

**2.7.8 Spray Deluge System**

There are no Tier 1 entries for this system.

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**2.7.9 Demineralized Water Distribution System**

There are no Tier 1 entries for this system.

**2.7.10 Potable and Sanitary System**

There are no Tier 1 entries for this system.

## 2.7.11 Essential Service Water System

### Design Description

#### 1.0 System Description

The essential service water system (ESWS) is a safety-related system that provides cooling water to the component cooling water system (CCWS) heat exchangers, the emergency diesel generator (EDG) heat exchangers, the emergency power generating building ventilation system (EPGBVS) coolers, and the essential service water pump building ventilation system (ESWPBVS) room coolers under normal operating, shutdown/cooldown, design basis events. The Ultimate Heat Sink (UHS) dissipates heat rejected from the ESW during normal operation and post accident shutdown.

The ESWS and UHS provide the following safety-related functions:

- The ESWS provides the capability to transfer heat from CCWS, emergency power generating building (EPGB), and EDG to the environment following an anticipated operational occurrence (AOO) or postulated accident.
- The ESWS provides continued heat transfer from the fuel pool cooling system (FPCPS) via the CCWS as long as any fuel assemblies are in the spent fuel storage pool located outside containment.
- The ESWS provides the capability to transfer heat from the EDG Building control/electrical room coolers when the respective EDG is in operation or during testing.
- The UHS provides heat removal from the ESWS during normal operation and accident conditions, and transfers that energy to the environment.
- Isolation valves in the ESW emergency makeup, the normal makeup, and the blowdown system flow paths provide automatic isolation of the tower basins under DBA conditions to prevent loss of tower water inventory.
- Each UHS cooling tower basin is sized to contain sufficient water to allow for 72 hours of ESW train operation under DBE conditions without addition of makeup water. The water level in the basin at the end of the 72 hour period is sufficient to meet pump minimum suction head (NPSH) requirements.
- After 72 hours have elapsed since the initiation of design basis event, the ESW emergency makeup water system provides water to the ESW system to replenish cooling water lost to evaporation, drift, blowdown and other losses in order to ensure cooling tower basin water levels remain within established limits under DBE conditions.
- The site specific ESW emergency makeup water system will provide this makeup water for at least 27 days following the initial 72 hour post-accident period (balance of 30 day scenario).

The ESWS provides the following non-safety-related functions:

- The ESWS provides the cooling of the system users during all normal plant operating conditions.
- Deleted.
- The ESW normal makeup water system provides makeup water to the ESW system to replenish cooling water lost to evaporation, drift, and other losses in order to ensure cooling tower basin water levels remain within established limits. The ESW normal makeup water system also provides water to the cooling tower riser keep-fill.
- The ESW system provides the means of transferring heat loads from the dedicated CCW heat exchanger under severe accident conditions to ensure containment integrity.
- Freeze protection is provided by diverting ESW return flow directly to the tower basin and controlling fan operation under low load/low ambient temperature conditions.

The non-safety-related dedicated ESWS train provides water as a cooling medium to the non-safety-related dedicated CCWS train heat exchanger and to the division 4 ESWS ESWPBVS room cooler for the removal of reject heat under severe accident conditions.

## **2.0 Arrangement**

2.1 The functional arrangement of the ESWS is as described in the Design Description of Section 2.7.11, Tables 2.7.11-1—Essential Service Water System Equipment Mechanical Design and 2.7.11-2—Essential Service Water System Equipment I&C and Electrical Design, and as shown in Figure 2.7.11-1—Essential Service Water System Functional Arrangement.

2.2 Deleted.

2.3 Physical separation exists between divisions of the ESWS as listed in Table 2.7.11-1 and as shown on Figure 2.7.11-1.

2.4 Deleted.

2.5 Deleted.

## **3.0 Mechanical Design Features**

3.1 Pumps and valves listed in Table 2.7.11-1 will be functionally designed and qualified such that each pump and valve is capable of performing its intended function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions up to and including design basis accident conditions.

- 3.2 Check valves listed in Table 2.7.11-1 will function to change position as listed in Table 2.7.11-1 under normal operating conditions.
- 3.3 Deleted.
- 3.4 Equipment identified as Seismic Category I in Table 2.7.11-1 can withstand seismic design basis loads without a loss of safety function(s).
- 3.5 ASME Code Class 3 piping systems are designed in accordance with ASME Code Section III requirements.
- 3.6 As-built ASME Code Class 3 components listed in Table 2.7.11-1 are reconciled with the design requirements.
- 3.7 Pressure-boundary welds in ASME Code Class 3 components listed in Table 2.7.11-1 meet ASME Code Section III non-destructive examination requirements.
- 3.8 ASME Code Class 3 components listed in Table 2.7.11-1 retain their pressure-boundary integrity at their design pressure.
- 3.9 ASME Code Class 3 components listed in Table 2.7.11-1 are fabricated, installed, and inspected in accordance with ASME Code Section III requirements.
- 3.10 Deleted.
- 3.11 Deleted.
- 3.12 Deleted.
- 3.13 Deleted.
- 3.14 Deleted.
- 3.15 Deleted.
- 3.16 Deleted.
- 3.17 Deleted.
- 3.18 The UHS fans are capable of withstanding the effects of tornado including differential pressure effects, overspeed, and the impact of differential pressure effects on other equipment located within the cooling tower structure (e.g., capability to function, potential to become missile/debris hazard).
- 4.0 I&C Design Features, Displays, and Controls**
- 4.1 Displays listed in Table 2.7.11-2 are indicated on the PICS operator workstations in the MCR and the RSS.
- 4.2 Controls on the PICS operator workstations in the MCR and the RSS perform the function listed in Table 2.7.11-2.

- 4.3 Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 2.7.11-2 responds to the state requested and provides drive monitoring signals back to the PACS module. The PACS module will protect the equipment by terminating the output command upon the equipment reaching the requested state.
- 4.4 An interlock for failure of one ESWS pump during normal operation results in a switchover to the other ESWS train and is automatically initiated by the CCWS Switchover sequence.
- 4.5 An interlock for a spurious closure of the ESWS pump discharge valve results in a switchover to the other ESWS train and is automatically initiated by the CCWS Switchover sequence.
- 4.6 Deleted.
- 4.7 Deleted.
- 5.0 Electrical Power Design Features**
- 5.1 Equipment designated as Class 1E in Table 2.7.11-2 are powered from the Class 1E division as listed in Table 2.7.11-2 in a normal or alternate feed condition.
- 5.2 Deleted.
- 5.3 Deleted.
- 5.4 Equipment identified as “Dedicated” ESWS motor-operated equipment (including Division 4 cooling tower fans) in Table 2.7.11-2 are capable of being powered by a SBODG.
- 6.0 Environmental Qualifications**
- 6.1 Deleted.
- 7.0 Equipment and System Performance**
- 7.1 Each ESWS UHS listed in Table 2.7.11-1 has the capacity to transfer the design heat load from the CCWS and EDG heat exchangers, and the ESWPBVS room coolers.
- 7.2 The pumps listed in Table 2.7.11-1 have sufficient NPSHA.
- 7.3 Class 1E valves listed in Table 2.7.11-2 will function to change position as listed in Table 2.7.11-1 under normal operating conditions.
- 7.4 The ESWS has provisions to allow flow testing of each ESWS pump during plant operation.
- 7.5 Deleted.

- 7.6 The ESWS pump delivers water to the CCWS and EDG heat exchangers and the ESWPBVS room coolers.
- 7.7 The ESWS debris filters listed in Table 2.7.11-1 function to backwash upon high differential pressure.
- 7.8 The inlet between the cooling tower basin and pump intake structure has a coarse and a fine debris screen for each ESW pump.
- 7.9 The UHS cooling towers are capable of removing the design heat load without exceeding the maximum design temperature limit for ESWS.
- 7.10 The UHS cooling towers are capable of removing the design heat load without water level dropping below the minimum design level in the cooling tower basin.
- 7.11 The pumps listed in Table 2.7.11-1 have sufficient NPSHA at the minimum cooling tower basin level.

## **8.0 Interface Requirements**

- 8.1 The site specific emergency makeup water system provides  $\geq 300$  gpm makeup water to each ESW cooling tower basin to maintain the minimum basin water level.
- 8.2 The site-specific emergency makeup water system provides water to each ESW cooling tower basin at a temperature below the maximum ESWS supply temperature of 95°F.
- 8.3 The site-specific emergency makeup water system is designed in accordance with ASME Section III, Class 3 safety-related SSC and Seismic Category I requirements.
- 8.4 The site-specific emergency makeup water system provides a means to limit corrosion, scaling, and biological contaminants in order to minimize component fouling for a minimum of 30 days post-DBA.

### **Inspections, Tests, Analyses, and Acceptance Criteria**

Table 2.7.11-3 lists the ESWS ITAAC.



**Table 2.7.11-1—ESWS Equipment Mechanical Design  
Sheet 1 of 9**

Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
ESWS Pump Division 1	30PEB10AP001	ESW Pump Structure Division 1	Yes	Run	I
Recirc Isolation Valve Division 1	30PEB10AA002	ESW Pump Structure Division 1	Yes	Close	I
Emer. Blowdown Isolation Valve Division 1	30PEB10AA003	ESW Pump Structure Division 1	Yes	Close	I
Filter Emergency Blowdown Isolation Valve Division 1	30PEB10AA004	ESW Pump Structure Division 1	Yes	Open	I
Filter Emergency Blowdown Isolation Valve Division 2	30PEB20AA004	ESW Pump Structure Division 2	Yes	Open	I
Filter Emergency Blowdown Isolation Valve Division 3	30PEB30AA004	ESW Pump Structure Division 3	Yes	Open	I
Filter Emergency Blowdown Isolation Valve Division 4	30PEB40AA004	ESW Pump Structure Division 4	Yes	Open	I
Pump Discharge Isolation Valve Division 1	30PEB10AA005	ESW Pump Structure Division 1	Yes	Open	I
Filter Blowdown Isolation Valve Division 1	30PEB10AA015	ESW Pump Structure Division 1	Yes	Close	I
Blowdown Isolation Valve Division 1	30PEB10AA016	ESW Pump Structure Division 1	Yes	Close	I
Pump Discharge Check Valve Division 1	30PEB10AA204	ESW Pump Structure Division 1	Yes	Open	I

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
ESW Debris Filter Division 1	30PEB10AT002	ESW Pump Structure Division 1	Yes	Backwash	I
Tower Isolation Valve Division 1	30PED10AA010	ESW Pump Structure Division 1	Yes	Open	I
Tower Bypass Isolation Valve Division 1	30PED10AA011	ESW Pump Structure Division 1	Yes	Close	I
Makeup Water Isolation Valve Division 1	30PED10AA019	ESW Pump Structure Division 1	Yes	Close	I
Emer. Makeup Water Isolation Valve Division 1	30PED10AA021	ESW Pump Structure Division 1	Yes	Open	I
Tower Keep-Fill Isolation Valve Division 1	30PED10AA024	ESW Pump Structure Division 1	Yes	Close	I
Tower Keep-Fill Check Valve Division 1	30PED10AA025	ESW Pump Structure Division 1	Yes	Close	I
Makeup Water Check Valve Division 1	30PED10AA220	ESW Pump Structure Division 1	Yes	Close	I
ESWS Pump Division 2	30PEB20AP001	ESW Pump Structure Division 2	Yes	Run	I
Recirc Isolation Valve Division 2	30PEB20AA002	ESW Pump Structure Division 2	Yes	Close	I
Emer. Blowdown Isolation Valve Division 2	30PEB20AA003	ESW Pump Structure Division 2	Yes	Close	I
Pump Discharge Isolation Valve Division 2	30PEB20AA005	ESW Pump Structure Division 2	Yes	Open	I
Filter Blowdown Isolation Valve Division 2	30PEB20AA015	ESW Pump Structure Division 2	Yes	Close	I

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Blowdown Isolation Valve Division 2	30PEB20AA016	ESW Pump Structure Division 2	Yes	Close	I
Pump Discharge Check Valve Division 2	30PEB20AA204	ESW Pump Structure Division 2	Yes	Open	I
ESW Debris Filter Division 2	30PEB20AT002	ESW Pump Structure Division 2	Yes	Backwash	I
Tower Isolation Valve Division 2	30PED20AA010	ESW Pump Structure Division 2	Yes	Open	I
Tower Bypass Isolation Valve Division 2	30PED20AA011	ESW Pump Structure Division 2	Yes	Close	I
Makeup Water Isolation Valve Division 2	30PED20AA019	ESW Pump Structure Division 2	Yes	Close	I
Emer. Makeup Water Isolation Valve Division 2	30PED20AA021	ESW Pump Structure Division 2	Yes	Open	I
Tower Keep-Fill Isolation Valve Division 2	30PED20AA024	ESW Pump Structure Division 2	Yes	Close	I
Tower Keep-Fill Check Valve Division 2	30PED20AA025	ESW Pump Structure Division 2	Yes	Close	I
Makeup Water Check Valve Division 2	30PED20AA220	ESW Pump Structure Division 2	Yes	Close	I
ESWS Pump Division 3	30PEB30AP001	ESW Pump Structure Division 3	Yes	Run	I
Recirc Isolation Valve Division 3	30PEB30AA002	ESW Pump Structure Division 3	Yes	Close	I
Emer. Blowdown Isolation Valve Division 3	30PEB30AA003	ESW Pump Structure Division 3	Yes	Close	I

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Pump Discharge Isolation Valve Division 3	30PEB30AA005	ESW Pump Structure Division 3	Yes	Open	I
Filter Blowdown Isolation Valve Division 3	30PEB30AA015	ESW Pump Structure Division 3	Yes	Close	I
Blowdown Isolation Valve Division 3	30PEB30AA016	ESW Pump Structure Division 3	Yes	Close	I
Pump Discharge Check Valve Division 3	30PEB30AA204	ESW Pump Structure Division 3	Yes	Open	I
ESW Debris Filter Division 3	30PEB30AT002	ESW Pump Structure Division 3	Yes	Backwash	I
Tower Isolation Valve Division 3	30PED30AA010	ESW Pump Structure Division 3	Yes	Open	I
Tower Bypass Isolation Valve Division 3	30PED30AA011	ESW Pump Structure Division 3	Yes	Close	I
Makeup Water Isolation Valve Division 3	30PED30AA019	ESW Pump Structure Division 3	Yes	Close	I
Emer. Makeup Water Isolation Valve Division 3	30PED30AA021	ESW Pump Structure Division 3	Yes	Open	I
Tower Keep-Fill Isolation Valve Division 3	30PED30AA024	ESW Pump Structure Division 3	Yes	Close	I
Tower Keep-Fill Check Valve Division 3	30PED30AA025	ESW Pump Structure Division 3	Yes	Close	I
Makeup Water Check Valve Division 3	30PED30AA220	ESW Pump Structure Division 3	Yes	Close	I
ESWS Pump Division 4	30PEB40AP001	ESW Pump Structure Division 4	Yes	Run	I

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Recirc Isolation Valve Division 4	30PEB40AA002	ESW Pump Structure Division 4	Yes	Close	I
Emer. Blowdown Isolation Valve Division 4	30PEB40AA003	ESW Pump Structure Division 4	Yes	Close	I
Pump Discharge Isolation Valve Division 4	30PEB40AA005	ESW Pump Structure Division 4	Yes	Open	I
Filter Blowdown Isolation Valve Division 4	30PEB40AA015	ESW Pump Structure Division 4	Yes	Close	I
Blowdown Isolation Valve Division 4	30PEB40AA016	ESW Pump Structure Division 4	Yes	Close	I
Pump Discharge Check Valve Division 4	30PEB40AA204	ESW Pump Structure Division 4	Yes	Open	I
Dedicated System Check Valve Upstr 30SAQ40AC001 Division 4	30PEB41AA011	ESW Pump Structure Division 4	Yes	Open	I
ESW Debris Filter Division 4	30PEB40AT002	ESW Pump Structure Division 4	Yes	Backwash	I
Tower Isolation Valve Division 4	30PED40AA010	ESW Pump Structure Division 4	Yes	Open	I
Tower Bypass Isolation Valve Division 4	30PED40AA011	ESW Pump Structure Division 4	Yes	Close	I
Makeup Water Isolation Valve Division 4	30PED40AA019	ESW Pump Structure Division 4	Yes	Close	I
Emer. Makeup Water Isolation Valve Division 4	30PED40AA021	ESW Pump Structure Division 4	Yes	Open	I

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Tower Keep-Fill Isolation Valve Division 4	30PED40AA024	ESW Pump Structure Division 4	Yes	Close	I
Tower Keep-Fill Check Valve Division 4	30PED40AA025	ESW Pump Structure Division 4	Yes	Close	I
Makeup Water Check Valve Division 4	30PED40AA220	ESW Pump Structure Division 4	Yes	Close	I
Dedicated Isolation Valve Upstr KAA80AC001	30PEB80AA003	ESW Dedicated Division Safeguard Building 4	No	Open	N/A
Dedicated Isolation Valve Dnstr KAA80AC001	30PEB80AA004	ESW Dedicated Division Safeguard Building 4	Yes	Open	I
Dedicated Isolation Valve Upstr KAA80AC001	30PEB80AA013	ESW Dedicated Division Safeguard Building 4	No	Open	N/A
Dedicated Isolation Valve Dnstr KAA80AC001	30PEB80AA014	ESW Dedicated Division Safeguard Building 4	No	Open	N/A
Dedicated ESW Pump	30PEB80AP001	ESW Pump Structure Division 4	No	Run	N/A
Dedicated Filter Blowdown Isolation Valve	30PEB80AA009	ESW Pump Structure Division 4	No	Close	N/A
Dedicated Blowdown Isolation Valve	30PEB80AA016	ESW Pump Structure Division 4	No	Close	N/A
Dedicated Recirc Isolation Valve	30PEB80AA015	ESW Pump Structure Division 4	No	Close	N/A

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Dedicated Filter Blowdown Isolation Check Valve	30PEB80AA211	ESW Pump Structure Division 4	No	Close	N/A
Dedicated Pump Isolation Check Valve	30PEB80AA002	ESW Pump Structure Division 4	No	Open	N/A
Dedicated ESW Debris Filter	30PEB80AT001	ESW Pump Structure Division 4	No	Backwash	N/A
Cooling Tower Fan	30PED10AN001	ESW Cooling Tower Division 1	No	Run	I
Cooling Tower Fan	30PED10AN002	ESW Cooling Tower Division 1	No	Run	I
Cooling Tower Fan	30PED20AN001	ESW Cooling Tower Division 2	No	Run	I
Cooling Tower Fan	30PED20AN002	ESW Cooling Tower Division 2	No	Run	I
Cooling Tower Fan	30PED30AN001	ESW Cooling Tower Division 3	No	Run	I
Cooling Tower Fan	30PED30AN002	ESW Cooling Tower Division 3	No	Run	I
Cooling Tower Fan	30PED40AN001	ESW Cooling Tower Division 4	No	Run	I
Cooling Tower Fan	30PED40AN002	ESW Cooling Tower Division 4	No	Run	I
Mechanical Draft Cooling Tower Train 1 (excluding fans)	30PED10AC001	ESW Cooling Tower Structure 1	Yes	Heat Transfer Device	I

**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Mechanical Draft Cooling Tower Train 2 (excluding fans)	30PED20AC001	ESW Cooling Tower Structure 2	Yes	Heat Transfer Device	I
Mechanical Draft Cooling Tower Train 3 (excluding fans)	30PED30AC001	ESW Cooling Tower Structure 3	Yes	Heat Transfer Device	I
Mechanical Draft Cooling Tower Train 4 (excluding fans)	30PED40AC001	ESW Cooling Tower Structure 4	Yes	Heat Transfer Device	I
Isolation Valve Upstream of the EDG Bldg Control Room Cooler Division 1	30PEB15AA010	ESW Pump Structure Division 1	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 1	30PEB15AA011	ESW Pump Structure Division 1	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 1	30PEB15AA012	ESW Pump Structure Division 1	Yes	Open	I
Isolation Valve Upstream of the EDG Bldg Control Room Cooler Division 2	30PEB25AA010	ESW Pump Structure Division 2	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 2	30PEB25AA011	ESW Pump Structure Division 2	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 2	30PEB25AA012	ESW Pump Structure Division 2	Yes	Open	I



**Table 2.7.11-1—ESWS Equipment Mechanical Design  
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Description	Tag Number <sup>(1)</sup>	Location	ASME Code Section III	Function	Seismic Category
Isolation Valve Upstream of the EDG Bldg Control Room Cooler Division 3	30PEB35AA010	ESW Pump Structure Division 3	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 3	30PEB35AA011	ESW Pump Structure Division 3	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 3	30PEB35AA012	ESW Pump Structure Division 3	Yes	Open	I
Isolation Valve Upstream the EDG Bldg Control Room Cooler Division 4	30PEB45AA010	ESW Pump Structure Division 4	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 4	30PEB45AA011	ESW Pump Structure Division 4	Yes	Open	I
Isolation Valve Downstream of the EDG Bldg Control Room Cooler Division 4	30PEB45AA012	ESW Pump Structure Division 4	Yes	Open	I

1. Equipment tag numbers are provided for information only and are not part of the certified design.

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design  
Sheet 1 of 7**

<b>Description</b>	<b>Tag Number<sup>(1)</sup></b>	<b>Location</b>	<b>IEEE Class 1E <sup>(2)(3)</sup></b>	<b>PACS</b>	<b>MCR/RSS Displays</b>	<b>MCR/RSS Controls</b>
ESWS Pump Division 1	30PEB10AP001	ESW Pump Structure Division 1	Division 1	Yes	On-Off/ On-Off	Start-Stop / Start-Stop
Recirc Isolation Valve Division 1	30PEB10AA002	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Emer. Blowdown Isolation Valve Division 1	30PEB10AA003	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Filter Emergency Blowdown Isolation Valve Division 1	30PEB10AA004	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Filter Emergency Blowdown Isolation Valve Division 2	30PEB20AA004	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Filter Emergency Blowdown Isolation Valve Division 3	30PEB30AA004	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Filter Emergency Blowdown Isolation Valve Division 4	30PEB40AA004	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Pump Discharge Isolation Valve Division 1	30PEB10AA005	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Filter Blowdown Isolation Valve Division 1	30PEB10AA015	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design**  
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<b>Description</b>	<b>Tag Number<sup>(1)</sup></b>	<b>Location</b>	<b>IEEE Class 1E <sup>(2)(3)</sup></b>	<b>PACS</b>	<b>MCR/RSS Displays</b>	<b>MCR/RSS Controls</b>
Blowdown Isolation Valve Division 1	30PEB10AA016	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
ESW Debris Filter Division 1	30PEB10AT002	ESW Pump Structure Division 1	Division 1	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Tower Isolation Valve Division 1	30PED10AA010	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Tower Bypass Isolation Valve Division 1	30PED10AA011	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Makeup Water Isolation Valve Division 1	30PED10AA019	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
Emer. Makeup Water Isolation Valve Division 1	30PED10AA021	ESW Pump Structure Division 1	Division 1	Yes	Position / Position	Open-Close / Open-Close
ESWS Pump Division 2	30PEB20AP001	ESW Pump Structure Division 2	Division 2	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Recirc Isolation Valve Division 2	30PEB20AA002	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Emer. Blowdown Isolation Valve Division 2	30PEB20AA003	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Pump Discharge Isolation Valve Division 2	30PEB20AA005	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Filter Blowdown Isolation Valve Division 2	30PEB20AA015	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design  
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<b>Description</b>	<b>Tag Number<sup>(1)</sup></b>	<b>Location</b>	<b>IEEE Class 1E <sup>(2)(3)</sup></b>	<b>PACS</b>	<b>MCR/RSS Displays</b>	<b>MCR/RSS Controls</b>
Blowdown Isolation Valve Division 2	30PEB20AA016	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
ESW Debris Filter Division 2	30PEB20AT002	ESW Pump Structure Division 2	Division 2	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Tower Isolation Valve Division 2	30PED20AA010	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Tower Bypass Isolation Valve Division 2	30PED20AA011	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Makeup Water Isolation Valve Division 2	30PED20AA019	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
Emer. Makeup Water Isolation Valve Division 2	30PED20AA021	ESW Pump Structure Division 2	Division 2	Yes	Position / Position	Open-Close / Open-Close
ESWS Pump Division 3	30PEB30AP001	ESW Pump Structure Division 3	Division 3	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Recirc Isolation Valve Division 3	30PEB30AA002	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Emer. Blowdown Isolation Valve Division 3	30PEB30AA003	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Pump Discharge Isolation Valve Division 3	30PEB30AA005	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Filter Blowdown Isolation Valve Division 3	30PEB30AA015	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design**  
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<b>Description</b>	<b>Tag Number<sup>(1)</sup></b>	<b>Location</b>	<b>IEEE Class 1E <sup>(2)(3)</sup></b>	<b>PACS</b>	<b>MCR/RSS Displays</b>	<b>MCR/RSS Controls</b>
Blowdown Isolation Valve Division 3	30PEB30AA016	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
ESW Debris Filter Division 3	30PEB30AT002	ESW Pump Structure Division 3	Division 3	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Tower Isolation Valve Division 3	30PED30AA010	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Tower Bypass Isolation Valve Division 3	30PED30AA011	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Makeup Water Isolation Valve Division 3	30PED30AA019	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
Emer. Makeup Water Isolation Valve Division 3	30PED30AA021	ESW Pump Structure Division 3	Division 3	Yes	Position / Position	Open-Close / Open-Close
ESWS Pump Division 4	30PEB40AP001	ESW Pump Structure Division 4	Division 4	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Recirc Isolation Valve Division 4	30PEB40AA002	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Emer. Blowdown Isolation Valve Division 4	30PEB40AA003	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Pump Discharge Isolation Valve Division 4	30PEB40AA005	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Filter Blowdown Isolation Valve Division 4	30PEB40AA015	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design**  
**Sheet 5 of 7**

<b>Description</b>	<b>Tag Number<sup>(1)</sup></b>	<b>Location</b>	<b>IEEE Class 1E <sup>(2)(3)</sup></b>	<b>PACS</b>	<b>MCR/RSS Displays</b>	<b>MCR/RSS Controls</b>
Blowdown Isolation Valve Division 4	30PEB40AA016	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
ESW Debris Filter Division 4	30PEB40AT002	ESW Pump Structure Division 4	Division 4	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Tower Isolation Valve Division 4	30PED40AA010	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Tower Bypass Isolation Valve Division 4	30PED40AA011	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Makeup Water Isolation Valve Division 4	30PED40AA019	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Emer. Makeup Water Isolation Valve Division 4	30PED40AA021	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Dedicated ESW Pump	30PEB80AP001	ESW Pump Structure Division 4	Division 4	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Dedicated Blowdown Isolation Valve	30PEB80AA009	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Dedicated Isolation Valve Dnstr KAA80AC001	30PEB80AA004	ESW Dedicated Division Safeguard Building 4	Yes	Yes	Position / Position	Open-Close / Open-Close
Dedicated Filter Blowdown Isolation Valve	30PEB80AA016	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Dedicated Recirc Isolation Valve	30PEB80AA015	ESW Pump Structure Division 4	Division 4	Yes	Position / Position	Open-Close / Open-Close
Dedicated ESW Debris Filter	30PEB80AT001	ESW Pump Structure Division 4	Division 4	Yes	On-Off / On-Off	Start-Stop / Start-Stop

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design  
Sheet 6 of 7**

<b>Description</b>	<b>Tag Number<sup>(1)</sup></b>	<b>Location</b>	<b>IEEE Class 1E <sup>(2)(3)</sup></b>	<b>PACS</b>	<b>MCR/RSS Displays</b>	<b>MCR/RSS Controls</b>
Cooling Tower Fan	30PED10AN001	ESW Cooling Tower, Division 1	Division 1	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED10AN002	ESW Cooling Tower, Division 1	Division 1	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED20AN001	ESW Cooling Tower, Division 2	Division 2	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED20AN002	ESW Cooling Tower, Division 2	Division 2	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED30AN001	ESW Cooling Tower, Division 3	Division 3	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED30AN002	ESW Cooling Tower, Division 3	Division 3	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED40AN001	ESW Cooling Tower, Division 4	Division 4	Yes	On-Off / On-Off	Start-Stop / Start-Stop
Cooling Tower Fan	30PED40AN002	ESW Cooling Tower, Division 4	Division 4	Yes	On-Off / On-Off	Start-Stop / Start-Stop
<b>Instruments</b>						
Radiation Monitor (R-66)	30PEB10CR001	ESW Cooling Tower, Division 1	N/A	No	Radioactivity level / Radioactivity level	NA / NA
Radiation Monitor (R-67)	30PEB20CR001	ESW Cooling Tower, Division 1	N/A	No	Radioactivity level / Radioactivity level	NA / NA

**Table 2.7.11-2—ESWS Equipment I&C and Electrical Design  
Sheet 7 of 7**

Description	Tag Number <sup>(1)</sup>	Location	IEEE Class 1E <sup>(2)(3)</sup>	PACS	MCR/RSS Displays	MCR/RSS Controls
Radiation Monitor (R-68)	30PEB30CR001	ESW Cooling Tower, Division 1	N/A	No	Radioactivity level / Radioactivity level	NA / NA
Radiation Monitor (R-69)	30PEB40CR001	ESW Cooling Tower, Division 1	N/A	No	Radioactivity level / Radioactivity level	NA / NA
Radiation Monitor (R-70)	30PEB80CR001	ESW Cooling Tower, Division 1	N/A	No	Radioactivity level / Radioactivity level	NA / NA

1. Equipment tag numbers are provided for information only and are not part of the certified design.
2. <sup>N</sup> denotes the division the equipment is normally powered from; <sup>A</sup> denotes the division the equipment is powered from when alternate feed is implemented.
3. “Dedicated” equipment are non-Class 1E equipment but are powered from the Class 1E Division as shown.



**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 1 of 9**

<b>Commitment Wording</b>		<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
2.1	The functional arrangement of the ESWS is as described in the Design Description of Section 2.7.11, Tables 2.7.11-1 and 2.7.11-2, and as shown on Figure 2.7.11-1.	An inspection of the as-built ESWS functional arrangement will be performed.	The ESWS conforms to the functional arrangement as described in the Design Description of Section 2.7.11, Tables 2.7.11-1 and 2.7.11-2, and as shown on Figure 2.7.11-1.
2.2	Deleted.	Deleted.	Deleted.
2.3	Physical separation exists between divisions of the ESWS as listed in Table 2.7.11-1 and as shown on Figure 2.7.11-1.	An inspection will be performed to verify that the as-built divisions of the ESWS are located in separate ESWS and Safeguard Buildings.	The divisions of the ESWS are located in separate ESWS and Safeguard Buildings as listed in Table 2.7.11-1 and as shown on Figure 2.7.11-1.
2.4	Deleted.	Deleted.	Deleted.
2.5	Deleted.	Deleted.	Deleted.
3.1	Pumps and valves listed in Table 2.7.11-1 will be functionally designed and qualified such that each pump and valve is capable of performing its intended function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions up to and including design basis accident conditions.	Tests or type tests of pumps and valves will be performed to demonstrate that the pumps and valves function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions up to and including design basis accident conditions.	A report concludes that the pumps and valves listed in Table 2.7.11-1 are capable of performing their intended function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions up to and including design basis accident conditions.
3.2	Check valves listed in Table 2.7.11-1 will function to change position as listed in Table 2.7.11-1 under normal operating conditions.	Tests will be performed to verify the ability of check valves to change position under normal operating conditions.	The check valves change position as listed in Table 2.7.11-1 under normal operating conditions.
3.3	Deleted.	Deleted.	Deleted.

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 2 of 9**

	<b>Commitment Wording</b>	<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
3.4	Equipment identified as Seismic Category I in Table 2.7.11-1 can withstand seismic design basis loads without a loss of safety function(s).	a. Type tests, analyses, or a combination of type tests and analyses will be performed on the equipment identified as Seismic Category I in Table 2.7.11-1 using analytical assumptions, or under conditions, which bound the Seismic Category I design requirements.  b. An inspection will be performed of the as-built equipment identified as Seismic Category I in Table 2.7.11-1 to verify that the equipment, including anchorage, are installed in a condition bounded by the tested or analyzed condition.	a. Test/analysis reports conclude that the equipment identified as Seismic Category I in Table 2.7.11-1 can withstand seismic design basis loads without a loss of safety function(s).  b. Inspection reports conclude that the equipment identified as Seismic Category I in Table 2.7.11-1, including anchorage, are installed in a condition bounded by the tested or analyzed condition.
3.5	ASME Code Class 3 piping systems are designed in accordance with ASME Code Section III requirements.	An inspection of piping design and analysis documentation required by ASME Code Section III will be performed. <b>{{DAC}}</b>	ASME Code Section III Design Report(s) exist that meet the requirements of NCA-3550 and conclude that the design of ASME Code Class 3 piping systems complies with the requirements of ASME Code Section III. <b>{{DAC}}</b>
3.6	As-built ASME Code Class 3 components listed in Table 2.7.11-1 are reconciled with the design requirements.	A reconciliation analysis of ASME Code Class 3 components will be performed.	ASME Code Design Report(s) exist that meet the requirements of NCA-3550, conclude that the design reconciliation has been completed for as-built ASME Code Class 3 components listed in Table 2.7.11-1, and document that the results of the reconciliation analysis comply with the requirements of ASME Code Section III.

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 3 of 9**

<b>Commitment Wording</b>		<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
3.7	Pressure-boundary welds in ASME Code Class 3 components listed in Table 2.7.11-1 meet ASME Code Section III non-destructive examination requirements.	An inspection of the as-built pressure-boundary welds in ASME Code Class 3 components will be performed.	ASME Code reports(s) exist that conclude that ASME Code Section III requirements are met for non-destructive examination of pressure-boundary welds in ASME Code Class 3 components listed in Table 2.7.11-1.
3.8	ASME Code Class 3 components listed in Table 2.7.11-1 retain their pressure-boundary integrity at their design pressure.	A hydrostatic test will be conducted on ASME Code Class 3 components that are required to be hydrostatically tested by ASME Code Section III.	ASME Code Data Report(s) exist and conclude that the results of the hydrostatic test of ASME Code Class 3 components listed in Table 2.7.11-1 comply with the requirements of ASME Code Section III.
3.9	ASME Code Class 3 components listed in Table 2.7.11-1 are fabricated, installed, and inspected in accordance with ASME Code Section III requirements.	An inspection of the as-built construction activities and documentation for ASME Code Class 3 components will be conducted.	ASME Code Data Report(s) exist that conclude that ASME Code Class 3 components listed in Table 2.7.11-1 are fabricated, installed, and inspected in accordance with ASME Code Section III requirements.
3.10	Deleted.	Deleted.	Deleted.
3.11	Deleted.	Deleted.	Deleted.
3.12	Deleted.	Deleted.	Deleted.
3.13	Deleted.	Deleted.	Deleted.
3.14	Deleted.	Deleted.	Deleted.
3.15	Deleted.	Deleted.	Deleted.
3.16	Deleted.	Deleted.	Deleted.
3.17	Deleted.	Deleted.	Deleted.

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 4 of 9**

	<b>Commitment Wording</b>	<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
3.18	The UHS fans are capable of withstanding the effects of tornado including differential pressure effects, overspeed, and the impact of differential pressure effects on other equipment located within the cooling tower structure (e.g., capability to function, potential to become missile/debris hazard).	<ul style="list-style-type: none"> <li>a. Type tests, analyses, or a combination of type tests and analyses will be performed on the UHS fans using analytical assumptions, or under conditions, which bound the tornado design requirements.</li> <li>b. An inspection will be performed of the as-built UHS fans to verify that the equipment, including anchorage, are installed in a condition bounded by the tested or analyzed condition.</li> </ul>	<ul style="list-style-type: none"> <li>a. Test/analysis reports conclude that the UHS fans can withstand tornado design basis loads without a loss of safety function(s).</li> <li>b. Inspection reports conclude that the UHS fans, including anchorage, are installed in a condition bounded by the tested or analyzed condition.</li> </ul>
4.1	Displays listed in Table 2.7.11-2 are indicated on the PICS operator workstations in the MCR and the RSS.	<ul style="list-style-type: none"> <li>a. Tests will be performed to verify that the displays listed in Table 2.7.11-2 are indicated on the PICS operator workstations in the MCR.</li> <li>b. Tests will be performed to verify that the displays listed in Table 2.7.11-2 are indicated on the PICS operator workstations in the RSS.</li> </ul>	<ul style="list-style-type: none"> <li>a. Displays listed in Table 2.7.11-2 are indicated on the PICS operator workstations in the MCR.</li> <li>b. Displays listed in Table 2.7.11-2 are indicated on the PICS operator workstations in the RSS.</li> </ul>
4.2	Controls on the PICS operator workstations in the MCR and the RSS perform the function listed in Table 2.7.11-2.	<ul style="list-style-type: none"> <li>a. Tests will be performed using controls on the PICS operator workstations in the MCR.</li> <li>b. Tests will be performed using controls on the PICS operator workstations in the RSS.</li> </ul>	<ul style="list-style-type: none"> <li>a. Controls on the PICS operator workstations in the MCR perform the function listed in Table 2.7.11-2.</li> <li>b. Controls on the PICS operator workstations in the RSS perform the function listed in Table 2.7.11-2.</li> </ul>

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 5 of 9**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.3	Equipment listed as being controlled by a PACS module in Table 2.7.11-2 responds to the state requested and provides drive monitoring signals back to the PACS module. The PACS module will protect the equipment by terminating the output command upon the equipment reaching the requested state.	A test will be performed using test input signals to verify equipment controlled by a PACS module responds to the state requested and provides drive monitoring signals back to the PACS module.	Equipment listed as being controlled by a PACS module in Table 2.7.11-2 responds to the state requested and provides drive monitoring signals back to the PACS module. The PACS module will protect the equipment by terminating the output command upon the equipment reaching the requested state.
4.4	An interlock for failure of one ESWS pump during normal operation results in a switchover to the other ESWS train and is automatically initiated by the CCWS Switchover sequence.	Tests will be performed using test input signals to verify the interlock automatically initiates the CCWS Switchover sequence on failure of one ESWS pump during normal operation which results in a switchover to the other ESWS train.	The following interlock responds as specified below when activated by a test input signal: <ul style="list-style-type: none"> <li>• If one ESWS pump fails during normal operation, a switchover to the other ESWS train is carried out and is automatically initiated by the CCWS Switchover sequence.</li> </ul>
4.5	An interlock for a spurious closure of the ESWS pump discharge valve results in a switchover to the other ESWS train and is automatically initiated by the CCWS Switchover sequence.	Tests will be performed using test input signals to verify the interlock automatically initiates the CCWS Switchover sequence on a spurious closure of the ESWS pump discharge valve which results in a switchover to the other ESWS train.	The following interlock responds as specified below when activated by a test input signal: <ul style="list-style-type: none"> <li>• A spurious closure of the ESWS pump discharge valve results in a switchover to the other ESWS train and is automatically initiated by the CCWS Switchover sequence.</li> </ul>
4.6	Deleted.	Deleted.	Deleted.
4.7	Deleted.	Deleted.	Deleted.

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 6 of 9**

<b>Commitment Wording</b>		<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
5.1	Equipment designated as Class 1E in Table 2.7.11-2 are powered from the Class 1E division as listed in Table 2.7.11-2 in a normal or alternate feed condition.	<p>a. Testing will be performed by providing a test input signal in each normally aligned division.</p> <p>b. Testing will be performed by providing a test input signal in each division with the alternate feed aligned to the divisional pair.</p>	<p>a. The test input signal provided in the normally aligned division is present at the respective Class 1E equipment identified in Table 2.7.11-2.</p> <p>b. The test input signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E equipment identified in Table 2.7.11-2.</p>
5.2	Deleted.	Deleted.	Deleted.
5.3	Deleted.	Deleted.	Deleted.
5.4	Equipment identified as “Dedicated” ESWS motor-operated equipment (including Division 4 cooling tower fans) in Table 2.7.11-2 are capable of being powered by a SBODG.	Testing will be performed for equipment identified as “Dedicated” ESWS motor-operated equipment (including Division 4 cooling tower fans) in Table 2.7.11-2 by providing a test input signal from an SBODG.	The test input signal provided from the SBODG is present at the equipment identified as “Dedicated” ESWS motor-operated equipment (including Division 4 cooling tower fans) in Table 2.7.11-2.
6.1	Deleted.	Deleted.	Deleted.
7.1	Each ESWS UHS listed in Table 2.7.11-1 has the capacity to transfer the design heat load from the CCWS and EDG heat exchangers and the ESWPBVS room coolers.	Tests and analyses will be performed to verify the capability of the ESWS UHS to transfer the design heat load from the CCWS and EDG heat exchangers and the ESWPBVS room coolers.	Each ESWS UHS listed in Table 2.7.11-1 has the capacity to transfer the design heat load from the CCWS and EDG heat exchangers and the ESWPBVS room coolers.

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 7 of 9**

<b>Commitment Wording</b>		<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
7.2	The pumps listed in Table 2.7.11-1 have sufficient NPSHA.	Tests and analyses will be performed to verify pump NPSHA is greater than NPSHR at system run-out flow.	A report exists and concludes that the pumps listed in Table 2.7.11-1 have NPSHA that is greater than NPSHR at the maximum ESWS flow rate with consideration for minimum allowable cooling tower basin water level (as corrected to account for vortex effects and actual temperature and atmospheric conditions).
7.3	Class 1E valves listed in Table 2.7.11-2 will function to change position as listed in Table 2.7.11-1 under normal operating conditions.	Tests will be performed to verify the ability of Class 1E valves to change position under normal operating conditions.	Class 1E valves listed in Table 2.7.11-2 change position as listed in Table 2.7.11-1 under normal operating conditions.
7.4	The ESWS has provisions to allow flow testing of each ESWS pump during plant operation.	Tests will be performed to verify ESWS has provisions to allow flow testing of each ESWS pump during plant operation.	The closed loop allows ESWS pump flow back to the ESW cooling tower basin during plant operation.
7.5	Deleted.	Deleted.	Deleted.
7.6	The ESWS pump delivers water to the CCWS and EDG heat exchangers and the EPGBVS coolers and the ESWPBVS room coolers.	Tests will be performed to determine the ESWS pump flowrate to the CCWS and EDG heat exchangers and the ESWPBVS room coolers.	The ESWS pump delivers water at greater than or equal to the Normal Flow Rate for the ESW pump to the CCWS and EDG heat exchangers and the ESWPBVS room coolers within 120 seconds after receipt of a start signal from the PACS module.
7.7	The ESWS debris filters listed in Table 2.7.11-1 function to backwash upon high differential pressure.	Tests will be performed using test input signals to verify the ESWS debris filters function to backwash on high differential pressure.	The filters initiate backwash flow to filter blowdown on high differential pressure.

**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 8 of 9**

	<b>Commitment Wording</b>	<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
7.8	<p>The inlet between the cooling tower basin and pump intake structure has a coarse and a fine debris screen for each ESW pump.</p>	<p>a. An inspection will be performed to verify the installation of as-built coarse and as-built fine debris screen at the inlet between the cooling tower basin and pump intake structure for each ESW pump.</p> <p>b. An inspection will be performed to verify the maximum mesh grid opening of the as-built debris screens.</p>	<p>a. A coarse and a fine debris screen is installed at the inlet between the cooling tower basin and pump intake structure for each ESW pump.</p> <p>b. The coarse debris screen has a maximum mesh grid opening of 2 x 2 inches. The fine debris screen has a maximum mesh grid opening of 0.5 x 0.5 inches.</p>
7.9	<p>The UHS cooling towers are capable of removing the design heat load without exceeding the maximum design temperature limit for ESWS.</p>	<p>Tests and analyses, or a combination of tests and analyses, will be performed to demonstrate that the UHS cooling towers are capable of removing the design basis heat load without exceeding the maximum design temperature limit for ESWS.</p>	<p>A report concludes that the UHS cooling towers are capable of removing the design heat load for a minimum of 30 days following a design basis accident, assuming the most limiting design conditions of heat removal and assuming worst-case (or most limiting) site-specific meteorological conditions (including the effects of concentrating impurities on the ESWS), without exceeding the maximum design temperature limit for ESWS.</p>



**Table 2.7.11-3—Essential Service Water System ITAAC**  
**Sheet 9 of 9**

	<b>Commitment Wording</b>	<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
7.10	The UHS cooling towers are capable of removing the design heat load without water level dropping below the minimum design level in the cooling tower basin.	Tests and analyses, or a combination of tests and analyses, will be performed to demonstrate that the UHS cooling towers are capable of removing the design heat load without water level dropping below the minimum design level in the cooling tower basin.	A report concludes that the UHS cooling towers are capable of removing the design heat load for a minimum of 30 days following a design basis accident, assuming the most limiting design conditions for water usage and assuming worst-case (or most limiting) site-specific meteorological conditions (including the effects of concentrating impurities on the ESWS), without water level dropping below the minimum design level in the cooling tower basin.
7.11	The cooling tower basin is sized for the minimum basin water volume.	An inspection and analysis will be performed to demonstrate the size of the as-built cooling tower basin is capable of holding the minimum basin water volume.	The cooling tower basin size is capable of holding the minimum basin water volume.