

6.0 ENGINEERED SAFETY FEATURES

6.1 GENERAL

Several systems in Calvert Cliffs Units 1 and 2 are designated engineered safety features (ESF). The function of these systems is to localize, control, terminate, and otherwise mitigate the consequences of an accident and thereby enhance the protection of the public and plant personnel against the accidental release of fission products.

The systems function to cool the core, limit the magnitude and duration of a pressure transient within containment following a loss-of-coolant accident (LOCA), provide long-term post-accident cooling, and reduce the airborne radioactivity concentration in containment.

The systems defined as ESF are as follows:

- a. The Safety Injection (SI) System [including as subsystems the safety injection tanks (SITs), high-pressure safety injection (HPSI) pumps and low-pressure safety injection (LPSI) pumps]:
The SI system injects borated water into the Reactor Coolant System (RCS). The system supplies emergency core cooling to limit fuel rod damage and fission product release, and ensure adequate shutdown margin regardless of temperature. The injection system also supplies continuous long-term post-accident cooling of the core by recirculation of borated water from the containment sump. Portions of the SI system may be used to provide long-term cooling flush;
- b. Containment cooling systems:
 1. The Containment Spray System:
Removes heat by spraying cool, borated water through the containment atmosphere. Heat is transferred to the Component Cooling System through the shutdown cooling heat exchangers;
 2. The Containment Air Recirculation and Cooling System:
Removes heat by circulating the post-accident containment atmosphere over coils cooled by service water (SRW);
- c. Containment Penetration Room Ventilation System:
Operation of the penetration room exhaust system ensures that radioactive materials discharging from the containment atmosphere following a LOCA are filtered prior to reaching the environment. High efficiency particulate and charcoal filters remove radioactivity associated with aerosols and the radioiodines;
- d. Containment Iodine Removal System:
Recycles the post-accident containment atmosphere through charcoal filters to remove radioiodines.

The essential supporting systems include the control systems, the normal and emergency power systems and the component cooling, SRW and saltwater systems. These systems are described in Chapters 7, 8 and 9, respectively.