

6

From: Khanna, Meena *10/27/11*
To: Li, Yong; Farzam, Farhad; Manoly, Kamal
Subject: FW: Most recent ShakeCast report
Date: Wednesday, August 24, 2011 12:11:41 PM
Attachments: shakecast_report_nrc.pdf

-----Original Message-----

From: Khanna, Meena
Sent: Wednesday, August 24, 2011 12:07 PM
To: Wilson, George
Subject: RE: Most recent ShakeCast report

We JUST got the latest USGS data (hot off the presses). Please see the latest version of the ShakeCast report. The current best estimate of the PGA for the rock is 0.2g, although there is significant uncertainty of the estimates. The SSE of the North Anna NPP is 0.12g.

So that people are aware of why the ground motion estimates fluctuate in the period immediately following the earthquake, I want to provide some background information. Version 1 of the ShakeCast report was based on very preliminary information. Version 6 is attached. As information has become available the ground motion estimate, particularly the location and magnitude of earthquake has become better constrained. This is due to aftershock information and intensity information from the USGS "Did You Feel It?" system, which provides a level of "ground truthing". We just spoke to the USGS and they think that the numbers have stabilized, however we will provide further updates as we receive them.

The underlying data comes from something called a ShakeMap, which is the information that the USGS puts out to the public. North Anna is on hard rock which may further amplify the incoming motions. The upshot is that there are many indications that the SSE is exceeded and this is a beyond-design-basis event.

Currently, the licensee is retrieving their seismic recording instrumentation. However, we do not yet know the type and quality of the recording data that will be available to the NRC. Information from the NPP may be used to evaluate the USGS estimates of ground motion and may be used to compare with FSAR design basis.

Regards,
Annie

-----Original Message-----

From: Kammerer, Annie *10/27/11*
Sent: Wednesday, August 24, 2011 10:47 AM
To: Wilson, George; Grobe, Jack; Boger, Bruce; Leeds, Eric; Ruland, William; McGinty, Tim; Lund, Louise; Pruett, Troy; Lubinski, John; Wiggins, Jim; Dapas, Marc; McCree, Victor; Croteau, Rick; Jones, William; Brown, Frederick; Glitter, Joseph; Howe, Allen; Evans, Michele; Holian, Brian; Skeen, David; Galloway, Melanie; Cheok, Michael; Nelson, Robert; Bahadur, Sher; Andersen, James; Dean, Bill; Virgilio, Martin; Borchardt, Bill; Weber, Michael; Johnson, Michael; Holahan, Gary
Cc: Li, Yong; Karas, Rebecca; Khanna, Meena; Munson, Clifford; Manoly, Kamal
Subject: Re:

Just to clarify, the FIRST shake cast report shows a PGA of 0.18g. The most recent, which is version 4, shows a PGA of 0.38g due to a better estimate of the epicenter location.

I can't send it to the full list from my BB (I am in Meena's office right now). I'm sending it to Meena, and she can forward.

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 6

FOIA: 2011-0357

P/57

Cheers,
Annie

Sent from an NRC blackberry

Annie Kammerer

mobile (b)(6)

(b)(6)

annie.kammerer@nrc.gov

67.6

----- Original Message -----

From: Wilson, George *GW*

To: Grobe, Jack; Boger, Bruce; Leeds, Eric; Ruland, William; McGinty, Tim; Lund, Louise; Pruett, Troy; Lubinski, John; Wiggins, Jim; Dapas, Marc; McCree, Victor; Croteau, Rick; Jones, William; Brown, Frederick; Giitter, Joseph; Howe, Allen; Evans, Michele; Holian, Brian; Skeen, David; Galloway, Melanie; Cheok, Michael; Nelson, Robert; Bahadur, Sher; Andersen, James; Dean, Bill; Virgilio, Martin; Borchardt, Bill; Weber, Michael; Johnson, Michael; Holahan, Gary

Cc: Li, Yong; Karas, Rebecca; Khanna, Meena; Munson, Clifford; Kammerer, Annie; Manoly, Kamal

Sent: Wed Aug 24 10:34:55 2011

Subject: FW:

The following attachment includes the following

The latest shake cast report from the USGS - this shows that the peak ground motion was .16g The Design for North Anna is .12g The North Anna Spectral curve from Numark/FSAR and spectral curve from earthquake. You can see where the data from the earthquake exceeds design curve above 10hz. The next pictures shows the same curve outlay from the IPEEE submittal..
Reg Guide 1.166 for the after earthquake guidance.

This info is still draft and preliminary.

R

-----Original Message-----

From: GEORGE.WILSON@NRC.GOV [mailto:george.wilson@nrc.gov]

Sent: Wednesday, August 24, 2011 9:44 AM

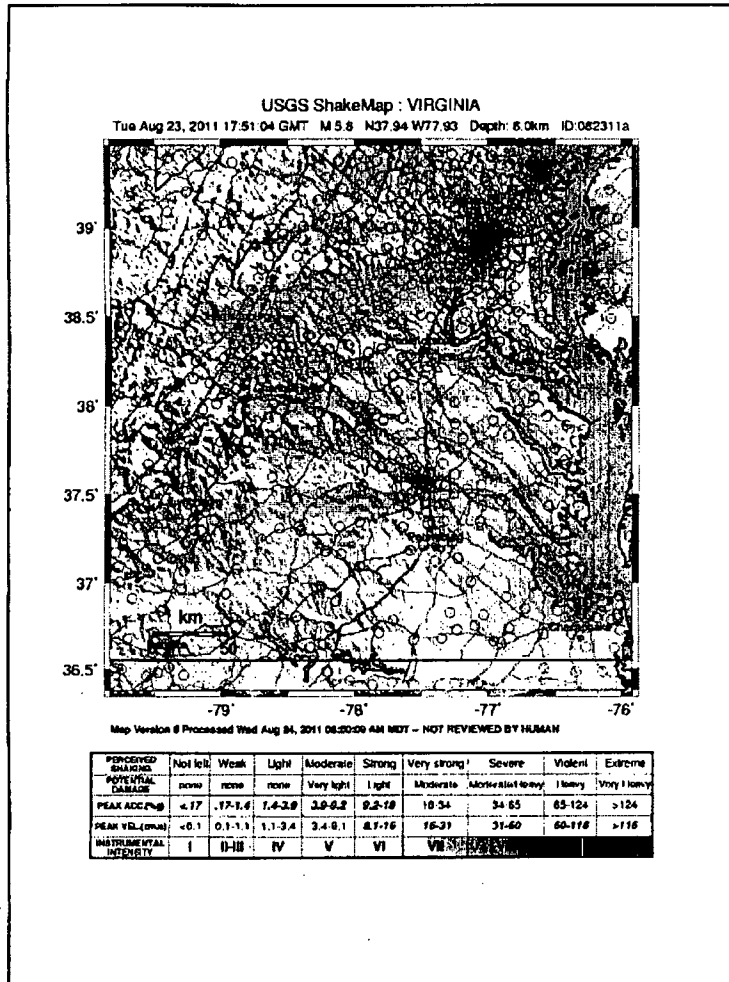
To: Wilson, George

Subject:

Magnitude 5.8 - VIRGINIA
 Origin Time: 2011-08-23 17:51:04 GMT
 Latitude: 37.9360 Longitude: -77.9330

Version 6
 Created: 2011-08-24 15:11:29 GMT
 Depth: 6.0 km

These results are from an automated system and users should consider the preliminary nature of this information when making decisions relating to public safety. ShakeCast results are often updated as additional or more accurate earthquake information is reported or derived.



U.S.NRC Nuclear ShakeCast

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Select an earthquake from the last 7 days

ShakeCast Summary

1

Number of facilities evaluated: 3

Peak Ground Acceleration (PGA): 1.41 - 82.46
 Peak Ground Velocity (cm/sec): 6.93 - 27.82
 Instrumental Intensity: III - VII
 Peak Spectral Acc. at 0.3 sec (PGA): 1.23 - 63.39
 Peak Spectral Acc. at 1.0 sec (PGA): 0.94 - 12.29
 Peak Spectral Acc. at 3.0 sec (PGA): 0.66 - 1.28
 PGA Uncertainty in Std Deviation: 0.29 - 1.82
 Estimated VISO in core: 0 - 340

M 5.8 - VIRGINIA

ID: 062311a Version: 6
 Origin Time: 2011-08-23 17:51:04
 Location: -77.933, 37.936

SHAKECAST	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
PGA ACC (cm)	<.17	.17-1.6	1.6-3.9	3.9-6.2	6.2-18	18-34	34-65	65-124	>124
PGA VEL (cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-6.1	6.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X

Recent significant earthquakes in the region

- M4.5 VIRGINIA at 12/9/2003 20:59

FACILITY TYPE	FACILITY ID	FACILITY NAME	DIST	LATITUDE	LONGITUDE	DAMAGE LEVEL	MMI	PGA	PGV	PSA03	PSA10	PSA30
NUCLEAR	USA37	North Anna	18.08	38.0573	-77.7956	YELLOW	VI	19.9918	12.2568	26.0078	5.9443	0.5989
NUCLEAR	USA8	Calvert Cliffs	141.73	38.4319	-76.4424	GREEN	V	6.8436	6.7083	3.5967	1.4285	0.1501
NUCLEAR	USA56	Surry	139.06	37.1633	-76.6942	GREEN	V	6.1296	6.5473	3.5591	1.4118	0.1482

* - MMI level may extend beyond map boundary; some facilities may not appear on the map due to space restriction