COMPONENT COOLING SYSTEM MALFUNCTION ANALYSIS

Component	Malfunction	Comments and Consequences
1. Component cooling water pump	Rupture of a pump casing	Isolate pump and start redundant pump. Minimum safeguards requirements only one out of two pumps.
2. Component cooling water pump	Pump fails to start	One operating pump will supply sufficient flow. Redundancy is sufficient to provide ample flow for any condition.
3. Component cooling water pump	Manual valve on a pump suction line closed	This will be prevented by pre-startup and operational checks. Further, during normal operation, each pump will be checked on a periodic basis, which would show that a valve was closed.
4. Component cooling water pump	Stop valve on discharge line closed or check valve sticks closed	Stop valve will be checked open by pre-startup and operational checks. The stop valve and the check valve will be checked by periodic operation of the standby pump during normal operation.
5. Component cooling heat exchanger	Tube or shell rupture	Isolate and valve in standby train.
6. Component cooling heat exchanger vent or drain valve	Left open	This will be prevented by pre-startup and operational checks. On the in service heat exchangers such a situation would be readily assessed by makeup requirements to system. On the out-of-service heat exchangers such a situation would be assessed during periodic inspection of general area.
7. Thermal Barrier Heat Exchanger	Tube Leak or Rupture	See Section 9.5.4 Detection by CCW Radiation Monitor or Surge Tank level. Redundant containment isolation valves provide means to isolate if a leak is detected (isolation would require plant shutdown).