
2.9 Radioactive Waste Management

2.9.1 Liquid Waste Management System

Design Description

1.0 System Description

The liquid waste management system (LWMS) collects and treats radioactive liquid effluents from several systems throughout the plant. If the total radioactivity indicated by radiation monitors exceeds predetermined limits or there is low in-plant dilution flow rate, the LWMS discharge valves automatically close.

2.0 Arrangement

2.1 The functional arrangement of the LWMS is as described in the Design Description of Section 2.9.1, and Tables 2.9.1-1—LWMS Equipment Mechanical Design and 2.9.1-2—LWMS Equipment I&C and Electrical Design.

3.0 I&C Design Features, Displays, and Controls

3.1 Displays listed in Table 2.9.1-2 are indicated on the PICS operator workstations in the MCR.

3.2 Controls on the PICS operator workstations in the MCR perform the function listed in Table 2.9.1-2.

4.0 Equipment and System Performance

4.1 The LWMS processing equipment contains the proper types and amounts of filter media or treatment media.

4.2 Upon receipt of a high radioactivity signal from the radiation monitors (R-31), the LWMS discharge valves close.

4.3 Equipment identified as RW-IIa in Table 2.9.1-1 can withstand design basis loads listed in Regulatory Guide 1.143 without a loss of structural integrity.

4.4 Upon receipt of a low in-plant dilution flow rate signal and a high radioactivity signal from the radiation monitors (R-31), the LWMS discharge valves close.

4.5 Upon receipt of a low in-plant dilution flow rate signal, the LWMS discharge valves close.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.9.1-3 lists the liquid waste management system ITAAC.

Table 2.9.1-1—LWMS Equipment Mechanical Design

Description	Tag Number ⁽¹⁾	Location	Seismic Category
Discharge valves	30KPK29AA001 30KPK29AA002	Radioactive Waste Processing Building	RW-IIa
Radiation monitors (R-31)	30KPK29CR001 30KPK29CR002	Radioactive Waste Processing Building	RW-IIa
Monitoring Tanks	30KPK21BB001 30KPK22BB001	Radioactive Waste Processing Building	RW-IIa
Recirculation and Discharge Pumps	30KPK26AP001 30KPK27AP001	Radioactive Waste Processing Building	RW-IIa
Chemical Tank Agitators	30KPK41AM001 30KPK42AM001 30KPK43AM001 30KPK44AM001	Radioactive Waste Processing Building	RW-IIa
Concentrate Tank Agitators	30KPK31AM001 30KPK32AM001 30KPK33AM001	Radioactive Waste Processing Building	RW-IIa
Decanter with Agitator	30KPF5AT001	Radioactive Waste Processing Building	RW-IIa
Filling Station (Centrifuge Plant) Evaporator	30KPF11AC002	Radioactive Waste Processing Building	RW-IIa
Evaporator Column	30KPF11AT001	Radioactive Waste Processing Building	RW-IIa
Separator (Centrifuge Plant)	30KPF52AT001	Radioactive Waste Processing Building	RW-IIa
Sludge Tank Agitator	30KPF53AM001	Radioactive Waste Processing Building	RW-IIa
Storage Tank Agitators	30KPK11AM001 30KPK12AM001 30KPK13AM001 30KPK14AM001 30KPK15AM001	Radioactive Waste Processing Building	RW-IIa
Vapor Compressor	30KPF11AN001	Radioactive Waste Processing Building	RW-IIa

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1. Equipment tag numbers are provided for information only and are not part of the certified design.

Table 2.9.1-2—LWMS Equipment I&C and Electrical Design

Description	Tag Number ⁽¹⁾	Location	IEEE Class 1E ⁽²⁾	EQ – Harsh Env.	PACS	MCR Displays	MCR Controls
Discharge valves	30KPK29AA001 30KPK29AA002	Radioactive Waste Processing Building	No	No	No	Position	Open-Close
Radiation monitors (R-31)	30KPK29CR001 30KPK29CR002	Radioactive Waste Processing Building	No	No	No	Radioactivity levels	N/A

1. Equipment tag numbers are provided for information only and are not part of the certified design.
2. ^N denotes the division equipment is normally powered from. ^A denotes the division equipment is powered from when alternate feed is implemented.

**Table 2.9.1-3—Liquid Waste Management System ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The functional arrangement of the LWMS is as described in the Design Description of Section 2.9.1, and Tables 2.9.1-1 and 2.9.1-2.	An inspection of the as-built LWMS functional arrangement will be performed.	The LWMS conforms to the functional arrangement as described in the Design Description of Section 2.9.1, and Tables 2.9.1-1 and 2.9.1-2.
3.1	Displays listed in Table 2.9.1-2 are indicated on the PICS operator workstations in the MCR.	Tests will be performed to verify that the displays listed in Table 2.9.1-2 are indicated on the PICS operator workstations in the MCR.	Displays listed in Table 2.9.1-2 are indicated on the PICS operator workstations in the MCR.
3.2	Controls on the PICS operator workstations in the MCR perform the function listed in the MCR as listed in Table 2.9.1-2.	Tests will be performed using controls on the PICS operator workstations in the MCR.	Controls on the PICS operator workstations in the MCR perform the function listed in Table 2.9.1-2.
4.1	The LWMS processing equipment contains the proper types and amounts of filter media or treatment media.	An inspection will be performed to verify the as-built LWMS processing equipment contains filter/treatment media.	A report concludes that the LWMS processing equipment contains a minimum of 30 ft ³ per ion exchange column filter/treatment media.
4.2	Upon receipt of a high radioactivity signal from the radiation monitors (R-31), the LWMS discharge valves close.	A test will be performed to verify that the LWMS discharge valves close upon receipt of a high radioactivity signal from the radiation monitors (R-31).	The LWMS discharge valves close upon receipt of a high radioactivity signal from the radiation monitors (R-31) using an established trip setpoint.
4.3	Equipment identified as RW-IIa in Table 2.9.1-1 can withstand design basis loads listed in Regulatory Guide 1.143 without a loss of structural integrity.	An inspection and analysis will be performed to verify the as-built equipment identified as RW-IIa in Table 2.9.1-1 will withstand design basis loads.	A report concludes that the equipment identified as RW-IIa in Table 2.9.1-1 will withstand design basis loads listed in Regulatory Guide 1.143 without a loss of structural integrity.
4.4	Upon receipt of a low in-plant dilution flow rate signal and a high radioactivity signal from the radiation monitors (R-31), the LWMS discharge valves close.	A test will be performed to verify that the LWMS discharge valves close upon receipt of a low in-plant dilution flow rate signal and a high radioactivity signal from the radiation monitors (R-31).	The LWMS discharge valves close upon receipt of a low in-plant dilution flow rate signal and a high radioactivity signal from the radiation monitors (R-31) using an established trip setpoint.

**Table 2.9.1-3—Liquid Waste Management System ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.5	Upon receipt of a low in-plant dilution flow rate signal, the LWMS discharge valves close.	A test will be performed to verify that the LWMS discharge valves close upon receipt of a low in-plant dilution flow rate signal.	The LWMS discharge valves close upon receipt of a low in-plant dilution flow rate signal.