

# RCM 가

## System Priority Evaluation for RCM Analysis

, , ,

103-16

196

(RCM : Reliability Centered Maintenance)

. 1999 RCM 1,2 3  
 2000 1 30 .  
 1 가 가 가 가 .  
 가 30 가 , 30  
 , 60

### Absrract

Reliability Centered Maintenance(RCM) is a systematic decision logic tree approach to identify or revise preventive maintenance tasks and intervals. This paper describes the result of the evaluating system priority for RCM analysis. We evaluated the system priority, using categories and factors considering the functional importance and maintenance history. Result of this study, all of the top priority 30 systems were functional important system, and 30 systems of next top priority were similar to each other.

1.

(RCM)

RCM 1,2 3 1999  
 30 RCM RCM 2000  
 RCM RCM  
 가 가 가  
 가 .

2. 가

2.1

가

(RCM) 가 3 Category

Category A

, 가 10  
 “ ”

가 Trip Category A

Category B

가 Category A

가 9

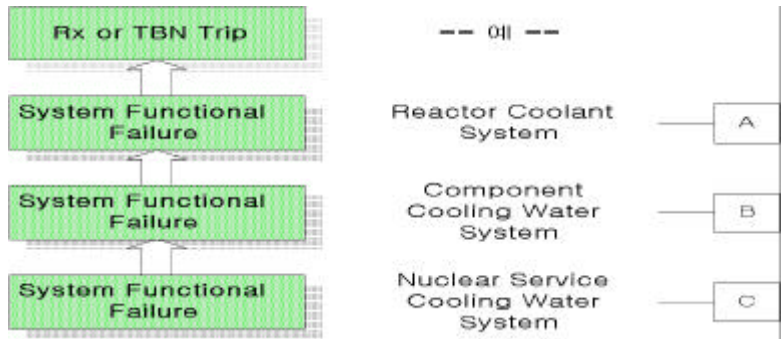
가 Trip Category B

Category C

Category B

가 8

Category C



2.2

Category D 가 7 ,  
 (Reactor Make-up Water System)  
 Category D .

2.3

(LCO : Limiting Condition for Operation)  
 (Category S) 가 7 .  
 Category A, B C A/S  
 가 LCO  
 Category S , Trip Category A  
 . 10 가 .

3.

가

3.1

(RCM) 가  
 / 가  
 1 (PUMAS/N- ) 3 ('96 '99)  
 가 100 (1,2 )  
 가  
 가  
 가

[ . 1]

ID					(CM)				(PM)						CM+PM
		#1	#2		#1	#2			#1		#2				
									OH	PP	OH	PP		OH	

3.2 가

가 가 15 6 가 , 15 5 가 ,  
 15 4 가 90 15 1  
 가 .

가 가  
 , 15 4 가 . 가 15 6 가  
 가 90 15 1  
 .

3.3 가

RCM RCM  
 가 . 가 가 15 6 가 ,  
 15 5 가 , 15 4 가 90  
 15 1 가 .

가 가 가  
 15 6 가 , 15 4 가 . 가  
 90 15 1 가 .

(PM/ (PM+CM))

65%

55%

75%

5 가

. 55%

0.75

#### 4. 가

RCM 가 가

가 [ . 2] 가 가

100 (1, 2 ) 85 가

30 가 가 가 , 30 60 가 가

12 . 가 가 7

60 .

#### 5.

RCM RCM 가 가

가 ,

가 ,

가

RCM 가 , 가 RCM

가 RCM

, 가

1. " 1,2 "( ), , 1999. 7
2. Handbook on safety related maintenance P175 178, IAEA, 1993
3. , 1999.6
4. " , , 98. 5.30
5. , , 99. 5.29
6. , , , 98. 10.31
7. 1998.5Use of Reliability-Centered Maintenance for the McGuire Nuclear Station Feed-water System, EPRI, 1986.9

계명 ID	System Description	중요도 평가		장애이력 평가										평가결과				
		중요도	Rate	기대수	OMNo	Rate	OM7기	Rate	PMNo	Rate	PM7기	Rate	PMCOM +PM)	Rate	중요도	경비비율	상대	우선 순위
EG	Chemical & Volume Control	B/S	9	3,043	221	6	0.0726	4	1,960	6	0.513	6	0.6759	5	9	27	36	1
AE	Feed Water	B	9	2,011	90	6	0.0448	3	1,304	6	0.648	6	0.9354	5	9	28	35	2
EG	Component Cooling Water	B/S	9	2,394	77	6	0.0322	2	986	6	0.416	6	0.9282	5	9	25	34	3
GL	Auxiliary Building HVAC	S	7	989	106	6	0.1072	5	944	5	0.954	6	0.8990	5	7	27	34	4
EF	Nuclear Service Cooling Water	C/S	8	596	82	6	0.1399	5	709	5	1.210	4	0.8963	5	8	25	33	5
MA	Main Generator	A	10	272	59	5	0.2169	6	457	4	1.680	2	0.8557	5	10	22	32	6
CH	Turbine Valve & Hydraulic Control	A	10	188	16	3	0.0851	5	371	4	1.973	5	0.9587	5	10	22	32	7
EA	Turbine Plant Open Cooling Water	B	9	525	70	5	0.1333	5	427	4	0.613	4	0.8592	5	9	23	32	8
DC	Traveling Screen and Screen Wash Pumps	C	8	435	100	6	0.2299	6	601	5	1.382	2	0.8573	5	8	24	32	9
AD	Condensate Water	C	8	2,422	83	6	0.0943	2	941	5	0.389	6	0.9189	5	8	24	32	10
AB	Main Steam	A/S	10	2,043	73	5	0.0357	2	1,204	6	0.589	3	0.9428	5	10	21	31	11
KC	Fire Protection	S	7	1,450	93	6	0.0641	4	426	4	0.294	5	0.8208	5	7	24	31	12
KJ	Stand-by Diesel & Diesel Fuel Oil	S	7	1,674	53	5	0.0317	2	1,852	6	1.106	6	0.9722	5	7	24	31	13
RL	Control Board(SSDLS)	A	10	11,054	35	4	0.0032	0	6,633	6	0.600	5	0.9949	5	10	20	30	14
DA	Circulating Water	B	9	1,639	70	5	0.0427	3	1,238	6	0.755	2	0.9485	5	9	21	30	15
AF	Feed Water Heater Extraction Drain & Vents	D	7	4,350	89	6	0.0205	1	2,208	6	0.506	5	0.9612	5	7	23	30	16
BB	Reactor Coolant	A/S	7	1,254	73	6	0.0582	4	1,474	6	1.175	2	0.9528	5	7	23	30	17
AC	Main Turbine	A	7	2,319	48	5	0.0207	1	1,654	6	0.713	6	0.9718	5	7	23	30	18
CA	Turbine Grand Steam Sealing	B	9	317	22	3	0.0694	4	349	3	1.101	5	0.9407	5	9	20	29	19
GK	Control Building HVAC	S	7	970	82	5	0.0839	4	699	5	0.721	3	0.9185	5	7	22	29	20
GT	CF Air Purification & Combustible Control	S	7	798	26	4	0.0325	2	621	5	0.778	6	0.9598	5	7	22	29	21
SF	Reactor Control Logic(CRMO)	A/S	10	1,033	8	2	0.0077	0	1,760	6	1.704	5	0.9955	5	10	18	28	22
SE	Neutron Monitorings	A/S	10	400	7	2	0.0175	0	1,158	6	2.895	5	0.9940	5	10	18	28	23
GJ	Essential Chilled Water	S	7	1,174	51	5	0.0434	3	402	4	0.342	4	0.8574	5	7	21	28	24
GN	Containment Heat Removal	S	7	462	29	4	0.0606	4	602	5	1.303	3	0.9556	5	7	21	28	25
CE	Generator Stator Cooling	A	10	463	14	3	0.0302	2	205	2	0.443	5	0.9361	5	10	17	27	26
CB	Turbine-Generator Lubrication	A	10	382	16	3	0.0419	3	441	4	1.154	1	0.9950	5	10	16	26	27
SC	Reactor Instrumentation	A/S	10	3,276	3	0	0.0009	0	4,187	6	1.278	5	0.9993	5	10	16	26	28
BH	Safety Injection	S	7	1,756	36	4	0.0205	1	776	5	0.442	4	0.9557	5	7	19	26	29
GG	Fuel Handling Building HVAC	S	7	231	31	4	0.1342	5	217	2	0.999	3	0.8750	5	7	19	26	30
AL	Auxiliary Feed Water	S	7	989	18	3	0.0192	1	434	4	0.462	6	0.9602	5	7	19	26	31
KA	Compressed Air	B/S	9	2,417	59	5	0.0344	1	616	5	0.255	0	0.9126	5	9	16	25	32
FC	Main Feed Water Pump Drive Turbine	B	9	1,350	27	4	0.0200	1	723	5	0.536	1	0.9640	5	9	16	25	33
EB	Turbine Plant Closed Cooling Water	B	9	1,259	26	4	0.0207	1	353	3	0.280	3	0.9314	5	9	16	25	34
CD	Hydrogen Seal Oil	B	9	176	12	2	0.0674	4	343	3	1.927	2	0.9682	5	9	16	25	35
EC	Spent Fuel Pool Cooling & Cleanup	S	7	412	28	4	0.0680	4	172	2	0.417	3	0.8800	5	7	18	25	36
GB	Central Chilled Water	N	0	1,836	135	6	0.0735	4	767	5	0.418	5	0.8503	5	0	25	25	37
NG	Non-Class 1B 480V Load Center	A	10	246	11	2	0.0447	3	202	2	0.821	2	0.9494	5	10	14	24	38
SB	Reactor Protection Instrument Controls	A/S	10	2,024	1	0	0.0005	0	1,444	6	0.713	3	0.9993	5	10	14	24	39
MC	Start-up Transformer 346KV, 13.8KV, 4.16KV	B	9	124	6	1	0.0484	3	97	1	0.782	5	0.9417	5	9	15	24	40
BM	Steam Generator Blowdown	N	0	1,277	127	6	0.0995	5	523	5	0.410	3	0.8046	5	0	24	24	41
AK	Condensate Demineralizer & Regeneration	N	0	1,156	67	5	0.0580	3	854	5	0.586	6	0.9071	5	0	24	24	42
LF	Non-Radioactive Gravity Collection	N	0	251	54	5	0.2151	6	234	3	0.932	5	0.8125	5	0	24	24	43
RM	Safety Related Balance of Plant Instrumentation	B/S	9	756	-	0	0.0000	0	442	4	0.585	5	1.0000	5	9	14	23	44
BK	Containment Spray	S	7	361	25	4	0.0693	4	218	3	0.604	0	0.8971	5	7	16	23	45
GE	Turbine Building HVAC	N	0	687	73	6	0.1063	5	606	5	0.882	2	0.8925	5	0	23	23	46
BL	Reactor Make-up Water	D	7	235	25	4	0.1064	5	111	1	0.472	0	0.8162	5	7	15	22	47
SD	Area Radiation Monitorings	S	7	299	17	3	0.0589	3	331	3	1.107	1	0.9511	5	7	15	22	48
FE	Auxiliary Feed Water Pump Drive Turbine	S	7	236	10	2	0.0424	3	107	1	0.453	4	0.9145	5	7	15	22	49
SP	Process and Effluent Radioactive Monitoring	S	7	548	6	1	0.0109	0	579	5	1.067	4	0.9897	5	7	15	22	50
GX	Access Control Building HVAC	N	0	204	33	4	0.1618	6	257	3	1.308	4	0.8900	5	0	22	22	51
GH	Radwaste Building HVAC	N	0	167	25	4	0.1337	5	197	2	1.063	6	0.8674	5	0	22	22	52
CG	Condenser Air Removal	D	7	409	17	3	0.0416	3	165	2	0.403	1	0.9066	5	7	14	21	53
LG	Waste Water Treatment	N	0	626	118	6	0.1879	6	301	3	0.479	1	0.7184	5	0	21	21	54
NA	Non-Class 1B 13.8KV Power	B	9	180	2	0	0.0111	0	79	-	0.439	6	0.9753	5	9	11	20	55
CF	Lube Oil Storage Transfer & Purification	N	0	659	27	4	0.0410	2	507	4	0.789	5	0.9494	5	0	20	20	56
AP	Condensate Storage & Transfer	D/S	7	432	11	2	0.0255	1	129	1	0.299	3	0.9214	5	7	12	19	57