Background
The reactor coolant pump (RCP) automatic shutdown system has been developed to reduce the burden on the operator and maintain reactor coolant system (RCS) inventory during abnormal conditions, including: Appendix R – Fire Protection (10 CFR 50.48 Appendix R and NFPA 805). The RCP automatic shutdown system provides an alternate means for shutting down the RCPs without operator action following the loss of all seal cooling.

Description
The RCP automatic shutdown system monitors redundant flow signals for seal injection flow and component cooling water flow. When a loss of all seal cooling is detected, the system allows the operator time to restore seal cooling. If seal cooling is not restored, the system automatically shuts down the RCP without operator action. When used in conjunction with the SHIELD® passive thermal shutdown seal, the RCP automatic shutdown system will ensure the RCP has been shut down prior to the activation of the SHIELD passive thermal shutdown seal.

The RCP automatic shutdown system will be located in a different fire zone to ensure that during a fire, either the RCP automatic shutdown system or the operator will be able to shut down the RCP.

The RCP automatic shutdown system can be provided as a turnkey product, including the following services:
- Licensing and 10 CFR 50.59 Support
- Preparation of the engineering change package
- Hardware installation
- Training
**Benefits**

- Allows operators the maximum amount of time to restore seal cooling
- Provides an alternative and dedicated means for shutting down the RCP following a loss of all seal cooling
- Independently wired from main control room control fire zone
- Allows for consistent operator response for fire response and loss of all AC power
- Redundancy prevents inadvertent actuation from a single failure
- Continuous monitoring of trip logic
- Allows for online testing

**Platform Features**

- Can be provided as a stand-alone system, or added to an existing Ovation® system
- Flexible equipment footprint allows a wide range of installation options
- Fault tolerance within control algorithm logic
- Redundant architecture with automatic fail-over (power supplies, controllers)
- Continuous online self-diagnostics and alarming

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