

From: Decker, David *10/11/11*  
Sent: Friday, September 16, 2011 11:34 AM  
To: Khanna, Meena  
Cc: Li, Yong; Manoly, Kamal  
Subject: RE: Follow-Up Question from Congressional Staffer

*Meena,*

*I sent the staffer the updated info you sent to me below, and here is a follow-up e-mail from her about the seismic measuring equipment at North Anna. Hopefully the USGS statement about better equipment being available was talking about the kinematic equipment, but I wanted to check. Also, is there anything we can say about how confident we are about the readings, as the staffer is worried about? Thanks. -David*

*Follow-Up E-mail*

*Thanks for the info, but I'm still a bit confused. Is the kinematic equipment the type of equipment USGS is recommending? The witness made it sound like there was better equipment that wasn't being used yet in plants. Also, if the two types of equipment didn't provide the same readings, how do we know which is/or if either is correct? Could the earthquake have been worse than Dominion thought because their equipment didn't record it properly?*

*—Original Message—*

*From: Khanna, Meena *MMR*  
Sent: Thursday, September 15, 2011 10:50 PM  
To: Decker, David  
Cc: Li, Yong; Manoly, Kamal  
Subject: FW: Follow-Up Question from Congressional Staffer  
Importance: High*

*David, pls use this response in lieu of what I sent you earlier..thanks*

*Kinematics seismometers are relatively reliable because they provide ground motion time histories and the corresponding response spectrum can be calculated. However, Engdahl Scratch plates only record peak accelerations and due to unknown reasons, the scratch plates at the North Anna plant did not register any ground motion from the earthquake at certain frequencies. The response spectra from Engdahl and Kinematics seismometers showed significant inconsistency, in both frequencies and amplitudes, even though the two seismometers are located at the same location/elevation. However, it should be noted that both types of recordings indicated the exceedance of OBE and DBE at the North Anna site.*

*NR*

---

*From: Khanna, Meena *MMR*  
Sent: Thursday, September 15, 2011 6:35 PM  
To: Decker, David  
Cc: Manoly, Kamal; Li, Yong; Wilson, George  
Subject: FW: Follow-Up Question from Congressional Staffer*

*E/14*

David, here is a response to your question...

Yes. Kinematic recordings are more reliable because they provide time histories and the corresponding response spectra can be calculated. Engdahl Scratch plates only record peak accelerations and could miss accelerations at certain frequencies, thus one would be expected to see some inconsistency in reflecting the frequency vs. amplitude of vibrations. However, it should be noted that both types of recordings indicate the exceedance of OBE and DBE at North Anna.

Thanks,  
Meena

---

From: Decker, David *1001A*  
To: Munson, Clifford  
Cc: Wilson, George  
Sent: Thu Sep 15 09:55:48 2011  
Subject: RE: Follow-Up Question from Congressional Staffer Thanks Cliff. Knowing that we also have data from seismometers (do we know how many there are at the plant) is good.

George - anything more that we can say about where we got data to evaluate the earthquake's impact (other than the scratchplates) would be much appreciated.

From: Munson, Clifford *11/15*  
Sent: Thursday, September 15, 2011 8:01 AM  
To: Decker, David  
Cc: Wilson, George  
Subject: RE: Follow-Up Question from Congressional Staffer

Bill Leith of USGS was referring to the "scratch plate" readouts. Dominion also has seismometers which give a complete record of the earthquake motions so they aren't just relying on the scratch plates, which are fairly crude (1970s technology).

Maybe George Wilson can amplify more on the accuracy of the scratch plates since he has experience with them.

Cliff

From: Decker, David *000*  
Sent: Wednesday, September 14, 2011 5:25 PM  
To: Wilson, George; Munson, Clifford; Croteau, Rick; Jones, William  
Subject: Follow-Up Question from Congressional Staffer

*We received the following question from Kathy Dedrick (one of our Senate oversight staffers who we've talked with on the phone twice recently), after she watched the Task Force public meeting today. Thanks for your help in responding to the question below. -David*

*"Can anyone explain to me what the ramifications are of the USGS testimony today which said that the measurements at North Anna were probably not accurate within 10 or 20 percent. Does that mean they are less sensitive and the ground motion could have been much more? Or what does that mean? It sounds like those instruments are the only source of information, so Dominion would be basing decisions on something that isn't very accurate."*