

## 2.3 Radiation Monitoring Systems

The information in this section of the ABWR DCD, including all subsections, tables, and figures, is incorporated by reference with the following departures.

STD DEP T1 2.3-1 (Figure 2.3.1)

STD DEP T1 2.14-1 (Table 2.3.3)

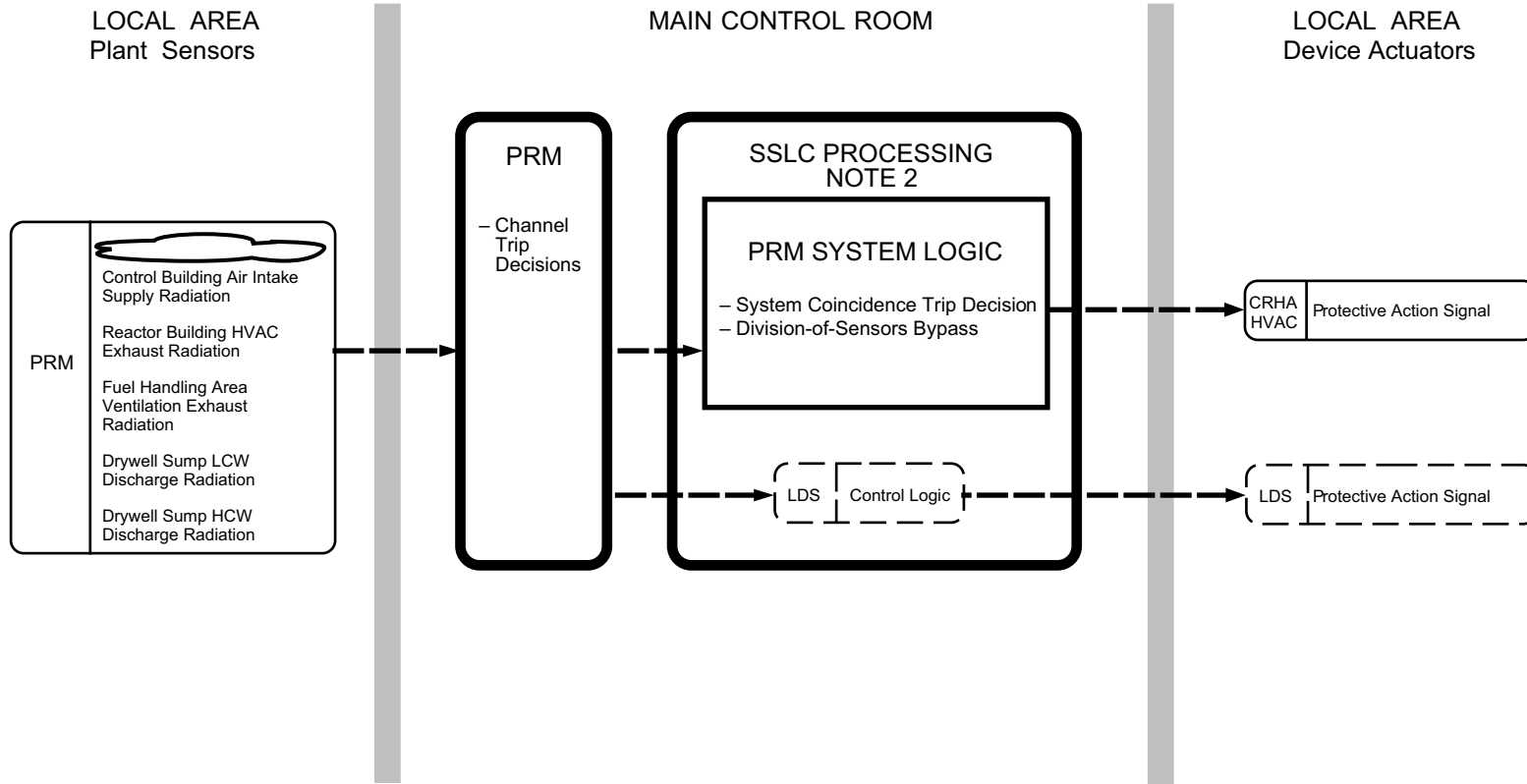
### 2.3.1 Process Radiation Monitoring System

STD DEP T1 2.3-1

#### ***Design Description***

*The Process Radiation Monitoring (PRM) System measures and displays radioactivity levels in process and effluent gaseous and liquid streams, initiates protective actions, and activates alarms in the main control room (MCR) on high radiation signals. The PRM System provides radiological monitoring during plant operation and following an accident. PRM System equipment consists of radiation sensors, radiation process monitors, and effluent samplers. The PRM System consists of independent subsystems each of which contains between one and four monitoring channels. Figure 2.3.1 shows the PRM System control interfaces. As shown on Figure 2.3.1, the PRM System safety-related channel trip signals are provided as inputs to the Safety System Logic and Control (SSLC) for generation of protective action signals.*

*Portions of the PRM System are classified as Class 1E safety-related (items 42 through 5 below); the remainder are classified as non-safety-related.*



- Notes:
1. Diagram represents one of four PRM System divisions.
  2. See Section 3.4, Figure 3.4b for SSLC processing.

Figure 2.3.1 Process Radiation Monitoring System Control Interface Diagram

### 2.3.3 Containment Atmospheric Monitoring System

STD DEP T1 2.14-1

#### **Design Description**

*The CAMS is classified as a Class 1E safety-related system, except the oxygen/hydrogen monitoring equipment in CAMS is non-safety-related.*

*Operation of ~~each CAMS division~~ the oxygen/hydrogen monitoring equipment can be activated manually or automatically during a post-accident condition by a signal indicating a high drywell pressure or a low reactor water level.*

*One radiation channel of each CAMS division monitors the radiation level in the drywell and the other channel monitors the radiation level in the suppression chamber.*

*The oxygen/hydrogen monitoring equipment ~~of each CAMS division~~ analyzes the hydrogen and oxygen gas concentration levels in the drywell or in the suppression chamber and provides separate gas concentration displays in the MCR.*

*Each CAMS division of radiation channels is powered from its respective divisional Class 1E power source. In the CAMS, independence is provided between the Class 1E divisions, and also between the Class 1E divisions and non-Class 1E equipment.*

*~~Both CAMS equipment is~~ divisions are located in the Reactor Building, except for the radiation and the gas process monitors, which are located in the Control Building.*

*The CAMS has the following alarms, displays, and controls in the MCR:*

- (1) Displays of radiation, hydrogen and oxygen levels.*
- (2) Alarms for radiation levels, and for hydrogen and oxygen gas concentration levels.*
- (3) Manual or automatic system level initiation of oxygen/hydrogen monitoring equipment ~~for each CAMS division.~~*

Table 2.3.3 Containment Atmospheric Monitoring System

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2. Operation of <del>each</del> CAMS <b>oxygen/hydrogen monitoring equipment</b> <del>division</del> can be activated manually by the operator or automatically.	2. Tests <del>of each division</del> of the as-built CAMS <b>oxygen/hydrogen monitoring equipment</b> will be conducted using manual controls and simulated automatic initiation signals.	2. <del>Each</del> CAMS <del>division</del> <b>oxygen/hydrogen monitoring equipment</b> is activated upon receipt of the test signals.
3. a. Each CAMS division <b>of radiation channels</b> is powered <b>only</b> from its respective divisional Class 1E power source <b>with electrical independence between divisions</b> .  b. In the CAMS, independence is provided between Class 1E divisions, and between Class 1E divisions and non-Class 1E equipment.	3. a. Tests will be performed on <b>each division</b> of the CAMS <b>radiation channels</b> by providing a test signal to only one Class 1E division at a time.  b. Inspection of the as-built Class 1E <b>radiation channels</b> <del>divisions in the CAMS</del> will be performed.	3. a. The test signal exists only in the Class 1E division under test in the CAMS.  b. In the CAMS, physical separation or electrical isolation exists between Class 1E divisions. Physical separation or electrical isolation exists between these Class 1E divisions and non-Class 1E equipment.