



July 11, 2022  
TJT:22:009

U.S. Nuclear Regulatory Commission  
Director, Office of Nuclear Material  
Safety and Safeguards  
Attn: Document Control Desk  
Washington, D.C. 20555

**Subject:** 60-day report for a May 12, 2022 incident reported under 10 CFR 70 Appendix A 24-hour Report (NRC Event No. 55897); Framatome Richland Facility; License No. SNM-1227; Docket No. 70-1257

To whom it may concern:

On May 13, 2022, the Framatome Richland facility reported to NRC that two items relied on for safety (IROFS) associated with the Waste-Water-Treatment system had failed. The initial report was conservatively made because it was related to the conditions of 10 CFR 70 Appendix A b (2). This follow up report is being submitted to comply with 10 CFR 70.74 (b).

Attached is a copy of the 60-day follow-up report, submitted to comply with 10 CFR 70.50 (c)(2).

If you have questions about this incident or Framatome's response, please contact Bill Doane of my staff at (509) 375-8771 or me at (509) 375-8550.

Very Truly Yours,

A handwritten signature in black ink that reads "T. Tate".

Timothy J. Tate, Manager  
Environmental, Health, Safety and Licensing

US NRC  
July 11, 2022

TJT:22:009  
Page 2

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**Framatome's 60-day report for an incident reported to NRC on May 13, 2022  
(Event No. 55897)**

Caller Identification

The condition was reported to the NRC Operations Center by Calvin Manning, Framatome Manager of Licensing and Compliance, on May 13, 2022, at 1924 ET. Mr. Manning's telephone number is (509) 375-8237.

Date, Time, and Exact Location of Incident

The reportable condition was discovered on May 12, 2022, at approximately 1910 local time. The location was Framatome's Richland facility at 2101 Horn Rapids Road, Richland WA 99354.

Incident Description

On May 12, 2022, at about 1910 local time Framatome Plant Engineering personnel informed the Manager Nuclear Criticality Safety that two gamma ratemeters on a sand filter associated with the Waste-Water-Treatment system were discovered to be non-functional during their monthly calibration check and that the required safety interlock would not have activated if needed.

These gamma ratemeters and associated interlocks are designated as IROFS and are used to prevent gradual long-term accumulations of uranium in the Waste-Water-Treatment sand filters from exceeding a safe mass.

The system was shut down and remained down until the required safety function was restored.

This condition was conservatively reported under the requirements of 10CFR70 Appendix A b (2) due to two Failed IROFS although Framatome had determined that the performance requirements of 10CFR70.61 were still met.

Radiological and Chemical Hazards

There were no radiological or chemical hazards associated with this plant condition.

Health and Safety Consequences

The health and safety consequences of this plant condition were minor as accidental nuclear criticality remained highly unlikely.

### Sequence of Events

May 12, 2022, a Framatome Instrument Technician was performing a scheduled calibration for a gamma ratemeter (Canberra ADM-606M) associated with a sand filter and found the ratemeter (IROFS 2309) to be unresponsive to secondary standards. The same Instrument Technician also performed a second scheduled calibration for a second gamma ratemeter on the same sand filter and also found this ratemeter (IROFS 2310) to be unresponsive to secondary standards.

Framatome Technical Support personnel reviewed the historical chart records for these two Canberra ADM-606M ratemeters and determined that channel 1 of both units became non-responsive on April 10, 2022, around 1515 local time. Furthermore, while the detector channels were unresponsive, their transmitting signal to the control system was still valid, and as such, the interlock that would put the system in a safe state when communications between the ADM-606M units and the control system is lost, did not activate.

Despite extensive troubleshooting and investigation, no definitive cause was determined for the failed detectors and the associated "fail safe" interlock. Nevertheless, due to the exact same failure of identical channels, on two different Canberra ADM-606M ratemeters at the same time, a common cause failure is assumed to exist. See Probably Cause of Event section below for details.

### Remaining Structures, Systems, Equipment, Components, and Activities of Personnel

IROFS 2315, a mass control based on a scheduled backwash of the sand filters to removed accumulated (potentially U-bearing) solids, remained available and reliable to perform the required safety function. This IROFS combined with the initiating event frequency for each applicable accident sequence maintained accidental nuclear criticality as highly unlikely.

All other IROFS upstream of the Waste-Water-Treatment sand filters that assure low U concentration in the feed streams all remained available and reliable to perform their required safety functions.

### External Conditions

No external conditions were identified.

### Additional Actions

Framatome shut the Waste-Water-Treatment process system down until the required safety function of the ADM-606M units on one of the two sand filter/IX column sets was restored. The other sand filter and IX column remain isolated/locked out of service pending acquisition and installation of functional ADM-606M units and verification that the required safety functions have been restored.

Framatome also completed an extent of condition evaluation and determined that the ADM-606M units were only used in the Waste-Water-Treatment process system.

#### Status of the Event

One sand filter and one IX column are still shut down due to parts availability. The equipment used by Framatome (ADM-606M ratemeters and GSP-100 gamma detectors) has been sent back to the factory for evaluation and repair. The remaining equipment and processes that were shut down because of this plant condition have been restored to complete and normal function. The ISA summary has been updated as appropriate to document configuration changes and impacted accident sequences that followed this plant condition.

#### Current and planned site status

The current and planned site status remains in normal operating conditions.

#### Notifications to Other Agencies

No other agencies were notified of this plant condition.

#### Press Releases

A press release was not issued, and none are planned that are related to this plant condition.

#### Probable Causes of Event

These possibilities exist but are purely speculative:

- **Power Disturbance:** Both ratemeters have three channels each and transmit those channels to the control system. Routine preventative maintenance proves that a power loss drops the transmission for all three channels. Each dropped signal is detected and individually activates the interlock. For this instance, only 1 of 3 channels went unresponsive while the other two were unaffected. Therefore, a power loss seems unlikely.
- **Damage to the Detector:** Channel 1 for both ratemeters relate to detectors for the V680 vessel. Loss of those channels, specifically, could have been caused by damage to the detectors (by impact or unplugging the cables). Maintenance activities existed near the April 10th timeframe, notably: moving or removing scaffolding around the V680 vessel to prepare for the construction of a new platform (to replace the scaffolding).

### Corrective and Mitigating Actions

The Waste-Water-Treatment system was shut down until the Preventive action listed below were completed. The extent of condition was determined to be limited to the Waste-Water-Treatment system. This is the only system where Canberra ADM 606M gamma ratemeters are currently utilized at this Framatome site.

### Preventive Actions

Framatome completed Engineering Change Notice (ECN) 9005 to enhance the detection of a valid active signal from the gamma ratemeters. The signal integrity for the two sand filters and the two feed tanks to the control system are checked via logic software and will activate the required interlocks and/or alarms if signal integrity is lost, invalid, or locked.

A management measure, PM C163P104 Rev 5 was updated to validate the signal integrity by monitoring for the following conditions:

1. Loss of signal: the control system receives no signal from the IROFS channel. This was existing logic as part of the signal integrity monitoring.
2. Invalid signal: the control system receives a signal from the IROFS channel that is below a limit threshold.
3. Locked signal: the control system detects the input signal from the IROFS channel is unchanging and therefore invalid.

### Additional Interim Actions Planned:

1. Evaluate adequacy of existing (ADM606M with GSP-100) UPS system. Make recommendations for improved UPS system and Independence.
2. Physically protect detectors, cables, and terminations for ASSAY systems sitewide
3. Review Failure Modes of unique stand-alone safety equipment with history of Out of Tolerances and ensure improvement prioritization.

### Long Term Action Planned:

A longer-term corrective action that is still planned is to replace the Canberra /ADM-606M gamma ratemeters with different monitoring system that Framatome uses in a newer process Facility. This newer system has a good performance record. This modification is currently scheduled to be completed by the end of the first quarter of next year due to spare parts availability issues which have prevented earlier completion of this project

Inclusion in Integrated Safety Analysis

This plant condition was considered in the ISA Summary E15-01-2.14 Version 19.0  
accident sequences 163-5.1 and 5.2