

**B.1.28 SERVICE WATER INTEGRITY**

**Program Description**

The Service Water Integrity Program at PNPS is comparable to the program described in NUREG-1801, Section XI.M20, Open-Cycle Cooling Water System.

This program relies on implementation of the recommendations of GL 89-13 to ensure that the effects of aging on the salt service water (SSW) system are managed for the period of extended operation. The program includes surveillance and control techniques to manage aging effects caused by biofouling, corrosion, erosion, protective coating failures, and silting in the SSW system or structures and components serviced by the SSW system.

**NUREG-1801 Consistency**

The Service Water Integrity Program at PNPS is consistent with the program described in NUREG-1801, Section XI.M20, Open-Cycle Cooling Water System with exceptions.

**Exceptions to NUREG-1801**

The Service Water Integrity Program at PNPS is consistent with the program described in NUREG-1801, Section XI.M

Attributes		U.S. NUCLEAR REGULATORY COMMISSION	
2. Preventive Acti		In the Matter of <u>Energy (Pilgrim Nuclear Power Station)</u>	
		Docket No. <u>50-293-LR</u>	Official Exhibit No. <u>46</u>
		OFFERED by: Applicant/Licensee	Intervenor
		<u>NRC Staff</u>	Other <u>NRC Staff Ex. 8</u>
		IDENTIFIED on <u>4-10-08</u>	Witness/Panel
		Action Taken: <u>ADMITTED</u>	REJECTED WITHDRAWN
5. Monitoring and		Reporter/Clerk <u>Thibault</u>	

**Exception Notes**

1. NUREG-1801 s materials and li exposed to agg components ar necessary to pi

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11SNRC

April 15, 2008 (10:00am)

OFFICE OF SECRETARY  
R.I.I. EMAKINGS AND  
AD.II INDICATIONS STAFF

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**Exceptions to NUREG-1801**

The Service Water Integrity Program at PNPS is consistent with the program described in NUREG-1801, Section XI.M20, Open-Cycle Cooling Water System with the following exceptions.

Attributes Affected	Exceptions
2. Preventive Actions	NUREG-1801 states that system components are lined or coated. Components are lined or coated only where necessary to protect the underlying metal surfaces. <sup>1</sup>
5. Monitoring and Trending	NUREG-1801 states that testing and inspections are performed annually and during refueling outages. The PNPS program requires tests and inspections each refueling outage. <sup>2</sup>

**Exception Notes**

1. NUREG-1801 states that system components are constructed of appropriate materials and lined or coated to protect the underlying metal surfaces from being exposed to aggressive cooling water environments. Not all PNPS system components are lined or coated. Components are lined or coated only where necessary to protect the underlying metal surfaces.

2. NUREG-1801 program entails testing and inspections performed annually and during refueling outages. The PNPS program requires tests and inspections each refueling outage, but not annually. Since aging effects are typically manifested over several years, the difference in inspection and testing frequency is insignificant.

### Enhancements

None.

### Operating Experience

Results of heat transfer capability testing of the reactor building closed cooling water (RBCCW) heat exchangers from 2001 through 2004 show that the heat exchangers are capable of removing the required amount of heat. Confirmation of adequate thermal performance provides evidence that the program is effective for managing fouling of SSW cooled heat exchangers.

Results of SSW visual inspections, eddy current testing, ultrasonic testing, and radiography testing from 1998 through 2004 revealed areas of erosion and areas of corrosion on internal and external surfaces. SSW butterfly valves, pump discharge check valves, air removal valves, and pipe spools have been replaced with components made of corrosion resistant materials. Also, RBCCW heat exchanger channel assemblies have been replaced and tubes have been sleeved to address erosion and corrosion. Identification of degradation and corrective action prior to loss of intended function provide evidence that the program is effective for managing loss of material for SSW system components.

Visual inspections of SSW piping revealed degradation of the lining in original SSW carbon steel rubber lined piping. Pipe lining is intended to protect pipe internal surfaces from erosion and corrosion. Therefore, SSW piping has been replaced with carbon steel pipe with cured-in-place rubber lining, relined with a ceramic epoxy compound, or replaced with titanium pipe. Identification of degradation and corrective action prior to loss of intended function provide evidence that the program is effective for managing loss of material for SSW system components.

### Conclusion

The Service Water Integrity Program has been effective at managing aging effects. The Service Water Integrity Program provides reasonable assurance that effects of aging will be managed such that applicable components will continue to perform their intended function consistent with the current licensing basis for the period of extended operation.