

## **6.10 ELECTRICAL HEAT TRACING SYSTEM**

Electrical heat tracing is installed on all piping, valves, pumps and other line-mounted components that contain concentrated boric acid. Heat tracing is needed to maintain a 12% weight boric acid solution above the 135°F saturation temperature. The heat tracing system is designed to maintain 160°F; however, the operating temperature may be set lower. The thermal insulation is designed to limit the insulation surface temperature to 140°F based on an ambient air temperature of 80°F and component temperature of 160°F.

The electrical heat tracing system is designed such that a single failure will not cause loss of function and includes redundant heater elements, controls, and alarm functions. Each subsystem is supplied by separate emergency power sources.

Each subsystem is equipped with an independent alarm system. Functions which are alarmed locally and in the Control Room include high and low temperature and loss of power.

Power for heat tracing is considered as part of the load for the emergency diesel generator during the first eight hours of operation.

The pre-operational test of the heat tracing system verified that the design basis, as stated above, is adequate. This test program included verification of the following:

- a. Proper functioning of all heating elements;
- b. Alarm functions for loss of power to heating elements;
- c. The temperature of the boric acid solution;
- d. Manual transfer to the redundant subsystem from the local control panel; and,
- e. All heat tracing controls function properly.