

April 1, 2011
REL:11:015



U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Director, Office of Nuclear Material Safety
and Safeguards
11555 Rockville Pike
One White Flint North
Rockville, MD 20852

Gentlemen:

**Subject: Response to Informal NRC Request for Additional Information (RAI)
Relative to Battery Backup Power to Fire Alarm Panels; License No.
SNM-1227; Docket No. 70-1257**

Ref. 1: Letter, R.E. Link to USNRC Document Control Desk, "Administrative Revisions to License No. SNM-1227; AREVA NP Richland Facility (Docket 70-1257); October 8, 2010.

Ref. 2: E-mail Correspondence; M. Diaz to L. Maas, "AREVA R Fire Alarm System Emergency Backup Batteries;" February 15, 2011.

Via Reference 1, AREVA NP Inc. (AREVA) requested a number of largely administrative changes to its recently renewed special nuclear materials license (License No. SNM-1227). One of the requested changes however was more technical in nature, correcting a statement in Chapter 7, Fire Safety, implying that all of the site's fire alarm systems are provided emergency backup electrical power via the site's emergency diesel generators. In reality not all of the site's facilities are on emergency backup electrical power; fire alarm systems in those facilities rely on emergency backup electrical power from batteries.

AREVA responded to an initial informal RAI relative to the emergency backup battery systems (M. Diaz email of January 19, 2011) via L. Maas' e-mail of February 7, 2011. Reference 2 constitutes a second more substantive informal NRC RAI on this issue; AREVA's response to that follow-up RAI is attached.

NRC's questions deal with the application of specific sections of NFPA 72, National Fire Alarm Code, to fire alarm panels relying on batteries as a source of secondary backup electrical power. In general, it should be noted that AREVA Richland does not commit to prescriptive compliance with the requirements of NFPA standards. In the case of the fire alarm system, AREVA uses NFPA 72 as guidance for the maintenance of this system.

In 2005, AREVA began upgrading its then current IRC3 fire alarm system to a new Edwards EST3 system. By the end of 2011, all of the site's major SNM-processing

AREVA NP INC.
An AREVA and Siemens company

2101 Horn Rapids Road, Richland, WA 99354
Tel.: 509 375 8100 - www.aveva.com

K145501

facilities are scheduled to be on the new system. This upgrade will likely continue for the next several years, until all areas of the AREVA Richland site are serviced by the EST3 system. As the upgrade proceeds, preventative maintenance plans (PMs) for the system are modified using NFPA 72 as guidance. Once again, this does not necessarily mean that the upgraded EST3 system will meet all the prescriptive requirements of the NFPA 72 standard.

Any modifications to the older IRC3 system are performed by a qualified service vendor. Upgraded systems are commissioned / re-commissioned as described below:

- Use of the site configuration control Engineering Change Notice (ECN) process as the record of completion to commission / re-commission site fire alarm systems;
- Use of the UL-listed and labeled, upgraded Edwards EST3 System recommended test plan to commission / re-commission EST3 fire alarm control panels / devices / notification appliances that the site engineering staff is certified to install / program;
- Use of documented manufacturing software quality (MSQ) test plans when upgraded EST3 fire alarm control panels / devices / notification appliances are commissioned / re-commissioned;
- Use of vendors such as Engineered Control Systems (ECS), Oxarc Fire Division, and Cascade Fire Protection as design resources to install / modify all other fire alarm systems, such as central alarm stations, gas suppression systems, and sprinkler systems;
- Review and approval of design documents by the "Authority Having Jurisdiction" which is the City of Richland, WA. The City of Richland governs to "Richland Municipal Code Title 20".
- Notification of the City of Richland to invite them to observe the commissioning of upgraded fire alarm systems.

We believe that the Richland site is covered by an effective and well maintained fire alarm system, including provisions for secondary emergency electrical power. If after reviewing responses to the NRC's specific questions (attached), you still require additional information, please feel free to contact me at 509-375-8409.

Very truly yours,



R. E. Link, Manager
Environmental, Health, Safety, & Licensing

U.S. Nuclear Regulatory Commission
April 1, 2011

REL:11:015
Page 3

cc: Marilyn Diaz
US Nuclear Regulatory Commission
6003 Executive Blvd.
Mail Stop E2C40M
Rockville, MD 20852

/mah

Attachment - Status of AREVA Richland Fire Alarm Panels Versus Selected Sections of NFPA 72

The responses below are intended to address the section-specific questions from the NRC's Reference 2 email. Text highlighted in yellow is taken directly from that email.

Section 10.5.6.3.1 (Capacity) states that "The secondary power supply shall have sufficient capacity to operate the system under quiescent load (system operating in a nonalarm condition) for a minimum of 24 hours and at the end of the period, shall be capable of operating all alarm notification appliances used for evacuation or to direct aid to the location of an emergency for 5 minutes, unless otherwise permitted or required by the following"

AREVA RESPONSE:

Fire alarm panels in Special Nuclear Material (SNM) handling areas at AREVA undergo a 5-minute load test on battery backup when those panels are initially commissioned. If work is performed on, or if modifications are made to, a system that adds electrical load to a panel, the affected panel is re-commissioned and another 5-minute load test on battery backup is performed as part of the re-commissioning of that panel.

The AREVA Richland fire alarm systems have automated electronic monitoring / supervision 24/7. If a failure of any kind occurs, a "trouble" signal notifies Security personnel at the Central Guard Station. Security immediately notifies the electrical supervisor and/or the on-call electrician to troubleshoot the problem. If the problem cannot be resolved in 4 hours, the Justification for Continuing Operations (JCO) process is triggered and compensatory actions are implemented (fire watch, etc). For the reasons discussed above, AREVA does not perform the 24-hour quiescent load prior to the 5-minute alarm load test when commissioning or re-commissioning fire alarm panels. Any extended run time on secondary backup power is precluded by the site's electronic monitoring and early intervention programs.

Section 10.5.7 (Continuity of Power Supplies) requires the secondary power supply to automatically provide power to the protected premises system within 10 seconds whenever the primary power supply fails to provide the minimum voltage required for proper operation (10.5.7.1). The secondary power supply to automatically provide power to the supervising station facility within 60 seconds whenever the primary power supply fails to provide the minimum voltage required for proper operation.

AREVA RESPONSE:

AREVA does not verify that the switch to secondary power following a loss of primary power occurs within the time limits above, either at installation or on any frequency. AREVA personnel were interviewed and stated that when secondary power tests are performed, the secondary power begins "immediately" upon loss of primary power.

Additionally, the EST3 Installation and Service Manual (page v) states, "This product has been designed to meet the requirements of NFPA Standard 72; Underwriters Laboratories, Inc., Standard 864; and Underwriters Laboratories of Canada, Inc., Standard ULC S537."

Section 14.3 (Inspection) in accordance with Table 14.3.1 requirements for batteries (by type)

AREVA RESPONSE:

Specific to panel batteries, those used in AREVA's fire alarm panels are the sealed lead-acid type. For these batteries, Table 14.3.1 requires initial acceptance/reacceptance and semi-annual visual inspections. AREVA complies with these requirements via the configuration management system for initial acceptance/reacceptance and the preventative maintenance program for the semi-annual inspections.

Section 14.4.1.1 Initial acceptance testing and Section 14.4.1.2 Reacceptance Testing in accordance with appropriate subsections

AREVA RESPONSE:

The table below is copied from AREVA document EMF-MSQ-117-02 (Fire Alarm Control Panel Software Requirements Specification). All items in the table are completed as a part of acceptance and re-acceptance testing, except items 2 and 4 relative to panel secondary power (shown in *italic font*). Items 2 and 4 for panel secondary power are not performed based on the 24/7 automated electronic monitoring / supervision of the battery systems, previously discussed.

Panel Primary Power	Acceptance and Re-acceptance tests	<ol style="list-style-type: none">1. Remove Primary AC power2. Verify panel operates from battery3. Verify panel goes into trouble (6 second delay)4. Restore AC power at end of test5. Reset and lock panel at conclusion of all testing.
Panel Secondary Power	Acceptance and Re-acceptance tests	<ol style="list-style-type: none">1. Remove primary AC power2. <i>Measure standby and alarm currents, and compare with battery calculations to verify adequate battery capacity.</i>3. Test under full load for 5 minutes4. <i>Measure battery voltage under full load (20.4 to 27.3 VDC)</i>5. Restore AC power at end of test6. Reset and lock panel at conclusion of all testing.

Section 14.4.2 (Test methods) in accordance with Table 14.4.2.2 for (3) Secondary (standby) power supplies and (5) Batteries-general test

AREVA RESPONSE:

With respect to Table 14.4.2.2 (3), "Secondary (standby) power supply", as previously discussed, the secondary power is tested by removing the primary power and testing the secondary power supply under full load for 5 minutes. Following this test, the primary power is restored.

With respect to Table 14.4.2.2 (5) "Batteries – general tests":

- Prior to conducting any battery testing, AREVA personnel ensure that all system software stored in volatile memory is protected from loss.
- Currently, a semi-annual PM requires visual inspections of the batteries, which include checks for corrosion or leakage, connection tightness, and terminal / connection cleanliness. AREVA uses maintenance-free sealed lead-acid type batteries. Therefore, electrolyte level checks are not necessary.
- Currently, a 5-year PM requires batteries to be replaced. If an installed battery fails one of the automated electronic tests, a "trouble" signal is received in the Central Guard Station and electrical craft personnel are summoned to troubleshoot the problem. If the battery is discovered to be failed or otherwise unable to perform its function, it will be replaced at that time.
- Both old IRC3 systems and new EST3 systems have automation that performs charger tests.
- The new EST3 systems have automation that performs load voltage tests.

Section 14.4.5 (Testing Frequency) in accordance with Table 14.4.5 for (5) Batteries – central station facilities, (6) Batteries –fire alarm stations, and (7) Power supply –Public emergency alarm reporting stations , as appropriate to the AREVA system.

AREVA RESPONSE:

The portion of this section applicable to AREVA is that for sealed lead-acid batteries. Batteries are replaced every 5-years, per a PM previously discussed. The EST3 systems automatically perform the charger, discharge, and load voltage tests.