



General Electric Company
175 Curtner Avenue, San Jose, CA 95128

May 21, 1993

Docket No. STN 52-001

Chet Poslusny, Senior Project Manager
Standardization Project Directorate
Associate Directorate for Advanced Reactors
and License Renewal
Office of the Nuclear Reactor Regulation

Subject: Submittal Supporting Accelerated ABWR Review Schedule - DFSEER COL
Action Items 9.3.3-1 and 9.3.8-1

Dear Chet:

Enclosed is a final (draft) version of the SSAR that addresses COL Action Items 9.3.3-1 and 9.3.8-1.

Please provide a copy of this transmittal to Butch Burton.

Sincerely,

Jack Fox
Advanced Reactor Programs

cc: Bernie Genetti (GE)
Norman Fletcher (DOE)
Gail Miller (GE)

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9.3.3 Equipment and Floor Drainage System

The system which collects and transfers all radioactive liquid wastes is discussed in Subsection 9.3.8. The non-radioactive drains are discussed in this subsection. The non-radioactive drains consist of equipment inside the standard plant buildings and COL interface requirements for that portion outside the buildings. The drains release effluent to the site specific discharge structure. The potable and sanitary water systems (Subsection 9.2.4) includes the non-radioactive drains.

9.3.3.1 Non-Radioactive Drains

9.3.3.1.1 Safety Design Bases

- COL 9.3.3-1
- (1) There shall be no interconnection between any portion of the radioactive drain transfer system and any non-radioactive waste system.
 - (2) Effluent from non-radioactive systems shall be sampled prior to discharge to assure that there are no unacceptable discharges.
 - (3) Non-radioactive drains piping shall be non-nuclear safety class and quality group D and shall not have any effect on the operation of safety-related equipment.
 - (4) The floor drain piping system shall be arranged with a separate piping system for each quadrant. The piping shall be arranged so that flooding or backflow in one quadrant cannot adversely affect the other quadrants.
 - (5) Any valves that are relied upon to prevent backflow shall be inspectable and testable and withstand SSE.

9.3.3.1.2 Power Generation Design Bases

- (1) The drains shall be designed to collect and remove effluent from their point of origin to the site discharge structure.
- (2) The sump level switches shall serve as leakage monitors for equipment or systems served by each sump. Leakage detection is also discussed in Subsection 5.2.5.

(3) Open drainage lines from areas that are required to maintain an air pressure differential are provided with a water seal.

(4) All drainage lines into each sump shall be turned down and terminated below the lowest fluid level to which the sump pump can draw.

9.3.3.1.3 System Description

The non-radioactive drain system is designed to assure that waste liquids, valve and pump leakoffs and component drains and vents are directed to the proper area for processing. The process portion of the systems consists of sump pumps, valves and instrumentation. Sumps are provided as shown in the arrangement drawings in Section 1.2.

All drainage systems are essentially passive systems down to the sumps or yard pipe connections. This is, flow is by gravity with no valves, pumps, and the like in the lines such that failure could cause a system not to drain. All exposed drainage piping is seismically analyzed to remain intact following an SSE, and thus will drain the area as required. See Subsection 3.4.1 for further details.

Unacceptable flooding consequences are precluded by the capacity of the drain and the placement of safety-related equipment on raised pads or grating. Also, check valves in sump pump discharge lines prevent reverse flow from other sumps that have piping to common collection tanks.

The design of the drain system precludes release to the environs of radioactive liquid. As a backup, however, all non-radioactive drain systems are sampled for radiation prior to release to the environs.

9.3.3.1.4 System Operation and Component Description

The drain system is similar in operation and component descriptions as discussed in Subsections 9.3.8.2.2 and 9.3.8.2.3 excepting radiation effects and the interfacing discharge process in lieu of discharge to radwaste.

9.3.3.1.5 Safety Evaluation

The non-radioactive drains are not safety-related. The sumps may be instrumented and alarmed as required to assure there is no effect on safety-related equipment.

Provisions for obtaining water samples from the non-radioactive drain system shall be provided. A sampling and analysis program shall be provided to show that radioactive liquids are not being discharged from the non-radioactive drain system.

COL 9.3.8-1
9.3.3.2 Non-Radioactive Drain Interface

The COL applicant shall provide the continuation of the drain system (Subsection 9.3.3.1) from the standard plant buildings to the site discharge structure. A conceptual design continuation is discussed in this subsection.

9.3.4 Chemical and Volume Control System (PWR)

(Not applicable to a BWR)

9.3.3.2.1 Safety Design Bases (Interface Requirement)

COL 9.3.8-1
The safety design bases is the same as listed in Subsection 9.3.3.1.1.

9.3.5 Standby Liquid Control System

9.3.5.1 Design Bases

9.3.5.1.1 Safety Design Bases

The standby liquid control system (SLCS) has a safety-related function and is designed as a Seismic Category I system. It shall meet the following safety design bases:

9.3.3.2.2 Power Generation Design Bases (Interface Requirement)

The power generation design bases is the same as listed in Subsection 9.3.3.1.2.

(1) Backup capability for reactivity control shall be provided, independent of normal reactivity control provisions in the nuclear reactor, to be able to shut down the reactor if normal control ever becomes inoperative.

9.3.3.3 System Description (Conceptual)

The non-radioactive drain system collects waste water from the following sources: plant buildings (reactor, turbine, radwaste, service and other buildings), precipitation and other surface runoff. A system composed of collection piping, curb and gutter inlets, manholes and pumps is provided. Waste water is sent to dual settling basins where suspended solids are settled and oil is collected on the surface. Means are provided to perform any required tests or analyses required by the discharge permit. Periodically, one of the basins is taken out of service and the suspended solids and oil are removed.

(2) The backup system shall have the capacity for controlling the reactivity difference between the steady-state rated operating condition of the reactor with voids and the cold shutdown condition, including shutdown margin, to assure complete shutdown from the most reactive conditions at any time in core life.

9.3.3.2.4 Safety Evaluation (Interface Requirement)

The safety evaluation is the same as Subsection 9.3.3.1.5.

(3) The time required for actuation and effectiveness of the backup control shall be consistent with the nuclear reactivity rate of change predicted between rated operating and cold shutdown conditions. A fast scram of the reactor or operational control of fast reactivity transients is not specified to be accomplished by this system.

9.3.3.2.5 Instrumentation (Interface Requirement)

(4) Means shall be provided by which the functional performance capability of the backup control system components can be verified periodically under conditions approaching actual use requirements. Demineralized water, rather than the actual neutron absorber solution, can be injected

9.3.12 COL License Information

9.3.12.1 Non-radioactive Drains (Interface Requirements)

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The COL applicant shall provide the continuation of the non-radioactive drain system outside of the standard plant buildings to process and monitor to the site discharge structure in accordance with Subsection 9.3.3.2.

9.3.12.2 Storage Tank Discharge Valve Reliability

The COL applicant will confirm that the SLCS storage tank discharge valves will have adequate reliability requirements and that the valves be incorporated into the Operational Reliability Assurance Program. (See Subsection 9.3.5.4)

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9.3.8-1

9.3.12.3 Monitor Effluents From Non-Radioactive Systems

The COL applicant shall provide the following which apply on a plant-specific basis.

Provisions for obtaining water samples from the non-radioactive drain system shall be provided. A sampling and analysis program shall be provided to show that radioactive liquids are not being discharged from the non-radioactive drain system.