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From: [Bernardo, Robert](#)
To: [Khanna, Meena](#)
Subject: Issue for Resolution
Date: Tuesday, September 13, 2011 12:00:15 PM
Attachments: [IFR 2011-XX Screen In Document - North Anna Earthquake.docx](#)

Hello, Meena,

I dropped by, but you were out of your office. Wanted to discuss this with you before I go any further.

I have been requested to open an Issue for Resolution to document evaluation of the recent seismic event that impacted North Anna. I wanted to run this by you. I understand that you are in the process of drafting an action plan and a communications plan related to this event, and it's likely that , with the action plan, GI-199 and other agency actions, this IFR may simply be used by IOEB to document the agency actions (see [IFR-2011-05](#) on the Fukushima event for a recent example). However, since there are potentially 3 generic issues from the AIT (I've summarized them below), there may be additional action coming out of this IFR beyond what is covered by GI-199 and the action plan. In any case, I'd like to talk before I open the IFR. I'm tied up until about 2:00 pm today, maybe I could drop by sometime this afternoon after that? Thanks!

- Potential Generic Issues:
 - Seismic instrumentation power supplies, lost power for brief (8 seconds) time during event. AIT thinks that at least Surry has the same issue
 - Seismic monitor locations are on structures, not on the "free field" (OBE/SSE based on "Free field" acceleration levels.)
 - No seismic monitors on ISFSI pads.

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IFR SCREEN-IN AND ASSIGNMENT DOCUMENT

Issue for Resolution (IFR) 2011-0XX North Anna – Earthquake Which Exceeded the Design Basis Earthquake Ground Motion Acceleration

IFR Assignment Date: 09/xx/2011

Assigned to: Robert Bernardo is the Issue Manager

TAC Number: ME

Evaluation: North Anna – Earthquake Which Exceeded the Design Basis Earthquake
Ground Motion Acceleration (Bernardo-DIRS)

This has been entered into ROE, see record xxxx.

Estimated Completion Date: 3/30/2012

Source:

Region Phone Call Notes, Region II Plant Issues and Tracking Application (PITA)

Event Notification [EN47181](#)

Event Notification [EN47201](#)

INES Report, Level 0, "Alert Emergency Action Level Declaration due to Loss of Offsite Power Resulting from a Seismic Event", <http://www-news.iaea.org/ErfView.aspx?mId=dbfcabf2-3bbb-423d-8159-de53d8fc7e67>

The IOEB Screening summary for September xx, 2011 screened in this item as an Issue for Resolution.

North Anna – Earthquake Which Exceeded the Design Basis Earthquake Ground Motion Acceleration

On August 23, 2011, at 1403 hrs. EDT, North Anna Power Station declared an Alert due to significant seismic activity onsite from an earthquake (centered approximately 11 miles south-south east of NAPS) which had a measured magnitude of 5.8. Both units experienced automatic reactor trips from 100% power and were stabilized in Mode 3. All offsite electrical power to the site was lost. All four emergency diesel generators (EDGs) automatically started, loaded and provided power to the emergency buses.

The best estimate of the Peak Ground Acceleration (PGA) for NAPS based on US Geological Survey data indicated the Design Basis Earthquake (DBE) ground motion may have been exceeded. Subsequent analysis of seismic instrumentation determined that the DBE criteria had been exceeded for both sites.

In accordance with Management Directive (MD) 8.3, deterministic and conditional risk criteria were used to evaluate the level of NRC response for this operational event. The MD 8.3 evaluation (**NON-PUBLIC**, [ML112410546](#)) determined that the Conditional Core Damage Probability (CCDP) for the event was estimated to be $1.1E^{-4}$, which is in the region of an

Augmented Inspection Team (AIT). A charter was developed (**NON-PUBLIC**, ML11243A021), and the AIT arrived on site on August 30, 2011.

Related COMM:

An OpE COMM written by Robert Bernardo dated September 7, 2011, "**North Anna - Alert Declared Due to an Earthquake in the Area and a Loss of Off Site Power**"

This COMM was sent to the following communities: All Communications, Auxiliary Feedwater, ECCS, Electrical Power Systems, Emergency Diesel Generators, Emergency Preparedness, Flood Protection & Missiles, Inspection Programs, Natural Phenomena, New Reactors, Physical Security, SIT/AIT, Spent Fuel Storage & Load Handling, Structural

Background Information/Documents:

Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants" see the internal RES website for the latest status of GI-199.

NRC Information Notice 2010-18, Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants"
ML101970221

Draft Generic Letter 2011-XX "Seismic Risk Evaluations for Operating Reactors" **ML111710783**

Screening Guidelines met:

This event was screened in during the Operating Experience Clearinghouse screening meeting on September ~~xx~~, 2011. It was reviewed against the criteria of LIC-401 and determined to screen in as an Issue for Resolution in accordance with the following LIC-401 Criteria:

This event met the following screen-in criteria:

1. potential safety significance based on risk or other quantitative factors
 - a. risk factor - conditional core damage probability (CCDP) $\geq 1E^{-6}$ or an increase in core damage probability (Δ CCDP) $\geq 1E^{-6}$, or a change in large early release frequency (Δ LERF) $\geq 1E^{-7}/\text{yr}$
2. qualitative judgment of significance based on the following guidelines
 - d. potential degradation of fuel integrity, primary coolant pressure boundary, or important associated structures
AND
 - k. other potential agency issues or concerns—potential concerns related to heightened public, media, congressional, and/or governmental interest, or other factors.

Assignment:

- 1) Assess the safety significance and generic applicability of this issue. Determine whether it is significant and generic enough to warrant a Generic Communication (i.e., Info Notice).

- 2) Review past history and NUREGS, industry standards/expectations, generic communications, inspection procedures, etc. related to this issue, to determine what guidance already exists and whether additional guidance may be necessary.
- 3) Review and evaluate industry information (any INPO SEE-IN documents) related to these issues, and any other applicable international OpE.
- 4) Work with the assigned technical branches as needed to achieve more consistent and clear guidance for NRC inspection staff and industry as to what actions may be required to ensure that exterior fires are considered in the design of control room ventilation systems.
- 5) Review for any other applications necessary per standard IFR review and closure process.
- 6) Draft and process a Closure Memorandum on this issue, which includes recommendations for follow-up actions and inputs or attachments providing the appropriate Technical & Safety assessment.

Recommend involving:

- 1) Involve NRR technical branches for their recommendations on this issue. (i.e., Structural TRG Lead, Seismic Experts, and the Division of Engineering, Mechanical and Civil Engineering Branch (EMCB)).
- 2) Region-II as necessary to obtain their insights and information from the licensee's investigation of this issue. Determine how this issue will be documented in the inspection program (SDP significance).
- 3) For any additional Risk Assessment / Risk Analysts insights contact SRAs as needed (contact Michael Franovich, BC for PRA Operational Support and Maintenance Branch).
- 4) Generic Communications Branch should be involved if an Information Notice or other generic communication is deemed warranted.
- 5) If NRC inspection program / inspection procedure changes are needed involve Reactor Inspection Branch and / or use ROP inspection program feedback forms.