

Thompson, John

From: Thorp, John *NRR*
Sent: Wednesday, August 24, 2011 7:01 AM
To: NRR_DIRS_IOEB Distribution
Subject: FW: Day EO notes from Virginia Earthquake Bridge Line Discussions 8-23-2011

Folks, fyi for you. Russ for ET brief, Dave for your INES scale review. Looks like a zero at this point.

John

From: Thorp, John *NRR*
Sent: Tuesday, August 23, 2011 7:44 PM
To: Thorp, John; Grobe, Jack; Boger, Bruce; Leeds, Eric; Ruland, William; Bahadur, Sher; Evans, Michele; Lubinski, John; Hilland, Patrick; Skeen, David; 'Cunningham, Mark'; Galloway, Melanie; Holian, Brian; Lee, Samson; Glitter, Joseph; Lund, Louise; Howe, Allen; Cheok, Michael; McGinty, Tim; Pruett, Troy; Andersen, James
Cc: King, Mark; Thomas, Eric; Bahadur, Sher; Morris, Scott; McDermott, Brian; Wiggins, Jim; Dean, Bill; McCree, Victor; Pederson, Cynthia
Subject: Day EO notes from Virginia Earthquake Bridge Line Discussions 8-23-2011

All,

The following information is from notes taken by Mark King and myself as we listened in on the call this afternoon with the EOC, Regions 1, 2, 3 RA's, Jack Grobe, Tim McGinty, Bill Borchardt, NSIR management and others, following the decision to go to monitoring mode in Regions 2 and 1, and during a briefing for the Commissioner TA's. Please let me know if any information Mark and I have gathered appears to be incorrect. I apologize for the somewhat jumbled structure of the notes, but in the interest of not delaying this update any further, I'm sending it now.

Summary: At 1351 EDT a 5.8 (Richter scale) earthquake struck near Mineral Virginia, which is located close to the North Anna nuclear power station. The North Anna station experienced a loss of offsite power due to sudden pressure or differential overpressure (unclear to me at this point) relay trips of the three Reserve Station Service Transformers (RSST's). The loss of offsite power resulted in trips of both Turbine Generators leading to automatic trips of both Reactors on "negative rate".

At 1403 EDT, the North Anna emergency director declared an Alert at North Anna under Emergency Action Level criteria HA 6.1 which has words to the effect of actual or potential degradation or loss of safety, including the potential for degradation to nuclear security systems.

All four EDG's started to supply the emergency busses on both units; The 2H EDG on Unit Two was manually tripped due to a leaking gasket on a bypass line for auxiliary systems supporting the EDG. This EDG was replaced by a Station Blackout diesel generator, and all four safety related emergency busses are being supplied with power. Unit One had one steam driven auxiliary feedwater pump undergoing

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FOIA- 2011-0357

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maintenance. Both reactors are shutdown and being cooled by steaming to atmosphere with feed from motor and steam driven auxiliary feedwater pumps. No radiation release noted.

A number of other stations in Regions 1, 2 and 3 declared unusual events in response to criteria for sensing or detection of seismic activity. These stations are conducting walkdowns to determine whether there is any damage or not. Once determinations have been made, then de-escalation from UE conditions are anticipated.

Region 1 entered monitoring mode at 1420. (I didn't catch the time that Region 2 entered monitoring mode) Region 3 remained in normal mode, with reports from the two plants that did enter NOUE that there was no evidence of damage or concern.

North Anna is pursuing objectives of restoration of Offsite Power, inspection of the plant, repair of six station service transformers which supply non-safety related busses and which suffered bushing damage during the event.

A Commissioner TA brief was held. Staff are evaluating the seismic data to determine ground acceleration and motion values to compare with the design basis earthquake and safe shutdown earthquake values for the plant.

More details are provided below:

Note: NRC Press release issued:

SEE link: <http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-153.pdf> and NRC public webpage for any updates.

A PN is being coordinated by Region-II with I and III to likely be released later tonight.

EO call info from 8/23/2011 for the event: The agency is currently in monitoring mode due to 7 plants in RI, two plants in RII and two plants in Region III that have declared an unusual event. Due to an earthquake near Mineral, Va In addition, North Anna in RII declared an ALERT due to a loss of offsite power, loss of EDG and Security System issues... Alert declared on other conditions existing - based on actual or potential substantial degradation of safety or security as determined by the Emergency Director for the North Anna site.

Reported time of the earthquake was at 13:51 EDT. Media reports noted 1353 EDT.

EO /executive team call was discussing setting up a Chairman brief with the TA's. Shortly later it was reported that Chairman called down and said he did not need a brief right now. Bill Borchardt briefed the Chairman. Chairman's TAs will be briefed at ~4:15 PM.

Bill Borchardt has updated the Chairman, Bill is monitoring this line and will update the Chairman at 4:30 PM. Commissioner TA briefing at 4:15 is still planned.

At one point SRI at North Anna was inadvertently disconnected from the safety counterpart link. Also we lost link the RI. Priority is to get communications re-established with the North Anna Resident Inspector (RI) staff. These parties were reconnected shortly afterward.

*Rough calculations – preliminary estimate is that the earthquake may meet the **safe shutdown earthquake** level (especially at higher frequencies) and may have equaled the design basis earthquake based on NRC calcs.. Earthquake had a very shallow epicenter, therefore ground motion is much more amplified. This is very Preliminary / Pre-decisional information.*

Off-site power is now re-established/available to the site (One of the 500 KV lines) so they can re-tie if and when the licensee at North Anna is ready to make the transfer. Overpressure trips or sudden overpressure trips occurred on RSST's that still need to be reset / site needs to check out prior to retying to off-site power. Priority for RSST restoration will be the "C" transformer, as it provides power to an emergency bus on each unit.

Emergency power is being supplied to all four safety-buses from EDGs with the 2H safety bus being supplied by the SBO DG. Note: 2H safety-related EDG is out due to coolant leak – had a flange leak after starting up, so apparently it was shutdown.

4:05 (NIGHTTIME EO (Sher Bahadur) contacted and alerted to call in when he arrived home.

4:10 PM -- Lots of phone problems / feedback issues noted.

4:23 Briefing notes: Victor McCree came on and provided a summary of the events at North Anna – discussed the issuance of a PN. Looking at CNN, he noted they said 9 units in are UEs. **North Anna is in an Alert.** PN will be put out by Region-II - (at least that's what Victor [Region-II RA] recommends). Most of the units declared UEs. North Anna declared an Alert. Summary of Victor McCree briefing to Commissioner TA's:

13:51 seismic event. About 2 miles from North Anna. North Anna at 100% trip were doing TDAFW maint. on unit 1 at the time. Both loss circ water, units turbine trip and negative rate induced tripped both reactors. 1403 Alert declared on other conditions exist **based on actual or potential substantial degradation of safety or security.** Headquarters entered the monitoring mode. Loss of offsite power. 2H bus energized by SBO EDG. Relieving steam to atmosphere. No radiological conditions. SFP cooling lost for about 90 minutes but no significant heat up (common SFP for both

units). Dam inspected no damage noted – FERC notified. Security camera power lost, comp measures implemented. 22 Personnel not accounted for currently. RI staff safe, families safe as well. SRI and RI are on site. TSC / EOF. An additional RI qualified staff member is heading toward North Anna to provide assistance.

500KV lines are offsite power, will restore power via reserve station transformers (RSST). No damage but Sudden Pressure Trip did actuate. Will restore C RST first. Non-safety service transformers sustained damage to transformer insulator bushings. No reports of damage to off-site power transmission towers.

Surry and Harris also declared UEs but units did not trip. No damage reported. B&W Lynchburg, Va. felt the quake - but reports no damage.

Tom Hickman Chairman's office asked questioned on fuel facilities in the area: GE did not feel it. NFS felt it - no damage.

Bill Dean noted Region-1 sites report very minor damage, no safety issues. ~40 materials licensees had been called and reported no issues. Licensees in Region 1 that declared NOUE's are conducting system walkdowns and determining status in order to decide on de-escalation from the Unusual Event. RI staff are doing independent walkdowns. Expect those to complete in the next hour and half.

Cindy Pederson of Region 3 noted they've got RI's observing licensee response at the two Region 3 plants that declared UE's and walking down the plants. Offered any assistance possible to Region 2.

Press release questions: on UE declarations reason---

Answer: sensing or feeling an earthquake or alarms based on their site specific EALs.

Two UEs in Region-III DC Cook and Palisades in Michigan. - No damage reported.

White house national security folks have been made aware of the issues.

No additional calls are planned for tonight. All plants stable / safe.

Tim McGinty will be covering for Jack Grobe who is going out of town.

Jack dropped off call at 4:55 PM.

John Thorp dropped off the call at 5 PM.

Basically the call completed at 1704 EDT. The line will remain active – Region-II IRC watchbill is established ("which will take us right into Hurricane Irene response which is approaching Region-II" per Victor McCree).

All plants appear to be stable/ safe, North Anna still has to restore off-site power to safety-buses and they will then need to repair non-safety transformers (bushing damage) before restarting the plants. They may be going down in modes while these repairs take place, still to be determined.

Have a good night.

My thanks to Mark King for notes he contributed to the above.

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9/23