

## **6.9 AUXILIARY FEEDWATER PUMP ROOM EMERGENCY COOLING**

### **6.9.1 DESIGN BASIS**

The Auxiliary Feedwater Pump Room cooling system is designed to prevent the room air temperature from rising above 130°F so as to prevent failure of the air-cooled bearings of the pump during an emergency shutdown of the plant.

### **6.9.2 SYSTEM DESCRIPTION**

If the "normal" operating mode of the cooling unit fails for any reason, the "emergency" mode of operation can be deployed. The emergency mode of operation relies on redundant fan coil units (FCUs), located in the mechanical equipment room at Elevation 5'0" of the Auxiliary Building, which can circulate and cool 3,300 cfm (nominal) of air from the AFW Pump Room through a system of connecting ductwork. The Service Water System supplies all of the cooling water required to the FCUs to cool the air. This system is shown in Figure 9-21.

### **6.9.3 SYSTEM COMPONENTS**

- a. Fans - The fans are made of carbon steel, direct-drive, SQA design 44 plug fans.
- b. Motor and Drive - Each motor is of drip-proof/TEFC (totally enclosed, fan cooled) type with grease lubricated ball bearings.
- c. Cooling Coils – The cooling coil tubes are copper-nickel and the fins are aluminum.

### **6.9.4 SYSTEM OPERATION**

These fans are not in service during normal operation. Fans are controlled manually from a local station as well as automatically by temperature switches located in the AFW Pump rooms.

### **6.9.5 DESIGN EVALUATION**

- a. The system consists of redundant FCUs and ducting with automatic dampers located on the discharge opening of each fan and isolation dampers on the suction side of each fan.
- b. Each FCU is furnished as a unit and meets Seismic Category I requirements.
- c. All ducting and equipment is reinforced with Seismic Category I bracing.

### **6.9.6 AVAILABILITY AND RELIABILITY**

All moving parts, such as fans or dampers, are redundant and each has the capacity to handle 100% of the load.

Because the system is not in use during normal plant operation, specific routine tests and inspections will be incorporated into the plant operating procedures. Periodic tests will be performed to ensure the availability of power and the operability of the components.

The FCU are arranged electrically so they can be operated using either off-site power or the emergency diesel generators. Each FCU can be powered from a separate emergency diesel generator.

### **6.9.7 TESTS AND INSPECTIONS**

- a. FCU, motors and dampers were tested in-place to ascertain their over-all performance.

- b. Air and water flow rates were measured and certified before the system was accepted as being operable.
- c. All equipment and associated components are arranged so that they can be inspected at any time.