Enclosure 2

UAP-HF-13080
Docket No. 52-021

2nd Revised Response to Request for Additional Information No. 841-6055 Revision 3

April 2013

(SRI excluded version)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

04/02/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 841-6055 REVISION 3**
SRP SECTION:	**03.04.01 – INTERNAL FLOOD PROTECTION FOR ONSITE EQUIPMENT FAILURES**
APPLICATION SECTION:	**3.04.01**
DATE OF RAI ISSUE:	**10/18/2011**

QUESTION NO.: 03.04.01-29:

DCD Tier 2, Section 3.4.1.5, "Evaluation of Internal Flooding," outlines the flood evaluation process used in the internal flooding analysis for the US-APWR design. This section identifies the following flooding events that were considered in the analysis:

- Loss of Coolant Accident (LOCA)
- Earthquake
- High-Energy Line Break/Moderate Energy Line Break (HELB\MELB)
- Fire Fighting Operations

While the DCD states that the above events are considered, and identifies the events that were used in determination of the maximum flood height in the various plant areas subject to internal flooding, the DCD did not provide the basis for the assumption used in determining these applicable flood levels. An example would be flooding resulting from fire fighting operations in the reactor building. In the DCD, it is indicated that the quantity of flood water associated with fire-fighting activities is based on operation of two hose stations for two hours, assuming a 125 gpm flow rate per hose station. The basis for the assumption of two hose stations, and the assumption of a flowrate of 125 gpm per hose station for two hours is not provided in the DCD. Another example where the DCD has limited information is on the HELB/MELB evaluations. HELB/MELB is considered in the evaluation, and the HELB contribution to flood levels are shown in some areas but there is no indication on when breaks and cracks in moderate energy lines were considered, or how they were evaluated.

In order for the staff to evaluate if safety-related SSCs are adequately protected form internal flooding, as required by GDCs 2 and 4, the applicant is requested to provide following information:

1. Provide, and include in the DCD, the basis for assumptions made for evaluating flooding due to fire fighting operations, including the bases for the number of hose stations assumed, the flow rates for those stations for all areas where fire fighting operations were assumed, and the 2 hour duration.
2. Discuss how high and moderate energy line breaks and cracks were accounted for in their analsysis. Include information on which breaks were accounted for in each area, and how the release rates and durations were determined for the high and moderate energy line failures.

Additionally, the flooding analysis should be made available for NRC audit.

ANSWER:

[Item No.1]

The water volume discharged during fire fighting operation is evaluated under reasonable assumptions in light of the industrial common knowledge with sufficient conservatism. Two hose stations are not necessarily available in all fire areas, but are assumed for conservatism. The flow rate of 125 gpm per hose station is estimated with a hose station that can be handled by untrained persons. The assumption of a two-hour duration as well as that of two hose stations is extremely conservative for fire fighting in one room, and is consistent with the Section 3.2 of RG 1.189.

Furthermore, the above-mentioned assumptions are in line with the other precedent design certifications.

MHI will provide the basis for the assumptions made for the fire protection activity in the DCD, Section 3.4.1.3. See the Impact on the DCD.

[Item No.2]

The flooding caused by HELB/MELB is evaluated in accordance with the criteria provided in DCD Tier 2, Section 3.6, "Protection Against Dynamic Effects Associated with Postulated Rupture of Piping." Since a LOCA represents the worst case flooding event in the containment vessel, postulated line breaks in the reactor building (R/B) or power source buildings (PS/Bs) are discussed below. Although the auxiliary building (A/B) adjoins the R/B and the PS/B, flooding events occurring in the A/B does not adversely affect safety-related SSCs located in the R/B and the PS/B, because of water-tight doors, penetration seals, and a normally closed drain isolation valve that prevent water discharged in the A/B from flowing into the R/B or the PS/B.

<u>High energy line breaks</u>

Water-containing high energy lines with nominal diameters of more than 1 inch are evaluated as potential water sources in the flooding evaluation. Such lines belong to chemical and volume control system (CVCS), feedwater system (FWS), or steam generator blowdown system (SGBDS). The volume of water discharged from these lines in the event of HELB is calculated as follows.

<u>CVCS in the R/B RCA west area</u>

Letdown line, charging line, and seal water injection line run through the west radiological controlled area (RCA) of the reactor building (R/B). Flow rate from postulated pipe rupture (Q) is calculated with,

$$Q = \sqrt{\frac{2g\Delta H}{\Sigma K}} \times A \quad \text{..... (1)}$$

where g is the gravitational acceleration, ΔH is the hydraulic head at the break point, ΣK is loss coefficient, and A is flow area. ΔH and A are assumed to be the design pressure of the line, and internal cross-section of the pipe, respectively. ΣK of 1.5 is conservatively applied.

The discharge from the three lines is assumed to continue until the broken line is automatically isolated in response to low water level alarm of the pressurizer. Therefore, the duration of water release is sum of the time elapsing from initiation of the discharge to activation of the alarm, and from the alarm and closure of an isolation valve. The former is calculated based on the flow rate given above, and the latter is assumed to be 5 minutes for conservatism.

On the basis of the assumptions above, the break in charging line will result in 15,000 ft^3 of flooding water, the largest amount among the three lines. This obtained value is conservative also in that the design pressure, instead of operating pressure, is chosen as the pipe internal pressure and assumed to remain constant throughout the discharge.

While the above mentioned three lines run between B1F and 2F in west RCA of the R/B, flooding water discharged on between 1F and 2F will immediately flow down to B1MF through grated floor near the pipes, resulting in no accumulation of water on the upper floor. As a consequence, the flooding water released following the charging line break will accumulate on either B1F or B1MF. Since all of the components required to maintain functionality during a flood event are located within water-tight compartment, the event will not jeopardize the plant's safety.

FWS in the R/B NRCA west and east MS/FW area

The high energy piping in the MS/FW piping areas comprises main steam, feedwater, and SG blowdown piping. A rupture of the feedwater piping upstream of the feedwater check valve represents the worst case flooding scenario in this area. The water volume released in this event is broken into the water from the SG, the main feedwater pump, and the main feedwater piping.

1. The volume of water from the SG

   Although it is the most likely that the water retained in the SG below the level of the feedwater nozzle is released, the volume is more conservatively calculated on the assumption that the water between the narrow range level taps is released. As a result, the water volume is estimated to be 95 m^3 (3,355 ft^3).

2. The volume of water from the main feedwater pump

   The volume of water coming from the main feedwater pump is calculated by multiplying the flow rate in feedwater piping under normal plant conditions and time duration. The flow rate assumed in the calculation is 2,850 m^3/h. It is postulated that the main feedwater pump keeps pumping the feedwater until the SG low water level signal automatically trips the pump. This duration is estimated on the basis of

   i) Released water volume required to trigger SG low water level signal

   ii) Release rate of water from the SG

   The water volume i) is 3,355 ft^3. The flow rate of discharge from the SG is calculated with the formula (1).

$$Q = \sqrt{\frac{2g\Delta H}{\Sigma K}} \times A = \sqrt{\frac{2 \cdot 32.2[\mathrm{ft/sec^2}] \cdot 37.346[\mathrm{ft}]}{1.5}} \times 1.0[\mathrm{ft^2}] \cong 40[\mathrm{ft^3/sec}]$$

   The loss coefficient of 1.5 is conservatively applied, and ΔH of 37.346 [ft] is determined on the basis of the level difference between the break point and the upper narrow range level taps. The area of the break is 1.0 ft^2, in accordance with DCD Tier 2, Section 3.6.

   Therefore, the time duration between the break and the SG low water level signal is obtained as,

$$3{,}355\ [\mathrm{ft^3}] / 40\ [\mathrm{ft^3/sec}] \cong 84\ [\mathrm{sec}]$$

   Although this calculated duration is shorter than 1.5 min, time duration of 5 min is applied in the water volume calculation for extensive conservatism. Consequently, the water volume discharged from the main feed water pump before the signal is,

$$2{,}850\ [\mathrm{m^3/hr}] \times 5[\mathrm{min}]/60[\mathrm{min/hr}] \cong 240\ [\mathrm{m^3}]$$

3. The volume of water from the main feedwater pipe

   The water volume from the main feedwater pipe is calculated on the basis of the piping volume from the feedwater nozzle of the SG to the main feedwater control valve, and is 7 m^3. For conservatism, 10 m^3 was applied for the flood evaluation.

In conclusion, the total flood water volume in the west and east MS/FW piping areas at elevation 76 ft, 5 in is calculated as follows.

$$95\ m^3 + 240\ m^3 + 10\ m^3 = 345\ m^3 \cong 12{,}180\ ft^3$$

SGBDS in the R/B NRCA west and east MS/FW area

High energy lines of SGBDS subject to flooding evaluation run through the MS/FW areas. Since the HELB of the feedwater piping represents the most severe flooding event in the areas as mentioned above, the HELB of the SGBDS lines are not postulated.

Moderate energy line breaks

Moderate energy line breaks (through-wall cracks) in pipes with nominal diameters of more than 1 inch are postulated in the flooding evaluation in accordance with DCD Tier 2, Section 3.6.

Most of the water-containing moderate energy piping is excluded from flooding source because that piping is to be designed so that a crack is not required to be postulated in the line in accordance with the criteria described in Section 3.6.2.1.2.2. This is attained by maintaining stress on the pipes below the threshold by means of route and support design. Note that cracks are not postulated only if the cracks are excluded based on the criteria specified in Section 3.6.2.1.2.1 or 3.6.2.1.2.2. Full-circumferential breaks of non-seismically designed pipes are considered in the flooding evaluation in compliance with SRP 3.4.1. Volume of flood water discharged from a postulated crack in the rest of the piping is conservatively estimated on the basis of the volume of water contained in the piping and any connected reservoir.

MHI will provide additional description on the postulation of high and moderate energy line break as bases for the flood evaluation in the DCD, Section 3.4.1. In addition, equipment class and seismic category of water-containing systems are revised to incorporate the piping design on which the flooding evaluation is based. See the attachment for DCD impacts.

Impact on DCD

The DCD Tier 2 Section 3.4.1 is revised to describe the basis for the assumptions made for the fire protection activity and to provide additional description on the postulation of high and moderate energy line break.

The following portions of the DCD are revised to update the internal flooding evaluation incorporating the latest design information including those related to seismic closure plan and Fukushima-related design enhancement.

Tier 1		Table 2.2-5,	Figure 2.2-14 through 2.2-25	
Tier 2	Chapter 3	Section 3.4.1,		
		Table 3K-2,	Table 3K-3,	Table 3K-4,
		Figure 3K-1 throught 3K-12		
		Section 9.2.1		

The DCD Tier 2 Section 9.3.3 and Figure 9.3.3-1 are revised to illustrate the isolation valve in non-radioactive drain line from the A/B to the R/B.

The following portions of the DCD are revised to reflect the updated equipment class and seismic category of water-containing piping on which the flooding evaluation is based.

Tier 2	Chapter 3	Section 3.2.2,	Table 3.2-2,	
		Section 3.4.1,		
		Figure 3E-2,	Figure 3E-3,	Figure 3E-5,
		Figure 3E-6,	Figure 3E-9	
	Chapter 5	Figure 5.1-2		
	Chapter 9	Figure 9.1.3-2,		
		Section 9.2.2,	Figure 9.2.2-1,	
		Figure 9.2.6-2,	Figure 9.2.6-3,	
		Section 9.2.7,	Figure 9.2.7-2,	
		Figure 9.3.2-1,		
		Figure 9.3.4-1,		
		Section 9.5.1		
	Chapter 10	Figure 10.4.9-2		

See attached DCD markups for the revision described above.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Topical Report / Technical Report

There is no impact on the Topical Report / Technical Report.

Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 1 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
1	R/B	-26'-4"	FA2-101-01	0.~~45~~42	-
2	R/B	-26'-4"	FA2-102-01	0.~~45~~42	-
3	R/B	-26'-4"	FA2-103-01	0.~~45~~42	-
4	R/B	-26'-4"	FA2-104-01	0.~~45~~42	-
5	R/B	-26'-4"	FA2-105-01	0.~~45~~42	-
6	R/B	-26'-4"	FA2-111-01	0.~~45~~42	-
7	R/B	-26'-4"	FA2-106-01	0.~~6~~43	-
8	R/B	-26'-4"	FA2-107-01	0.~~6~~43	-
9	R/B	-26'-4"	FA2-108-01	0.~~6~~43	-
10	R/B	-26'-4"	FA2-109-01	0.~~6~~43	-
11	R/B	-26'-4"	FA2-110-01	0.~~6~~43	-
12	R/B	-26'-4"	FA2-112-01	0.~~6~~43	-
13	R/B	-26'-4"	FA2-113-04	1.~~24~~04	-
14	R/B	-26'-4"	FA2-121-01	1.~~24~~04	-
15	R/B	-26'-4"	FA2-121-02	1.~~24~~04	-
16	R/B	-26'-4"	FA2-122-01	1.~~24~~04	-
17	R/B	-26'-4"	FA2-118-01	~~2.27~~3.58	-
18	R/B	-26'-4"	FA2-119-01	~~2.27~~3.58	-
19	R/B	-26'-4"	FA2-124-01	~~2.27-~~	2~~-~~
20	R/B	-26'-4"	FA2-125-01	~~2.27~~3.58	-
21	R/B	-26'-4"	FA2-126-01	~~2.27~~3.58	-
22	R/B	-26'-4"	FA2-127-01	~~2.27~~3.58	-
23	R/B	-26'-4"	FA2-129-01	~~2.27~~3.58	-
24	R/B	-26'-4"	FA2-130-01	~~2.27~~3.58	-
25	R/B	-26'-4"	FA2-113-01	-	1
26	R/B	-26'-4"	FA2-113-02	-	1

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 2 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
27	R/B	-26'-4"	FA2-113-03	-	1
28	R/B	-26'-4"	FA2-114-01	-	1
29	R/B	-26'-4"	FA2-114-02	-	1
30	R/B	-26'-4"	FA2-114-03	-	1
31	R/B	-26'-4"	FA2-115-01	-	1
32	R/B	-26'-4"	FA2-115-02	-	1
33	R/B	-26'-4"	FA2-115-03	-	1
34	R/B	-26'-4"	FA2-116-01	-	1
35	R/B	-26'-4"	FA2-116-02	-	1
36	R/B	-26'-4"	FA2-116-03	-	1
37	R/B	-26'-4"	FA2-123-02	-	4
38	R/B	-8'-7"	FA2-127-02	~~0.81~~2.46	-
39	R/B	-8'-7"	FA2-127-03	~~0.81~~2.46	-
40	R/B	-8'-7"	FA2-127-04	~~0.81~~2.46	-
41	R/B	-8'-7"	FA2-127-05	~~0.81~~2.46	-
42	R/B	-8'-7"	FA2-128-01	~~0.81~~2.46	-
43	R/B	-8'-7"	FA2-153-02	~~0.81~~2.46	-
44	R/B	-8'-7"	FA2-154-02	1.~~35~~09	-
45	R/B	-8'-7"	FA2-155-01	1.~~35~~09	-
46	R/B	-8'-7"	FA2-151-01	-	1
47	R/B	-8'-7"	FA2-152-01	-	1
48	R/B	-8'-7"	FA2-153-01	-	1
49	R/B	-8'-7"	FA2-154-01	-	1
50	R/B	3'-7"	FA2-151-04	0.~~69~~70	-
51	R/B	3'-7"	FA2-209-01	0.~~69~~70	-
52	R/B	3'-7"	FA2-209-02	0.~~69~~70	-
53	R/B	3'-7"	FA2-209-03	0.~~69~~70	-
54	R/B	3'-7"	FA2-210-10	~~-0.69~~	2~~-~~

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 3 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
55	R/B	3'-7"	FA2-211-01	0.~~69~~70	-
56	R/B	3'-7"	FA2-127-06	0.~~88~~79	-
57	R/B	3'-7"	FA2-128-02	0.~~88~~79	-
58	R/B	3'-7"	FA2-128-03	0.~~88~~79	-
59	R/B	3'-7"	FA2-128-04	0.~~88~~79	-
60	R/B	3'-7"	FA2-152-04	0.~~88~~79	-
61	R/B	3'-7"	FA2-212-01	0.~~88~~79	-
62	R/B	3'-7"	FA2-201-01	~~3.14~~0.94	-
63	R/B	3'-7"	FA2-206-01	~~3.14~~2.68	-
64	R/B	3'-7"	FA2-151-01	-	1
65	R/B	3'-7"	FA2-151-02	-	1
66	R/B	3'-7"	FA2-151-03	-	1
67	R/B	3'-7"	FA2-152-01	-	1
68	R/B	3'-7"	FA2-152-02	-	1
69	R/B	3'-7"	FA2-152-03	-	1
70	R/B	3'-7"	FA2-153-01	-	1
71	R/B	3'-7"	FA2-153-03	-	1
72	R/B	3'-7"	FA2-153-04	-	1
73	R/B	3'-7"	FA2-154-01	-	1
74	R/B	3'-7"	FA2-154-03	-	1
75	R/B	3'-7"	FA2-154-04	-	1
76	R/B	3'-7"	FA2-202-01	-	1
77	R/B	3'-7"	FA2-203-01	-	1
78	R/B	3'-7"	FA2-204-01	-	1
79	R/B	3'-7"	FA2-205-01	-	1
80	R/B	3'-7"	FA2-207-01	-	4
81	R/B	3'-7"	FA2-208-01	-	4
82	R/B	13'-6"	FA2-127-07	-	2,3

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 4 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
83	R/B	13'-6"	FA2-212-02	-	2,3
84	R/B	25'-3"	FA2-151-05	0.~~53~~43	-
85	R/B	25'-3"	FA2-151-06	0.~~53~~43	-
86	R/B	25'-3"	FA2-154-05	0.~~53~~43	-
87	R/B	25'-3"	FA2-154-06	0.~~53~~43	-
88	R/B	25'-3"	FA2-209-04	0.~~53~~43	-
89	R/B	25'-3"	FA2-210-10	0.~~53~~43	-
90	R/B	25'-3"	FA2-316-01	0.~~53~~43	-
91	R/B	25'-3"	FA2-319-01	0.~~53~~43	-
92	R/B	25'-3"	FA2-323-01	0.~~53~~43	-
93	R/B	25'-3"	FA2-323-02	0.~~53~~43	-
94	R/B	25'-3"	FA2-127-08	0.~~69~~56	-
95	R/B	25'-3"	FA2-152-05	0.~~69~~56	-
96	R/B	25'-3"	FA2-152-06	0.~~69~~56	-
97	R/B	25'-3"	FA2-153-05	0.~~69~~56	-
98	R/B	25'-3"	FA2-~~209~~213-~~05~~01	0.~~69~~56	-
99	R/B	25'-3"	FA~~2~~3-~~210~~214-~~12~~02	0.~~69~~56	-
100	R/B	25'-3"	FA2-317-01	0.~~69~~56	-
101	R/B	25'-3"	FA2-318-01	0.~~69~~56	-
102	R/B	25'-3"	FA2-322-01	0.~~69~~56	-
103	R/B	~~25'-3"~~26'-11"	FA2-321-01	2.~~85~~37	-
104	R/B	~~25'-3"~~26'-11"	FA2-320-01	~~3.14~~2.68	-
105	R/B	~~25'-3"~~26'-11"	FA2-302-01	-	1
106	R/B	~~25'-3"~~26'-11"	FA2-303-01	-	1
107	R/B	~~25'-3"~~26'-11"	FA2-304-01	-	1
108	R/B	~~25'-3"~~26'-11"	FA2-307-01	-	1
109	R/B	~~25'-3"~~26'-11"	FA2-308-01	-	1
110	R/B	~~25'-3"~~26'-11"	FA2-308-02	-	1

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 5 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
111	R/B	~~25'-3"~~26'-11"	FA2-309-01	-	1
112	R/B	~~25'-3"~~26'-11"	FA2-312-01	-	1
113	R/B	~~25'-3"~~26'-11"	FA2-313-01	-	1
114	R/B	~~25'-3"~~26'-11"	FA2-314-01	-	1
115	R/B	25'-3"	FA2-~~210~~214-~~11~~01	-	1,2
116	R/B	35'-2"	FA2-210-13	-	1,2
117	R/B	50'-2"	FA2-209-06	0.~~58~~54	-
118	R/B	50'-2"	FA2-209-07	0.~~58~~54	-
119	R/B	50'-2"	FA2-210-10	0.~~58~~54	-
120	R/B	50'-2"	FA2-408-01	~~0.58~~-	1-
121	R/B	50'-2"	FA2-409-01	0.~~58~~54	-
122	R/B	50'-2"	FA2-416-01	0.~~58~~54	-
123	R/B	50'-2"	FA2-421-01	0.~~58~~54	-
124	R/B	50'-2"	FA2-210-22	0.54	-
12~~4~~5	R/B	50'-2"	FA2-~~210~~214-~~14~~03	0.~~76~~61	-
12~~5~~6	R/B	50'-2"	FA2-410-01	0.~~76~~61	-
12~~6~~7	R/B	50'-2"	FA2-411-01	0.~~76~~61	-
12~~7~~8	R/B	50'-2"	FA2-417-01	0.~~76~~61	-
12~~8~~9	R/B	50'-2"	FA2-418-01	0.~~76~~61	-
1~~29~~30	R/B	50'-2"	FA2-422-01	0.~~76~~61	-
13~~0~~1	R/B	50'-2"	FA2-403-01	0.~~86~~77	-
13~~1~~2	R/B	50'-2"	FA2-404-01	0.~~86~~77	-
13~~2~~3	R/B	50'-2"	FA2-406-01	0.~~86~~77	-
13~~3~~4	R/B	50'-2"	FA2-407-03	0.~~86~~77	-
13~~4~~5	R/B	50'-2"	FA2-413-01	0.~~86~~77	-
13~~5~~6	R/B	50'-2"	FA2-419-01	0.~~86~~77	-
13~~6~~7	R/B	50'-2"	FA2-423-01	0.~~86~~77	-
13~~7~~8	R/B	50'-2"	FA2-401-01	0.~~87~~78	-

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 6 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
1389	R/B	50'-2"	FA2-402-01	0.8778	-
13940	R/B	50'-2"	FA2-405-01	0.8778	-
1401	R/B	50'-2"	FA2-412-01	0.8778	-
1412	R/B	50'-2"	FA2-420-01	0.8778	-
1423	R/B	50'-2"	FA2-420-02	0.8778	-
144	R/B	50'-2"	FA2-424-01	0.78	-
1435	R/B	50'-2"65'-0"	FA2-414-01	4.5162	-
1446	R/B	50'-2"65'-0"	FA2-415-01	4.5162	-
1457	R/B	76'-5"	FA2-210-15	0.8468	-
1468	R/B	76'-5"	FA2-210-19	0.8468	-
1479	R/B	76'-5"	FA2-409-02	0.8468	-
14850	R/B	76'-5"	FA2-506-01	0.8468	-
14951	R/B	76'-5"	FA2-210214-1605	0.9983	-
1502	R/B	76'-5"	FA2-210214-1704	0.9983	-
1513	R/B	76'-5"	FA2-210214-1806	0.9983	-
1524	R/B	76'-5"	FA2-210214-2107	0.9983	-
1535	R/B	76'-5"	FA2-410-02	0.9983	-
1546	R/B	76'-5"	FA2-511-01	0.9983	-
1557	R/B	76'-5"	FA2-505-01	1.2413	-
1568	R/B	76'-5"	FA2-508-01	1.2413	-
1579	R/B	76'-5"	FA2-508-02	1.2413	-
15860	R/B	76'-5"	FA2-509-01	1.2413	-
15961	R/B	76'-5"	FA2-510-01	1.2413	-
1602	R/B	76'-5"	FA2-510-02	1.2413	-
1613	R/B	76'-5"	FA2-507-01	1.528	-
1624	R/B	76'-5"	FA2-507-02	1.528	-
1635	R/B	76'-5"	FA2-513-01	1.528	-
1646	R/B	76'-5"	FA2-502-01	-	1

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 7 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
16~~5~~7	R/B	76'-5"	FA2-503-01	-	1
16~~6~~8	R/B	76'-5"	FA2-504-01	-	1
16~~7~~9	R/B	76'-5"	FA2-501-02	-	5
1~~68~~70	R/B	76'-5"	FA2-512-01	-	5
1~~69~~71	R/B	101'-0"	FA2-601-01	1.~~71~~52	-
17~~0~~2	R/B	101'-0"	FA2-601-02	1.~~71~~52	-
17~~1~~3	R/B	101'-0"	FA2-603-01	1.~~71~~52	-
17~~2~~4	R/B	101'-0"	FA2-602-01	3.~~08~~09	-
17~~3~~5	R/B	101'-0"	FA2-604-01	3.~~08~~09	-
17~~4~~6	PS/B	-26'-4"	FA3-101-01	0.~~45~~42	-
17~~5~~7	PS/B	-26'-4"	FA3-102-01	0.~~45~~42	-
17~~6~~8	PS/B	-26'-4"	FA3-103-01	0.~~45~~42	-
17~~7~~9	PS/B	-26'-4"	FA3-104-01	0.~~45~~42	-
1~~78~~80	PS/B	-26'-4"	FA3-106-01	0.~~45~~42	-
1~~79~~81	PS/B	-26'-4"	FA3-115-01	0.~~45~~42	-
18~~0~~2	PS/B	-26'-4"	FA3-116-01	0.~~45~~42	-
183	PS/B	-26'-4"	FA3-127-01	0.42	
184	PS/B	-26'-4"	FA3-128-01	0.42	
185	PS/B	-26'-4"	FA3-132-01	0.42	
186	PS/B	-26'-4"	FA3-133-01	0.42	
18~~1~~7	PS/B	-26'-4"	FA3-108-01	0.~~6~~43	-
18~~2~~8	PS/B	-26'-4"	FA3-109-01	0.~~6~~43	-
18~~3~~9	PS/B	-26'-4"	FA3-110-01	0.~~6~~43	-
1~~84~~90	PS/B	-26'-4"	FA3-111-01	0.~~6~~43	-
1~~85~~91	PS/B	-26'-4"	FA3-112-01	0.~~6~~43	-
1~~86~~92	PS/B	-26'-4"	FA3-120-01	0.~~6~~43	-
1~~87~~93	PS/B	-26'-4"	FA3-121-01	0.~~6~~43	-
194	PS/B	-26'-4"	FA3-134-01	0.43	-

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 8 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
195	PS/B	-26'-4"	FA3-135-01	0.43	-
1~~88~~96	PS/B	-14'-2"	FA3-117-01	-	1
1~~89~~97	PS/B	-14'-2"	FA3-118-01	-	1
19~~0~~8	PS/B	-14'-2"	FA3-122-01	-	1
19~~1~~9	PS/B	-14'-2"	FA3-123-01	-	1
~~192~~200	PS/B	-14'-2"	FA3-103-02	-	3
~~193~~201	PS/B	-14'-2"	FA3-104-02	-	3
~~194~~202	PS/B	-14'-2"	FA3-105-01	-	3
~~195~~	~~PS/B~~	~~-14'-2"~~	~~FA3-105-02~~	~~-~~	~~3~~
~~196~~203	PS/B	-14'-2"	FA3-105-03	-	3
~~197~~204	PS/B	-14'-2"	FA3-109-02	-	3
~~198~~205	PS/B	-14'-2"	FA3-111-02	-	3
~~199~~206	PS/B	-14'-2"	FA3-113-01	-	3
207	PS/B	-14'-2"	FA3-113-02	-	1
20~~0~~8	PS/B	-14'-2"	FA3-113-03	-	3
20~~1~~9	PS/B	-14'-2"	FA3-119-01	-	3
2~~02~~10	PS/B	-14'-2"	FA3-124-01	-	3
2~~03~~11	PS/B	-14'-2"	FA3-125-01	-	3
212	PS/B	-14'-2"	FA3-129-01	-	3
2~~04~~13	PS/B	-14'-2"	FA3-126-01	-	3
214	PS/B	-14'-2"	FA3-131-01	-	3
2~~05~~15	PS/B	3'-7"	FA3-103-03	-	1
216	PS/B	3'-7"	FA3-103-04	-	1
2~~06~~17	PS/B	3'-7"	FA3-104-03	-	1
218	PS/B	3'-7"	FA3-104-04	-	1
2~~07~~19	PS/B	3'-7"	FA3-105-02	0.94~~-~~	~~-1~~
220	PS/B	3'-7"	FA3-130-01	0.94	-
2~~08~~21	PS/B	3'-7"	FA3-109-03	-	1

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Table 2.2-5 Internal Flooding Elevation above Floor
(Sheet 9 of 9)

	Building	Floor Elevation	Fire Zone No.	Design Flood Level above Floor [ft]	Notes
2~~09~~22	PS/B	3'-7"	FA3-111-03	-	1
2~~1~~023	PS/B	3'-7"	FA3-113-02	-	1
224	PS/B	24'-2"	FA3-114-01	-	2

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Note:

1. This area is protected from flooding by water-tight door.
2. There are no SSCs in this area to be protected from flooding.
3. Water flows down stairs.
4. No water source inside and no pathway of water to the neighboring zones.
5. This area is the emergency water pit and is out of scope of flood protection.

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Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-14 Flood barriers and water-tight doors R/B EL -26'-4" (B1F)

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Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-15 Flood barriers and water-tight doors R/B EL -8’-7” (B1MF)

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01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-16 Flood barriers and water-tight doors R/B EL 3'-7" (1F)

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01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-17 Flood barriers and water-tight doors R/B EL 13’-6” (1MF)

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01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-18 Flood barriers and water-tight doors R/B EL 25’-3” (2F)

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01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-19 Flood barriers and water-tight doors R/B EL 35’-2” (2MF)

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01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-20 Flood barriers and water-tight doors R/B EL 50’-2” (3F)

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Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-21 Flood barriers and water-tight doors R/B EL 76’-5” (4F)

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Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-22 Flood barriers and water-tight doors R/B EL 101’-0” (Roof)

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Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-23 Flood barriers and water-tight doors R/B EL 115’-6” (Roof)

DCD_03.04.
01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-24 Flood barriers and water-tight doors PS/B EL -26'-4" (B1F), EL -14'-2" (B1MF)

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01-29 S02

Security-Related Information – Withheld Under 10 CFR 2.390

Figure 2.2-25 Flood barriers and water-tight doors
PS/B EL 3'-7" (1F), EL 24'-2" (1MF), EL 39'-6" (Roof)

Equipment Class 5 SSCs are classified either as non-seismic (NS) or seismic category II. ~~Seismic category II SSCs meet the pertinent QA requirements of 10 CFR 50, Appendix B.~~Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 5 SSCs. Codes and standards, as defined in the design bases, are applied to Equipment Class 5 components. DCD_03.02.02-17

The COL Applicant is to apply DCD methods of equipment classification, quality assurance classification, and seismic categorization of risk-significant, non-safety related SSCs ~~based on their safety role assumed in the PRA and treatment by the D-RAP~~to site-specific, nonsafety-related SSCs based on their contribution to plant safety. DCD_03.02.02-17

Equipment Class 6

Equipment Class 6 is assigned to the nonsafety-related components of the RWMS and a part of SGBDS which ~~cover~~are outside the containment isolation valves ~~except for class 3 components~~. DCD_03.02.02-17

The seismic category defined in RG 1.143 (Reference 3.2-10) is applied. Portions of the Equipment Class 6 SSCs on which seismic category II requirements are imposed are designed to comply with both the requirements of RG 1.143 and seismic category II. Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 6 SSCs. ~~and 10 CFR 50, Appendix B (Reference 3.2-8) is not applied.~~ DCD_03.04.01-29 S02

The Equipment Class 6 components are designed in compliance with applicable codes and standards, and guidance provided in RG 1.143 (Reference 3.2-10).

Equipment Class 7

Equipment Class 7 is assigned to the ~~system, design, and~~nonsafety-related components of the ~~F~~fire ~~P~~protection ~~Program~~system. Portions of the Equipment Class 7 SSCs on which seismic category II requirements are imposed are designed to comply with both the requirements of RG 1.189 (reference 3.2-11) and seismic category II. Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 7 SSCs. DCD_03.02.02-17 DCD_03.04.01-29 S02

The codes and standards applicable to fire protection systems follow the guidance of RG 1.189 (Reference 3.2-11), Section 1.7, and National Fire Protection Association 804 (Reference. 3.2-25), Section 4.6, and are applied for fire protection system design in the US-APWR buildings.

Equipment Class 8

Equipment Class 8 is assigned to non-safety related components ~~and structures containing radioactive materials, and classified as Quality Group D.~~that contain or may contain radioactive materials, that are classified as Quality Group D, are not included in Equipment Classes 1-7, and do not require augmented quality per Section 3.1.1.1.1. DCD_03.02.02-17

Equipment Class 8 SSCs are classified as NS. ~~Codes and standards as defined in the design bases are applied to Equipment Class 8 components.~~The applicable codes and

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 4 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Pressurizer spray block valves RCS-MOV-111A, B	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
(Deleted)								
Letdown line stop valve RCS-VLV-021	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Reactor coolant piping first drain stop valvesRCS-VLV-022A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		
~~(Deleted)~~Pressurizer gas phase sample line piping and valve up to and excluding valve PSS-VLV-001	2	PCCV	B	Q	2	I		DCD_03.02.02-17
~~(Deleted)~~Pressurizer liquid phase sample line piping and valve up to and excluding valve PSS-VLV-004	2	PCCV	B	Q	2	I		
Pressurizer spray bypass valves RCS-VLV-112A,B	1	PCCV	A	~~YES~~Q	1	I		
Reactor coolant piping	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Main coolant piping insulation	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Pressurizer surge line piping	1	PCCV	A	~~YES~~Q	1	I		
Pressurizer spray line piping	1	PCCV	A	~~YES~~Q	1	I		
Pressurizer relief tank	4	PCCV	D	~~N/A~~A	4	II	Note 5.a	
Reactor coolant system piping and valves related to pressurizer relief tank excluding containment isolation valves and piping between valves	4	PCCV R/B	D	~~N/A~~A	4	NS / II	Note 5.d / Note 5.a	DCD_03.04.01-29 S02
Following containment isolation valves and piping between valves: RCS-AOV-147, 148 RCS-AOV-132, RCS-VLV-133 RCS-AOV-138, RCS-VLV-139, 140	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
3. Chemical and Volume Control System								
Charging pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Boric acid transfer pumps	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 7 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes
Chemical and volume control system containment isolation valves and piping between the valves.	2	PCCV R/B	B	~~YES~~Q	2	I	
Excess letdown piping and valves from reactor coolant system to and including valve CVS-AOV-222 just prior to excess letdown heat exchanger.	1	PCCV	A	~~YES~~Q	1	I	
Excess letdown piping and valves from but excluding valve CVS-AOV-222 just prior to excess letdown heat exchanger to and excluding containment isolation valves CVS-MOV-203 and CVS-VLV-202. This includes piping related to reactor coolant pump seal water return line to the following valves. 4 valves CVS-AOV-192A,B,C,D (excluding the valves) Seal water return line relief valve CVS-SRV-201 (including the valve)	3	PCCV	C	~~YES~~Q	3	I	
Excess letdown heat exchanger drain piping ~~and valve to and including valve CVS-VLV-685~~	3	PCCV	C	~~YES~~Q	3	I	
Reactor coolant pump purge water piping and valves up to but excluding reactor coolant pump #2 seal housings	8	PCCV	D	~~N/A~~N	4	NS	
Letdown line piping and valves outside containment from and excluding the ~~containment isolation valve CVS-AOV-006~~wall that separates R/B and A/B to and including the three way valve CVS-TCV-014	8	~~R/B~~ A/B	D	~~N/A~~N	4	NS	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 8 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes
Letdown line piping and valves outside containment from and excluding the containment isolation valve CVS-AOV-006 to and including the wall that separates R/B and A/B	4	R/B	D	A	4	II	Note 5.a
Piping and valves contained within the demineralizer subsystem of chemical and volume control system. This subsystem branches off the letdown line between the two three way valves CVS-TCV-014 and CVS-LCV-031A. It includes reactor coolant purification filters and demineralizers, and deborating demineralizers	8	A/B	D	~~N/A~~N	4	NS	
Letdown line piping and valves outside containment from the three way valve CVS-LCV-031A ~~to the volume control tankvalves CVS-VLV-102, CVS-VLV-103 (excluding the valves)~~up to and excluding the wall that separates R/B and A/B	8	~~R/B~~ A/B	D	~~N/A~~N	4	NS	
Letdown line piping and valves outside containment from ~~CVS-VLV-102, CVS-VLV-103 (including the valves)~~and including the wall that separates R/B and A/B on the upstream valves CVS-VLV-101 to the volume control tank	4	R/B	D	~~N/A~~A	4	II	Note 5.a

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 9 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Reactor coolant pump seal water return piping and valves outside containment from and excluding containment isolation valve CVS-MOV-204 to ~~all other connections in chemical and volume control system~~valves CVS-VLV-213, CVS-VLV-214, and CVS-SRV-210 (excluding ~~the valves~~CVS-VLV-213, including CVS-VLV-214 and CVS-SRV-210)	~~3~~4	R/B	D	~~N/A~~A	4	~~NS~~II	Note 5.~~d~~a	DCD_03.04.01-29 S02 DCD_03.04.01-29 S02 DCD_03.02.02-17 DCD_03.04.01-29 S02
Reactor coolant pump seal water return piping and valves from reactor coolant pump seal to and including 4 valves CVS-AOV-192A,B,C,D	2	PCCV	B	~~YES~~Q	2	I		
~~Reactor coolant pump seal water return line drain piping and valves for the strainer and the seal water heat exchanger including the 2 valves CVS-VLV-678 and CVS-VLV-681.~~	~~3~~	~~R/B~~	~~D~~	~~N/A~~	~~4~~	~~NS~~		DCD_03.02.02-17
Reactor coolant pump seal water injection piping and valves excluding containment isolation valves, piping between these valves, piping downstream of CVS-VLV-180A, B, C, D (excluding valves), and seal water injection filter line valves and piping between and including CVS-VLV-168 and CVS-VLV-173	3	R/B PCCV	C	~~YES~~Q	3	I		
Reactor coolant pump seal water injection piping and valves downstream of including valves CVS-VLV-180A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 10 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Seal water injection filter line valves and piping between and excluding CVS-VLV-168 and CVS-VLV-173	~~8~~4	R/B A/B	D	~~N/A~~A	4	NS / II	Note 5.d / Note 5.a	DCD_03.04.01-29 S02
Charging lines from and including valves CVS-VLV-158 and CVS-AOV-159 to their penetration into the reactor coolant system	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Auxiliary spray line from and including valves CVS-AOV-155 to the penetration into the RCS	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Charging line and auxiliary spray line piping and valves between the following valves (excluding the valves) downstream of the regenerative heat exchanger: CVS-VLV-158 CVS-AOV-159 CVS-AOV-155 And the following valves: ~~Charging line drain valve CVS-VLV-655 (including the valve)~~ Containment isolation valve CVS-VLV-153 (excluding the valve)	3	PCCV	C	~~YES~~Q	3	I		DCD_03.02.02-17 DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 11 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Charging line piping and valves from and including the volume control outlet valve CVS-LCV-031B to charging pump minimum flow orifices and following valves: CVS-VLV-213 (including valve) CVS-VLV-585 (including valve) CVS-VLV-557 (including valve) CVS-VLV-163 and 164 (excluding valves) CVS-MOV-152 (excluding valve) CVS-VLV-591 and 593 (including valves)	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Volume control tank outlet line to and excluding valve CVS-LCV-031B and the line from and including CVS-VLV-568	4	R/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Volume control tank drain piping and valves up to and including CVS-VLV-636	4	R/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Volume control tank drain piping and valves from and excluding CVS-VLV-636	8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system make up piping and valves ~~excluding valves CVS-FCV-128, 129 and piping between these valves~~to and excluding valve CVS-FCV-128	~~8~~4	R/B ~~A/B~~	D	~~N/A~~N	4	~~NS~~II	Note 5.a	DCD_03.02.02-17 DCD_03.04.01-29 S02
Chemical and volume control system piping and valves on the chemical mixing tank side of and excluding the valves CVS-VLV-585 and CVS-VLV-584	8	R/B A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 12 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Chemical and volume control system piping and valves related to the chemical mixing tank and the blender	8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid tanks excluding valve CVS-VLV-557, up to and including valves CVS-VLV-542,547, CVS-AOV-549A,B, through boric acid transfer pump A,B, boric acid filter and including the downstream piping from and including valve CVS-VLV-525	4	A/B	D	~~N/A~~A	4	NS / II	Note 5.d / Note 5.a	DCD_03.02.02-17 DCD_03.04.01-29 S02
Chemical and volume control system piping and valves related to the boric acid batching tank to and excluding valve CVS-VLV-525	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
(Deleted)								
Chemical and volume control system piping and valves related to the boric acid pump minimum flow piping up to boric acid tank, through transfer pump minimum flow orifice and valve CVS-VLV-531A,B	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid tanks up to and including valves CVS-SRV-509A,B, CVS-VLV-511A,B, CVS-VLV-508A,B	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid tanks excluding foregoing piping and valves	~~8~~4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 13 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Chemical and volume control system piping related to the holdup tanks within R/B including the wall that separates R/B and A/B	4	R/B	D	A	4	II	Note 5.a	DCD_03.04.01-29 S02
Chemical and volume control system piping and valves related to the holdup tanks and the boric acid evaporator feed pumps	8	A/B	D	~~N/A~~N	4	NS		
Chemical and volume control system piping and valves related to the boric acid evaporator and the boric acid evaporator feed demineralizer.	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves related to the primary makeup water supply isolation CVS-FCV-133A, 129, 128 and CVS-VLV-581	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
4. Safety Injection System								
Safety injection pumps	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Safety injection piping and valves between the System penetration and including the second check valve SIS-VLV-012A, B, C, D upstream of the direct Vessel Injection penetration	1	PCCV	A	~~YES~~Q	1	I		
Safety injection piping and valves upstream of and excluding the second check valve SIS-VLV-012A, B, C, D upstream of the direct Vessel Injection penetration	2	PCCV, R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Hot leg injection piping downstream of and including the motor operated valves SIS-MOV-014A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 24 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Component cooling water system piping and valves related to components installed in reactor building and including the wall that separates R/B and A/B or T/B within followings: From and excluding stop valve NCS-VLV-601 up to and excluding stop valve NCS-VLV-651; From and excluding stop valve NCS-VLV-661A,B up to and excluding stop valve NCS-VLV-669A,B	4	R/B	D	A	4	II	Note 5.a	DCD_03.04.01-29 S02
Component cooling water system piping and valves related to components installed in auxiliary building from ~~and excluding isolation~~stop valve NCS-~~AOV-602~~-VLV-601 up to ~~and excluding~~ stop valve NCS-VLV-651	~~4~~8	A/B ~~R/B~~	D	~~N/A~~N	4	NS		DCD_09.02.02-49
Component cooling water system piping and valves related to components installed in turbine building from ~~and excluding isolation~~stop valves NCS-~~AOV-662~~VLV-661A,B up to ~~and excluding~~ stop valves NCS-VLV-669A,B	~~4~~8	T/B ~~R/B~~	D	~~N/A~~N	4	NS		DCD_03.02.02-17 DCD_03.04.01-29 S02 DCD_09.02.02-49
Component cooling water system piping and valves related to reactor coolant pumps between the containment isolation valves NCS-MOV-436A,447A (excluding) and NCS-VLV-403A,437A (excluding) and the valves NCS-SRV-406A,B,435A (including)	3	PCCV	C	~~YES~~Q	3	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 26 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Makeup line piping and valves from and including the valves NCS-VLV-051A,B and 054A,B up to and excluding the valves NCS-~~LCV-010,020~~VLV-053A,B	~~4~~5	R/B	~~D~~N/A	~~N/AN~~A	~~4~~5	~~II NS~~II	Note 5.a	DCD_09.02.02-68 DCD_03.04.01-29 S02
Makeup line piping and valves from and ~~including the valves NCS-VLV-061A,B up to and~~ excluding the valves NCS-VLV-~~062~~063A,B	~~4~~7	R/B	~~D~~N/A	~~N/A~~A	~~4~~5	~~II~~Note 2	Note 5.c	DCD_09.02.02-68 DCD_03.02.02-17
Makeup line piping and valves from and including the valves ~~NCS-VLV-065A,B up to and including the valves NCS-LCV-010,020 and~~ NCS-VLV-~~062A,B~~053A,B and NCS-VLV-063A,B	3	R/B	C	~~YES~~Q	3	I		DCD_09.02.02-68
Nitrogen gas supply line piping and valves from and including the valves NCS-VLV-041A,B up to and excluding the valves NCS-PCV-012,022 and NCS-VLV-045~~A,~~B	~~1~~5	R/B	N/A	~~N/A~~A	5	NS	Note 5.d	DCD_03.02.02-17
Chemical addition line piping and valves up to and excluding the valves NCS-VLV-047A,B	10	R/B	N/A	~~N/A~~N	5	NS		
Component cooling water system piping from alternative component cooling water supply/ return headers A1 to and including the valve(NCS-MOV-321A, 323A, 325A, 326A)	3	R/B	C	Q	3	I		DCD_09.02.02-80 DCD_03.02.02-17
Component cooling water system piping from alternative component cooling water supply/ return headers C1 to and including the valve (NCS-MOV-241, 242, 321B, 323B, 325B, 326B)	3	R/B	C	Q	3	I		DCD_09.02.02-80 DCD_03.02.02-17
12. Spent Fuel Pit Cooling and Purification System (SFPCS)								

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 27 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes
Spent fuel pit pumps	3	R/B	C	~~YES~~Q	3	I	
Spent fuel pit heat exchangers	3	R/B	C	~~YES~~Q	3	I	
Spent fuel pit filters	8	A/B	D	~~N/A~~N	4	NS	
Spent fuel pit strainers	~~8~~4	A/B	D	~~N/A~~A	4	NS	Note 5.d
Spent fuel pit demineralizers	8	A/B	D	~~N/A~~N	4	NS	
Spent fuel pit cooling piping and valves up to and including the following valves: Primary makeup line isolation valve SFS-VLV-026,~~027~~028 and SFS-VLV-030,031,032 Purification line isolation valves SFS-~~VLV~~MOV-~~101~~002A,B	3	R/B	C	~~YES~~Q	3	I	
Spent fuel pit purification piping and valves ~~from but excluding valve SFS-VLVMOV-101002A, B up to but excluding valve SFS-VLV-133A,B, A,B Purification crosstie piping and valves~~inside A/B excluding the wall that separates R/B and A/B	8	~~R/B~~ A/B	D	~~N/A~~N	4	NS	
Spent fuel pit purification piping and valves from but excluding valve SFS-MOV-002A,B and SFS-VLV-103A,B up to and including the wall that separates R/B and A/B	4	R/B	D	A	4	II	Note 5.a
Spent fuel pit purification piping and valves from and including the wall that separates R/B and A/B up to but excluding valve SFS-VLV-133A,B	4	R/B	D	A	4	II	Note 5.a
Spent fuel pit cooling piping and valves from but excluding RHS-VLV-032A,D (return line from containment spray/ residual heat removal system)	3	R/B	C	~~YES~~Q	3	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 34 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Piping from the refueling water storage auxiliary tank up to and excluding the valve CVS-VLV-591	4	O/R R/B	D	~~N/A~~A	4	NS / II	Note 5.d / Note 5.a	DCD_03.04.01-29 S02
RWSP overflow piping to C/V drain pump room	2	PCCV	B	Q	2	I		MIC-03-03-00043
Piping and valves in the refueling water storage system except the foregoing piping and valves	~~8~~4	PCCV R/B	D	~~N/A~~A	4	NS / II	Note 5.d / Note 5.a	DCD_03.02.02-17 DCD_03.04.01-29 S02
18. Compressed Air and Gas System								
Instrument air compressors package	~~9~~59	T/B	N/A	~~N/A~~AN/A	5	NS	~~Note 5.d~~	DCD_03.02.02-17
Service air compressors package	9	T/B	N/A	~~N/A~~N	5	NS		
Compressed air and gas system piping and valves except the containment penetration noted below	~~9~~59	PCCV R/B A/B T/B	N/A	~~N/A~~AN/A	5	NS	~~Note 5.d~~	DCD_03.02.02-22
Compressed air and gas system containment isolation valves and piping between the valves	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
19. Primary Make-Up Water System								
Primary makeup water tank	8	O/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Primary makeup water pump	8	A/B	D	~~N/A~~N	4	NS		
Primary makeup water system valves and piping from and including PWS-VLV-005	8	R/B A/B O/B	D	~~N/A~~N	4	NS		
Primary makeup water system from deaerated supply line up to but excluding PWS-VLV-005, and upstream and downstream of PWS-VLV-060	9	R/B A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 35 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Primary makeup water system valves and pipings from and including the wall that separates R/B and A/B on the downstream valves PWS-VLV-027A,B up to and excluding valves RCS-VLV-136, PSS-VLV-221, CVS-FCV-128 and PWS-AOV-045A,B	4	R/B	D	A	4	II	Note 5.a	DCD_03.04.01-29 S02
Primary makeup water system piping and valves from and including the wall that separates R/B and A/B on the downstream valves PWS-VLV-060 up to and excluding NCS-VLV-051A,B and VWS-VLV-266A,B,C,D	5	PS/B R/B	N/A	A	5	II	Note 5.a	
20. Demineralized Water System								
Demineralized water system containment isolation valves and piping between the valves	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Demineralized water system piping and valves from and including the wall that separates R/B and A/B up to but excluding valve DWS-VLV-004	5	R/B	N/A	A	5	II	Note 5.a	DCD_03.04.01-29 S02
Demineralized water system piping and valves except ~~the containment penetration~~ noted above	~~9~~10	PCCV ~~R/B~~ A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
21. Auxiliary Steam Supply System								
(Deleted)								
(Deleted)								
(Deleted)								
Auxiliary steam supply system drain monitor heat exchanger	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Auxiliary steam supply system drain tank	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 38 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Containment vessel atmosphere gas sampling compressor	~~4~~8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Containment vessel atmosphere sampling inlet, outlet valve PSS-MOV-301, 312	~~4~~8	R/B	D	~~N/A~~N	4	~~I~~NS	The SSE will not result in a failure and interaction of these components that adversely affect the function of Containment Airborne Particulate Radioactivity Monitor addressed by RG 1.45.	DCD_03.02.02-17
Process and post-accident sampling systems piping and valves within following boundaries: From and excluding PSS-MOV-031A,B up to and including the wall that separates R/B and A/B, PSS-VLV-204, 207, 209 and 221; From and excluding PSS-MOV-052A through D up to A,B-Sample heat exchanger	4	R/B	D	A	4	II	Note 5.a	DCD_03.04.01-29 S02
Process and post-accident sampling systems piping and valves not specifically described above (excluding PSS-MOV-301, 312)	~~4~~8	R/B A/B,AC/B	D	~~N/A~~N	4	NS		
~~PSS-MOV-301~~	~~4~~	~~R/B~~	~~D~~	~~N/A~~	~~4~~	~~I~~		DCD_03.02.02-17
~~PSS-MOV-312~~	~~4~~	~~R/B~~	~~D~~	~~N/A~~	~~4~~	~~I~~		
Sample hood and sample panel	~~4~~8	AC/B	D	~~N/A~~N	4	NS		
Post accident liquid sample hood	~~4~~8	R/B	D	~~N/A~~N	4	NS		
25. Equipment and Floor drainage System								

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 39 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Drain piping, valves and sump in the containment	6	PCCV	N/A	~~N/A~~A	6	Note 1	Note 5.b The SSE will not result in a failure and interaction of these components that adversely affect the function of containment sump level and flow monitoring system addressed by RG 1.45.	DCD_03.02.02-17
Drain piping, valves in radiological controlled area	6	R/B A/B AC/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Drain piping from and including the wall that separates R/B and A/B up to and the first valve located in the R/B for A/B non-radioactive drain line	5	R/B	N/A	A	5	II	Note 5.a	DCD_03.04.01-29 S02
Drain piping, valves, reactor building non-radioactive sump and sump pump in ~~reactor building except for RCA~~NRCA of reactor building except the line noted above	8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17 DCD_03.04.01-29 S02
Drain piping, valves, turbine building sump and sump pump in turbine building	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Drain piping, valves in auxiliary building and access control building, except for RCA	10	A/B,AC/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Drain piping, valves in power source building	10	PS/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 40 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes
Drain piping valves related to ESF rooms drain isolation FDS-VLV-001A,B,C,D	3	R/B	C	~~YES~~Q	3	I	
26. Potable and Sanitary Water System							
Potable and Sanitary Water System pipings and valves within R/B including the wall that separates R/B and other buildings	5	R/B	N/A	A	5	II	Note 5.a
Potable and Sanitary Water System components, piping and valves except noted above	~~5 or~~10	~~R/B,~~A/B,AC/B T/B	N/A	~~N/AA or~~ N	5	~~II or~~ NS	~~Piping and valves within the MCR compartment are designed as Seismic Category II.~~
27. Emergency Gas Turbine Auxiliary System							
Emergency Gas Turbine	3	PS/B	N/A	Q	5	I	
Fuel oil storage tanks	3	PSFSV	C	~~YES~~Q	3	I	
Fuel oil transfer pumps	3	PSFSV	C	~~YES~~Q	3	I	
Fuel oil transfer pump suction lines from EPS fuel oil storage tank to EPS fuel oil transfer pumps	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump suction line outlet check valves	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump suction line isolation valves	3	PSFSV	C	Q	3	I	
Fuel oil day tanks	3	PS/B	C	~~YES~~Q	3	I	
Fuel oil transfer pump discharge lines up to EPS fuel oil day tank	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump discharge line check valves	3	PSFSV	C	Q	3	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 57 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Non-essential chilled water pumps	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-essential chilled water compression tanks	9	A/B	N/A	~~N/A~~N	5	NS		
Non-essential chilled water system cooling towers	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-essential chilled water system condenser water pumps	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-essential chilled water chemical feed tank	10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Piping and valves (except portion of the containment penetration)	9	PCCV R/B A/B PS/B T/B	N/A	~~N/A~~N	5	NS	~~Piping and valves within areas containing safety related equipment are designed as seismic category II.~~	DCD_03.02.02-17 DCD_09.02.02-70
Piping and valves ~~within areas containing safety related equipment~~ (except portion of the containment penetration)	5	PCCV R/B ~~A/B PS/B T/B~~	N/A	A	5	II	Note 5.a	DCD_03.04.01-29 S02 DCD_09.02.02-70
(Deleted)								
Piping and valves between and including the containment isolation valves VWS-MOV-403 and 421, VWS-MOV-422, VLV-423 and 407	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
~~Valves VWS-MOV-424,425~~	~~3~~	~~R/B~~	~~C~~	~~YES~~	~~5~~	~~I~~		DCD_09.02.02-80
Non-essential chilled water chemical feed tank supply and return line piping and valves between VWS-VLV-571 and VWS-VLV-574	10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
48. Containment Hydrogen Control System								

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 60 of 60)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes
The system components up to the first piping restraint at the interface between the reactor building and the turbine building	8	T/B	D	~~N/A~~N	4	NS	
63. Secondary side Chemical Injection System (SCIS)							
~~Secondary chemical injection system~~SCIS components	9	T/B	N/A	~~N/A~~N	5	NS	

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Notes:

1. Seismic category meeting RG 1.143 (Reference 3.2-10) is applied. Portions of the Equipment Class 6 SSCs on which seismic category II requirements are imposed are designed to comply with both the requirements of RG 1.143 and seismic category II.
2. Seismic category meeting RG 1.189 (Reference 3.2-11) is applied. Portions of the Equipment Class 7 SSCs on which seismic category II requirements are imposed are designed to comply with both the requirements of RG 1.189 and seismic category II.
3. Identification number for "Code and Standards"
   (1) ASME Code, Section III, Class 1 (Reference 3.2-14)
   (2) ASME Code, Section III, Class 2 (Reference 3.2-14)
   (3) ASME Code, Section III, Class 3 (Reference 3.2-14)
   (4) RG 1.26 (Reference 3.2-13), Table 1, Quality Standards for Class D
   (5) Codes and standards as defined in design bases
   (6) Codes and standards, and guidelines provided in RG 1.143 (Reference 3.2-10), for design of SSCs for Radwaste Facility
   (7) The codes and standards applicable to fire protection systems follow the guidance of RG 1.189 Section 1.7, and National Fire Protection Association 804.
4. ~~Seismic category II SSCs meet the pertinent QA requirements of 10 CFR 50, Appendix B. (Refer to Subsection 3.2.1.1.2)~~Seismic category: The designations "I" or "II" indicate that the design requirements of Seismic Category I or II equipment are applied as described in Subsection 3.2.1 and Section 3.7, Seismic Design. Equipment that is not designated "I" or "II" is designated "NS."
5. Quality Assurance Classification: The designation "Q" indicates that the quality assurance requirements of 10 CFR 50, Appendix B, are applied in accordance with the quality assurance program described in Chapter 17. The designation "A" indicates that augmented quality assurance requirements are applied, commensurate with the SSCs contribution to safety or credited for regulatory events for one or more of the following reasons:
   a. Nonsafety-related equipment required to be designed in accordance with special seismic design requirements, such as seismic category II requirements. See note 4.
   b. Nonsafety-related equipment required to be designed in accordance with radioactive waste management system requirements from RG 1.143 for Category RW-IIa [See note 3(6)]. The radioactive waste management system components conform to Regulatory Guide 1.143 Table 1 [see note 3(6)].
   c. Nonsafety-related equipment required to be designed in accordance with fire protection requirements from 10 CFR 50.48 and RG 1.189. A quality assurance program meets the guidance of RG 1.189.
   d. Nonsafety-related equipment not otherwise identified in notes 5(a) though 5(c) and are identified as risk-significant in Table 17.4-1 or credited for regulatory events such as ATWS and SBO.

The designation "N" indicates that neither 10CFR50 Appendix B nor augmented quality standards are required.

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3.4.1.3 Flood Protection from Internal Sources

The US-APWR SSCs are designed to accommodate the effects of, and to be compatible with, the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including LOCAs. This subsection addresses the accommodations made for flooding from internal water sources, specifically from the following:

- Earthquakes
- Pipe breaks and cracks
- Fire fighting operations
- Pump mechanical seal failures

The combination of events is not considered. However, an earthquake event followed by fire fighting operations for an earthquake induced fire is considered.

Full-circumferential ruptures of non-seismic piping and failures of non-seismic equipment located in the R/B or power source buildings (PS/Bs) are considered in the evaluation of flooding caused by an earthquake. Non-seismic equipment~~For flood events caused by an earthquake, equipment or pipe (not classified as seismic category I) in the R/B are assumed to be fully compromised and the total volume of the fluid contained within the subject equipment or pipe contributes to the flood volume. Equipment~~ or piping ~~not classified as seismic category I~~ in areas outside of the area of concern is also assumed to be fully compromised, and if the discharge fluids can not be demonstrated to be excluded from the area of concern, their volume is included in the flood volume. The US-APWR is designed for maximum water levels created by internal flooding sources. The internal flood design accommodates the effects of, and is compatible with, environmental conditions associated with normal operations, maintenance, testing, and postulated accidents, including LOCAs. DCD_03.04.01-29

Water-tight doors are used as protective barriers to prevent flood waters from spreading to adjacent divisions in various buildings and elevations. ~~Water tight doors have remote position indication for closure verification and are periodically inspected and tested to ensure proper functionality.~~Water-tight doors have remote position indication for closure verification and are subject to periodic visual inspection and functional testing to help maintain and demonstrate meeting their design function. Any aging-related degradation or fault is identified and repaired. The COL Applicant is responsible for developing inspection and testing~~are performed in accordance with operating~~ procedures ~~developed as per Subsection 13.5.2.~~in accordance with manufacturer recommendations so that each water-tight door remains capable of performing its intended function. DCD_03.04.01-32 DCD_03.04.01-32 S01

Open pits are isolated within water tight compartments using water tight doors, penetration seals, and normally closed floor drains. In this manner, flooding effects caused by open pit water sloshing are considered.

For flood events caused by the postulated failure of piping, defined in Section 3.6, the rupture of the single worst-case piping in the area of concern is assumed in the flood

analysis for each area of concern. The discharge volume is calculated according to "Subcompartment Pressure and Temperature Transient Analysis in Light Water Reactors", American National Standards Institute (ANSI)/American Nuclear Society (ANS) 56.10-1987, Section 3 (Reference 3.4-6), and is included in the pipe break and cracks flood evaluation. The structures adjacent to the postulated pipe rupture locations are also designed for the maximum associated hydrodynamic loads due to a pipe failure as discussed in Section 3.6. The loads and load combinations are addressed in detail in Section 3.8.

In the flooding effects from fire fighting operations, water discharged from only fire hose stations is assumed. The fire fighting operations are assumed to continue for a period of 2 hours from two hose stations, on the basis of the Section 3.2 of RG 1.189. The discharge rate of 125 gpm per hose station is applied, assuming the use of a hose station that can be handled by untrained persons~~In fire fighting operations, a discharge rate of 125 gpm is assumed for a period of 2 hours from two hose stations~~. DCD_03.04.01-29

Pump mechanical seal failures of concern are limited to the active pumps identified in Section 3.9. Seal failure is a low probability event based on the use of robust pump mechanical seals. Additionally, monitoring of mechanical seal water temperature, pressure, and flow rate across the pump mechanical seals provides the means of limiting the effects of pump seal failure through early detection and timely corrective action. As such, pump mechanical seal failure presents a sufficiently low probability of occurrence and flood volume that it can be credibly ignored.

The formulae and methodology of "Design Criteria for Protection against the Effects of Compartment Flooding in Light Water Reactor Plants", ANSI/ANS-56.11-1988 (Reference 3.4-7) are used when analyzing flow rates through unusual features such as stairwells and floor/wall openings.

The areas of concern within the US-APWR are as follows:

- R/B
  - Inside the PCCV

    Systems to be protected within the PCCV are the RCS, the safety injection system (SIS), RHRS, the CSS, and the containment boundary.

    The components to be protected from flooding in the protected systems are the motor operated components, such as valves and electric/instrumentation components.

  - Outside the PCCV

    US-APWR R/B consists of a radiological controlled area (RCA) and a non-radiological controlled area (NRCA) separated physically by concrete barrier walls. These concrete barrier walls are designed to preclude flooding between the RCA and the NRCA. Piping, instrumentation, HVAC duct, conduit, and cable trays installed through a flood barrier wall are routed above the maximum flood level or provided with water-tight seals.

- R/B RCA

  Systems to be protected in the RCA of the R/B are the SIS, the RHRS, the CSS, the containment boundary, the safeguard component area HVAC system, and the annulus air clean up system.

  In the systems to be protected, the components to be protected from flooding are the motor driven pumps, the valves, and the HVAC fans and dampers, the electric panels, and the electric/instrumentation components within the relevant system.

  Instrumentation for flood detection is installed in the containment annulus compartment since the compartment houses mechanical penetrations including piping systems containing water. The instrumentation is designed to alarm when the annulus compartment is flooded.

- R/B NRCA

  The NRCA of the R/B adjoins the east and west PS/Bs and the T/B, with personnel access between all three areas.

  The systems to be protected in the NRCA of the R/B are the CCWS, the emergency feedwater system (EFWS), the electrical panels, the Class 1E electric/instrumentation components, and the HVAC fans and dampers for these systems.

  Evaluation of flooding occurring in the essential service water pipe chase (ESWPC) is site-specific. DCD_03.04.01-29 S02

- PS/B DCD_03.04.01-29

  The east and west PS/Bs adjoin the R/B.

  The equipment to be protected in the east area of PS/B are the A, B, C, and D train Essential Chiller Units, and A, B, C, and D train Class 1E GTG.

- A/B

  The A/B adjoins the R/B. There are no SSCs to be protected from flooding the A/B.

- T/B

  The T/B adjoins the NRCA of the R/B. The T/B is subject to flooding from a variety of potential sources including the circulating water, service water, condensate/feedwater, CCW, demineralized water, and fire protection systems.

  The bounding flooding source for the T/B is a break in the circulating water piping.

  A break in the circulating water system (CWS) piping would result in water flowing into the lower elevation of the T/B, elevation -18 ft, 0 in. When the flood water fills

Therefore, flood water is assumed to run across the area except the SI pump rooms and CS/RHR pump rooms.

Flood Events are considered as follows;

- Earthquake

  Most of the water-containing equipment and piping in the RCA of the R/B are excluded from flooding source because they are designed to withstand Safe Shutdown Earthquake (SSE). The flood water volume is evaluated on the basis of amounts of water contained in ~~or estimated flow rates from~~ other non-seismic equipment and/or piping~~Most of equipments and piping contained water in the RCA of the R/B are excluded from flooding source because these components are designed as seismic category I or II. However, it is assumed that there is other miscellaneous piping designed as non-seismic, and the amount of water contained by this piping is considered as flood water~~. DCD_03.04.01-29 DCD_03.04.01-29 S02

  The amount of water released in the seismic event is ~~260~~250 ft^3 in the east area and ~~4,400~~320 ft^3 in the west area~~contained by other miscellaneous piping is 1,060 ft^3~~. DCD_03.04.01-29 S02

- High-energy line break/moderate-energy line break (HELB/MELB)

  The high energy line in the RCA of R/B consists of the charging line, letdown line, and seal water injection line of the chemical and volume control system (CVCS). All these lines are not routed within the east side of R/B. Of these lines, the line break in the charging piping in the west side of R/B RCA constitutes the most severe flooding event. In this event, release of water from the charging piping continues until the line is automatically isolated. The time required for automatic closure of an isolation valve after an isolation signal is conservatively estimated to be 5 minutes.~~The high energy piping in the RCA of R/B consists of the charging pipe, letdown pipe, and seal water injection piping of the CVCS. Of this piping, the line break occurs in the charging piping at the charging pump discharge nozzle. The water volume released by this break consists of the following:~~ DCD_03.04.01-29

  - ~~The total content of the VCT, 670 ft^3.~~
  - ~~The volume of water from the RWSAT, which would be released between the time of the HELB event and the time of the RWSAT isolation from the line break. The gravity flow rate from the RWSAT is 14,400 ft^3/hr. The time duration between HELB and isolation is taken as 45 minutes. Thus, the volume of the RWSAT released is 10,800 ft^3.~~
  - ~~The associated pipe, assumed to be 100 ft^3, between the two tanks and the charging pump.~~

  The total water volume from this HELB event in the west area is 15,000 ft^3~~This total water volume from the HELB event is 11,570 ft^3~~.

Most of the water-containing moderate energy piping in the RCA of the R/B is excluded from flooding source because that piping is to be designed so that a crack is not required to be postulated in the line in accordance with the criteria described in subsection 3.6.2.1.2.2. This is attained by maintaining stress on the pipes below the threshold by means of route and support design. Volume of flood water discharged from a postulated crack in the rest of the piping is conservatively estimated on the basis of the volume of water contained in the piping and any connected reservoir. The maximum water volume released in the MELB of piping routed on this elevation level is 250 ft^3 in both the east and west area ~~Moderate energy piping whose failure may leads to discharge of more than 4,000 ft^3 of water is designed not to be subject to the pipe break postulation by means of route and support design. Therefore, the most severe postulated flooding event caused by a crack in the rest of the moderate energy piping results in discharged water volume of equal to or less than 4,000 ft^3 in both east and west area~~ The flow path from the RWSAT is through a six in. pipe line containing two parallel sets of motor operated valves with two valves in each set. These valves are normally closed but are open upon signal from the reactor make up water system. The HELB is conservatively considered to occur when the valves of the reactor make up water system have been actuated open and remain open until actuated closed by plant personnel. The amount of time allotted to transpire between the HELB event and closure actuation is conservatively assumed to be 45 minutes. Detection of the HELB occurs through multiple paths. The primary path is the charging pump trip logic circuit. The secondary path is the charging pump rooms leak detection system. In addition, the CVCS line from the RWSAT and the charging pumps contains a flow indicating orifice which dually serves as an indicator of excess flow from the RWSAT and also as flow restrictor. Credit for the flow restriction is not taken.

DCD_03.04.01-29 S02

DCD_03.04.01-29

- Fire Fighting Operations

  Flooding contribution from fire-fighting operations is based on the full operation of two hose stations for 2 hours. The flow rate from 1 hose station is 125 gpm. With two stations operating for 2 hours, the total volume of water is 4,010 ft^3.

Based on the above, the worst case flooding on the west side of the R/B is a HELB at 15,000~~11,570~~ ft^3. On the east side of the plant, the worst case flooding is an earthquake followed by fire fighting operations due to an earthquake induced fire at 4,260~~4,270~~5,070 ft^3.

DCD_03.04.01-29
DCD_03.04.01-29 S02

The square footage of floor area subject to flooding at elevation -26 ft, 4 in. is as follows:

- East side: 4,100 ft^2
- West side: 4,200~~5,100~~ ft^2

DCD_03.04.01-29

Based on these values, the maximum water levels are as follows:

DCD_03.04.01-29 S02

- East side: 1.040~~524~~ ft above elevation -26 ft, 4 in.

DCD_03.04.01-29

- West side: 3.582.27 ft above elevation -26 ft, 4 in. DCD_03.04.01-29

The SI pump and CS/RHR pump are installed in a room which prevents flow-in water by water-tight door, and floor drains of these rooms are separated by closed valve or check valve for each train. Therefore, the pumps are not flooded. Instrumentation of the SI pump and CS/RHR pump are installed above the flood water level.

Elevation 3 ft, 7 in.

Flood waters occurring above elevation -26 ft, 4 in. drain to floor elevation -26 ft, 4 in. through floor drains, stairwell, elevator shaft and/or equipment hatch. However, the evaluation above elevation -26 ft, 4 in. conservatively assumes that the water drainage will not reduce the flood water level at the floor of originflooding water is not drained. DCD_03.04.01-29

The equipment to be protected in the east area of RCA at elevation 3 ft, 7 in. are the A and B train CS/RHR heat exchanger (HX), the A and B train safeguard component area air handling unit, and the A train SFP pump. The equipment to be protected in the west area of RCA at elevation 3 ft, 7 in. are the C and D train CS/RHR HX, the C and D train safeguard component area air handling unit, and B train SFP pump.

The CS/RHR HX and the safeguard component area air handling unit are isolated by concrete walls and water-tight door. Moreover, floor drains of these rooms are separated from floor drains outside of these rooms and are also separated for each train. Therefore, flood water is assumed to run across the area except the CS/RHR HX and the safeguard component area air handling unit rooms.

Flood Events are considered as follows:

- Earthquake

  The flood water volume is estimated on the basis of the amount of water contained in non-seismic equipment or piping. The amount of water discharged in the seismic event is 10 ft^3 in the east area and 70 ft^3 in the west area100 ft^3 in both the east and west areaThe total water volume from the earthquake event is same as that of elevation -26 ft, 4 in. DCD_03.04.01-29 DCD_03.04.01-29 S02

- HELB/MELB

  HELB event is not a concern, because the flood water discharged from the postulated pipe break will immediately flow down to the lower floor level through floor opening. DCD_03.04.01-29

  The maximumtotal water volume from the MELB event is 110 ft^3 in both the east and west areasame as that of elevation -26 ft, 4 inat the discharge nozzle of the CVCS charging pump occurs at a location on a lower floor level. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,020 ft^3 in the east area and 4,080 ft^3 in the west area~~4,1105,070 ft^3 in both the east and west area~~. DCD_03.04.01-29 S02 DCD_03.04.01-29

The footage of subject area and the water level are as follows:

- East side: 5,800~~7,250400~~ ft^2 area, 0.70~~5769~~ ft water height above elevation 3 ft, 7 in. DCD_03.04.01-29 DCD_03.04.01-29 S02
- West side: 5,200~~750~~ ft^2 area, 0.79~~808~~ ft water height above elevation 3 ft, 7 in. DCD_03.04.01-29 DCD_03.04.01-29 S02

CS/RHR HX and safeguard component area air handling unit are installed in the room which prevents flow-in water by water-tight door, and floor drains of these rooms are separated from floor drains outside of these rooms and are also separated for each train. Therefore, components are not flooded. The instrumentation of the CS/RHR HX and safeguard component area air handling unit are installed above the flood water level.

The height (top of concrete) of A and B train SFP pump foundations are 1.0 ft above the floor elevation 3 ft, 7 in. Therefore, the SFP pumps are not flooded.

Elevation 25 ft, 3 in.

The equipment to be protected in the east and west area of RCA elevation 25 ft, 3 in. are the containment isolation valves in piping penetration room.

Flood Events are considered as follows:

- Earthquake

  The amount of water discharged from non-seismic equipment or piping in the seismic event is 10 ft^3 in both the east and west area~~100 ft^3 in the east area and 10 ft^3 in the west areaThe total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29 DCD_03.04.01-29 S02

- HELB/MELB

  HELB event is not a concern, because the flood water discharged from the postulated pipe break will immediately flow to the lower floor level through floor opening. DCD_03.04.01-29

  The maximum~~total~~ water volume from the MELB event is 110 ft^3 in both the east and west area~~same as that of elevation -26 ft, 4 inpostulated pipe break at the discharge nozzle of the CVCS charging pump occurs at a location on a lower floor level~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,020 ft^3 in both the east and west area~~4,1105,070 ft^3 in both the east area, and 4,020 ft^3 in the west area~~. DCD_03.04.01-29 S02 DCD_03.04.01-29

The both east and west areas are isolated by concrete walls and the fireproof doors and/or air-tight doors which are not water-tight. Therefore, flood water is assumed to run across the each area.

The footage of subject area and the water level are as follows;

- East side: 9,450~~500~~ ft^2 area, 0.434~~4453~~ ft water height above elevation 25 ft, 3 in. DCD_03.04.01-29 S02 DCD_03.04.01-29
- West side: 7,200~~350~~ ft^2 area, 0.56~~69~~ ft water height above elevation 25 ft, 3 in. DCD_03.04.01-29

The containment isolation valve motors are installed above the flood water level.

Elevation 50 ft, 2 in.

The equipments to be protected in the east and west area of RCA elevation 50 ft, 2 in. are annulus emergency exhaust filtration unit and junction boxes and cables in the electrical penetration rooms.

Flood Events are considered as follows;

- Earthquake

  The amount of water discharged from non-seismic equipment or piping in the seismic event is 10 ft^3 in the west area. There is no non-seismic water-containing equipment or piping in the east area on this floor~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29

- HELB/MELB

  HELB event is not a concern, because there is no high energy piping on or above this floor. DCD_03.04.01-29

  There is no water-containing moderate energy-piping in which a leakage crack should be postulated on or above this floor~~The total water volume from the MELB event is same as that of elevation -26 ft, 4 inthe postulated pipe break at the discharge nozzle of the CVCS charging pump occurs at a location on a lower floor level~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,0105,070 ft^3 in both the east area, and 4,020 ft^3 in the west area. DCD_03.04.01-29

The both east and west areas are isolated by concrete walls and the fireproof doors and/or air-tight doors which are not water-tight. Therefore, flood water is assumed to run across the each area.

The footage of subject area and the water level are as follows:

- East side: 8,87007,550 ft^2 area, 0.465854 ft above elevation 50 ft, 2 in. DCD_03.04.01-29
- West side: 6,650 ft^2 area, 0.6176 ft above elevation 50 ft, 2 in. DCD_03.04.01-29 S01

The annulus emergency exhaust filtration unit foundations (top of concrete) height is 1.0 ft above floor elevation 50 ft, 2in. As such, the annulus emergency exhaust filtration units are not flooded. The junction boxes and cables in the electrical penetration rooms is designed to be located at heights above the level of flood water.

Elevation 76 ft, 5 in.

Elevation 76 ft, 5 in. of the RCA is divided into two areas, east and west, by concrete wall and water-tight doors and the fuel handling area. The fuel handling area is isolated by installing the water-tight doors to walkway and/or doorways of stairwell to prevent flood water by sloshing of SFP spilling to other area.

The equipment to be protected from internal flooding on elevation 76 ft, 5 in. of the RCA are junction boxes and cables connected to the PCCV penetrations in the east and west electrical penetration areas.

There is no equipment to be protected in the fuel handling area.

Flood Events are considered as follows;

- Earthquake

  The amount of water discharged from non-seismic equipment or piping in the seismic event is 10 ft^3 in the west area. There is no non-seismic water-containing equipment or piping in the east area on this floorThe total water volume from the earthquake event is same as that of elevation -26 ft, 4 in. DCD_03.04.01-29

- HELB/MELB

  HELB event is not a concern, because there is no high energy piping on or above this floor. DCD_03.04.01-29

  There is no water-containing moderate energy-piping in which a leakage crack should be postulated on or above this floorThe total water volume from the MELB event is same as that of elevation -26 ft, 4 inthe postulated pipe break at the DCD_03.04.01-29 S02

~~discharge nozzle of the CVCS charging pump occurs at a location on a lower floor level~~. DCD_03.04.01-29

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,010~~5,070~~ ft^3 in ~~both~~ the east area, and 4,020 ft^3 in the west area. DCD_03.04.01-29

The both east and west areas are isolated by concrete walls and the fireproof doors and/or air-tight doors which are not water-tight. Therefore, flood water is assumed to run across the each area.

The footage of subject area and the water level are as follows:

- East side: 5,900~~6,050~~ ft^2 area, 0.68~~84~~ ft above elevation 76 ft, 5 in. DCD_03.04.01-29
- West side: ~~5,1~~4,900 ft^2 area, 0.~~7999~~83 ft above elevation 76 ft, 5 in. DCD_03.04.01-29 S01

The junction boxes and cables in the electrical penetration rooms are~~is~~ designed to be located at heights above the level of flood water. DCD_03.04.01-29

3.4.1.5.2.2 NRCA

The NRCA is arranged into rooms/compartments to provide a physical separation of the water containing components from the electrical components. This separation, along with the associated physical barriers (concrete walls and floors), minimizes the probability of component leaks affecting the electrical components.

All floors in the NRCA of the R/B are divided into the two areas, east and west, by concrete walls and/or water-tight doors. The concrete walls are designed to prevent flood water migration from one safety train to another. This is accomplished by installing piping, electrical conduit, HVAC duct, cable trays, etc., penetrations above the maximum flood level and/or by sealing penetrations.

Two types of drain systems are provided in the NRCA of the R/B - an equipment drain system and a room/compartment floor drain system. The equipment drain system collects water leaking from components and routes the leakage to the non-radioactive drain sump. The floor drain water is also routed to the non-radioactive drain sump at elevation -26 ft, 4 in. The floor drains of the east areas are connected and finally go into the A-R/B non-radioactive sump. The floor drains of west areas are connected and finally go into the B-R/B non-radioactive sump. There is no cross-connection between east area drains and west area drains. Therefore, east and west areas are evaluated as independent areas.

The drains from the NRCA of A/B and the PS/B are also collected in the R/B non-radioactive sumps. The water in the R/B non-radioactive sumps is transferred to the T/B

sump by sump pumps. The evaluation of flooding in the NRCA area of the R/B conservatively excludes the use of the sump pump.

The drains from the main steam (MS) / feedwater (FW) piping area is directly collected in the T/B sump. The MS/FW piping area is addressed separately below.

Elevation -26 ft, 4 in.

The systems to be protected at elevation -26 ft, 4 in. of the NRCA of the R/B are the four trains (A, B, C, and D) of the component cooling water (CCW) heat exchanger and pump and four trains (A, B ,C and D) of the emergency feedwater (EFW) pump.

The east side includes the two trains (A and B) of the CCW HX and pump rooms, and two trains (A and B) of the EFW pump room. The west side includes the two trains (C and D) of the CCW HX and pump room, and two trains (C and D) of the EFW pump room.

Equipment rooms are isolated by concrete walls and the fireproof doors which are not water-tight. Therefore, flood water is assumed to run across the area.

In addition, since the doorways to the PS/B which adjoined each east and west area of R/B are not water-tight, flood water of the NRCA of R/B is assumed to flow into the whole area of the PS/B, elevation -26 ft, 4 in.

Therefore, the subject area of east is the east side of R/B and PS/B. Similarly, the subject area of west is the west side of R/B and PS/B.

Flood events are considered as follows:

- Earthquake

  Most of the water-containing equipment and piping in the NRCA of the R/B and PS/B are excluded from flooding source because they are designed to withstand Safe Shutdown Earthquake (SSE). The flood water volume is estimated on the basis of the amount of water contained in other non-seismic equipment or piping. DCD_03.04.01-29

  The amount of water discharged in the seismic event is 750 ft^3 in the east area and 760 ft^3 in the west area~~540700 ft^3 in both the east and west areas. In the flooding events caused by an earthquake, the following components are assumed to fail and release all of their contents:~~ DCD_03.04.01-29 S02 DCD_03.04.01-29 S01

  - ~~Non seismic category I piping in the NRCA of the R/B, total volume of water held by these pipe lines is 700 ft^3.~~

  - ~~Non seismic category I components in the adjacent A/B are considered damaged. Water from these failed components is conservatively assumed to flow to the NRCA portion of the R/B through floor drains. The components in these buildings which are not seismic category I are associated with the demineralized water system, non-safety chilled water. The total volume of water held by these systems is 1,590 ft^3. Since floor drains of the NRCA of the A/B are collected by non-radioactive drain sump, the water of these areas~~

~~does not flow into the east area. Therefore, the water generated in the NRCA of the A/B is taken into consideration only to evaluation of the west area.~~ DCD_03.04.01-29

- HELB/MELB

  HELB event is not a concern, because ~~there are no piping breaks, which are assumed to occur in the subject area~~break of turbine driven emergency feedwater pump steam piping drain line, which is the only high energy line in these areas, results in less severe flooding event than that caused by earthquake concurrent with fire-fighting operation. DCD_03.04.01-29

  Most of the water-containing moderate energy piping in the NRCA of the R/B and the PS/B is excluded from flooding source because that piping is to be designed so that a crack is not required to be postulated in the line in accordance with the criteria described in subsection 3.6.2.1.2.2. This is attained by maintaining stress on the pipes below the threshold by means of route and support design. Volume of flood water discharged from a postulated crack in the rest of the piping is conservatively estimated on the basis of the volume of water contained in the piping and any connected reservoir. The maximum water volume released in the MELB of piping routed on this elevation level is 740 ft^3 in both the east and west area~~Moderate energy piping whose failure may leads to discharge of more than 4,000 ft^3 of water is designed not to be subject to the pipe break postulation by means of route and support design. Therefore, the most severe postulated flooding event caused by a crack in the rest of the moderate energy piping results in discharged water volume of equal to or less than 4,000 ft^3 in both east and west area~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The flooding contribution from fire fighting operations is based on the full operation of two hose stations for 2 hours. The flow rate from one hose station is 125 gpm. With two stations operating for 2 hours, the total volume of water is 4,010 ft^3.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is as follows:

- East side: 4,760~~4,550710~~ ft^3 DCD_03.04.01-29 S02
- West side: 4,770~~4,7105506,300~~ ft^3 DCD_03.04.01-29

The square footage of floor area subject to flooding at elevation -26 feet, 4 inches is as follows: DCD_03.04.01-29 S01

- East side: 11~~0~~,500 ft^2 DCD_03.04.01-29
- West side: 11~~0~~,1~~5~~00 ft^2

Base on these values, the maximum water level is as follows: DCD_03.04.01-29 S02

- East side: 0.42~~405~~ ft above elevation -26 ft, 4 in. DCD_03.04.01-29
- West side: 0.43~~160~~ ft above elevation -26 ft, 4 in. DCD_03.04.01-29 S01

The pump foundations (top of concrete) height is 1.0 foot above floor elevation -26 ft, 4 in. As such, the pumps are not flooded. The instrumentation of each pump is designed to be located at heights above the level of flood water.

Elevation 3 ft, 7 in.

Flood waters occurring above elevation -26 ft, 4 in. drain to floor elevation -26 ft, 4 in. through floor drains, stairwell, elevator shaft and/or equipment hatch. However, the evaluation above elevation -26 ft, 4 in. conservatively assumes that the water drainage will not reduce the flood water level at the floor of origin~~flooding water is not drained~~. DCD_03.04.01-29

The equipment to be protected in the east area of NRCA at elevation 3 ft, 7 in. are the A and B train Class 1E electrical panels. Similarly, the equipment to be protected in the west area is the C and D train Class 1E electrical panels. The Class 1E electrical panel rooms are isolated from corridor by concrete walls and water-tight door. There are no floor drains in the Class 1E electrical panel rooms.

Since the doorway between the corridor in the east PS/B and east area of the R/B at elevation 3 ft, 7 in. is not water-tight, flood water in the east NRCA of the R/B is assumed to flow into the east PS/B, and vice versa. DCD_03.04.01-29

Flood events are considered as follows:

- Earthquake

  The flood water volume is estimated on the basis of the amount of water contained in non-seismic equipment or piping. The amount of water discharged in the seismic event is 10 ft^3 in both the east and west area~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29

- HELB/MELB

  HELB event is not a concern, because break of drain piping for turbine driven emergency feedwater pump steam piping results in less severe flooding event than that caused by earthquake concurrent with fire-fighting operation. DCD_03.04.01-29

  The maximum~~total~~ water volume from the MELB event is 20 ft^3 in both the east and west area~~same as that of elevation -26 ft, 4 inthere are no piping breaks, which are assumed to occur in the subject area~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,020~~710~~ ft^3 in both the east and west area. DCD_03.04.01-29

The footage of corridor area and the water level are as follows:

- East side: 4,3~~1,5~~00 ft^2 area, 0.94~~3.14~~ ft above elevation 3 ft, 7 in. DCD_03.04.01-29
- West side:1,500 ft^2 area, 2.68~~3.14~~ ft above elevation 3 ft, 7 in.

Class 1E electrical panels are installed in the room which prevents flow-in water by water-tight door. Therefore, panels are not flooded.

Elevation 25 ft, 3 in.

The equipment to be protected in the NRCA portion of elevation 25 ft, 3 in. is the main control panel and Class 1E I&C panels. The main control room and Class 1E I&C rooms are isolated from corridor by concrete walls and water-tight door.

Flood events are considered as follows;

- Earthquake

  The flood water volume is estimated on the basis of the amount of water contained in non-seismic equipment or piping. The amount of water discharged in the seismic event is 10 ft^3 in both the east and west area~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29

- High-Energy Line Break/Moderate-Energy Line Break (HELB/MELB)

  HELB event is not a concern, because break of drain piping for turbine driven emergency feedwater pump steam piping results in less severe flooding event than that caused by earthquake concurrent with fire-fighting operation. DCD_03.04.01-29

  The maximum~~total~~ water volume from the MELB event is 20 ft^3 in both the east and west area~~same as that of elevation -26 ft, 4 inthere are no piping breaks, which are assumed to occur in the subject area~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

~~Cracks are not postulated in the sanitary piping located in the MCR since it is 1 inch nominal diameter moderate energy fluid system piping.~~Since the potable and sanitary water system (PSWS) piping within the MCR compartment is moderate-energy fluid system piping which is designed to be excluded from the postulation of leakage crack during normal plant operation, and is designed as seismic category II to ensure its integrity during and after the SSE, the PSWS piping within the MCR compartment is not postulated to crack or break. DCD_03.04.01-31

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,020~~710~~ ft^3 in both the east and west area. DCD_03.04.01-29

The footage of corridor area and the water level are as follows;

- East side: 1,500 ft^2 area, 2.68~~3.14~~ ft above elevation 25 ft, 3 in. DCD_03.04.01-29
- West side: 1,700~~650~~ ft^2 area, 2.37~~85~~ ft above elevation 25 ft, 3 in.

The Class 1E I&C panels are installed in the room, which prevents flow-in water by the use of barriers and water-tight doors. Therefore, panels are not flooded. The MCR subject to regular access is protected from flooding by the use of barriers.

The MCR penetrations are designed to prevent water from flowing in by applying appropriate sealing features. The HVAC ducts coming from the MCR air handling units and the filter train units are routed horizontally above the postulated flooding level. The vertical HVAC ducts penetrate the MCR ceiling and are welded to embedded sleeves for penetration. The HVAC duct sections of concern and the embedded sleeves are designed to withstand the hydrostatic load of flooding. The penetrations of sanitary pipes also use the embedded sleeves (southern exterior wall of the R/B). Cables enter the MCR from beneath the raised MCR floor, and the penetrations at the control room envelope boundary may contain a liquid or clay filling and are water sealed. Therefore, flooding of the MCR through those penetrations is precluded through the use of appropriate sealing features.

Elevation 50 ft, 2 in.

The equipment to be protected in the elevation 50 ft, 2 in. of the NRCA is the MCR air handling units, Class 1E electrical room air handling units, and MCR emergency filtration units.

Flood events are considered as follows;

- Earthquake

  There is no non-seismic water-containing equipment or piping in both the east and west areas on or above this floor~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29

- High-Energy Line Break/Moderate-Energy Line Break (HELB/MELB)

  HELB event is not a concern, because there are no piping breaks, which are assumed to occur in the subject area.

  The maximum~~total~~ water volume from the MELB event is 20 ft^3 in both the east and west area~~same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29 DCD_03.04.01-29 S02

- Fire Fighting Operations

The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from ~~a combination of earthquake and~~ fire fighting operations. The total volume of flood water caused by this event ~~combination~~ is 4,0~~7~~10 ft^3 in both the east and west area. DCD_03.04.01-29

The footage of subject area and the water level are as follows;

- East side: 5,150~~400~~ ft^2 area, 0.78~~87~~ ft above elevation 50 ft, 2 in. DCD_03.04.01-29
- West side: 5,250~~500~~ ft^2 area, 0.77~~86~~ ft above elevation 50 ft, 2 in.

The MCR air handling units, Class 1E electrical room air handling units, as well as the MCR emergency filter units have a steel frame base installed on the top of the concrete foundations. The additional height of this base results in a total of 1.5 feet between the floor level and the filtration units. Therefore, when considering the steel frame base units, the current design has sufficient margin (i.e., 0.72~~63~~ feet above the postulated flood level) to protect against the postulated flooding. DCD_03.04.01-29

Elevation 76 ft, 5 in.

Elevation 76 ft, 5 in. of the NRCA is divided into the MS/FW piping area and other areas by concrete walls and water-tight doors. Moreover, the MS/FW piping area is divided into the two areas, east and west, by the concrete wall.

The equipment to be protected in the MS/FW piping area is the MS isolation valve, main feedwater isolation valve (MFIV), and MS depressurization valve.

The equipment to be protected in the subject area, except the MS/FW piping area, is the instrumentation of the EFW pit, and the remote shutdown console within the remote shutdown room.

Flood events in the MS/FW piping area are considered as follows:

- Earthquake

  The amount of water discharged from non-seismic equipment or piping in the seismic event is 2,700 ft^3 in both the east and west areas~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29

- HELB/MELB

  In the flooding events caused by the postulated failure of piping, the high energy piping consists of main steam, feedwater, and SG blowdown piping, within the MS/FW piping area. A rupture of the feedwater piping in this area represents the worst case flooding scenario for this area. This is based on a 1.0 ft^2 break, as defined in Section 3.6, in the feedwater piping upstream of the feedwater check valve. The rupture at this point results in feedwater from the SG and from within the associated feedwater piping flow back into and flooding the compartment. In

addition, the main feedwater pump is assumed to be pumping at the maximum flowrate. As a result of this scenario, the water level in the SG would decline resulting in a low level alarm/signal from the SG water level indication instrumentation. The low water signal initiates the feedwater isolation circuit. Based on actuation of the feedwater isolation circuit, the main feedwater pump is tripped, which stops the main feedwater pump. The volume of water which floods the main steam/feedwater pipe/relief valve compartment, based on the time required to reach the low water level set point, is 12,180 ft^3. The flood water occurring in the main steam/feed water piping room is drained to the T/B sump through the floor drain. Conservatively assuming that the drain line is clogged, the flood water will not be discharged by way of the floor drain.

Leakage cracks in moderate-energy piping do not result in flooding more severe than the rupture of the feedwater piping. DCD_03.04.01-29

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the above, the worst case flooding in the MS/FW piping area is a piping rupture at 12,180 ft^3. The floor area of the MS/FW piping area is 2,640 ft^2; therefore the water level caused by piping rupture area is 4.62 ft above elevation 65 ft, 0 in, the bottom of the MS/FW piping area. The actuators of valve to be protected are designed to be located at heights above the level of flood water. In addition, the bottom of doorways to the MS/FW piping area is at elevation 76 ft, 5 in. This is 11 ft, 5 in. above the floor at elevation 65 ft, 0 in, and the doorways are located at a level that is higher than the level of flood water. Therefore, the flood water flow from the MS/FW piping area to the balance of the NRCA portion of the R/B is not a consideration. DCD_03.04.01-29 S01

Flood events in the subject area except MS/FW piping room are considered as follows;

- Earthquake

  There is no non-seismic water-containing equipment or piping in both the east and west areas on or above this floor~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in. The EFW pit is isolated by installing the water-tight doors to doorway to prevent flood water by sloshing of EFW pit spilling to other area~~The EFW pit is isolated by installing the water-tight doors to doorway to prevent flood water by sloshing of EFW pit spilling to other area. DCD_03.04.01-29 DCD_03.04.01-29 S01

- HELB/MELB

  HELB event is not a concern, because maximum flood level within the MS/FW piping area is well below the door elevation as described above, and there are no high energy piping breaks which are assumed to occur outside of the MS/FW areas on or above this floor. DCD_03.04.01-29

The maximum~~total~~ water volume from the MELB event is 20 ft^3 in both the east and west area~~same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from ~~a combination of earthquake and~~ fire fighting operations. The total volume of flood water caused by this event~~combination~~ is 4,0~~7~~10 ft^3 in both the east and west area. DCD_03.04.01-29

The footage of subject area and the water level are as follows;

- East side: 3,150 ft^2 area, 1.28~~50~~ ft above elevation 76 ft, 5 in. DCD_03.04.01-29
- West side: 3,550~~800~~ ft^2 area, 1.13~~24~~ ft above elevation 76 ft, 5 in.

The instrumentation of the EFW pit is designed to be located at heights above the level of flood water. The remote shutdown console is installed in the remote shutdown room. There is no piping and therefore no flooding sources inside the remote shutdown room. In addition, the remote shutdown room is protected from in-flow of water from flood sources by a water-tight door.

3.4.1.5.3 R/B Flooding Events Impacting PS/B

The US-APWR PS/B includes an east and west PS/B that are adjoined by the NRCA of R/B.

The doorways provide potential flow paths from the NRCA of R/B to the PS/B. These flooding events are evaluated on a compartment basis.

All floors in the NRCA of the R/B are divided into two areas, east and west, by concrete walls and/or water-tight doors. The floor drain water is also routed to the non-radioactive drain sump at elevation -26 ft, 4 in. The floor drains of the east areas are connected and finally go into the A-R/B non-radioactive sump. The floor drains of west areas are connected and finally go into the B-R/B non-radioactive sump. There is no cross-connection between east and west area drains. Therefore, east and west areas are evaluated as independent areas.

Elevation -26 ft, 4 in.

The equipment to be protected in the east area of PS/B at elevation -26 ft, 4 in. are the A and B train Essential Chiller Units. Equipment to be protected in the west area are the C and D train Essential Chiller Units.

In both the east and west area, each room is divided ~~area is isolated~~ by a fire rated door instead of a water-tight door. Therefore, flood water is assumed to run across the entire area. In addition, the door to the adjoined NRCA of R/B is not a water-tight door, and the flood water from NRCA R/B is assumed to run across the PS/B. DCD_03.04.01-29

Flood Events are considered as follows;

- Earthquake

Most of the water-containing equipment and piping in the NRCA of the R/B and PS/B are excluded from flooding source because they are designed to withstand Safe Shutdown Earthquake (SSE). The flood water volume is estimated on the basis of the amount of water contained in other non-seismic equipment or piping. DCD_03.04.01-29

The amount of water discharged in the seismic event is 750 ft^3 in the east area and 760 ft^3 in the west area~~540700 ft^3 in both the east and west areasIn the flooding events caused by an earthquake, the following components are assumed to fail and release all of their contents:~~ DCD_03.04.01-29 S02 DCD_03.04.01-29 S01

- ~~Non-seismic category I piping in the NRCA of the R/B, total volume of water held by these pipe lines is 700 ft^3.~~
- ~~Non-seismic category I components in the adjacent A/B are considered damaged. Water from these failed components is conservatively assumed to flow to the NRCA portion of the R/B through floor drains. The components in these buildings which are not seismic category I are associated with the demineralized water system, and non-safety chilled water system. The total volume of water held by these systems is 1,590 ft^3. Since floor drains of the NRCA of the A/B are collected by non-radioactive drain sump, the water of these areas does not flow into the east area. Therefore, the water generated in the NRCA of the A/B is taken into consideration in the evaluation of the west area~~.

- HELB/MELB

HELB event is not a concern, because break of turbine driven emergency feedwater pump steam piping drain line, which is the only high energy line in these areas, results in less severe flooding event than that caused by earthquake concurrent with fire-fighting operation. DCD_03.04.01-29

Most of the water-containing moderate energy piping in the NRCA of the R/B and the PS/B is excluded from flooding source because that piping is to be designed so that a crack is not required to be postulated in the line in accordance with the criteria described in subsection 3.6.2.1.2.2. This is attained by maintaining stress on the pipes below the threshold by means of route and support design. Volume of flood water discharged from a postulated crack in the rest of the piping is conservatively estimated on the basis of the volume of water contained in the piping and any connected reservoir. The maximum water volume released in the MELB of piping routed on this elevation level is 740 ft^3 in both the east and west area~~Moderate energy piping whose failure may leads to discharge of more than 4,000 ft^3 of water is designed not to be subject to the pipe break postulation by means of route and support design. Therefore, the most severe postulated flooding event caused by a crack in the rest of the moderate energy piping results~~ DCD_03.04.01-29 S02

~~in discharged water volume of equal to or less than 4,000 ft^3 in both east and west areathere are no piping breaks, which are assumed to occur in the subject area~~. DCD_03.04.01-29

- Fire Fighting Operations

  The flooding contribution from fire fighting operations is based on the full operation of two hose stations for 2 hours. The flow rate from one hose station is 125 gpm. With two stations operating for 2 hours, the total volume of water is 4,010 ft^3.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is as follows:

- East side: 4,760~~4,550710~~ ft^3 DCD_03.04.01-29 S02
- West side: 4,770~~6,3004,710550~~ ft^3 DCD_03.04.01-29 DCD_03.04.01-29 S01

The square footage of floor area subject to flooding at elevation -26 feet, 4 inches is as follows:

- East side: 11~~0~~,500 ft^2 (this area includes R/B NRCA floor area) DCD_03.04.01-29
- West side: 11~~0~~,1~~5~~00 ft^2 (this area includes R/B NRCA floor area)

Based on these values, the maximum water level is as follows:

- East side: 0.42~~405~~ ft above elevation -26 ft, 4 in. DCD_03.04.01-29 S02
- West side: 0.43~~160~~ ft above elevation -26 ft, 4 in. DCD_03.04.01-29 DCD_03.04.01-29 S01

The pump foundations (top of concrete) height is 1.0 foot above floor elevation -26 ft, 4 in. As such, the pumps are not flooded. The instrumentation of each pump is designed to be located at heights above the level of flood water.

Elevation 3 ft, 7 in.

The equipment to be protected in the east area of PS/B at elevation 3 ft, 7 in. are the A and B train Class 1E GTG. Similarly, the equipment to be protected in the west area is the C and D train Class 1E GTG. Since the doorway between the corridor in the east PS/B and east area of the R/B at elevation 3 ft, 7 in. is not water-tight, flood water in the east NRCA of the R/B is assumed to flow into the east PS/B, and vice versa. The Class 1E GTG rooms are isolated from corridor of R/B NRCA and corridor of east PS/B by concrete walls and water-tight door. There are no floor drains in the Class 1E GTG rooms. DCD_03.04.01-29

Flood events are considered as follows:

- Earthquake

The flood water volume is estimated on the basis of the amount of water contained in non-seismic equipment or piping. The amount of water discharged in the seismic event is 10 ft^3 in both the east and west area~~The total water volume from the earthquake event is same as that of elevation -26 ft, 4 in~~. DCD_03.04.01-29

- HELB/MELB

  HELB event is not a concern, because break of drain piping for turbine driven emergency feedwater pump steam piping results in less severe flooding event than that caused by earthquake concurrent with fire-fighting operation. DCD_03.04.01-29

  The maximum~~total~~ water volume from the MELB event is 20 ft^3 in both the east and west area~~same as that of elevation -26 ft, 4 inthere are no piping breaks, which are assumed to occur in the subject area~~. DCD_03.04.01-29 S02

- Fire Fighting Operations

  The total water volume from the fire fighting operation events is same as that of elevation -26 ft, 4 in.

Based on the flood events described above, the worst case results are from a combination of earthquake and fire fighting operations. The total volume of flood water caused by this combination is 4,020~~710~~ ft^3 in both the east and west area. DCD_03.04.01-29 S01

The footage of corridor area and the water level are as follows:

- East side: ~~1,500~~4,300 ft^2 area, 0.94~~3.14~~ ft above elevation 3 ft, 7 in. DCD_03.04.01-29
- West side: The entire floor of the west area of PS/B at elevation 3 ft, 7 in. consists of water tight compartments~~1,500 ft^2 area, 3.14 ft above elevation 3 ft, 7 in~~.

Class 1E GTG are installed in the room which prevents flow-in water by water-tight door.

Therefore, GTG room is not flooded.

3.4.2 Analysis Procedures

The static and dynamic effects of the design-basis flood or groundwater conditions, which are identified in Section 2.4, are applied to seismic category I structures. Section 3.8 specifies the applicable codes, standards, and specifications used in the design of seismic category I structures. The loads and load combination subsections of Section 3.8 take into consideration the static and dynamic loadings on seismic category I structures including hydrostatic loading as the result of the design-basis flood and/or ground conditions identified in Section 2.4. Section 3.8 also provides the design and analysis procedures used to transform the static and dynamic effects of the DBFL and ground water levels applied to seismic category I structures to assure their design meet the applicable acceptance criteria.

The COL Applicant is to identify any site-specific physical models used to predict prototype performance of hydraulic structures and systems involving an unusual design

DCD_03.04.
01-29 S02

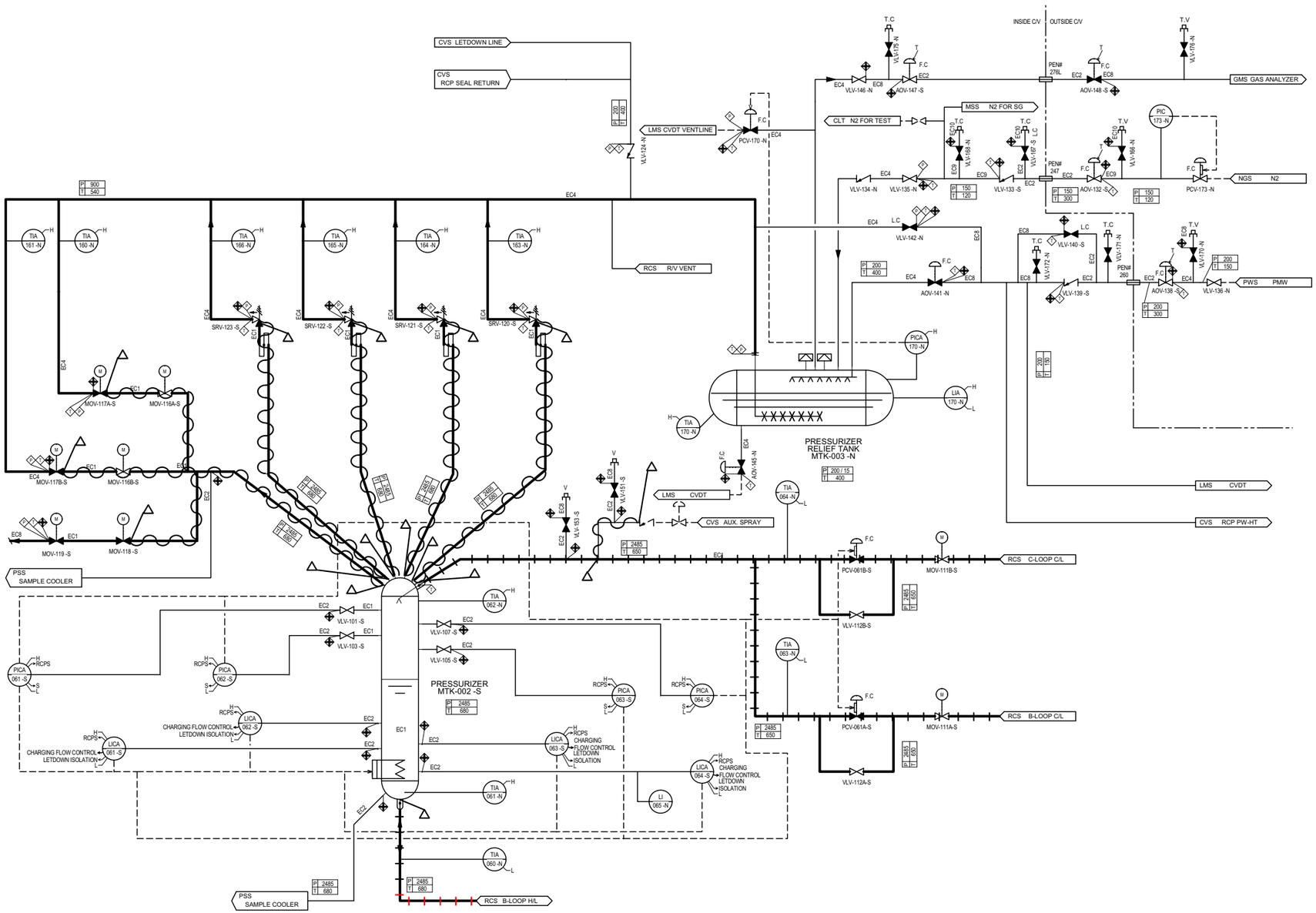


Figure 3E-2 Reactor Coolant System Flow Diagram (2/2)

DCD_03.04.
01-29 S02

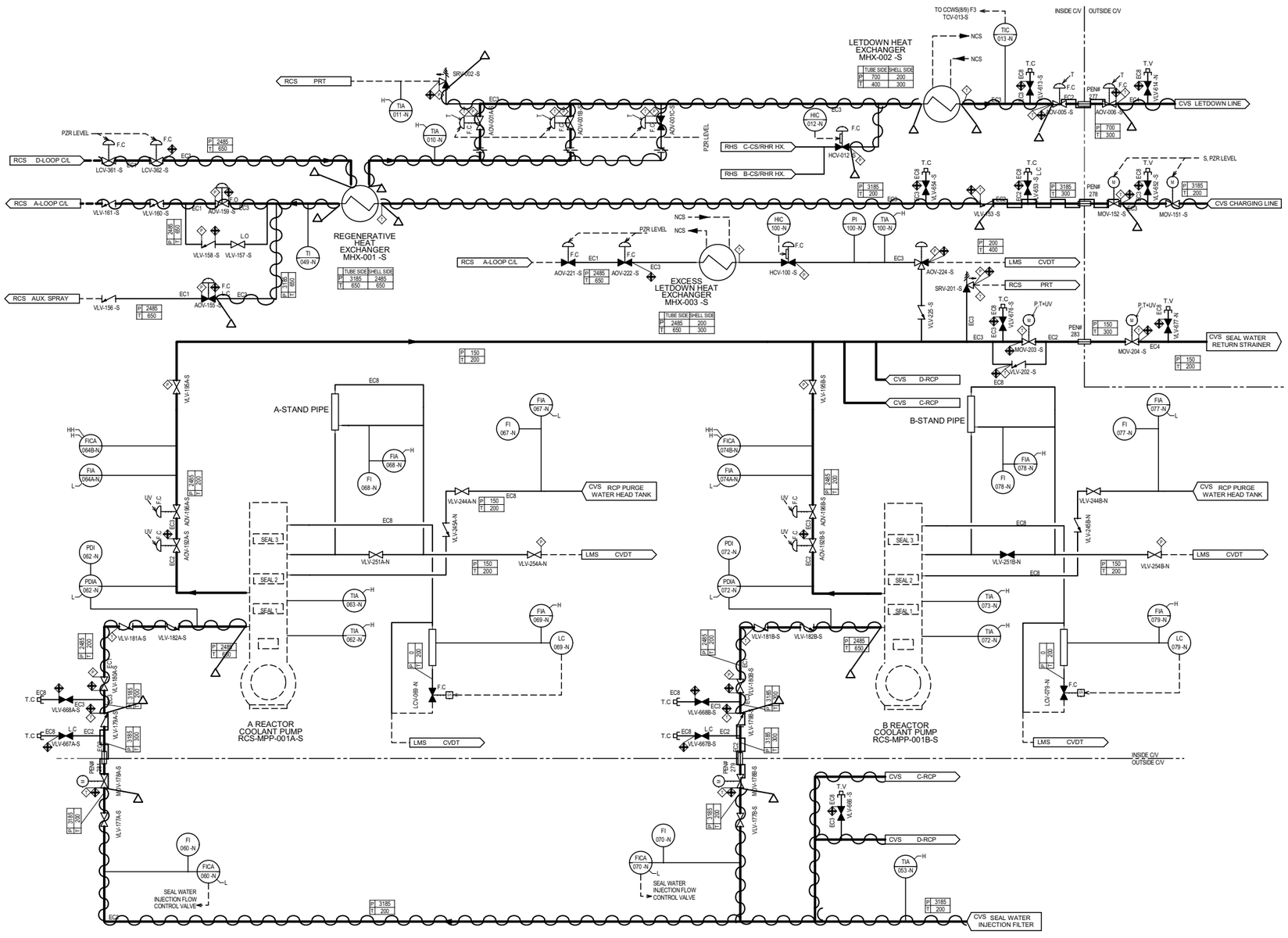
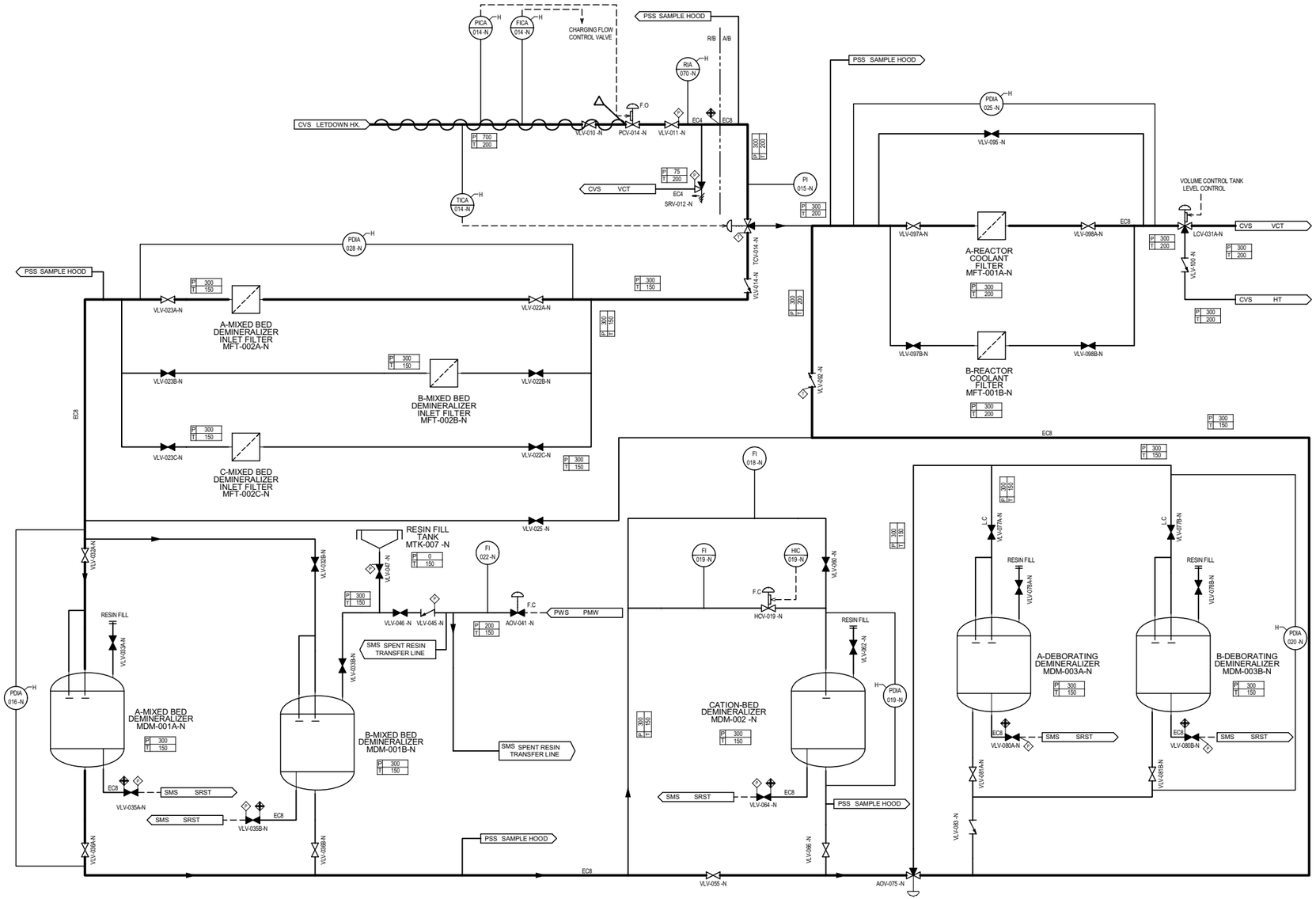


Figure 3E-3 Chemical and Volume Control System Flow Diagram (1/4)

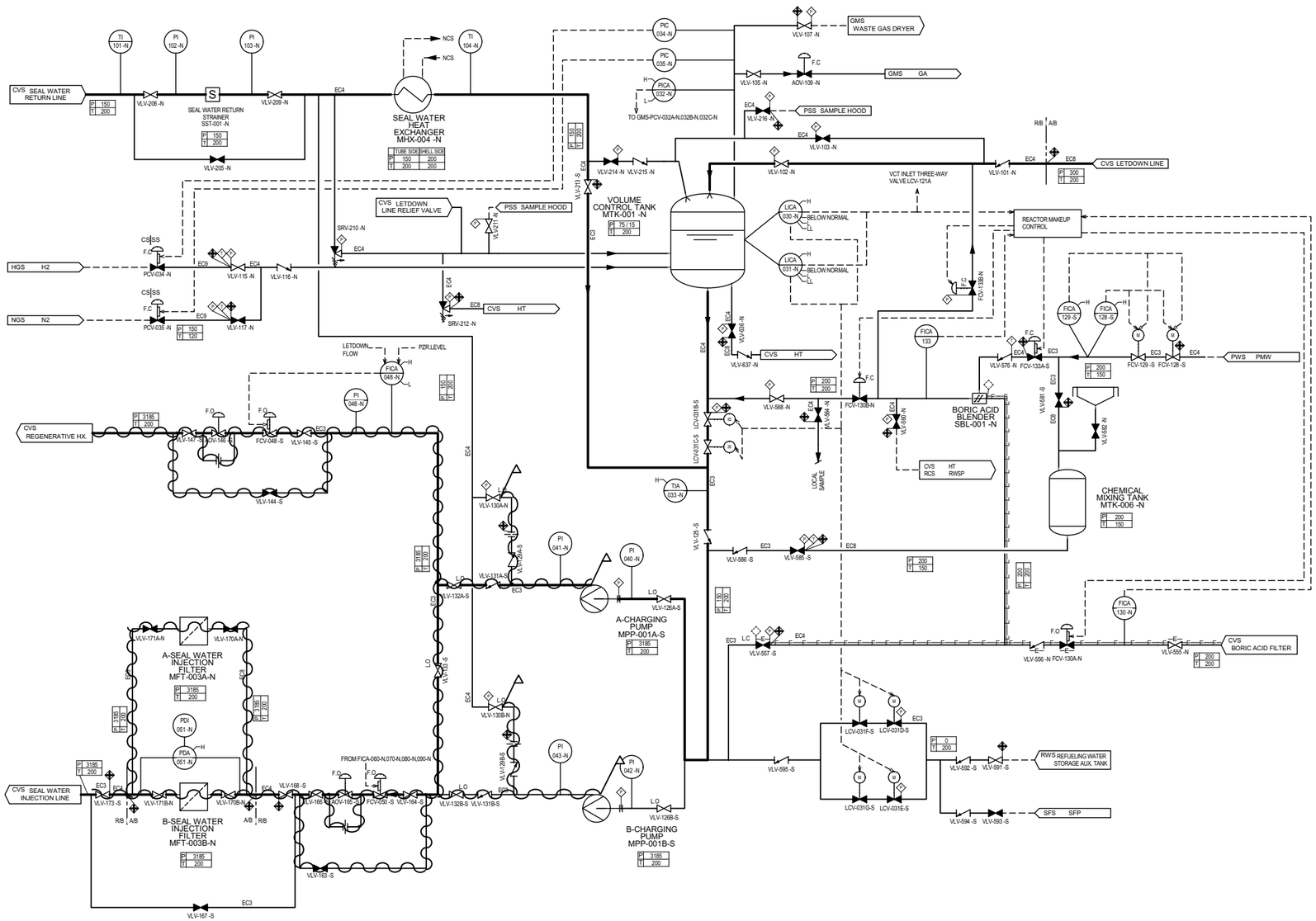
DCD_03.04.
01-29 S02



Note: Figure is used only to schematically identify high-energy piping, and is not intended to represent site-specific system configuration.

Figure 3E-5 Chemical and Volume Control System Flow Diagram (3/4)

DCD_03.04.
01-29 S02



Note: Figure is used only to schematically identify high-energy piping, and is not intended to represent site-specific system configuration.

Figure 3E-6 Chemical and Volume Control System Flow Diagram (4/4)

DCD_03.04.
01-29 S02

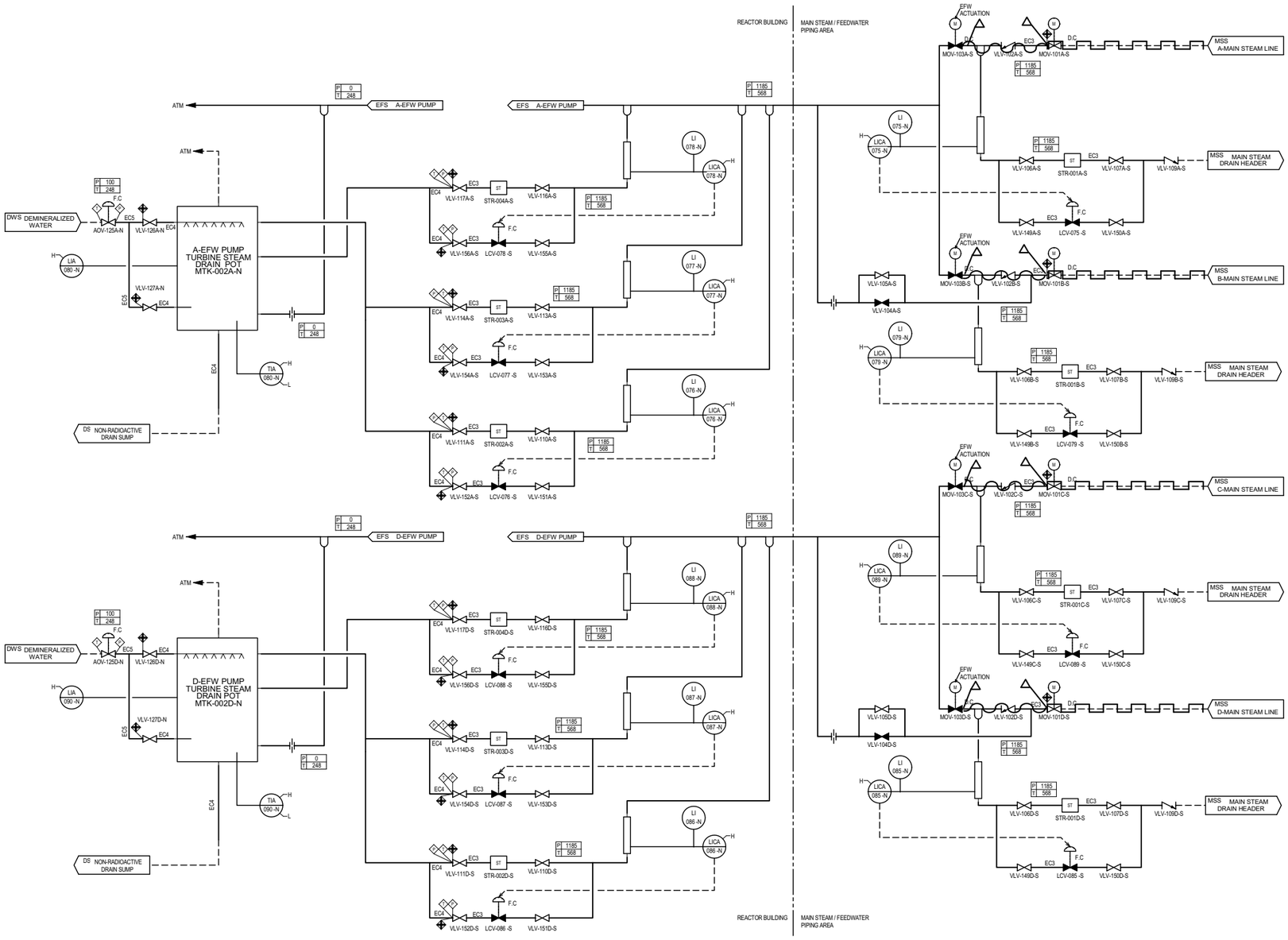


Figure 3E-9 Emergency Feedwater System Flow Diagram (2/2)

Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 1 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
1	RCS-AOV-132	Air Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
2	RCS-AOV-148	Air Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
3	RCS-AOV-138	Air Operated Valve	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56	
4	CVS-MOV-151	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
5	CVS-MOV-152	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
6	CVS-MOV-204	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
7	CVS-MOV-178A	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
8	CVS-MOV-178B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
9	CVS-AOV-006	Air Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
10	CVS-MOV-178C	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
11	CVS-MOV-178D	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-127-08	above flood elevation	0.~~69~~56	
12	SIS-MPP-001A	A-Safety Injection Pump	R/B RCA	E	-26'-4"	FA2-113-01	N/A	-	1
13	SIS-MPP-001B	B-Safety Injection Pump	R/B RCA	E	-26'-4"	FA2-114-01	N/A	-	1

DCD_03.04.01-29 S02

Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 2 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
14	SIS-MPP-001C	C-Safety Injection Pump	R/B RCA	W	-26'-4"	FA2-115-01	N/A	-	1
15	SIS-MPP-001D	D-Safety Injection Pump	R/B RCA	W	-26'-4"	FA2-116-01	N/A	-	1
16	SIS-MOV-001A	Motor Operated Valve	R/B RCA	E	-8'-7"	FA2-154-01	N/A	-	1
17	SIS-MOV-001B	Motor Operated Valve	R/B RCA	E	-8'-7"	FA2-151-01	N/A	-	1
18	SIS-MOV-009A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~4<u>3</u>	
19	SIS-MOV-009B	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~5~~4<u>3</u>	
20	SIS-MOV-001C	Motor Operated Valve	R/B RCA	W	-8'-7"	FA2-152-01	N/A	-	1
21	SIS-MOV-001D	Motor Operated Valve	R/B RCA	W	-8'-7"	FA2-153-01	N/A	-	1
22	SIS-MOV-009C	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~<u>56</u>	
23	SIS-MOV-009D	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~<u>56</u>	
24	SIS-AOV-114	Air Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~5~~4<u>3</u>	
25	RHS-MPP-001A	A-Containment Spray/Residual Heat Removal Pump	R/B RCA	E	-26'-4"	FA2-113-02	N/A	-	1
26	RHS-MPP-001B	B-Containment Spray/Residual Heat Removal Pump	R/B RCA	E	-26'-4"	FA2-114-02	N/A	-	1
27	RHS-MPP-001C	C-Containment Spray/Residual Heat Removal Pump	R/B RCA	W	-26'-4"	FA2-115-02	N/A	-	1

DCD_03.04.01-29 S02

DCD_03.04.01-29 S02

Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 3 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes	
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor			
28	RHS-MPP-001D	D-Containment Spray/Residual Heat Removal Pump	R/B RCA	W	-26'-4"	FA2-116-02	N/A	-	1	
29	RHS-MHX-001A	A-Containment Spray/Residual Heat Removal Heat Exchanger	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1	
30	RHS-MHX-001B	B-Containment Spray/Residual Heat Removal Heat Exchanger	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1	
31	RHS-MHX-001C	C-Containment Spray/Residual Heat Removal Heat Exchanger	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1	
32	RHS-MHX-001D	D-Containment Spray/Residual Heat Removal Heat Exchanger	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1	
33	RHS-MOV-021A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-154-~~1~~05	above flood elevation	0.~~5~~43		DCD_03.04.01-29 S02
34	RHS-MOV-021B	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~5~~43		
35	RHS-HCV-023	Hand Control Valve	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1	
36	RHS-FCV-021	Flow Control Valve	R/B RCA	E	3'-7"	FA2-151-01	N/A	-	1	
37	RHS-MOV-021C	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56		DCD_03.04.01-29 S02
38	RHS-MOV-021D	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56		
39	RHS-HCV-033	Hand Control Valve	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1	
40	RHS-FCV-031	Flow Control Valve	R/B RCA	W	3'-7"	FA2-152-01	N/A	-	1	
41	CSS-MOV-004A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~43		DCD_03.04.01-29 S02
42	CSS-MOV-004B	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~5~~43		

Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 4 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes	
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor			
43	CSS-MOV-001A	Motor Operated Valve	R/B RCA	E	-8'-7	FA2-154-01	N/A	-	1	
44	CSS-MOV-001B	Motor Operated Valve	R/B RCA	E	-8'-7	FA2-151-01	N/A	-	1	
45	CSS-MOV-004C	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56		DCD_03.04.01-29 S02
46	CSS-MOV-004D	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56		
47	CSS-MOV-001C	Motor Operated Valve	R/B RCA	W	-8'-7	FA2-152-01	N/A	-	1	
48	CSS-MOV-001D	Motor Operated Valve	R/B RCA	W	-8'-7	FA2-153-01	N/A	-	1	
49	CSS-MOV-011	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-151-04	above flood elevation	0.~~69~~70	1	DCD_03.04.01-29 S02
50	NCS-MOV-145A	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-209-03	above flood elevation	0.~~69~~70		
51	NCS-MOV-438A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~53~~43		
52	NCS-MOV-145B	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-151-04	above flood elevation	0.~~69~~70		
53	NCS-MOV-145C	Motor Operated Valve	R/B RCA	W	3'-7"	FA2-152-04	above flood elevation	0.~~88~~79		
54	NCS-MOV-145D	Motor Operated Valve	R/B RCA	W	3'-7"	FA2-128-02	above flood elevation	0.~~88~~79		
55	NCS-MOV-232A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~53~~43		
56	NCS-MOV-232B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56		

Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 5 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
57	NCS-MOV-233A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~54~~43	
58	NCS-MOV-233B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
59	NCS-MOV-234A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~53~~43	
60	NCS-MOV-234B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
61	NCS-MOV-511	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~53~~43	
62	NCS-MOV-517	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~53~~43	
63	NCS-MOV-402A	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~53~~43	
64	NCS-MOV-531	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
65	NCS-MOV-537	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
66	NCS-MOV-402B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
~~67~~	~~NCS-MOV-445A~~	~~Motor Operated Valve~~	~~R/B RCA~~	~~E~~	~~25'-3"~~	~~FA2-151-06~~	~~above flood elevation~~	~~0.53~~	
~~68~~	~~NCS-MOV-445B~~	~~Motor Operated Valve~~	~~R/B RCA~~	~~W~~	~~25'-3"~~	~~FA2-152-06~~	~~above flood elevation~~	~~0.69~~	
~~69~~	~~NCS-MOV-448A~~	~~Motor Operated Valve~~	~~R/B RCA~~	~~E~~	~~25'-3"~~	~~FA2-151-06~~	~~above flood elevation~~	~~0.53~~	
~~70~~	~~NCS-MOV-448B~~	~~Motor Operated Valve~~	~~R/B RCA~~	~~W~~	~~25'-3"~~	~~FA2-152-06~~	~~above flood elevation~~	~~0.69~~	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 6 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
71	NCS-MOV-438B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
72	LMS-AOV-053	Air Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
73	LMS-AOV-056	Air Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
74	LMS-AOV-060	Air Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
75	LMS-LCV-010B	Level Control Valve	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~53~~43	
76	LMS-AOV-105	Air Operated Valve	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~53~~43	
77	PSS-MOV-031A	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
78	PSS-MOV-031B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
79	PSS -MOV-052A	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-322-01	above flood elevation	0.~~69~~56	
80	PSS -MOV-052B	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-322-01	above flood elevation	0.~~69~~56	
81	PSS -MOV-052C	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-322-01	above flood elevation	0.~~69~~56	
82	PSS -MOV-052D	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-322-01	above flood elevation	0.~~69~~56	
83	PSS-AOV-063	Air Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
84	PSS-MOV-071	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 7 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
85	SGS-AOV-031A	Air Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~5~~43	
86	SGS-AOV-031B	Air Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~5~~43	
87	SGS-AOV-031C	Air Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~5~~43	
88	SGS-AOV-031D	Air Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.~~5~~43	
89	RWS-MOV-004	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-211-01	above flood elevation	0.~~69~~70	
90	RWS-AOV-022	Air Operated Valve	R/B RCA	E	3'-7"	FA2-211-01	above flood elevation	0.~~69~~70	
91	~~CAS~~IAS-MOV-002	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.~~69~~56	
92	RMS-MOV-002	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
93	RMS-MOV-003	Motor Operated Valve	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
94	VRS-MFU-001A	A-Annulus EmergencyFiltration Unit Exhaust	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.~~58~~54	
95	VRS-MFU-001B	B-Annulus EmergencyFiltration Unit Exhaust	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
96	VRS-MFN-001A	A-Annulus EmergencyFiltration Unit Fan Exhaust	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.~~58~~54	
97	VRS-MFN-001B	B-Annulus EmergencyFiltration Unit Fan Exhaust	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 8 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
98	VRS-EHD-001A	Electro Hydraulic Operated Damper	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
99	VRS-EHD-001B	Electro Hydraulic Operated Damper	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
100	VRS-EHD-002A	Electro Hydraulic Operated Damper	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
101	VRS-EHD-002B	Electro Hydraulic Operated Damper	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
102	VRS-EHD-003A	Electro Hydraulic Operated Damper	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
103	VRS-EHD-003B	Electro Hydraulic Operated Damper	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
104	VRS-MAH-301A	A-Safeguard Component Area Air Handling Unit	R/B RCA	E	3'-7"	FA2-154-04	N/A	-	1
105	VRS-MAH-301B	B-Safeguard Component Area Air Handling Unit	R/B RCA	E	3'-7"	FA2-151-02	N/A	-	1
106	VRS-MAH-301C	C-Safeguard Component Area Air Handling Unit	R/B RCA	W	3'-7"	FA2-152-02	N/A	-	1
107	VRS-MAH-301D	D-Safeguard Component Area Air Handling Unit	R/B RCA	W	3'-7"	FA2-153-04	N/A	-	1
108	VRS-MFN-301A	A-Safeguard Component Area Air Handling Unit Fan	R/B RCA	E	3'-7"	FA2-154-04	N/A	-	1
109	VRS-MFN-301B	B-Safeguard Component Area Air Handling Unit Fan	R/B RCA	E	3'-7"	FA2-151-02	N/A	-	1
110	VRS-MFN-301C	C-Safeguard Component Area Air Handling Unit Fan	R/B RCA	W	3'-7"	FA2-152-02	N/A	-	1
111	VRS-MFN-301D	D-Safeguard Component Area Air Handling Unit Fan	R/B RCA	W	3'-7"	FA2-153-04	N/A	-	1

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 10 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
124	VRS-MOD-302A	Motor Operated Damper	R/B RCA	E	3'-7"	FA2-154-04	N/A	-	1
125	VRS-MOD-302B	Motor Operated Damper	R/B RCA	E	3'-7"	FA2-151-02	N/A	-	1
126	VRS-MOD-302C	Motor Operated Damper	R/B RCA	W	3'-7"	FA2-152-02	N/A	-	1
127	VRS-MOD-302D	Motor Operated Damper	R/B RCA	W	3'-7"	FA2-153-04	N/A	-	1
128	VRS-MAH-541A	A-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
129	VRS-MAH-541B	B-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
130	VRS-MFN-541A	A-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Fan	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
131	VRS-MFN-541B	B-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Fan	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
132	VRS-MCL-541A	A-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Cooling Coil	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
133	VRS-MCL-541B	A-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Cooling Coil	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
134	VRS-MCL-541C	B-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Cooling Coil	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 11 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
135	VRS-MCL-541D	B-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Cooling Coil	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
136	VRS-MEH-541A	A-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Electric Heating Coil	R/B RCA	E	50'-2"	~~416-01~~FA2-416-01	above flood elevation	0.5~~8~~4	
137	VRS-MEH-541B	B-Annulus Emergency Exhaust Filtration Unit Area Air Handling Unit Electric Heating Coil	R/B RCA	W	50'-2"	~~417-01~~FA2-417-01	above flood elevation	0.~~76~~61	
138	VRS-MAH-551A	A-Penetration Area Air Handling Unit	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	~~0.58~~-	2
139	VRS-MAH-551B	B-Penetration Area Air Handling Unit	R/B RCA	E	50'-2"	FA2-409-01	above flood elevation	0.5~~8~~4	
140	VRS-MAH-551C	C-Penetration Area Air Handling Unit	R/B RCA	W	50'-2"	FA2-410-01	above flood elevation	0.~~76~~61	
141	VRS-MAH-551D	D-Penetration Area Air Handling Unit	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
142	VRS-MFN-551A	A-Penetration Area Air Handling Unit Fan	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	~~0.58~~-	2
143	VRS-MFN-551B	B-Penetration Area Air Handling Unit Fan	R/B RCA	E	50'-2"	FA2-409-01	above flood elevation	0.5~~8~~4	
144	VRS-MFN-551C	C-Penetration Area Air Handling Unit Fan	R/B RCA	W	50'-2"	FA2-410-01	above flood elevation	0.~~76~~61	
145	VRS-MFN-551D	D-Penetration Area Air Handling Unit Fan	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
146	VRS-MCL-551A	A-Penetration Area Air Handling Unit Cooling Coil	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	~~0.58~~-	2

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 12 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
147	VRS-MCL-551B	B-Penetration Area Air Handling Unit Cooling Coil	R/B RCA	E	50'-2"	FA2-409-01	above flood elevation	0.5~~8~~4	
148	VRS-MCL-551C	C-Penetration Area Air Handling Unit Cooling Coil	R/B RCA	W	50'-2"	FA2-410-01	above flood elevation	0.~~76~~61	
149	VRS-MCL-551D	D-Penetration Area Air Handling Unit Cooling Coil	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
150	VRS-MEH-551A	A-Penetration Area Air Handling Unit Electric Heating Coil	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	~~0.58~~	2
151	VRS-MEH-551B	B-Penetration Area Air Handling Unit Electric Heating Coil	R/B RCA	E	50'-2"	FA2-409-01	above flood elevation	0.5~~8~~4	
152	VRS-MEH-551C	C-Penetration Area Air Handling Unit Electric Heating Coil	R/B RCA	W	50'-2"	FA2-410-01	above flood elevation	0.~~76~~61	
153	VRS-MEH-551D	D-Penetration Area Air Handling Unit Electric Heating Coil	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
154	VCS-AOV-304	Air Operated Valve	R/B RCA	E	76'-5"	FA2-409-02	above flood elevation	0.~~84~~68	
155	VCS-AOV-307	Air Operated Valve	R/B RCA	W	76'-5"	FA2-511-01	above flood elevation	0.~~99~~83	
156	VCS-AOV-354	Air Operated Valve	R/B RCA	E	76'-5"	FA2-409-02	above flood elevation	0.~~84~~68	
157	VCS-AOV-357	Air Operated Valve	R/B RCA	W	76'-5"	FA2-511-01	above flood elevation	0.~~99~~83	
158	VAS-AOD-501A	Air Operated Damper	R/B RCA	E	25'-3"	FA2-209-04	above flood elevation	0.~~5~~43	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 13 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
159	VAS-AOD-501B	Air Operated Damper	R/B RCA	W	50'-2"	FA2-418-01	above flood elevation	0.~~76~~61	
160	VAS-AOD-502A	Air Operated Damper	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~43	
161	VAS-AOD-502B	Air Operated Damper	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
162	VAS-AOD-503A	Air Operated Damper	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~43	
163	VAS-AOD-503B	Air Operated Damper	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
164	VAS-AOD-504A	Air Operated Damper	R/B RCA	E	25'-3"	FA2-209-04	above flood elevation	0.~~5~~43	
165	VAS-AOD-504B	Air Operated Damper	R/B RCA	W	50'-2"	FA2-418-01	above flood elevation	0.~~76~~61	
166	VAS-AOD-505A	Air Operated Damper	R/B RCA	E	3'-7"	FA2-209-03	above flood elevation	0.~~69~~70	
167	VAS-AOD-505B	Air Operated Damper	R/B RCA	E	3'-7"	FA2-151-04	above flood elevation	0.~~69~~70	
168	VAS-AOD-505C	Air Operated Damper	R/B RCA	W	3'-7"	FA2-152-04	above flood elevation	0.~~88~~79	
169	VAS-AOD-505D	Air Operated Damper	R/B RCA	W	3'-7"	FA2-128-02	above flood elevation	0.~~88~~79	
170	VAS-AOD-506A	Air Operated Damper	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1
171	VAS-AOD-506B	Air Operated Damper	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1
172	VAS-AOD-506C	Air Operated Damper	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 14 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
173	VAS-AOD-506D	Air Operated Damper	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1
174	VAS-AOD-507A	Air Operated Damper	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1
175	VAS-AOD-507B	Air Operated Damper	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1
176	VAS-AOD-507C	Air Operated Damper	R/B RCA	W	3'-7"	FA2-~~209~~152-03	N/A	-	1
177	VAS-AOD-507D	Air Operated Damper	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1
178	VAS-AOD-508A	Air Operated Damper	R/B RCA	E	3'-7"	FA2-~~117~~209-0~~8~~3	above flood elevation	0.~~69~~70	
179	VAS-AOD-508B	Air Operated Damper	R/B RCA	E	3'-7"	FA2-151-04	above flood elevation	0.~~69~~70	
180	VAS-AOD-508C	Air Operated Damper	R/B RCA	W	3'-7"	FA2-152-04	above flood elevation	0.~~88~~79	
181	VAS-AOD-508D	Air Operated Damper	R/B RCA	W	3'-7"	FA2-128-02	above flood elevation	0.~~88~~79	
182	VAS-AOD-511	Air Operated Damper	R/B RCA	W	76'-5"	FA2-21~~0~~4-~~21~~07	above flood elevation	0.~~99~~83	
183	VAS-AOD-512	Air Operated Damper	R/B RCA	W	76'-5"	FA2-21~~0~~4-~~21~~07	above flood elevation	0.~~99~~83	
184	VWS-TMV-304	Chilled Water Control Valve	R/B RCA	E	3'-7"	FA2-154-04	N/A	-	1
185	VWS-TMV-314	Chilled Water Control Valve	R/B RCA	E	3'-7"	FA2-151-02	N/A	-	1
186	VWS-TMV-324	Chilled Water Control Valve	R/B RCA	W	3'-7"	FA2-152-02	N/A	-	1

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 15 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
187	VWS-TMV-334	Chilled Water Control Valve	R/B RCA	W	3'-7"	FA2-153-04	N/A	-	1
188	VWS-TMV-602A	Chilled Water Control Valve	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
189	VWS-TMV-602B	Chilled Water Control Valve	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
190	VWS-TMV-612A	Chilled Water Control Valve	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
191	VWS-TMV-612B	Chilled Water Control Valve	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
192	VWS-TMV-622	Chilled Water Control Valve	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	0.~~58~~-	2
193	VWS-TMV-632	Chilled Water Control Valve	R/B RCA	E	50'-2"	FA2-409-01	above flood elevation	0.5~~8~~4	
194	VWS-TMV-642	Chilled Water Control Valve	R/B RCA	W	50'-2"	FA2-410-01	above flood elevation	0.~~76~~61	
195	VWS-TMV-652	Chilled Water Control Valve	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
196	VWS-MOV-403	Motor Operated Valve	R/B RCA	W	76'-5"	FA2-511-01	above flood elevation	0.~~99~~83	
197	VWS-MOV-407	Motor Operated Valve	R/B RCA	W	76'-5"	FA2-511-01	above flood elevation	0.~~99~~83	
198	SRPP-A	Source Range Neutron Flux Preamplifier Panel (Train A)	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	~~0.58~~-	2
199	SRPP-D	Source Range Neutron Flux Preamplifier Panel (Train D)	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
200	WRPP-A	Wide Range Neutron Flux Preamplifier Panel (Train A)	R/B RCA	E	50'-2"	FA2-408-01	~~above flood elevation~~N/A	~~0.58~~-	2

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 16 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
201	WRPP-D	Wide Range Neutron Flux Preamplifier Panel (Train D)	R/B RCA	W	50'-2"	FA2-411-01	above flood elevation	0.~~76~~61	
202	CVS-FT-128	Primary Makeup Water Supply Flow	R/B RCA	W	25'-3"	FA2-2~~09~~13-0~~5~~1	above flood elevation	0.~~69~~56	
203	CVS-FT-129	Primary Makeup Water Supply Flow	R/B RCA	W	25'-3"	FA2-2~~09~~13-0~~5~~1	above flood elevation	0.~~69~~56	
204	SIS-FT-062	A -Safety Injection Pump Discharge Flow	R/B RCA	E	-26'-4"	FA2-113-03	N/A	~~1~~	1
205	SIS-FT-063	B -Safety Injection Pump Discharge Flow	R/B RCA	E	-26'-4"	FA2-114-03	N/A	~~1~~	1
206	SIS-FT-064	C -Safety Injection Pump Discharge Flow	R/B RCA	W	-26'-4"	FA2-115-03	N/A	~~1~~	1
207	SIS-FT-065	D -Safety Injection Pump Discharge Flow	R/B RCA	W	-26'-4"	FA2-116-03	N/A	~~1~~	1
208	SIS-PT-060	A - Safety Injection Pump Suction Pressure	R/B RCA	E	-26'-4"	FA2-113-03	N/A	~~1~~	1
209	SIS-PT-061	B - Safety Injection Pump Suction Pressure	R/B RCA	E	-26'-4"	FA2-114-03	N/A	~~1~~	1
210	SIS-PT-062	C - Safety Injection Pump Suction Pressure	R/B RCA	W	-26'-4"	FA2-115-03	N/A	~~1~~	1
211	SIS-PT-063	D - Safety Injection Pump Suction Pressure	R/B RCA	W	-26'-4"	FA2-116-03	N/A	~~1~~	1
212	SIS-PT-064	A -Safety Injection Pump Discharge Pressure	R/B RCA	E	-26'-4"	FA2-113-03	N/A	~~1~~	1
213	SIS-PT-065	B -Safety Injection Pump Discharge Pressure	R/B RCA	E	-26'-4"	FA2-114-03	N/A	~~1~~	1
214	SIS-PT-066	C -Safety Injection Pump Discharge Pressure	R/B RCA	W	-26'-4"	FA2-115-03	N/A	~~1~~	1

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 17 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
215	SIS-PT-067	D -Safety Injection Pump Discharge Pressure	R/B RCA	W	-26'-4"	FA2-116-03	N/A	~~1~~ -	1
216	RHS-FT-011	A - Containment Spray / Residual Heat Removal Pump Discharge Flow	R/B RCA	E	-26'-4"	FA2-113-03	N/A	~~1~~ -	1
217	RHS-FT-014	A - Containment Spray / Residual Heat Removal Pump Minimum Flow	R/B RCA	E	3'-7"	FA2-209-03	above flood elevation	0.~~69~~70	
218	RHS-FT-021	B - Containment Spray / Residual Heat Removal Pump Discharge Flow	R/B RCA	E	-26'-4"	FA2-114-03	N/A	-	1
219	RHS-FT-024	B - Containment Spray / Residual Heat Removal Pump Minimum Flow	R/B RCA	E	3'-7"	FA2-151-04	above flood elevation	0.~~69~~70	
220	RHS-FT-031	C - Containment Spray / Residual Heat Removal Pump Discharge Flow	R/B RCA	W	-26'-4"	FA2-115-03	N/A	~~1~~ -	1
221	RHS-FT-034	C - Containment Spray / Residual Heat Removal Pump Minimum Flow	R/B RCA	W	3'-7"	FA2-152-04	above flood elevation	0.~~88~~79	
222	RHS-FT-041	D - Containment Spray / Residual Heat Removal Pump Discharge Flow	R/B RCA	W	-26'-4"	FA2-116-03	N/A	~~1~~ -	1
223	RHS-FT-044	D - Containment Spray / Residual Heat Removal Pump Minimum Flow	R/B RCA	W	3'-7"	FA2-128-02	above flood elevation	0.~~88~~79	
224	RHS-PT-010	A - Containment Spray / Residual Heat Removal Pump Suction Pressure	R/B RCA	E	-26'-4"	FA2-113-03	N/A	~~1~~ -	1

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 18 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
225	RHS-PT-011	A - Containment Spray / Residual Heat Removal Pump Discharge Pressure	R/B RCA	E	-26'-4"	FA2-113-03	N/A	~~1~~	1
226	RHS-PT-020	B - Containment Spray / Residual Heat Removal Pump Suction Pressure	R/B RCA	E	-26'-4"	FA2-114-03	N/A	~~1~~	1
227	RHS-PT-021	B - Containment Spray / Residual Heat Removal Pump Discharge Pressure	R/B RCA	E	-26'-4"	FA2-114-03	N/A	~~1~~	1
228	RHS-PT-030	C - Containment Spray / Residual Heat Removal Pump Suction Pressure	R/B RCA	W	-26'-4"	FA2-115-03	N/A	~~1~~	1
229	RHS-PT-031	C - Containment Spray / Residual Heat Removal Pump Discharge Pressure	R/B RCA	W	-26'-4"	FA2-115-03	N/A	~~1~~	1
230	RHS-PT-040	D - Containment Spray / Residual Heat Removal Pump Suction Pressure	R/B RCA	W	-26'-4"	FA2-116-03	N/A	~~1~~	1
231	RHS-PT-041	D - Containment Spray / Residual Heat Removal Pump Discharge Pressure	R/B RCA	W	-26'-4"	FA2-116-03	N/A	~~1~~	1
232	CSS-PT-010	Containment Pressure	R/B RCA	E	76'-5"	FA2-506-01	above flood elevation	0.~~84~~68	
233	CSS-PT-011	Containment Pressure	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~53~~43	
234	CSS-PT-012	Containment Pressure	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56	
235	CSS-PT-013	Containment Pressure	R/B RCA	W	76'-5"	FA2-410-02	above flood elevation	0.~~99~~83	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 19 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
236	RHS-TE-014	A - Containment Spray / Residual Heat Removal Heat Exchanger Outlet Temperature	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1
237	RHS-TE-024	B - Containment Spray / Residual Heat Removal Heat Exchanger Outlet Temperature	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1
238	RHS-TE-034	C - Containment Spray / Residual Heat Removal Heat Exchanger Outlet Temperature	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1
239	RHS-TE-044	D - Containment Spray / Residual Heat Removal Heat Exchanger Outlet Temperature	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1
240	VRS-TS-621	A - Penetration Area Temperature	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~43	
241	VRS-TS-624	A - Penetration Area Temperature	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~43	
242	VRS-TS-625	A - Penetration Area Temperature	R/B RCA	E	25'-3"	FA2-154-05	above flood elevation	0.~~5~~43	
243	VRS-TS-631	B - Penetration Area Temperature	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~5~~43	
244	VRS-TS-634	B - Penetration Area Temperature	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~5~~43	
245	VRS-TS-635	B - Penetration Area Temperature	R/B RCA	E	25'-3"	FA2-151-05	above flood elevation	0.~~5~~43	
246	VRS-TS-641	C - Penetration Area Temperature	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56	
247	VRS-TS-644	C - Penetration Area Temperature	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 20 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
248	VRS-TS-645	C - Penetration Area Temperature	R/B RCA	W	25'-3"	FA2-152-05	above flood elevation	0.~~69~~56	
249	VRS-TS-651	D - Penetration Area Temperature	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
250	VRS-TS-654	D - Penetration Area Temperature	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
251	VRS-TS-655	D - Penetration Area Temperature	R/B RCA	W	25'-3"	FA2-153-05	above flood elevation	0.~~69~~56	
252	VRS-TS-306	A - Safeguard Component Area Temperature	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1
253	VRS-TS-307	A - Safeguard Component Area Temperature	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1
254	VRS-TS-305	A - Safeguard Component Area Temperature	R/B RCA	E	3'-7"	FA2-154-03	N/A	-	1
255	VRS-TS-316	B - Safeguard Component Area Temperature	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1
256	VRS-TS-317	B - Safeguard Component Area Temperature	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1
257	VRS-TS-315	B - Safeguard Component Area Temperature	R/B RCA	E	3'-7"	FA2-151-03	N/A	-	1
258	VRS-TS-326	C - Safeguard Component Area Temperature	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1
259	VRS-TS-327	C - Safeguard Component Area Temperature	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1
260	VRS-TS-325	C - Safeguard Component Area Temperature	R/B RCA	W	3'-7"	FA2-152-03	N/A	-	1
261	VRS-TS-336	D - Safeguard Component Area Temperature	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 21 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
262	VRS-TS-337	D - Safeguard Component Area Temperature	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1
263	VRS-TS-335	D - Safeguard Component Area Temperature	R/B RCA	W	3'-7"	FA2-153-03	N/A	-	1
264	VRS-TS-601	A - Annulus Emergency Exhaust Filtration Unit Area Temperature	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
265	VRS-TS-604	A - Annulus Emergency Exhaust Filtration Unit Area Temperature	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
266	VRS-TS-605	A - Annulus Emergency Exhaust Filtration Unit Area Temperature	R/B RCA	E	50'-2"	FA2-416-01	above flood elevation	0.5~~8~~4	
267	VRS-TS-611	B - Annulus Emergency Exhaust Filtration Unit Area Temperature	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
268	VRS-TS-614	B - Annulus Emergency Exhaust Filtration Unit Area Temperature	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
269	VRS-TS-615	B - Annulus Emergency Exhaust Filtration Unit Area Temperature	R/B RCA	W	50'-2"	FA2-417-01	above flood elevation	0.~~76~~61	
270	NCS-MOV-146A	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-209-03	above flood elevation	0.~~69~~70	
271	NCS-MOV-146B	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-151-04	above flood elevation	0.~~69~~70	
272	NCS-MOV-146C	Motor Operated Valve	R/B RCA	W	3'-7"	FA2-152-04	above flood elevation	0.~~88~~79	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 22 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
273	NCS-MOV-146D	Motor Operated Valve	R/B RCA	W	3'-7"	FA2-128-02	above flood elevation	0.~~88~~79	
274	SFS-MOV-001A	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-209-01	above flood elevation	0.~~69~~70	
275	SFS-MOV-002A	Motor Operated Valve	R/B RCA	E	3'-7"	FA2-209-01	above flood elevation	0.~~69~~70	
276	SFS-MOV-001B	Motor Operated Valve	R/B RCA	W	3'-7"	FA2-128-04	above flood elevation	0.~~88~~79	
277	SFS-MOV-002B	Motor Operated Valve	R/B RCA	W	3'-7"	FA2-128-04	above flood elevation	0.~~88~~79	
278	SFS-MPP-001A	A-Spent Fuel Pit Pump	R/B RCA	E	3'-7"	FA2-209-02	above flood elevation	0.70	
279	SFS-MPP-001B	B-Spent Fuel Pit Pump	R/B RCA	W	3'-7"	FA2-128-03	above flood elevation	0.79	
280	NCS-MOV-241	Motor Operated Valve	R/B RCA	W	76'-5"	FA2-214-07	above flood elevation	0.83	
281	NCS-MOV-242	Motor Operated Valve	R/B RCA	W	76'-5"	FA2-214-07	above flood elevation	0.83	
282	NCS-AOV-057A	Air Operated Valve	R/B RCA	E	25'-3"	FA2-316-01	above flood elevation	0.43	
283	NCS-AOV-057B	Air Operated Valve	R/B RCA	W	25'-3"	FA2-318-01	above flood elevation	0.56	
284	NCS-AOV-058A	Air Operated Valve	R/B RCA	E	25'-3"	FA2-316-01	above flood elevation	0.43	
285	NCS-AOV-058B	Air Operated Valve	R/B RCA	W	25'-2"	FA2-318-01	above flood elevation	0.56	
286	FSS-AOV-001	Air Operated Valve	R/B RCA	W	25'-3"	FA2-152-06	above flood elevation	0.56	

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Table 3K-2 R/B RCA Components Protected From Internal Flooding (Sheet 23 of 23)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
287	FSS-MOV-004	Motor Operated Valve	R/B RCA	E	25'-3"	FA2-151-06	above flood elevation	0.43	

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Note:

1. These components are protected by water-tight door and floor drain isolation valve against in-flow of flooding occurring outside of compartment. In addition, these components are not required to be protected against flooding occurring inside the compartment due to redundancy of other trains/components.

2. These components are protected by water-tight door. In addition, these components are not required to be protected against flooding occurring inside the compartment due to redundancy of other trains/components.

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 1 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
1	EFS-MPP-001A	A-Emergency Feedwater Pump	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2	
2	EFS-MPP-001B	B-Emergency Feedwater Pump	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
3	EFS-MPP-001C	C-Emergency Feedwater Pump	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
4	EFS-MPP-001D	D-Emergency Feedwater Pump	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
5	EFS-MPT-001A	A-Emergency Feedwater Pit	R/B NRCA	E	76'-5"	FA2-501-02	~~0~~N/A	~~1.50~~	2
6	EFS-MPK-001B	B-Emergency Feedwater Pit	R/B NRCA	W	76'-5"	FA2-512-01	~~0~~N/A	~~1.24~~	2
7	EFS-MOV-014A	Motor Operated Valve	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2	
8	EFS-MOV-014B	Motor Operated Valve	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
9	EFS-MOV-014C	Motor Operated Valve	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
10	EFS-MOV-014D	Motor Operated Valve	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
11	EFS-MOV-017A	A-Emergency Feedwater Control Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
12	EFS-MOV-017B	B-Emergency Feedwater Control Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
13	EFS-MOV-017C	C-Emergency Feedwater Control Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
14	EFS-MOV-017D	D-Emergency Feedwater Control Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
15	EFS-MOV-019A	A-Emergency Feedwater Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
16	EFS-MOV-019B	B-Emergency Feedwater Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
17	EFS-MOV-019C	C-Emergency Feedwater Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 2 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
18	EFS-MOV-019D	D-Emergency Feedwater Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
19	EFS-MOV-101A	A-Emergency Feedwater Pump A-Main Steam Line Steam Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
20	EFS-MOV-101B	A-Emergency Feedwater Pump B-Main Steam Line Steam Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
21	EFS-MOV-101C	D-Emergency Feedwater Pump C-Main Steam Line Steam Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
22	EFS-MOV-101D	D-Emergency Feedwater Pump D-Main Steam Line Steam Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
23	EFS-MOV-103A, EFS-MOV-103B	A-Emergency Feedwater Pump Actuation Valve on A-steam supply line, A-Emergency Feedwater Pump Actuation Valve on B-steam supply line	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
24	EFS-MOV-103C, EFS-MOV-103D	D-Emergency Feedwater Pump Actuation Valve on C-steam supply line, D-Emergency Feedwater Pump Actuation Valve on D-steam supply line	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
25	FWS-SMV-512A	A-Main Feedwater Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	below flood elevation	4.62	3
26	FWS-SMV-512B	B-Main Feedwater Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	below flood elevation	4.62	3
27	FWS-SMV-512C	C-Main Feedwater Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	below flood elevation	4.62	3

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 3 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
28	FWS-SMV-512D	D-Main Feedwater Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	below flood elevation	4.62	3
29	MSS-SRV-509A	A1-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
30	MSS-SRV-510A	A2-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
31	MSS-SRV-511A	A3-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
32	MSS-SRV-512A	A4-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
33	MSS-SRV-513A	A5-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
34	MSS-SRV-514A	A6-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
35	MSS-SRV-509B	B1-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
36	MSS-SRV-510B	B2-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
37	MSS-SRV-511B	B3-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
38	MSS-SRV-512B	B4-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
39	MSS-SRV-513B	B5-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
40	MSS-SRV-514B	B6-Main Steam Safety Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
41	MSS-SRV-509C	C1-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
42	MSS-SRV-510C	C2-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
43	MSS-SRV-511C	C3-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
44	MSS-SRV-512C	C4-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
45	MSS-SRV-513C	C5-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
46	MSS-SRV-514C	C6-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
47	MSS-SRV-509D	D1-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
48	MSS-SRV-510D	D2-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
49	MSS-SRV-511D	D3-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
50	MSS-SRV-512D	D4-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 4 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
51	MSS-SRV-513D	D5-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
52	MSS-SRV-514D	D6-Main Steam Safety Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
53	MSS-MOV-507A	A-Main Steam Relief Valve Block Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
54	MSS-MOV-507B	B-Main Steam Relief Valve Block Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
55	MSS-MOV-507C	C-Main Steam Relief Valve Block Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
56	MSS-MOV-507D	D-Main Steam Relief Valve Block Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
57	MSS-MOV-508A	A-Main Steam Depressurization Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
58	MSS-MOV-508B	B-Main Steam Depressurization Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
59	MSS-MOV-508C	C-Main Steam Depressurization Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
60	MSS-MOV-508D	D-Main Steam Depressurization Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
61	MSS-SMV-515A	A-Main Steam Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
62	MSS-SMV-515B	B-Main Steam Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
63	MSS-SMV-515C	C-Main Steam Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
64	MSS-SMV-515D	D-Main Steam Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
65	MSS-HCV-565	A-Main Steam Bypass Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
66	MSS-HCV-575	B-Main Steam Bypass Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 5 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
67	MSS-HCV-585	C-Main Steam Bypass Isolation Valve Hand Control Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
68	MSS-HCV-595	D-Main Steam Bypass Isolation Valve Hand Control Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
69	MSS-PCV-515	A-Main Steam Relief Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
70	MSS-PCV-525	B-Main Steam Relief Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
71	MSS-PCV-535	C-Main Steam Relief Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
72	MSS-PCV-545	D-Main Steam Relief Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
73	MSS-MOV-701A	A-Main Steam Drain Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
74	MSS-MOV-701B	B-Main Steam Drain Isolation Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
75	MSS-MOV-701C	C-Main Steam Drain Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
76	MSS-MOV-701D	D-Main Steam Drain Isolation Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
77	NCS-MPP-001A	A-Component Cooling Water Pump	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
78	NCS-MPP-001B	B-Component Cooling Water Pump	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
79	NCS-MPP-001C	C-Component Cooling Water Pump	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
80	NCS-MPP-001D	D-Component Cooling Water Pump	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
81	NCS-MTK-001A	A-Component Cooling Water Surge tank	R/B NRCA	E	101'-0"	FA2-601-01	below flood elevation	1.~~71~~52	4

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 6 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
82	NCS-MTK-001B	B-Component Cooling Water Surge Tank	R/B NRCA	W	101'-0"	FA2-602-01	below flood elevation	3.0~~8~~9	5
83	NCS-MHX-001A	A-Component Cooling Water Heat Exchanger	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
84	NCS-MHX-001B	B-Component Cooling Water Heat Exchanger	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
85	NCS-MHX-001C	C-Component Cooling Water Heat Exchanger	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
86	NCS-MHX-001D	D-Component Cooling Water Heat Exchanger	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
87	NCS-SRV-003A	Safety Valve	R/B NRCA	E	101'-0"	FA2-601-01	above flood elevation	1.~~71~~52	
88	NCS-SRV-003B	Safety Valve	R/B NRCA	W	101'-0"	FA2-602-01	above flood elevation	3.0~~8~~9	
89	NCS-MOV-007A	Motor Operated Valve	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
90	NCS-MOV-007B	Motor Operated Valve	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
91	NCS-MOV-020A	Motor Operated Valve	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
92	NCS-MOV-020B	Motor Operated Valve	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
93	NCS-VLV-035A	Safety Valve	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
94	NCS-VLV-035B	Safety Valve	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
95	NCS-RCV-056A	Radiation Control Valve	R/B NRCA	E	101'-0"	FA2-601-01	above flood elevation	1.~~71~~52	
96	NCS-LCV-010A	Level Control Valve	R/B NRCA	E	101'-0"	FA2-603-01	above flood elevation	1.~~71~~52	
97	NCS-MOV-007C	Motor Operated Valve	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
98	NCS-MOV-007D	Motor Operated Valve	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
99	NCS-MOV-020C	Motor Operated Valve	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
100	NCS-MOV-020D	Motor Operated Valve	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
101	NCS-RCV-056B	Radiation Control Valve	R/B NRCA	W	101'-0"	FA2-602-01	above flood elevation	3.0~~8~~9	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 7 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
102	NCS-LCV-~~020~~010C	Level Control Valve	R/B NRCA	W	101'-0"	FA2-604-01	below flood elevation	3.0~~8~~9	7
103	NCS-PCV-012	Pressure Control Valve	R/B NRCA	E	101'-0"	FA2-601-01	above flood elevation	1.~~71~~52	
104	NCS-PCV-022	Pressure Control Valve	R/B NRCA	W	101'-0"	FA2-602-01	above flood elevation	3.0~~8~~9	
~~105~~	~~EWS-SST-003A~~	~~A-Component Cooling Water Heat Exchanger Inlet Strainer~~	~~R/B NRCA~~	~~E~~	~~26'-4"~~	~~FA2-104-01~~	~~above flood elevation~~	~~0.45~~	
~~106~~	~~EWS-SST-003B~~	~~B-Component Cooling Water Heat Exchanger Inlet Strainer~~	~~R/B NRCA~~	~~E~~	~~26'-4"~~	~~FA2-105-01~~	~~above flood elevation~~	~~0.45~~	
~~107~~	~~EWS-SST-003C~~	~~C-Component Cooling Water Heat Exchanger Inlet Strainer~~	~~R/B NRCA~~	~~W~~	~~26'-4"~~	~~FA2-106-01~~	~~above flood elevation~~	~~0.60~~	
~~108~~	~~EWS-SST-003D~~	~~D-Component Cooling Water Heat Exchanger Inlet Strainer~~	~~R/B NRCA~~	~~W~~	~~26'-4"~~	~~FA2-107-01~~	~~above flood elevation~~	~~0.60~~	
109	SGS-AOV-001A	Air Operated Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
110	SGS-AOV-001B	Air Operated Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
111	SGS-AOV-001C	Air Operated Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
112	SGS-AOV-001D	Air Operated Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
113	SGS-AOV-002A	Air Operated Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
114	SGS-AOV-002B	Air Operated Valve	R/B NRCA	E	65'-0"	FA2-414-01	above flood elevation	4.62	
115	SGS-AOV-002C	Air Operated Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
116	SGS-AOV-002D	Air Operated Valve	R/B NRCA	W	65'-0"	FA2-415-01	above flood elevation	4.62	
117	VRS-MAH-101A	A-Main Control Room Air Handling Unit	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
118	VRS-MAH-101B	B-Main Control Room Air Handling Unit	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
119	VRS-MAH-101C	C-Main Control Room Air Handling Unit	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 8 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
120	VRS-MAH-101D	D-Main Control Room Air Handling Unit	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
121	VRS-MFN-101A	A-Main Control Room Air Handling Unit Fan	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
122	VRS-MFN-101B	B-Main Control Room Air Handling Unit Fan	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
123	VRS-MFN-101C	C-Main Control Room Air Handling Unit Fan	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
124	VRS-MFN-101D	D-Main Control Room Air Handling Unit Fan	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
125	VRS-MCL-101A	A-Main Control Room Air Handling Unit Cooling Coil	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
126	VRS-MCL-101B	B-Main Control Room Air Handling Unit Cooling Coil	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
127	VRS-MCL-101C	C-Main Control Room Air Handling Unit Cooling Coil	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
128	VRS-MCL-101D	D-Main Control Room Air Handling Unit Cooling Coil	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
129	VRS-MEH-101A	A-Main Control Room Air Handling Unit Electric Heating Coil	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
130	VRS-MEH-101B	B-Main Control Room Air Handling Unit Electric Heating Coil	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
131	VRS-MEH-101C	C-Main Control Room Air Handling Unit Electric Heating Coil	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 9 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
132	VRS-MEH-101D	D-Main Control Room Air Handling Unit Electric Heating Coil	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
133	VRS-MFU-111A	A-Main Control Room Emergency Filtration Unit	R/B NRCA	E	50'-2"	FA2-405-01	above flood elevation	0.~~87~~78	
134	VRS-MFU-111B	B-Main Control Room Emergency Filtration Unit	R/B NRCA	W	50'-2"	FA2-406-01	above flood elevation	0.~~86~~77	
135	VRS-MFN-111A	A-Main Control Room Emergency Filtration Unit Fan	R/B NRCA	E	50'-2"	FA2-405-01	above flood elevation	0.~~87~~78	
136	VRS-MFN-111B	B-Main Control Room Emergency Filtration Unit Fan	R/B NRCA	W	50'-2"	FA2-406-01	above flood elevation	0.~~86~~77	
137	VRS-MEH-111A	A-Main Control Room Emergency Filtration Unit Electric Heating Coil	R/B NRCA	E	50'-2"	FA2-405-01	above flood elevation	0.~~87~~78	
138	VRS-MEH-111B	B-Main Control Room Emergency Filtration Unit Electric Heating Coil	R/B NRCA	W	50'-2"	FA2-406-01	above flood elevation	0.~~86~~77	
139	VRS-EHD-101A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-42~~0~~4-01	above flood elevation	0.~~87~~78	
140	VRS-EHD-101B	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-423-01	above flood elevation	0.~~86~~77	
141	VRS-EHD-102A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-42~~0~~4-01	above flood elevation	0.~~87~~78	
142	VRS-EHD-102B	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-423-01	above flood elevation	0.~~86~~77	
143	VRS-AOD-103A	Air Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
144	VRS-AOD-103B	Air Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
145	VRS-EHD-104A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 10 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
146	VRS-EHD-104B	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
147	VRS-EHD-105A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
148	VRS-EHD-105B	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
149	VRS-EHD-105C	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
150	VRS-EHD-105D	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
151	VRS-EHD-106A	Electro HydraulicOperated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
152	VRS-EHD-106B	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
153	VRS-EHD-106C	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
154	VRS-EHD-106D	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
155	VRS-EHD-107A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
156	VRS-EHD-107B	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
157	VRS-MOD-111A	Motor Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
158	VRS-MOD-111B	Motor Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
159	VRS-MOD-112A	Motor Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
160	VRS-MOD-112B	Motor Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
161	VRS-MOD-113A	Motor Operated Damper	R/B NRCA	E	50'-2"	FA2-405-01	above flood elevation	0.~~87~~78	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 11 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
162	VRS-MOD-113B	Motor Operated Damper	R/B NRCA	W	50'-2"	FA2-406-01	above flood elevation	0.~~86~~77	
163	VRS-AOD-121	Air Operated Damper	R/B NRCA	E	26'-11"	FA2-308-02	N/A	-	6
164	VRS-AOD-122	Air Operated Damper	R/B NRCA	E	50'-2"	FA2-412-01	above flood elevation	0.~~87~~78	
165	VRS-AOD-131	Air Operated Damper	R/B NRCA	W	26'-11"	FA2-308-01	N/A	-	6
166	VRS-AOD-132	Air Operated Damper	R/B NRCA	W	50'-2"	FA2-413-01	above flood elevation	0.~~86~~77	
167	VRS-MAH-201A	A-Class 1E Electrical Room Air Handling Unit	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
168	VRS-MAH-201B	B-Class 1E Electrical Room Air Handling Unit	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
169	VRS-MAH-201C	C-Class 1E Electrical Room Air Handling Unit	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
170	VRS-MAH-201D	D-Class 1E Electrical Room Air Handling Unit	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
171	VRS-MFN-201A	A-Class 1E Electrical Room Air Handling Unit Fan	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
172	VRS-MFN-201B	B-Class 1E Electrical Room Air Handling Unit Fan	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
173	VRS-MFN-201C	C-Class 1E Electrical Room Air Handling Unit Fan	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
174	VRS-MFN-201D	D-Class 1E Electrical Room Air Handling Unit Fan	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
175	VRS-MFN-202A	A-Class 1E Electrical Room Return Air Fan	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
176	VRS-MFN-202B	B-Class 1E Electrical Room Return Air Fan	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
177	VRS-MFN-202C	C-Class 1E Electrical Room Return Air Fan	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 12 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
178	VRS-MFN-202D	D-Class 1E Electrical Room Return Air Fan	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
179	VRS-MCL-201A	A-Class 1E Electrical Room Air Handling Unit Cooling Coil	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
180	VRS-MCL-201B	B-Class 1E Electrical Room Air Handling Unit Cooling Coil	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
181	VRS-MCL-201C	C-Class 1E Electrical Room Air Handling Unit Cooling Coil	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
182	VRS-MCL-201D	D-Class 1E Electrical Room Air Handling Unit Cooling Coil	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
183	VRS-MEH-201A	A-Class 1E Electrical Room Air Handling Unit Electric Heating Coil	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
184	VRS-MEH-201B	B-Class 1E Electrical Room Air Handling Unit Electric Heating Coil	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
185	VRS-MEH-201C	C-Class 1E Electrical Room Air Handling Unit Electric Heating Coil	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
186	VRS-MEH-201D	D-Class 1E Electrical Room Air Handling Unit Electric Heating Coil	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
187	VRS-MEH-202A	A-Class 1E I&C Room In-Duct Heater	R/B NRCA	E	2~~5~~6'-~~3~~11"	FA2-304-01	NA	-	6
188	VRS-MEH-202B	B-Class 1E I&C Room In-Duct Heater	R/B NRCA	E	2~~5~~6'-~~3~~11"	FA2-307-01	NA	-	6
189	VRS-MEH-202C	C-Class 1E I&C Room In-Duct Heater	R/B NRCA	W	2~~5~~6'-~~3~~11"	FA2-312-01	NA	-	6

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 13 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes	
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor			
190	VRS-MEH-202D	D-Class 1E I&C Room In-Duct Heater	R/B NRCA	W	2~~5~~6'-~~3~~11"	FA2-309-01	NA	-	6	DCD_03.04.01-29 S02
191	VRS-MEH-203A	A-Class 1E Electrical Room MCR HVAC Equipment Room In-Duct Heater	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78		
192	VRS-MEH-203B	B-Class 1E Electrical Room MCR HVAC Equipment Room In-Duct Heater	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78		
193	VRS-MEH-203C	C-Class 1E Electrical Room MCR HVAC Equipment Room In-Duct Heater	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77		
194	VRS-MEH-203D	D-Class 1E Electrical Room MCR HVAC Equipment Room In-Duct Heater	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77		
195	VRS-MEH-211A	A-Remote Shutdown Console Room In-Duct Heater	R/B NRCA	E	76'-5"	FA2-504-01	NA	-	6	
196	VRS-MEH-211B	B-Remote Shutdown Console Room In-Duct Heater	R/B NRCA	E	76'-5"	FA2-504-01	NA	-	6	
~~197~~	~~VRS-MEH-204A~~	~~A-Class 1E Battery Room In-Duct Heater~~	~~R/B NRCA~~	~~E~~	~~26'-4"~~	~~FA3-115-01~~	~~above flood elevation~~	~~0.45~~		DCD_03.04.01-29 S02
~~198~~	~~VRS-MEH-204B~~	~~B-Class 1E Battery Room In-Duct Heater~~	~~R/B NRCA~~	~~E~~	~~26'-4"~~	~~FA3-115-01~~	~~above flood elevation~~	~~0.45~~		
~~199~~	~~VRS-MEH-204C~~	~~C-Class 1E Battery Room In-Duct Heater~~	~~R/B NRCA~~	~~W~~	~~26'-4"~~	~~FA3-115-01~~	~~above flood elevation~~	~~0.60~~		
~~200~~	~~VRS-MEH-204D~~	~~D-Class 1E Battery Room In-Duct Heater~~	~~R/B NRCA~~	~~W~~	~~26'-4"~~	~~FA3-115-01~~	~~above flood elevation~~	~~0.60~~		
201	VRS-EHD-201A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78		

Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 14 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
202	VRS-EHD-201B	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
203	VRS-EHD-201C	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
204	VRS-EHD-201D	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
205	VRS-EHD-202A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
206	VRS-EHD-202B	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
207	VRS-EHD-202C	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
208	VRS-EHD-202D	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
209	VRS-EHD-203A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
210	VRS-EHD-203B	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
211	VRS-EHD-203C	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
212	VRS-EHD-203D	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
213	VRS-EHD-204A	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
214	VRS-EHD-204B	Electro Hydraulic Operated Damper	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
215	VRS-EHD-204C	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 15 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
216	VRS-EHD-204D	Electro Hydraulic Operated Damper	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
217	VRS-AOD-205A	Air Operated Damper	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.~~87~~78	
218	VRS-AOD-205B	Air Operated Damper	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.~~87~~78	
219	VRS-AOD-205C	Air Operated Damper	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
220	VRS-AOD-205D	Air Operated Damper	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
221	VRS-MAH-401A	A-Emergency ~~FeedwaterArea Air Handling Unit Pump~~Feedwater Pump Area Air Handling Unit	R/B NRCA	E	-26'-4"	FA2-102-01	~~N/A~~above flood elevation	-0.42	
222	VRS-MAH-401B	B-Emergency Feedwater Pump Area Air Handling Unit	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
223	VRS-MAH-401C	C-Emergency Feedwater Pump Area Air Handling Unit	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
224	VRS-MAH-401D	D-Emergency Feedwater Pump Area Air Handling Unit	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
225	VRS-MFN-401A	A-Emergency Feedwater Pump Area Air Handling Unit Fan	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2	
226	VRS-MFN-401B	B-Emergency Feedwater Pump Area Air Handling Unit Fan	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
227	VRS-MFN-401C	C-Emergency Feedwater Pump Area Air Handling Unit Fan	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
228	VRS-MFN-401D	D-Emergency Feedwater Pump Area Air Handling Unit Fan	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
229	VRS-MCL-401A	A-Emergency Feedwater Pump Area Air Handling Unit Cooling Coil	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 16 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
230	VRS-MCL-401B	B-Emergency Feedwater Pump Area Air Handling Unit Cooling Coil	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
231	VRS-MCL-401C	C-Emergency Feedwater Pump Area Air Handling Unit Cooling Coil	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
232	VRS-MCL-401D	D-Emergency Feedwater Pump Area Air Handling Unit Cooling Coil	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
233	VRS-MEH-401A	A-Emergency Feedwater Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2	
234	VRS-MEH-401B	B-Emergency Feedwater Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
235	VRS-MEH-401C	C-Emergency Feedwater Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
236	VRS-MEH-401D	D-Emergency Feedwater Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
237	VRS-MAH-501A	A-Component Cooling Water Pump Area Air Handling Unit	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
238	VRS-MAH-501B	B-Component Cooling Water Pump Area Air Handling Unit	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
239	VRS-MAH-501C	C-Component Cooling Water Pump Area Air Handling Unit	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
240	VRS-MAH-501D	D-Component Cooling Water Pump Area Air Handling Unit	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 17 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
241	VRS-MFN-501A	A-Component Cooling Water Pump Area Air Handling Unit Fan	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
242	VRS-MFN-501B	B-Component Cooling Water Pump Area Air Handling Unit Fan	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
243	VRS-MFN-501C	C-Component Cooling Water Pump Area Air Handling Unit Fan	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
244	VRS-MFN-501D	D-Component Cooling Water Pump Area Air Handling Unit Fan	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
245	VRS-MCL-501A	A-Component Cooling Water Pump Area Air Handling Unit Cooling Coil	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
246	VRS-MCL-501B	B-Component Cooling Water Pump Area Air Handling Unit Cooling Coil	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
247	VRS-MCL-501C	C-Component Cooling Water Pump Area Air Handling Unit Cooling Coil	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
248	VRS-MCL-501D	D-Component Cooling Water Pump Area Air Handling Unit Cooling Coil	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
249	VRS-MEH-501A	A-Component Cooling Water Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
250	VRS-MEH-501B	B-Component Cooling Water Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
251	VRS-MEH-501C	C-Component Cooling Water Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 18 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
252	VRS-MEH-501D	D-Component Cooling Water Pump Area Air Handling Unit Electric Heating Coil	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
253	VWS-TMV-141	Chilled Water Control Valve	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.78~~7~~	
254	VWS-TMV-151	Chilled Water Control Valve	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.78~~7~~	
255	VWS-TMV-161	Chilled Water Control Valve	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
256	VWS-TMV-171	Chilled Water Control Valve	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
257	VWS-TMV-206	Chilled Water Control Valve	R/B NRCA	E	50'-2"	FA2-402-01	above flood elevation	0.78~~7~~	
258	VWS-TMV-226	Chilled Water Control Valve	R/B NRCA	E	50'-2"	FA2-401-01	above flood elevation	0.78~~7~~	
259	VWS-TMV-246	Chilled Water Control Valve	R/B NRCA	W	50'-2"	FA2-403-01	above flood elevation	0.~~86~~77	
260	VWS-TMV-266	Chilled Water Control Valve	R/B NRCA	W	50'-2"	FA2-404-01	above flood elevation	0.~~86~~77	
261	VWS-TMV-402	Chilled Water Control Valve	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2	
262	VWS-TMV-412	Chilled Water Control Valve	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2	
263	VWS-TMV-422	Chilled Water Control Valve	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43	
264	VWS-TMV-432	Chilled Water Control Valve	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
265	VWS-TMV-502	Chilled Water Control Valve	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
266	VWS-TMV-512	Chilled Water Control Valve	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
267	VWS-TMV-522	Chilled Water Control Valve	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
268	VWS-TMV-532	Chilled Water Control Valve	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
269	OC	Operator Console	R/B NRCA	W	26'-11"	FA2-308-01	N/A	-	6
270	RPS-A	A-Reactor Protection System Cabinet	R/B NRCA	E	26'-11"	FA2-304-01	N/A	-	6
271	EFS-A	A-ESF Actuation System Cabinet	R/B NRCA	E	26'-11"	FA2-304-01	N/A	-	6
272	SVP-A	A-Safety VDU Processor Cabinet	R/B NRCA	E	26'-11"	FA2-304-01	N/A	-	6

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 19 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
273	SLS-A	A-Safety Logic System Cabinet	R/B NRCA	E	26'-11"	FA2-304-01	N/A	-	6
274	RPS-B	B-Reactor Protection System Cabinet	R/B NRCA	E	26'-11"	FA2-307-01	N/A	-	6
275	EFS-B	B-ESF Actuation System Cabinet	R/B NRCA	E	26'-11"	FA2-307-01	N/A	-	6
276	SVP-B	B-Safety VDU Processor Cabinet	R/B NRCA	E	26'-11"	FA2-307-01	N/A	-	6
277	SLS-B	B-Safety Logic System Cabinet	R/B NRCA	E	26'-11"	FA2-307-01	N/A	-	6
278	RPS-C	C-Reactor Protection System Cabinet	R/B NRCA	W	26'-11"	FA2-312-01	N/A	-	6
279	EFS-C	C-ESF Actuation System Cabinet	R/B NRCA	W	26'-11"	FA2-312-01	N/A	-	6
280	SVP-C	C-Safety VDU Processor Cabinet	R/B NRCA	W	26'-11"	FA2-312-01	N/A	-	6
281	SLS-C	C-Safety Logic System Cabinet	R/B NRCA	W	26'-11"	FA2-312-01	N/A	-	6
282	RPS-D	D-Reactor Protection System Cabinet	R/B NRCA	W	26'-11"	FA2-309-01	N/A	-	6
283	EFS-D	D-ESF Actuation System Cabinet	R/B NRCA	W	26'-11"	FA2-309-01	N/A	-	6
284	SVP-D	D-Safety VDU Processor Cabinet	R/B NRCA	W	26'-11"	FA2-309-01	N/A	-	6
285	SLS-D	D-Safety Logic System Cabinet	R/B NRCA	W	26'-11"	FA2-309-01	N/A	-	6
286	MC-A	A-Class 1E 6.9kV Switchgear	R/B NRCA	E	3'-7"	FA2-202-01	N/A	-	6
287	LC-A	A-Class 1E 480V Load Center	R/B NRCA	E	3'-7"	FA2-202-01	N/A	-	6
288	MCC-A	A-Class 1E Motor Control Center	R/B NRCA	E	3'-7"	FA2-202-01	N/A	-	6
289	MCC-A1	A1-Class 1E Motor Control Center	R/B NRCA	E	3'-7"	FA2-202-01	N/A	-	6
290	RIO-A	A-Safety Remote I/O Cabinet	R/B NRCA	E	~~3~~26'-~~7~~11"	FA2-~~202~~304-01	N/A	-	6
291	PBH-A	A-Pressurizer Heater Distribution Panel	R/B NRCA	E	3'-7"	FA2-202-01	N/A	-	6
292	RPTS-A	A-RCP Trip Switchgear	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 20 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
293	MC-B	B-Class 1E 6.9kV Switchgear	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6
294	LC-B	B-Class 1E 480V Load Center	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6
295	MCC-B	B-Class 1E Motor Control Center	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6
296	RIO-B	B-Safety Remote I/O Cabinet	R/B NRCA	E	26'-11"	FA2-307-01	N/A	-	6
297	PBH-B	B-Pressurizer Heater Distribution Panel	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6
298	RPTS-B	B-RCP Trip Switchgear	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6
299	MC-C	C-Class 1E 6.9kV Switchgear	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
300	LC-C	C-Class 1E 480V Load Center	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
301	MCC-C	C-Class 1E Motor Control Center	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
302	RIO-C	C-Safety Remote I/O Cabinet	R/B NRCA	W	26'-11"	FA2-312-01	N/A	-	6
303	PBH-C	C-Pressurizer Heater Distribution Panel	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
304	RPTS-C	C-RCP Trip Switchgear	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
305	MC-D	D-Class 1E 6.9kV Switchgear	R/B NRCA	W	3'-7"	FA2-205-01	N/A	-	6
306	LC-D	D-Class 1E 480V Load Center	R/B NRCA	W	3'-7"	FA2-205-01	N/A	-	6
307	MCC-D	D-Class 1E Motor Control Center	R/B NRCA	W	3'-7"	FA2-205-01	N/A	-	6
308	MCC-D1	D1-Class 1E Motor Control Center	R/B NRCA	W	3'-7"	FA2-205-01	N/A	-	6
309	RIO-D	D-Safety Remote I/O Cabinet	R/B NRCA	W	~~3~~26'-~~7~~11"	FA2-~~205~~309-01	N/A	-	6
310	PBH-D	D-Pressurizer Heater Distribution Panel	R/B NRCA	W	3'-7"	FA2-205-01	N/A	-	6
311	RPTS-D	D-RCP Trip Switchgear	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
312	RSC	Remote Shutdown Console	R/B NRCA	E	76'-5"	FA2-504-01	N/A	-	6

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 21 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes	
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor			
313	MRTP-1	MCR/RSR Transfer Panel (1)	R/B NRCA	~~W~~E	76'-5"	FA2-50~~1~~4-~~1~~01	~~above flood elevation~~N/A	~~1.24~~-	6	DCD_03.04.01-29 S02
314	MRTP-2	MCR/RSR Transfer Panel (2)	R/B NRCA	~~E~~W	76'-5"	FA2-50~~4~~9-01	~~N/A~~above flood elevation	-1.13	~~6~~	
315	RTBC-1	Reactor Trip Breaker Cabinet (1)	R/B NRCA	W	76'-5"	FA2-502-01	N/A	-	6	
316	RTBC-2	Reactor Trip Breaker Cabinet (2)	R/B NRCA	W	76'-5"	FA2-503-01	N/A	-	6	
317	DDP-A	A-Reactor Building DC Distribution Panel	R/B NRCA	E	~~26~~3'-~~11~~7"	FA2-~~3~~202-01	N/A	-	6	DCD_03.04.01-29 S02
318	SDC-A	A-Solenoid Distribution Panel	R/B NRCA	E	~~26~~3'-~~11~~7"	FA2-~~3~~202-01	N/A	-	6	
319	IBC-A	A-Class 1E UPS Unit	R/B NRCA	E	26'-11"	FA2-302-01	N/A	-	6	
~~320~~	~~IBB-A~~	~~A-Class 1EI&C Power Transformer~~	~~R/B NRCA~~	~~E~~	~~26' 11"~~	~~FA2-302-01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02
321	IBD-A	A-Class 1E AC120V Panelboard	R/B NRCA	E	~~26~~3'-~~11~~7"	FA2-~~3~~202-01	N/A	-	6	
~~322~~	~~MVIA1~~	~~A-MOV Inverter1~~	~~R/B NRCA~~	~~E~~	~~26' 11"~~	~~FA2-302-01~~	~~N/A~~	-	~~6~~	
~~323~~	~~MVIA2~~	~~A-MOV Inverter2~~	~~R/B NRCA~~	~~E~~	~~26' 11"~~	~~FA2-302-01~~	~~N/A~~	-	~~6~~	
~~324~~	~~MVCA1~~	~~A-MOV Motor Control Center1~~	~~R/B NRCA~~	~~E~~	~~3' 7"~~	~~FA2-202-01~~	~~N/A~~	-	~~6~~	
~~325~~	~~MVCA2~~	~~A-MOV Motor Control Center2~~	~~R/B NRCA~~	~~E~~	~~3' 7"~~	~~FA2-202-01~~	~~N/A~~	-	~~6~~	
326	DDP-B	B-Reactor Building DC Distribution Panel	R/B NRCA	E	~~26~~3'-~~11~~7"	FA2-~~3~~203-01	N/A	-	6	
327	SDC-B	B-Solenoid Distribution Panel	R/B NRCA	E	~~26~~3'-~~11~~7"	FA2-~~3~~203-01	N/A	-	6	
328	IBC-B	B-Class 1E UPS Unit	R/B NRCA	E	26'-11"	FA2-303-01	N/A	-	6	
~~329~~	~~IBB-B~~	~~B-Class 1E I&C Power Transformer~~	~~R/B NRCA~~	~~E~~	~~26' 11"~~	~~FA2-303-01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02
330	IBD-B	B-Class 1E AC120V Panelboard	R/B NRCA	E	~~26~~3'-~~11~~7"	FA2-~~3~~203-01	N/A	-	6	
~~331~~	~~MVIB~~	~~B-MOV Inverter~~	~~R/B NRCA~~	~~E~~	~~26' 11"~~	~~FA2-303-01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02

Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 22 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes	
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor			
~~332~~	~~MVCB~~	~~B MOV Motor Control Center~~	~~R/B NRCA~~	~~E~~	~~3' 7"~~	~~FA2 203 01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02
333	DDP-C	C-Reactor Building DC Distribution Panel	R/B NRCA	W	~~26~~3'-~~11~~7"	FA2-~~31~~204-01	N/A	-	6	
334	SDC-C	C-Solenoid Distribution Panel	R/B NRCA	W	~~26~~3'-~~11~~7"	FA2-~~31~~204-01	N/A	-	6	
335	IBC-C	C-Class 1E UPS Unit	R/B NRCA	W	26'-11"	FA2-314-01	N/A	-	6	
~~336~~	~~IBB C~~	~~C I&C Power Transformer~~	~~R/B NRCA~~	~~W~~	~~26' 11"~~	~~FA2 314 01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02
337	IBD-C	C-Class 1E AC120V Panelboard	R/B NRCA	W	~~26~~3'-~~11~~7"	FA2-~~31~~204-01	N/A	-	6	
~~338~~	~~MVIC~~	~~C MOV Inverter~~	~~R/B NRCA~~	~~W~~	~~26' 11"~~	~~FA2 314 01~~	~~N/A~~	-	~~6~~	
~~339~~	~~MVCC~~	~~C MOV Motor Control Center~~	~~R/B NRCA~~	~~W~~	~~3' 7"~~	~~FA2 204 01~~	~~N/A~~	-	~~6~~	
340	DDP-D	D-Reactor Building DC Distribution Panel	R/B NRCA	W	~~26~~3'-~~11~~7"	FA2-~~313~~205-01	N/A	-	6	
341	SDC-D	D-Solenoid Distribution Panel	R/B NRCA	W	~~26~~3'-~~11~~7"	FA2-~~313~~205-01	N/A	-	6	
342	IBC-D	D-Class 1E UPS Unit	R/B NRCA	W	26'-11"	FA2-313-01	N/A	-	6	
~~343~~	~~IBB D~~	~~D Class 1E I&C Power Transformer~~	~~R/B NRCA~~	~~W~~	~~26' 11"~~	~~FA2 313 01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02
344	IBD-D	D-Class 1E AC120V Panelboard	R/B NRCA	W	~~26~~3'-~~11~~7"	FA2-~~313~~205-01	N/A	-	6	
~~345~~	~~MVID1~~	~~D MOV Inverter1~~	~~R/B NRCA~~	~~W~~	~~26' 11"~~	~~FA2 313 01~~	~~N/A~~	-	~~6~~	DCD_03.04.01-29 S02
~~346~~	~~MVID2~~	~~D MOV Inverter2~~	~~R/B NRCA~~	~~W~~	~~26' 11"~~	~~FA2 313 01~~	~~N/A~~	-	~~6~~	
~~347~~	~~MVCD1~~	~~D MOV Motor Control Center1~~	~~R/B NRCA~~	~~W~~	~~3' 7"~~	~~FA2 205 01~~	~~N/A~~	-	~~6~~	
~~348~~	~~MVCD2~~	~~D MOV Motor Control Center2~~	~~R/B NRCA~~	~~W~~	~~3' 7"~~	~~FA2 205 01~~	~~N/A~~	-	~~6~~	
349	EFS-FT-016	A - Emergency Feedwater Flow	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.4~~5~~2		
350	EFS-FT-026	B - Emergency Feedwater Flow	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.4~~5~~2		
351	EFS-FT-036	C - Emergency Feedwater Flow	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.~~60~~43		
352	EFS-FT-046	D - Emergency Feedwater Flow	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43		

Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 23 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
353	EFS-LT-060	A - Emergency Feedwater Pit Water Level	R/B NRCA	E	76'-5"	FA2-5017-01	above flood elevation	1.5028	
354	EFS-LT-061	A - Emergency Feedwater Pit Water Level	R/B NRCA	E	76'-5"	FA2-5017-01	above flood elevation	1.5028	
355	EFS-LT-070	B - Emergency Feedwater Pit Water Level	R/B NRCA	W	76'-5"	FA2-5019-101	above flood elevation	1.2413	
356	EFS-LT-071	B - Emergency Feedwater Pit Water Level	R/B NRCA	W	76'-5"	FA2-5019-101	above flood elevation	1.2413	
357	EFS-PT-052	A - Emergency Feedwater Pump Discharge Pressure	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.452	
358	EFS-PT-050	B - Emergency Feedwater Pump Discharge Pressure	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.452	
359	EFS-PT-051	C - Emergency Feedwater Pump Discharge Pressure	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.6043	
360	EFS-PT-053	D - Emergency Feedwater Pump Discharge Pressure	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.6043	
361	MSS-PT-515	A - Main Steam Line Pressure	R/B NRCA	E	76'-5"	FA2-5017-01	above flood elevation	1.5028	
362	MSS-PT-516	A - Main Steam Line Pressure	R/B NRCA	E	76'-5"	FA2-5017-01	above flood elevation	1.5028	
363	MSS-PT-517	A - Main Steam Line Pressure	R/B NRCA	E	76'-5"	FA2-5017-01	above flood elevation	1.5028	
364	MSS-PT-518	A - Main Steam Line Pressure	R/B NRCA	E	76'-5"	FA2-5017-01	above flood elevation	1.5028	
365	MSS-PT-525	B - Main Steam Line Pressure	R/B NRCA	E	765'-05"	FA2-414507-01	above flood elevation	4.61.28	
366	MSS-PT-526	B - Main Steam Line Pressure	R/B NRCA	E	765'-05"	FA2-414507-01	above flood elevation	4.61.28	
367	MSS-PT-527	B - Main Steam Line Pressure	R/B NRCA	E	765'-05"	FA2-414507-01	above flood elevation	4.61.28	
368	MSS-PT-528	B - Main Steam Line Pressure	R/B NRCA	E	765'-05"	FA2-414507-01	above flood elevation	4.61.28	
369	MSS-PT-535	C - Main Steam Line Pressure	R/B NRCA	W	76'-5"	FA2-5019-101	above flood elevation	4.61.13	
370	MSS-PT-536	C - Main Steam Line Pressure	R/B NRCA	W	76'-5"	FA2-5019-101	above flood elevation	4.61.13	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 24 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
371	MSS-PT-537	C - Main Steam Line Pressure	R/B NRCA	W	76'-5"	FA2-50~~1~~9-~~1~~01	above flood elevation	~~4.6~~1.13	
372	MSS-PT-538	C - Main Steam Line Pressure	R/B NRCA	W	76'-5"	FA2-50~~1~~9-~~1~~01	above flood elevation	~~4.6~~1.13	
373	MSS-PT-545	D - Main Steam Line Pressure	R/B NRCA	W	76~~5~~'-~~0~~5"	FA2-~~415~~509-01	above flood elevation	~~4.6~~1.13	
374	MSS-PT-546	D - Main Steam Line Pressure	R/B NRCA	W	76~~5~~'-~~0~~5"	FA2-~~415~~509-01	above flood elevation	~~4.6~~1.13	
375	MSS-PT-547	D - Main Steam Line Pressure	R/B NRCA	W	76~~5~~'-~~0~~5"	FA2-~~415~~509-01	above flood elevation	~~4.6~~1.13	
376	MSS-PT-548	D - Main Steam Line Pressure	R/B NRCA	W	76~~5~~'-~~0~~5"	FA2-~~415~~509-01	above flood elevation	~~4.6~~1.13	
377	NCS-FT-034	A -Component Cooling Water Header Flow	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
378	NCS-FT-035	B -Component Cooling Water Header Flow	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
379	NCS-FT-037	C -Component Cooling Water Header Flow	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
380	NCS-FT-038	D -Component Cooling Water Header Flow	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
381	NCS-LT-010A	A -Component Cooling Water Surge Tank Water Level	R/B NRCA	E	101'-0"	FA2-60~~1~~3-01	above flood elevation	1.~~7~~152	
382	NCS-LT-~~011~~010B	A -Component Cooling Water Surge Tank Water Level	R/B NRCA	E	101'-0"	FA2-601-01	above flood elevation	1.~~7~~152	
383	NCS-LT-~~020~~010C	B -Component Cooling Water Surge Tank Water Level	R/B NRCA	W	101'-0"	FA2-602-01	above flood elevation	3.0~~8~~9	
384	NCS-LT-~~021~~010D	B -Component Cooling Water Surge Tank Water Level	R/B NRCA	W	101'-0"	FA2-60~~2~~4-01	above flood elevation	3.0~~8~~9	
385	NCS-PT-030	A -Component Cooling Water Header Pressure	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
386	NCS-PT-031	B -Component Cooling Water Header Pressure	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 25 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
387	NCS-PT-032	C -Component Cooling Water Header Pressure	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
388	NCS-PT-033	D -Component Cooling Water Header Pressure	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
389	EWS-FT-034	A - Component Cooling Water Heat Exchanger Essential Service Water Flow	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
390	EWS-FT-035	B - Component Cooling Water Heat Exchanger Essential Service Water Flow	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
391	EWS-FT-036	C - Component Cooling Water Heat Exchanger Essential Service Water Flow	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
392	EWS-FT-037	D - Component Cooling Water Heat Exchanger Essential Service Water Flow	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
393	NCS-TE-025	A -Component Cooling Water Supply Temperature	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
394	NCS-TE-026	B -Component Cooling Water Supply Temperature	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
395	NCS-TE-027	C -Component Cooling Water Supply Temperature	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
396	NCS-TE-028	D -Component Cooling Water Supply Temperature	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
397	RMS-RE-83A	Main Control Room Outside Air Intake Particulate Radiation	R/B NRCA	E	50'-2"	FA2-42~~0~~7-02	above flood elevation	0.7~~8~~7	
398	RMS-RE-83B	Main Control Room Outside Air Intake Particulate Radiation	R/B NRCA	W	50'-2"	FA2-407-03	above flood elevation	0.~~86~~77	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 26 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
399	RMS-RE-84A	Main Control Room Outside Air Intake Gas Radiation	R/B NRCA	E	50'-2"	FA2-4207-02	above flood elevation	0.787	
400	RMS-RE-84B	Main Control Room Outside Air Intake Gas Radiation	R/B NRCA	W	50'-2"	FA2-407-03	above flood elevation	0.8677	
401	RMS-RE-85A	Main Control Room Outside Air Intake Iodine Radiation	R/B NRCA	E	50'-2"	FA2-4207-02	above flood elevation	0.787	
402	RMS-RE-85B	Main Control Room Outside Air Intake Iodine Radiation	R/B NRCA	W	50'-2"	FA2-407-03	above flood elevation	0.8677	
403	VRS-TS-401	A - Emergency Feedwater Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.452	
404	VRS-TS-405	A - Emergency Feedwater Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.452	
405	VRS-TS-406	A - Emergency Feedwater Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-102-01	above flood elevation	0.452	
406	VRS-TS-411	B - Emergency Feedwater Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.452	
407	VRS-TS-415	B - Emergency Feedwater Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.452	
408	VRS-TS-416	B - Emergency Feedwater Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-103-01	above flood elevation	0.452	
409	VRS-TS-421	C - Emergency Feedwater Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.6043	
410	VRS-TS-425	C - Emergency Feedwater Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.6043	
411	VRS-TS-426	C - Emergency Feedwater Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-109-01	above flood elevation	0.6043	
412	VRS-TS-431	D - Emergency Feedwater Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.6043	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 27 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
413	VRS-TS-435	D - Emergency Feedwater Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
414	VRS-TS-436	D - Emergency Feedwater Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-108-01	above flood elevation	0.~~60~~43	
415	VRS-TS-501	A -Component Cooling Water Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
416	VRS-TS-504	A -Component Cooling Water Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
417	VRS-TS-505	A -Component Cooling Water Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
418	VRS-TS-511	B -Component Cooling Water Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
419	VRS-TS-514	B -Component Cooling Water Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
420	VRS-TS-515	B -Component Cooling Water Pump Area Temperature	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	
421	VRS-TS-521	C -Component Cooling Water Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
422	VRS-TS-524	C -Component Cooling Water Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
423	VRS-TS-525	C -Component Cooling Water Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
424	VRS-TS-531	D -Component Cooling Water Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
425	VRS-TS-534	D -Component Cooling Water Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
426	VRS-TS-535	D -Component Cooling Water Pump Area Temperature	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 28 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
427	VRS-TS-210	A -Class 1E Electrical Room Temperature	R/B NRCA	E	3'-7"	FA2-202-01	N/A	-	6
428	VRS-TS-230	B -Class 1E Electrical Room Temperature	R/B NRCA	E	3'-7"	FA2-203-01	N/A	-	6
429	VRS-TS-250	C -Class 1E Electrical Room Temperature	R/B NRCA	W	3'-7"	FA2-204-01	N/A	-	6
430	VRS-TS-270	D -Class 1E Electrical Room Temperature	R/B NRCA	W	3'-7"	FA2-205-01	N/A	-	6
431	VRS-TS-146	Main Control Room Temperature	R/B NRCA	W	26'-11"	FA2-308-01	N/A	-	6
432	VRS-TS-156	Main Control Room Temperature	R/B NRCA	W	26'-11"	FA2-308-01	N/A	-	6
433	VRS-TS-166	Main Control Room Temperature	R/B NRCA	W	26'-11"	FA2-308-01	N/A	-	6
434	VRS-TS-176	Main Control Room Temperature	R/B NRCA	W	26'-11"	FA2-308-01	N/A	-	6
435	NCS-LCV-010B	Level Control Valve	R/B NRCA	E	101'-0"	FA2-~~10~~601-01	above flood elevation	1.~~7~~152	
436	NCS-LCV-010D	Level Control Valve	R/B NRCA	W	101'-0"	FA2-604-01	above flood elevation	~~1.71~~3.09	7
437	NCS-LT-011A	A - Component Cooling Water Surge Tank Water Level	R/B NRCA	E	101'-0"	FA2-60~~1~~3-01	above flood elevation	1.~~7~~152	
438	NCS-LT-011B	A - Component Cooling Water Surge Tank Water Level	R/B NRCA	E	101'-0"	FA2-601-01	above flood elevation	1.~~7~~152	
439	NCS-LT-011C	B - Component Cooling Water Surge Tank Water Level	R/B NRCA	W	101'-0"	FA2-602-01	above flood elevation	3.0~~8~~9	
440	NCS-LT-011D	B - Component Cooling Water Surge Tank Water Level	R/B NRCA	W	101'-0"	FA2-60~~2~~4-01	above flood elevation	3.0~~8~~9	
441	NCS-PT-025	A - Component Cooling Water Pump discharge Pressure	R/B NRCA	E	-26'-4"	FA2-104-01	above flood elevation	0.4~~5~~2	
442	NCS-PT-026	B - Component Cooling Water Pump discharge Pressure	R/B NRCA	E	-26'-4"	FA2-105-01	above flood elevation	0.4~~5~~2	

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Table 3K-3 R/B NRCA Components Protected From Internal Flooding (Sheet 29 of 29)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
443	NCS-PT-027	C - Component Cooling Water Pump discharge Pressure	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
444	NCS-PT-028	D - Component Cooling Water Pump discharge Pressure	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	
445	NCS-PT-035	A - Component Cooling Water Pump discharge Pressure	R/B NRCA	E	-26'-4"	FA2-10~~5~~4-01	above flood elevation	0.4~~5~~2	
446	NCS-PT-036	B - Component Cooling Water Pump discharge Pressure	R/B NRCA	E	-26'-4"	FA2-10~~4~~5-01	above flood elevation	0.4~~5~~2	
447	NCS-PT-037	C - Component Cooling Water Pump discharge Pressure	R/B NRCA	W	-26'-4"	FA2-106-01	above flood elevation	0.~~60~~43	
448	NCS-PT-038	D - Component Cooling Water Pump discharge Pressure	R/B NRCA	W	-26'-4"	FA2-107-01	above flood elevation	0.~~60~~43	

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Notes:

1. These components are protected by water-tight door and floor drain isolation valve against in-flow of flooding occurring outside of compartment. In addition, these components are not required to be protected against flooding occurring inside the compartment due to redundancy of other trains/components.
2. There is no impact to this component, even if outside of pit is flooded.
3. Main feed water valves are submerged in the event of main feed water pipe rupture. However, the function of these valves are not required for the mitigation of a main feed water rupture event. Main feed water valves are required for containment isolation function in the event of LOCA. In the event of LOCA, a huge volume of water is released. However, this flooding only occurs inside containment. Therefore, these valves are not submerged in the event of LOCA.
4. Support leg of A-CCW surge tank is flooded, but there is no impact to function of this component.
5. Lower portion of B-CCW surge tank is flooded, but there is no impact to function of this component.
6. These components are protected by water-tight door or barriers against in-flow of flooding occurring outside of compartment.

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7. These valves are closed when in the normal condition. If this valve opens due to the event of flooding, the water is continuously supplied to CCW surge tank. Then, the surge tank may fail. However, the other valve “NCS-RCV-056B” will open on a high pressure alarm. Since the valve “NCS-RCV-056B” is not submerged in the event of flooding, the CCW surge tank maintains its function.

Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 1 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes	
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor			
1	VRS-MFN-251A	A-Class 1E Battery Room Exhaust Fan	PS/B	E	3'-7"	FA3-104-0~~3~~4	N/A	-	1	DCD_03.04.01-29 S02
2	VRS-MFN-251B	B-Class 1E Battery Room Exhaust Fan	PS/B	E	3'-7"	FA3-103-0~~3~~4	N/A	-	1	
3	VRS-MFN-251C	C-Class 1E Battery Room Exhaust Fan	PS/B	W	3'-7"	FA3-109-03	N/A	-	1	
4	VRS-MFN-251D	D-Class 1E Battery Room Exhaust Fan	PS/B	W	3'-7"	FA3-111-03	N/A	-	1	
5	VRS-EHD-251A	Electro Hydraulic Operated Damper	PS/B	E	3'-7"	FA3-104-0~~3~~4	N/A	-	1	DCD_03.04.01-29 S02
6	VRS-EHD-251B	Electro Hydraulic Operated Damper	PS/B	E	3'-7"	FA3-103-0~~3~~4	N/A	-	1	
7	VRS-EHD-251C	Electro Hydraulic Operated Damper	PS/B	W	3'-7"	FA3-109-03	N/A	-	1	
8	VRS-EHD-251D	Electro Hydraulic Operated Damper	PS/B	W	3'-7"	FA3-111-03	N/A	-	1	
9	VRS-EHD-252A	Electro Hydraulic Operated Damper	PS/B	E	3'-7"	FA3-104-0~~3~~4	N/A	-	1	DCD_03.04.01-29 S02
10	VRS-EHD-252B	Electro Hydraulic Operated Damper	PS/B	E	3'-7"	FA3-103-0~~3~~4	N/A	-	1	
11	VRS-EHD-252C	Electro Hydraulic Operated Damper	PS/B	W	3'-7"	FA3-109-03	N/A	-	1	
12	VRS-EHD-252D	Electro Hydraulic Operated Damper	PS/B	W	3'-7"	FA3-111-03	N/A	-	1	
13	VRS-MAH-511A	A-Essential Chiller Unit Area Air Handling Unit	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2	DCD_03.04.01-29 S02
14	VRS-MAH-511B	B-Essential Chiller Unit Area Air Handling Unit	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2	
15	VRS-MAH-511C	C-Essential Chiller Unit Area Air Handling Unit	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2	

Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 2 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
16	VRS-MAH-511D	D-Essential Chiller Unit Area Air Handling Unit	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
17	VRS-MFN-511A	A-Essential Chiller Unit Area Air Handling Unit Fan	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
18	VRS-MFN-511B	B-Essential Chiller Unit Area Air Handling Unit Fan	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
19	VRS-MFN-511C	C-Essential Chiller Unit Area Air Handling Unit Fan	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
20	VRS-MFN-511D	D-Essential Chiller Unit Area Air Handling Unit Fan	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
21	VRS-MCL-511A	A-Essential Chiller Unit Area Air Handling Unit Cooling Coil	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
22	VRS-MCL-511B	B-Essential Chiller Unit Area Air Handling Unit Cooling Coil	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
23	VRS-MCL-511C	C-Essential Chiller Unit Area Air Handling Unit Cooling Coil	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
24	VRS-MCL-511D	D-Essential Chiller Unit Area Air Handling Unit Cooling Coil	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
25	VRS-MEH-511A	A-Essential Chiller Unit Area Air Handling Unit Electric Heating Coil	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
26	VRS-MEH-511B	B-Essential Chiller Unit Area Air Handling Unit Electric Heating Coil	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
27	VRS-MEH-511C	C-Essential Chiller Unit Area Air Handling Unit Electric Heating Coil	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
28	VRS-MEH-511D	D-Essential Chiller Unit Area Air Handling Unit Electric Heating Coil	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 3 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
29	VWS-MEQ-001A	A-Essential Chiller Unit	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
30	VWS-MEQ-001B	B-Essential Chiller Unit	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
31	VWS-MEQ-001C	C-Essential Chiller Unit	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
32	VWS-MEQ-001D	D-Essential Chiller Unit	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
33	VWS-MPP-001A	A-Essential Chilled Water Pump	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
34	VWS-MPP-001B	B-Essential Chilled Water Pump	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
35	VWS-MPP-001C	C-Essential Chilled Water Pump	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
36	VWS-MPP-001D	D-Essential Chilled Water Pump	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
37	VWS-MTK-001A	A-Essential Chilled Water Compression Tank	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
38	VWS-MTK-001B	B-Essential Chilled Water Compression Tank	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
39	VWS-MTK-001C	C-Essential Chilled Water Compression Tank	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
40	VWS-MTK-001D	D-Essential Chilled Water Compression Tank	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
41	VWS-TMV-542	Chilled Water Control Valve	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
42	VWS-TMV-552	Chilled Water Control Valve	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 4 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
43	VWS-TMV-562	Chilled Water Control Valve	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
44	VWS-TMV-572	Chilled Water Control Valve	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
45	VWS-SRV-253A	Safety Valve	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
46	VWS-SRV-253B	Safety Valve	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
47	VWS-SRV-253C	Safety Valve	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
48	VWS-SRV-253D	Safety Valve	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
49	A-EGTG	A-Class 1E Gas Turbine Generator	PS/B	E	3'-7"	FA3-104-03	N/A	-	1
50	B-EGTG	B-Class 1E Gas Turbine Generator	PS/B	E	3'-7"	FA3-103-03	N/A	-	1
51	C-EGTG	C-Class 1E Gas Turbine Generator	PS/B	W	3'-7"	FA3-109-03	N/A	-	1
52	D-EGTG	D-Class 1E Gas Turbine Generator	PS/B	W	3'-7"	FA3-111-03	N/A	-	1
53	BCP-A	A-Class 1E Battery Charger	PS/B	E	-14'-2"	FA3-117-01	N/A	-	1
54	DCC-A	A-Class 1E DC Switchboard	PS/B	E	-14'-2"	FA3-117-01	N/A	-	1
55	DCC-A1	A1-Class 1E DC Switchboard	PS/B	E	-14'-2"	FA3-117-01	N/A	-	1
56	BCP-B	B-Class 1E Battery Charger	PS/B	E	-14'-2"	FA3-118-01	N/A	-	1
57	DCC-B	B-Class 1E DC Switchboard	PS/B	E	-14'-2"	FA3-118-01	N/A	-	1
58	BCP-C	C-Class 1E Battery Charger	PS/B	W	-14'-2"	FA3-122-01	N/A	-	1
59	DCC-C	C-Class 1E DC Switchboard	PS/B	W	-14'-2"	FA3-122-01	N/A	-	1
60	BCP-D	D-Class 1E Battery Charger	PS/B	W	-14'-2"	FA3-123-01	N/A	-	1
61	DCC-D	D-Class 1E DC Switchboard	PS/B	W	-14'-2"	FA3-123-01	N/A	-	1
62	DCC-D1	D1-Class 1E DC Switchboard	PS/B	W	-14'-2"	FA3-123-01	N/A	-	1
63	VCC-A	A-Ventilation Chiller Control Cabinet	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 5 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
64	VCC-B	B-Ventilation Chiller Control Cabinet	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
65	VCC-C	C-Ventilation Chiller Control Cabinet	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
66	VCC-D	D-Ventilation Chiller Control Cabinet	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
67	BAT-A	A-Class 1E Battery	PS/B	E	-26'-4"	FA3-115-01	above flood elevation	0.4~~5~~2	2
68	BAT-B	B-Class 1E Battery	PS/B	E	-26'-4"	FA3-116-01	above flood elevation	0.4~~5~~2	2
69	BAT-C	C-Class 1E Battery	PS/B	W	-26'-4"	FA3-120-01	above flood elevation	0.~~60~~43	2
70	BAT-D	D-Class 1E Battery	PS/B	W	-26'-4"	FA3-121-01	above flood elevation	0.~~60~~43	2
71	EPBA	A-Class 1E Gas Turbine Generator Control Board	PS/B	E	3'-7"	FA3-104-0~~3~~4	N/A	-	1
72	EPBB	B-Class 1E Gas Turbine Generator Control Board	PS/B	E	3'-7"	FA3-103-0~~3~~4	N/A	-	1
73	EPBC	C-Class 1E Gas Turbine Generator Control Board	PS/B	W	3'-7"	FA3-109-03	N/A	-	1
74	EPBD	D-Class 1E Gas Turbine Generator Control Board	PS/B	W	3'-7"	FA3-111-03	N/A	-	1
75	VRS-TS-541	A - Essential Chiller Unit Area Temperature	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
76	VRS-TS-544	A - Essential Chiller Unit Area Temperature	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
77	VRS-TS-545	A - Essential Chiller Unit Area Temperature	PS/B	E	-26'-4"	FA3-101-01	above flood elevation	0.4~~5~~2	2
78	VRS-TS-551	B - Essential Chiller Unit Area Temperature	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 6 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
79	VRS-TS-554	B - Essential Chiller Unit Area Temperature	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
80	VRS-TS-555	B - Essential Chiller Unit Area Temperature	PS/B	E	-26'-4"	FA3-102-01	above flood elevation	0.4~~5~~2	2
81	VRS-TS-561	C - Essential Chiller Unit Area Temperature	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
82	VRS-TS-564	C - Essential Chiller Unit Area Temperature	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
83	VRS-TS-565	C - Essential Chiller Unit Area Temperature	PS/B	W	-26'-4"	FA3-108-01	above flood elevation	0.~~60~~43	2
84	VRS-TS-571	D - Essential Chiller Unit Area Temperature	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
85	VRS-TS-574	D - Essential Chiller Unit Area Temperature	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
86	VRS-TS-575	D - Essential Chiller Unit Area Temperature	PS/B	W	-26'-4"	FA3-110-01	above flood elevation	0.~~60~~43	2
87	VRS-MEH-204A	A-Class 1E Battery Room In-Duct Heater	PS/B	E	-26'-4"	FA3-115-01	above flood elevation	0.42	2
88	VRS-MEH-204B	B-Class 1E Battery Room In-Duct Heater	PS/B	E	-26'-4"	FA3-116-01	above flood elevation	0.42	2
89	VRS-MEH-204C	C-Class 1E Battery Room In-Duct Heater	PS/B	W	-26'-4"	FA3-120-01	above flood elevation	0.43	2
90	VRS-MEH-204D	D-Class 1E Battery Room In-Duct Heater	PS/B	W	-26'-4"	FA3-121-01	above flood elevation	0.43	2
91	MVIA1	A-MOV Inverter1	PS/B	E	-26'-4"	FA3-132-01	above flood elevation	0.42	2
92	MVIA2	A-MOV Inverter2	PS/B	E	-26'-4"	FA3-132-01	above flood elevation	0.42	2

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 7 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
93	MVCA1	A-MOV Motor Control Center1	PS/B	E	-26'-4"	FA3-132-01	above flood elevation	0.42	2
94	MVCA2	A-MOV Motor Control Center1	PS/B	E	-26'-4"	FA3-132-01	above flood elevation	0.42	2
95	MVIB	B-MOV Inverter	PS/B	E	-26'-4"	FA3-133-01	above flood elevation	0.42	2
96	MVCB	B-MOV Motor Control Center	PS/B	E	-26'-4"	FA3-133-01	above flood elevation	0.42	2
97	MVIC	C-MOV Inverter	PS/B	W	-26'-4"	FA3-134-01	above flood elevation	0.43	2
98	MVCC	C-MOV Motor Control Center	PS/B	W	-26'-4"	FA3-134-01	above flood elevation	0.43	2
99	MVID1	D-MOV Inverter1	PS/B	W	-26'-4"	FA3-135-01	above flood elevation	0.43	2
100	MVID2	D-MOV Inverter2	PS/B	W	-26'-4"	FA3-135-01	above flood elevation	0.43	2
101	MVCD1	D-MOV Motor Control Center1	PS/B	W	-26'-4"	FA3-135-01	above flood elevation	0.43	2
102	MVCD2	D-MOV Motor Control Center2	PS/B	W	-26'-4"	FA3-135-01	above flood elevation	0.43	2
103	GTS-MFN-201A	A-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	E	3'-7"	FA3-104-03	N/A	-	1
104	GTS-MFN-202A	A-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	E	3'-7"	FA3-104-03	N/A	-	1
105	GTS-MFN-201B	B-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	E	3'-7"	FA3-103-03	N/A	-	1
106	GTS-MFN-202B	B-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	E	3'-7"	FA3-103-03	N/A	-	1
107	GTS-MFN-201C	C-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	W	3'-7"	FA3-109-03	N/A	-	1
108	GTS-MFN-202C	C-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	W	3'-7"	FA3-109-03	N/A	-	1
109	GTS-MFN-201D	D-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	W	3'-7"	FA3-111-03	N/A	-	1

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 8 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
110	GTS-MFN-202D	D-Emergency Gas Turbine Lubrication System Oil Cooler Fan	PS/B	W	3’-7”	FA3-111-03	N/A	-	1
111	GTS-MFN-302A	A-Ventilation Exhaust Fan	PS/B	E	3’-7”	FA3-104-03	N/A	-	1
112	GTS-MFN-302B	B-Ventilation Exhaust Fan	PS/B	E	3’-7”	FA3-103-03	N/A	-	1
113	GTS-MFN-302C	C-Ventilation Exhaust Fan	PS/B	W	3’-7”	FA3-109-03	N/A	-	1
114	GTS-MFN-302D	D-Ventilation Exhaust Fan	PS/B	W	3’-7”	FA3-111-03	N/A	-	1
115	GTS-SOV-109A	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	E	3’-7”	FA3-104-03	N/A	-	1
116	GTS-SOV-110A	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	E	3’-7”	FA3-104-03	N/A	-	1
117	GTS-SOV-109B	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	E	3’-7”	FA3-103-03	N/A	-	1
118	GTS-SOV-110B	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	E	3’-7”	FA3-103-03	N/A	-	1
119	GTS-SOV-109C	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	W	3’-7”	FA3-109-03	N/A	-	1
120	GTS-SOV-110C	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	W	3’-7”	FA3-109-03	N/A	-	1
121	GTS-SOV-109D	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	W	3’-7”	FA3-111-03	N/A	-	1
122	GTS-SOV-110D	Air Start Solenoid Valves in Starting Air Valve Unit	PS/B	W	3’-7”	FA3-111-03	N/A	-	1
123	GTS-LT-005	Level Transmitter of the Fuel Oil Day Tank	PS/B	E	3’-7”	FA3-104-03	N/A	-	1

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Table 3K-4 PS/B Components Protected From Internal Flooding (Sheet 9 of 9)

Item No.	Equipment Tag	Description	Location					Flood Elevation above Floor [ft]	Notes
			Building	Side	Floor Elevation	Fire Zone No.	Location Elevation above Floor		
124	GTS-LT-006	Level Transmitter of the Fuel Oil Day Tank	PS/B	E	3’-7”	FA3-103-03	N/A	-	1
125	GTS-LT-007	Level Transmitter of the Fuel Oil Day Tank	PS/B	W	3’-7”	FA3-109-03	N/A	-	1
126	GTS-LT-008	Level Transmitter of the Fuel Oil Day Tank	PS/B	W	3’-7”	FA3-111-03	N/A	-	1

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Notes:

1. These components are protected by water-tight door against in-flow of flooding occurring outside of compartment. In addition, these components are not required to be protected against flooding occurring inside the compartment due to redundancy of other trains/components.

2. The electrical interconnections (e.g., cables) servicing components are excluded as SSCs requiring protection against internal flooding, because the cables in PS/B are located above the internal flooding level and maintain their function in case of any internal flooding.

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Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-1 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation -26'-4"

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Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-2 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation -8'-7"

DCD_03.04.01-29 S02

Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-3 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 3'-7"

DCD_03.04.01-29 S02

Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-4 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 13'-6"

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DCD_03.04.01-29 S02

Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-5 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 25'-3"

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Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-6 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 35'-2"

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Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-7 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 50'-2"

DCD_03.04.01-29 S02

Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-8 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 76'-5"

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Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-9 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 101'-0"

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Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-10 Location of Watertight Doors and Flood Barrier Walls R/B Plan View Elevation 115'-6"

DCD_03.04.01-29 S02

Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-11 Location of Watertight Doors and Flood Barrier Walls PS/Bs Plan View Elevation -26'-4", -14'-2"

DCD_03.04.01-29 S02

Security-Related Information - Withheld Under 10 CFR 2.390

Figure 3K-12 Location of Watertight Doors and Flood Barrier Walls PS/Bs Plan View Elevation 3'-7", 24'-2", 39'-6"

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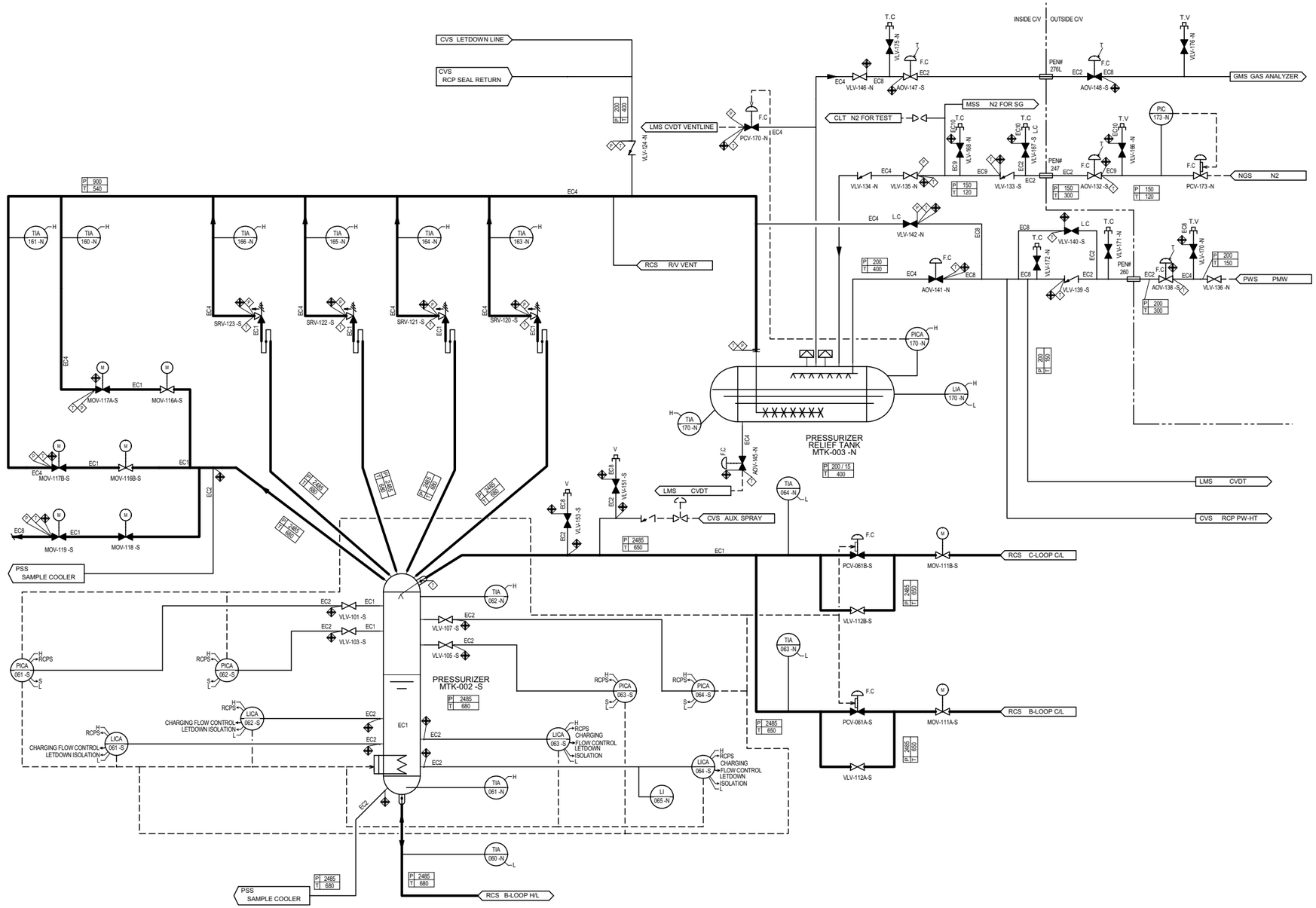

Figure 5.1-2 Reactor Coolant System Piping and Instrumentation Diagram (Sheet 2 of 3)

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03-7 S01
DCD_03.04.
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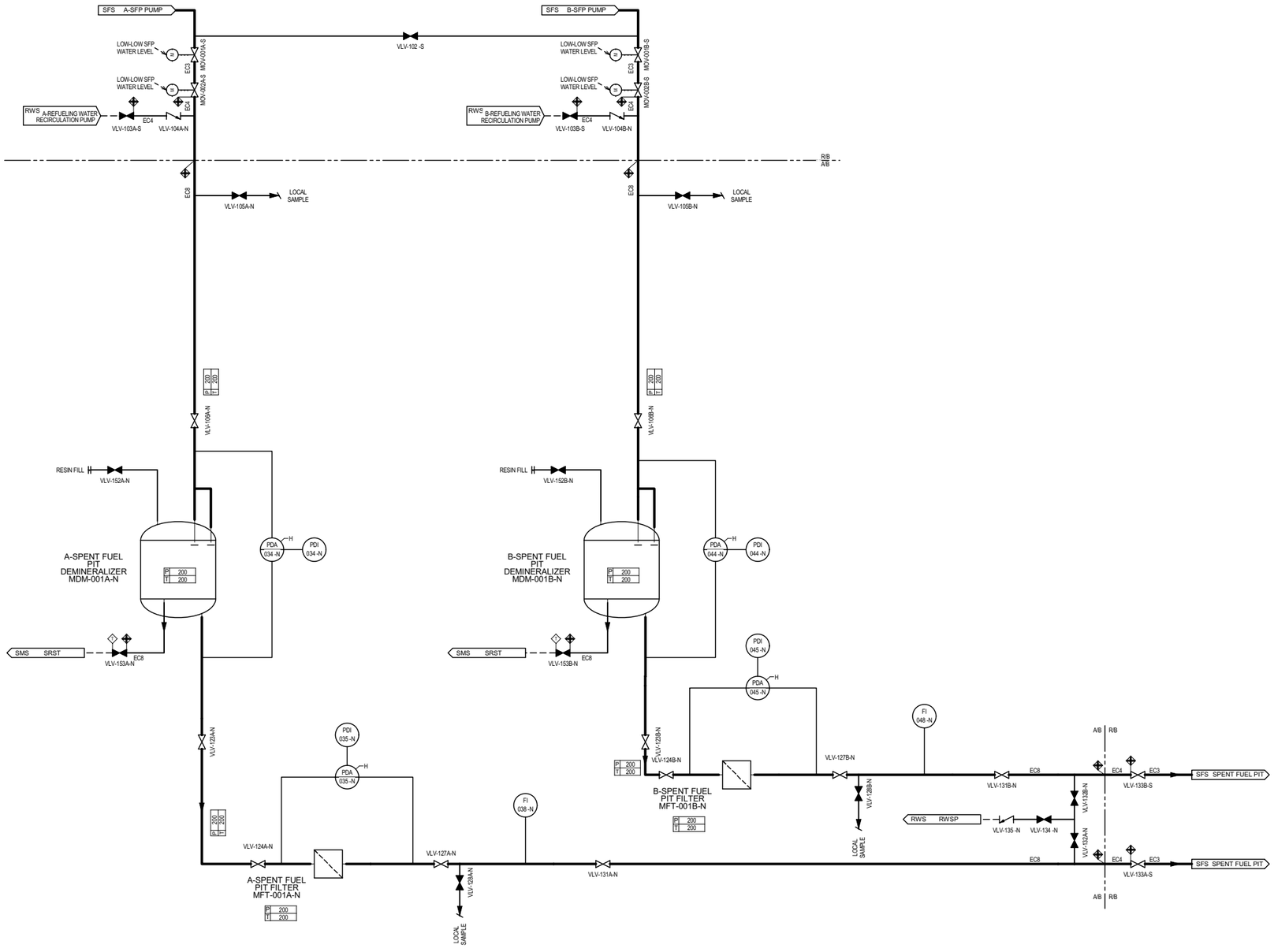

Figure 9.1.3-2 Schematic of Spent Fuel Pit Purification and Cooling System (Purification Portion)

sealing the penetrations. The east side includes two trains (A and B) of the CCW heat exchanger and pump rooms. The west side includes two trains (C and D) of the CCW heat exchanger and pump room. Equipment rooms are isolated by concrete walls and the fireproof doors which are not water-tight. Therefore, flood water is assumed to run across the area. DCD_09.02.01-44

Flood events are evaluated with the following assumptions:

- Earthquake
  For flooding events caused by an earthquake, non-seismic ~~category I~~ piping and components are assumed to fail and release all of their contents. DCD_03.04.01-29 S02

- High-energy line break/Moderate-energy line break
  HELB event is not a concern, because ~~there are no piping breaks, which are assumed to occur in the subject area~~the event results in less severe flooding than that caused by earthquake concurrent with fire-fighting operation. DCD_03.04.01-29 S02

- Fire fighting operations
  The flooding contribution from fire fighting operations is based on the full operation of two hose stations for 2 hours.

The worst case results are from a combination of earthquake and fire fighting operations, with a maximum water level of:

- East side: 0.~~45~~42 ft above elevation -26 ft, 4 in. DCD_03.04.01-29 S02
- West side: 0.~~60~~43 ft above elevation -26 ft, 4 in. DCD_03.04.01-29 S02

The pump foundations (top of concrete) height is 1.0 foot above floor elevation -26 ft, 4 in. As such, the pumps are not flooded. The instrumentation of each pump is located above the level of flood water.

Further discussion regarding flood protection is addressed in DCD Subsection 3.4.1.5.2.2.

The ESWS equipment and piping are located in the R/B, the UHSRS, the ESWPT, and the PS/Bs. These buildings are designed to withstand the effects of earthquakes, tornadoes, hurricanes, floods, external missiles and other appropriate natural phenomena. Sections 3.3, 3.4, 3.5, 3.7, 3.8 and 9.5 describe the bases of the structural design and protection from natural events.

Radioactive contamination of the ESWS is unlikely but can occur if the CCWS system is contaminated and then leaks into ESWS via the CCW HX. Subsection 9.2.1.2.1 describes prevention of this leakage to the environment.

Four independent, redundant trains, each powered from an independent Class 1E power supplies, are provided. The system is designed to provide the required cooling to mitigate the consequences of an accident with a single failure and one train unavailable due to maintenance coincident with a loss of offsite power.

All non-safety related components are supplied from the two non-safety CCW headers A2 and C2 (refer to Table 9.2.2-1). Therefore, the CCW system's safety function will be maintained ~~as a result of the~~in the event of a nonsafety-related piping failure, and the indirect impact of the pipe break will not impact any SSC safety function. DCD_09.02.02-48

The CCWS is designed so that periodic inspections of piping and components can be performed. DCD_09.02.02-64

Butterfly valves are used to set or adjust flow for some components in the CCWS design. However, severe throttling, resulting in large pressure drops and cavitations are avoided through appropriate sizing. Testing and flow balancing will verify correct sizing. Once positioned, frequent repositioning of the valves is not intended. DCD_09.02.02-62 DCD_09.02.02-62

During a severe accident, alternative methods of charging pump cooling using CCWS connections are available from water supplied by the non-essential chilled water system (non-ECWS) or the fire water supply system (FSS). The non-ECWS and the FSS ~~are non-seismic class~~include non-seismically designed portions. Therefore, at the boundary of the FSS (or the non-ECWS) and the CCWS, there are redundant normally-closed motor operated valves (MOV-321A/B, 322A/B, 323A/B, 324A/B, 325A/B and 326A/B). These valves at the safety related and non-safety-related boundaries are installed in series, and even if one valve opens during normal operation of the CCWS, it would not affect the CCWS since the other valve is closed. If there were a total loss of CCW, non-essential chilled water could be supplied to the CCWS to be used for CVS charging pump cooling water; this would be accomplished by opening MOV-322A/B, 323A/B, 324A/B, and 326A/B after closing MOV-316A/B. Fire water could be supplied to the CCWS to provide CVS charging pump cooling water by opening MOV-321A/B, 322A/B, 324A/B, and 325A/B after closing MOV-316A/B. These valves can be operated from the MCR. The water supply path from the non-ECWS or the FSS to the charging pumps is discussed in Section 19.2. DCD_09.02.02-80 DCD_03.04.01-29 S02

The CCWS can be used as an alternative supply of cooling water to the containment fan coolers of the non-ECWS. The non-ECWS ~~is non-seismic class~~includes non-seismically designed portions. Therefore, at the boundary with the CCWS, two locked-closed valves (NCS-MOV-241, 242) with their breakers open are provided. These valves on the boundaries with the CCWS are locked-closed, hence they would not open during normal operation of the CCWS by misoperation. During a severe accident, if containment spray could not be performed, CCW could be supplied to the containment fan coolers by opening NCS-MOV-241 and 242 and closing valves VWS-MOV-401 and 409. These valves can be operated from the MCR. To initialize the alternative containment cooling method, the operator must first pressurize the CCW surge tank to 100 psig which exceeds the design pressure of 50 psig. A pressure of 100 psig, which exceeds the containment design pressure of 68 psig, will match the saturation pressure so that flashing in the containment fan cooler is prevented. Because a severe accident is beyond design basis accident requirements, pressurizing the CCW surge tank to 100 psig can be realistically credited as the tank design specification margin will be adequate to demonstrate that the tank will maintain its integrity at 100 psig. The CCW surge tank detailed design will consider a provision for corrosion allowance, as required by ASME Section III. Because the tank is covered with nitrogen and the temperature is less than 100°F during the power operation, corrosion is unlikely to occur. Therefore, there is DCD_03.04.01-29 S02

manufacturer's standards. Piping and valves of Equipment Class 5 in the non-essential chilled water system are designed in accordance with ASME B31.1. DCD_03.02.02-25

- The non-essential chilled water system piping and valves located in R/B and PS/B are designed as seismic category II to ensure their integrity during and after the SSE. DCD_03.04.01-29 S02

9.2.7.2 System Description

9.2.7.2.1 Essential Chilled Water System

The essential chilled water system flow diagram is shown in Figure 9.2.7-1, equipment and component data is presented in Table 9.2.7-1. The operating data in Table 9.2.7-1 are determined at the system operating point, which is based on the abnormal operation condition, and are considered bounding values. DCD_09.02.02-72

The essential chilled water system consists of four independent trains and each train consists of one 50% capacity system. Each system includes, a water-cooled chiller, a chilled water pump, a compression tank with a make-up water line, a chilled water distribution loop, and instrumentation and control system. The condenser (heat rejection) section of each chiller is supplied with cooling water from the respective essential service water system during both normal and emergency operating conditions. The ECWS heat transfer and flow requirements ~~for normal plant operation and abnormal conditions~~under the worst condition are shown in Table 9.2.7-2. DCD_09.02.02-72 S01

The motor operated three-way control valves are located on the retune lines from each safety-related air handling unit cooling coils. These valves control the heat removal capacity by modulating the flow rate of chilled water through the AHU cooling coils in response to a temperature control signal. The motor operated three-way control valves fail "as is" upon a loss of control signal or electrical power.

During LOOP, each of the essential chilled water system is powered from the respective safety emergency power source. The essential chiller units stop for one hour after a SBO occurs until alternate ac gas turbine generator restores power (Chapter 8, Section 8.4). DCD_09.02.02-72

The chiller of each essential chilled water system is equipped with an integral chilled water temperature control system.

The chillers are protected by ~~a~~ pressure-relief devices to safely relieve overpressure, which ~~and~~ are vented~~piped~~ to the outside of the building in accordance with ANSI/ASHRAE Standard 15 to prevent the discharge from entering any building. The essential chiller units are located within the essential chiller mechanical equipment rooms. ~~And t~~The chiller mechanical equipment rooms meet ANSI/ASHRAE Standard 15 requirements for refrigerating machinery rooms including being equipped with refrigerant leak detectors that can actuate an alarm inside and outside of the chiller mechanical equipment room and in the MCR. ~~and~~The chiller mechanical equipment rooms are equipped with self-closing, tightfitting doors to isolate the chillers from occupied spaces. The supply and exhaust air to and from the chiller mechanical equipment rooms are ducted directly to the auxiliary building HVAC system to prevent airflow from the mechanical equipment rooms DCD_06.04-14 DCD_06.04-17 DCD_06.04-14 DCD_06.04-15 DCD_06.04-17

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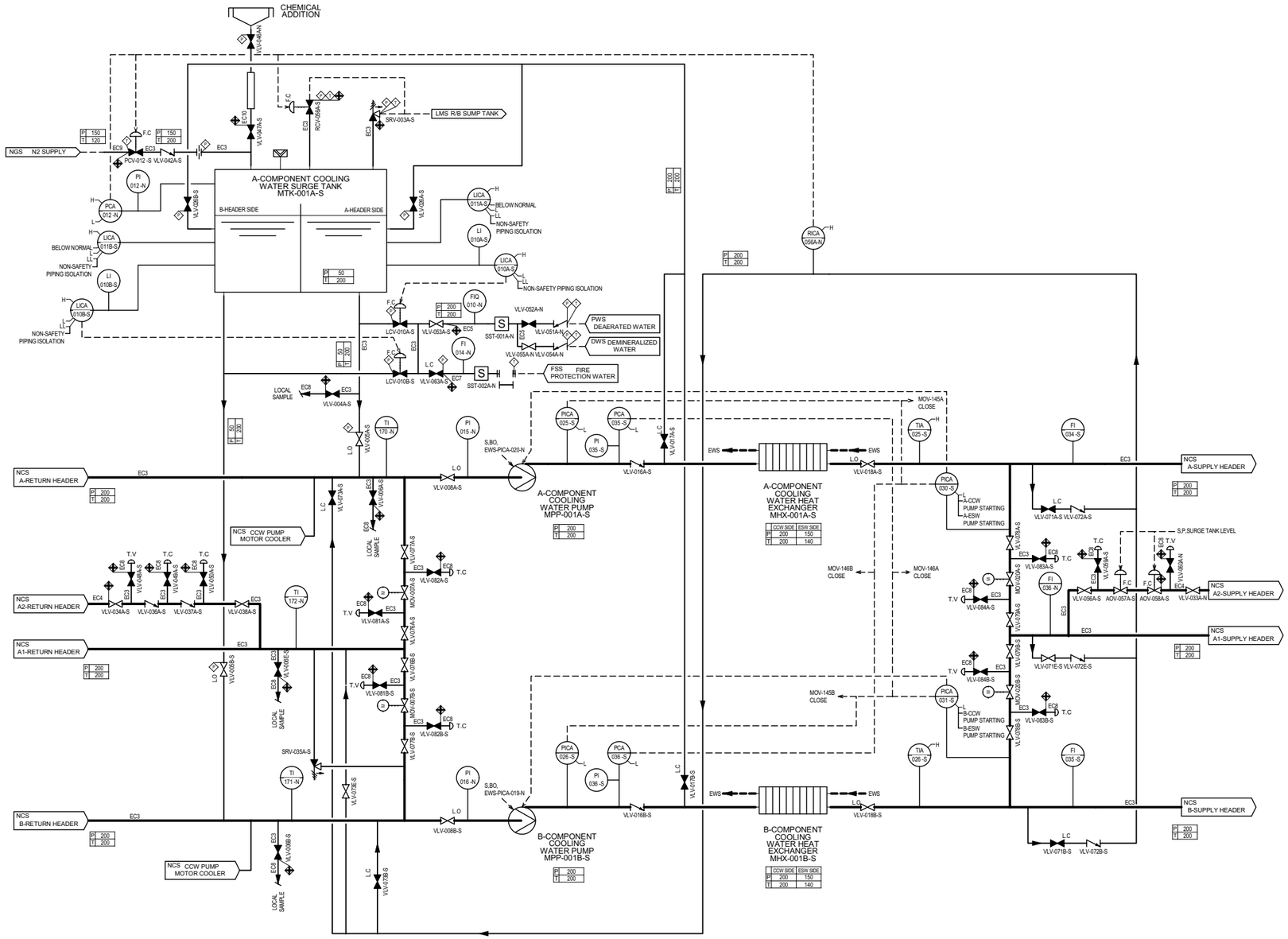

Figure 9.2.2-1 Component Cooling Water System Piping and Instrumentation Diagram (Sheet 1 of 9)

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DCD_09.02.02-86
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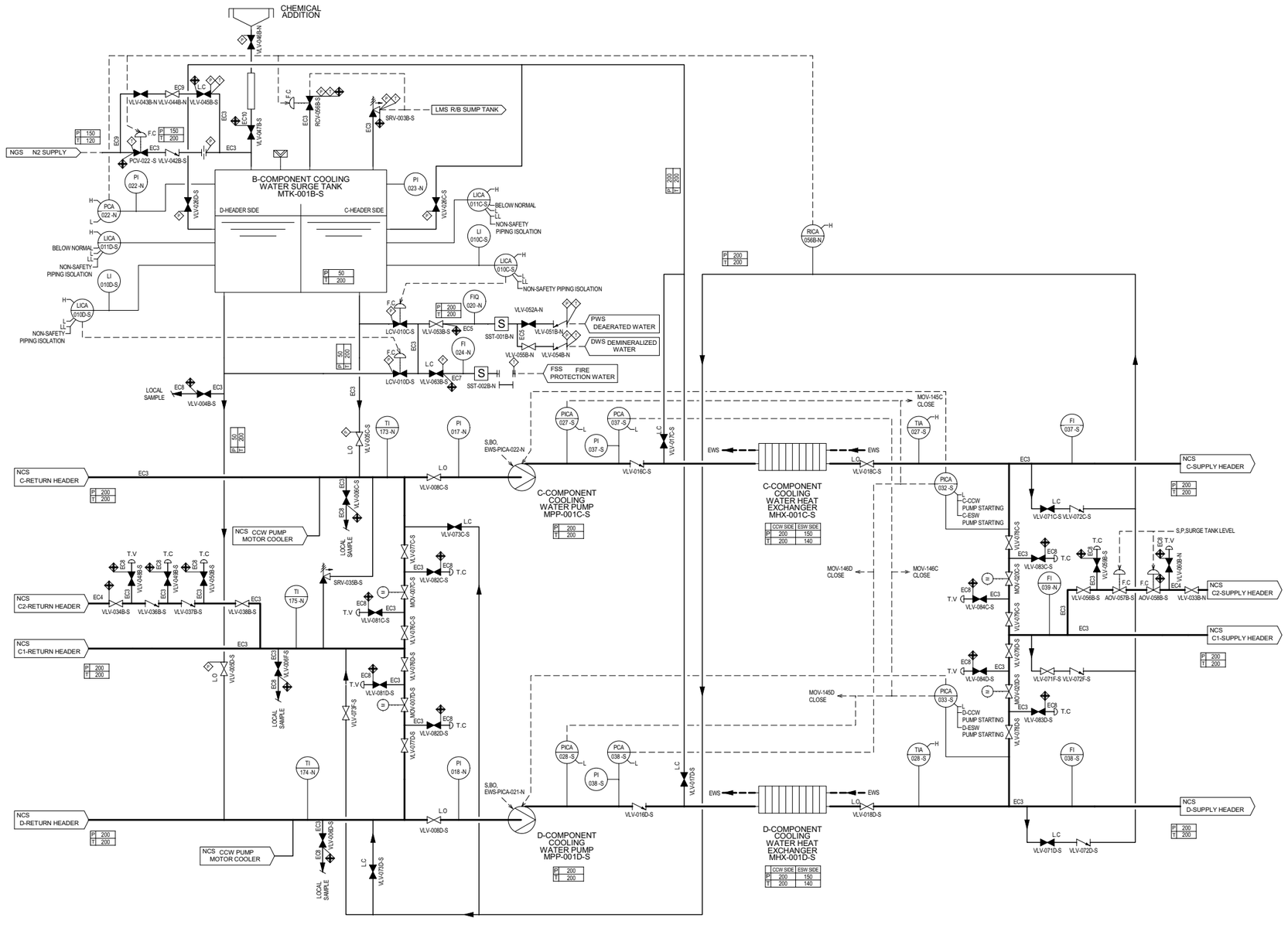

Figure 9.2.2-1 Component Cooling Water System Piping and Instrumentation Diagram (Sheet 2 of 9)

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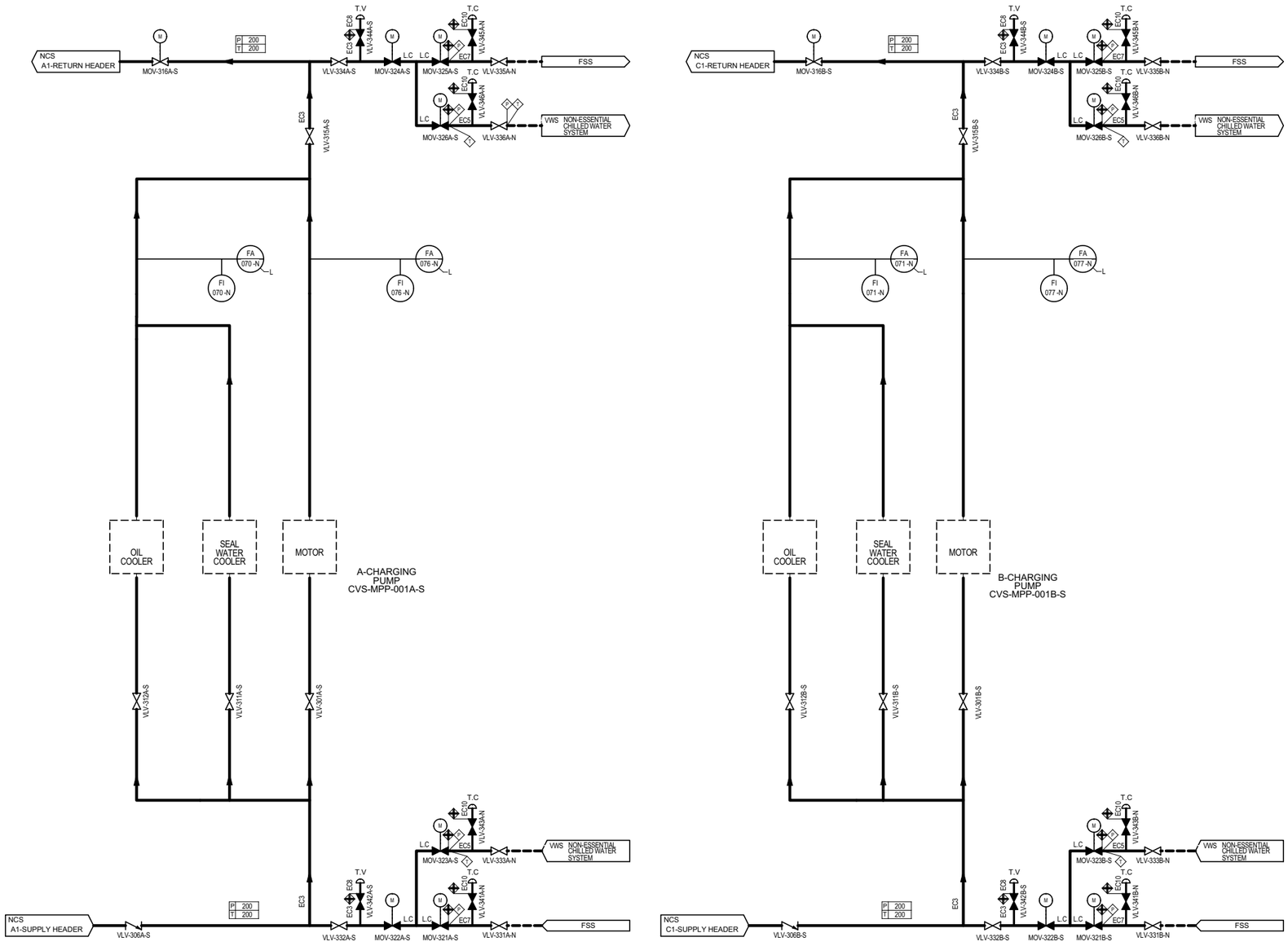

Figure 9.2.2-1 Component Cooling Water System Piping and Instrumentation Diagram (Sheet 6 of 9)

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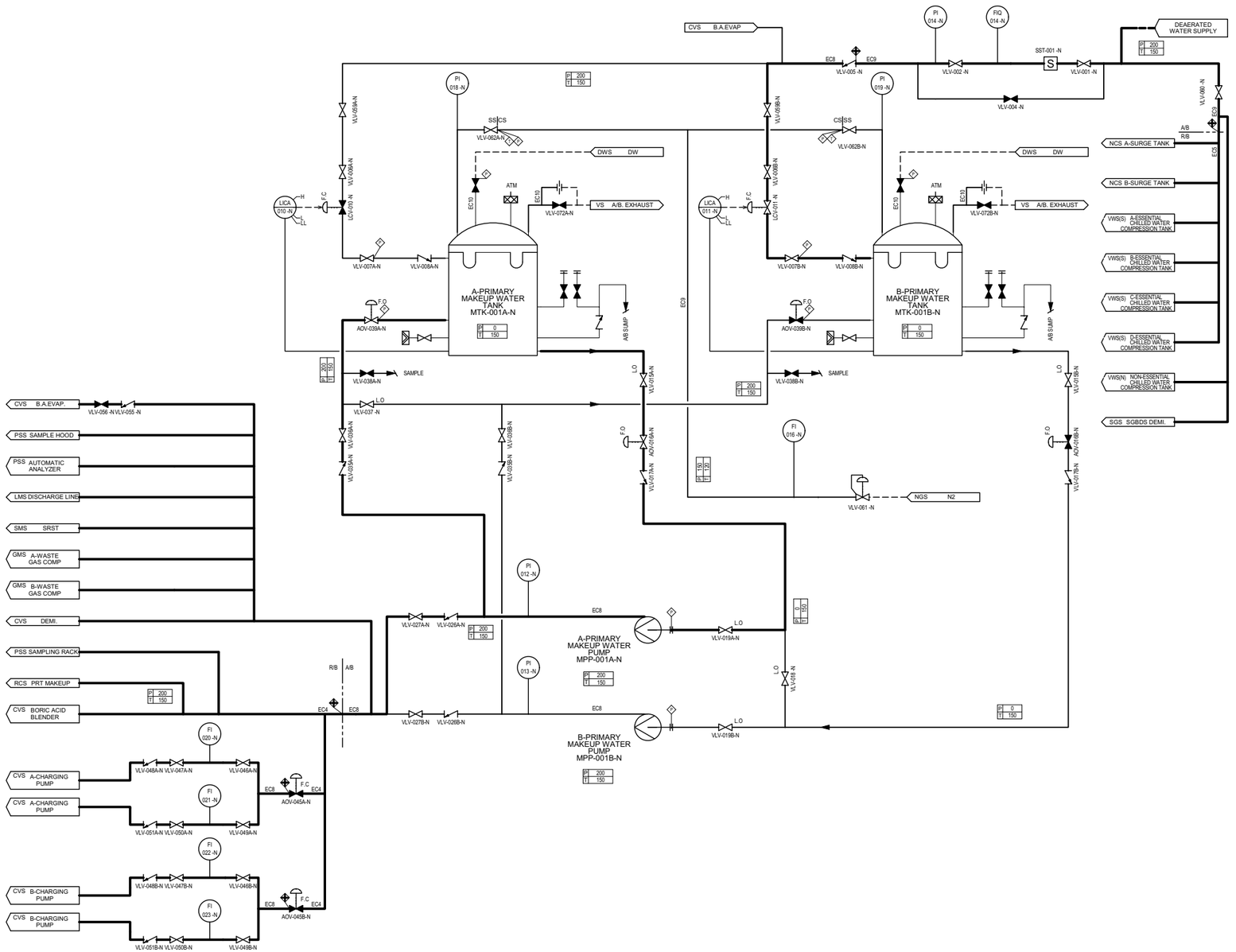

Figure 9.2.6-2 Primary Makeup Water System Flow Diagram

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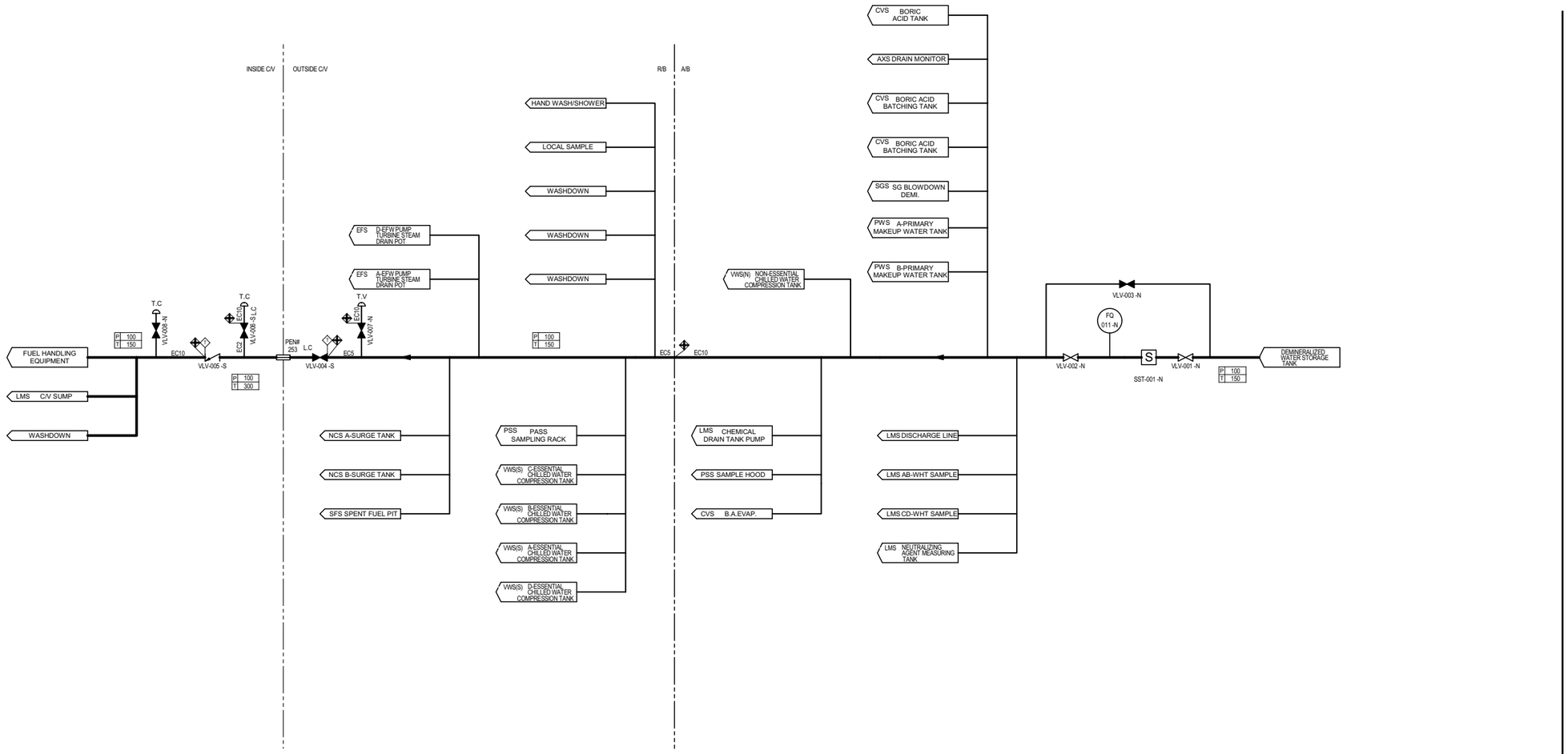

Figure 9.2.6-3 Demineralized Water System Flow Diagram

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02-74

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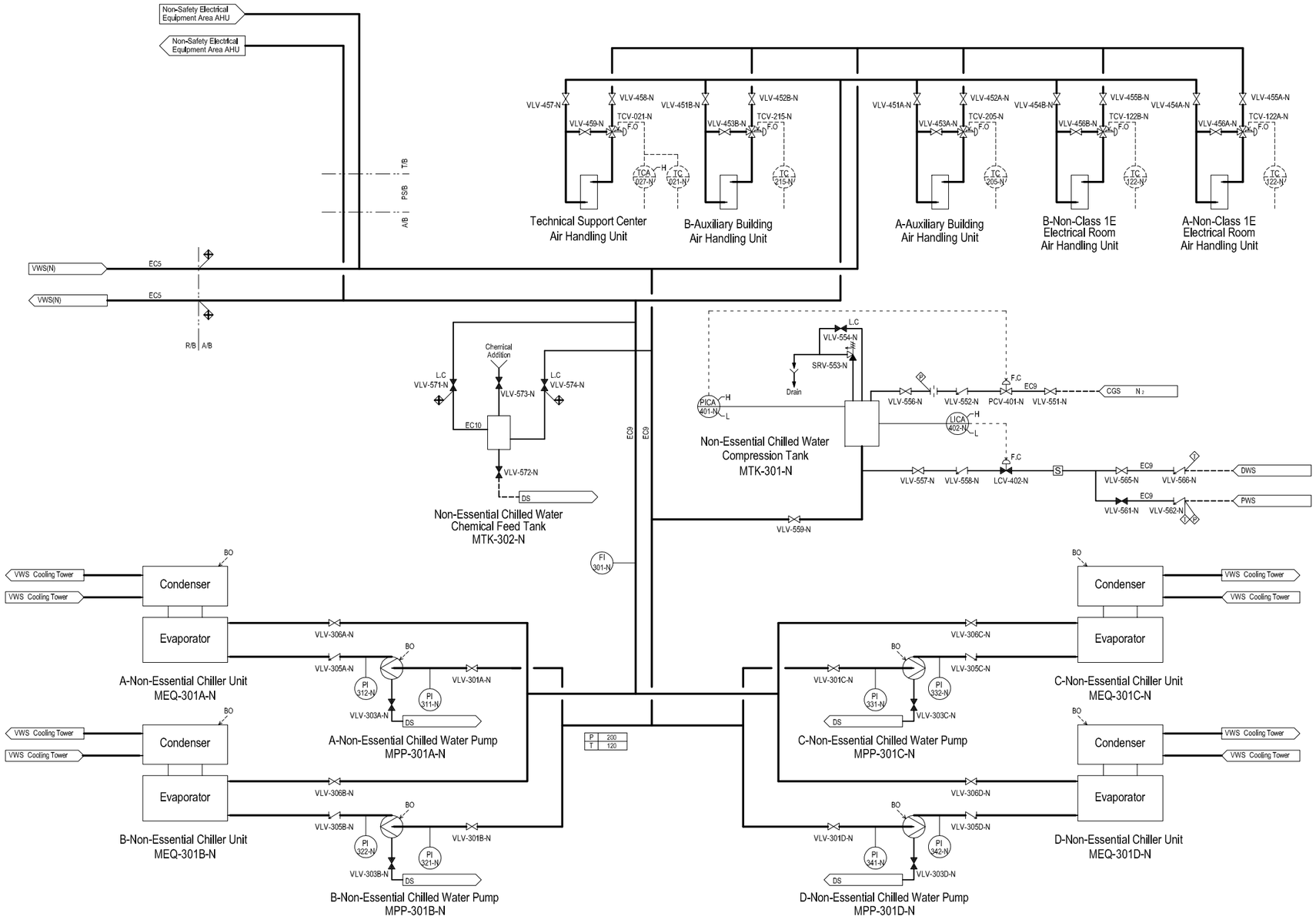

Figure 9.2.7-2 Non-Essential Chilled Water System Flow Diagram (1 of 3)

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02-74

DCD_03.04.
01-29 S02

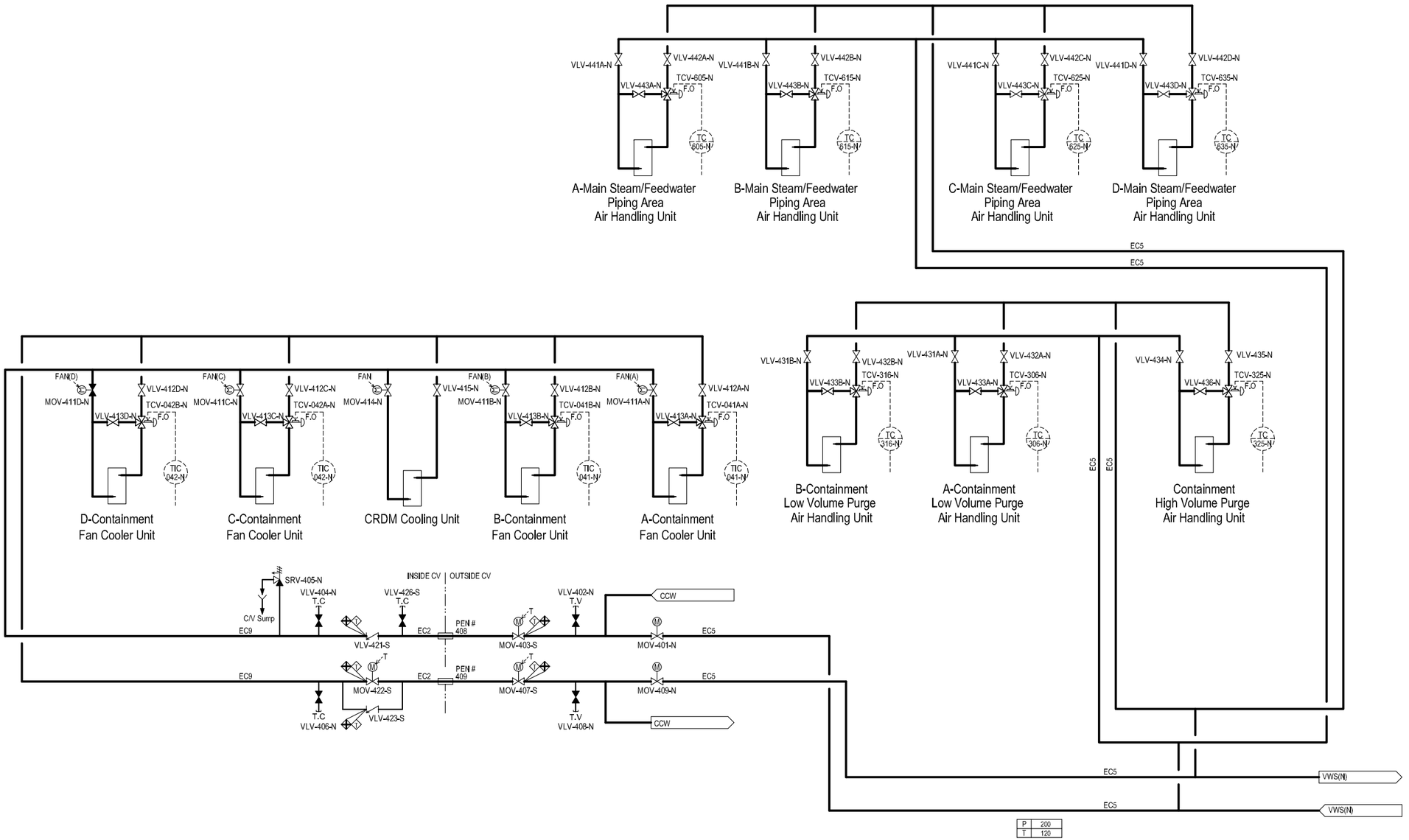

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Figure 9.2.7-2 Non-Essential Chilled Water System Flow Diagram (2 of 3)

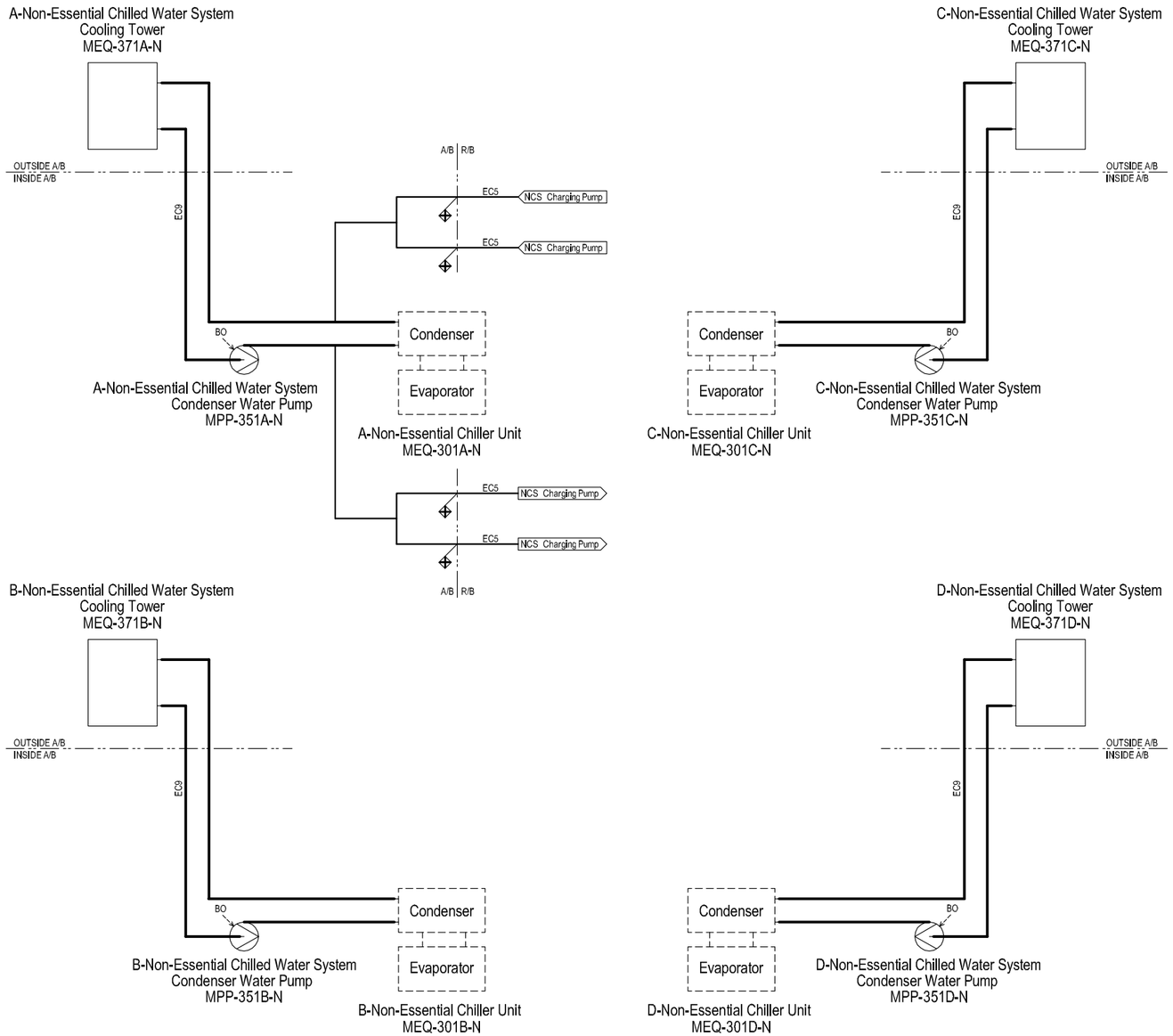

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Figure 9.2.7-2 Non-Essential Chilled Water System Flow Diagram (3 of 3)

- The floor drains in ESF area are capable to remove expected fire fighting water flow.

- ESF room drain isolation valves are also provided on the ESF room drain piping in order to protect against flooding due to backflow. These isolation valves are safety-related and serve safety-related function.

- A normally closed isolation valve is provided in the non-radioactive drainage line from the A/B to the non-radioactive sump to prevent flooding water released in the A/B from flowing into the R/B. This valve is designed as seismic category II and is only opened as required. DCD_03.04.01-29 S02

- The equipment and floor drainage systems are designed to be protected against flood (Refer to Chapter 3, Section 3.4) internally and externally generated missiles (Refer to Chapter 3, Section 3.5) and pipe ruptures (Refer to Chapter 3, Section 3.6).

9.3.3.1.2 Power Generation Design Bases

- The Radioactive drainage system and non-radioactive drainage system are separated, however, in case that radioactive water flows into non-radioactive system (e.g. CCW component failure), potentially radioactive contaminants are diverted from the non-radioactive drainage system to the LWMS. This is in conformance to the requirement of GDC 60.

- The LWMS collects potentially radioactive liquid wastes, at atmospheric pressure, from equipment and floor drainage in the containment vessel, R/B, A/B and access building. All such drainage is conveyed by gravity to sumps or tanks within the respective buildings and pumped to the waste holdup tanks.

- Chemical and other wastes collected from laboratory, decontamination solutions, and laboratory sinks drain to the chemical drain tank of the LWMS.

- The waste from hand and eyewash stations and the personnel decontamination shower facilities is collected in the detergent drain tank of the LWMS.

- The T/B drain system collects the non-radioactive floor and equipment drains in the non-radioactive drain sump. The liquid waste is sent to the [[WWS]]. In the unlikely event, that the fluid becomes radioactive, a radiation monitor determines the level of radioactive contamination. A measured concentration exceeding the predetermined setpoint activates an alarm in the MCR for operator actions and also activates the closure of the transfer valves. Following operator initiation, the contaminated waste is then sent to the A/B floor drain sump to be transferred to the LWMS. There is a check valve in the sump line that will prevent backflow from the Auxiliary Building to the Turbine Building. DCD_09.04.03-20

- Oily waste is collected by separate equipment and rooted to a separate floor drain sump tank. The separated oil is collected for offsite disposal.

- Sump pumps are designed to discharge at a flow rate adequate to preventing sump overflow for drain rate anticipated during normal plant operation and other

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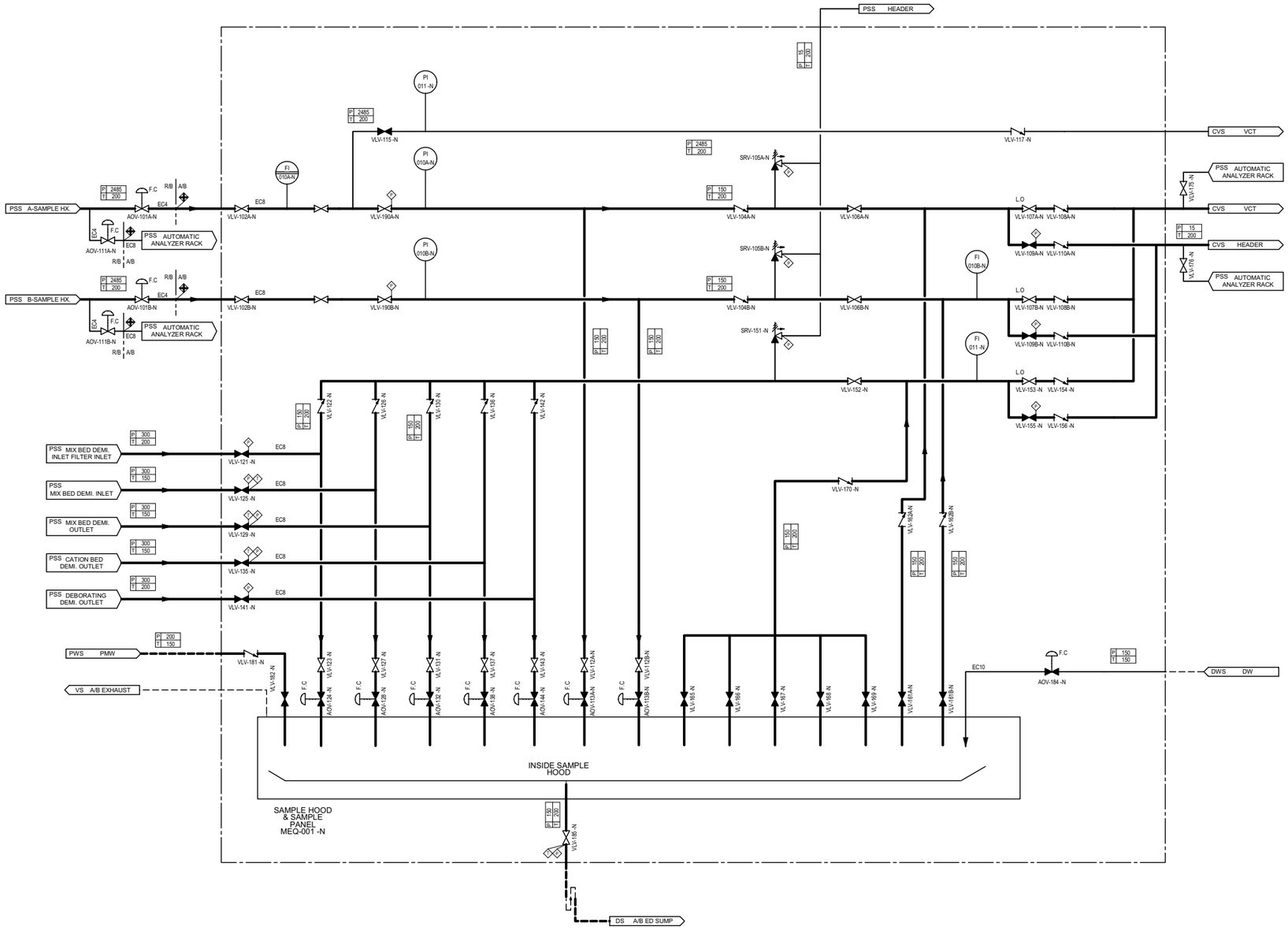

Figure 9.3.2-1 PSS Flow Diagram (Sheet 2 of 5)

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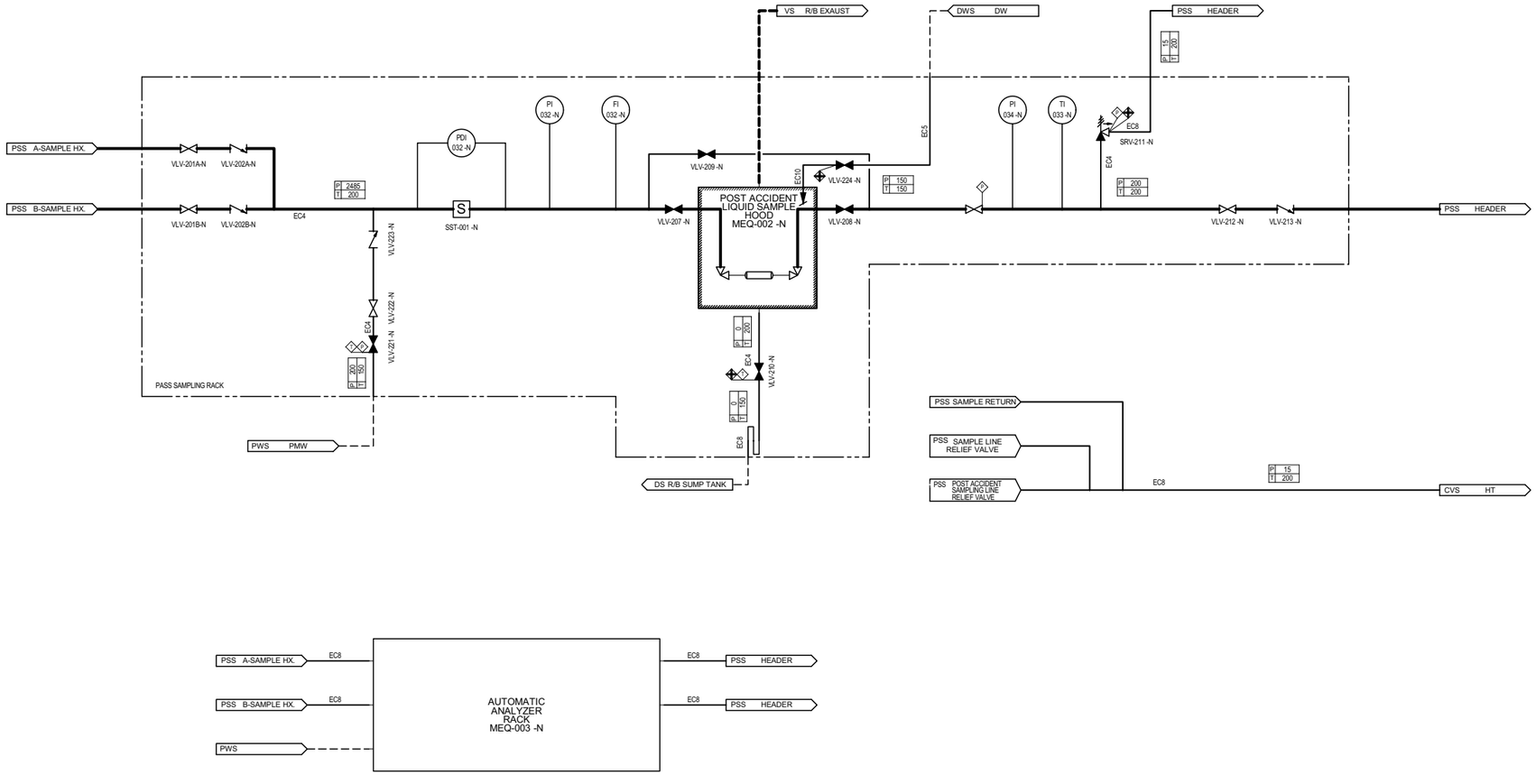

Figure 9.3.2-1 PSS Flow Diagram (Sheet 3 of 5)

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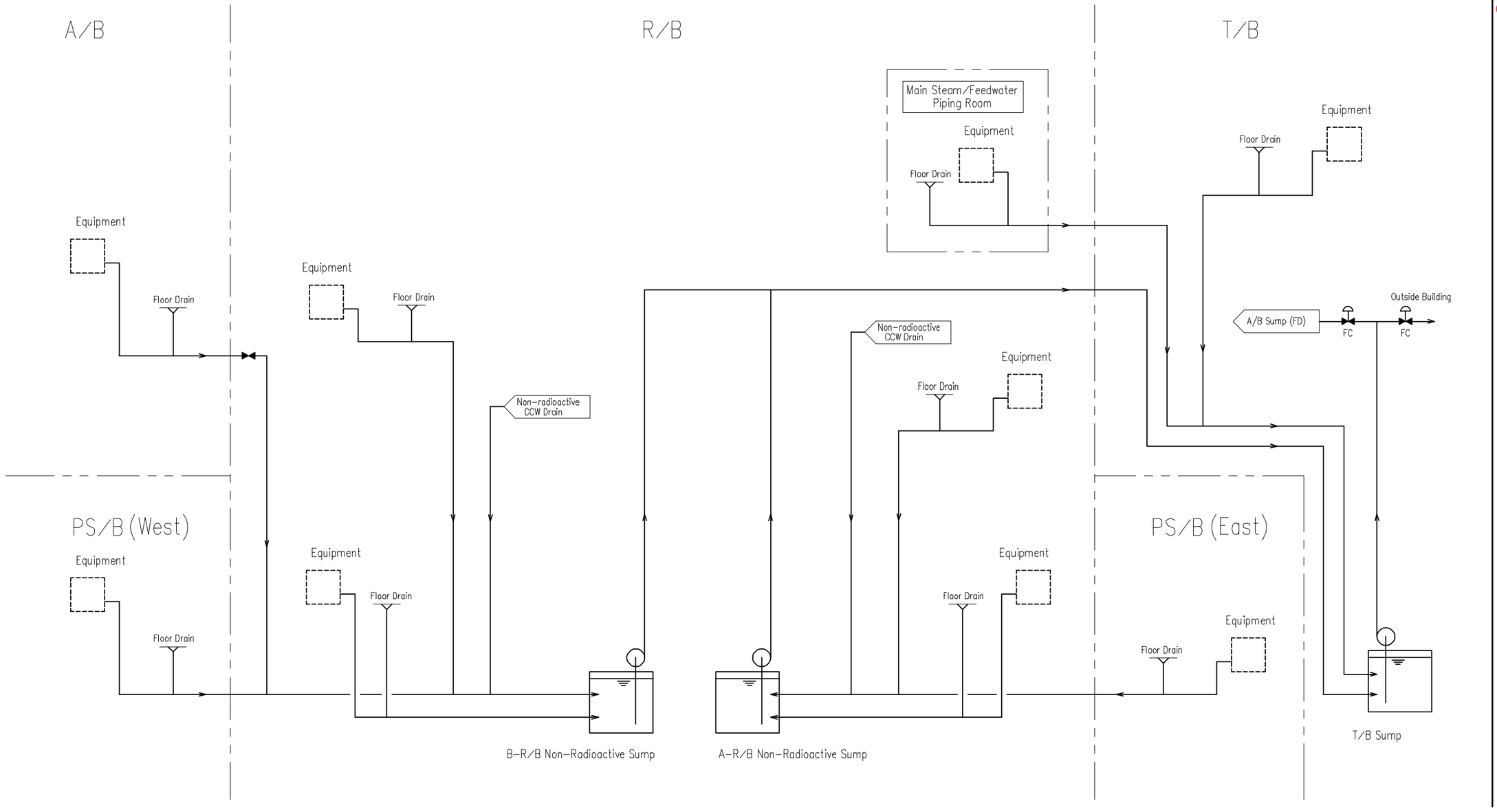

Figure 9.3.3-1 Equipment and Floor Drain System Flow Schematic Radiological Controlled Area (Sheet 2 of 2)

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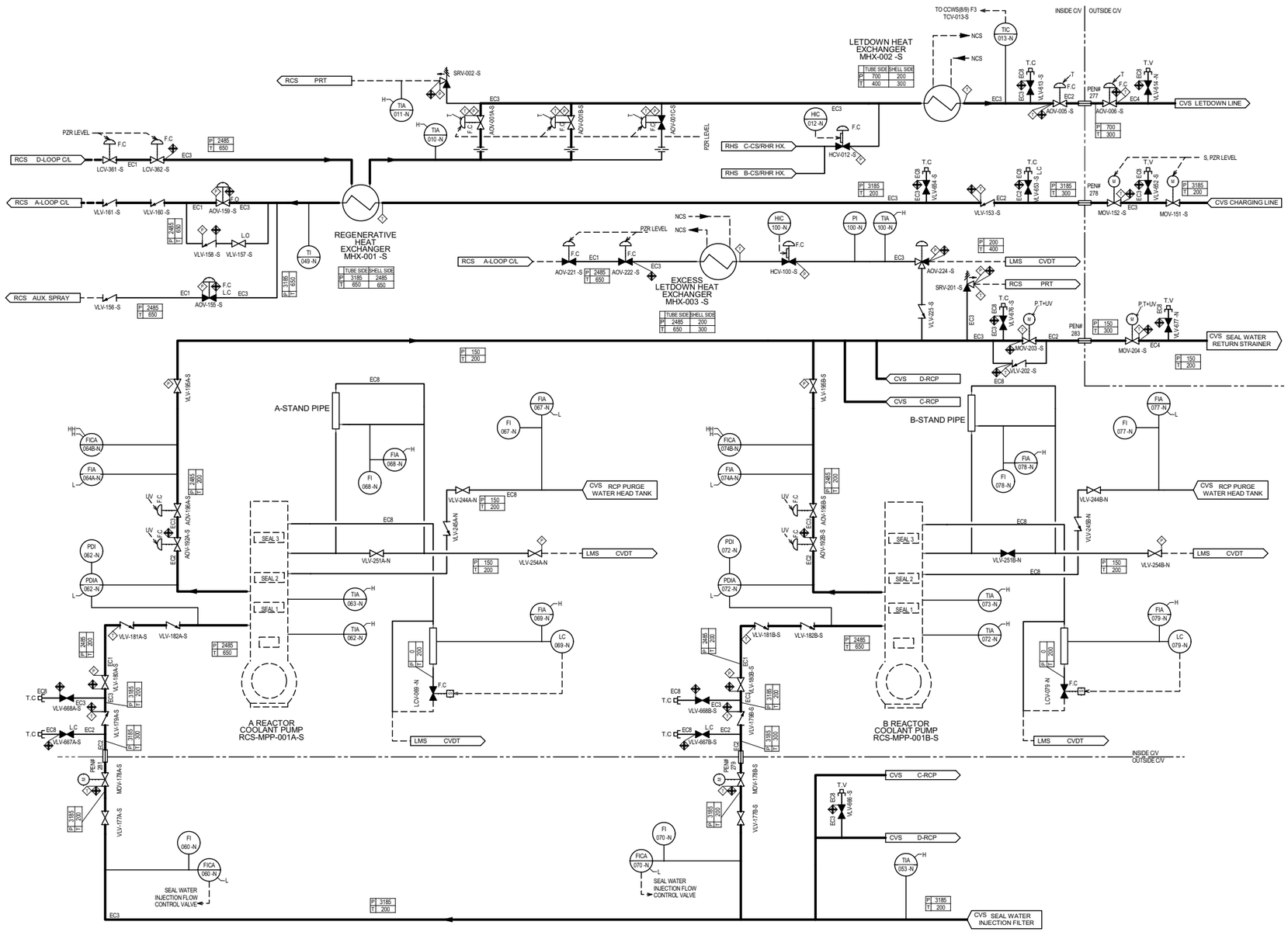

Figure 9.3.4-1 Chemical and Volume Control System Flow Diagram (Sheet 1 of 7)

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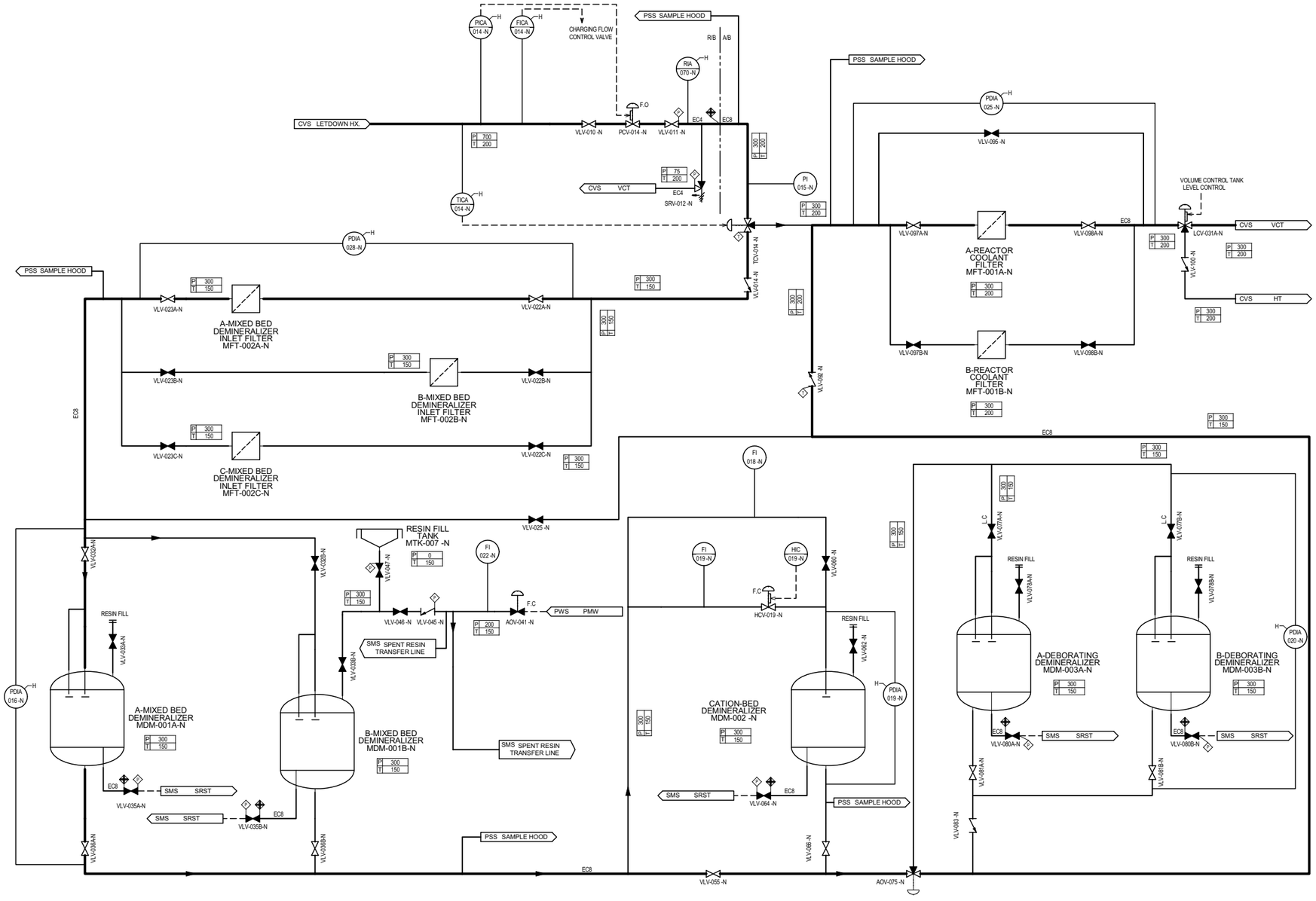

Figure 9.3.4-1 Chemical and Volume Control System Flow Diagram (Sheet 3 of 7)

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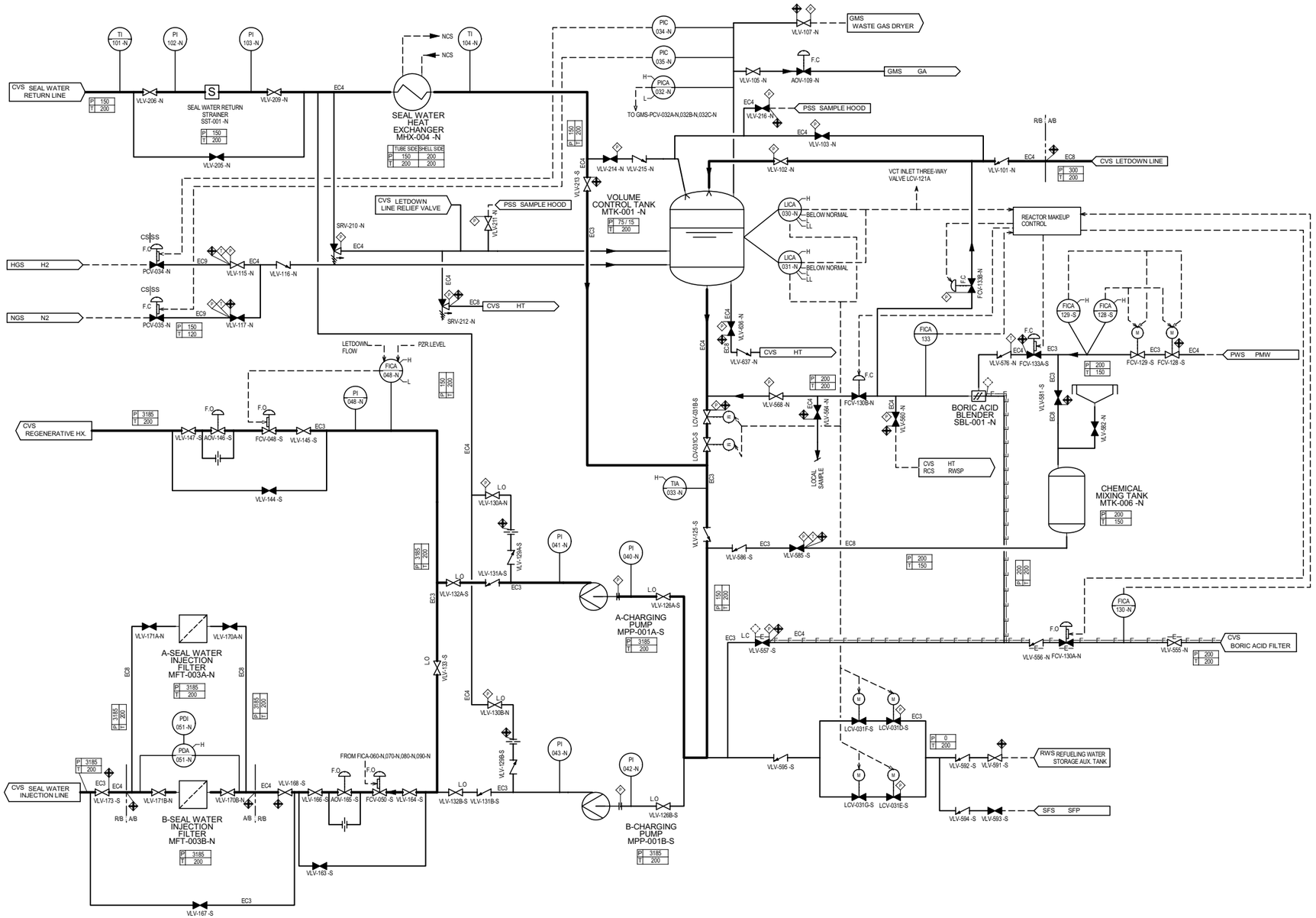

Figure 9.3.4-1 Chemical and Volume Control System Flow Diagram (Sheet 4 of 7)

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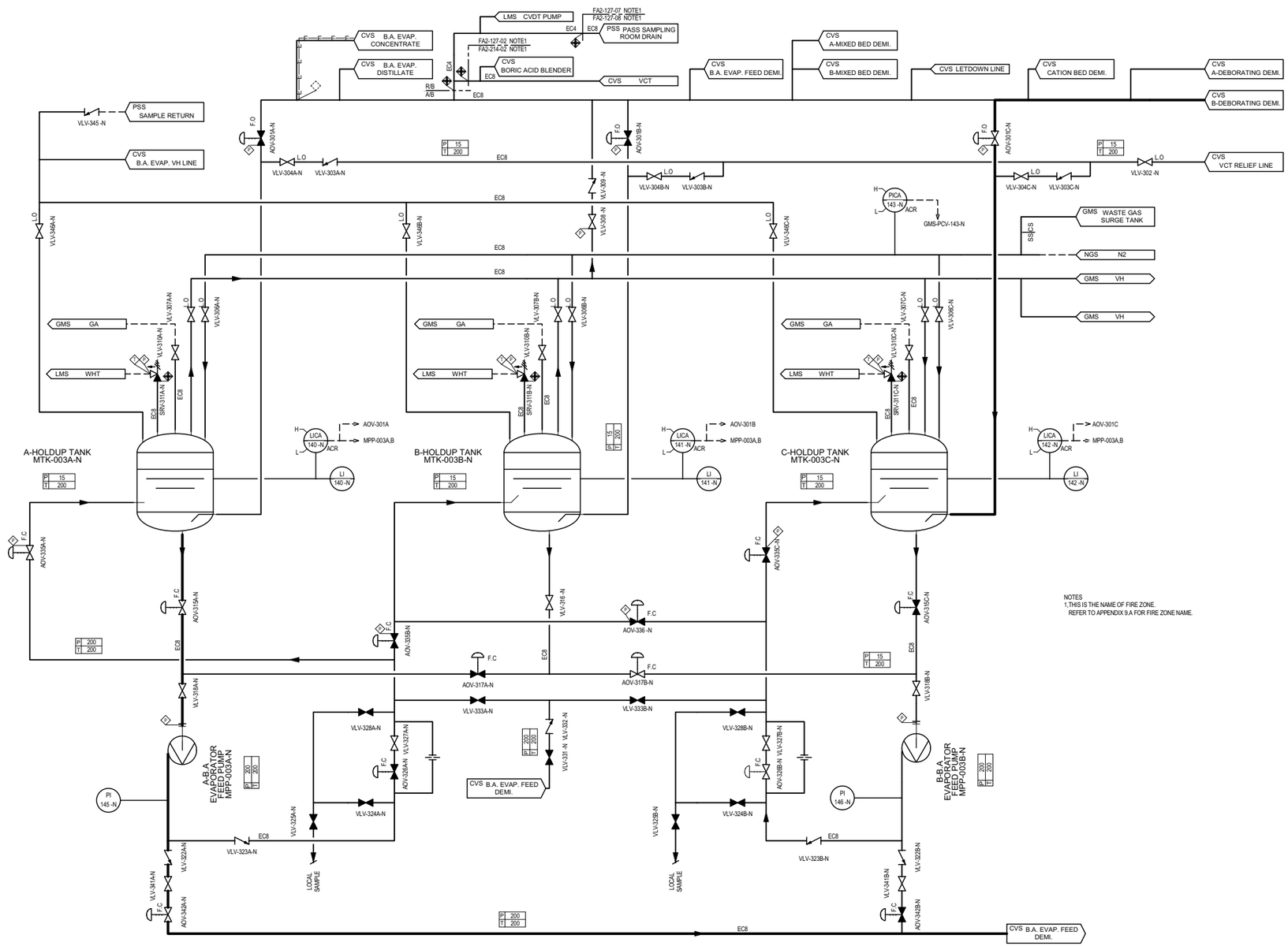

Figure 9.3.4-1 Chemical and Volume Control System Flow Diagram (Sheet 6 of 7)

- Provide fire-fighting personnel access and escape routes for each fire area or fire zone/compartment.

- Provide communications (Subsection 9.5.2) and emergency lighting (Subsection 9.5.3) that facilitate safe-shutdown following a fire.

- Minimize exposure to personnel and releases to the environment of radioactivity or hazardous chemicals as a result of a fire.

The fire protection system is classified as a non-safety related~~, non-seismic~~ system. The fire protection system is not required to remain functional following a plant accident or the most severe natural phenomena. Seismic design requirements are applied to portions of the system located in areas containing equipment required for safe-shutdown following a safe-shutdown earthquake (SSE). In addition, the containment isolation valves and associated piping for the fire protection system are safety-related (Equipment Class 2) and seismic category I. DCD_03.04.01-29 S02

The fire protection system is designed to perform the following functions:

- Detect and locate fires and provide operator indication of the location.

- Provide the capability to extinguish fires in any plant area, to protect site personnel, limit fire damage, and enhance safe-shutdown capabilities.

- Supply fire suppression water at a flow rate and pressure sufficient to satisfy the demand of any automatic sprinkler system plus 500 gpm for fire hoses, for a minimum of 2-hours, but not less than 300,000gallons.

- Maintain 100% design capacity of fire pump, assuming failure of the largest fire pump or the loss of offsite power (LOOP).

- Following a SSE, provide water to hose stations for manual fire fighting in areas containing safe-shutdown equipment.

In order to accomplish the goals of the fire protection program, appropriate industry codes and standards are consulted in the design, construction, and operation of the US-APWR. Fire protection SCCs designed to NFPA codes and standards will use, as the code of record, those NFPA codes and standards which are in effect 180 days prior to the submittal of the application under 10 CFR 52. Deviations to any NFPA codes and standards are identified and justified in the fire hazards analysis. These deviations are not to degrade the performance of the fire protection systems or features.

The US-APWR design has four separate and redundant safety trains. Two safety trains can achieve safe-shutdown from the MCR, which eliminates the need for any operator manual actions that would require operators to enter any fire-involved areas. A remote shutdown console electrical isolation from the MCR and can accomplish the necessary shutdown actions should the MCR become unavailable due to fire.

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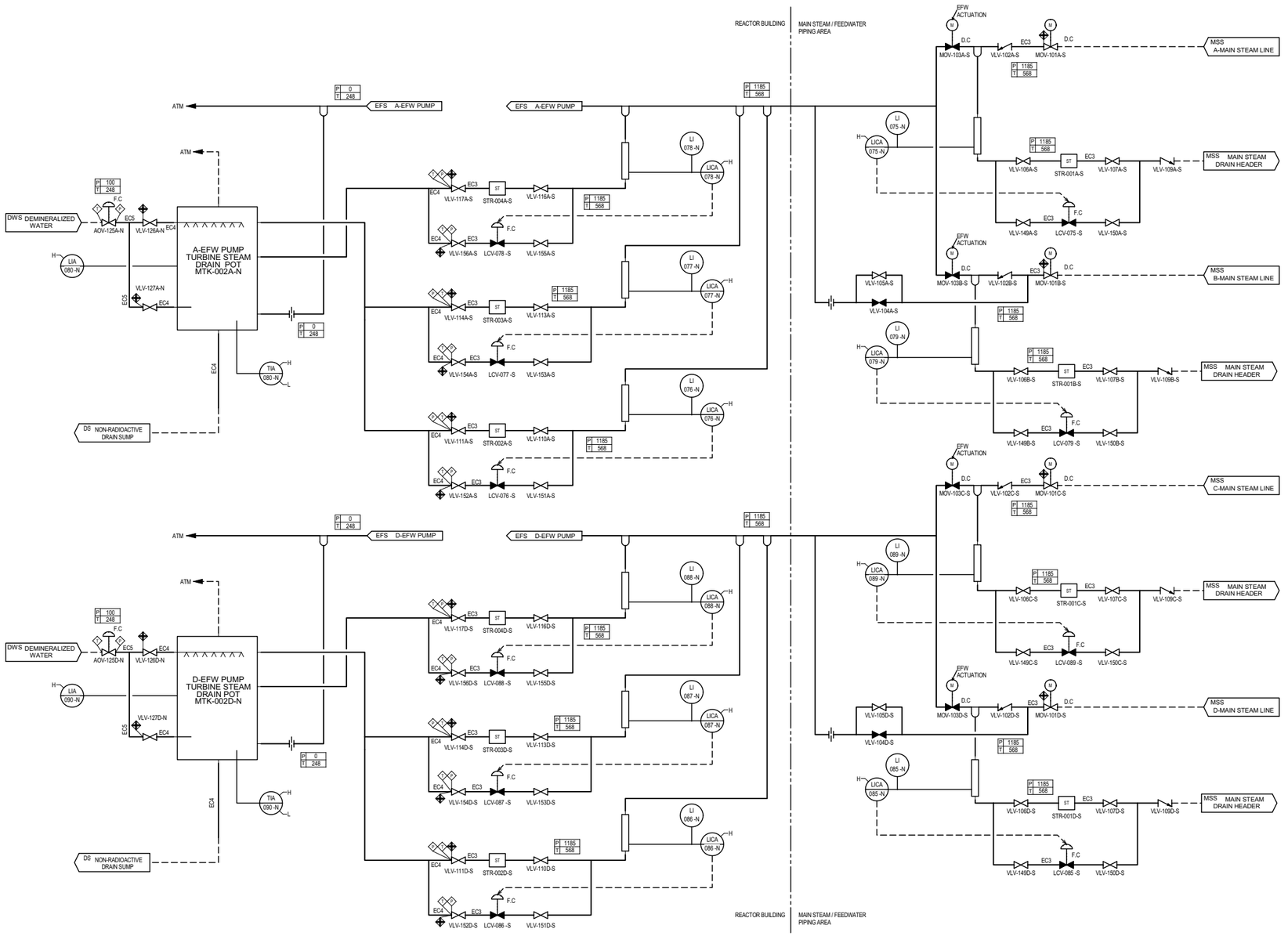

Figure 10.4.9-2 Emergency Feedwater System Piping and Instrumentation Diagram (2/2)