuel oil flow contr valve stuck
J:			
K:	M1414	[0-100]	Plane A fuel oil flow sensor gain low
L:	M1415	[0-100]	Plane A fuel oil flow sensor gain high
M:			
N:	M1420	[0-1]	Plane A sec. air flow contr auto fail
O:	M1421	[0-1]	Plane A sec. air flow contr unstable
P:	M1422	[0-100]	Plane A sec. air flow contr damper stuck
Q:	M1423	[0-100]	Plane A sec. air flow contr damper leak
R:	M1424	[0-100]	Plane A sec. air flow sensor gain low
S:	M1425	[0-100]	Plane A sec. air flow sensor gain high
T:			

2.6 Page:0381 MGO3* * BURNER PLANE A (2)

A:			
B:	M1430	[0-1]	Plane A prim air flow contr auto fail
C:	M1431	[0-1]	Plane A prim air flow contr unstable
D:	M1432	[0-100]	Plane A prim air flow contr damper stuck
E:			
F:	M1440	[0-1]	Plane A prim air temp contr auto fail
G:	M1441	[0-1]	Plane A prim air temp contr unstable
H:	M1442	[0-100]	Plane A prim air damper stuck (hot)
I:	M1443	[0-100]	Plane A prim air damper stuck (cold)
J:			
K:	M1450	[0-100]	Plane A prim air fan wear
L:			
M:	M1460	[0-100]	Plane A prim air ducts dirty (mill)
N:	M1461	[0-100]	Plane A prim air ducts dirty (burners)
O:			
P:	M1470	[0-100]	Plane A coal feeder speed contr wear
Q:	M1471	[0-1]	Plane A coal feeder speed contr stuck
R:			
S:	M1472	[0-1]	Plane A coal mill fire
T:	M1473	[0-100]	Plane A coal mill wear

2.7 Page:0480 MG04** BURNER PLANE B (1)

A:	M1500	[0-1]	Plane B burner 1 flame detector fail
B:	M1501	[0-1]	Plane B burner 2 flame detector fail
C:	M1502	[0-1]	Plane B burner 3 flame detector fail
D:	M1503	[0-1]	Plane B burner 4 flame detector fail
E:	M1504	[0-100]	Plane B burners fuel nozzle wear (all)
F:			
G:	M1510	[0-1]	Plane B fuel oil flow contr auto fail
H:	M1511	[0-1]	Plane B fuel oil flow contr unstable
I:	M1512	[0-100]	Plane B fuel oil flow contr valve stuck
J:			
K:	M1514	[0-100]	Plane B fuel oil flow sensor gain low
L:	M1515	[0-100]	Plane B fuel oil flow sensor gain high
M:			
N:	M1520	[0-1]	Plane B sec. air flow contr auto fail
O:	M1521	[0-1]	Plane B sec. air flow contr unstable
P:	M1522	[0-100]	Plane B sec. air flow contr damper stuck
Q:	M1523	[0-100]	Plane B sec. air flow contr damper leak
R:	M1524	[0-100]	Plane B sec. air flow sensor gain low
S:	M1525	[0-100]	Plane B sec. air flow sensor gain high
T:			

2.8 Page:0481 MG04** BURNER PLANE B (2)

A:			
B:	M1530	[0-1]	Plane B prim air flow contr auto fail
C:	M1531	[0-1]	Plane B prim air flow contr unstable
D:	M1532	[0-100]	Plane B prim air flow contr damper stuck
E:			
F:	M1540	[0-1]	Plane B prim air temp contr auto fail
G:	M1541	[0-1]	Plane B prim air temp contr unstable
H:	M1542	[0-100]	Plane B prim air damper stuck (hot)
I:	M1543	[0-100]	Plane B prim air damper stuck (cold)
J:			
K:	M1550	[0-100]	Plane B prim air fan wear
L:			
M:	M1560	[0-100]	Plane B prim air ducts dirty (mill)
N:	M1561	[0-100]	Plane B prim air ducts dirty (burners)
O:			
P:	M1570	[0-100]	Plane B coal feeder speed contr wear
Q:	M1571	[0-1]	Plane B coal feeder speed contr stuck
R:			
S:	M1572	[0-1]	Plane B coal mill fire
T:	M1573	[0-100]	Plane B coal mill wear



2.9 Page:0580 MG05** BURNER PLANE C (1)

A:	M1600	[0-1]	Plane C burner 1 flame detector fail
B:	M1601	[0-1]	Plane C burner 2 flame detector fail
C:	M1602	[0-1]	Plane C burner 3 flame detector fail
D:	M1603	[0-1]	Plane C burner 4 flame detector fail
E:	M1604	[0-100]	Plane C burners fuel nozzle wear (all)
F:			
G:	M1610	[0-1]	Plane C fuel oil flow contr auto fail
H:	M1611	[0-1]	Plane C fuel oil flow contr unstable
I:	M1612	[0-100]	Plane C fuel oil flow contr valve stuck
J:			
K:	M1614	[0-100]	Plane C fuel oil flow sensor gain low
L:	M1615	[0-100]	Plane C fuel oil flow sensor gain high
M:			
N:	M1620	[0-1]	Plane C sec. air flow contr auto fail
O:	M1621	[0-1]	Plane C sec. air flow contr unstable
P:	M1622	[0-100]	Plane C sec. air flow contr damper stuck
Q:	M1623	[0-100]	Plane C sec. air flow contr damper leak
R:	M1624	[0-100]	Plane C sec. air flow sensor gain low
S:	M1625	[0-100]	Plane C sec. air flow sensor gain high
T:			

2.10 Page:0581 MG05** BURNER PLANE C (2)

A:			
B:	M1630	[0-1]	Plane C prim air flow contr auto fail
C:	M1631	[0-1]	Plane C prim air flow contr unstable
D:	M1632	[0-100]	Plane C prim air flow contr damper stuck
E:			
F:	M1640	[0-1]	Plane C prim air temp contr auto fail
G:	M1641	[0-1]	Plane C prim air temp contr unstable
H:	M1642	[0-100]	Plane C prim air damper stuck (hot)
I:	M1643	[0-100]	Plane C prim air damper stuck (cold)
J:			
K:	M1650	[0-100]	Plane C prim air fan wear
L:			
M:	M1660	[0-100]	Plane C prim air ducts dirty (mill)
N:	M1661	[0-100]	Plane C prim air ducts dirty (burners)
O:			
P:	M1670	[0-100]	Plane C coal feeder speed contr wear
Q:	M1671	[0-1]	Plane C coal feeder speed contr stuck
R:			
S:	M1672	[0-1]	Plane C coal mill fire
T:	M1673	[0-100]	Plane C coal mill wear

2.11 Page:0680 MG06** BURNER PLANE D (1)

A:	M1700	[0-1]	Plane D burner 1 flame detector fail
B:	M1701	[0-1]	Plane D burner 2 flame detector fail
C:	M1702	[0-1]	Plane D burner 3 flame detector fail
D:	M1703	[0-1]	Plane D burner 4 flame detector fail
E:	M1704	[0-100]	Plane D burners fuel nozzle wear (all)
F:			
G:	M1710	[0-1]	Plane D fuel oil flow contr auto fail
H:	M1711	[0-1]	Plane D fuel oil flow contr unstable
I:	M1712	[0-100]	Plane D fuel oil flow contr valve stuck
J:			
K:	M1714	[0-100]	Plane D fuel oil flow sensor gain low
L:	M1715	[0-100]	Plane D fuel oil flow sensor gain high
M:			
N:	M1720	[0-1]	Plane D sec. air flow contr auto fail
O:	M1721	[0-1]	Plane D sec. air flow contr unstable
P:	M1722	[0-100]	Plane D sec. air flow contr damper stuck
Q:	M1723	[0-100]	Plane D sec. air flow contr damper leak
R:	M1724	[0-100]	Plane D sec. air flow sensor gain low
S:	M1725	[0-100]	Plane D sec. air flow sensor gain high
T:			

2.12 Page:0681 MG06** BURNER PLANE D (2)

A:			
B:	M1730	[0-1]	Plane D prim air flow contr auto fail
C:	M1731	[0-1]	Plane D prim air flow contr unstable
D:	M1732	[0-100]	Plane D prim air flow contr damper stuck
E:			
F:	M1740	[0-1]	Plane D prim air temp contr auto fail
G:	M1741	[0-1]	Plane D prim air temp contr unstable
H:	M1742	[0-100]	Plane D prim air damper stuck (hot)
I:	M1743	[0-100]	Plane D prim air damper stuck (cold)
J:			
K:	M1750	[0-100]	Plane D prim air fan wear
L:			
M:	M1760	[0-100]	Plane D prim air ducts dirty (mill)
N:	M1761	[0-100]	Plane D prim air ducts dirty (burners)
O:			
P:	M1770	[0-100]	Plane D coal feeder speed contr wear
Q:	M1771	[0-1]	Plane D coal feeder speed contr stuck
R:			
S:	M1772	[0-1]	Plane D coal mill fire
T:	M1773	[0-100]	Plane D coal mill wear



2.13 Page:0780 MG07** BOILER COMBUSTION CONTROL (1)

A:			
B:	M1800	[0-1]	Plane A burner 1 OBA contr fail
C:	M1801	[0-1]	Plane A burner 2 OBA contr fail
D:	M1802	[0-1]	Plane A burner 3 OBA contr fail
E:	M1803	[0-1]	Plane A burner 4 OBA contr fail
F:			
G:	M1810	[0-1]	Plane B burner 1 OBA contr fail
H:	M1811	[0-1]	Plane B burner 2 OBA contr fail
I:	M1812	[0-1]	Plane B burner 3 OBA contr fail
J:	M1813	[0-1]	Plane B burner 4 OBA contr fail
K:			
L:	M1820	[0-1]	Plane C burner 1 OBA contr fail
M:	M1821	[0-1]	Plane C burner 2 OBA contr fail
N:	M1822	[0-1]	Plane C burner 3 OBA contr fail
O:	M1823	[0-1]	Plane C burner 4 OBA contr fail
P:			
Q:	M1830	[0-1]	Plane D burner 1 OBA contr fail
R:	M1831	[0-1]	Plane D burner 2 OBA contr fail
S:	M1832	[0-1]	Plane D burner 3 OBA contr fail
T:	M1833	[0-1]	Plane D burner 4 OBA contr fail

2.14 Page:0781 MG07** BOILER COMBUSTION CONTROL (2)

A:			
B:			
C:	M1860	[0-1]	Fuel master controller auto fail
D:	M1861	[0-1]	Fuel master controller unstable
E:			
F:	M1870	[0-1]	Oxygen controller auto fail
G:	M1871	[0-1]	Oxygen controller unstable
H:			
I:	M1874	[0-100]	Oxygen controller sensor gain low
J:	M1875	[0-100]	Oxygen controller sensor gain high
K:	M1876	[0-100]	Oxygen controller sensor noisy
L:			
M:	M1900	[0-1]	Block load master controller auto fail
N:	M1901	[0-1]	Block load master controller unstable
O:			
P:			
Q:			
R:			
S:			
T:			

2.15 Page:0880 MG08** COMBUSTION AIR/FLUE GAS SYSTEM (1)

A:			
B:			
C:	M2000	[0-100]	Comb. air fan 1 motor wear
D:	M2001	[0-100]	Comb. air fan 1 prop wear
E:	M2002	[0-100]	Comb. air fan 1 prop vane stuck
F:			
G:	M2010	[0-100]	Comb. air fan 2 motor wear
H:	M2011	[0-100]	Comb. air fan 2 prop wear
I:	M2012	[0-100]	Comb. air fan 2 prop vane stuck
J:			
K:			
L:	M2020	[0-100]	Flue gas fan 1 motor wear
M:	M2021	[0-100]	Flue gas fan 1 prop wear
N:	M2022	[0-100]	Flue gas fan 1 prop vane stuck
O:			
P:	M2030	[0-100]	Flue gas fan 2 motor wear
Q:	M2031	[0-100]	Flue gas fan 2 prop wear
R:	M2032	[0-100]	Flue gas fan 2 prop vane stuck
S:			
T:			

2.16 Page:0881 MG08** COMBUSTION AIR/FLUE GAS SYSTEM (2)

A:			
B:			
C:	M2040	[0-1]	Ring channel air press sp contr auto fail
D:	M2041	[0-1]	Ring channel air press sp contr unstable
E:			
F:	M2044	[0-1]	Ring channel air pressure contr auto fail
G:	M2045	[0-1]	Ring channel air pressure contr unstable
H:			
I:			
J:	M2050	[0-1]	Furnace pressure contr auto fail
K:	M2051	[0-1]	Furnace pressure contr unstable
L:			
M:			
N:	M2060	[0-1]	Furnace OFA flow contr auto fail
O:	M2061	[0-1]	Furnace OFA flow contr unstable
P:	M2062	[0-100]	Furnace OFA flow contr damper stuck
Q:			
R:			
S:			
T:			



2.17 Page:0980 MG09* * COMBUSTION AIR PREHEATERS

A:			
B:			
C:	M2100	[0-100]	Rotary air preheater 1 dirty
D:	M2101	[0-100]	Rotary air preheater 1 air leakage
E:	M2102	[0-100]	Rotary air preheater 1 rotor speed
F:			
G:	M2110	[0-100]	Rotary air preheater 2 dirty
H:	M2111	[0-100]	Rotary air preheater 2 air leakage
I:	M2112	[0-100]	Rotary air preheater 2 rotor speed
J:			
K:			
L:	M2120	[0-100]	Water air preheater 1 dirty
M:	M2121	[0-100]	Steam air preheater 1 dirty
N:			
O:	M2130	[0-100]	Water air preheater 2 dirty
P:	M2131	[0-100]	Steam air preheater 2 dirty
Q:			
R:			
S:			
T:			

2.18 Page:1080 MG10* * BOILER WATER SYSTEM (1)

A:			
B:			
C:	M2400	[0-100]	Start up heat exchanger dirty
D:			
E:	M2410	[0-1]	Separator level controller 1 auto fail
F:	M2411	[0-1]	Separator level controller 1 unstable
G:	M2412	[0-100]	Separator level controller 1 valve stuck
H:			
I:	M2420	[0-1]	Separator level controller 2 auto fail
J:	M2421	[0-1]	Separator level controller 2 unstable
K:	M2422	[0-100]	Separator level controller 2 valve stuck
L:			
M:	M2430	[0-1]	Separator level controller 3 auto fail
N:	M2431	[0-1]	Separator level controller 3 unstable
O:	M2432	[0-100]	Separator level controller 3 valve stuck
P:			
Q:	M2440	[0-1]	Bottom blow tank level contr auto fail
R:	M2441	[0-1]	Bottom blow tank level contr unstable
S:	M2442	[0-100]	Bottom blow tank level contr valve stuck
T:			

2.19 Page:1081 MG10** BOILER WATER SYSTEM (2)

A:
B:
C: M2900 [0-1] Boiler feedw flow controller auto fail
D: M2901 [0-1] Boiler feedw flow controller unstable
E:
F: M2902 [0-100] Boiler feedw flow control valve stuck
G: M2903 [0-100] Boiler feedw flow sensor noisy
H:
I: M2910 [0-1] Boiler feedw valve pos contr auto fail
J: M2911 [0-1] Boiler feedw valve pos contr unstable
K:
L:
M: M2921 [0-1] Boiler feedw master controller unstable
N:
O:
P:
Q: M2660 [0-100] Boiler outlet steam press ctr valve stuck
R:
S:
T:

2.20 Page:1180 MG11** BOILER STEAM SYSTEM (1)

A:
B:
C: M2300 [0-100] Superheater 2 dirty
D:
E: M2310 [0-100] Superheater 3 dirty
F:
G: M2320 [0-100] Reheater 1 dirty
H:
I: M2330 [0-100] Reheater 2 dirty
J:
K: M2340 [0-100] Economizer dirty
L:
M:
N:
O: M2350 [0-100] Furnace dirty
P:
Q: M2360 [0-100] Furnace wall tube leakage (steam)
R:
S:
T:

**2.21 Page:1181 MG11 * * BOILER STEAM SYSTEM (2)**

A:			
B:			
C:	M2500	[0-1]	Superheater 2 temp controller auto fail
D:	M2501	[0-1]	Superheater 2 temp controller unstable
E:			
F:	M2502	[0-100]	Superheater 2 temp control valve stuck
G:	M2503	[0-100]	Superheater 2 temp control valve leakage
H:			
I:			
J:			
K:	M2510	[0-1]	Superheater 3 temp controller auto fail
L:	M2511	[0-1]	Superheater 3 temp controller unstable
M:			
N:	M2512	[0-100]	Superheater 3 temp control valve stuck
O:	M2513	[0-100]	Superheater 3 temp control valve leakage
P:			
Q:	M2515	[0-100]	Superheater 3 temp control sensor dirty
R:	M2516	[0-100]	Superheater 3 temp control sensor gain low
S:	M2517	[0-100]	Superheater 3 temp control sensor gain high
T:			

2.22 Page:1182 MG11 * * BOILER STEAM SYSTEM (3)

A:			
B:			
C:	M2520	[0-1]	Reheater 2 temp controller auto fail
D:	M2521	[0-1]	Reheater 2 temp controller unstable
E:			
F:	M2522	[0-100]	Reheater 2 temp control valve stuck
G:	M2523	[0-100]	Reheater 2 temp control valve leakage
H:			
I:			
J:			
K:	M2525	[0-100]	Reheater 2 temp control sensor dirty
L:	M2526	[0-100]	Reheater 2 temp control sensor gain low
M:	M2527	[0-100]	Reheater 2 temp control sensor gain high
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.23 Page:1280 MG12** MAIN STEAM LINES (1)

A:
B:
C: M2600 [0-100] HP safety valve leakage
D:
E: M2601 [0-100] IP safety valve leakage
F:
G:
H:
I: M2610 [0-100] HP line steam leakage
J:
K: M2611 [0-100] IPC line steam leakage
L:
M: M2612 [0-100] IPH line steam leakage
N:
O:
P:
Q:
R:
S:
T:

2.24 Page:1281 MG12** MAIN STEAM LINES (2)

A:
B:
C: M2620 [0-1] HP bypass steam press contr auto fail
D: M2621 [0-1] HP bypass steam press contr unstable
E: M2622 [0-100] HP bypass steam press contr valve stuck
F:
G: M2630 [0-1] HP bypass steam temp contr auto fail
H: M2631 [0-1] HP bypass steam temp contr unstable
I: M2632 [0-100] HP bypass steam temp contr valve stuck
J:
K: M2635 [0-100] HP bypass steam temp contr sensor noisy
L:
M:
N: M2640 [0-1] HP bypass water dp contr auto fail
O: M2641 [0-1] HP bypass water dp contr unstable
P: M2642 [0-100] HP bypass water dp contr valve stuck
Q:
R: M2650 [0-1] LP bypass steam press contr auto fail
S: M2651 [0-1] LP bypass steam press contr unstable
T:



2.25 Page:1380 MG13** STEAM TURBINES (1)

A:			
B:			
C:	M3000	[0-100]	HP turbine wear (overall eff)
D:			
E:			
F:	M3010	[0-100]	IP1 turbine wear (overall eff)
G:			
H:	M3011	[0-100]	IP1 turbine section 1 efficiency
I:	M3012	[0-100]	IP1 turbine section 2 efficiency
J:	M3013	[0-100]	IP1 turbine section 3 efficiency
K:			
L:			
M:	M3015	[0-100]	IP1 turbine section 1 deposits
N:	M3016	[0-100]	IP1 turbine section 2 deposits
O:	M3017	[0-100]	IP1 turbine section 3 deposits
P:			
Q:	M3050	[0-100]	LP turbine vibration (start-up)
R:	M3051	[0-100]	LP turbine vibration (connected)
S:			
T:			

2.26 Page:1381 MG13** STEAM TURBINES (2)

A:			
B:			
C:			
D:	M3020	[0-100]	IP2 turbine wear (overall eff)
E:			
F:	M3021	[0-100]	IP2 turbine section 1 efficiency
G:	M3022	[0-100]	IP2 turbine section 2 efficiency
H:	M3023	[0-100]	IP2 turbine section 3 efficiency
I:	M3024	[0-100]	IP2 turbine section 4 efficiency
J:			
K:			
L:	M3025	[0-100]	IP2 turbine section 1 deposits
M:	M3026	[0-100]	IP2 turbine section 2 deposits
N:	M3027	[0-100]	IP2 turbine section 3 deposits
O:	M3028	[0-100]	IP2 turbine section 4 deposits
P:			
Q:			
R:			
S:			
T:			

2.27 Page:1382 MG13** STEAM TURBINES (3)

A:			
B:			
C:	M3030	[0-100]	LP1 turbine wear (overall eff)
D:			
E:	M3031	[0-100]	LP1 turbine section 1 efficiency
F:	M3032	[0-100]	LP1 turbine section 2 efficiency
G:			
H:	M3035	[0-100]	LP1 turbine section 1 deposits
I:	M3036	[0-100]	LP1 turbine section 2 deposits
J:			
K:			
L:	M3040	[0-100]	LP2 turbine wear (overall eff)
M:			
N:	M3041	[0-100]	LP2 turbine section 1 efficiency
O:	M3042	[0-100]	LP2 turbine section 2 efficiency
P:			
Q:	M3045	[0-100]	LP2 turbine section 1 deposits
R:	M3046	[0-100]	LP2 turbine section 2 deposits
S:			
T:			

2.28 Page:1480 MG14** ELECTRIC SYSTEM

A:			
B:	M3800	[0-1]	Circuit breaker trip : comb air fan 1
C:	M3801	[0-1]	Circuit breaker trip : flue gas fan 1
D:	M3802	[0-1]	Circuit breaker trip : feedw pump 1
E:	M3803	[0-1]	Circuit breaker trip : feedw pump 2
F:	M3804	[0-1]	Circuit breaker trip : DHW supply pump 1
G:	M3805	[0-1]	Circuit breaker trip : DHW return pump 1
H:	M3806	[0-1]	Circuit breaker trip : 400 V pumps no 1
I:			
J:			
K:	M3810	[0-1]	Circuit breaker trip : comb air fan 2
L:	M3811	[0-1]	Circuit breaker trip : flue gas fan 2
M:	M3812	[0-1]	Circuit breaker trip : feedw pump 3
N:	M3813	[0-1]	Circuit breaker trip : DHW supply pump 2
O:	M3814	[0-1]	Circuit breaker trip : DHW return pump 2
P:	M3815	[0-1]	Circuit breaker trip : denox/desox plant
Q:	M3816	[0-1]	Circuit breaker trip : 400 V pumps no 2/3
R:			
S:	M3820	[0-1]	Main circuit breaker fail
T:	M3821	[0-1]	Fast circuit breaker fail

**2.29 Page:1580 MG15** COLD CONDENSER SYSTEM
(1)**

A:			
B:			
C:	M4000	[0-100]	Cold condenser dirty
D:	M4001	[0-100]	Cold condenser air leakage
E:	M4002	[0-100]	Cold condenser wtr leakage
F:			
G:	M4010	[0-100]	Cold condenser vacuum pump 1 wear
H:	M4012	[0-100]	Cold condenser vacuum pump 2 wear
I:			
J:			
K:	M4020	[0-100]	Cold condenser main coolw pump 1 wear
L:	M4021	[0-1]	Cold condenser main coolw pump 1 fail
M:			
N:	M4022	[0-100]	Cold condenser main coolw pump 2 wear
O:	M4023	[0-1]	Cold condenser main coolw pump 2 fail
P:			
Q:	M4030	[0-100]	Cold condenser auxil coolw pump wear
R:	M4031	[0-1]	Cold condenser auxil coolw pump fail
S:			
T:			

2.30 Page:1581 MG15 COLD CONDENSER SYSTEM
(2)**

A:			
B:			
C:	M4040	[0-100]	Main cold condensate pump 1 wear
D:	M4041	[0-1]	Main cold condensate pump 1 fail
E:			
F:	M4042	[0-100]	Main cold condensate pump 2 wear
G:	M4043	[0-1]	Main cold condensate pump 2 fail
H:			
I:	M4044	[0-100]	Main cold condensate pump 3 wear
J:	M4045	[0-1]	Main cold condensate pump 3 fail
K:			
L:			
M:	M4050	[0-100]	Auxil cold condensate pump wear
N:	M4051	[0-1]	Auxil cold condensate pump fail
O:			
P:			
Q:			
R:			
S:			
T:			

2.31 Page:1582 MG15** COLD CONDENSER SYSTEM (3)

A:			
B:			
C:			
D:	M4060	[0-100]	LP feed heater 0 dirty
E:			
F:	M4070	[0-1]	LP feed heater 0 level contr auto fail
G:	M4071	[0-1]	LP feed heater 0 level contr unstable
H:	M4072	[0-100]	LP feed heater 0 level contr valve stuck
I:	M4073	[0-100]	LP feed heater 0 level sensor gain low
J:			
K:			
L:	M4080	[0-1]	Cold condenser hotwell level ctr auto fail
M:	M4081	[0-1]	Cold condenser hotwell level ctr unstable
N:			
O:	M4082	[0-100]	Cold condenser hotwell level contr v stuck
P:	M4083	[0-100]	Cold condenser hotwell level recir v stuck
Q:			
R:	M4084	[0-1]	CC hotwell level signal slowly lost
S:	M4085	[0-100]	CC hotwell level sensor gain low
T:			

2.32 Page:1680 MG16** MAIN CONDENSATE SYSTEM

A:			
B:			
C:	M4100	[0-100]	Condensate tank vacuum pump wear
D:			
E:			
F:	M4110	[0-100]	Main condensate pump 1 wear
G:	M4111	[0-1]	Main condensate pump 1 fail
H:			
I:	M4112	[0-100]	Main condensate pump 2 wear
J:	M4113	[0-1]	Main condensate pump 2 fail
K:			
L:	M4114	[0-100]	Main condensate pump 3 wear
M:	M4115	[0-1]	Main condensate pump 3 fail
N:			
O:			
P:	M4120	[0-1]	Condensate tank level contr auto fail
Q:	M4121	[0-1]	Condensate tank level contr unstable
R:	M4122	[0-100]	Condensate tank level contr valve stuck
S:	M4123	[0-100]	Condensate tank level contr valve leakage
T:			



2.33 Page:1780 MG17** LOW PRESSURE FEED HEATERS (1)

A:			
B:			
C:	M4200	[0-100]	LP feed heater 1 dirty
D:	M4201	[0-1]	LP feed heater 1 air vent blocked
E:	M4202	[0-100]	LP feed heater 1 tube leakage
F:			
G:			
H:	M4210	[0-100]	LP feed heater 2 dirty
I:	M4211	[0-1]	LP feed heater 2 air vent blocked
J:	M4212	[0-100]	LP feed heater 2 tube leakage
K:			
L:	M4220	[0-100]	LP feed heater 3 dirty
M:	M4221	[0-1]	LP feed heater 3 air vent blocked
N:	M4222	[0-100]	LP feed heater 3 tube leakage
O:	M4223	[0-100]	LP feed heater 3 safety valve leakage
P:			
Q:	M4225	[0-1]	LP feed heater 1 level alarm fault
R:	M4226	[0-1]	LP feed heater 2 level alarm fault
S:	M4227	[0-1]	LP feed heater 3 level alarm fault
T:			

2.34 Page:1781 MG17** LOW PRESSURE FEED HEATERS (2)

A:			
B:	M4230	[0-1]	LP feed heater 1 level contr auto fail
C:	M4231	[0-1]	LP feed heater 1 level contr unstable
D:	M4232	[0-100]	LP feed heater 1 level contr valve stuck
E:	M4233	[0-100]	LP feed heater 1 level contr sensor low
F:			
G:	M4240	[0-1]	LP feed heater 2 level contr auto fail
H:	M4241	[0-1]	LP feed heater 2 level contr unstable
I:	M4242	[0-100]	LP feed heater 2 level contr valve stuck
J:	M4243	[0-100]	LP feed heater 2 level contr sensor low
K:	M4250	[0-1]	LP feed heater 3 level contr auto fail
L:	M4251	[0-1]	LP feed heater 3 level contr unstable
M:	M4252	[0-100]	LP feed heater 3 level contr valve stuck
N:	M4253	[0-100]	LP feed heater 3 level contr sensor low
O:			
P:	M4260	[0-1]	Condensate filter dp contr auto
Q:	M4261	[0-1]	Condensate filter dp contr unstable
R:	M4262	[0-100]	Condensate filter dp contr valve stuck
S:			
T:			

2.35 Page:1880 MG18** FEED WATER DEAERATOR SYSTEM

A:			
B:			
C:	M4300	[0-100]	Feedw deaerator safety valve leakage
D:			
E:			
F:	M4310	[0-1]	Feedw deaerator level contr auto fail
G:	M4311	[0-1]	Feedw deaerator level contr unstable
H:	M4312	[0-100]	Feedw deaerator level contr valve stuck
I:	M4313	[0-100]	Feedw deaerator level contr sensor high
J:			
K:	M4320	[0-1]	Feedw deaerator press contr auto fail
L:	M4321	[0-1]	Feedw deaerator press contr unstable
M:	M4322	[0-100]	Feedw deaerator press contr valve stuck
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.36 Page:1881 MG18** FEED WATER PUMPS (1)

A:			
B:	M4330	[0-100]	Feedw pump 1 rotor wear
C:	M4331	[0-100]	Feedw pump 1 motor wear
D:	M4332	[0-100]	Feedw pump 1 gear wear
E:	M4333	[0-100]	Feedw pump 1 strainer dirty
F:			
G:	M4340	[0-100]	Feedw pump 2 rotor wear
H:	M4341	[0-100]	Feedw pump 2 motor wear
I:	M4342	[0-100]	Feedw pump 2 gear wear
J:	M4343	[0-100]	Feedw pump 2 strainer dirty
K:			
L:	M4350	[0-100]	Feedw pump 3 rotor wear
M:	M4351	[0-100]	Feedw pump 3 motor wear
N:	M4352	[0-100]	Feedw pump 3 gear wear
O:	M4353	[0-100]	Feedw pump 3 strainer dirty
P:			
Q:			
R:			
S:			
T:			

**2.37 Page:1882 MG18** FEED WATER PUMPS (2)**

A:			
B:	M4334	[0-100]	Feedw pump 1 LO pump wear
C:	M4335	[0-100]	Feedw pump 1 axial displacement
D:	M4336	[0-100]	Feedw pump 1 slip ring resistance
E:			
F:			
G:	M4344	[0-100]	Feedw pump 2 LO pump wear
H:	M4345	[0-100]	Feedw pump 2 axial displacement
I:	M4346	[0-100]	Feedw pump 2 slip ring resistance
J:			
K:			
L:	M4354	[0-100]	Feedw pump 3 LO pump wear
M:	M4355	[0-100]	Feedw pump 3 axial displacement
N:	M4356	[0-100]	Feedw pump 3 slip ring resistance
O:			
P:			
Q:			
R:			
S:			
T:			

2.38 Page:1980 MG19 HIGH PRESSURE FEED HEATERS (1)**

A:			
B:	M4400	[0-100]	HP feed heater 1 dirty
C:	M4401	[0-1]	HP feed heater 1 air vent blocked
D:	M4402	[0-100]	HP feed heater 1 tube leakage
E:	M4403	[0-100]	HP feed heater 1 safety valve leakage
F:			
G:	M4410	[0-100]	HP feed heater 2 dirty
H:	M4411	[0-1]	HP feed heater 2 air vent blocked
I:	M4412	[0-100]	HP feed heater 2 tube leakage
J:	M4413	[0-100]	HP feed heater 2 safety valve leakage
K:			
L:	M4420	[0-100]	HP feed heater 3 dirty
M:	M4421	[0-1]	HP feed heater 3 air vent blocked
N:	M4422	[0-100]	HP feed heater 3 tube leakage
O:	M4423	[0-100]	HP feed heater 3 safety valve leakage
P:			
Q:	M4425	[0-1]	HP feed heater 1 level alarm fault
R:	M4426	[0-1]	HP feed heater 2 level alarm fault
S:	M4427	[0-1]	HP feed heater 3 level alarm fault
T:			

2.39 Page:1981 MG19** HIGH PRESSURE FEED HEATERS (2)

A:		
B:		
C:	M4430	[0-1] HP feed heater 1 level contr auto fail
D:	M4431	[0-1] HP feed heater 1 level contr unstable
E:	M4435	[0-100] HP feed heater 1 level contr sensor low
F:	M4432	[0-100] HP feed heater 1 level contr valve 1 stuck (FD)
G:	M4433	[0-100] HP feed heater 1 level contr valve 2 stuck (LP)
H:		
I:		
J:		
K:	M4440	[0-1] HP feed heater 2 level contr auto fail
L:	M4441	[0-1] HP feed heater 2 level contr unstable
M:	M4442	[0-100] HP feed heater 2 level contr valve stuck
N:	M4445	[0-100] HP feed heater 2 level contr sensor low
O:		
P:		
Q:		
R:		
S:		
T:		

2.40 Page:2080 MG20** MAKE UP DEAERATOR SYSTEM (1)

A:		
B:		
C:	M5000	[0-100] Condensate make up pump 1 wear
D:	M5001	[0-1] Condensate make up pump 1 fail
E:		
F:	M5002	[0-100] Condensate make up pump 2 wear
G:	M5003	[0-1] Condensate make up pump 2 fail
H:		
I:	M5004	[0-100] Condensate make up pump 3 wear
J:	M5005	[0-1] Condensate make up pump 3 fail
K:		
L:		
M:	M5010	[0-1] Condensate make up tank level ctr auto fail
N:	M5011	[0-1] Condensate make up tank level ctr unstable
O:	M5012	[0-100] Condensate make up tank level ctr v stuck
P:		
Q:	M5020	[0-100] Make up deaerator vacuum pump 1 wear
R:	M5022	[0-100] Make up deaerator vacuum pump 2 wear
S:		
T:		



2.41 Page:2081 MG20* * MAKE UP DEAERATOR SYSTEM (2)

A:			
B:			
C:	M5030	[0-100]	Condensate transfer pump 1 wear
D:	M5031	[0-1]	Condensate transfer pump 1 fail
E:			
F:	M5032	[0-100]	Condensate transfer pump 2 wear
G:	M5033	[0-1]	Condensate transfer pump 2 fail
H:			
I:	M5034	[0-100]	Condensate transfer pump 3 wear
J:	M5035	[0-1]	Condensate transfer pump 3 fail
K:			
L:			
M:	M5040	[0-1]	Make up deaerator level contr auto fail
N:	M5041	[0-1]	Make up deaerator level contr unstable
O:	M5042	[0-100]	Make up deaerator level contr valve stuck
P:			
Q:	M5050	[0-1]	Make up deaerator temp contr auto fail
R:	M5051	[0-1]	Make up deaerator temp contr unstable
S:	M5052	[0-100]	Make up deaerator temp contr valve stuck
T:			

2.42 Page:2180 MG21* * HOT CONDENSER SYSTEM (1)

A:			
B:			
C:	M6000	[0-100]	District heat water return pump 1 wear
D:	M6002	[0-100]	District heat water return pump 2 wear
E:			
F:	M6010	[0-100]	District heat water supply pump 1 wear
G:	M6012	[0-100]	District heat water supply pump 2 wear
H:			
I:	M6020	[0-100]	Hot condenser 1 dirty
J:	M6021	[0-100]	Hot condenser 1 tube leakage
K:			
L:	M6030	[0-100]	Hot condenser 2 dirty
M:	M6031	[0-100]	Hot condenser 2 tube leakage
N:			
O:			
P:	M6070	[0-1]	District heat water temp contr auto fail
Q:	M6071	[0-1]	District heat water temp contr unstable
R:	M6072	[0-100]	District heat water temp contr valve stuck
S:			
T:			

2.43 Page:2181 MG21** HOT CONDENSER SYSTEM (2)

A:			
B:			
C:	M6040	[0-100]	Hot condensate pump 1 wear
D:	M6041	[0-1]	Hot condensate pump 1 fail
E:			
F:	M6042	[0-100]	Hot condensate pump 2 wear
G:	M6043	[0-1]	Hot condensate pump 2 fail
H:			
I:	M6044	[0-100]	Hot condensate pump 3 wear
J:	M6045	[0-1]	Hot condensate pump 3 fail
K:			
L:			
M:	M6050	[0-1]	Hot condenser 1 level contr auto fail
N:	M6051	[0-1]	Hot condenser 1 level contr unstable
O:	M6052	[0-100]	Hot condenser 1 level contr valve stuck
P:			
Q:	M6060	[0-1]	Hot condenser 2 level contr auto fail
R:	M6061	[0-1]	Hot condenser 2 level contr unstable
S:	M6062	[0-100]	Hot condenser 2 level contr valve stuck
T:			

2.44 Page:2280 MG22** DIRECT HEATER SYSTEM (1)

A:			
B:			
C:	M6100	[0-100]	Direct heater 1 dirty
D:	M6101	[0-100]	Direct heater 1 tube leakage
E:			
F:	M6110	[0-100]	Direct heater 2 dirty
G:	M6111	[0-100]	Direct heater 2 tube leakage
H:			
I:			
J:			
K:	M6130	[0-1]	Direct heater 1 level contr auto fail
L:	M6131	[0-1]	Direct heater 1 level contr unstable
M:	M6132	[0-100]	Direct heater 1 level contr valve stuck
N:			
O:			
P:	M6140	[0-1]	Direct heater 2 level contr auto fail
Q:	M6141	[0-1]	Direct heater 2 level contr unstable
R:	M6142	[0-100]	Direct heater 2 level contr valve stuck
S:			
T:			

**2.45 Page:2281 MG22* * DIRECT HEATER SYSTEM
(2)**

A:
B:
C: M6120 [0-100] Subcooler 1 dirty
D:
E: M6122 [0-100] Subcooler 2 dirty
F:
G:
H: M6150 [0-1] Subcooler 1 flow contr auto fail
I: M6151 [0-1] Subcooler 1 flow contr unstable
J: M6152 [0-100] Subcooler 1 flow contr valve stuck
K:
L: M6160 [0-1] Subcooler 2 flow contr auto fail
M: M6161 [0-1] Subcooler 2 flow contr unstable
N: M6162 [0-100] Subcooler 2 flow contr valve stuck
O:
P:
Q:
R:
S:
T:

2.46 Page:2380 MG23* * ACCUMULATOR SYSTEM (1)

A:
B: M6200 [0-1] Accumulator tank spray system fail
C:
D: M6210 [0-100] Accumulator pump wear
E:
F: M6212 [0-100] Accumulator pump motor wear
G: M6213 [0-1] Accumulator pump motor fail
H:
I: M6216 [0-100] Accumulator pump recirc v stuck
J:
K: M6218 [0-100] Accumulator pump LO press low
L:
M: M6220 [0-100] Francis turbine wear
N: M6221 [0-100] Francis turbine nozzle deposits
O:
P: M6225 [0-100] DHW system exp. tank leakage
Q: M6226 [0-1] DHW system exp. tank steam contr fail
R:
S:
T:

2.47 Page:2381 MG23** ACCUMULATOR SYSTEM (2)

A:
B:
C:
D: M6230 [0-100] DHW system make up pump 1 wear
E: M6231 [0-1] DHW system make up pump 1 fail
F: M6234 [0-100] DHW system make up pump 2 wear
G: M6235 [0-1] DHW system make up pump 2 fail
H:
I: M6240 [0-1] Exp. tank level contr fail
J: M6241 [0-1] Exp. tank level contr unstable
K:
L:
M: M6244 [0-1] Exp. tank high level contr fail
N: M6245 [0-1] Exp. tank low level contr fail
O:
P: M6250 [0-1] Francis turb w temp contr fail
Q: M6251 [0-1] Francis turb w temp contr unstable
R:
S: M6260 [0-100] Francis turb overspeed sensor misadjusted
T:

2.48 Page:2480 MG24** DISTRICT HEAT WATER SYSTEM

A:
B:
C: M6300 [0-100] District heat water return flow loss
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

**2.49 Page:2580 MG25** SPARE**

A:
B:
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

2.50 Page:2780 MG27 SCR1 FANS**

A:	M7131	[0-1]	SCR1 NH3 Injection fan will not Start
B:	M7132	[0-1]	SCR1 NH3 Injection fan will not Stop
C:	M7141	[0-1]	SCR1 Heating fan will not Start
D:	M7142	[0-1]	SCR1 Heating fan will not Stop
E:			
F:			
G:			
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.51 Page:2781 MG27* * SCR2 FANS

A: M7231 [0-1] SCR2 NH3 Injection fan will not Start
B: M7232 [0-1] SCR2 NH3 Injection fan will not Stop
C: M7241 [0-1] SCR2 Heating fan will not Start
D: M7242 [0-1] SCR2 Heating fan will not Stop
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

2.52 Page:2880 MG28* * SLAKE SYSTEM

A: M8130 [0-1] Slake feeder weight 1 will not Start
B: M8131 [0-1] Slake feeder motor 1 will not Start
C: M8141 [0-1] Slake tank 1 mixer will not Start
D: M8230 [0-1] Slake feeder weight 2 will not Start
E: M8231 [0-1] Slake feeder motor 2 will not Start
F: M8241 [0-1] Slake tank 2 mixer will not Start
G: M8171 [0-1] Slake suspension pump 1 will not Start
H: M8172 [0-1] Slake suspension pump 1 will not Stop
I: M8271 [0-1] Slake suspension pump 2 will not Start
J: M8272 [0-1] Slake suspension pump 2 will not Stop
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:



2.53 Page:2881 MG28* * SLURRY FEEDER PUMPS

A: M8137 [0-1] Slurry Feeder pump 1 will not Start
B: M8237 [0-1] Slurry Feeder pump 2 will not Start
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

2.54 Page:2882 MG28* * ABSORBER

A: M8140 [0-1] Absorber Spreader Gear Oil Fault
B:
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

2.55 Page:2883 MG28** PRODUCT SYSTEM

A: M8151 [0-1] Product Transporter 1 will not Start
B: M8251 [0-1] Product Transporter 2 will not Start
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

2.56 Page:2884 MG28** MIXING SYSTEM

A: M8164 [0-1] Mixer tank 1 mixer will not Start
B: M8264 [0-1] Mixer tank 2 mixer will not Start
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

**2.57 Page:2885 MG28* * PRODUCT CELL FEEDERS**

A: M8161 [0-1] Product Cell feeder 1 will not Start
B: M8261 [0-1] Product Cell feeder 2 will not Start
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T:

2.58 Page:2886 MG28* * PRODUCT SLURRY PUMPS

A: M8167 [0-1] Product slurry pump 1 will not Start
B: M8267 [0-1] Product slurry pump 2 will not Start
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
P:
Q:
R:
S:
T: