Landau, Mindy

From: Landau, Mindy
Sent: Wednesday, March 23, 2011 1:36 PM
To: Ellmers, Glenn
Subject: Fw: ACTION - DRAFT A DESCRIPTION OF THE SCOPE OF THE AGENCY'S RESPONSE TO JAPAN

I would think you could use the Commission mtg script and Bill's all hands comments

Sent from my NRC Blackberry
Mindy Landau
(b)(6)
Mindy.Landau@nrc.gov

From: Weber, Michael
To: Landau, Mindy
Cc: Borchardt, Bill; Virgilio, Martin; Muessle, Mary
Sent: Wed Mar 23 12:54:10 2011
Subject: ACTION - DRAFT A DESCRIPTION OF THE SCOPE OF THE AGENCY'S RESPONSE TO JAPAN

Good afternoon, Mindy. Could you ask Glenn to prepare a draft description of the scope of NRC's response to the nuclear emergency in Japan? I would think that between Bill comments at last Friday's all staff meeting and his presentation at Monday's Commission meeting, Glenn should have enough details to draft the description. Bill might use this in Friday's Sr. managers meeting or in an agency announcement of some type to clarify for NRC employees what the agency's response consists of and what it does not. The teams here in the Ops Center are beginning to receive an increased number of requests for information that are not directly related to the ongoing response.

Thanks

0000/131

Landau, Mindy

From: Landau, Mindy
Sent: Wednesday, March 23, 2011 1:44 PM
To: Weber, Michael
Subject: Re: ACTION - DRAFT A DESCRIPTION OF THE SCOPE OF THE AGENCY'S RESPONSE TO JAPAN

Will do

Sent from my NRC Blackberry
Mindy Landau
(b)(6)
Mindy.Landau@nrc.gov

From: Weber, Michael
To: Landau, Mindy
Cc: Borchardt, Bill; Virgilio, Martin; Muessle, Mary
Sent: Wed Mar 23 12:54:10 2011
Subject: ACTION - DRAFT A DESCRIPTION OF THE SCOPE OF THE AGENCY'S RESPONSE TO JAPAN

Good afternoon, Mindy. Could you ask Glenn to prepare a draft description of the scope of NRC's response to the nuclear emergency in Japan? I would think that between Bill comments at last Friday's all staff meeting and his presentation at Monday's Commission meeting, Glenn should have enough details to draft the description. Bill might use this in Friday's Sr. managers meeting or in an agency announcement of some type to clarify for NRC employees what the agency's response consists of and what it does not. The teams here in the Ops Center are beginning to receive an increased number of requests for information that are not directly related to the ongoing response.

Thanks

0000/132

From:	Morris, Scott
To:	Blount, Tom; Bergman, Thomas; Webber, Robert; Adams, John; Tschiltz, Michael; Corrella, Richard; Zimmerman, Jacob; Temple, Jeffrey; Gibson, Kathy; Lubinski, John; Cool, Donald; Tappert, John; Reis, Terrence; Jones, Cynthia; Sullivan, Randy; Brandon, Lou; Grant, Jeffery; Uhle, Jennifer; Dudes, Laura; Skeen, David; Brown, Frederick; Holian, Brian; Ruland, William; Hiland, Patrick; Case, Michael; Hasselberg, Rick
Cc:	Evans, Michele; OSTD2 HOC; Marshall, Jane; Gott, William
Subject:	Staffing Incident Response Teams
Date:	Wednesday, March 23, 2011 3:07:33 PM
Importance:	High

Staffing of each of the NRC's Incident Response Teams with capable technical staff is critical to the success of our incident response mission. However, ensuring that each of the individual team positions is filled with trained staff members is not an easy task, particularly during protracted response situations like we find ourselves now. As you know, most of the positions on the teams are filled with volunteers from around the agency.

The Executive Team Support Team (ETST) Coordinator is responsible for ensuring that a comprehensive watchbill is staffed, published, and distributed well in advance of scheduled individual duty assignments (at least three days) to ensure that there are no gaps in position coverage. The ERST Coordinator should collect individual response team watchbills from the respective Response Program Team (RPT) Managers (i.e., the permanent NSIR/IRD staff). The RPT managers are responsible for ensuring adequate staffing on each of their respective teams.

Scott A. Morris
Deputy Director for Incident Response
Division of Preparedness and Response
Office of Nuclear Security and Incident Response

U.S. Nuclear Regulatory Commission
Mail Stop T4-A43
11555 Rockville Pike
Rockville, MD 20852

scott.morris@nrc.gov
301-415-7482 (Office)
(b)(6) (BlackBerry/Cell)
301-415-5278 (Fax)

0000/133

Weaver, Tonna

From: Ulses, Anthony
Sent: Thursday, March 24, 2011 2:51 AM
To: Carter, Mary
Subject: Re: TRAVEL BACK TO THE STATES

Mary,

I understand that NRC is paying for Jim's and my travel. Can I be booked on the Narita to Dulles flight on Saturday, March 26th? I need another day to transition to my replacement and I need to give USAID some time to work out a passport problem. I passed my passport information to the Liaison team.

Thanks,

Tony

Sent from NRC BlackBerry
Anthony Ulses
(b6)

From: Ulses, Anthony
To: Carter, Mary
Sent: Wed Mar 23 10:24:58 2011
Subject: Re: TRAVEL BACK TO THE STATES

Mary,

I would rather not go through London on the return. Rather, I would like to take the direct from Narita to Dulles if possible. Currently, I have been told that my departure is set for the 25th.

Thanks,

Tony

Sent from NRC BlackBerry
Anthony Ulses
(b6)

From: Trapp, James
To: Carter, Mary; Devercelly, Richard
Cc: Ulses, Anthony
Sent: Tue Mar 22 23:27:30 2011
Subject: RE: TRAVEL BACK TO THE STATES

I would love to be on United flight #3880 to Newark Departs 4:45 and Arrives at 4:20.

I believe since the NRC arranged my travel over, USAID would like the NRC to fly me back and then get reimbursement from USAID.

Thank you!

0000/134

From: Carter, Mary
Sent: Tuesday, March 22, 2011 10:45 AM
To: Devercelly, Richard
Cc: Trapp, James; Ulses, Anthony
Subject: RE: TRAVEL BACK TO THE STATES

I was told that US AID is supposed to take care of the Japan crisis travel. We were cautioned that AID would handle the travel.

From: Devercelly, Richard
Sent: Tuesday, March 22, 2011 9:16 AM
To: Carter, Mary
Cc: Trapp, James; Ulses, Anthony
Subject: TRAVEL BACK TO THE STATES

Good Afternoon Mary:

USAID tells us that because Jim Trapp and Tony Ulses did not fly over here via USAID then their return flight needs to be coordinated by us. My understanding that is they intend to return on Friday 3/25. Can you take care of them?

Jim and Tony:

Please make sure you have the information on the attachment to help Mary coordinate your return.

Rick DeVercelly

From: RMTPACTSU_ELNRC
To: LIA11 Hoc; LIA01 Hoc; LIA02 Hoc; LIA07 Hoc; LIA08 Hoc; LIA12 Hoc; LIA04 Hoc; Harrington, Holly; McIntyre, David; Burnell, Scott; ET07 Hoc
Subject: FYI: FDA/ Governmental Decision Database: Screening Recommendations
Date: Thursday, March 24, 2011 8:44:00 AM

Here is a link to an FDA alert I just received re. food imports:
http://www.accessdata.fda.gov/cms_ia/importalert_621.html

FDA is working on some advice for our Customs officers re. packages arriving from Japan. I hope to have that available tomorrow. Thanks.

Mike Boyd

From: <Edward.LAZO@oecd.org>
To: amcgarry@rpii.ie, patrick.smeesters@fanc.fgov.be, kaare.ulbak@sis.dk, edward.lazo@oecd.org, schneider@cepn.asso.fr, jean-francois.lecomte@irsn.fr, ck@nuke.hacettepe.edu.tr, suzuki51@mext.go.jp, shandala@srcibph.ru, apanfilov@uyrb.faae.ru, toshihiko.kamada@mofa.go.jp, perezm@who.int, masa.takahashi@cao.go.jp, patricia.milligan@nrc.gov, bruno.cessac@irsn.fr, david.duchesne@hc-sc.gc.ca, david.tredinnick@arpansa.gov.au, p.hedemann@dekom.dk, david.cancio@ciemat.es, jose.gutierrez@ciemat.es, tomoho.yamada@cao.go.jp, ian.robinson@hse.gsi.gov.uk, johannes.hammer@ensi.ch, Mike Boyd/DC/USEPA/US@EPA, carvalho@itn.pt, wweiss@bfs.de, shizuyo.kusumi@cao.go.jp, ali.ghovanlou@hq.doe.gov, kazsakai@nirs.go.jp, saito-minoru@jnes.go.jp, andre.jouve@ec.europa.eu, wim.molhoek@minvrom.nl, antonis@eeae.nrcps.ariadne-t.gr, r.martincic@iaea.org, j.p.auclair@hc-sc.gc.ca, jerzy.mietelski@ifj.edu.pl, olivier.isnard@irsn.fr, brian.ahier@hc-sc.gc.ca, koblinger@haea.gov.hu, [redacted] (b)(6) rafal.frac@oecd-poland.org, kobayashi.hirohide@jaea.go.jp, clive.williams@environment-agency.gov.uk, carrz@who.int, jldelgado@cnsns.gob.mx, caroline.purvis@cnsc-ccsn.gc.ca, sci.sec@icrp.org, ikumi.moriguchi@oecd.org, eduard.metke@ujd.gov.sk, jpgc@csn.es, keith.binfield@defra.gsi.gov.uk, delphine.xicluna@asn.fr, ronald.rusch@ensi.ch, werner.zeller@bag.admin.ch, pcam@enresa.es, karla.petrova@sujb.cz, dominique.rauber@babs.admin.ch, saigusa@nirs.go.jp, jim.scott@arpansa.gov.au, [redacted] (b)(6) yuinoue@mext.go.jp, okuno.hiroshi@jaea.go.jp, kanamori.masashi@jaea.go.jp, patrick.breuskin@ms.etat.lu, duranova@vuje.sk, Sara DeCair/DC/USEPA/US@EPA, d.h.byron@iaea.org, adriana.sokolikova@ujd.gov.sk, yamamoto.kazuya@jaea.go.jp, f.baciu@iaea.org, delphine.caamano@asn.fr, ysumika@mext.go.jp, ciska.zuur@minvrom.nl, smm@gr.is, carlos.sancho@ciemat.es, khour@eeae.gr, ingemar.lund@ssm.se, augustin.janssens@ec.europa.eu, pedrovaz@itn.pt, ksmith@rpii.ie, jill.meara@hpa.org.uk, joerg.brauns@areva.com, ogoshi-harushige@meti.go.jp,

0000/135

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stephen.solomon@arpansa.gov.au, bob.powell@hse.gsi.gov.uk,
kevin.jackson@ec.europa.eu, krzysztof.dabrowski@paa.gov.pl,
jette.bijlholt@minvrom.nl, kmiyamo@mext.go.jp

Date: 03/23/2011 10:29 AM
Subject: Governmental Decision Database: Screening Recommendations

Dear Colleagues,

There has been quite a lot of interest in people and goods arriving from Japan, by air or by boat, in particular with respect to any radiological screening that is being recommended at ports of entry (air travel or maritime). As such, could you please respond to the following questions, which will be posted, along with the other decision information from you, on the ENAC web site. Note that the following question is SOMEWHAT redundant with Q2 and Q3 which have already been asked. As such, I have extracted these questions and answers from the existing database and included them here to facilitate any updating you may need to make. If there is no change please feel free to ignore this request.

Have you established any recommendations regarding screening of passengers, baggage and transport arriving from Japan in terms of:

* Screening of passengers and crew

* Screening of baggage and cargo

* Screening of cabins (on airplane or on ships)

* Screening of outer surfaces (of airplanes or of ships)

If you have established such recommendations, what are they, and what is their technical basis?

Sincerely,
Ted Lazo[attachment "Results Compilation Emergency Response Governmental Decision and Recommendation Port of Entry Questions.doc" deleted by Mike Boyd/DC/USEPA/US]

From:	ET07 Hoc
To:	Harrington, Holly; Burnell, Scott; McIntyre, David; Billings, Sally
Subject:	RE: Q&As
Date:	Thursday, March 24, 2011 11:23:38 AM

Thanks

From: Harrington, Holly
Sent: Thursday, March 24, 2011 11:23 AM
To: Burnell, Scott; ET07 Hoc; McIntyre, David; Billings, Sally
Subject: RE: Q&As

There is no "distribution list" for Q&As or talking points. We are posting them on WebEOC. We have not updated the Q&As, originally developed for the chairman, in some time. But there are some additional Q&As on other subjects that have been developed separately and should also be available via WebEOC.

From: Burnell, Scott
Sent: Thursday, March 24, 2011 10:45 AM
To: ET07 Hoc; McIntyre, David; Harrington, Holly
Subject: Re: Q&As

Holly's in the best position to explain how we're handling this.

Sent from an NRC Blackberry
Scott Burnell
(b)(6)

From: ET07 Hoc
To: Burnell, Scott; McIntyre, David
Sent: Thu Mar 24 10:42:10 2011
Subject: Q&As

Does OPA maintain the distribution list for the Japan Event Q&As?

Sally Billings
ET Status Officer

0000/136

From: Case, Michael
To: Sheron, Brian
Subject: RE: Background 3rd team to Japan .docx
Date: Thursday, March 24, 2011 12:02:00 PM

Not much more information that wasn't already on the info sheet. We didn't have to provide names at this juncture. I'll stop up this afternoon and discuss path forward.

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:44 AM
To: Case, Michael
Subject: FW: Background 3rd team to Japan .docx

FYI. You can volunteer Salay.

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 11:40 AM
To: Sheron, Brian
Cc: Uhle, Jennifer
Subject: RE: Background 3rd team to Japan .docx

Well let me first say that at the beginning of all this, I asked all my staff to provide information on whether they were willing to work in the IRC and shift preferences, whether they were willing to go to Japan, and what their area(s) of expertise are. I have a spreadsheet with this information.

(b)(6)

As an alternative, Mike Salay has severe accident expertise, is willing to go to Japan, and is politically savvy. He is also serving on the RST and is involved with a number of OECD agreements on fission product behavior and MELCOR modeling. I can also get more detail from Richard if you need it.

For both Jason and Mike, their normal work is already being impacted by their service in the IRC, so a couple weeks in Japan would not be a major additional impact.

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

0000/137

From: Couret, Ivonne
To: Smith, James
Cc: McIntyre, David; Harrington, Holly; Hannah, Roger; Culp, Lisa; Kinneman, John; Bailey, Marissa; Campbell, Larry; Campbell, Larry; Bailey, Marissa; Marcano, Jonathan; Romano, Michelle; Sykes, Marvin
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities
Date: Thursday, March 24, 2011 12:24:16 PM

Agree can you place caveat in Green ticket that we will work with OPA to incorporate items based on current events. Thanks, Ivonne

From: Smith, James
Sent: Thursday, March 24, 2011 11:59 AM
To: Couret, Ivonne
Cc: McIntyre, David; Harrington, Holly; Hannah, Roger; Culp, Lisa; Kinneman, John; Bailey, Marissa; Campbell, Larry; Campbell, Larry; Bailey, Marissa; Marcano, Jonathan; Romano, Michelle; Sykes, Marvin
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Ivonne

Thanks, I'll run the information by David and Roger. As far as adjusting the Info Digest, since our input is due by COB today, I think it would be unreasonable to try to meddle with that big of a change at this point. However, OPA may want to consider asking the offices to reconsider the recent events before proceeding with publication.

James Smith
Technical Assistant
US Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Fuel Cycle Safety and Safeguards
MS [illegible]
Washington, DC 20555
[illegible]
(301) 492-3234 Work
(b)(6) Blackberry
USNRC

From: Couret, Ivonne
Sent: Thursday, March 24, 2011 11:44 AM
To: Smith, James
Cc: McIntyre, David; Harrington, Holly; Hannah, Roger
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Jim,
David McIntyre and Roger Hannah are best equipped to examine these. I have included then in this email. I would also encourage re-examination of the NMSS Information Digest section to see if we need to enhance verbiage to be more inclusive for public concerns on these issues.

Ivonne L. Couret
Public Affairs Officer
Office of Public Affairs
Media Desk
opa.resource@nrc.gov
301-415-8200

0000/138

http://www.nrc.gov/reading-rm/photo-gallery/

2010-2011 Information Digest - Where you can find NRC Facts at a Glance
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/

From: Smith, James
Sent: Thursday, March 24, 2011 10:36 AM
To: Couret, Ivonne; Culp, Lisa
Cc: Campbell, Larry; Bailey, Marissa; Marcano, Jonathan; Romano, Michelle; Sykes, Marvin
Subject: Heads up - Qs&As for Seismic Events at Fuel Cycle Facilities

Ivonne and Lisa-

In light of the recent events in Japan, FCSS/NMSS and RII are developing a list of Qs&As for expected effects and responses to Seismic Events (and other natural phenomenon) at Fuel Cycle Facilities to be used by NRC staff in addressing concerns that the public may bring up during public meetings in the near future, the NFS LPR being the next one I am aware of.

After we have put the data and information together, would you two take a look to see if there is anything you would add from the PA/Communications point of view, remembering that these will be official use only and that there is no plan to distribute them to the press.

The plan is to have these finalized and to Cathy Haney by next Wednesday. I plan to have the drafts done sometime after 1pm today. Ivonne, if you are unavailable to take a look, can you recommend someone else from OPA who may be able to assist.

Thanks

James Smith
Technical Assistant
US Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Fuel Cycle, Safety and Safeguards
MS EBC40M
Washington, DC 20555
James.Smith@nrc.gov
(301) 492-3234 Work
(b)(6) Blackberry
USNRC

From: Case, Michael
To: Gibson, Kathy
Subject: FW: Background 3rd team to Japan .docx
Date: Thursday, March 24, 2011 1:34:00 PM
Attachments: Kathy Halvey Gibson.vcf

Hi Kathy. The only tidbit of information I need in order to forward Mike's name is his passport status (i.e. does he have one).

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:44 AM
To: Case, Michael
Subject: FW: Background 3rd team to Japan .docx

FYI. You can volunteer Salay.

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 11:40 AM
To: Sheron, Brian
Cc: Uhle, Jennifer
Subject: RE: Background 3rd team to Japan .docx

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(b)(6)

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Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

0000/139

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:29 AM
To: Gibson, Kathy
Cc: Uhle, Jennifer
Subject: FW: Background 3rd team to Japan .docx

See below.

1.) I know Charlie can't go because of health issues.
2.) Is Jason available to go as a SA expert?
3.) What would be the impact if we lost Jason for 2 weeks?

From: Salus, Amy
Sent: Thursday, March 24, 2011 11:14 AM
To: Ruland, William; Holahan, Gary; Miller, Charles; Haney, Catherine; Sheron, Brian; Ordaz, Vonna; Dean, Bill; McCree, Victor; Satorius, Mark; Howell, Art; Collins, Elmo
Subject: Background 3rd team to Japan .docx

Attachment Kathy Halvey Gibson_9.vcf (5196 Bytes) cannot be converted to PDF format.

From: Culp, Lisa
To: Smith, James; McIntyre, David; Ruffin, Steve; Benney, Brian; Stablein, King
Cc: Culp, Lisa
Subject: RE: Heads up- NRC story
Date: Thursday, March 24, 2011 1:57:45 PM

This is a new NRC story. Note comments to it. Things to think about re Q&As, public meetings, etc.

http://www.huffingtonpost.com/2011/03/24/us-nuclear-equipment-defects-ig-nrc-report_n_840052.html

From: Smith, James
Sent: Thursday, March 24, 2011 1:30 PM
To: Hannah, Roger; McIntyre, David; Culp, Lisa
Cc: Harrington, Holly; Couret, Ivonne; Campbell, Larry; Marcano, Jonathan; Sykes, Marvin; Romano, Michelle; Tschiltz, Michael; Kinneman, John; Gody, Tony; Cobey, Eugene; Hiltz, Thomas; Reilly, Breeda; Liu, Tilda; Thompson, Richard; Diaz, Marilyn; Rodriguez, Rafael; Baker, Merritt; Ramsey, Kevin; Smith, Brian; Johnson, Timothy; Johnson, Robert; Naquin, Tyrone; Ryder, Christopher; Tiktinsky, David; Mattern, Kevin; Ramsey, Kevin; Morrissey, Kevin; Siurano-Perez, Osiris; Downs, James
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Hi Roger, David, and Lisa-

See attached draft. It is a preliminary set of talking points for members of our staff who may be questioned about the vulnerabilities of our Fuel Cycle Facilities to Seismic and other natural events at public meetings in the near future. It is not intended for public release, but to be used only as a reference resource for our staff in the field. Although it is still draft and we are gathering more information, we'd like your feedback on the general nature of the document as well as any recommendations you may have for improvement.

Thanks,

Jim Smith

James Smith
Technical Assistant
US Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Fuel Cycle, Safety and Safeguards
MS EBC40M
Washington, DC 20555
(301) 492-3234 Office
(b)(6) Blackberry
US NRC

From: Couret, Ivonne
Sent: Thursday, March 24, 2011 11:44 AM
To: Smith, James
Cc: McIntyre, David; Harrington, Holly; Hannah, Roger
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Jim,

0000/140

David McIntyre and Roger Hannah are best equipped to examine these. I have included then in this email. I would also encourage re-examination of the NMSS Information Digest section to see if we need to enhance verbiage to be more inclusive for public concerns on these issues.

Ivonne L. Couret
Public Affairs Officer
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Visit our online photo gallery. Incorporate graphics and photographs to tell your story!
http://www.nrc.gov/reading-rm/photo-gallery/

2010-2011 Information Digest - Where you can find NRC Facts at a Glance
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/

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Sent: Thursday, March 24, 2011 10:36 AM
To: Couret, Ivonne; Culp, Lisa
Cc: Campbell, Larry; Bailey, Marissa; Marcano, Jonathan; Romano, Michelle; Sykes, Marvin
Subject: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Ivonne and Lisa-

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Thanks

James Smith
Technical Assistant
US Nuclear Regulatory Commission
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Division of Fuel Cycle Safety and Safeguards
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(b)(6) Blackberry

U.S.NRC

Rihm, Roger

From: Rihm, Roger
Sent: Thursday, March 24, 2011 3:04 PM
To: Landau, Mindy; Ellmers, Glenn
Subject: Fw: transcript
Attachments: Roger.doc

Here's the whole thing if you need it.

Sent from an NRC BlackBerry
Roger S. Rihm
(b)(6)

From: Garland, Stephanie
To: Rihm, Roger
Sent: Tue Mar 22 13:25:33 2011
Subject: RE: transcript

Here ya go!!

Stephanie Garland
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From: Rihm, Roger
Sent: Tuesday, March 22, 2011 12:37 PM
To: Garland, Stephanie
Subject: FW: transcript
Importance: High

Stephanie, you were so good at this the other day....Can you turn this pdf (below) into a word document for me? I need to prepare testimony based on this, so I'm hoping the number lines don't transfer over.....

Thank you!

From: Landau, Mindy
Sent: Tuesday, March 22, 2011 10:11 AM
To: Rihm, Roger; Ellmers, Glenn
Subject: transcript

http://www.nrc.gov/reading-rm/doc-collections/commission/tr/2011/20110321.pdf

Mindy S. Landau
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0000/141

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UNITED STATES OF AMERICA

U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON NRC RESPONSE TO RECENT NUCLEAR EVENTS IN JAPAN

MARCH 21, 2011 9:00 A.M. TRANSCRIPT OF PROCEEDINGS Public Meeting

Before the U.S. Nuclear Regulatory Commission: Gregory B. Jaczko, Chairman Kristine L. Svinicki, Commissioner George Apostolakis, Commissioner William D. Magwood, IV, Commissioner William C. Ostendorff, Commissioner NRC Staff:

Bill Borchardt Executive Director for Operations

P R O C E E D I N G S

CHAIRMAN JACZKO: Good morning everyone. The Commission meets today to discuss the tragic events in Japan and to begin to consider possible actions we may take to verify the safety of the nuclear facilities that we regulate here in the United States. People across the country and around the world who have been touched by the magnitude and the scale of this disaster are closely following the events in Japan and the repercussions in this country and many other countries.

Before we begin, I would like to offer my sincere condolences to all of those who have been affected by the earthquake and the tsunami in Japan. Our hearts go out to all who have been dealing with the aftermath of these natural disasters and we are mindful of the long and difficult road they will face in recovering. We know the people of Japan are resilient and strong and we have every confidence that they will come through this difficult time and move forward with resolve to rebuild their vibrant country. I believe I speak for all Americans when I say that we stand together with the people of Japan at this most difficult and challenging time.

The NRC is a relatively small agency with just about 4,000 staff, but we play a critical role in protecting the American people and the environment when it comes to the use of nuclear materials. We have our inspectors who work full time at every nuclear plant in the country and we are proud to have world-class scientists, engineers, and professionals representing nearly every discipline.

Since Friday, March 11, when the earthquake and tsunami struck, the NRC's headquarter operation center has been operating on a 24-hour basis to monitor and analyze events at nuclear power plants in Japan. At the request of the Japanese government and through the United States Agency for International Development, the NRC sent a team of its technical experts to provide an on the ground support, and we have been in continual contact with them since they deployed.

And within the United States, the NRC has been working closely with other federal agencies as part of the U.S. Government's response to the situation. Here in the United States we have an obligation to the American people to undertake a systematic and methodical review of the safety of our own domestic nuclear facilities in light of the natural disaster and resulting nuclear situation in Japan. Beginning to examine all available information is an essential part of our effort to analyze the event and understand its impacts on Japan and implications for the United States. Our focus will always be on keeping plants and radioactive materials in this country safe and secure.

As the immediate crisis in Japan comes to an end we will look at any information we can to gain experience from the event and see if there are any changes we need to make to further protect public health and safety. Together with my colleagues on the Commission, we will review the current status and identify the steps we will take to conduct that review. In the meantime we will continue to oversee and monitor plants to ensure that U.S. reactors remain safe.

On behalf of the Commission I want to thank all of our staff for maintaining their focus on our essential safety and security mission throughout

these difficult days. I want to acknowledge their tireless efforts and their critical contributions to the U.S. response to assist Japan. In spite of the evolving situation, the long hours, and the intensity of efforts over the past week, the staff has approached their responsibilities with dedication, determination, and professionalism, and we are all incredibly proud of their efforts. The American people can also be proud of the commitment and dedication within the federal workforce, which is exemplified by our staff every day. And again, I want to reiterate certainly on behalf of the Commission and all of us here in this room our sympathy with the crisis and the difficult situation for our friends and colleagues in Japan, and we look forward to continuing our efforts to provide them with assistance as they continue to deal with a very challenging situation, not only with the nuclear facilities but with many of the other impacts from this natural disaster in Japan. I would like to offer Commissioner Svinicki an opportunity to make some comments.

COMMISSIONER SVINICKI: Thank you Mr. Chairman. I want to add my voice to that of others regarding the great sympathy we feel over the loss and devastation due to the earthquake and tsunami in Japan. The dramatic images of the events at Fukushima, images that have riveted so many of us over the course of the past week, have an added dimension for us as a community of nuclear safety professionals because for us these images are not an abstraction. Many of us have traveled to Japan; we have toured the facilities of our Japanese colleagues. We have worked alongside them in support of the shared goal of advancing nuclear safety. The sense of anguish we feel as we desire so desperately to do something, anything we can, to help our friends and colleagues

in Japan has been co clearly evident on the faces of the men and women

working here at NRC. We are heartsick over this tragedy. Some may characterize that our faith in this technology is shaken, but nuclear safety has not been and cannot be a matter of faith; it is and must continue to be a matter of fact. So today we continue the systematic evaluation of facts of what we know about what happened and what we don't know but will piece together in the coming months. Our objective is to confirm that our approach to the regulation of nuclear power in this country is comprehensive and correct while applying any lessons learned we can from these events. In taking the systematic and deliberate approach to this review that you have called for, Mister Chairman, I'm certain the Commission will achieve this objective. Thank you.

CHAIRMAN JACZKO: Thank you. Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: I join the Chairman and Commissioner Svinicki in expressing my condolences to the people of Japan and I also second the Chairman's comments on commending the staff for its response to this accident. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Commissioner Magwood.

COMMISSIONER MAGWOOD: Thank you, Chairman. This is in many ways a very personal tragedy for me. I have many friends and colleagues in Japan. I have been in touch with several of them over the last week and a half. I've heard from friends in Tokyo worried about radiation and others in the North who are dealing with food shortages and gasoline shortages. Everyone in Japan is enduring continuing aftershocks, anxiety about the Fukushima and Daiichi plant, and difficulties in communicating with friends and neighbors, and a lot of uncertainty about what will happen next. I have one friend Emito

who lost

all her utilities for several days after the earthquake and is still waiting for water to

be restored. But in the aftermath of the earthquake, she is making new friends as people bond together to help each other and comfort each other and make the best of a difficult situation. Fortunately she found a kind neighbor who has a well, and so she has been able to get water and take it to her apartment on a daily basis.

I'm sure there's thousands of examples of people who are reaching out to each other, bonding as a community, and showing the kind of resilience that is going to be necessary to move forward. The scale of the tragedy is staggering and the toll on life and property has been terrible, but Japan will recover. But Japan will not stand alone and has not stood alone over the last week and a half. We in the U.S. are close friends to the Japanese people and I'm very, very proud of how our country has responded to this crisis and particularly proud of how the Nuclear Regulatory Commission Staff has responded as well. The staff has demonstrated both the expertise and the selflessness over the last 10 days and I applaud their outstanding efforts.

Today the Commission will receive an update on the nuclear situation in Japan, our response and our efforts to understand what has happened. There will be important lessons learned from the events at the Fukushima/Daiichi plant. It's essential that we identify them correctly and respond to them effectively. This meeting, I expect, will be the first of many Commission meetings as we engage to understand the issues and address those issues to ensure the safety of U.S. nuclear power plants. And I look forward to working with my partners on the Commission to do so. Thank you.

CHAIRMAN JACZKO: Thank you, Commissioner Magwood. Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. This is a vitally important meeting for the Commission and the country. I want to join my colleagues in extending my personal sympathies to the people of Japan. The consequences and loss of life in the earthquake and tsunami are simply devastating. Our thoughts and prayers are with all. I'd like to commend the Chairman, the Executive Director for Operations and the NRC staff for their efforts to date in supporting the NRC's monitoring assistance associated with these events. I appreciate the hard work ongoing 24/7 at the Op Center for the last 11 days. Along with my other colleagues here at this table, I've been very impressed with the technical competence and professionalism demonstrated by the NRC staff. I'm also grateful for the highly competent team of NRC detailees dispatched to Japan. While dismayed by this tragedy as a Commissioner, I am also extraordinarily proud of the commitment and professionalism of our team. The events that have unfolded at the Daiichi plant over the last 11 days are stark. On one hand, I believe that our existing licensing and oversight activities assure us that our commercial nuclear power plants in this country are safe. On the other hand, I know that we must, and that we most certainly will, conduct a thoughtful and rational examination of the NRC's regulatory framework with the information and lessons learned resulting from the incidence in Japan. As we head down this path together, I know this Commission will stay mindful of the challenges that face us. As stated by Chairman Jaczko several times in the last week and again today as echoed by the Commissioners, I fully support his call for a systematic and methodical review. We must also do this in a way that clearly communicates to the American people what this review means and what it

implies for the safety of our existing nuclear power plants. Thank you.

CHAIRMAN JACZKO: Well thank you everyone. With that, we will turn it to Bill Borchardt, the Executive Director for Operations for the presentation.

MR. BORCHARDT: Thank you, and good morning. I would like to join in your expressions of condolences to the people of Japan. I and many of my colleagues on the NRC staff have had many years of very close and personal interaction with our regulatory counterparts and we would like to extend our condolences to them.

We are mindful of our primary responsibility to ensure the public health and safety of the American people. We have been very closely monitoring the activities in Japan and reviewing all available information to allow us to conclude that the U.S. plants continue to operate safely. There has been no reduction in the licensing or oversight function of the NRC as it relates to any of the U.S. licensees. Contributors to the conclusion that the current fleet of reactors and materials licensees continue to protect the public health and safety are based on a number of principles, including the Defense in Depth.

The fact that every reactor in this country is designed for natural events based upon the specific site that that reactor is located, that there are multiple fission product barriers, and that there are a wide range of diverse and redundant safety features in order to provide that public health and safety assurance. We have a long regulatory history of conservative decision-making. We've been intelligently using risk insights to help inform our regulatory process, and we have never stopped to make improvements to the plant design as we learn from operating experience over the more than 35 years of civilian nuclear power in this country. Some have been derived from lessons learned from previous significant events, such as Three Mile Island. We have severe accident

management guidelines, revisions to the emergency operating procedures, procedures and processes for dealing with large fires and explosions, regardless of the cause. We have a station blackout rule. We have a hydrogen rule for reactors and many others which I'll go into in a little more detail later.

But all of these relate in one way or another to the tragic events in Japan. In addition to all that we've done in the NRC and over the last week and a half and over the many years as I alluded to on rulemaking type activities, the industry is also performing many verification activities at this time to verify that all of these processes and procedures and rules that have been implemented are still valid. From a very high level, the NRC response centered from the Operations Center here in Rockville as well as the NRC team that's in Japan focuses on three major areas. The first is to support the Japanese government and our regulatory counterpart, NISA. Second is to gather information and assess that information for implications on the U.S. facilities. And the third is to support the U.S. ambassador in Japan with a level of nuclear expertise that the NRC is perfectly positioned to do. We are in fact mobilized to support the US government in responding to this event.

Notwithstanding the very high level of support, we continue to maintain our focus on our domestic responsibilities. And finally as my last point of introduction, we do not expect the releases of radioactive material that have occurred in Japan to have any effect on the health and safety of the U.S. population.

The next slide shows the agenda for this meeting. Given the time constraints, it'll be a relatively high overview of activities but the room has a

healthy number of NRC staff that are available to explore any questions and

answers that you may have later. I'll now move to, let's say, a brief overview of the events.

On Friday, March 11th an earthquake hit Japan, resulting in the shutdown of more than 10 reactors. To our understanding, the reactors' response to the earthquake went according to design. There is no known problems to our knowledge with the response to that event. The ensuing tsunami, however, caused the loss of emergency AC power to six units at the Fukushima Daiichi site; and it's those six units that have received the majority of our attention since that time. Units One, Two, and Three, at that six unit site, were in operation at the time. Units Four, Five, and Six were in previously scheduled outages.

Immediately after the tsunami, there appeared that there was no injection capability into the reactor vessels on Units One, Two, and Three. On Saturday, March 12th, a hydrogen explosion occurred in Unit One; and then the following Monday, March 14th, a hydrogen explosion in Unit Three. On the 15th of March, on Tuesday, there were explosions in Unit Two and in Unit Four from hydrogen originating from, we believe, overheated fuel in the spent fuel pool.

At this time, it's our assessment that it's likely that Units One, Two, and Three have experienced some degree of core damage. Today, all three units appear to be in a stable condition, with seawater injection being used to keep the reactors cool. Containment integrity for all three units is also believed to have been -- is currently maintained. Grey smoke has emitted from Unit Three, which is the cause of the site evacuation that's been reported this morning. The source of that smoke is unknown,

although there is indication that

there's been no increase in temperature or in radioactivity.

On a sign of some promising news, TEPCO has been able to bring offsite power onto the site from a nearby transmission line. It is now essentially at the border of Units One and Two. There's early indications that there may be cabling problems -- electrical cabling problems within the units. So I understand that they're now in the process of laying some temporary cables to some of the pumps and valves inside of Units One and Two. Over the next day or two they'll be doing the same thing for Units Three and Four. There's two diesel generators that are currently running and supplying power to Units Five and Six.

Moving to the NRC response: Shortly after 4:00 in the morning on Friday, March 11th, the NRC Operations Center made the first call, informing NRC management of the earthquake and the potential impact on U.S. plants. We went into the monitoring mode at the Operations Center and the first concern for the NRC was possible impacts of the tsunami of U.S. plants on the West Coast.

On that same day, Friday, March 11th, we dispatched two experts to Japan to help at the embassy and begin interactions with our Japanese regulatory counterparts. By Monday, we had dispatched a total of 11 staff to Japan. As I said, the areas of focus for this team of 11 is to support the Japanese government and respond to requests from our regulatory counterpart, NISA, to support the U.S. ambassador and his understanding of the nuclear impacts of this event, and then third to help the information flow from Japan to the U.S. NRC so that we could assess the implications on the U.S. fleet in as timely a manner as possible.

We've had an extensive range of stakeholders that we've had

constant interaction with, ranging from the White House, Congressional staff, our

state regulatory counterparts, a wide range of other federal agencies, and of course the international regulatory bodies around the world.

Our ongoing NRC response is that the NRC Operations Center remains in a 24/7 posture. This has involved the efforts of over 250 NRC staff on a rotating basis. In addition to the people that are staffing the Operations Center, there is hardly a person amongst the 4,000 people in this agency that aren't in one way or another contributing to the response, whether it's through information technology needs for the people in Japan, or the Region IV staff in Texas, which is backing up for the operations officers in our Operations Center to help maintain an information flow on the currently operating reactors in this country. The entire agency is coordinating and pulling together in response to this event so that we can provide the assistance in Japan and not miss any of our normal activities regarding domestic responsibilities.

In addition, we remain aware of U.S. industry efforts to provide assistance with their counterparts in TEPCO in Japan.

The U.S. Government has an extensive network of radiation monitors across the country. EPA's system has not identified any radiation levels of concern in this country. In fact, natural background from things like the rock -- from rocks, sun, buildings, is 100,000 times more than any level that has been detected to date. We feel confident in our conclusion that there is no reason for concern in the United States regarding radioactive releases from Japan.

I'd like to focus for a few more minutes on the factors that go into assuring us of domestic reactor safety. We have, since the beginning of the regulatory program in the

United States, used a philosophy of Defense-in-Depth,

which recognizes that the nuclear industry requires the highest standards of

design, construction, oversight, and operation, but even with that we will not rely on any one level of protection for the entire purposes of protecting public health and safety. So the designs for every single reactor in this country take into account the specific site that that reactor is located and does a detailed evaluation for any natural event such as earthquakes, tornadoes, hurricanes, floods, tsunami, and many others.

In addition, there are multiple physical barriers to fission product release at every reactor design. And then in addition to that, there are both diverse and redundant safety systems that are required to be maintained operable and frequently tested by NRC regulations that ensure that the plant is in a high condition of readiness to respond to any scenario.

As I mentioned earlier, we've taken advantage of the lessons learned from previous operating experience, one of the most significant in this country, of course, being the Three Mile Island accident in the late 1970s. As a result of those lessons learned, we've significantly revised the emergency planning, the emergency operating procedures. Many human factors issues as it relates to how control room operators operate the plant. We added new requirements for hydrogen control to help prevent explosions inside of containment and we also created requirements for enhanced indication of pumps and valves.

We have a post-accident sampling system that requires -- or that allows -- for the monitoring of radioactive material release and possible fuel degradation. And of course one of the most significant changes is after Three Mile Island we created the Resident Inspector Program, which has at least two full time NRC inspectors on site that

have unfettered access to all licensees' activities 24 hours a day, seven days a week.

Also as a result of operating experience and ongoing research programs, we have developed requirements for severe accident management guidelines. These are programs that perform the "what if" scenario. What if all of this careful design work, all of these important procedures and practices and instrumentation, what if that all failed? What procedures and policies and equipment should be in place to deal with the extremely unlikely scenario of a severe accident? Those have been in effect for many years and are frequently evaluated by the NRC inspection program.

As a result of the events of September 11, 2001, we did a similar evaluation, and identified important pieces of equipment that, if, regardless of the cause of a significant fire or explosion at a plant, we would have pre-staged equipment, procedures, and policies to help deal with that situation. All of these things are directly applicable to the kinds of very significant events that are taking place in Japan. Over the last 15 or 20 years, there's been a number of new rulemakings that directly relate to Japan. There's a station blackout rule that has required every plant in the country to analyze what the plant response would be if it were to lose all alternating current so that it could respond using batteries for a while, and then have procedures and arrangements in place in order to restore alternating current to the site, and provide cooling to the core.

As I mentioned earlier, there's a hydrogen rule, which requires modifications to reduce the impacts of hydrogen generated for beyond-design basis events and core damage. There's equipment qualification rules that require equipment, indication equipment, as well as pumps and valves, to remain

operable under the kinds of environmental temperature, radiation conditions that you would see under a design basis accident. And then, going directly to the type of containment design that the plants in Japan of highest interest have, we've had a Mark I Containment Improvement Program since the very late 1980s, which had installed hardened vent systems for the containment cooling and fission product scrubbing for all BWR Mark I's, as well as enhanced reliability of the automatic depressurization system.

I also mentioned earlier that we have emergency preparedness and planning requirements that provide ongoing training, and testing, and evaluations of emergency preparedness programs, in coordination with our federal partner, FEMA. And that entails extensive interaction with state and local governments, as those programs are evaluated and tested on a yearly basis.

Over the near term, the NRC activities are -- we will – concurrent with the event evaluation that we're doing through the Operations Center and the team that's in Japan, we will be enhancing inspection activities through temporary instructions to our inspection staff, including the resident inspectors and the region-based inspectors in our four Regional offices, to look at the readiness to deal with both the design basis accidents and the beyond-design basis accidents.

We've already issued an information notice to the licensees to make them aware of the events, and what kinds of activities we believe they should be engaged in, to verify their readiness. And then we, every single day, assess whether or not there is some additional regulatory action that needs to be taken immediately, in order to address the information that we have, to date. The

temporary inspection I've referred to is verifying that the capabilities to mitigate

conditions that result from severe accidents, including the loss of significant operational and safety systems, are in effect and operational. They're verifying the capability to mitigate a total loss of electric power to the nuclear plant. They're verifying the capability to mitigate problems associated with flooding, and the impact of floods on systems both inside and outside of the plant. And they're identifying the equipment that's needed for the potential loss of equipment due to seismic events appropriate for the site, because each site has its own unique seismic profiles.

The information that we gather from this temporary inspection will be used to evaluate the industry's readiness for similar events, and aid in our understanding of whether additional regulatory actions need to be taken in the immediate term. For a near term effort, we are beginning, very soon, a 90 day effort, that will evaluate all of the currently available information from the Japanese event, and look at it to evaluate our 104 operating reactors' ability to protect against natural disasters, to evaluate the response to station blackouts, severe accidents and spent fuel accident progression, look at radiological consequence analysis, and also look at severe accident management issues regarding equipment.

I expect that, coming out of this, we'll have the development of some recommendations for generic communications, either to make sure that the industry has a broad understanding of the events and the issues, as best we understand them. But also, as I mentioned earlier, that we would evaluate whether or not some regulatory action, perhaps in the framework of an order, would be required, in order to require the licensees to take some actions that

they have not already done. I expect that this 90 day effort will include a Quick

Look 30 day report to the Commission, and of course we stand ready to brief the Commission as you desire.

In order to accomplish this Quick Look report, I think we will have limited stakeholder involvement in this activity, and that it will be done independent of industry efforts that might be ongoing. The idea is to just get a quick snapshot of the regulatory response and the condition of the U.S. fleet based on whatever information we have available. You know, I recognize that we have limited information now. More and more information will become available to us as we go along. But we wanted to do at least this Quick Look report, beginning very soon. And of course, consistent with the Commission's practices, the results of this report will be made public.

On the longer term, we'll be developing lessons learned that are somewhat dependent on when we begin to get a better understanding of the events and the results of the earthquake and tsunami in Japan. So, to some degree, it's difficult to precisely state when the start date for this longer-term review will begin. The review may include the involvement of other federal agencies, but it will certainly include interaction with those other federal agencies, because there's, obviously, the issue of emergency preparedness is a prime example of where we would interact with FEMA to have an effective review. And we would identify the lessons learned that need to be incorporated into any ongoing, long term agency action.

We'll evaluate all the technical and policy issues to identify additional research, or generic communications, changes to our reactor oversight program, potential new rulemakings, adjustments to the regulatory framework

that should be conducted by the NRC. As I said, we'll evaluate inter-agency

issues, and also look for applicability to non-operating reactor facilities. I expect this longer-term report to have substantial stakeholder involvement, and the outcomes are likely to be along the lines of generic letters, bulletins, and potential rulemakings. So, in conclusion, I want to make it clear that we continue to make our domestic responsibilities of licensing and oversight of the U.S. licensees our top priority. There is an immediate short term and long term evaluations that are beginning, and that they will be influenced by our understanding of the events in Japan. With that, that concludes my presentation. I'm ready to answer any questions.

CHAIRMAN JACZKO: Well, thank you, Bill, for that very thorough presentation. We have a proposal in front of the Commission now to consider the options for the short term and the long term reviews, so we'll take a look at that and provide response in fairly short order. I would, again, just want to reiterate my thanks to the work that you and your team have done over the last several days, to deal with this situation, and the -- emphasize the importance of a systematic and methodical review, so that we do make sure that we approach these issues, and really get the facts, and make sure that we don't move in a direction that is based on early information, which often tends to be confusing, and sometimes conflicting. So I appreciate the work that you've done to this point. And I don't have any specific questions, at this time, but I would turn to Commissioner Svinicki to begin with some questions and comments.

COMMISSIONER SVINICKI: Thank you, Mr. Chairman, and thank you, Bill. I second the Chairman's comments about the tremendous efforts that you and all of the NRC staff members have made in supporting the agency's

reaction to this event. There is a lot that we don't yet know, and so that becomes

a context, really, for the types of questions that we're able to ask about this event today. Very generally, I would ask you, in the staff's expert assessment, this morning, do you believe that the events occurring at Fukushima have stabilized, or is it reasonable to expect that events there will continue to be dynamic in the days and weeks to come?

MR. BORCHARDT: In my view, the fact that off-site power is close to being available for use of plant equipment is, perhaps, the first optimistic sign that we've had, that things could be turning around. We believe that the spent fuel pools on Units Three and Four, which had been two components that were of significant safety concern, that the situation there is stabilizing, that the containment in three, all three Units One, Two, and Three appear to be functional, and that there's water being injected into the reactor vessels in Units One, Two, and Three.

So I would say optimistically, things appear to be on the verge of stabilizing. This has been a very challenging event for us to understand the exact situation, because, as was alluded to, the information is sometimes conflicting, it's certainly not at the level that any engineer would like to have in order to do a thorough analysis, so we've spent a lot of the time trying to piece together our best understanding. But that would be my personal assessment of the situation on site now.

COMMISSIONER SVINICKI: Is it fair to say from that, then, that, based on what we understand now of the needs that most urgently need to be addressed there at the site, that those are being addressed, and that they have the status that you just described to me? Those are, of course, the items of

highest interest. But it sounds also like, in the days and weeks to come, we will

certainly discover other conditions and things at the site, of perhaps a lower level of priority that we just don't know about right now.

MR. BORCHARDT: Yes. The radiation releases and the dose rates that we've seen on site, I think, were primarily influenced by the condition of the Units Three and Four spent fuel pools. And the water inventory questions of whether or not there was some fuel that was uncovered in the spent fuel pool was of significant concern. TEPCO, the licensee, and the Government of Japan have been making a concerted effort to address those issues. So that we're aware of.

I don't believe we have anywhere near a clear understanding of what the plant conditions are like within the reactor buildings. So, what kinds of electrical cabling has been damaged, what kinds of pumps and valves remain operable, is a significant unknown right now.

COMMISSIONER SVINICKI: Okay, thank you. You gave a very high level chronology of the events that occurred, as we know them. And it really ends up being a narrative of three events that are related to each other. First, of course, being the earthquake, the seismic event. Second, the tsunami, or, as we might have it in the United States, a flood surge, or some other flooding event, followed by the loss of power.

In terms of what we know now, and given that there are these three events in succession, do you think that our regulatory focus right now, for the review we're doing, is where it needs to be?

MR. BORCHARDT: Yes, I'm quite confident. We've looked at all of the information that we're getting from Japan. We've looked at the design basis

for the U.S. reactors. We continue with the inspection program, and we have a

high degree of confidence that the 104 currently operating reactors, there's an adequate basis to assure adequate protection.

COMMISSIONER SVINICKI: Thank you. There's been some discussion of what we call Generic Safety Issue 199. And Generic Safety Issues, that's a program that we have at NRC for the continual evaluation of various safety-relevant issues. Could you talk a little bit about the ongoing nature, this is, Generic Safety Issue 199, was ongoing prior to the event in Japan. Could you talk about what was occurring there, and how the events in Japan may alter how we approach that generic safety issue, going forward?

MR. BORCHARDT: Occasionally, I think it's every five years or so, the USGS does a review of information which impacts the U.S. Government's understanding of seismic frequencies and issues associated with seismic. Recently they put out a report that talked about the seismic information for the East, the Central and Eastern United States. That information has been given to the industry. There's now both industry and NRC evaluation of that information to see if this new information, and in some places it's an increase in the frequency, expected frequency of a seismic event, would cause us to have to change the seismic design basis for the plants.

We did a, as we do every time we get any kind of new information, seismic or otherwise, we do a quick look to make sure that we don't believe there's any immediate information or any immediate need to take any regulatory action. If there was, we would certainly do that through the immediate imposition of new operating guidelines, or new systems, or potentially, even, requirement to shut the reactor down, until the issue was addressed.

In this case, we did that review. We found no reason to take any immediate regulatory action. And so this is an ongoing review. I don't believe that what we've learned from Japan would cause a different type of analysis. It certainly puts a broader, brighter spotlight on the work we're doing, and that follow-up. But I'm confident that the approach we've been on is the right approach.

COMMISSIONER SVINICKI: You described our role in the interagency response, and NRC-specific actions. Are we cognizant of, and working to understand and make sure that our efforts do not conflict with, any industry-toindustry systems that is going on? I'm not aware of Tokyo Electric Power reaching out to the U.S. nuclear industry, or nuclear utilities, since this is a technology that we have in the United States. Do we maintain a cognizance of that so that we can make sure that all efforts are coordinated?

MR. BORCHARDT: We are aware that the industry-to-industry interaction has been ongoing at one level. Of course, there's many vendors and companies in the United States that have had ongoing business relationships with TEPCO, and the other generating companies in Japan. So at the working level, it has been going on ever since the event, and prior to the event.

At a higher, coordinated industry-level, I would say we are still in the formulative stages of that interaction. We have had some discussions with the industry, U.S. industry, it's still evolving. So we're cognizant of what's going on, and trying to help, in a U.S. government role, facilitate the contacts, if you will, between the U.S. and the Japanese companies, in any way that we can. Because we think it would certainly be a potential benefit to TEPCO.

COMMISSIONER SVINICKI: Thank you. And my last question to you is that, you mentioned our ability to issue very rapidly various types of generic communications to the industry, and in your prepared remarks you talked about the fact that we had already issued, I believe last week, an information notice. Could you describe generally, in that notice, what are we alerting the
U.S. reactors to?

MR. BORCHARDT: Well, the main purpose, from my perspective, and I might ask NRR to supplement my answer if I'm not quite complete, was to have a regulatory follow-up on the activities that we understand the industry has taken on their own to verify that the plant procedures and equipment for severe accidents, for the types of things I discussed that came out of the 9/11 event: that all of those pieces of equipment, temporary hoses, fittings, procedures, that all those things are, in fact, still in place, that the operators are cognizant of them, that they've been trained for whatever reason, to make sure that they haven't fallen into disuse because they haven't been used.

So it was really a regulatory verification that the industry's initiatives on this front have, in fact, been taken, and that we will be following up on the results of those assessments, and doing our own sampling check, as we always do.

COMMISSIONER SVINICKI: Okay, and so those were the items, based on what we know now, that we identified as being of the highest interest, at least in the immediate term, okay?

MR. BORCHARDT: Yes. COMMISSIONER SVINICKI: Thank you. Thank you, Mr.

Chairman.

CHAIRMAN JACZKO: Did you have any other questions? Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. Bill, you mentioned that the -- well, first of all, we know that there is a number of Mark I BWRs in the United States, which is the same design as those in Fukushima. But you also said that in the recent past we hardened the venting valves of the containment. Have the Japanese done this?

MR. BORCHARDT: That, we're not clear on. I'm not sure; I can't really answer that question.

COMMISSIONER APOSTOLAKIS: I guess the question is, if they had done it, would that have affected the accident? And in what way?

MR. BORCHARDT: Well, it would not have affected the loss of off-site power, which is, right, the initiator. The hydrogen explosion aspect, though, possibly, is where the hardened vent would happen. There's two vent paths off of the U.S. Mark I containments. The preferred vent path takes suction, if you will, or has a release path from the airspace above a pool of water that's in the basement, it's in the torus of the Mark I containment, and that would allow for the steam that went into the torus to be scrubbed of fission products, so you would have a release; it would relieve the pressure, which is the main objective of the vent, is, you want to maintain the containment integrity. And it's preferable to vent it on purpose to get the pressure so that you don't have a catastrophic failure of the containment.

And so that release path is exterior to the plant. So it's at least my belief that you wouldn't have the hydrogen accumulation in the upper levels of

the reactor building, which we believe is the cause of the explosions. Now, the

spent fuel pools on these designs are also on that same level, on the upper level of the reactor building. So it's, the hardened vent wouldn't do anything to help hydrogen that came from the spent fuel pool

COMMISSIONER APOSTOLAKIS: I see, okay. Now you also mentioned that we have extra equipment for beyond-design basis accidents that were installed, so-called B.5.b that were installed after the September 11 attacks. Did the Japanese have any of those?

MR. BORCHARDT: Again, I'm not sure. I -- really, we're trying to get information, but I am not personally aware of the situation in Japan.

COMMISSIONER APOSTOLAKIS: Okay. Thank you. Some people are asking why did the Germans shut down their plants, or some plants, after the accident, and we did not? Are we less prudent than the Germans?

MR. BORCHARDT: No, I am not aware of the basis for the German decision to do that. I'm 100 percent confident in the review that we've done, and we continue to do every single day, that we have a sufficient basis to believe, to conclude that the U.S. plants continue to operate safely. So I -- we've asked ourselves the question every single day: Should we take a regulatory action based upon the latest information? And, because of the kinds of things that I outlined in my presentation, we have not reached the conclusion.

COMMISSIONER APOSTOLAKIS: Thank you. Now, of course, the seismic risk is at the forefront of the news. And we hear that -- well, first of all, our press releases emphasize that the seismic design is based on the horizontal ground acceleration at the plant. But, of course, most people think in terms of the Richter scale. And also we

hear that the earthquake of magnitude 9

at Fukushima had not been anticipated.

Now, we say that in the United States, we design the plants by looking at the historical record, and then by, we add margins. Now I understand, or believe, that the strongest earthquakes in the United States have occurred east of the Rocky Mountains in the 1800s, and the magnitude was between 7 and 7.7 on the Richter scale, something like that. So immediately you get the question, then, yeah, okay, you design against those, but look at Japan: What if you had an earthquake of magnitude 9? How does one answer that question? I mean, you can always ask, what if an earthquake of 9 and a half occurred. I mean, is there a rational way of addressing that?

MR. BORCHARDT: Well, my explanation is one that I know you understand this, but we look at faults around the U.S., we have that information. We look at the historical record, look at what the maximum earthquake has been, and then, as with everything we do, we add margins. But we also look at the specific location in relation to the fault, and consider the kinds of soil and rock formations that are between the fault location and the site, and do an analysis to see what is the ground motion that would actually be seen at this site. And we design for an earthquake of a certain size, or a, you know, I'm falling into the trap of saying "an earthquake of a certain size", of a ground motion of a certain magnitude.

But then, having said that, all of these other things: severe accident management guidelines, the B.5.b procedures, we have programs in place, equipment in place, that says, even if we were wrong, and the plants suffered this kind of serious event, we have, in fact, the activities, the equipment, ready, and practiced to respond to protect public health and safety. So I don't know if I should throw a seismic lifeline here, if you

wanted to get into any more detail on

seismic issues.

CHAIRMAN JACZKO: And just say your name.

ANNIE KAMMERER: Thank you. My name is Dr. Annie Kammerer, I'm in the Office of Research. I think I'd like to make a couple of points. The first point is related to the ground motion in Japan. Recently, starting in 2006, the Japanese regulatory agency performed a study in which they looked at increased hazard, perception of hazard at the plants. And recently themselves did a reevaluation of the impact that potential increased hazard at the facilities, and actually were in the middle of this when this event occurred. As a result, a number of modifications were made to the plants.

At this point, it's not clear exactly what modifications the Fukushima plant had already had implemented. However, the ground motions for which the plant was reevaluated, is about .62G; the original design basis was about .37G. Based on the preliminary information that we have, .62G is in the range of the ground motions that were actually experienced by the plant, although they came from a different earthquake than was anticipated. The ground motions that, for which the plant was assessed, was a 7.1, very close to the plant. That's what produced the ground motions of 6.2.

So, one thing that we believe is that the ground motions at the plant, even though it was a different event, were not out of the range that they had already considered. It's less clear with regard to the tsunami. Currently, the Japanese Society of Civil Engineers is finalizing guidance, probabilistic tsunami hazard assessment guidance for Japan. And it was anticipated that the

Japanese regulator would do a similar study for a tsunami hazard assessment at

the plants once that was completed. Unfortunately, because the guidance has not yet completed, it's not believed that they initiated that work.

So just to clarify, that even though this particular event was larger on the subduction zone than was anticipated, it probably didn't greatly exceed the ground motions. The one exception to that may be in the long period range. Because if you have a larger amount farther away, you get more long period content than would be anticipated from a 7.1 close in. The second question, or the second point is in regard to a seismic hazard in the United States. As was mentioned, we are undertaking a program, Generic Issue 199, which is looking at the potential impact to assess risk, given a perceived increase in the ground motion hazard in the Central and Eastern U.S., which was initiated by the new USGS seismic hazard mapping work that was done. And it's important to note that when the modern analysis techniques that are used are probabilistic techniques, those are the basis of the maps, and they account for basically all sources and the potential for all the different magnitudes that are capable of those sources, up to and including maximum magnitude events which, in many cases, exceed that which we have seen in the historic record. It was mentioned that the largest, the most widely-felt earthquakes in the U.S. were the 1811-1812 New Madrid events, which we currently believe were about a magnitude 7. And yet, we do look at, particularly in portions of the crust of a potential for exceeding that. Of course, we also account for the likelihood that that event occurs. And that also accounts for background seismicity, which is common in the east, which is seismicity which cannot be attributed to a specific fault.

In fact, it's important to note that seismicity in the Central and

Eastern U.S. tends to be in what we call seismic zones, which are not directly

attributable to a fault. And we account for all of the hazard in the seismic zones. One of the questions which has come up repeatedly is, how many plants are near faults? Or, how many plants are in moderate or high seismicity regions? And that's a very challenging question to answer, because these seismic zones are not well-defined boundaries. The faults that were the causative faults in the 1811 and 1812 earthquakes have never been identified, in part because they're under a very deep -- the very deep sediments in the Mississippi region. And so we have to account for the uncertainty in the location, we have to account for the uncertainty involved in the maximum magnitudes. And all of that is incorporated in the hazard analyses that we undertake.

The Generic Issue Program is using the most state-of-the-art types of analyses, which do look at earthquakes, and include earthquakes beyond the design basis. So, in that way, we directly account for those potential sources and those potential earthquakes, which are not under our current licensing basis. And we're currently assessing the risk from the possible beyond-design basis events.

CHAIRMAN JACZKO: Well, thank you for that, Annie. Commissioner Apostolakis, did you have additional comments or questions?

COMMISSIONER APOSTOLAKIS: Yeah, I'd like to make one comment and then ask my last question. Annie mentioned several times, probabilities, even after we do the probabilistic analysis, we still have Defense in Depth in mind, which is the current way of looking at things. So it's not just, what is the most likely event that we anticipate, we always ask that question that Mr. Borchardt mentioned: what if we are wrong? And we take additional measures.

So I think that's very important, for people to understand it. Because, you know, probabilities, sometimes, are easy to attack.

One last question, thank you Annie. As you mentioned, the damage in Fukushima was not really caused by the earthquake; it was the tsunami that came afterwards. So the question now is: when we license our plants here, are we considering this one-two punch? Are we considering an earthquake followed by a tsunami, as appropriate? Or a major fire, or a flood, because tanks holding water fail? Because this secondary event seems to be, now, very important, and we have to account for it. So how are we approaching this issue in the United States?

MR. BORCHARDT: Well, the design basis includes many different analyses. I would just say one thing about the earthquake in Japan. We don't know what the impacts of the earthquake are inside of the reactor buildings, specifically, that's where most of the equipment of interest to us would be located. It may have survived perfectly well, and stayed perfectly functional, or there may be damage that we just don't know about. So we need to see what the inspection results are, once they have access to the plant.

But our reviews for the U.S. include, it's always very site-specific. So, you know, for earthquakes, if they are in a very soft soil environment, there's not a very challenging review that's required, or analysis that's required on earthquakes. But it might be that you need a storm surge for a hurricane, or a storm surge for a tsunami. But there are multiple -- you don't take every possible current event and pile them all together into one event. So it's done more on an event by event basis, so I don't know if --

COMMISSIONER APOSTOLAKIS: [inaudible] or something else?

CHAIRMAN JACZKO: Well, I think that, and Eric, maybe you could just answer the question. I think it's, more generally, how do we – do we consider separate design basis events -- do we consider design basis events separately, or do we consider all design basis events simultaneously on a plant?

MR. LEEDS: Eric Leeds, Director of the Office of Nuclear Reactor Regulation. As Bill mentioned, we take into account whatever natural phenomena could occur at a particular site, whether it's a hurricane, a tsunami, an earthquake, a tornado, what have you. And we have them analyzed site-specifically. Now, I'm not exactly sure if I understand the question directly. Are you asking, a seismic event followed by a tsunami? Well, I know that we analyzed for a tsunami, we analyzed for the maximum storm surge, as Mr. Borchardt mentioned, and also what kind of a run-out would happen. Typically, tsunamis are triggered by an earthquake. So, one or the other, we would analyze for that. And we've done that for our plants on the coast.

COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman.

CHAIRMAN JACZKO: And I would just echo, I think, Bill's comments. We are at a very early stage now, too, and detailed information, it's probably going to be some time until we have it. And so exactly the impacts of the tsunami and/or the earthquake and what their effects on the plant were will probably still take some time to understand. Commissioner Magwood?

COMMISSIONER MAGWOOD: Thank you. Good morning, Bill.

MR. BORCHARDT: Good morning.

COMMISSIONER MAGWOOD: Did you get some sleep this

weekend.

MR. BORCHARDT: Not much.

COMMISSIONER MAGWOOD: Not much? I'm sorry. You'll get there at some point. There's been a lot of discussion in the media about -- that compares what's happening in Japan to Three Mile Island. And I, as I look at this, and again, we're so early in this, I tend not to think as much about Three Mile Island as I do 9/11. And one reason I think about that is because it seems to me that there are, certainly, a lot of lessons learned, a lot of technical details we'll have to sort out over time. But I wondered, also, whether, as in the case of 9/11, is there a major conceptual "Ah-ha!" that's sitting out there in front of us? And I want to make sure we don't miss that forest while we're looking at all these trees.

And in the case of 9/11, it wasn't just simply, you know, that we need to do a better job protecting, you know, airplane cockpits, and lots of other security upgrades. It was a conceptual "Ah-ha!" that the threat is a lot different than we thought it was. Do you, as you look at this at this early stage, do you see a bigger message out there that we should be thinking about?

MR. BORCHARDT: I don't see a significant weakness now, but that's why we need to do this Quick Look review. And my personal view is that what we need to do is take some very experienced people that are both within the staff, and maybe take some even recently retired people that have expertise in the broad areas of design review and licensing, and let them just focus on the question of, is there something here that causes us to question these, the way we've applied Defense in Depth, and being risk-informed, and the various barriers of radiation release protection, and those kinds of things, and evaluate whether or not there's something different that needs to be done.

It hasn't actually occurred to me, if anything, it's given me a bit of a confidence, if you will, that all of those redundancies, and all of our processes, are paying off. I mean, it was maybe in the view of some stakeholders overly conservative, the way we've approached it, but I think we're seeing the value and the benefit of that approach that we've used for the last 35 years.

COMMISSIONER MAGWOOD: I appreciate that, and I agree with it. Let me give you some, just sort of, thoughts about where I think there might be some larger issues to think about. And that is, in looking at, as we've described them, again, we don't know all the details yet. But we do have the sense that the plant seemed to survive the earthquake. And we do have the sense that the tsunami's disabling of the backup power systems led to the situation that followed. But even beyond that, there's the fact that there was so much difficulty in bringing resources to the plant to recover from that situation.

When you look at our plants, we certainly have done things in B.5.b and other things to upgrade our ability to recover from site blackout; and we're going to be looking at those issues. But if you lose a lot of infrastructure, if you lose the ability to get to a site, if you lose hundreds of miles of transmission line, if you lose the ability to have rail transport, to move equipment around, that's something I don't know that there's been a lot of thought about.

And I wonder if you could reflect on that for a moment, because when I look at this event, I see a significant struggle over -- especially over the early part of this, to get the right resources to the plant to be able to recover from this accident. And even today,

we still are struggling to hook up the AC power to Units One and Two, as you've described.

When you think about this, and again

we'll look at this in great detail as we go forward, do we even have the regulatory

scope to cover all the ground that needs to be covered, to assure that the infrastructure's in place to be able to recover from an accident like this?

MR. BORCHARDT: I think there's a couple levels that maybe I'd like to touch on in response to that question. The first is, and I have no idea what the situation is in Japan regarding their regulations and what they have in place, so I'm not implying whether they had it or didn't have these kind of things. But in the United States, I mentioned the station blackout rule, which is a rule that requires an analysis of what would happen at a plant and its coping strategy for dealing with a complete loss of all AC power. So that assumes that the diesels don't -- that you'd lose the transmission lines and the diesels don't start, and then they have to do an evaluation and it's a coping study, how they would be able to restore the plant. That has resulted in various approaches at different sites. Some have a gas turbine that is on the site that could be very quickly hooked up into the grid -- not into the grid, into the plant. There's others that have non-safety-related diesel generators. There are plants that have diesel fire-pumps so that there is a backup to a backup to a backup way to inject water into the core and into the spent fuel pool. So there's a regulatory construct that's required and mandated that type of activity.

From a U.S. Government perspective, coming out of 9/11, we had the Department of Homeland Security, which is positioned to orchestrate the entire federal response to an event of magnitude that, you know, you might be suggesting, that would happen so that the full resources of the U.S. Government would be able to use different resources to get temporary equipment to a site in order to provide electrical power, temporary diesel generators, that kind of thing.

And then the backstop for all of that, and I'm now leaving the kind of

federal regulatory requirement perspective, is that the U.S. industry, I think, is unique in the world, but also within industry in this country in that while on the one hand they're competitors, on the other hand they share operating experience, they have programs that they all contribute to, and they have an inventory of spare parts and equipment that can be very quickly brought to bear in responding to this kind of an event. So this is outside the regulatory purview, I want to make clear, but that is yet another backstop that would help a site that had a similar kind of problem respond to it in a quick and effective manner.

COMMISSIONER MAGWOOD: I appreciate that, and let me also echo your somewhat positive words about the industry. I think in this particular instance, actually, I think the industry in the U.S. and internationally has responded very, very well to this. I particularly congratulate INPO's efforts, through WANO, to work with international partners and also to take positive action here in the United States. I think they've done a good job, and I think NEI and others have worked together and I think individual companies have done a lot, so I congratulate the industry for reacting that way.

Let me move on to a little bit different subject. We've talked a little bit about hydrogen already this morning, and the measures we have to deal with hydrogen. Is it your understanding that all the hydrogen that led to the explosions came from the spent fuel?

MR. BORCHARDT: I wouldn't want to hazard a guess. It was certainly a likely source; whether it was all of it or not, I couldn't guess.

COMMISIONER MAGWOOD: You've talked about this a little bit, but I want to give you a chance to sort of give a little bit more of a holistic response to this.

What measures are in place to prevent hydrogen from collecting and exploding in U.S. plants? Mark I's or others.

MR. BORCHARDT: Well, the hardened vent, of course -- the U.S. design approach is to protect the containment. It's to ensure the integrity of the containment, and if you can do that, even if you have fuel damage, then you can prevent the uncontrolled release of radioactive materials into the environment. And so this is -- Three Mile Island, for example, had core damage, a significant amount of core damage, yet the radiological releases were very limited from Three Mile Island, so there was negligible health effect from that accident. So hardened vents will allow the primary containment to stay intact and that's probably the single most important thing.

The other thing to maintain the containment is, for this particular design of containment, we've required, I think since the late 80s again, inerting of the containment. So it's filled with nitrogen, so if you don't have oxygen in the containment, even if you did have hydrogen in there, you're not going to have an explosion or a fire. So I think those are the two, probably the biggest ones, and I don't know if there's anything that we need to add.

COMMISSIONER MAGWOOD: Appreciate that. One more question, Mr. Chairman. Also to just give you a chance to clarify. I know there's a lot of chatter in the press over the weekend about the impact of 50-mile evacuation zones around U.S. nuclear plants. Could you sort of give the NRC's position on what the emergency planning requirements are, and why we're confident in what we have today? Can you please elaborate?

MR. BORCHARDT: We have, as part of the emergency preparedness construct in this country, a 10-mile emergency planning zone that

completely encircles every reactor plant in the country. That, in coordination with FEMA, who has an offsite emergency-preparedness role throughout the country, is routinely practiced. We have models that would do an analysis of what the release paths are; we take into account the meteorological conditions; and the NRC, I should be clear, the NRC does not make the recommendations regarding evacuation or any other protective action guidelines; that's the responsibility of the state government, so it would be the governor that would ultimately be making that decision. But we're in a position to provide independent assessment and advice to the governor in those kinds of circumstances.

The situation that led to the 50-mile guidance in Japan was based upon what we understood and still believe had existed, that there was degraded conditions in two spent fuel pools at the site, and in all likelihood some core damage in three of the reactor units. Based on the situation as we understood it at that time, we thought it was prudent to provide the recommendation to the ambassador to evacuate out to 50 miles in Japan. It was not based on the existing radiological conditions, but what at that time was a possibility. And so we thought it was the prudent, conservative suggestion. If those conditions existed in the United States, we would have made the exact same recommendation. But the idea that there might be some misunderstanding, that because we have a 10-mile EPZ, that would be the extent for what we would consider and what our emergency planning recommendations would be limited to, is not true at all. We would have done the exact same kind of analysis and gone through the same thought process to consider extending evacuation or whatever protective measures we thought were appropriate.

COMMISSIONER MAGWOOD: Thank you. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. Bill, again I thank you for your leadership in this effort, and for the hard work and professionalism of your teams. It was helpful in your opening statement, where you talked about the history of the NRC post-Three Mile Island, post-9/11, as to what steps or additional measures were considered or in fact implemented; and so I think that history is very relevant to the near-term and longer-term efforts. Certainly there's Hurricanes: Andrew, Katrina that this country has faced. Also provide data points for various steps taken, whether they be specific to the nuclear field or external to the nuclear field. Does any of the experience from your career at NRC, do you have any significant lessons learned from the process, not the substantive technical details, but the process that was employed following these other significant events that would help inform the task force execution of its mission?

MR. BORCHARDT: Well I think it's very important that the task force keep the broad perspective of the regulatory framework that exists within the NRC, and the legal framework that exists within the United States. Because there is a temptation to, I think, try to pile in every good idea that exists into something that becomes unmanageable, and in the ultimate could actually end up being counterproductive to safety.

There was a degree of that, in my opinion -- this is only speaking my personal opinion -- after Three Mile Island, because when I started with the

agency in 1983, we were still in the midst of following up the actions from the

Three Mile Island action plan. It was a NUREG-0737, and anybody who started in the NRC has that number burned into their brain because we spent enormous amounts of resources following up on those activities. Some of those fixes that I alluded to were absolutely instrumental in improving the safety in this country. Some were, I believe, if we had carried them all out, might have actually been counterproductive in a way, just not contributed to safety. They might have been a good idea in somebody's mind. So there needs to be -- after you go through the brainstorming and identification of all possible things to change, I think there needs to be a good evaluation, thorough evaluation, of what's the right thing to do, and in what kind of sequence and in what kind of timing.

COMMISSIONER OSTENDORFF: Okay. Well I'll just make two comments on that. One thing, just for information, you may be aware of this, but about a year ago the National Academies undertook a significant study for about 9 or 10 federal agencies, to look at disaster resilience in this country, specifically from the context of inter-agency coordination, roles and responsibilities. But nothing there was, or to my knowledge is currently nuclear-specific. The extent of interagency coordination for various types of events in this country is a prime subject of that study. There may be some value in looking at that.

And refer to Commissioner Magwood's questioning on the transportation logistics support, which I completely agree have been issues here so far, in this particular response. One might take note of the Department of Defense's efforts, since the loss of the U.S.S. Thresher back in 1963. There's been a very operationally ready deep-submergence rescue vehicle, DSRV, on standby close to airplanes on the East and

West Coast of the United States to

provide a response. So other agencies, the point is, have gone through similar

analogues in looking at how they might deal with particular responses, and that's something just to note.

Also, kind of maybe staying a little bit on the big-picture historical nature of some of the prior NRC responses to these big events, it also strikes me that perhaps the audience or the recipients of these reports will be representing a broader cross-section than typical Commission meetings. Certainly we have nuclear industry, we have many of the same stakeholders from issue to issue, but in my personal opinion is that this is one where how we communicate to John

Q. Public, the person that doesn't have a stake in the industry or is not part of one of the normal stakeholder groups, but also deserves and needs to receive a reply that they can understand, is really essential. Is there anything from your prior experience here at the NRC, either 9/11 or Davis-Besse or the 2003 blackout, that you think would be in your initial thoughts on how we communicate so that people in the American public understand what the results are of these near-term and longer-term efforts?

MR. BORCHARDT: Well, and again this is just my view, my assessment, I think that especially in the long-term review that we do, we need to build in a meaningful engagement with all the stakeholders. They have an enormous capability to understand the most technical issues. Sometimes we think that capability doesn't exist, but it's in fact not true. And we have had enormously valuable input from a wide range of stakeholders. This is a little bit off of event response, but when we established the reactor oversight program -- we did it 10 or 12 years ago -- we used just that kind of an approach. We brought in all kinds of different stakeholders from all different perspectives, and it

was a very impressive end result that had everyone's buy-in. People who came

from pro-nuclear, anti-nuclear, and they all agreed that this was a good approach to perform regulatory oversight. I think the same kind of mindset is important to enter into this long-term activity, and start at the beginning. Where we get into trouble as a regulator is when we have our mind made up, or even if we don't have our mind made up, there's a perception we already have our mind made up, and then we begin the engagement. So I think we need to do it right from the very beginning, have it be a very open and transparent process.

COMMISSIONER OSTENDORFF: Thank you. I know as the Chairman indicated in his comments earlier, there's much we don't know. There'll be significant periods of time before we have full granularity, a lot of the details of what happened at Fukushima, but there's one area, if you'll just bear with me, that I do want to ask you about. I've been here not quite one year; I've spent very little time looking at spent fuel pools. When I go visit a plant, I'll go see the pool, and on some of these visits -- I've probably seen four, I think, in the last year. But I certainly don't have much background at all in the spent fuel pools. And recognizing that's been the focus of a lot of the concerns over the last 10 days, and that perhaps compared to our discussions, we have an emergency core cooling systems and GSI-191 and other issues that we don't spend a lot of time, as a Commission, really talking about that.

Is there any initial area of U.S. reactor plant spent-fuel configuration or operation that comes to your mind as warranting particular exploration in this task force?

MR. BORCHARDT: Well clearly, it's a very simple problem. All you have to do is keep water in the pool. The pool is an open vessel, and the

only objective is to keep water in it. Even if, in a bad situation, it were to heat up

and you had boiling in there, as long as you kept the fuel covered with water, you're going to prevent the high radiological release. So I think what the task force needs to do is to go down the specifics of what happened in Japan, and then evaluate that to make sure that in fact, these things that we put into place after 9/11, for example, really would work under that scenario.

We have thought about things like making sure that the equipment you're going to use wouldn't be damaged in the event that caused the first problem, so you can't have everything staged exactly where it's ready to be used. There has to be some staging areas. But for example, on the tsunami or a flooding issue you wouldn't want the equipment now stored outside, right? Because it would be swept away. So you know, it's yet another "what if" to really help us explore and probe what the various scenarios are being, and make sure we have the highest probability of success. I think that's really the box we need people to be thinking in.

COMMISSIONER OSTENDORFF: That's very helpful. Thank you. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: I'd ask at this point if there are any other questions that any of my colleagues have.

MR. BORCHARDT: Well at this point, can I just --

CHAIRMAN JACZKO: Sure, Bill.

MR. BORCHARDT: Can I just -- I'm not going to ask you a question.

[laughter]

CHAIRMAN JACZKO: I'm not sure I'd have answered it for you if

you did.

[laughter]

MR. BORCHARDT: I do want to just take a moment and thank all the NRC staff that have responded to this event, all the people that are in the Ops Center -- we're doing our best to have a rotation of people in and out of there, but they're working very hard, very long hours. They're still doing their real job too, like I said, that's got to be our first priority. But I want to just make special note of the team of people that volunteered to go to Japan on no notice, that have been there working incredibly long, hard hours, working in a way that there is no operating procedure to operate. They have had to develop it on the go. So Chuck Casto happens to be the team leader, but there are many people that have worked very hard. We have sent another person over to help Chuck in that team-leader role, and there is the next wave of NRC employees that have volunteered, and they'll be leaving beginning, I think it's tomorrow. And then the last element of that group on Thursday. So I just want to make special note of their commitment and professionalism. Thank you.

CHAIRMAN JACZKO: Well thanks for that, Bill. I appreciate that, and your work as well, I think, as I've noted. At this point I would just offer that we do have a proposal that's been circulated that I think captures at a high level some of these ideas for a path forward, and I would certainly encourage that we move on that as promptly as possible. But I thought I'd offer at this time an opportunity, if anybody wants to make comments on that or any of the other issues that we have in front of us. Commissioner Ostendorff?

COMMISSIONER OSTENDORFF: I just thank you for convening this

meeting today. I think it's been very helpful, and I know that we're all ready to move forward to take the actions we need to take.

CHAIRMAN JACZKO: Okay. Well again I want to thank everybody for their efforts so far, and again, I just want to reiterate as we close that as many people on this side of the table have indicated, we have had, many of us, very close and personal relationships with colleagues in Japan, and our hearts go out to them as they continue to deal with this very difficult event, and we will continue to work to provide our colleagues and counterparts in Japan with assistance as they need it, to deal with the situation. And I think as Commissioner Magwood indicated, this is likely the first of many discussions we will have on this topic, and I look forward to continuing the discussion and continuing our focus on our important health and safety mission. With that, we are adjourned. Thank you.

[Whereupon the proceedings were concluded]

Haskell, Russell

From: Thomas, Eric
Sent: Thursday, March 24, 2011 3:43 PM
To: NRR_DIRS_IOEB Distribution
Subject: Fukushima Pix

These are from the Ops Center.

G:\ADRO\DIRS\IOEB\Subject Folders\International Activities\Japanese Earthquake\2011 Earthquake and Tsunami\Pictures

Eric Thomas
U.S. Nuclear Regulatory Commission
NRR/DIRS/IOEB
OWFN-7E24
eric.thomas@nrc.gov
301-415-6772 (office)
(b)(6) (mobile)

0000/142

Haskell, Russell

From: Bernardo, Robert
Sent: Thursday, March 24, 2011 2:45 PM
To: King, Mark
Cc: Haskell, Russell
Subject: FW: RIS to licensees on radioisotopes that are detected from the Japanese event

FYI, more information on the RIS. By the way, now Limerick and TMI are reporting having found I-131 in rainwater samples. I've passed along results to Richard Conatser.

Bob Bernardo
Reactor Systems Engineer
US Nuclear Regulatory Commission
NRR/DIRS/IOEB
Mail Stop: O-7C02A
301-415-2621
Robert.Bernardo@nrc.gov

From: Shoop, Undine
Sent: Thursday, March 24, 2011 2:16 PM
To: Dickson, Billy; Henderson, Pamela; Werner, Greg; Bonser, Brian
Cc: Burnell, Scott; Giitter, Joseph; Brown, Frederick; Westreich, Barry; Nelson, Robert
Subject: RIS to licensees on radioisotopes that are detected from the Japanese event

All,

NRR has been directed to develop a RIS to the licensees regarding radioisotopes detected by the REMP program that are from the Japanese event. This RIS will request that the licensees voluntarily submit their results to the Operations Center at hoo.hov@nrc.gov . In parallel, NEI will also be requesting the information from the licensees. This is the information we are requesting:

When reporting information, the following should be provided as applicable:

1. Sample date(s) and time
2. Approximate locations(s)
3. Environmental sample medium (eg, air particulate filter, air charcoal, milk, sediment, vegetation, rainwater, groundwater, etc…)
4. Type of analysis (eg, gross beta, iodine-131, tritium, etc…)
5. Analysis result(s) (in units typically used in the environmental monitoring program and include applicable detection sensitivity)

If you have any questions, please let me know.

Undine Shoop
Chief, Health Physics and Human Performance Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation
301-415-2063

From: Gibson, Kathy
To: Case, Michael
Subject: Re: Background 3rd team to Japan .docx
Date: Thursday, March 24, 2011 4:06:35 PM

Mike Salay is willing to go. He is attending a meeting at Halden that overlaps so he would have to leave there and go straight to Japan.

From: Case, Michael
To: Gibson, Kathy
Sent: Thu Mar 24 13:49:37 2011
Subject: RE: Background 3rd team to Japan .docx

No problem. Still the nomination phase. Not yet selected (but I bet he has a pretty good chance.)

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 1:48 PM
To: Case, Michael
Subject: RE: Background 3rd team to Japan .docx

Yes he does, but let me give him a heads up first and I will get back to you as soon as I contact him.

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

From: Case, Michael
Sent: Thursday, March 24, 2011 1:35 PM
To: Gibson, Kathy
Subject: FW: Background 3rd team to Japan .docx

Hi Kathy. The only tidbit of information I need in order to forward Mike's name is his passport status (i.e. does he have one).

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:44 AM
To: Case, Michael
Subject: FW: Background 3rd team to Japan .docx

FYI. You can volunteer Salay.

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 11:40 AM
To: Sheron, Brian

0000/143

Cc: Uhle, Jennifer
Subject: RE: Background 3rd team to Japan .docx

Well let me first say that at the beginning of all this, I asked all my staff to provide information on whether they were willing to work in the IRC and shift preferences, whether they were willing to go to Japan, and what their area(s) of expertise are. I have a spreadsheet with this information.

(b)(6)

As an alternative, Mike Salay has severe accident expertise, is willing to go to Japan, and is politically savvy. He is also serving on the RST and is involved with a number of OECD agreements on fission product behavior and MELCOR modeling. I can also get more detail from Richard if you need it.

For both Jason and Mike, their normal work is already being impacted by their service in the IRC, so a couple weeks in Japan would not be a major additional impact.

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6)

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:29 AM
To: Gibson, Kathy
Cc: Uhle, Jennifer
Subject: FW: Background 3rd team to Japan .docx

See below.

1.) I know Charlie can't go because of health issues.
2.) Is Jason available to go as a SA expert?
3.) What would be the impact if we lost Jason for 2 weeks?

From: Salus, Amy
Sent: Thursday, March 24, 2011 11:14 AM
To: Ruland, William; Holahan, Gary; Miller, Charles; Haney, Catherine; Sheron, Brian; Ordaz, Vonna; Dean, Bill; McCree, Victor; Satorius, Mark; Howell, Art; Collins, Elmo
Subject: Background 3rd team to Japan .docx

Rihm, Roger

EDO

From: Rihm, Roger
Sent: Thursday, March 24, 2011 4:36 PM
To: Wittick, Brian
Cc: Brock, Kathryn
Subject: Re: Looking for some assistance

Thx. I'lltake a look. Kathryn is going to try to put something together for me.

Sent from an NRC BlackBerry
Roger S. Rihm
(b)(6)

From: Wittick, Brian
To: Rihm, Roger; Merzke, Daniel; Sanfilippo, Nathan; Andersen, James
Sent: Thu Mar 24 14:38:01 2011
Subject: RE: Looking for some assistance

Roger,

There is detail I think you are looking for in the status section of every report from the OPS center. See attached for most recent. Let me know if you need more.

Brian Wittick
Executive Technical Assistant for Reactors
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-2496 (w) (b)(6) (c)

From: Rihm, Roger
Sent: Thursday, March 24, 2011 11:52 AM
To: Merzke, Daniel; Sanfilippo, Nathan; Andersen, James; Wittick, Brian
Subject: Looking for some assistance

Was wondering if one of you is sufficiently in the know to be able to help me on this, or if you can suggest someone who is.

Bill is testifying before Senate Energy Comm on Tuesday. I drafted his "statement for the record" and am now beginning to craft from that a shorter oral statement that he will make. In the longer statement I don't include a chronology/status of Japanese events as that statement is now out of my hands (gone to OCA/Commission) and it would be out of date by Tuesday. However, Bill does want to be able to give a brief overview and current status in his oral presentation. Attached is what Bill said when he testified before the Commission. It only gets me thru the first few days. I would like to add probably not more than an additional paragraph or two (at the most) that provides a couple of key highlights since then and then gives a current status. I would need this text on MONDAY.

Are any of you following events sufficiently closely to provide this or can you suggest who might be able to?

Thanks a lot!

0000/144

From: McIntyre, David
To: Cool, Donald; Holahan, Vincent; Jones, Cynthia; Milligan, Patricia; DeCicco, Joseph
Subject: FW: Aloha, All! and request for professional-type info if you have it!
Date: Thursday, March 24, 2011 4:43:00 PM
Attachments: Effects of radiation graphic.gif

Calling all HPs: The following is a request from an old friend of mine who works at Hickham AFB in Honolulu. He's looking for some nifty graphic on the biological effects of radiation they can send to military doctors helping out in Japan. I pointed him to our website, which of course is rather lacking in nifty graphics. Any suggestions?

And just to show that NRC is not the only (or even the most) dysfunctional agency out there, my friend is the base .... historian. But if we can help, I'd like to.

Thanks,
Dave

> **From:** Steve (b)(6) [mailto: (b)(6)]
> **Sent:** Thursday, March 24, 2011 2:40 AM
> **To:** Dave McIntyre
> **Cc:** McIntyre, David
> **Subject:** Aloha, All! and request for professional-type info if you have it!
>
> Aloha Dave & Lily,
>
> Hope all is well with you all. As you might expect, I am incredibly busy out here with the USAF and other services support to Japan. One thing I thought I might ask you is if the NRC has a simple, "cartoon" level graphic that shows the different levels of radiation, from benign to lethal, with associated risks. I've attached one graphic that is being widely publicized (LA Times, etc.), which happens to cite, among other sources, NRC.
>
> Would you happen to have another simple graphic. We're looking for one we can send via our medical officers and commanders and such to help people understand the relative safety/danger.
>
> Please send me anything you think will help at my work address,
> (b)(6)
>
> With the severe lack of government funding I might not make it out to the East Coast any time soon for government business and to visit you guys. (b)(6) I still are thinking about a trip on our own for "vacation" – something I'll desperately need after a couple months of running 24/7 ops here in my little history shop.
>
> Take care,
>
> Steve

0000/145

Radiation effects

Occasional exposure to very low levels of radiation is harmless. However, chronic exposure, such as from frequent X-rays or CT scans, raises the risk of cancer. Short-term exposure to high levels of radiation, such as from a nuclear explosion, can cause immediate radiation sickness.

Radiation sickness symptoms

A dose of about one-half to 1 sievert* will cause radiation sickness.

Immediate:

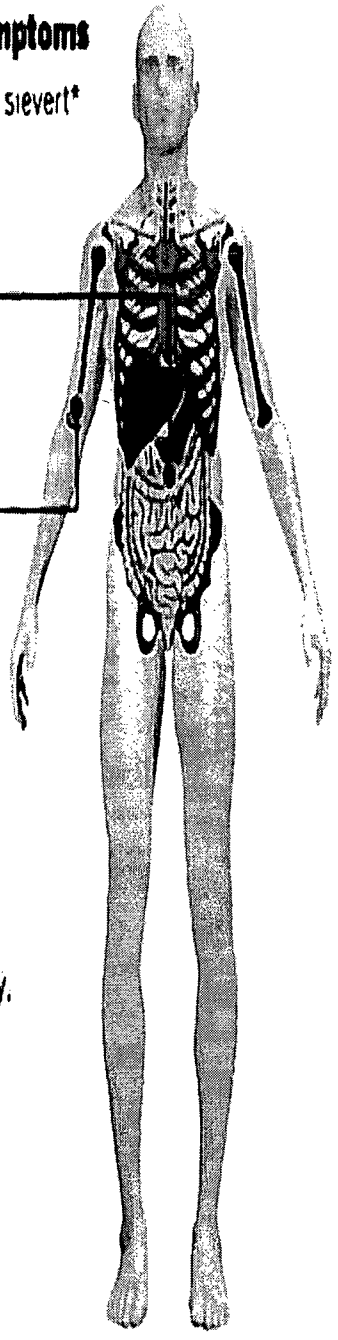
Vomiting and diarrhea occur because of damage in cells that maintain intestinal integrity.

Reduction in number of blood cells results from damage to blood-producing cells in the bone marrow. Bleeding occurs because damaged marrow cells cannot produce platelets, which coagulate blood.

Delayed:

Cataracts, temporary sterility, cancer, genetic damage.

Anemia and risk of infection caused by loss of protective white blood cells.



Exposure to radiation

Type of exposure	Microsieverts
Smoking a pack a day for one year	80,000
Maximum whole-body exposure considered safe for a radiation worker per year	50,000
Average radiation dose to evacuees from areas highly contaminated by the 1986 Chernobyl disaster**	33,000
CT scan (abdomen)	8,000
One year's worth of exposure to natural radiation from soil, cosmic rays and other sources	3,000
One mammogram	700
One dental X-ray	40-150
One chest X-ray	100
Average dose to people living at the time within 10 miles of the 1979 Three Mile Island accident	80
Airplane flight from New York to Los Angeles	30-40
Full-body airport X-ray scanner	0.0148

*A sievert is a unit that measures the biological effects of radiation; 1 sievert = 1,000,000 microsieverts

**Of 600,000 of the most-affected people, cancer risk went up by a few percentage points, eventually representing perhaps 4,000 fatal cancers tied to radiation exposure.

Sources: Transportation Security Administration, Centers for Disease Control and Prevention, Food and Drug Administration, Nuclear Regulatory Commission, International Atomic Energy Agency, Wright State University. Graphics reporting by AMINA KHAN AND SHARI ROAN

MARK HAFER Los Angeles Times

From: Jones, Cynthia
To: McIntyre, David
Subject: Out of Office: Aloha, All! and request for professional-type info if you have it!
Date: Thursday, March 24, 2011 4:43:23 PM

Between Mar 22-27, I will be part of a team operating in the NRC Ops Center responding to the event in Japan. Because of the shift work involved, I may not be able to respond to your email as quickly as I normally would.

Should you have an emergent issue, please call my blackberry at (b)(6) and leave a message. I will get back to you as soon as I can.

Thank you !
Cyndi

Cynthia G. Jones, Ph.D.
U.S. INES National Officer & Advisory Committee Member
Sr. Technical Advisor for Nuclear Security
Office of Nuclear Security & Incident Reponse
U.S. Nuclear Regulatory Commission
W: 301-415-0298
C: (b)(6)

0000/146

Phalen, Martin

From: Haeg, Lucas
Sent: Thursday, March 24, 2011 7:51 AM
To: Riemer, Kenneth; Phalen, Martin; Cassidy, John; Mitchell, Mark; Dickson, Billy
Cc: Murray, Robert
Subject: RE: Duane Arnold environmental sampling
Attachments: 01632746.pdf

All,

The licensee is planning on putting together an increased frequency monitoring plan over the next month or so. Also, per the attached CR, they'll perform an evaluation to verify the I-131 source.

The licensee's REMP reporting requirement for I-131 is >20 pico ci/liter averaged over a quarter. I don't know if this is a rolling average or not, but depending on the measurements over the coming months, they could reach the REMP threshold (all information from RPM – Bob Porter).

Although Bob has been updating us, please keep us updated as you receive information from Bob so we can maintain consistent knowledge on these items. We'll do the same for you guys. Thanks.

Lucas Haeg
US Nuclear Regulatory Commission
Senior Resident Inspector - Duane Arnold
lucas.haeg@nrc.gov
319-851-5111 (office)
(b)(6) (cell)

From: Riemer, Kenneth
Sent: Thursday, March 24, 2011 7:27 AM
To: Phalen, Martin; Cassidy, John; Mitchell, Mark; Dickson, Billy
Cc: Haeg, Lucas; Murray, Robert
Subject: Duane Arnold environmental sampling

Gents/Mark,

I think you already have the following info, but if not; Duane Arnold has manually sampled rainwater for effects from the Japanese events. Prior to this they have not detected I-131 in their routine samples (REMP history). They have now detected I-131 at 25 pico ci/liter. For comparison, they detected 3000 pico ci/liter in 1986 after Chernobyl.

If we hear updated sample results, we'll send them to you.

Ken

0000147

Selection Criteria:

A/R Number: 01632746 A/R Type : A/R Status: Aff Fac :
Due Date : - Orig Date : - Reason : - Priority :
Event Date: - Event Code: Keyword: - Severity :
Oscvry Dt : - Reference : Report To :
Subj/Desc : Subj/Desc Text: Fac/Unit/System:
Orig ID : Orig Fac/Group : Orig Dept : - Orig Org :
Owed to ID: Owed to Fac/Grp: Owed to Dept: - Owed to Dspln:
Cmpl Notes: Y No Assignments : Print Code : ALL
Attribute : Attr Value :

A/R No.: 01632746 A/R Type: CR Status : NOTIFY 03/23/2011
Orig Date: 03/23/2011 Oscv Date: 03/23/2011 Event Date: Due Date :
Report To: Aff Fac : PDA

IODINE 131 IDENTIFIED IN RAINWATER COLLECTED ON SITE
Iodine-131 was identified in a sample of rainwater collected from a puddle on the North-East side of the Owner-Controlled area.
The sample was collected in response to a report from the Kewaunee nuclear power station of Iodine-131 identified in rainwater at that site.
The probable source of the contamination is from the damaged reactors at the Fukushima Daiichi station in Northern Japan.
The sample was collected from a location to the North East of our plant because this was the upwind direction during the rain events of the past day.
The concentration of I-131 was 2.45E-8 uCi/ml.
This concentration can also be expressed as 24.5 pCi/liter.
For the REMP, the ODAM requires a minimum detection threshold of 15 pCi/liter.
From ODAM OLCO 6.3.2 B, if Iodine-131 attributable to the DAEC is identified in the environment with a concentration > 20 pCi/liter, we are required to submit a report to the NRC within 30 days. Because the sample was collected in the upwind direction, plant effect is not indicated. The 30 day reporting report is not required.
Unit:
Equipment Name:
N/A
Equipment Location:
N/A

A/R Notes Type: I -- IMMEDIATE ACTIONS
ODAM requirements were reviewed SMFOVSO 03/23/2011
RPM and PCM were notified. SMFOVSO 03/23/2011
A/R Notes Type: M -- MANAGEMENT NOTIFIED
Formal Reporting is not required. SMFOVSO 03/23/2011
A/R Notes Type: O -- OPERABILITY NOTES
Stated concern does not adversely affect installed safety THCOVR9 03/23/2011

From: McIntyre, David
To: Hayden, Elizabeth
Subject: RE: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11
Date: Thursday, March 24, 2011 5:28:00 PM

Yes, I'll be here.

> **From:** Hayden, Elizabeth
> **Sent:** Thursday, March 24, 2011 1:49 PM
> **To:** McIntyre, David
> **Subject:** FW: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11
>
> Are you here tomorrow?
>
> *Beth Hayden*
> *Senior Advisor*
> *Office of Public Affairs*
> *U.S. Nuclear Regulatory Commission*
> *--- Protecting People and the Environment*
> *301-415-8202*
> *elizabeth.hayden@nrc.gov*
>
> **From:** Brenner, Eliot
> **Sent:** Thursday, March 24, 2011 1:45 PM
> **To:** McIntyre, David
> **Cc:** Burnell, Scott; Hayden, Elizabeth
> **Subject:** RE: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11
>
> Beth will take this one.
>
> **From:** McIntyre, David
> **Sent:** Thursday, March 24, 2011 1:42 PM
> **To:** Brenner, Eliot
> **Cc:** Burnell, Scott
> **Subject:** FW: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11
>
> We're all flat-out, including you, as you sent this to my personal email. I'll do this if Scott is handing the UCS/Containment accident pressure charges.
>
> > **From:** (b)(6) [mailto: (b)(6)] **On Behalf Of** Dave McIntyre
> > **Sent:** Thursday, March 24, 2011 1:36 PM
> > **To:** McIntyre, David
> > **Subject:** Fwd: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11

0000/148

---------- Forwarded message ----------
From: **Brenner, Eliot** <Eliot.Brenner@nrc.gov>
Date: Thu, Mar 24, 2011 at 1:32 PM
Subject: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11
To: Dave McIntyre (b)(6)

David: Is this something you can take on?

-----Original Message-----
From: Burnell, Scott
Sent: Thursday, March 24, 2011 1:28 PM
To: Harrington, Holly; Brenner, Eliot; Hayden, Elizabeth
Subject: FW: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11
Importance: High

We need a press release, I'm the best option, but I'm flat-out with existing stuff. Perhaps Dave?

-----Original Message-----
From: Mensah, Tanya
Sent: Thursday, March 24, 2011 1:23 PM
To: McIntosh, Angela; Doolittle, Elizabeth; Sullivan, Frederick; Tabatabai, Omid
Cc: Hawes, Cathy; Rosenberg, Stacey; Hilton, Nick; Hill, Leslie; Donnell, Tremaine; QTE Resource; Burnell, Scott; OGCMailCenter Resource; Banic, Merrilee; Russell, Andrea
Subject: URGENT ACTION: NRR Issuance of a RIS Related to The Japan Earthquake By 3/25/11

Good afternoon:

NRR/DPR was assigned to develop a RIS today (it is due tomorrow). The only information that I have at the moment is the intent of the RIS (see below). Dave Beaulieu and Tom Alexion have the lead to develop the RIS. Tom Alexion plans to send a draft RIS to you all (or to a POC that you designate) either late today, or early tomorrow, with concurrence requested by 2:30 pm tomorrow (Friday) afternoon, if possible.

NRR may need a POC from your Office to concur on the RIS. The NRR technical leads have not yet identified the addressees that would be impacted and are still working on the RIS. Thus, if you believe your licensees would be impacted by issuance of this RIS (based upon the intent provided below), please advise us so that you can be added on concurrence. If you are not sure and need to see the draft prior to making a decision, that is fine. Please be sure to confirm with Tom who the POC is for your Office.

As soon as Tom has a draft available, he will forward it to you or the POC

that you designate. In the meantime, please advise your senior management, as NRR will need expedited support (if the RIS is applicable to your licensees) to facilitate parallel concurrence.

I am also copying the contacts that normally review and concur on a RIS from OGC, OE, PMDA, OIS, and technical editor. OPA is copied for awareness only.

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to request that addressees with on-going environmental monitoring programs voluntary report to the NRC confirmed anomalous environmental radioactivity measurements likely caused by radioactive material released by the Fukushima Daiichi Nuclear Power Station in Japan following the March 11, 2011, Tohoku-Taiheiyou-Oki earthquake. This magnitude 9.0 earthquake and the subsequent tsunami caused significant damage to at least four of the six units of the Fukushima Daiichi Nuclear Power Station as the result of a sustained loss of both the offsite and on-site power systems. The information collected will be used to enhance the Federal and state monitoring programs.

Thanks again for your time and support,

Tanya Mensah, Generic Communications Program Manager
301-415-3610

Landau, Mindy

From: Landau, Mindy
Sent: Thursday, March 24, 2011 5:51 PM
To: Muessle, Mary
Subject: Re: Upcoming Congressional Hearings

NSIR already prepared the testimony - we just received it and haven't reviewed it yet. Mike is testifying.

Sent from my NRC Blackberry
Mindy Landau
(b)(6)
Mindy.Landau@nrc.gov

From: Muessle, Mary
To: Landau, Mindy
Sent: Thu Mar 24 17:33:41 2011
Subject: FW: Upcoming Congressional Hearings

Just talked with Amy, and I wanted to confirm that your group is doing the testimony for #3 the EP hearing. I had thought NSIR was doing it. Also, did you hear who was doing the briefing? We had at one point talked about Wiggins, but I heard it might be Weber.

Mary Muessle
Assistant for Operations - Acting
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-1703 office
301-415-2700 fax

From: Muessle, Mary
Sent: Tuesday, March 22, 2011 1:02 PM
To: Borchardt, Bill; Weber, Michael; Virgilio, Martin; Ash, Darren
Cc: Landau, Mindy; Ellmers, Glenn; Rihm, Roger; Andersen, James
Subject: Upcoming Congressional Hearings

1. Friday, March 25th -Member Briefing – in Illinois – Cynthia Pedersen approved by Chairman to provide testimony
Senators Durbin and Kirk
Topics
-Safety of Illinois Plants
-Potential Risks
-How to mitigate risks
-Differences between Japan and US licensing process
-Safety Priorities in US License Renewals

Panel includes NRC, Chip Pardee (Exelon) and member of Illinois Emergency Mgmt Office

Action – Glenn is working up draft testimony for Region III

2.Tuesday, March 29th- Member Briefing
Senate Energy Members

0000\149

Panel includes NRC (Bill?), Pete Lyons (DOE), UCS, and GE
Action – Becky is offering Bill as 1st choice to testify. Roger is pulling together Bill's remarks at the Commission meeting to transfer them into written and oral testimony. We will update with info from the "GoTo" Book.

3. Wednesday, March 30th- House Transportation and Infrastructure
Subcommittee meeting around Emergency Preparedness around Nuclear Power Plants
Jeff Denham Chair (Freshman from CA), Ranking Democrat Eleanor Holmes Norton
2 panels – 1st Director of FEMA, Deputy Chief of the Forest Service, NRC rep (Marty or Mike suggested may need to be Jim Wiggins if they are still on watch)
2nd panel – rep of CA local EP, rep of CA state EP, Red Cross

Action – This will be tasked to NSIR, I already called to give them a heads up. We need testimony on NRC's EP program, and an explanation of the 50-mile evacuation decision in Japan. Becky mentioned the House side are mostly freshman and they might be a little testy.

4. Wednesday, March 30th Senate Appropriations – Energy and Water Development Subcommittee
Likely topic Japan and maybe some budget
Two panels to include: NRC Chairman, Pete Lyons, UCS

5, Thursday, March 31st -House Appropriations Committee on FY 2012 Budget
NRC Chairman

Action for 4 and 5–we are proposing to ask the Chairman's communication staff to handle because of overload on communications group. They just need to update his previous written budget testimony that was going to be given at the House hearing last week. Also, Jim Dyer would need to include any supplemental budget request for the Japan event.

6. April – TBD Senate Environment and Public Works
Where do we go from here? Feedback to OCA- would be better to do after the 30 day report.

Action – this will be focused on the task force report so we can hold off planning until that information is more stable.

Mary Muessle
Assistant for Operations - Acting
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-1703 office
301-415-2700 fax

Rihm, Roger

From: Rihm, Roger
Sent: Friday, March 25, 2011 7:54 AM
To: Powell, Amy
Subject: RE: Emergency preparedness testimony

Mindy asked me to forward to Mike Weber, which I've done. We're not sure where he is today, but I probably need to give him some time to weigh in....

-----Original Message-----
From: Powell, Amy
Sent: Friday, March 25, 2011 7:47 AM
To: Rihm, Roger
Subject: Re: Emergency preparedness testimony

Awesome - I'm en route as well.

Thanks
AP
Amy Powell
Associate Director
Office of Congressional Affairs
U. S. Nuclear Regulatory Commission
Phone: 301-415-1673

Sent from my Blackberry

----- Original Message -----
From: Rihm, Roger
To: Powell, Amy
Sent: Fri Mar 25 07:31:44 2011
Subject: Re: Emergency preparedness testimony

I have it and would like to quickly review when I get in. On my way.

Sent from an NRC BlackBerry
Roger S. Rihm
(b)(6)

----- Original Message -----
From: Powell, Amy
To: Rihm, Roger
Sent: Fri Mar 25 06:44:34 2011
Subject: Emergency preparedness testimony

Hi Roger -

Any ETA on when OCA will see the draft testimony on emergency preparedness (for the hearing Mike Weber is doing)? Just trying to plan the day... Thanks!

Amy Powell
Associate Director
Office of Congressional Affairs

0000/150

U. S. Nuclear Regulatory Commission
Phone: 301-415-1673

Sent from my Blackberry

Rihm, Roger

From: Rihm, Roger
Sent: Friday, March 25, 2011 8:40 AM
To: Landau, Mindy
Subject: RE: Time of Hearing

You saw Mike's email? It seems OCA never closed the loop with him re: testifying on Weds! I'll have Sandy put on his calendar. I guess I will ask Trish if she could accompany him if that is what he ultimately wants.

From: Landau, Mindy
Sent: Friday, March 25, 2011 8:33 AM
To: Cianci, Sandra; Rihm, Roger
Subject: Fw: Time of Hearing

Sent from my NRC Blackberry
Mindy Landau
(b)(6)
Mindy.Landau@nrc.gov

From: Schmidt, Rebecca
To: Landau, Mindy
Sent: Fri Mar 25 08:25:19 2011
Subject: Re: Time of Hearing

1000

From: Landau, Mindy
To: Schmidt, Rebecca
Sent: Fri Mar 25 07:56:58 2011
Subject: Time of Hearing

Becky – do you know the time of the House hearing on EP on March 30?

Mindy S. Landau
Deputy Assistant for Operations
Communication and Performance Improvement
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
301-415-8703
mindy.landau@nrc.gov

0000/151

From: Sydnor, Russell
To: Richards, Stuart
Cc: Coe, Doug; Coyne, Kevin; Case, Michael; West, Stephanie
Subject: Re: Volunteers needed - Ops Center RST Schedule 3/26-4/2 (input needed by noon today)
Date: Friday, March 25, 2011 9:42:36 AM

Jeanne Dion has expressed interest. Leroy Hardin has also offered his time to support the Ops ctr.

Sent from NRC Blackberry
Russell Sydnor
(b)(6)

From: Richards, Stuart
To: RES_DE
Cc: Coe, Doug; Coyne, Kevin; Gibson, Kathy; Case, Michael; West, Stephanie
Sent: Fri Mar 25 09:39:15 2011
Subject: Volunteers needed - Ops Center RST Schedule 3/26-4/2 (input needed by noon today)

The Ops Center is seeking volunteers for the Reactor Safety Team.

The watchbill is in this e-mail below, with the slots needing to be filled indicated.

If you want to volunteer, please check with your BC and let Stephanie West know by noon today.

Thanks
Stu

From: RST01 Hoc
Sent: Wednesday, March 23, 2011 12:05 PM
To: Alter, Peter; Morlang, Gary; Hasselberg, Rick; Berry, Rollie; Collins, Frank; Thomas, Eric; Schoenebeck, Greg; McGovern, Denise; Rini, Brett; Bukharin, Oleg; Sloan, Scott; Circle, Jeff; Esmaili, Hossein; Ward, Leonard; Laur, Steven; Salay, Michael; Fuller, Edward; Schaperow, Jason; Marksberry, Don; Gilmer, James; Miranda, Samuel; Arndt, Steven; Helton, Donald; Norton, Charles; Kolb, Timothy; Brown, Eva; Shea, James; Vick, Lawrence; Brown, Michael; Williams, Donna; Roggenbrodt, William; Thorp, John; Kugler, Andrew; Williams, Joseph; Padovan, Mark; Isom, James; Hart, Ken; Bloom, Steven; Jervey, Richard
Subject: FW: RST Schedule 3/26-4/2

All,

Please look at current watchbills from the OST. Ed Fuller has signed up for swing shifts for Accident Analyst on 3/29 and 4/5. Other than that, please reply to RST01 so we can start filling in the holes on the watchbill.

Thanks for all of your support.

Eric Thomas
RST Coordinator

From: OST02 HOC
Sent: Wednesday, March 23, 2011 8:44 AM
To: RST01 Hoc
Subject: RST Schedule 3/26-4/2

Reactor Safety Team			
RST Director			
Sat	26-Mar	7am - 3pm	Pat Hiland

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Sat	26-Mar	3pm-11pm	Bill Ruland
Sat-Sun	3/26-3/27	11pm - 7am	Mike Case
Sun	27-Mar	7am - 3pm	Pat Hiland
Sun	27-Mar	3pm-11pm	Fred Brown
Sun-Mon	3/27-3/28	11pm - 7am	Mike Case
Mon	28-Mar	7am - 3pm	Pat Hiland
Mon	28-Mar	3pm-11pm	Fred Brown
Mon-Tue	3/28-3/29	11pm - 7am	Mike Case
Tue	29-Mar	7am - 3pm	Jennifer Uhle
Tue	29-Mar	3pm-11pm	Fred Brown
Tue-Wed	3/29-3/30	11pm - 7am	Mike Case
Wed	30-Mar	7am - 3pm	Jennifer Uhle
Wed	30-Mar	3pm-11pm	Fred Brown
Wed-Thur	3/30-3/31	11pm - 7am	Dave Skeen
Thur	31-Mar	7am - 3pm	Jennifer Uhle
Thur	31-Mar	3pm-11pm	Bill Ruland
Thur-Fri	3/31-4/1	11pm - 7am	Dave Skeen
Fri	1-Apr	7am - 3pm	Jennifer Uhle
Fri	1-Apr	3pm-11pm	Bill Ruland
Fri-Sat	4/1-4/2	11pm-7am	Dave Skeen
RST Coordinator			
Fri-Sat	3/25-3/26	11pm-7am	Frank Collins
Sat	26-Mar	7am - 3pm	Eric Thomas
Sat	26-Mar	3pm-11pm	
Sat-Sun	3/26-3/27	11pm - 7am	
Sun	27-Mar	7am - 3pm	Peter Alter
Sun	27-Mar	3pm-11pm	
Sun-Mon	3/27-3/28	11pm - 7am	Frank Collins
Mon	28-Mar	7am - 3pm	Rick Hasselberg
Mon	28-Mar	3pm-11pm	
Mon-Tue	3/28-3/29	11pm - 7am	Mike Morlang
Tue	29-Mar	7am - 3pm	Peter Alter
Tue	29-Mar	3pm-11pm	Greg Schoenebeck
Tue-Wed	3/29-3/30	11pm - 7am	Mike Morlang
Wed	30-Mar	7am - 3pm	Rick Hasselberg
Wed	30-Mar	3pm-11pm	Greg Schoenebeck
Wed-Thur	3/30-3/31	11pm - 7am	Frank Collins
Thur	31-Mar	7am - 3pm	Peter Alter
Thur	31-Mar	3pm-11pm	Greg Schoenebeck
Thur-Fri	3/31-4/1	11pm - 7am	
Fri	1-Apr	7am - 3pm	Rick Hasselberg
Fri	1-Apr	3pm-11pm	
Fri-Sat	4/1-4/2	11pm-7am	Frank Collins
Severe Accident/PRA			
Sat	26-Mar	7am - 3pm	Steven Arndt

Sat	26-Mar	3pm-11pm	
Sat-Sun	3/26-3/27	11pm - 7am	
Sun	27-Mar	7am - 3pm	
Sun	27-Mar	3pm-11pm	
Sun-Mon	3/27-3/28	11pm - 7am	
Mon	28-Mar	7am - 3pm	Jeff Circle
Mon	28-Mar	3pm-11pm	
Mon-Tue	3/28-3/29	11pm - 7am	
Tue	29-Mar	7am - 3pm	Hossein Esmaili
Tue	29-Mar	3pm-11pm	
Tue-Wed	3/29-3/30	11pm - 7am	
Wed	30-Mar	7am - 3pm	Jim Gilmer?
Wed	30-Mar	3pm-11pm	Hossein Esmaili
Wed-Thur	3/30-3/31	11pm - 7am	
Thur	31-Mar	7am - 3pm	
Thur	31-Mar	3pm-11pm	Hossein Esmaili
Thur-Fri	3/31-4/1	11pm - 7am	Ray Skarda
Fri	1-Apr	7am - 3pm	
Fri	1-Apr	3pm-11pm	
Fri-Sat	4/1-4/2	11pm-7am	Ray Skarda
BWR Expertise			
Sat	26-Mar	7am - 3pm	Mike Brown
Sat	26-Mar	3pm-11pm	Chuck Norton
Sat-Sun	3/26-3/27	11pm - 7am	
Sun	27-Mar	7am - 3pm	Mike Brown
Sun	27-Mar	3pm-11pm	Chuck Norton
Sun-Mon	3/27-3/28	11pm - 7am	
Mon	28-Mar	7am - 3pm	Mike Brown
Mon	28-Mar	3pm-11pm	Chuck Norton
Mon-Tue	3/28-3/29	11pm - 7am	
Tue	29-Mar	7am - 3pm	Mike Brown
Tue	29-Mar	3pm-11pm	Chuck Norton
Tue-Wed	3/29-3/30	11pm - 7am	
Wed	30-Mar	7am - 3pm	Mike Brown
Wed	30-Mar	3pm-11pm	Chuck Norton
Wed-Thur	3/30-3/31	11pm - 7am	
Thur	31-Mar	7am - 3pm	Mike Brown
Thur	31-Mar	3pm-11pm	Chuck Norton
Thur-Fri	3/31-4/1	11pm - 7am	
Fri	1-Apr	7am - 3pm	Mike Brown
Fri	1-Apr	3pm-11pm	Chuck Norton
Fri-Sat	4/1-4/2	11pm-7am	
RST Comm/ERDS Operator			
Sat	26-Mar	7am - 3pm	Donna Williams
Sat	26-Mar	3pm-11pm	

Sat-Sun	3/26-3/27	11pm - 7am	
Sun	27-Mar	7am - 3pm	Mark Padovan
Sun	27-Mar	3pm-11pm	Bill Roggenbrodt
Sun-Mon	3/27-3/28	11pm - 7am	
Mon	28-Mar	7am - 3pm	Mark Padovan
Mon	28-Mar	3pm-11pm	Bill Roggenbrodt
Mon-Tue	3/28-3/29	11pm - 7am	Andy Kugler
Tue	29-Mar	7am - 3pm	Mark Padovan
Tue	29-Mar	3pm-11pm	Bill Roggenbrodt
Tue-Wed	3/29-3/30	11pm - 7am	Andy Kugler
Wed	30-Mar	7am - 3pm	Mark Padovan
Wed	30-Mar	3pm-11pm	Bill Roggenbrodt
Wed-Thur	3/30-3/31	11pm - 7am	
Thur	31-Mar	7am - 3pm	Andy Kugler
Thur	31-Mar	3pm-11pm	Bill Roggenbrodt
Thur-Fri	3/31-4/1	11pm - 7am	
Fri	1-Apr	7am - 3pm	Mark Padovan
Fri	1-Apr	3pm-11pm	
Fri-Sat	4/1-4/2	11pm-7am	
RST Support (Seismology Q&A)			
Sat	26-Mar	7am - 3pm	
Sat	26-Mar	3pm-11pm	
Sat-Sun	3/26-3/27	11pm - 7am	
Sun	27-Mar	7am - 3pm	
Sun	27-Mar	3pm-11pm	
Sun-Mon	3/27-3/28	11pm - 7am	
Mon	28-Mar	7am - 3pm	
Mon	28-Mar	3pm-11pm	
Mon-Tue	3/28-3/29	11pm - 7am	
Tue	29-Mar	7am - 3pm	
Tue	29-Mar	3pm-11pm	
Tue-Wed	3/29-3/30	11pm - 7am	
Wed	30-Mar	7am - 3pm	
Wed	30-Mar	3pm-11pm	
Wed-Thur	3/30-3/31	11pm - 7am	
Thur	31-Mar	7am - 3pm	
Thur	31-Mar	3pm-11pm	
Thur-Fri	3/31-4/1	11pm - 7am	
Fri	1-Apr	7am - 3pm	
Fri	1-Apr	3pm-11pm	
Fri-Sat	4/1-4/2	11pm-7am	
RST Support (Structural)			
Sat	26-Mar	7am - 3pm	Off (On Call)
Sat	26-Mar	3pm-11pm	Off (On Call)
Sat-Sun	3/26-3/27	11pm - 7am	Off (On Call)

Sun	27-Mar	7am - 3pm	Off (On Call)
Sun	27-Mar	3pm-11pm	Off (On Call)
Sun-Mon	3/27-3/28	11pm - 7am	Off (On Call)
Mon	28-Mar	7am - 3pm	Off (On Call)
Mon	28-Mar	3pm-11pm	Off (On Call)
Mon-Tues	3/28-3/29	11pm - 7am	Off (On Call)
Tues	29-Mar	7am - 3pm	Off (On Call)
Tues	29-Mar	3pm-11pm	Off (On Call)
Tues-Wed	3/29-3/30	11pm - 7am	Off (On Call)
Wed	30-Mar	7am - 3pm	Off (On Call)
Wed	30-Mar	3pm-11pm	Off (On Call)
Wed-Thur	3/30-3/31	11pm - 7am	Off (On Call)
Thur	31-Mar	7am - 3pm	Off (On Call)
Thur	31-Mar	3pm-11pm	Off (On Call)
Thur-Fri	3/31-4/1	11pm - 7am	Off (On Call)
Fri	1-Apr	7am - 3pm	Off (On Call)
Fri	1-Apr	3pm-11pm	Off (On Call)
Fri-Sat	4/1-4/2	11pm-7am	Off (On Call)

Mitchell, Mark

From: Mitchell, Mark
Sent: Friday, March 25, 2011 10.03 AM
To: Phalen, Martin
Subject: FW: DAEC Puddle Sample Results

1st set of results. The initial background should be environmental LLD as they don't have any iodine identified since 1986, Chernobyl.

From: Porter, Robert L [mailto:Robert.L.Porter@fpl.com]
Sent: Thursday, March 24, 2011 5:35 PM
To: Costanzo, Christopher; Curtland, Dean; Pry, Glen; Wheaton, Ray; Catron, Steve; Harter, Roy; Murray, Robert; Haeg, Lucas; Mitchell, Mark; Hansen, Paul; O'Hare, Kevin
Subject: FW: Puddle Sample Results

Fyi below from our sampling of offsite water today.

Robert L Porter Jr
Manager of Radiation Protection and Chemistry
NextEra Energy - Duane Arnold
3277 DAEC Rd
Palo, IA 52324
319-851-7891 office
(b)(6) *blackberry*
cell
pager

From: Funk, Steve
Sent: Thursday, March 24, 2011 5:32 PM
To: Porter, Robert L
Cc: Gordon, Tom; Karrick, John
Subject: Puddle Sample Results

Location	Sample Type	Date/Time	pCi/liter	Remarks
Onsite - Between River and "D" Well	Precip/Puddle	3/23/2011 10:00	24.5 pCi/liter	Puddle 120 meters SW of REMP D-19
Hiawatha - Guthridge Park	Precip/Puddle	3/24/2011 07:50	<7.6 pCi/liter	Puddle water near REMP D-3 Sample collected from low spot in

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				grass.
Cedar Rapids - Prairie Creek Station	Precip/Puddle	3/24/2011 08:20	23.1 pCi/liter	Puddle water near REMP D-1
Center Point - New High School	Precip/Puddle	3/24/2011 08:50	23.8 pCi/liter	Puddle water near REMP D-6
Shellsburg - Grain Elevator	Precip/Puddle	3/24/2011 09:30	23.2 pCi/liter	Puddle water near REMP D-3

Mitchell, Mark

From: Porter, Robert L [Robert.L.Porter@fpl.com]
Sent: Friday, March 25, 2011 10:11 AM
To: Mitchell, Mark
Subject: RE: Puddle Sample Results

Thanks Mark. I will continue to update you as we get results.

Robert L Porter Jr
Manager of Radiation Protection and Chemistry
NextEra Energy · Duane Arnold
3277 DAEC Rd
Palo, IA 52324
319-851-7891 office
(b)(6) *Blackberry*
cell
pager

NEXTera ENERGY
DUANE ARNOLD

From: Mitchell, Mark [mailto:Mark.Mitchell@nrc.gov]
Sent: Friday, March 25, 2011 10:10 AM
To: Porter, Robert L
Subject: RE: Puddle Sample Results

Bob,

Thanks for the update on your additional sampling. If you can keep us informed of sample results, as you get them, that would be greatly appreciated.

As discussed, the NRC is not requiring this sampling or reporting, so you should feel free to administrate this activity as you deem appropriate for the best operation of your organization. However, this should be helpful in analyzing data for your REMP program and annual report.

Mark Mitchell
630-829-9855

0000/154

Mitchell, Mark

From: Mitchell, Mark
Sent: Friday, March 25, 2011 10:24 AM
To: Haeg, Lucas; Murray, Robert
Subject: FW: Puddle Sample Results

Luke and Rob,

I am getting this type of information and updates directly from the licensee. We (DRS/PST) are collating this information we get from the licensee into a table and recording it by plant. If you want to continue to get the information directly from the RPM that is fine. You won't need to feed it in to us individually. If you want to tell them to just forward to us because you want to focus on other things, that is ok or you can continue to get updates from them, either way. You can always call me or email me for the results trend. The results for each plant will be available to others here in the region including DRP, RA, etc. so they won't necessarily need to be updated. Let your BC and group know that they can get this through us in a condensed version.

Any questions, feel free to call,

Mark

From: Porter, Robert L [mailto:Robert.L.Porter@fpl.com]
Sent: Thursday, March 24, 2011 5:35 PM
To: Costanzo, Christopher; Curtland, Dean; Pry, Glen; Wheaton, Ray; Catron, Steve; Harter, Roy; Murray, Robert; Haeg, Lucas; Mitchell, Mark; Hansen, Paul; O'Hare, Kevin
Subject: FW: Puddle Sample Results

Fyi below from our sampling of offsite water today

Robert L Porter Jr
Manager of Radiation Protection and Chemistry
NextEra Energy - Duane Arnold
3277 DAEC Rd
Palo, IA 52324
319-851-7891 office
(b)(6) *blackberry*
cell
pager

NEXTera ENERGY DUANE ARNOLD

From: Funk, Steve
Sent: Thursday, March 24, 2011 5:32 PM
To: Porter, Robert L
Cc: Gordon, Tom; Karrick, John
Subject: Puddle Sample Results

Location	Sample Type	Date/Time	pCi/liter	Remarks

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Onsite - Between River and "D" Well	Precip/Puddle	3/23/2011 10:00	24.5 pCi/liter	Puddle 120 meters SW of REMP D-19
Hiawatha - Guthridge Park	Precip/Puddle	3/24/2011 07:50	<7.6 pCi/liter	Puddle water near REMP D-3 Sample collected from low spot in grass.
Cedar Rapids - Prairie Creek Station	Precip/Puddle	3/24/2011 08:20	23.1 pCi/liter	Puddle water near REMP D-1
Center Point - New High School	Precip/Puddle	3/24/2011 08:50	23.8 pCi/liter	Puddle water near REMP D-6
Shellsburg - Grain Elevator	Precip/Puddle	3/24/2011 09:30	23.2 pCi/liter	Puddle water near REMP D-3

From: Brenner, Eliot
To: Hayden, Elizabeth; Akstulewicz, Brenda; Chandrathil, Prema; McIntyre, David; Screnci, Diane; Harrington, Holly; Couret, Ivonne; Janbergs, Holly; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Burnell, Scott; Uselding, Lara; Shannon, Valerie; Dricks, Victor; Mitlyng, Viktoria
Subject: japanese nuke recovery plan
Date: Monday, April 18, 2011 8:58:48 AM

We should decline comment on it. It's Japan's plan and it's a Japanese accident. If we ultimately get pushed into a corner and our assessment of the plan for the embassy gets out in the public domain, I have a couple of tap-dancing lines to use.

Eliot

Eliot Brenner
Director, Office of Public Affairs
Nuclear Regulatory Commission
Rockville, Md.
O: 301-415-8200
C: (b)(6)

0000/156

From: Breskovic, Clarence
To: Breskovic, Clarence
Subject: Recent CRS Reports on Earthquakes, Japan, Fukushima....
Date: Friday, March 25, 2011 12:12:58 PM
Attachments: CRS Earthquakes.pdf
CRS Japan 2011 Experts.pdf
CRS Fukushima Crisis 1.pdf
CRS Tsunami Programs.pdf
CRS Earthquake DOD Response.pdf

Please see attached PDF files.

Earthquakes: Risk, Detection, Warning, and Research
U.S. Tsunami Programs: A Brief Overview
Japan 2011 Earthquake: U.S. Department of Defense (DOD) Response
Fukushima Nuclear Crisis
Japan 2011 Disaster: CRS Experts

Clarence Breskovic
International Policy Analyst
U.S. Nuclear Regulatory Commission
Office of International Programs
11555 Rockville Pike
Rockville, MD 20852, USA
Tel: 1-301-415-2364
Fax: 1-301-415-2395
Alternate Email: (b)(6)

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Congressional Research Service

Earthquakes: Risk, Detection, Warning, and Research

Peter Folger
Specialist in Energy and Natural Resources Policy

March 18, 2011

Congressional Research Service
7-5700
www.crs.gov
RL33861

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

The United States faces the possibility of large economic losses from earthquake-damaged buildings and infrastructure. The Federal Emergency Management Agency has estimated that earthquakes cost the United States, on average, over $5 billion per year. California, Oregon, and Washington account for nearly $4.1 billion (77%) of the U.S. total estimated average annualized loss. California alone accounts for most of the estimated annualized earthquake losses for the nation.

A single large earthquake, however, can cause far more damage than the average annual estimate. The 1994 Northridge (CA) earthquake caused as much as $26 billion (in 2005 dollars) in damage and was one of the costliest natural disasters to strike the United States. One study of the damage caused by a hypothetical magnitude 7.8 earthquake along the San Andreas Fault in southern California projected as many as 1,800 fatalities and more than $200 billion in economic losses. An issue for the 112th Congress is whether existing federally supported programs aimed at reducing U.S. vulnerability to earthquakes are an adequate response to the earthquake hazard.

Under the National Earthquake Hazards Reduction Program (NEHRP), four federal agencies have responsibility for long-term earthquake risk reduction: the U.S. Geological Survey (USGS), the National Science Foundation (NSF), the Federal Emergency Management Agency (FEMA), and the National Institute of Standards and Technology (NIST). They variously assess U.S. earthquake hazards, deliver notifications of seismic events, develop measures to reduce earthquake hazards, and conduct research to help reduce overall U.S. vulnerability to earthquakes. Congressional oversight of the NEHRP program might revisit how well the four agencies coordinate their activities to address the earthquake hazard. Better coordination was a concern that led to changes to the program in legislation enacted in 2004 (P.L. 108-360).

P.L. 108-360 authorized appropriations for NEHRP through FY2009. Total funding enacted from reauthorization through FY2009 was $613.2 million, approximately 68% of the total amount of $902.4 million authorized by P.L. 108-360. Congress appropriated $131.2 million for NEHRP in FY2010, similar to FY2009 funding levels. Also, the American Recovery and Reinvestment Act (ARRA; P.L. 111-5) provided some additional funding for earthquake activities under NEHRP. What effect funding at the levels enacted through FY2010 under NEHRP has had on the U.S. capability to detect earthquakes and minimize losses after an earthquake occurs is difficult to assess. The effectiveness of the NEHRP program is a perennial issue for Congress: it is inherently difficult to capture precisely, in terms of dollars saved or fatalities prevented, the effectiveness of mitigation measures taken before an earthquake occurs. A major earthquake in a populated urban area within the United States would cause damage, and a question becomes how much damage would be prevented by mitigation strategies underpinned by the NEHRP program.

Legislation was introduced during the 111th Congress (H.R. 3820) that would have made changes to the program and would have authorized appropriations totaling $906 million over five years for NEHRP. Ninety percent of the funding would have been designated for the USGS and NSF, and the remainder for FEMA and NIST. The bill passed the House but not the Senate. Similar legislation will likely be introduced in the 112th Congress.

Contents

Figures

Tables

Contacts

Introduction

Close to 75 million people in 39 states face some risk from earthquakes. Earthquake hazards are greatest in the western United States, particularly in California, but also in Alaska, Washington, Oregon, and Hawaii. Earthquake hazards are also prominent in the Rocky Mountain region and the New Madrid Seismic Zone (a portion of the central United States), as well as in portions of the eastern seaboard, particularly South Carolina. Given the potentially huge costs associated with a large, damaging earthquake in the United States, an ongoing issue for Congress is whether the federally supported earthquake programs are appropriate for the earthquake risk.

Under the National Earthquake Hazards Reduction Program (NEHRP), the federal government supports efforts to assess and monitor earthquake hazards and risk in the United States. Four federal agencies responsible for long-term earthquake risk reduction coordinate their activities under NEHRP: the U.S. Geological Survey (USGS), the National Science Foundation (NSF), the Federal Emergency Management Agency (FEMA), and the National Institute of Standards and Technology (NIST). Congress last made changes to NEHRP in 2004 (P.L. 108-360), and authorized appropriations through FY2009 for a total of $902.4 million over five years. A bill introduced in the 111th Congress, H.R. 3820 (Title I), would have made further changes to the program and authorized appropriations through FY2014, but it was not enacted.

This report discusses:

- NEHRP—the multi-agency federal program to reduce the nation's risk from earthquakes;
- earthquake hazards and risk in the United States;
- federal programs that support earthquake monitoring;
- the U.S. capability to detect earthquakes and issue notifications and warnings; and
- federally supported research to improve the fundamental scientific understanding of earthquakes with a goal of reducing U.S. vulnerability.

National Earthquake Hazards Reduction Program (NEHRP)

In 1977 Congress passed the Earthquake Hazards Reduction Act (P.L. 95-124) establishing NEHRP as a long-term earthquake risk reduction program for the United States. The program initially focused on research, led by USGS and NSF, toward understanding and ultimately predicting earthquakes. Earthquake prediction has proved intractable thus far, and the NEHRP program shifted its focus to minimizing losses from earthquakes after they occur. FEMA was created in 1979 and President Carter designated it as the lead agency for NEHRP. In 1980, Congress passed the Earthquake Hazards Reduction Act (P.L. 96-472), defining FEMA as the lead agency and authorizing additional funding for earthquake hazard preparedness and mitigation for FEMA and the National Bureau of Standards (now NIST).

A Shift in Program Emphasis to Hazard Reduction

NEHRP's original focus on research to predict earthquakes was changed in 1990, when Congress enacted P.L. 101-614. Congress decreased the emphasis on earthquake prediction, clarified the role of FEMA, clarified and expanded the program objectives, and required federal agencies to adopt seismic safety standards for new and existing federal buildings. In 2004, Congress enacted P.L. 108-360 and adjusted the program again by shifting primary responsibility for planning and coordinating NEHRP from FEMA to NIST. P.L. 108-360 also established a new interagency coordinating committee and a new advisory committee, both focused on earthquake hazards reduction.

The current program activities are focused on four broad areas:

- developing effective measures to reduce earthquake hazards;
- promoting the adoption of earthquake hazard reduction activities by federal, state, and local governments, national building standards and model building code organizations, engineers, architects, building owners, and others who play a role in planning and constructing buildings, bridges, structures, and critical infrastructure or "lifelines";[1]
- improving the basic understanding of earthquakes and their effects on people and infrastructure, through interdisciplinary research involving engineering, natural sciences, and social, economic, and decision sciences; and
- developing and maintaining the Advanced National Seismic System (ANSS), the George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES), and the Global Seismic Network (GSN).[2]

The House Science Committee report in the 108th Congress on H.R. 2608 (P.L. 108-360) noted that NEHRP has produced a wealth of useful information since 1977, but it also stated that the program's potential has been limited by the inability of the NEHRP agencies to coordinate their efforts.[3] The committee asserted that restructuring the program with NIST as the lead agency, directing funding towards appropriate priorities, and implementing it as a true interagency program would lead to improvement.

The 2004 law directed the Director of NIST to chair the Interagency Coordinating Committee. Other members of the committee include the directors of FEMA, USGS, NSF, the Office of Science and Technology Policy, and the Office of Management and Budget. The Interagency Coordinating Committee is charged with overseeing the planning, management, and coordination of the program. Primary responsibilities for the NEHRP agencies break down as follows (see also **Figure 1**):

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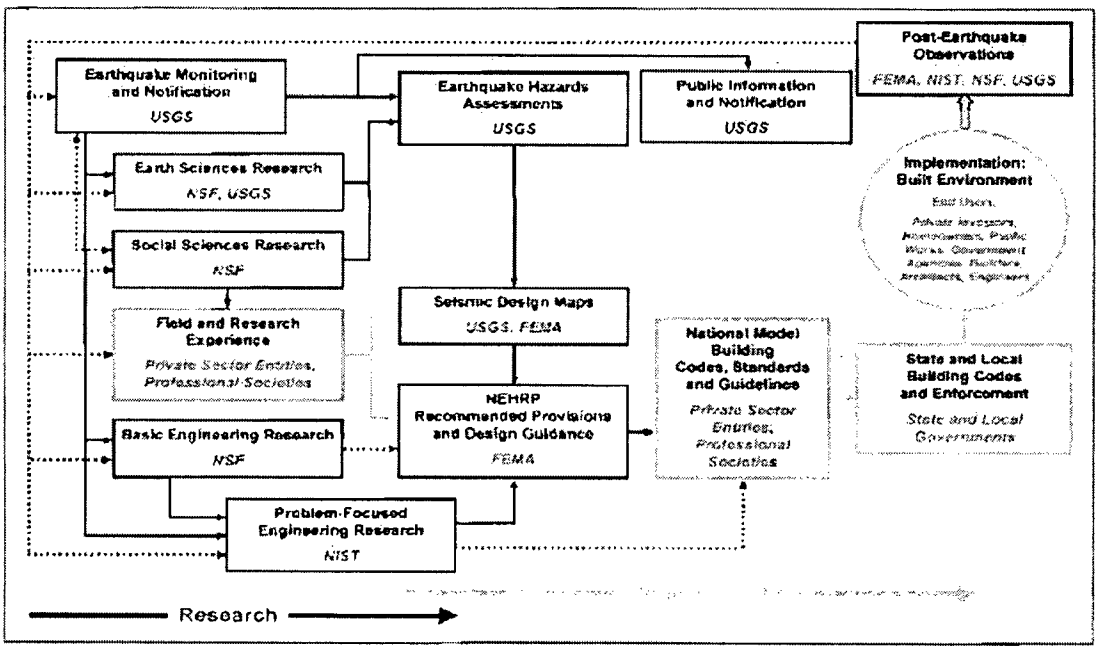
[1] Lifelines are essential utility and transportation systems.

[2] ANSS is a nationwide network of seismographic stations operated by the USGS. GSN is a global network of stations coordinated by the Incorporated Research Institutions for Seismology (IRIS, a nonprofit organization). NEES is an NSF-funded project that consists of 15 experimental facilities and an IT infrastructure with a goal of mitigating earthquake damage by the use of improved materials, designs, construction techniques, and monitoring tools.

[3] U.S. House, Committee on Science, *National Earthquake Hazards Reduction Program Reauthorization Act of 2003*, H.Rept. 108-246 (Aug. 14, 2003), p. 13.

- NIST is the lead NEHRP agency and has primary responsibility for NEHRP planning and coordination. NIST supports the development of performance-based seismic engineering tools and works with FEMA and other groups to promote the commercial application of the tools through building codes, standards, and construction practices.
- FEMA assists other agencies and private-sector groups to prepare and disseminate building codes and practices for structures and "lifelines", and aids development of performance-based codes for buildings and other structures.
- USGS conducts research and other activities to characterize and assess earthquake risks, and (1) operates a forum, using the National Earthquake Information Center (NEIC), for the international exchange of earthquake information; (2) works with other NEHRP agencies to coordinate activities with earthquake reduction efforts in other countries; and (3) maintains seismic hazard maps in support of building codes for structures and lifelines, and other maps needed for performance-based design approaches.
- NSF supports research to improve safety and performance of buildings, structures, and lifelines using the large-scale experimental and computational facilities of NEES and other institutions engaged in research and implementation of NEHRP.

Figure 1. NEHRP Agency Responsibilities and End Users of NEHRP Outcomes



Source: NEHRP program office at http://www.nehrp.gov/pdf/ppt_sdr.pdf (modified by CRS).

Table 1 shows the authorized and enacted appropriations for NEHRP from FY2005 through FY2010. The total enacted amount for FY2005-FY2009 was $613.2 million, or 68% of the $902.4 million total amount authorized in P.L. 108-360 over the five-year span. President Obama requested a total of $129.7 million for NEHRP in FY2011, even though authorization of appropriations for the program under P.L. 108-360 expired at the end of FY2009.

Table 1. Authorized and Enacted Funding for NEHRP

($ millions)

		USGS	NSF	FEMA	NIST	Total
FY2005	Authorized	77.0	58.0	21.0	10.0	**166.0**
	Enacted	58.4	53.1	14.7	0.9	**127.1**
FY2006	Authorized	84.4	59.5	21.6	11.0	**176.5**
	Enacted	54.5	53.8	9.5	0.9	**118.7**
FY2007	Authorized	85.9	61.2	22.3	12.1	**181.5**
	Enacted	55.4	54.2	7.2	1.7	**118.5**
FY2008	Authorized	87.4	62.9	23.0	13.3	**186.6**
	Enacted	58.1	53.6	6.1	1.7	**119.5**
FY2009	Authorized	88.9	64.7	23.6	14.6	**191.8**
	Enacted	61.2	55.0	9.1	4.1	**129.4**
FY2010	Enacted	62.8	55.3	9.0	4.1	**131.2**
FY2011	Requested	62.3	54.3	9.0	4.1	**129.7**

Source: NEHRP program office, at http://www.nehrp.gov/pdf/2010NEHRPAnnualReport.pdf.

Notes: According to the NEHRP program office, ARRA funds are not included. The FY2011 requested budget is the estimated portion of the President's budget request that would be allocated for NEHRP activities. The FY2010 enacted amounts are estimates.

NEHRP Legislation in the 111th Congress

Title I of H.R. 3820, the Natural Hazards Risk Reduction Act of 2009, introduced in the 111th Congress, would have made changes to NEHRP and authorized appropriations for the program through FY2014. The bill was reported by the House Science and Technology Committee on February 26, 2010, and was passed by the House on March 2, 2010. The Senate did not act on the bill. The legislation would have retained NIST as the lead NEHRP agency, and authorized total appropriations of about $906 million over five years. Title II of H.R. 3820 would have made changes to the National Windstorm Impact Reduction Act (first enacted in 2004 as Title II of P.L. 108-360 and modeled after NEHRP), and Title III would have created an interagency coordinating committee, chaired by the Director of NIST, to oversee the planning and coordination of both the earthquake and wind hazards programs. The single interagency coordinating committee would have replaced the two separate interagency committees overseeing the current earthquake and wind hazards programs.

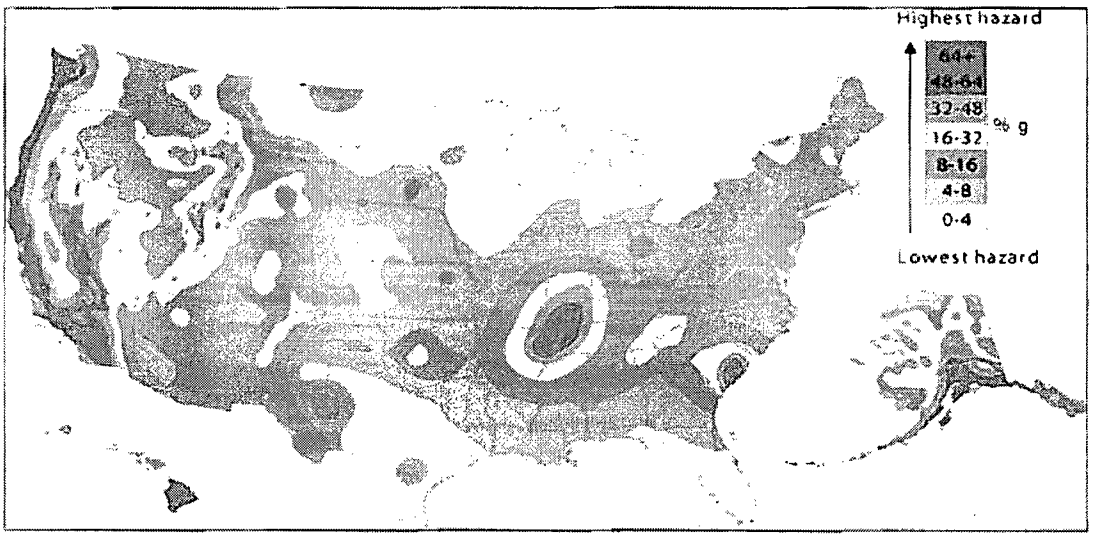
Earthquake Hazards and Risk

Portions of all 50 states and the District of Columbia are vulnerable to earthquake hazards, although risks vary greatly across the country and within individual states. Seismic hazards are greatest in the western United States, particularly in California, Washington, Oregon, and Alaska and Hawaii. Alaska is the most earthquake-prone state, experiencing a magnitude 7 earthquake almost every year and a magnitude 8 earthquake every 14 years on average. (See box below for a description of earthquake magnitude.) Because of its low population and infrastructure density, Alaska has a relatively low risk for large economic losses from an earthquake. In contrast, California has more citizens and infrastructure at risk than any other state because of the state's frequent seismic activity combined with its large population.

United States National Seismic Hazard Map

Figure 2 shows where earthquakes are likely to occur in the United States and how severe the earthquake magnitude and resulting ground shaking are likely to be. The map in **Figure 2** depicts the potential shaking hazard from future earthquakes. It is based on the frequency at which earthquakes occur in different areas and how far the strong shaking extends from the source of the earthquake. In **Figure 2**, the hazard levels indicate the potential ground motion—expressed as a percentage of the acceleration due to gravity (g). In a sense, the map shows the likelihood of where earthquakes could occur, and where the strongest shaking could take place.

Figure 2. Earthquake Hazard in the United States



Source: USGS Fact Sheet 2008-3018 (April 2008), at http://pubs.usgs.gov/fs/2008/3018/pdf/FS08-3018_508.pdf. Modified by CRS.

Note: The bar in the upper right shows the potential ground motion—expressed as a percentage of the acceleration due to gravity (g)—with up to a 1 in 50 chance of being exceeded over a 50-year period.

Figure 2 also shows relatively high earthquake hazard in the Rocky Mountain region, portions of the eastern seaboard—particularly South Carolina—and a part of the central United States known as the New Madrid Seismic Zone (see "The New Madrid Seismic Zone" below). Other portions of the eastern and northeastern United States are also vulnerable to moderate seismic hazard. According to the USGS, 75 million people in 39 states are subject to "significant risk."[4]

Earthquake Magnitude and Intensity

Earthquake magnitude is a number that characterizes the relative size of an earthquake. It was historically reported using the *Richter* scale (magnitudes in this report are generally consistent with the Richter scale). Richter magnitude is calculated from the strongest seismic wave recorded from the earthquake, and is based on a logarithmic (base 10) scale: for each whole number increase in the Richter scale, the ground motion increases by 10 times. The amount of energy released per whole number increase, however, goes up by a factor of 32. The *moment magnitude* scale is another expression of earthquake size, or energy released during an earthquake, that roughly corresponds to the Richter magnitude and is used by most seismologists because it more accurately describes the size of very large earthquakes. Sometimes earthquakes will be reported using qualitative terms, such as Great or Moderate. Generally, these terms refer to magnitudes as follows: Great (M>8); Major (M>7); Strong (M>6); Moderate (M>5); Light (M>4); Minor (M>3); and Micro (M<3).

Intensity is a measure of how much shaking occurred at a site based on observations and amount of damage. Intensity is usually reported on the Modified Mercalli Intensity Scale as a Roman numeral ranging from I (not felt) to XII (total destruction). The intensity of an earthquake depends on where the earthquake occurs, how it is felt by people, and the damage it causes. The lower numbers of the Modified Mercalli Intensity Scale generally refer to how the earthquake is felt by people, and the higher numbers are based on observed structural damage.

Modified Mercalli intensities that are typically observed at locations near the epicenters of earthquakes of different magnitudes are as follows:

Magnitude 1.0-3.0	Modified Mercalli Intensity I
Magnitude 3.0-3.9	Modified Mercalli Intensity II-III
Magnitude 4.0-4.9	Modified Mercalli Intensity IV-V
Magnitude 5.0-5.9	Modified Mercalli Intensity VI-VII
Magnitude 6.0-6.9	Modified Mercalli Intensity VII-IX
Magnitude 7.0+	Modified Mercalli Intensity VIII or higher

Source: USGS FAQs, at http://earthquake.usgs.gov/learn/faq/; and Magnitude/Intensity Comparison, at http://earthquake.usgs.gov/learn/topics/mag_vs_int.php.

2008 Update to the National Seismic Hazard Map

On April 21, 2008, the USGS released National Seismic Hazards Maps that updated the version published in 2002.[5] Compared to the 2002 version, the new maps indicate lower ground motions (by 10% to 25%) for the central and eastern United States, based on modifications to the ground-motion models used for earthquakes. The new maps indicate that estimates of ground motion for the western United States are as much as 30% lower for certain types of ground motion, called long-period seismic waves, which affect taller, multi-story buildings. Ground motion that affects

[4] U.S. Geological Survey, Dept. of the Interior, *Earthquake Hazards—A National Threat*, Fact Sheet 2006-3016, March 2006, http://pubs.usgs.gov/fs/2006/3016/2006-3016.pdf. During the period 1975-1995, only four states did not experience detectable earthquakes: Florida, Iowa, North Dakota, and Wisconsin. See USGS Earthquake Hazards Program, *Earthquake Facts*, at http://earthquake.usgs.gov/learn/facts.php.

[5] USGS Fact Sheet 2008-3018, "2008 United States National Seismic Hazard Maps" (April 2008), at http://pubs.usgs.gov/fs/2008/3018/pdf/FS08-3018_508.pdf;

shorter buildings of a few stories, called short-period seismic waves, is roughly similar to the 2002 maps. The new maps show higher estimates for ground motion for western Oregon and Washington compared to the 2002 maps, due to new ground motion models for the offshore Cascadia subduction zone. In formulating the 2008 maps, the USGS gave more weight to the probability of a catastrophic magnitude 9 earthquake occurring along the Cascadia subduction zone. The Cascadia subduction zone fault ruptures, on average, every 500 years, and has the potential to generate destructive earthquakes and tsunamis along the coasts of Washington, Oregon, and northern California.

Earthquake Forecast for California

According to a report released on April 14, 2008, California has a 99% chance of experiencing a magnitude 6.7 or larger earthquake in the next 30 years.[6] The likelihood of an even larger earthquake, magnitude 7.5 or greater, is 46%, and such an earthquake would likely occur in the southern part of the state. The fault with the highest probability of generating at least one earthquake of magnitude 6.7 or greater over the next 30 years is the San Andreas in southern California (59% probability); for northern California it is the Hayward-Rodgers Creek fault (31%). The earthquake forecasts are not predictions (i.e., they do not give a specific date or time), but represent probabilities over a given time period. In addition, the probabilities have variability associated with them. The earthquake forecasts are known as the "Uniform California Earthquake Rupture Forecast (UCERF)" and are produced by a working group composed of the USGS, the California Geological Survey, and the Southern California Earthquake Center.

How Many Earthquakes Occur Each Year?

The USGS estimates that several million earthquakes occur worldwide each year, but the majority are of small magnitude or occur in remote areas, and are not detectable. More earthquakes are detected each year as more seismometers[7] are installed in the world, but the number of large earthquakes (magnitude greater than 6.0)[8] has remained relatively constant. Between 2000 and 2008 there were between 2,261 and 3,876 earthquakes per year in the United States, according to the National Earthquake Information Center (NEIC). (See **Figure 3**.)

As **Figure 3** shows, about 98% of earthquakes detected each year by the NEIC are smaller than magnitude 5.0 (light earthquakes); only 63 earthquakes exceeded magnitude 6.0 (strong earthquakes) for the 10-year period (about 0.2% of the total earthquakes detected), for an average of about six earthquakes per year of at least 6.0 magnitude. Larger earthquakes, although infrequent, cause the most damage and are responsible for most earthquake-related deaths. The great San Francisco earthquake of 1906 claimed an estimated 3,000 lives, as a result of both the earthquake and subsequent fires. Over the past 100 years, relatively few Americans have died as a result of earthquakes, compared to citizens in some other countries.[9] Since 1970, three strong

[6] USGS Fact Sheet 2008-3027, "Forecasting California's Earthquakes—What Can We Expect in the Next 30 Years?" (2008), at http://pubs.usgs.gov/fs/2008/3027/fs2008-3027.pdf.

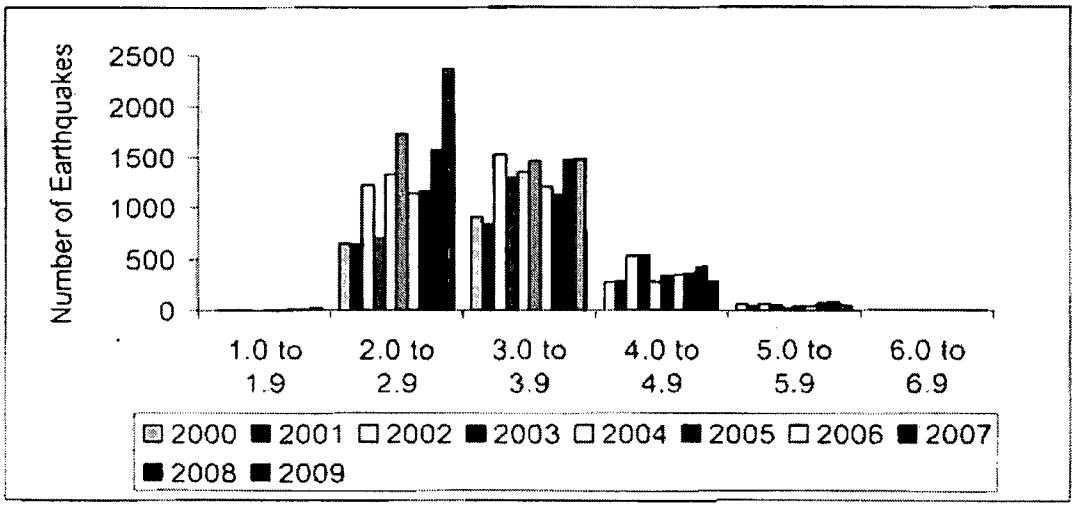
[7] *Seismometers* are instruments that measure and record the size and force of seismic waves, essentially sound waves radiated from the earthquake as it ruptures. Seismometers generally consist of a mass attached to a fixed base. During an earthquake, the base moves and the mass does not, and the relative motion is commonly transformed into an electrical voltage that is recorded. A *seismograph* usually refers to the *seismometer* and the recording device, but the two terms are often used interchangeably.

[8] See USGS "Earthquakes Facts and Statistics" at http://neic.usgs.gov/neis/eqlists/eqstats.html#table_2.

[9] Estimates of earthquake-related fatalities vary, and an exact tally of deaths and injuries is rare. For more information (continued...)

earthquakes (greater than magnitude 6) in the United States were responsible for 188 of the 212 total earthquake-related fatalities. (See Table 2.)

Figure 3. Histogram of the Number of U.S. Earthquakes from 2000 to 2009 by Magnitude (1.0 to 6.9)



Source: USGS, "Earthquake Facts and Statistics," at http://neic.usgs.gov/neis/eqlists/eqstats.html, data as of January 6, 2011.

Note: Earthquakes greater than magnitude 7.0 and less than 1.0 are not shown. According to the USGS, 6 earthquakes of magnitude 7.0 or greater occurred in the United States between 2000 and 2009.

Table 2. Earthquakes Responsible for Most U.S. Fatalities Since 1970

Date	Location	Magnitude	Deaths
February 9, 1971	San Fernando Valley, CA	6.6	65
October 18, 1989	Loma Prieta, CA	6.9	63
January 17, 1994	Northridge, CA	6.7	60

Source: USGS, http://earthquake.usgs.gov/earthquakes/states/us_deaths.php.

Note: Other sources report different numbers of fatalities associated with the Northridge earthquake.

Earthquake Fatalities

Since 2000, only two deaths directly caused by earthquakes have occurred in the United States, both associated with falling debris in Paso Robles (CA) during the December 22, 2003, San Simeon earthquake of magnitude 6.5. In contrast, earthquakes have been directly or indirectly responsible for more than 685,000 fatalities in other countries since 2000.[10] Approximately 65%

(...continued)

on the difficulties of counting earthquake-related deaths and injuries, see http://earthquake.usgs.gov/regional/world/casualty_totals.php

[10] U.S. Geological Survey, *Earthquakes with 1,000 or More Deaths Since 1900*, at http://earthquake.usgs.gov/earthquakes/world/world_deaths.php. This estimate does not include fatalities from the February 27, 2010, magnitude 8.8 Chilean earthquake, which has resulted in widespread destruction but few fatalities compared to the Indonesian, (continued...)

of those estimated deaths resulted from the December 2004 Indonesian earthquake (and resulting tsunami) of magnitude 9.1, and the January 2010 magnitude 7.0 earthquake in Haiti.

Estimating Potential Losses from Earthquakes

Estimating the seismic hazard for a region—as in **Figure 2**—is a first step in assessing risk. As a second step, shaking hazards maps are often combined with other data, such as the strength of existing buildings, to estimate possible damage in an area due to an earthquake. A third step in estimating potential losses would be in assigning value to the infrastructure at risk from earthquake damage. The combination of seismic risk, population, and vulnerable infrastructure can help improve the understanding of which urban areas across the United States face risks from earthquake hazards that may not be immediately obvious from the probability maps of shaking hazards alone, and what potential economic costs may be at stake.

The 1994 Northridge earthquake was the nation's most damaging earthquake in the past 100 years, preceded five years earlier by the second-most costly earthquake—Loma Prieta. Comparing losses between different earthquakes, and between earthquakes and other disasters such as hurricanes, can be difficult because of the different ways losses are calculated. Calculations may include a combination of insured losses, uninsured losses, and estimates of lost economic activity.

The United States faces potentially large total losses due to earthquake-caused damage to buildings and infrastructure and lost economic activity. As urban development continues in earthquake-prone regions in the United States, concerns are increasing about the exposure of the built environment, including utilities and transportation systems, to potential earthquake damage.[11] One estimate of economic loss from a severe earthquake in the Los Angeles area is over $500 billion.[12] Another estimate of economic loss from a hypothetical 6.5 magnitude earthquake along the heavily populated central New Jersey-Philadelphia corridor would be even higher—approximately $900 billion. The seismic hazard in the New Jersey-Philadelphia regions, however, is much lower than in the Los Angeles area, as shown in **Figure 2**.

Another approach to estimating potential losses is to "normalize" the damage estimates from past earthquakes by adjusting for inflation, increases in wealth, and changes in population. For example, adjusting the 1906 San Francisco earthquake and subsequent fire using 2005 dollars results in between $39 billion and $328 billion in losses, depending on assumptions and earthquake mitigation measures if that earthquake happened today.[13]

(. .continued)

Pakistan, and Haiti earthquakes.

[11] FEMA Publication 366, *HAZUS MH Estimated Annualized Earthquake Losses for the United States* (April 2008), at http://www.fema.gov/library/viewRecord.do?id=3265. Hereafter referred to as FEMA 366.

[12] A. M. Best Company Inc., *2006 Annual Earthquake Study: $100 Billion of Insured Loss in 40 Seconds* (Oldwick, NJ: A.M. Best Company, 2006), p. 12. The A. M. Best report includes estimates from catastrophe-modeling companies of predicted damage from hypothetical earthquakes in Los Angeles, the Midwest, the Northeast, and Japan. The report cites an estimate by one such company, Risk Management Solutions (RMS), that a hypothetical 7.4 magnitude event along the Newport-Inglewood Fault near Los Angeles would cause $549 billion in total property damage. A hypothetical 6.5 magnitude earthquake along a fault between Philadelphia and New York City would produce $901 billion in total loss, according to an RMS estimate.

[13] Kevin Vranes and Roger Pielke, Jr., "Normalized Earthquake Damage and Fatalities in the United States. 1900- (continued..)

Some studies and techniques combine seismic risk with the value of the building inventory[14] and income losses (e.g., business interruption, wage, and rental income losses) in cities, counties, or regions across the country to provide estimations of economic losses from earthquakes. An April 2008 report from FEMA calculated that the average *annualized* loss from earthquakes nationwide is $5.3 billion, with California, Oregon, and Washington accounting for nearly $4.1 billion (77%) of the U.S. total estimated average annualized loss.[15] **Table 3** shows metropolitan areas with estimated average annualized U.S. earthquake losses over $10 million.

Table 3. U.S. Metropolitan Areas with Estimated Annualized Earthquake Losses of More Than $10 Million

(in $ millions)

Rank	Metro area	AEL	Rank	Metro area	AEL
1	Los Angeles-Long Beach-Santa Ana, CA	$1,312	23	Reno-Sparks, NV	$29
2	San Francisco-Oakland-Fremont, CA	$781	24	Charleston-North Charleston, SC	$22
3	Riverside-San Bernadino-Ontario, CA	$397	25	Columbia, SC	$22
4	San Jose-Sunnyvale-Santa Clara, CA	$277	26	Stockton, CA	$21
5	Seattle-Tacoma, WA	$244	27	Atlanta-Sandy Springs-Marietta, GA	$19
6	San Diego-Carlsbad-San Marcos, CA	$155	28	Bremerton-Silverdale, WA	$18
7	Portland-Vancouver-Carlsbad, OR	$137	29	Ogden-Clearfield, UT	$18
8	Oxnard-Thousand Oaks-Ventura, CA	$111	30	Salem, OR	$17
9	Santa Rosa-Petaluma, CA	$69	31	Eugene-Springfield, OR	$17
10	St. Louis, MO-IL	$59	32	Napa, CA	$16
11	Salt Lake City, UT	$52	33	San Luis Obispo-Paso Robles, CA	$16
12	Sacramento-Arden-Arcade-Roseville, CA	$52	34	Nashville-Davidson-Murfreesboro, TN	$15
13	Vallejo-Fairfield, CA	$40	35	Albuquerque, NM	$15
14	Memphis, TN	$38	36	Olympia, WA	$14
15	Santa Cruz-Watsonville, CA	$36	37	Modesto, CA	$13
16	Anchorage, AK	$35	38	Fresno, CA	$13
17	Santa Barbara-Santa Maria-Goleta, CA	$34	39	Evansville, IN-KY	$12
18	Las Vegas-Paradise, NV	$33	40	Birmingham-Hoover, AL	$11
19	Honolulu, HI	$32	41	El Centro, CA	$11
20	Bakersfield, CA	$30	42	Little Rock-North Little Rock, AR	$11
21	New York-Northern New Jersey-Long Island, NY	$30	43	Provo-Orem, UT	$10
22	Salinas, CA	$29			

Source FEMA Publication 366, *HAZUS MH Estimated Annualized Earthquake Losses for the United States* (April 2008). Annualized earthquake losses (AEL) calculated in 2005 dollars.

(...continued)

2005," *Natural Hazards Review*, vol. 10, no. 3 (August 2009), pp. 84-101.

[14] Building inventory refers to four main inventory groups: (1) general building stock, (2) essential and high potential loss facilities, (3) transportation systems, and (4) utility systems (FEMA 366).

[15] FEMA 366, p. 37.

Annualized earthquake loss (AEL) addresses two components of seismic risk: the probability of ground motion and the consequences of ground motion. It enables comparison between different regions with different seismic hazards and different building construction types and quality. For example, earthquake hazard is higher in the Los Angeles area than in Memphis, but the general building stock in Los Angeles is more resistant to the effects of earthquakes. The AEL annualizes the expected losses by averaging them by year.

A single large earthquake can cause far more damage than the average annual estimate. Annualized estimates, however, help provide comparisons of infrequent, high-impact events like damaging earthquakes with more frequently occurring hazards like floods, hurricanes, or other types of severe weather. The annualized earthquake loss values shown in **Table 3** represent future estimates, and are calculated by multiplying losses from potential future ground motions by their respective frequencies of occurrence, and then summing these values.[16]

Table 3 also shows that annualized earthquake losses in the New York-Northern New Jersey-Long Island metropolitan area are $30 million (ranked 21 out of 43 metropolitan areas with losses greater than $1 million per year), even though no destructive earthquakes have struck that area for generations.[17] This area has a relatively low seismic hazard, but also has an extensive infrastructure and is densely populated. That combination of seismic risk, extensive infrastructure, and dense population produces a significant risk to people and structures, according to some estimates.[18]

A Decrease in Estimated Loss?

In its most recent publication estimating potential earthquake losses, FEMA noted that the $5.3 billion in annualized earthquake loss nationwide was 21% higher than the $4.4 billion calculated in FEMA's previous report, published in February 2001.[19] However, the 2001 report calculated losses using 1994 dollars, and when adjusted to reflect 2005 dollars the earlier estimate increased to $5.6 billion, indicating a small decrease in nationwide annualized earthquake loss potential since the 2001 report was published. According to FEMA, this loss occurred even though the national building inventory increased by 50% over this same period.

What factors led to a decreased estimate in potential loss despite growth in building inventory? According to FEMA, two primary factors were responsible: (1) a slight decrease in estimated earthquake hazard in the western United States (namely California) except for some parts of Washington and Utah, and (2) a change in the distribution of building inventory in California, with an increase in wood frame buildings of 17% and a reduction in the amount of masonry (-6%), steel (-5.8%), and concrete (-3%) buildings in the state.[20] Wood frame buildings are less vulnerable to earthquake damage, generally, compared to other construction types. Because California accounts for 66% of the overall nationwide annualized earthquake loss, a 17% increase

[16] FEMA 366, p. 10.

[17] The largest earthquakes in New York, New Jersey, and Massachusetts were; respectively: 1944, Massena, NY, magnitude 5.8, felt from Canada south to Maryland; 1783, New Jersey, magnitude 5.3, felt from New Hampshire to Pennsylvania; and 1755, Cape Ann and Boston, MA, intensity of VIII on the Modified Mercalli Scale, felt from Nova Scotia to Chesapeake Bay (USGS Earthquake Hazards Program).

[18] USGS Circular 1188, Table 3.

[19] FEMA 366, p. 32.

[20] Ibid., p. 32 and p. 36.

in wood frame buildings had a proportionally large effect. In fact, FEMA attributed 78% of the loss reduction between 2001 and 2008 to the change in building inventory distribution, and 22% to the decrease in earthquake hazard for California.[21]

The New Madrid Seismic Zone

The New Madrid Seismic Zone in the central United States is vulnerable to large but infrequent earthquakes. A series of large (magnitude greater than 7.0) earthquakes struck the Mississippi Valley over the winter of 1811-1812, centered close to the town of New Madrid, MO. Some of the tremors were felt as far away as Charleston, SC, and Washington, DC. The mechanism for the earthquakes in the New Madrid zone is poorly understood,[22] and no earthquakes of comparable magnitude have occurred in the area since these events.

Estimating earthquake damage is not an exact science and depends on many factors. As described above, these are primarily the probability of ground motion occurring in a particular area (see **Figure 2**), and the consequences of that ground motion, which are largely a function of building construction type and quality, and of the level of ground motion and shaking during the actual event. Such factors contribute to the difficulty of making a reasonable damage estimate for a low-frequency, high-impact event in the New Madrid region based on the probability of an earthquake of similar magnitude occurring. This uncertainty has implications for policy decisions to ameliorate risk, such as setting building codes, and for designing and building structures to withstand a level of shaking commensurate with the risk. Presumably, the same seismic hazard should lead to similar building codes in urban areas (e.g., in **Figure 2**, compare the seismic hazard for the New Madrid area with portions of California).

Some researchers have questioned whether erring on the side of caution in the New Madrid Seismic Zone is justified.[23] These researchers challenge whether the benefits of building structures to conform with the earthquake probability estimates merit the costs, in light of the uncertainty in making those probability estimates.[24] These analyses may call into question whether the probability of ground motion estimates for the New Madrid Seismic Zone (the bulls-eye-shaped area shown in **Figure 2** that includes parts of Arkansas, Illinois, Tennessee, and Missouri), and other regions of the country that experience infrequent earthquakes, are too high.[25] A contributing factor to the uncertainty in estimating the earthquake hazard in the New Madrid Seismic Zone is the small amount of ground motion measured across the major faults, compared to much faster motions measured across major faults in California.[26] Typically, seismologists

[21] Ibid., p. 36.

[22] In contrast to California, where earthquakes occur on the active margin of the North American tectonic plate, the New Madrid seismic zone is not on a plate boundary but may be related to old faults in the interior of the plate, marking a zone of tectonic weakness.

[23] Andrew Newman et al., "Slow Deformation and Lower Seismic Hazard in the New Madrid Seismic Zone," *Science*, v. 284 (April 23, 1999), pp. 619-621.

[24] Seth Stein, Joseph Tomasello, and Andrew Newman, "Should Memphis Build for California's Earthquakes?" *Eos*, v. 84, no. 19, (May 13, 2003), pp. 177, 184-185.

[25] Seth Stein, "Code Red: Earthquake Imminent?" *Earth*, vol. 54, no. 1 (January 2009), pp. 52-59.

[26] Some researchers measure, for example, less than 2 millimeters of ground motion per year in the New Madrid Seismic Zone using modern GPS technology. In contrast, motion across the San Andreas Fault in California is about 36 millimeters per year. See Seth Stein, *Disaster Deferred: How New Science is Changing Our View of Earthquake Hazards in the Midwest* (New York: Columbia University Press, 2010), pp. 4-5.

estimate the stress that builds up on a fault by measuring ground motion across the fault: the faster the motion, the more quickly the stress builds up. The buildup of stress may be ultimately released in an earthquake during which the rocks on one side of the fault move relative to the other side. Generally, for fast-moving faults such as the San Andreas Fault, the period of earthquake recurrence is short compared to faults where the ground motion is relatively slow.

Yet despite the uncertainty raised by some researchers because of the apparent lack of much ground motion, the USGS attributes a seismic hazard to areas of the New Madrid Seismic Zone comparable to the most seismically active portions of California (see **Figure 2**), where earthquakes are much more frequent, and the mechanisms for generating earthquakes are better understood. The lack of much ground motion is a confusing factor for scientists trying to understand the New Madrid Seismic Zone, which experienced three major earthquakes 200 years ago but does not seem to exhibit much ground motion today. In part because of the 200th anniversary of the three major earthquakes, FEMA is planning a National Level Exercise (NLE 2011) that will focus on a scenario of a catastrophic earthquake in the New Madrid Seismic Zone and will encompass eight states: Alabama, Arkansas, Kentucky, Illinois, Indiana, Mississippi, Missouri, and Tennessee. The NLE 2011 will be conducted in May 2011.[27]

Earthquakes in Haiti, Chile, and Japan—Some Comparisons

The magnitude 8.8 earthquake that struck Chile on February 27, 2010, was over 60 times larger than the magnitude 7.0 earthquake that destroyed Port-au-Prince, Haiti, less than two months earlier. Yet the number of deaths and the amount of damage in Haiti far exceeded damage and fatalities in Chile. The Chile earthquake occurred offshore, and was deeper and farther away from major cities than the Haiti earthquake; in addition, the infrastructure in Chile—buildings, highways, bridges—appears to have been built to withstand earthquake shaking far better than similar infrastructure in Haiti. Japan's magnitude 9.0 earthquake on March 11, 2011, was even larger and more destructive than the Chile earthquake, but a large portion of the damage was caused by a powerful tsunami. The three countries faced significant seismic hazards, although the hazards facing Chile and Japan were arguably better known, because Chile experienced a great (magnitude 9.5) earthquake in 1960[28] and Japan experienced a very damaging earthquake in Kobe in 1995 and has a long history of seismic activity. By contrast, Haiti had last experienced a large earthquake in 1860 (earthquakes in 1751 and 1770 destroyed Port-au-Prince; the 1860 earthquake struck farther west). In addition to the seismic *hazard*, which is a consequence of geology and plate tectonics, Haiti's vulnerability to earthquake shaking appears to have exceeded Chile's. Japan's dense population and infrastructure, in particular the nuclear power reactors located on the northeast coastline close to the epicenter, increased its vulnerability to the March 11 earthquake and tsunami. However, Haiti was at greater *risk* of fatalities—from the earthquake and resulting damage to buildings—than Chile or Japan, even though Japan's March 11, 2011, earthquake was approximately 100 times larger than the Haiti earthquake.

[27] See FEMA, National Level Exercise NLE 2011 Private Sector Participation, at http://www.fema.gov/privatesector/take_action.shtm#2.

[28] According to the USGS, the May 22, 1960, magnitude 9.5 earthquake was the largest earthquake in the world. See http://earthquake.usgs.gov/earthquakes/world/events/1960_05_22.php.

January 12, 2010, Magnitude 7.0 Earthquake in Haiti

On Tuesday, January 12, 2010, a magnitude 7.0 earthquake struck Haiti at 4:53 p.m. The epicenter was located approximately 15 miles west-southwest of Port-au-Prince, and the earthquake occurred at a depth of about 8 miles, according to the USGS.[29] The relatively shallow earthquake, and its close proximity to the capital city, exposed millions of Haitians to severe to violent ground shaking. The earthquake occurred along the Enriquillo-Plantain Garden fault system, a major east-west trending strike-slip fault system that lies between the Caribbean tectonic plate and the North American tectonic plate; the Caribbean plate actively moves against the North American plate and shear stresses are created at the boundary. At a strike-slip fault, the rocks move past each other horizontally along the fault line (in contrast to a thrust fault, where rocks on one side of the fault move on top of the rocks on the other side). Other examples of strike-slip faults are the San Andreas fault in California and the Red River fault in China.

The January 12, 2010, earthquake caused widespread damage in the Port-au-Prince area, causing approximately 223,000 deaths and 300,000 injuries.[30] Also, a series of aftershocks followed the main earthquake. There were 14 aftershocks greater than magnitude 5, and 36 greater than magnitude 4, within the first day following the magnitude 7.0 event. Aftershocks have the potential to cause further damage, especially to structures weakened by the initial large earthquake. The USGS noted that buildings in the Port-au-Prince area will continue to be at risk from strong earthquake shaking, and that the fault responsible for the January 12, 2010, earthquake still stores sufficient strain to be released as a large, damaging earthquake during the lifetime of structures built during the reconstruction effort.[31]

The USGS based its probability estimates on techniques developed to assess earthquake hazards in the United States. Using these techniques, the USGS estimated that the probability of a magnitude 7 or greater earthquake occurring within the next 50 years along the Enriquillo fault near Port-au-Prince is between 5% and 15%. The range of probabilities reflects the current understanding of the seismicity and tectonics of the Haiti region. By comparison, the USGS has estimated that that the probability of a magnitude 7 or greater earthquake occurring within the next 50 years along the Hayward-Rodgers Creek fault east of San Francisco is about 15%.[32]

February 27, 2010, Magnitude 8.8 Earthquake in Chile

A magnitude 8.8 earthquake struck Chile on February 27, 2010, along a subduction zone plate boundary fault 65 miles north-northeast of the city of Concepcion and offshore of the Chilean coast.[33] The earthquake occurred at a depth of approximately 22 miles below the seafloor, much deeper than the earthquake that struck Haiti on January 12, 2010. The city of Concepcion experienced intensity IX shaking on the Modified Mercalli Intensity Index, corresponding to considerable damage to specially designed structures, and corresponding to great damage to "substantial" buildings. The capital city of Santiago, located 200 miles northeast of the epicenter,

[29] USGS Earthquake Hazards Program, at http://earthquake.usgs.gov/earthquakes/eqinthenews/2010/us2010rja6/.

[30] See http://earthquake.usgs.gov/earthquakes/eqinthenews/2010/us2010rja6/#summary.

[31] USGS statement, "USGS Updates Assessment of Earthquake Hazard and Safety in Haiti and the Caribbean," February 23, 2010, at http://www.usgs.gov/newsroom/article.asp?ID=2413&from=rss_home.

[32] Ibid. However, the USGS also notes that the probability of a magnitude 6.7 or greater earthquake occurring on the Hayward-Rodgers fault over the next 30 years is 31%.

[33] See http://earthquake.usgs.gov/earthquakes/eqinthenews/2010/us2010tfan/#details.

experienced intensity VIII shaking corresponding to considerable damage in ordinary substantial buildings.[34] The earthquake caused an estimated $30 billion in total economic damage.[35] Over 500 deaths were reported, many from the tsunami generated by the subsea earthquake, and approximately 1.8 million people were affected.

Because the earthquake occurred offshore, it generated a tsunami, which struck parts of the Chilean coastline and offshore islands, causing damage and fatalities. Tsunami warnings were issued by the National Weather Service Pacific Tsunami Warning Center for Hawaii, Japan, and other regions bordering the Pacific Ocean that may have been vulnerable to a damaging tsunami wave, although most regions far from the epicenter did not experience any serious damage. A tsunami caused significant damage to the city of Hilo, Hawaii, following the May 1960 magnitude 9.5 earthquake that also occurred along the subduction zone fault about 143 miles south of the February 27, 2010, earthquake.[36] Why the 1960 earthquake generated a tsunami that caused damage and fatalities in Hawaii, Japan, and the Philippines, while the 2010 earthquake did not, is not yet well understood and is being actively studied.

The magnitude 8.8 earthquake occurred along the boundary between the Nazca tectonic plate and the South American tectonic plate, which converge at a rate of about 3 inches per year. The Nazca plate is subducting under the South American plate, which rides over the top of the Nazca plate. In geologic terms, this is known as a thrust fault or megathrust, in contrast to a strike-slip fault, where the rocks on either side of the fault slide past each other. The San Andreas fault and the Enriquillo fault that caused the January 2010 Haiti earthquake are strike-slip faults. The Sumatran-Andaman megathrust fault, which triggered the December 2004 Indonesian earthquake and tsunami, is a subduction zone fault or megathrust geologically similar to the Nazca-South American tectonic plate subduction zone.

March 11, 2011, Magnitude 9.0 Earthquake in Japan

A 9.0 magnitude massive earthquake struck off Japan's northeast coast near Honshu on Friday, March 11, 2011 (12:46 a.m. eastern time in the United States). The earthquake triggered a tsunami that caused widespread devastation to parts of the coastal regions in Japan closest to the earthquake epicenter. The epicenter was located about 80 miles east of Sendai, and about 230 miles northeast of Tokyo, and it occurred at a depth of approximately 20 miles beneath the seafloor.[37]

The earthquake resulted from thrust faulting along the subduction zone plate boundary between the Pacific and North America plates, and this is similar tectonically to the motion described for the 2010 Chile earthquake. Where the earthquake occurred, the Pacific plate is moving westward and sliding underneath the North America plate at just over 3 inches per year. (See **Figure 4**.) This is similar to the convergence rate of the Nazca plate and the South American plate on the west side of Chile, where the February 27, 2010, earthquake occurred. The convergence zone between the Pacific plate and North America plate creates an undersea feature known as the Japan Trench. According to the USGS, tectonic plate motion in the Japan Trench subduction zone has

[34] See http://earthquake.usgs.gov/earthquakes/eqinthenews/2010/us2010tfan/#summary.

[35] Ibid.

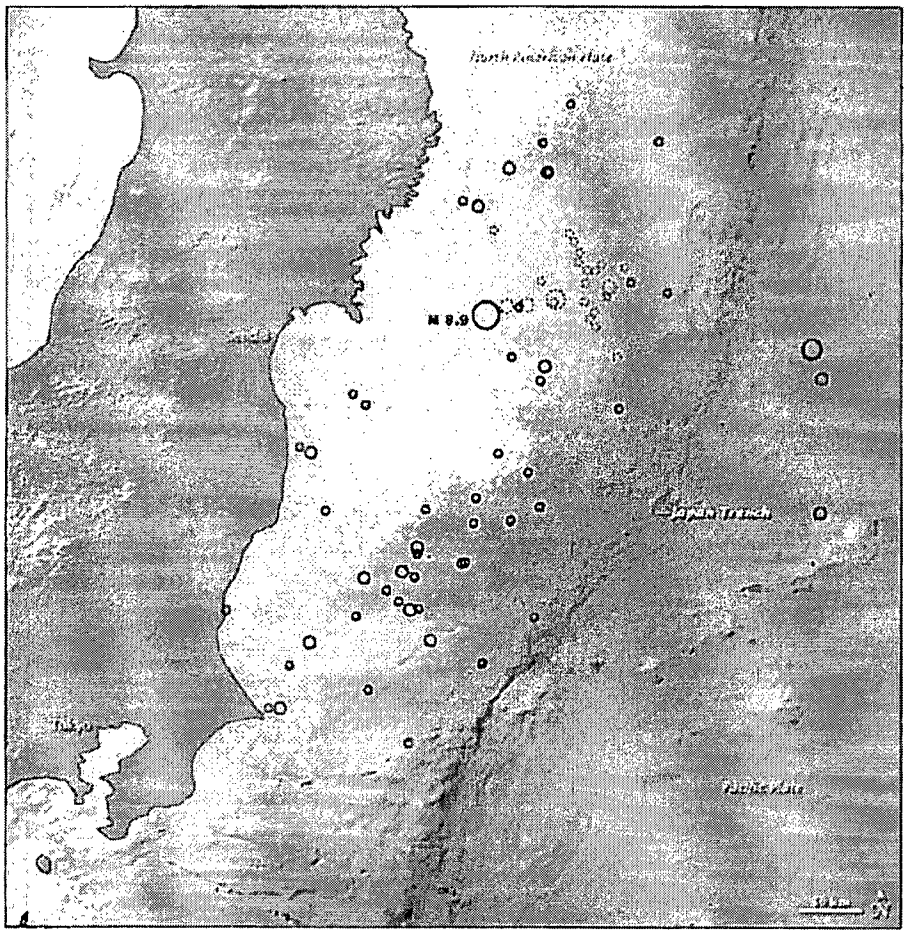
[36] *The Orphan Tsunami of 1700—Japanese Clues to a Parent Earthquake in North America*, USGS, Professional Paper 1707, 2005, http://pubs.usgs.gov/pp/pp1707/.

[37] USGS, Earthquake Hazards Program, http://earthquake.usgs.gov/earthquakes/eqinthenews/2011/usc0001xgp/.

triggered nine magnitude 7 or greater earthquakes since 1973.[38] Also, records indicate that large offshore earthquakes occurred in the same subduction zone in 1611, 1896, and 1933, each producing tsunamis that caused great destruction and fatalities.[39] According to records, the 1896 earthquake created tsunami waves of over 100 feet high and a reported death toll of 27,000.[40]

Figure 4. Image of the Japan Trench and Location of the March 11, 2011, Earthquake

(the Pacific plate is moving west and underneath the North America plate)



Source: NASA, Earth Observatory, March 11, 2011, http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=49621.

Notes: Large circle depicts epicenter of the earthquake (upgraded to magnitude 9.0); solid circles indicate aftershocks, dotted circles indicate foreshocks (smaller earthquakes that occurred prior to the major earthquake).

[38] USGS Earthquake Hazards Program, http://earthquake.usgs.gov/earthquakes/eqinthenews/2011/usc0001xgp/#summary

[39] Ibid.

[40] For more information on the March 11, 2011, Japan tsunami, and the U.S. tsunami monitoring network, see CRS Report R41686, *U.S. Tsunami Programs: A Brief Overview*, by Peter Folger.

Is There a Similar Risk to the United States?

Subduction zone megathrust faults generate the largest earthquakes in the world. The Cascadia Subduction Zone megathrust that stretches from mid-Vancouver Island in southern British Columbia southward to Cape Mendocino in northern California has the potential to generate a very large earthquake, similar in magnitude to the February 2010 Chilean earthquake and the March 11, 2011, Japan earthquake. The fault's proximity to the northwestern U.S. coastline—approximately 50-100 miles offshore—also poses a significant tsunami hazard; destructive waves from a large earthquake along the fault could reach the coast of Oregon and Washington in less than an hour, possibly in tens of minutes. The Cascadia Subduction Zone fault forms the boundary between the subducting Juan de Fuca tectonic plate and the overriding North America plate, very similar to the relationship between the Nazca plate and the South American plate off the Chilean coast, and the Pacific plate and North America plate east of Japan. If the Cascadia Subduction Zone megathrust were to "unzip" or rupture along a large section of its entire length, models indicate that it would likely generate a megathrust earthquake near magnitude 9 or more, similar to the 1964 Alaskan earthquake, the 1960 and 2010 Chilean earthquakes, the 2004 Indonesian earthquake, and the 2011 Japan earthquake. Scientists have documented that the last time this occurred along the Cascadia Subduction Zone fault was in 1700. The 1700 earthquake spawned a tsunami that traveled across the Pacific Ocean and struck Japan. Because of the similarities in the subduction zone megathrust faults, scientists hope to learn a great deal about the seismic hazard in the Pacific Northwest by studying the unique strong ground motion recordings from the 2010 Chilean magnitude 8.8 earthquake and the 2011 Japan earthquake.

Monitoring

Congress authorized the USGS to monitor seismic activity in the United States in the 1990 law modifying NEHRP (P.L. 101-614). The USGS operates a nationwide network of seismographic stations called the Advanced National Seismic System (ANSS), which includes the National Strong-Motion Project (NSMP). Globally, the USGS and the Incorporated Research Institutions for Seismology (IRIS) operate 140 seismic stations of the Global Seismic Network (GSN) in more than 80 countries.[41] The GSN provides worldwide coverage of earthquakes, including reporting and research.[42]

Advanced National Seismic System (ANSS)

According to the USGS, "the mission of ANSS is to provide accurate and timely data and information products for seismic events, including their effects on buildings and structures, employing modern monitoring methods and technologies."[43] If fully implemented, ANSS would encompass more than 7,000 earthquake sensor systems covering portions of the nation that are vulnerable to earthquake hazards. As envisioned, the system would consist of dense urban networks, regional networks, and backbone stations.

[41] IRIS is a university research consortium, primarily funded by NSF, that collects and distributes seismographic data.

[42] The GSN also monitors nuclear explosions.

[43] USGS Earthquake Hazards Program, http://earthquake.usgs.gov/research/monitoring/anss/.

ANSS Funding

Congress first authorized the ANSS program in P.L. 106-503 at a level of $38 million for FY2002 and $44 million for FY2003. The 2004 reauthorization of NEHRP (P.L. 108-360) authorized $30 million for ANSS in FY2005 and then $36 million per year through FY2009. From FY2000 through FY2010, the USGS has spent a total of $68.2 million on ANSS-directed funding,[44] although expenditures have never reached authorized levels since Congress first authorized appropriations for ANSS. Of the $8.8 million for ANSS-directed funding in FY2009, about $1.5 million was devoted to the development, modernization, and expansion of the system; the remainder of FY2009 funding was used to operate the existing system.[45] By the end of 2009, the USGS and its partners had installed a cumulative total of 886 ANSS earthquake monitoring stations.[46]

The American Recovery and Reinvestment Act (ARRA, P.L. 111-5) provided an additional $19 million for ANSS.[47] The ARRA funding for ANSS was provided for modernization of the current system, and is approximately 70% expended. The remainder of the ARRA funding for ANSS is expected to be expended by the end of FY2011.[48]

Dense Urban Networks

In the original conception for ANSS, approximately 6,000 of the planned stations would have been installed in 26 high-risk urban areas to monitor strong ground shaking and how buildings and other structures respond. Currently, five high-risk urban areas have instruments deployed in sufficient density to generate the data to produce near real-time maps,[49] called ShakeMaps, which can be used in emergency response during and after an earthquake.[50] (See "ShakeMap," below.)

Backbone Stations

Approximately 100 instruments comprise the existing "backbone" of ANSS, with a roughly uniform distribution across the United States, including Alaska and Hawaii. These instruments provide a broad and uniform minimum threshold of coverage across the country. The backbone network consists of USGS-deployed instruments and other instruments that serve both ANSS and the EarthScope project (described below, under "National Science Foundation").

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[44] USGS FY2011 Budget Justification, p. J-9, at http://www.usgs.gov/budget/2011/greenbook/FY2011_USGS_Greenbook.pdf.

[45] Email from William Leith, Advanced National Seismic System Coordinator, USGS, December 22, 2009.

[46] USGS FY2011 Budget Justification, p. J-10.

[47] USGS FY2011 Budget Justification, p. J-10.

[48] E-mail from William Leith, USGS, January 11, 2011.

[49] The five urban areas are Los Angeles, San Francisco, Seattle, Salt Lake City, and Anchorage. E-mail from William Leith, USGS, February 7, 2011.

[50] The number of stations necessary to generate a data-based ShakeMap depends on the urban area and geology, but roughly correspond to about half the number of planned stations per urban area, at a spacing of about 20 kilometers between stations. Personal communication, William Leith, USGS, January 11, 2010.

National Strong-Motion Project (NSMP)

Under ANSS, the USGS operates the NSMP to record seismic data from damaging earthquakes in the United States on the ground and in buildings and other structures in densely urbanized areas. The program currently has approximately 1,280 strong-motion[51] instruments across the United States and in the Caribbean. The NSMP has three components: data acquisition, data management, and research. The near real-time measurements collected by the NSMP are used by other government agencies for emergency response and real-time warnings. If fully implemented, the ANSS program would deploy about 3,000 strong-motion instruments. Many of the current NSMP instruments are older designs and are being upgraded with modern seismometers.

Regional Networks

If ANSS were fully implemented under its original conception, approximately 1,000 new instruments would replace aging and obsolete stations in the networks that now monitor the nation's most seismically active regions. The current regional networks contain a mix of modern, digital, broadband, and high-resolution instruments that can provide real-time data; they are supplemented by older instruments that may require manual downloading of data. Universities in the region typically operate the regional networks and will likely continue to do so as ANSS is implemented.

Global Seismic Network (GSN)

The GSN is a system of broadband digital seismographs arrayed around the globe and designed to collect high-quality data that are readily accessible to users worldwide, typically via computer. Currently, 140 stations have been installed in 80 countries and the system is nearly complete, although in some regions the spacing and location of stations has not fully met the original goal of uniform spacing of approximately 2,000 kilometers. The system is currently providing data to the United States and other countries and institutions for earthquake reporting and research, as well as for monitoring nuclear explosions to assess compliance with the Comprehensive Test Ban Treaty.

The Incorporated Research Institutions for Seismology (IRIS) coordinates the GSN and manages and makes available the large amounts of data that are generated from the network. The actual network of seismographs is organized into two main components, each managed separately. The USGS operates two-thirds of the stations from its Albuquerque Seismological Laboratory, and the University of California-San Diego manages the other third via its Project IDA (International Deployment of Accelerometers). Other universities and affiliated agencies and institutions operate a small number of additional stations. IRIS, with funding from the NSF, supports all of the stations not funded through the USGS appropriations. Funding for the GSN is provided via annual appropriations from the USGS and the National Science Foundation. In addition, the USGS committed $4.7 million from ARRA funding to the GSN, and NSF committed a similar portion of its ARRA funding to replace obsolete equipment on GSN stations worldwide.[52]

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[51] Strong motion seismometers, or accelerometers, are special sensors that measure the acceleration of the ground during large (>6.0 magnitude) earthquakes.

[52] USGS FY2011 Budget Justification, p. J-32. Annual appropriations for GSN totaled approximately $9 million for FY2009 and reflect the combined appropriations for USGS and NSF. The USGS portion of annual appropriations in (continued..)

Detection, Notification, and Warning

Unlike other natural hazards, such as hurricanes, where predicting the location and timing of landfall is becoming increasingly accurate, the scientific understanding of earthquakes does not yet allow for precise earthquake prediction. Instead, notification and warning typically involves communicating the location and magnitude of an earthquake as soon as possible after the event to emergency response providers and others who need the information.

Some probabilistic earthquake forecasts are now available that give, for example, a 24-hour probability of earthquake aftershocks for a particular region, such as California. These forecasts are not predictions, and are currently intended to increase public awareness of the seismic hazard, improve emergency response, and increase scientific understanding of the short-term hazard.[53] In the California example, a time-dependent map is created and updated every hour by a system that considers all earthquakes, large and small, detected by the California Integrated Seismic Network,[54] and calculates a probability that each earthquake will be followed by an aftershock[55] that can cause strong shaking. The probabilities are calculated from known behavior of aftershocks and the possible shaking pattern based on historical data.

When a destructive earthquake occurs in the United States or in other countries, the first reports of its location, or epicenter,[56] and magnitude originate either from the National Earthquake Information Center (NEIC), or from one of the regional seismic networks that are part of ANSS. Other organizations, such as universities, consortia, and individual seismologists may also contribute information about the earthquake after the event. Products such as ShakeMap (described below) are assembled as rapidly as possible to assist in emergency response and damage estimation following a destructive earthquake.

National Earthquake Information Center (NEIC)

The NEIC, part of the USGS, is located in Golden, CO. Originally established as part of the National Ocean Survey (U.S. Department of Commerce) in 1966, the NEIC was made part of the USGS in 1973. With data gathered from the networks described above and from other sources, the NEIC determines the location and size of all destructive earthquakes that occur worldwide and disseminates the information to the appropriate national or international agencies, government public information channels, news media, scientists and scientific groups, and the general public.

(...continued)

FY2010 was $5.8 million

[53] USGS Open-File Report 2004-1390, and California 24-hour Aftershock Forecast Map, at http://pasadena.wr.usgs.gov/step/.

[54] The California Integrated Seismic Network is the California region of ANSS; see http://www.cisn.org/.

[55] Earthquakes typically occur in clusters, in which the earthquake with the largest magnitude is called the main shock, events before the main shock are called foreshocks, and those after are called aftershocks. See also http://pasadena.wr.usgs.gov/step/aftershocks.html.

[56] The *epicenter* of an earthquake is the point on the earth's surface directly above the hypocenter. The *hypocenter* is the location beneath the earth's surface where the fault rupture begins.

With the advent of the USGS Earthquake Notification Service (ENS), notifications of earthquakes detected by the ANSS/NEIC are provided free to interested parties. Users of the service can specify the regions of interest, establish notification thresholds of earthquake magnitude, designate whether they wish to receive notification of aftershocks, and even set different magnitude thresholds for daytime or nighttime to trigger a notification.

The NEIC has long-standing agreements with key emergency response groups, federal, state, and local authorities, and other key organizations in earthquake-prone regions who receive automated alerts—typically location and magnitude of an earthquake—within a few minutes of an event in the United States. The NEIC sends these preliminary alerts by email and pager immediately after an earthquake's magnitude and epicenter are automatically determined by computer.[57] This initial determination is then checked by around-the-clock staff who confirm and update the magnitude and location data.[58] After the confirmation, a second set of notifications and confirmations are triggered to key recipients by email, pager, fax, and telephone.

For earthquakes outside the United States, the NEIC notifies the State Department Operations Center, and often sends alerts directly to staff at American embassies and consulates in the affected countries, to the International Red Cross, the U.N. Department of Humanitarian Affairs, and other recipients who have made arrangements to receive alerts.

ShakeMap

Traditionally, the information commonly available following a destructive earthquake has been epicenter and magnitude, as in the data provided by the NEIC described above. Those two parameters by themselves, however, do not always indicate the intensity of shaking and extent of damage following a major earthquake. Recently, the USGS developed a product called ShakeMap that provides a nearly real-time map of ground motion and shaking intensity following an earthquake in areas of the United States where the ShakeMap system is in place. **Figure 5** shows an example of a ShakeMap.

The maps produced portray the extent of damaging shaking and can be used by emergency response and for estimating loss following a major earthquake. Currently, ShakeMaps are available for northern California, southern California, the Pacific Northwest, Nevada, Utah, Hawaii, and Alaska.[59]

With improvements to the regional seismographic networks in the areas where ShakeMap is available, new real-time telemetry from the region, and advances in digital communication and computation, ShakeMaps are now triggered automatically and made available within minutes of the event via the web. In addition, better maps are now available because of recent improvements in understanding the relationship between the ground motions recorded during the earthquake and the intensity of resulting damage. If databases containing inventories of buildings and lifelines are available, they can be combined with shaking intensity data to produce maps of estimated damage. The ShakeMaps have limitations, especially during the first few minutes following an

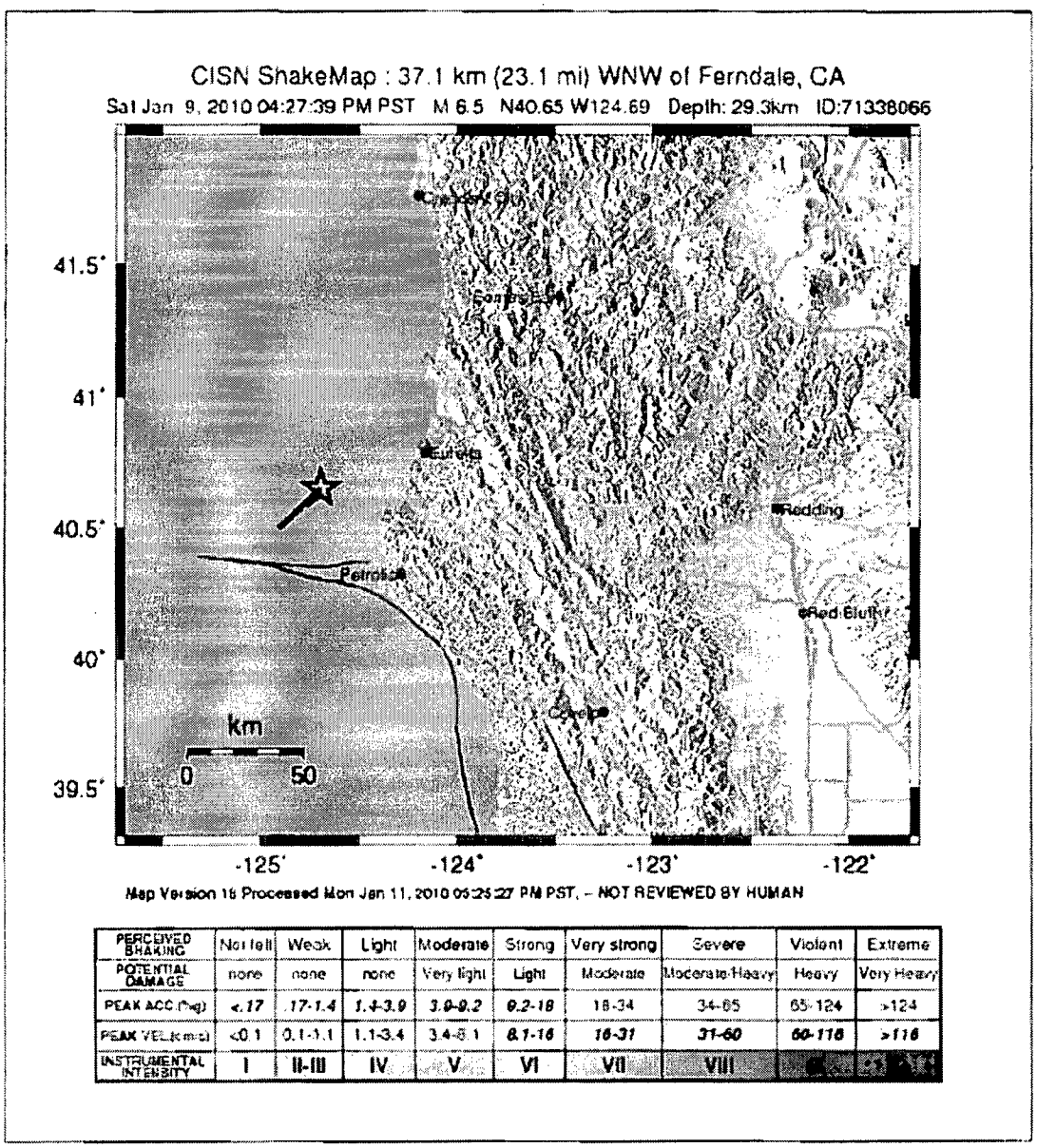
[57] Stuart Simkin, NEIC, Golden, CO, telephone conversation, Nov. 4, 2006.

[58] In early 2006, the NEIC implemented an around-the-clock operation center and seismic event processing center in response to the Indonesian earthquake and resulting tsunami of December 2004. Funding to implement 24/7 operations was provided by P.L. 109-13.

[59] ShakeMaps for some areas outside the United States are also available. See http://earthquake.usgs.gov/eqcenter/shakemap/.

earthquake before additional data arrive from distributed sources. Because they are generated automatically, the initial maps are preliminary, and may not have been reviewed by experts when first made available. They are considered a work in progress, but are deemed to be very promising, especially as more modern seismic instruments are added to the regional networks under ANSS and computational and telecommunication abilities improve.

Figure 5. Example of a ShakeMap



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate-Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	[illegible]	[illegible]

Source: USGS, http://earthquake.usgs.gov/eqcenter/shakemap/nc/shake/71338066/.

Note: Earthquake occurred 23.1 miles west-northwest of Ferndale, CA, at 4:27 p.m. on January 9, 2010, with a magnitude of 6.5. The star indicates the epicenter of the earthquake. Viewed on January 12, 2010.

Prompt Assessment of Global Earthquakes for Response (PAGER)

Another USGS product that is designed to provide nearly real-time earthquake information to emergency responders, government agencies, and the media is the Prompt Assessment of Global Earthquakes for Response, or PAGER, system.[60] This automated system rapidly assesses the number of people, cities, and regions exposed to severe shaking by an earthquake, and generally makes results available within 30 minutes. Following the determination of earthquake location and magnitude, the PAGER system calculates the degree of ground shaking using the methodology developed for ShakeMap, estimates the number of people exposed to various levels of shaking, and produces a description of the vulnerability of the exposed population and infrastructure. The vulnerability includes potential for earthquake-triggered landslides, which could be devastating, as was the case for the huge May 12, 2008, earthquake in Sichuan, China. The automated and rapid reports produced by the PAGER system provide an advantage compared to the traditional accounts from eye-witnesses on the ground or media reports, because communications networks may have been disabled from the earthquake. Emergency responders, relief organizations, and government agencies could make plans based on PAGER system reports even before getting "ground-truth" information from eye-witnesses and the media.[61] **Figure 6** shows an example of PAGER output for the January 12, 2010, magnitude 7.0 earthquake in Haiti.

Pre-disaster Planning: HAZUS-MH

FEMA developed a methodology and software program called the Hazards U.S. Multi-Hazard (HAZUS-MH).[62] The program allows a user to estimate losses from damaging earthquakes, hurricane winds, and floods before a disaster occurs. The pre-disaster estimates could provide a basis for developing mitigation plans and policies, preparing for emergencies, and planning response and recovery. HAZUS-MH combines existing scientific knowledge about earthquakes (for example, ShakeMaps, described above), engineering information that includes data on how structures respond to shaking, and geographic information system (GIS) software to produce maps and display hazards data including economic loss estimates. The loss estimates produced by HAZUS-MH include

- physical damage to residential and commercial buildings, schools, critical facilities, and infrastructure;
- economic loss, including lost jobs, business interruptions, repair and reconstruction costs; and
- social impacts, including estimates of shelter requirements, displaced households, and number of people exposed to the disaster.

In addition to furnishing information as part of earthquake mitigation efforts, HAZUS-MH can also be used to support real-time emergency response activities by state and federal agencies after a disaster. Twenty-seven HAZUS-MH user groups—cooperative ventures among private, public, and academic organizations that use the HAZUS-MH software—have formed across the United States to help foster better-informed risk management for earthquakes and other natural hazards.[63]

[60] See the USGS Earthquakes Hazards Program for more information, at http://earthquake.usgs.gov/earthquakes/pager/.

[61] See also USGS Fact Sheet 2007-3101 at http://pubs.usgs.gov/fs/2007/3101/.

[62] See http://www.fema.gov/plan/prevent/hazus/hz_overview.shtm.

[63] See http://www.hazus.org/.

Figure 6. Example of PAGER Output for the January 12, 2010, Magnitude 7.0 Haiti Earthquake

USGS

USAID

M 7.0, HAITI REGION

Origin Time: Tue 2010-01-12 21:53:10 UTC
Location: 18.46°N 72.53°W Depth: 13 km

PAGER
Version 7
Created: 1 day, 4 hours after earthquake

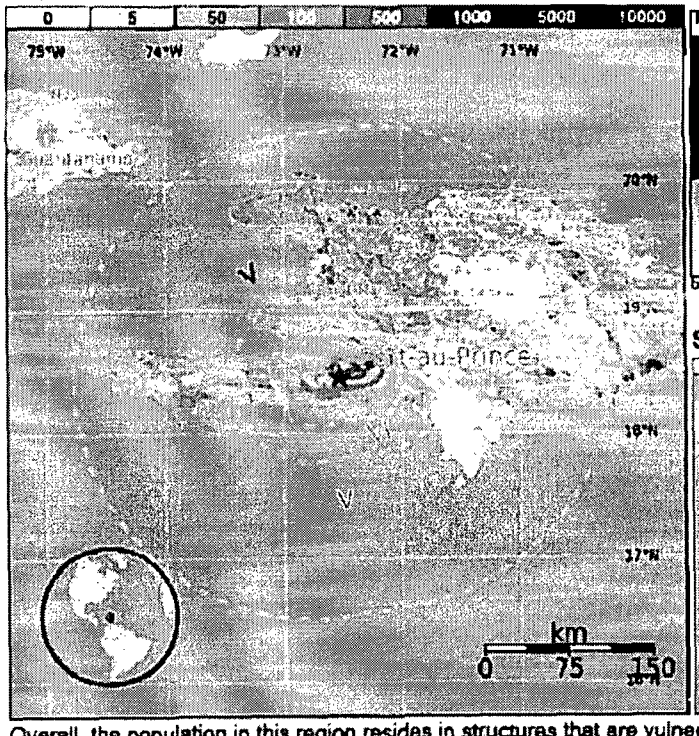
Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)		--*	--*	5,887k*	7,261k	1,049k	571k	314k	2,246k	332k
ESTIMATED MODIFIED MERCALLI INTENSITY		I	II-III	IV	V	VI	VII	VIII	IX+	
PERCEIVED SHAKING		Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy
	Vulnerable Structures	none	none	none	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area

Population Exposure

population per ~1 sq. km from Landscan



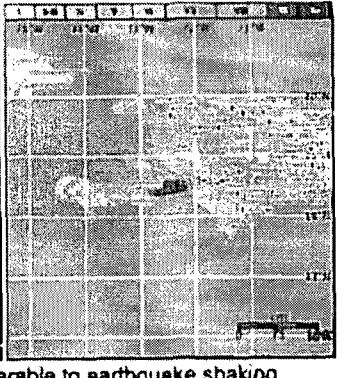
Selected City Exposure

MMI	City	Population
VI	Miragoane	[redacted]
V	Verrettes	48k
III	Santo Domingo	2,202k
III	Guantanamo	273k

bold cities appear on map (k = x1000)

Shaking Intensity

MMI



Overall, the population in this region resides in structures that are vulnerable to earthquake shaking, though some resistant structures exist. On June 24, 1984 (UTC), a magnitude 6.7 earthquake 329 km East of this one struck the Dominican Republic, with estimated population exposures of 320,000 at intensity VII and 2,964,000 at intensity VI, resulting in an estimated 5 fatalities. Recent earthquakes in this area have caused landslides that may have contributed to losses.

This information was automatically generated and has not been reviewed by a seismologist.

http://earthquake.usgs.gov/pager

Event ID: us2010rja6

Source: USGS, http://earthquake.usgs.gov/earthquakes/pager/events/us/2010rja6/onepager.pdf.

Note: This is version 7 of the PAGER output, accessed on January 14, 2010.

Research—Understanding Earthquakes

U.S. Geological Survey

Under NEHRP, the USGS has responsibility for conducting targeted research into improving the basic scientific understanding of earthquake processes. The current earthquake research program at the USGS covers six broad categories:[64]

- *Borehole geophysics and rock mechanics*: studies to understand heat flow, stress, fluid pressure, and the mechanical behavior of fault-zone materials at seismogenic[65] depths to yield improved models of the earthquake cycle;
- *Crustal deformation*: studies of the distortion or deformation of the earth's surface near active faults as a result of the motion of tectonic plates;
- *Earthquake geology and paleoseismology*: studies of the history, effects, and mechanics of earthquakes;
- *Earthquake hazards*: studies of where, why, when, and how earthquakes occur;
- *Regional and whole-earth structure*: studies using seismic waves from earthquakes and man-made sources to determine the structure of the planet ranging from the local scale, to the whole crust, mantle, and even the earth's core; and
- *Strong-motion seismology, site response, and ground motion*: studies of large-amplitude ground motions and the response of engineered structures to those motions using accelerometers.

National Science Foundation

NSF supports fundamental research into understanding the earth's dynamic crust. Through its Earth Sciences Division (part of the Geosciences Directorate), NSF distributes research grants and coordinates programs investigating the crustal processes that lead to earthquakes around the globe.[66]

EarthScope

In 2003, NSF initiated a Major Research Equipment and Facilities Construction (MREFC) project called EarthScope that deploys instruments across the United States to study the structure and evolution of the North American Continent, and to investigate the physical processes that cause earthquakes and volcanic eruptions.[67] EarthScope is a multi-year project begun in 2003 that is funded by NSF and conducted in partnership with the USGS and NASA.

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[64] See http://earthquake.usgs.gov/research/.

[65] Seismogenic means capable of generating earthquakes.

[66] See http://www.nsf.gov/div/index.jsp?div=EAR

[67] See http://www.earthscope.org/.

EarthScope instruments are intended to form a framework for broad, integrated studies of the four-dimensional (three spatial dimensions, plus time) structure of North America. The project is divided into three main programs:

- *The San Andreas Fault Observatory at Depth (SAFOD)*, a deep borehole observatory drilled through the San Andreas fault zone close to the hypocenter of the 1966 Parkfield, CA, magnitude 6 earthquake;
- *The Plate Boundary Observatory (PBO)*, a system of GPS arrays and strainmeters[68] that measure the active boundary zone between the Pacific and North American tectonic plates in the western United States; and
- *USArray*, 400 transportable seismometers that will be deployed systematically across the United States on a uniform grid to provide a complete image of North America from continuous seismic measurements.

SAFOD and PBO are in place and providing data to the seismological community. USArray is progressing across North America and is also furnishing real-time data to seismologists. The portable array currently covers the midsection of the United States and is moving east. The installation plan calls for completing the portable array by 2013.[69]

Network for Earthquake Engineering Simulation

Through its Engineering Directorate, NSF funds the George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES), a project intended to operate until 2014, aimed at understanding the effects of earthquakes on structures and materials.[70] To achieve the program's goal, the NEES facilities conduct experiments and computer simulations of how buildings, bridges, utilities, coastal regions, and materials behave during an earthquake. In the first six years of operations since 2004, 160 multiyear projects have been completed or are in progress under NEES.[71]

Conclusion

At present earthquakes can be neither accurately predicted nor prevented, and in its 1990 reauthorization NEHRP shifted its program emphasis from prediction to hazard reduction. The program's focus has been on understanding the earthquake hazard and its risk to populations and infrastructure in the United States, developing effective measures to reduce earthquake hazards, and promoting the adoption of earthquake hazards reduction measures in vulnerable areas.

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[68] A strainmeter is a tool used by seismologists to measure the motion of one point relative to another.

[69] See http://www.usarray.org/maps.

[70] Management for NEES has been headquartered at Purdue University's Discovery Park since October 1, 2009. Institutions participating in NEES include Cornell University, Lehigh University; Oregon State University; Rensselaer Polytechnical Institute; University of Buffalo-State University of New York; University of California-Berkeley; University of California-Davis; University of California-Los Angeles; University of California-San Diego; University of California-Santa Barbara; University of Colorado-Boulder; University of Illinois at Urbana-Champaign; University of Minnesota, University of Nevada-Reno; and University of Texas at Austin. See http://www.nees.org/.

[71] See http://nees.org/about.

Legislation to modify NEHRP in the 108th Congress (P.L. 108-360) reflected congressional concerns about how well the four NEHRP agencies coordinated their efforts to maximize the program's potential. If legislation is introduced in the 112th Congress to modify the program and reauthorize appropriations, Congress may consider evaluating how effectively the agencies have responded to Congress's direction in P.L. 108-360 to improve coordination since 2004.

In the 111th Congress, legislation introduced to make changes to NEHRP, H.R. 3820, reemphasized that approach but cast it in terms of hazard *mitigation* by stating that a major goal for the program should be "to reduce the loss of life and damage to communities and infrastructure through increasing the adoption of hazard mitigation measures." The bill further emphasized the social aspects of mitigating earthquake hazards, calling for research to better understand institutional, social, behavioral, and economic factors that influence how risk mitigation is implemented, in addition to the traditional research into understanding how, why, and where earthquakes occur.

The emphasis on mitigation proposed by H.R. 3820 in the 111th Congress reflects at least two fundamental challenges to increasing the nation's resiliency to earthquakes, and to most other major natural hazards such as hurricanes and major floods. The first is to assess whether social, behavioral, and economic factors can be understood in sufficient degree to devise strategies that influence behavior to mitigate risk posed by the hazard. Put simply, what motivates people and communities to adopt risk mitigation measures that address the potential hazard? A second challenge, which is more squarely an issue for Congress, is how to measure the effectiveness of NEHRP more quantitatively. It is inherently difficult to capture precisely, in terms of dollars saved or fatalities prevented, the effectiveness of mitigation measures taken before an earthquake occurs. A major earthquake in a populated urban area within the United States would cause damage, and a question becomes how much damage would be prevented by mitigation strategies underpinned by the NEHRP program.

A precise relationship between earthquake mitigation measures, NEHRP and other federal earthquake-related activities, and reduced losses from an actual earthquake may never be possible. However, as more accurate seismic hazard maps evolve, as understanding of the relationship between ground motion and building safety improves, and as new tools for issuing warnings and alerts such as ShakeMap and PAGER are devised, trends denoting the effectiveness of mitigation strategies and NEHRP activities may emerge more clearly. Without an ability to precisely predict earthquakes, Congress is likely to face an ongoing challenge in determining the most effective federal approach to increasing the nation's resilience to low-probability but high-impact natural hazards, such as major earthquakes.

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Congressional Research Service

Japan 2011 Disaster: CRS Experts

Ben Dolven
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March 15, 2011

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CRS Report for Congress
Prepared for Members and Committees of Congress

The following table provides access to names and contact information for CRS experts on policy concerns relating to the nuclear and humanitarian disaster unfolding in Japan. Policy areas identified include

- Nuclear power, nuclear safety, and radioactive heath concerns;
- Geology, earthquakes, and tsunamis;
- U.S. relations with Japan;
- U.S. government response to the disaster; and
- Economic impacts of the crisis.

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Fukushima Nuclear Crisis

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CRS Report for Congress
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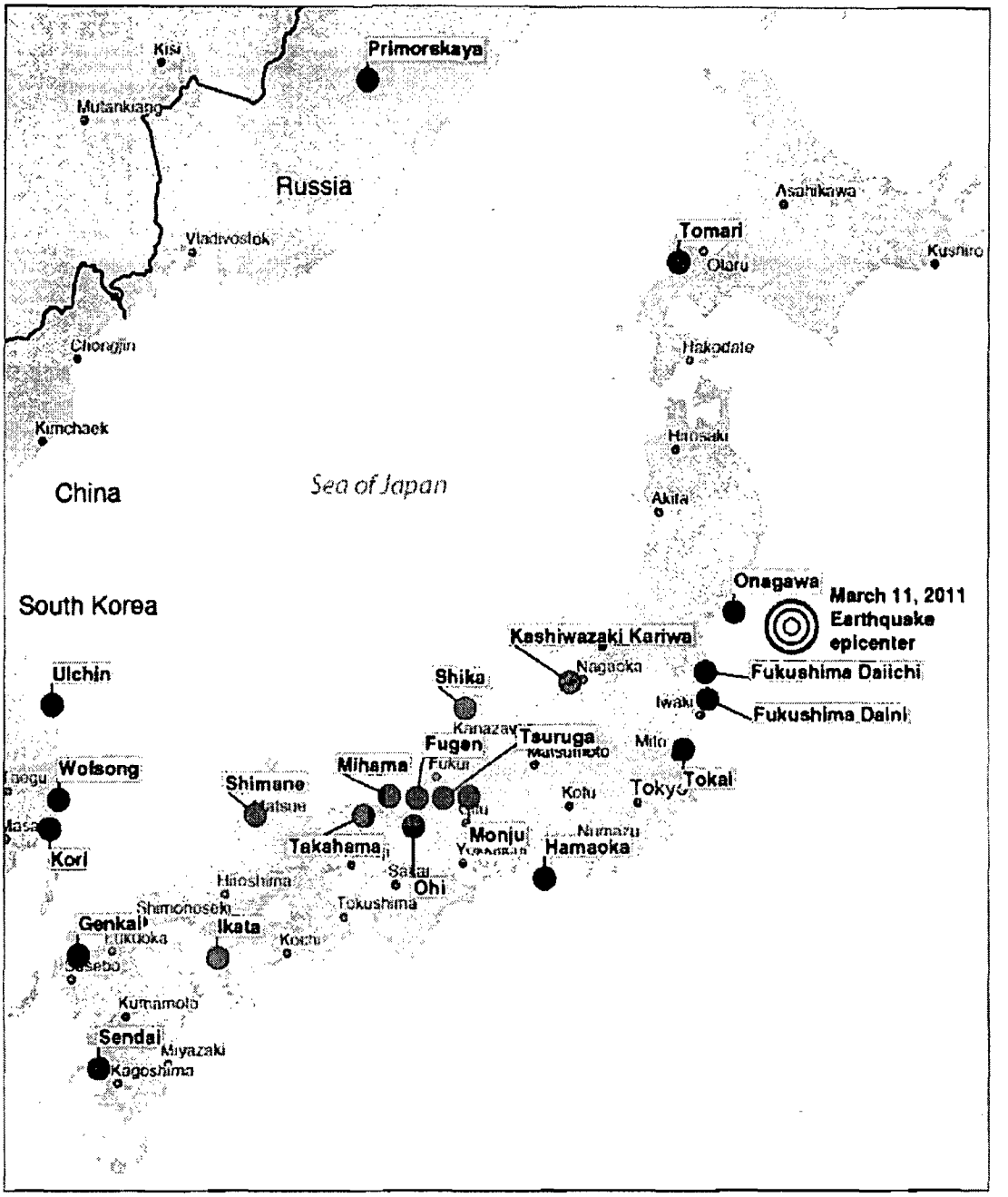
Summary of the Crisis

The earthquake on March 11, 2011, off the east coast of Honshu, Japan's largest island, reportedly caused an automatic shutdown (called a "scram") of eleven of Japan's fifty-five operating nuclear power plants.[1] Most of the shutdowns proceeded without incident. The plants closest to the epicenter, Fukushima and Onagawa (see **Figure 1**), were damaged by the earthquake and resulting tsunami.

[1] *BBC News*, "Timeline: Japan Power Plant Crisis," March 13, 2011, http://www.bbc.co.uk/news/science-environment-12722719.

Figure 1. Japan and Earthquake Epicenter



Source: Nuclear Energy Institute, edited by CRS.

Notes: http://i1107.photobucket.com/albums/h384/reactor1/japan_map1.jpg.

Tokyo Electric Power Company (TEPCO) operates the Fukushima nuclear power complex in the Futaba district of Fukushima prefecture in Northern Japan, consisting of six nuclear units at the Daiichi station and four nuclear units at the Daini station. All the units at the Fukushima complex

are boiling water reactors[2] with reactors 1, 2, and 3 being the General Electric Mark I design (see **Figure 2**). The Fukushima Daiichi reactors entered commercial operations in the years from 1971 (reactor 1) to 1979 (reactor 6). At the time of the earthquake, reactors 1, 2, and 3 at Daiichi were operational and shut down after the quake, while reactors 4, 5, and 6 were already shut down for routine inspections. All four of the Daini reactors were operational at the time of the earthquake and taken down after the quake.

Nuclear fuel rods in a reactor continue to produce heat when the reactor is shut down. To stop the nuclear reaction, control rods[3] are inserted into the reactor. During the cool-down phase, a source of electricity is needed to operate pumps and circulate water in the reactor. Under normal conditions, it would take a few days for a reactor core to cool down to a "cold shutdown" state.[4]

The magnitude 9.0 earthquake triggered a ten meter (33 foot) high tsunami which struck the coast, devastating much of the area and overtopping a six meter high sea wall at Fukushima Daiichi station. The station was cut off from Japan's national electricity grid. Diesel generators at the Daiichi station initially took over the power load but later failed. The tsunami flooded the backup diesel powered electric generators at the station, sweeping away the diesel fuel tanks, and knocking out the backup cooling capability for the station's nuclear reactors.[5]

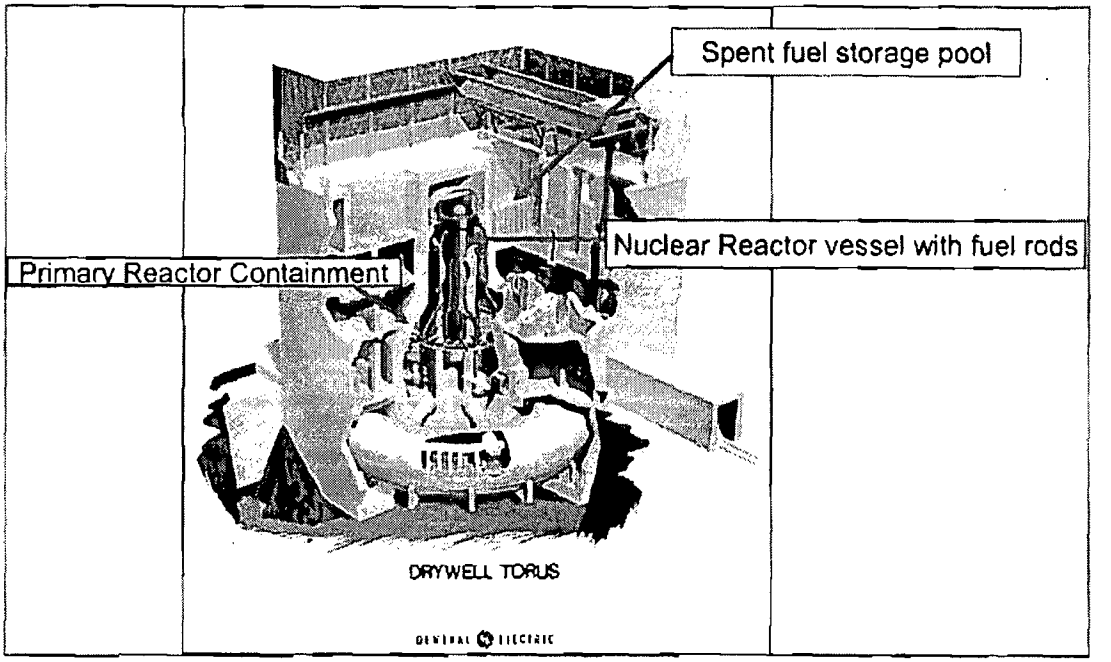
[2] A common nuclear power reactor design in which water flows upward through the core, where it is heated by fission and allowed to boil in the reactor vessel. The resulting steam then drives turbines, which activate generators to produce electrical power. BWRs operate similarly to electrical plants using fossil fuel, except that the BWRs are powered by 370–800 nuclear fuel assemblies in the reactor core rather than burning coal or natural gas to create steam. U.S. Nuclear Regulatory Commission, "Boiling-Water Reactor (BWR)," http://www.nrc.gov/reading-rm/basic-ref/glossary/boiling-water-reactor-bwr.html

[3] A rod, plate, or tube containing a material such as hafnium, boron, etc., used to control the power of a nuclear reactor. By absorbing neutrons, a control rod prevents the neutrons from causing further fissions. U.S. Nuclear Regulatory Commission, "Control Rod," http://www.nrc.gov/reading-rm/basic-ref/glossary/control-rod.html.

[4] U.S. Nuclear Regulatory Commission, "Cold Shutdown," http://www.nrc.gov/reading-rm/basic-ref/glossary/cold-shutdown.html.

[5] *BBC News*, "Timeline Japan Power Plant Crisis," March 13, 2011, http://www.bbc.co.uk/news/science-environment-12722719.

Figure 2. General Electric Mark I Boiling Water Reactor and Containment Building



Source: http://www.nrc.gov/.

TEPCO immediately began to experience problems with the Daiichi units, as temperatures began to rise in the reactors. With the primary and secondary cooling systems for the Daiichi reactors offline, TEPCO began trying to cool the reactor cores with seawater. Boron[6] has been added to the seawater to help slow down the nuclear reactions and cool down the reactor cores. Pressure began building in Daiichi reactor 1, resulting in an explosion on March 13, 2011, and radiation leak possibly from a build-up of hydrogen gas. Falling water levels in the reactor core are thought to have exposed fuel rods, leading to oxidation of the zirconium cladding resulting in the formation of hydrogen gas.

An explosion was reported at reactor 3 on March 14, 2011, with an associated release of radiation. At this time, while the containment structures at reactors 1 and 3 were breached, the reactor vessels themselves were thought to be undamaged. Falling water levels in reactor 2 and increasing pressure eventually led to another explosion on March 15, 2011, resulting in damage to the roof of the building above the reactor vessel and a release of radiation. It was unclear at that time whether the reactor vessel itself was damaged in the explosion. Fires were also reported at reactor 4, with the loss of water levels in the spent fuel pool. Elevated radiation levels measured around reactor 4 caused the temporary suspension of reactor control room operations on March 16, 2011. The spent fuel pool of reactor 3 was also reported to be boiling, with the reported release of radioactive steam. Water is also being introduced to the non-operational reactors 5 and 6 at the Daiichi station. The Japanese military may be enlisted to pump water into reactor 3 and the spent fuel pool in reactor 4.[7]

[6] Boron is the main material that goes into control rods used to halt or slow fission reactions in nuclear reactors. *Japan Times Online*, "Seoul to Send Boron in Bid to Cool Reactors," March 16, 2011, http://search.japantimes.co.jp/cgi-bin/nn20110317a9.html.

[7] *Reuters*, "Timeline for Japan's Unfolding Nuclear Crisis," March 16, 2011, http://www.vision.org/visionmedia/ (continued...)

Efforts continue in Japan to try to cool the nuclear reactors at the Daiichi station and keep water in the spent fuel pools. Loss of cooling water has reportedly led to "prolonged" exposure of fuel rods in the reactor cores, resulting in hydrogen gas formation. The explosions at reactors 1, 2, and 3 are thought to have been caused by the buildup of hydrogen gas. TEPCO is trying to build a new power line to supply electricity to the Daiichi station. It is unclear how long it will take to complete the line. However, it is not clear to what extent that any of the reactor core cooling systems are functioning at reactors 1, 2 and 3. Experts suggest that as long as the fuel cores can be kept covered with liquid water, the reactors cores should continue to cool, and a cold shutdown state may yet be achieved in all the Daiichi reactors.

If the fuel rods in the reactor cores cannot be cooled down, temperatures will continue to increase and the nuclear fuel assemblies would likely melt. In such a situation, a full meltdown or explosion could result in a major breach of the reactor vessel and extreme measures may be needed to contain a major radioactive release. This could mean filling the surviving reactor containment structures with concrete. Eventually, a reinforced concrete structure would be needed over the reactor containment buildings and the site monitored for radioactive releases.

The Fukushima Daini station is approximately 12 kilometers south of the Daiichi station, and further removed from the epicenter of the earthquake. The earthquake and tsunami apparently caused damage to the emergency core cooling systems at reactors 1, 2, and 4, while reactor 3 was apparently able to shut down without problems. The station reportedly retained offsite power to maintain its ability to circulate cooling water in the reactor. The makeup water and condensate systems were used as an emergency measure to maintain cooling water levels in reactors 1, 2, and 4. TEPCO has since made repairs to the cooling systems, and stable, cold shutdown conditions are reported at all Daini reactors as of March 14, 2011.[8]

The United States and other countries, as well as the International Atomic Energy Agency, are providing assistance to Japan to deal with the nuclear crisis. According to the U.S. State Department, Japan has requested foreign assistance including consequence management support, transport of pumps, boron, fresh water, remote cameras, global hawk surveillance, evacuation support, medical support, decontamination, and radiation monitoring equipment. A U.S. Nuclear Regulatory Commission advisory team is in Japan at the Japanese government's request. The Department of Energy has sent radiation monitoring equipment, and the U.S. Department of Defense has provided high-pressure water pumps and fire trucks.

(...continued)

article.aspx?id=42042.

[8] *World Nuclear News*, "All Fukushima Daini Units in Cold Shutdown," March 14, 2011, http://www.world-nuclear-news.org/IT-All_Fukushima_Daini_units_in_cold_shutdown-1503114.html.

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U.S. Tsunami Programs: A Brief Overview

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Summary

A 9.0 magnitude earthquake struck off Japan's northeast coast near Honshu in the afternoon on Friday, March 11, 2011 (12:46 a.m. eastern time in the United States). The earthquake triggered a tsunami that has caused widespread devastation to parts of the coastal regions in Japan closest to the earthquake. The tsunami traveled across the Pacific Ocean, and the National Oceanic and Atmospheric Administration (NOAA) tsunami warning centers in Hawaii and Alaska issued tsunami warnings for coastal areas of Hawaii, Guam, the Commonwealth of the Northern Marianas, American Samoa, Alaska, and California. Although the tsunami caused widespread damage along the northeast coast of Japan, tsunami warnings issued from the tsunami warning centers gave the above U.S. Pacific territories, Hawaii, and the U.S. West Coast adequate warning to prepare for incoming waves.

NOAA's National Weather Service (NWS) manages the two tsunami warning centers that monitor, detect, and issue warnings for tsunamis generated in the Pacific Ocean. The NWS operates the Pacific Tsunami Warning Center (PTWC) at Ewa Beach, HI, and the West Coast/Alaska Tsunami Warning Center (WC/AKTWC) at Palmer, AK. The National Tsunami Hazards Mitigation Program (NTHMP) assists states in emergency planning and in developing maps of potential coastal inundation for a tsunami of a given intensity. The goal of NTHMP is to ensure adequate advance warning of tsunamis along all the U.S. coastal areas and appropriate community response to a tsunami event.

The tsunami warning centers monitor and evaluate data from seismic networks and determine if a tsunami is likely based on the location, magnitude, and depth of an earthquake. If the center determines that a tsunami is likely, it transmits a warning message to NOAA's weather forecasting offices and state emergency management centers, as well as to other recipients. The centers monitor coastal water-level data, typically with tide-level gages, and data from NOAA's network of Deep-ocean Assessment and Reporting of Tsunamis (DART) detection buoys to confirm that a tsunami has been generated, and if not, to cancel any warnings. Shortly after the 2004 tsunami in the Indian Ocean, Congress passed the Tsunami Warning and Education Act (P.L. 109-424), to enhance and modernize the existing Pacific Tsunami Warning System to increase coverage, reduce false alarms, and increase the accuracy of forecasts and warnings, among other purposes. As a result, the array was expanded to a total of 39 DART buoys in March 2008.

Funding for the NOAA tsunami program supports three main categories of activities: (1) *warning*, such as the activities of the tsunami warning centers and DART network; (2) *mitigation*, such as the activities of NTHMP; and (3) *research*, including activities conducted by the Pacific Marine Environmental Laboratory and the National Buoy Data Center. The Government Accountability Office (GAO) noted that total funding for all these activities ranged from $5 million to $10 million annually between FY1997 and FY2004, but increased after the 2004 Indian Ocean tsunami from approximately $27 million in FY2005 to $42 million in FY2009. Funding in FY2010 was $41 million.

Currently, 7 of the 39 DART buoys are not operational. Of the 7 buoys that are not working, 5 are deployed in the Pacific Ocean. If more DART buoys fail, and regional forecasting capabilities are impaired, then the NOAA Administrator must notify Congress within 30 days. According to NOAA, the current continuing resolution (P.L. 112-4) does not allow the NWS to allocate FY2011 funding to purchase ship time required to repair the 7 DART buoys that are not working.

Contents

Figures

Contacts

Japan Earthquake and Tsunami

A 9.0 magnitude massive earthquake struck off Japan's northeast coast near Honshu in the afternoon on Friday, March 11, 2011 (12:46 a.m. eastern time in the United States). The earthquake triggered a tsunami[1] that has caused widespread devastation to parts of the coastal regions in Japan closest to the earthquake. The tsunami traveled across the Pacific Ocean, and the National Oceanic and Atmospheric Administration (NOAA) tsunami warning centers in Hawaii and Alaska issued tsunami warnings for coastal areas of Hawaii, Guam, the Commonwealth of the Northern Marianas, American Samoa, Alaska, and California. The first tsunami waves reached Hawaii in the early morning of March 11,[2] and reached the west coast of the United States later in the morning (Pacific time). Although the tsunami caused widespread damage along the northeast coast of Japan, tsunami warnings issued from the tsunami warning centers gave the above U.S. Pacific territories, Hawaii, and the U.S. West Coast adequate warning to prepare for incoming waves.[3] In addition, the long distance traveled across the Pacific from the earthquake epicenter attenuated the energy associated with the tsunami thousands of miles from its source. In contrast, the city of Sendai, Japan, is just 80 miles west of the epicenter.[4]

Tsunami Warning Centers

NOAA's National Weather Service (NWS) manages the two tsunami warning centers that monitor, detect, and issue warnings for tsunamis generated in the Pacific Ocean. The NWS operates the Pacific Tsunami Warning Center (PTWC) at Ewa Beach, HI, and the West Coast/Alaska Tsunami Warning Center (WC/AKTWC) at Palmer, AK. The PTWC monitors for tsunamis and issues warnings for the Hawaiian Islands, the U.S. Pacific territories, and other U.S. and international interests in the Pacific Basin. The center was established in 1949, after a strong earthquake and massive landslides off the coast of southwest Alaska caused a disastrous tsunami for the Hawaiian Islands only hours later. The WC/AKTWC was established in 1967, following a magnitude 9.2 earthquake that struck Anchorage, AK, in 1964 and caused major earthquake and localized tsunami damages.[5] The WC/AKTWC is responsible for issuing tsunami warnings to emergency management officials in Alaska, British Columbia (Canada), Washington State, Oregon, and California. The WC/AKTWC also serves as the center for warning U.S. populations located in the western Atlantic.

[1] A tsunami is a large ocean wave typically caused by a subsea earthquake or volcanic eruption that can cause extreme destruction when it strikes land.

[2] CNN U.S., *Tsunami Waves Reach Hawaii, Eye West Coast*, CNN Wire Staff, March 11, 2011, http://www.cnn.com/2011/US/03/11/tsunami/index.html?hpt=T1.

[3] Despite the tsunami warnings, some communities along the West Coast and in Hawaii suffered damages. For example, some boats and harbor facilities were damaged by the tsunami in Crescent City, CA, although most of the fishing fleet headed out to sea to avoid the waves before they reached the harbor, according to the Los Angeles Times. Crescent City has suffered tsunami damage in the past, particularly from the 1964 Good Friday earthquake that struck Alaska. See Maria L. La Ganga, "Crescent City Comes to Grips with Tsunami's Devastation," *Los Angeles Times*, March 13, 2011, http://www.latimes.com/news/local/la-me-japan-quake-crescent-city-20110313,0,5296998.story.

[4] U.S. Geological Survey, Earthquake Hazards Program, http://earthquake.usgs.gov/earthquakes/eqinthenews/2011/usc0001xgp/#details.

[5] See NOAA, NWS, "How *TsunamiReady* Helps Communities and Counties at Risk," http://www.tsunamiready.noaa.gov/.

The National Tsunami Hazards Mitigation Program

The National Tsunami Hazards Mitigation Program (NTHMP) assists states in emergency planning and in developing maps of potential coastal inundation for a tsunami of a given intensity. The NTHMP also operates tsunami disaster outreach and education programs through NOAA's *TsunamiReady* program. In 1992, NOAA launched the NTHMP to address the credibility of Pacific tsunami warnings and to reduce the number of "false alarms." The goal of NTHMP is to ensure adequate advance warning of tsunamis along all the U.S. coastal areas and appropriate community response to a tsunami.[6]

Detecting Tsunamis and Issuing Warnings

The tsunami warning centers monitor and evaluate data from seismic networks and determine if a tsunami is likely based on the location, magnitude, and depth of an earthquake.[7] If the center determines that a tsunami is likely, they transmit a warning message to NOAA's weather forecasting offices and state emergency management centers, as well as to other recipients. The centers monitor coastal water-level data, typically with tide-level gages, and data from NOAA's network of Deep-ocean Assessment and Reporting of Tsunamis (DART) detection buoys to confirm that a tsunami has been generated, and if not, to cancel any warnings.[8] A generalized decision tree network for the earthquake-detection-through-warning process is shown in **Figure 1**.

Warnings Triggered by the March 11, 2011, Tsunami

Initial warnings of an impending tsunami were first issued by the PTWC based on seismic information before the network of DART buoys and tide gages actually detected a wave generated by the earthquake.[9] According to NOAA, initial tsunami warnings are normally based only on seismic information to provide the earliest possible alert.[10] Because tsunamis travel more slowly than seismic waves, confirmation of a tsunami may take much longer than confirmation of an earthquake. That was the case for the March 11, 2011, tsunami. The DART network first detected the earthquake-triggered wave 27 minutes after the earthquake struck at 2:46 p.m. local time in Japan,[11] confirming that a tsunami had been generated and could lead to significant widespread inundation around the Pacific Ocean. **Figure 2** shows results from a model depicting the tsunami wave propagation across the Pacific Ocean.

[6] NOAA FY2012 Blue Book, Chapter 5, National Weather Service, p. 691. http://www.corporateservices.noaa.gov/nbo/fy12_presidents_budget/National_Weather_Service_FY12.pdf

[7] Nearly all tsunamis are triggered by subsea earthquakes, although some may also be caused by underwater volcanic eruptions or landslides.

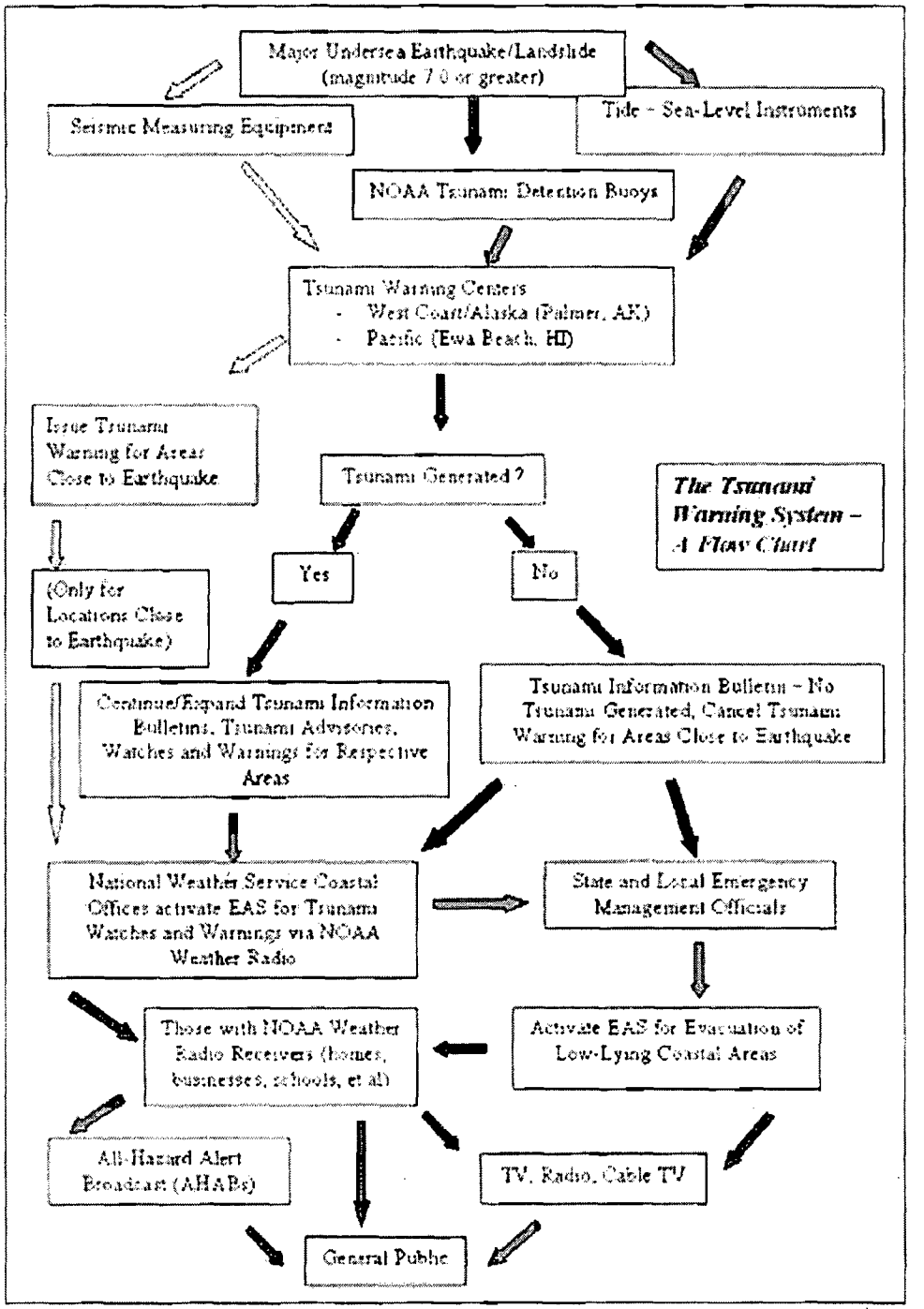
[8] U.S. Government Accountability Office, *U.S. Tsunami Preparedness. NOAA Has Expanded Its Tsunami Programs, but Improved Planning Could Enhance Effectiveness*, GAO-10-490, April 2010, p. 5

[9] DART buoy 21418; telephone conversation with Laura Furgione, Deputy Director, National Weather Service, March 15, 2011

[10] NWS, Pacific Tsunami Warning Center, *About PTWC Messages*, http://ptwc.weather.gov/ptwc/about_messages.php.

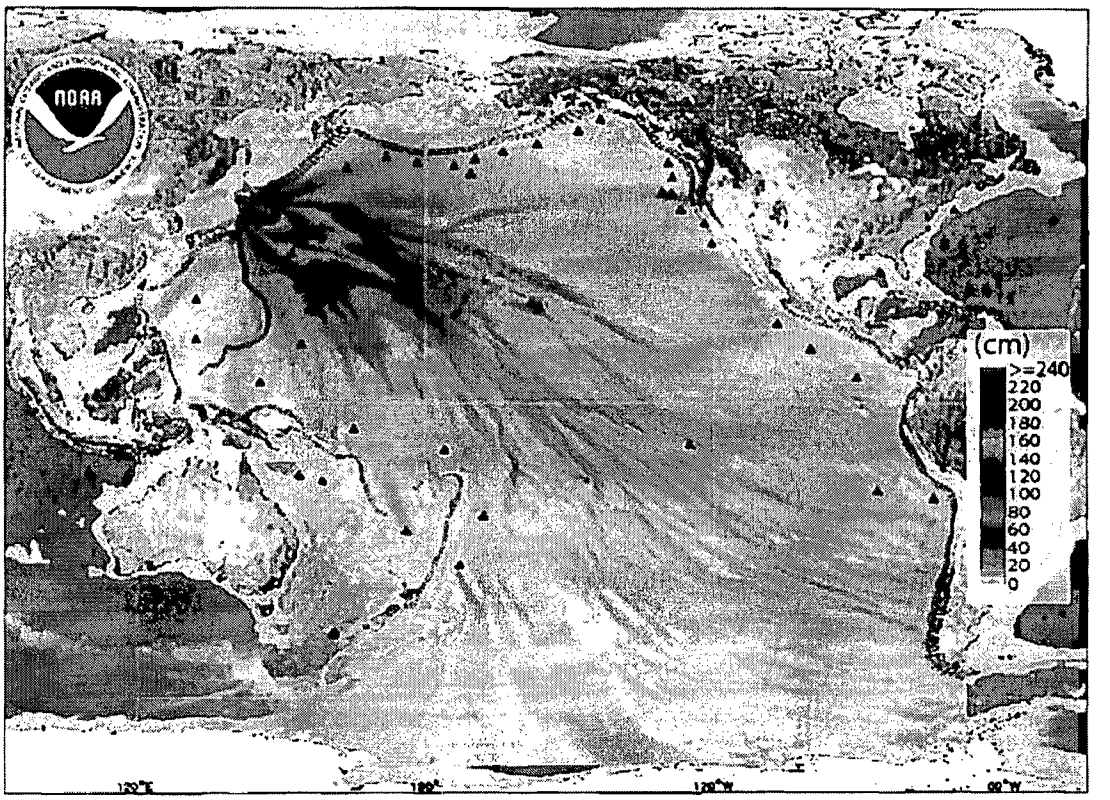
[11] Telephone conversation with Laura Furgione, March 15, 2011.

Figure 1. Flow Chart of the Tsunami Warning System



Source: NOAA, *How Does the Tsunami Warning System Work?* http://www.tsunami.noaa.gov/images/warning-system-smaller.jpg.

Figure 2. Results from NOAA Model Depicting the March 11, 2011 Tsunami Propagating Across the Pacific Ocean



Source: NOAA Center for Tsunami Research, Pacific Marine Environmental Laboratory, http://nctr.pmel.noaa.gov/honshu20110311/.

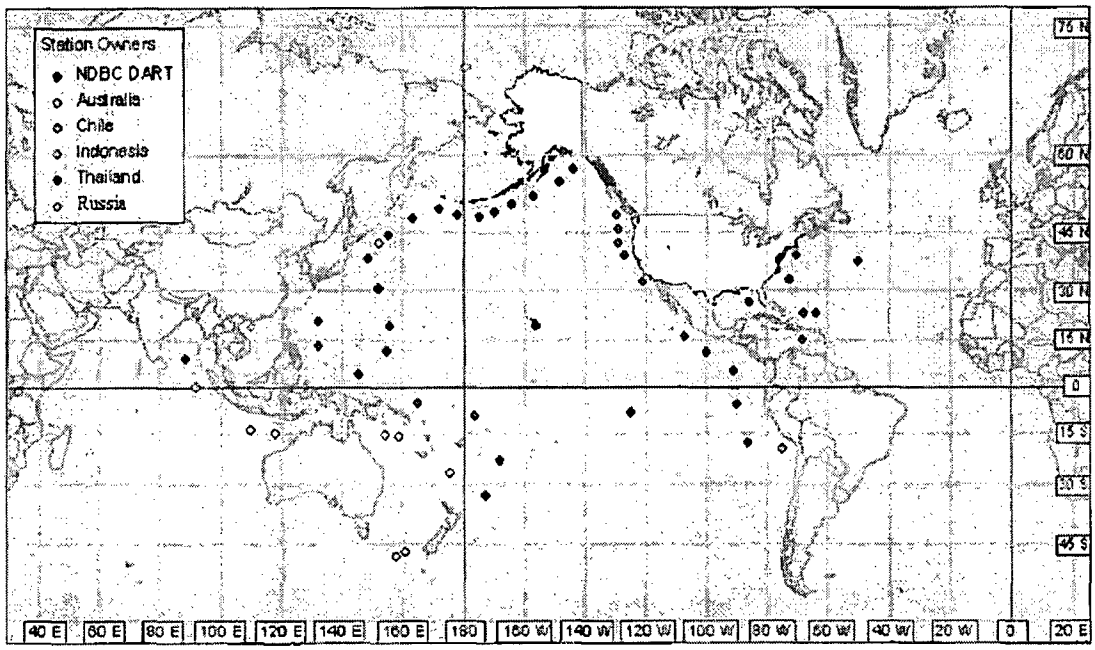
Notes: Colors indicate the wave amplitude in centimeters (see scale bar on right side of figure); contour labels indicate the computed tsunami arrival times. Black triangles indicate location of Deep-ocean Assessment and Reporting of Tsunamis (DART) detection buoys.

The DART Buoy Network

NOAA first completed a six-buoy DART array in 2001 in the Pacific Ocean. Shortly after the 2004 Indian Ocean earthquake and tsunami that killed over 200,000 people, Congress passed H.R. 1674, the Tsunami Warning and Education Act (P.L. 109-424), to enhance and modernize the existing Pacific Tsunami Warning System to increase coverage, reduce false alarms, and increase the accuracy of forecasts and warnings, among other purposes. In part, the 2004 tsunami provided the impetus to expand and upgrade the DART system and to improve the U.S. capability to detect and issue warnings for tsunamis generally. As a result, the array was expanded to a total of 39 DART buoys in March 2008.[12] (See **Figure 3**.)

[12] According to NOAA, 33 of the DART buoys are deployed in the Pacific Ocean, and the rest are deployed in the Atlantic Ocean and Caribbean. NOAA National Data Buoy Center, Deep-ocean Assessment and Reporting of Tsunamis (DART) Description, http://www.ndbc.noaa.gov/dart/dart.shtml.

Figure 3. Locations of DART Buoys



Source: NOAA National Data Buoy Center, http://www.ndbc.noaa.gov/dart.shtml

Notes: The United States owns and operates 39 of the DART Buoys.

Currently, 7 of the 39 buoys are not operational and in need of repair. Of the 7 buoys that are not working, 5 are deployed in the Pacific Ocean. Other countries also operate DART buoys in the Pacific (e.g., Australia and Russia), but if another U.S. DART buoy ceases to function less than 80% of the U.S. DART network would be operational. The Tsunami Warning and Education Act (P.L. 109-424) requires that NWS ensure that maintaining operations of tsunami detection equipment is the highest priority within the tsunami forecasting and warning program at NOAA. Further, P.L. 109-424 requires that the NOAA Administrator notify Congress[13] within 30 days of (1) impaired regional forecasting capabilities due to equipment or system failures; and (2) significant contractor failures or delays in completing work associated with the tsunami forecasting and warning system.[14]

Tsunami Warnings from the Japan Meteorological Agency

According to the International Tsunami Information Center, which operates under the International Oceanographic Commission (IOC)—part of the U.N.'s Educational, Scientific, and Cultural Organization (UNESCO)—the Japan Meteorological Agency (JMA) issued a major

[13] Specifically, P.L. 109-424 requires the NOAA Administrator to notify the Committee on Commerce, Science, and Transportation in the Senate and the Committee on Science (now Science, Space, and Technology) in the House.

[14] The statute does not define what is considered impairment of the forecasting abilities, or what is a threshold for significant contractor failures or delays. However, the committee report accompanying the bill states that NWS is required to notify Congress when the tsunami forecasting capabilities are impaired for more than three months; U.S. Congress, House Science, *United States Tsunami Warning and Education Act*, report to accompany H.R. 1674, 109th Cong., 2nd sess., 2006, H.Rept. 109-698, p. 10. NWS uses an 80% operational threshold as its internal guideline; Telephone conversation with Laura Furgione, March 15, 2011.

tsunami warning 3 minutes after the earthquake struck at 3:46 pm local time.[15] The first regional tsunami bulletins were issued by the North West Pacific Tsunami Advisory Centre (NWPTAC), operated by the JMA, about 9 minutes after the earthquake occurred.[16] The first tsunami wave reached the Japan coastline nearest to the epicenter about 15 minutes after the earthquake.[17]

The network of tsunami warning centers is coordinated under the umbrella of the IOC, through its Tsunami Programme, which falls under the auspices of UNESCO. According to the IOC, its role is coordinating the regional tsunami warning systems.[18] The IOC coordinates the Indian Ocean Tsunami Warning and Mitigation System (IOTWS), in addition to its role in the Pacific, per U.N. mandate after the 2004 Indian Ocean tsunami. The IOC also coordinates similar systems in the Caribbean (CARIBE-EWS) and the North-Eastern Atlantic and Mediterranean (NEAMTWS).

The IOC noted that for the March 11 earthquake the warning centers operated well and according to expectations: the seismic systems identified the location and magnitude of the earthquake within minutes and allowed for early warnings; the DART buoys confirmed the initial tsunami warnings and alerts; and the communication systems allowed for near-real time monitoring.[19] As a result, countries with Pacific Ocean coastlines received adequate warning in time to prepare for the oncoming tsunami waves. Northeast Japan, however, suffered the worst damage because it is so close to the epicenter, and the waves struck before people could evacuate to safety. In such instances, the ground shaking caused by the earthquake may be the only early indicator for people to act upon who live closest to the epicenter of an impending tsunami.[20]

Funding for the Tsunami Program

Funding for the NOAA tsunami program supports three main categories of activities: (1) *warning*, such as the activities of the tsunami warning centers and DART network; (2) *mitigation*, such as the activities of NTHMP; and (3) *research*, including activities conducted by the Pacific Marine Environmental Laboratory and the National Buoy Data Center.[21] In the NOAA budget, these activities are cross-cutting among different activities under the NWS line item.[22] GAO, which analyzed funding data for the three general categories, noted that total funding for all these activities ranged from $5 million to $10 million annually between FY1997 and FY2004, but increased after the 2004 Indian Ocean tsunami from approximately $27 million in FY2005 to $42 million in FY2009. According to GAO, the proportion of funding allocated to warning activities increased from about 40% of the total in FY2004 to approximately 70% of the funding in FY2009.[23] The proportion allocated to mitigation decreased from approximately 50% of the total

[15] UNESCO, International Tsunami Information Center, http://itic.ioc-unesco.org/.

[16] World Meteorological Organization, March 11, 2011, http://www.wmo.int/pages/mediacentre/news/index_en.html.

[17] UNSESCO, Intergovernmental Oceanographic Commission, http://ioc-unesco.org/.

[18] UNESCO, International Tsunami Information Center, http://itic.ioc-unesco.org/.

[19] Ibid.

[20] Personal communication, Dr. Gregory van der Vink, seismologist, March 14, 2011.

[21] U.S. Government Accountability Office, *U.S. Tsunami Preparedness: NOAA Has Expanded Its Tsunami Programs, but Improved Planning Could Enhance Effectiveness*, GAO-10-490, p. 7.

[22] For example, the FY2010 enacted budget contains a line item: Strengthen U.S. Tsunami Warning Network—$23.264 million. However, research activities for tsunamis are included in the overall budget for the Pacific Marine Environmental Laboratory and for the National Buoy Data Center.

[23] U.S. Government Accountability Office, *U.S. Tsunami Preparedness: NOAA Has Expanded Its Tsunami Programs*, (continued...)

in FY2004 to about 30% in FY2009, while the proportion for research remained steady between about 6% to 10%.

Funding for the NWS tsunami program for FY2010 was approximately $41 million, allocated as follows:

- $23 million—Strengthen U.S. Tsunami Warning Program;
- $13 million—Spectrum Auction funding;[24]
- $4 million—NWS/Local Warnings and Forecasts; and
- $1 million—Office of Oceanic and Atmospheric Research/Pacific Marine Environmental Laboratory.[25]

In 2010, the Government Accountability Office (GAO) found that NOAA had made progress since 2005 in expanding and strengthening its tsunami warning and mitigation capabilities, including the deployment of the 39 DART buoys. GAO also found that operating and maintaining the buoys has proved difficult and costly, consuming about 28% of the total NOAA Tsunami Warning Program budget in FY2009.[26] GAO noted that NOAA is exploring ways to reduce maintenance costs by improving buoy reliability.

According to NOAA, the current continuing resolution (P.L. 112-4) does not allow the NWS to allocate FY2011 funding to purchase ship time required to repair the seven DART buoys that are not working.[27] As noted above, the delay or failure in completing work associated with the tsunami forecasting and warning system by contractors should also trigger notification of Congress by the NOAA Administrator under P.L. 109-424.

Additional Reading

CRS Report RL33861, *Earthquakes: Risk, Detection, Warning, and Research*, by Peter Folger.

CRS Report RL33436, *Japan-U.S. Relations: Issues for Congress*, coordinated by Emma Chanlett-Avery.

CRS Report R41023, *Haiti Earthquake: Crisis and Response*, by Rhoda Margesson and Maureen Taft-Morales.

(...continued)

but Improved Planning Could Enhance Effectiveness, GAO-10-490, p. 8.

[24] Starting in FY2009, the tsunami program received funding from the proceeds of the Federal Communication Commission's auctioning of broadcast frequency spectrum. In FY2012, the program will be augmented by $12.7 million from auction proceeds, according to NOAA. Total funding received from auction proceeds will be approximately $50 million for the tsunami program at the end of FY2012, according to GAO.

[25] E-mail from Lara Hinderstein, NOAA Budget Outreach and Communications, March 11, 2011.

[26] U.S. Government Accountability Office, *U.S. Tsunami Preparedness: NOAA Has Expanded Its Tsunami Programs, but Improved Planning Could Enhance Effectiveness*, GAO-10-490, p. 21.

[27] Approximately $4 million would required, according to NOAA. Telephone conversation with Laura Furgione, March 15, 2011

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Congressional Research Service

Japan 2011 Earthquake: U.S. Department of Defense (DOD) Response

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March 17, 2011

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CRS Report for Congress
Prepared for Members and Committees of Congress

Overview

With almost 40,000 U.S. troops stationed in Japan, the March 11, 2011, earthquake and tsunami is unique in that U.S. forces and associated resources were located in close proximity to deal with the crisis. All services—Army, Navy, Marine Corps, and Air Force—are present in Japan in various capacities. In addition, U.S. forces train regularly with their Japanese Self Defense Force (SDF) counterparts, including many humanitarian assistance and disaster relief exercises.

With 100,000 SDF troops called up to respond to the disaster, U.S. forces were able to coordinate their efforts almost immediately to provide support for the Japanese responders. Within five days of the earthquake, the SDF had deployed 76,000 personnel (45,000 ground, 31,000 air and maritime); 194 rotary aircrafts and 322 fixed-wings; and 58 ships. As of March 16, the SDF had rescued 19,300 people, in addition to supporting activities at the troubled nuclear reactors.[1]

Operational Update[2]

DOD officials report that as of the morning of March 17, 14 U.S. naval ships and their aircraft and 17,000 sailors and Marines are now involved in humanitarian assistance and disaster relief efforts in and around Japan. These efforts have included 132 helicopter sorties and 641 fixed-wing sorties moving both people and supplies, assisting in search and rescue efforts, and delivering 129,000 gallons of water and 4,200 pounds of food. These totals are increasing by the hour, although some helicopter activities have been limited by poor weather and visibility. All search and rescue assets from Okinawa, the southernmost part of Japan, have been moved to Yokota Air base outside of Tokyo to be deployed to the north. Further details are in the sections on each branch's operations below.

DOD Funding[3]

On March 12, Secretary of Defense Gates authorized U.S. Pacific Command (USPACOM) to continue disaster relief operations and approved $35 million in Overseas Humanitarian, Disaster, and Civic Aid (OHDACA) funding for these purposes. As the scope and duration of DOD's support becomes better defined, it is possible that additional funding will be required.

Status of DOD Facilities and Personnel

Initial DOD efforts after the earthquake were focused on what can be described as "force protection," such as relocating naval vessels and aircraft so that potential damage from the impending tsunami would be mitigated, as well as protecting and accounting for U.S. military personnel, 43,000 dependents, and 5,000 DOD civilian employees stationed in Japan. These force

[1] Japanese Ministry of Defense, http://www.mod.go.jp/j/press/news/2011/03/16d.html

[2] Cheryl Pellerin, "Ships, Aircraft Support Japan Relief Effort," *American Forces Press Service*, March 16, 2011.

[3] Operational Update provide to CRS by the Office of Secretary of Defense Office for Legislative Affairs, March 16, 2011.

protection efforts appear to have been successful, as there were no reported DOD-related fatalities and no reports of major damage to DOD facilities or equipment.[4]

Voluntary Departure of DOD Dependents[5]

After the State Department authorized voluntary departure for family members and dependents of U.S. government personnel who wish to leave northeast Japan on March 17, DOD stated that it would implement the State Department's plan for eligible DOD dependents. It was reported that Navy bases in the Tokyo area will begin voluntary evacuations for family members as early as the evening of March 17. The Navy reportedly has the capability to evacuate up to 10,000 people per day.

Operation Tomodachi[6]

DOD's relief effort has been designated "Operation Tomodachi"—Japanese for "friend"—and consists at this point primarily of search-and-rescue missions and the delivery of humanitarian aid. U.S. airlift capability is particularly valuable in reaching survivors in the devastated areas. The U.S. airbase Misawa, located in Aomori prefecture in northeastern Japan, was shaken violently by the earthquake but escaped with only minor damage. The facility is being used as a forward operating base for both U.S. and SDF forces. In addition, the government of Japan granted permission for U.S. forces to use Yamagata airport, the first time such an allowance has been approved. SDF troops are also using the facility.[7]

Response to Damaged Nuclear Reactors

It is not yet clear to what extent DOD will be involved in responding to the problems at the affected nuclear reactor. On a force protection level, U.S. forces both ashore in Japan as well as at sea and in the air are well-equipped to monitor radiation levels as well as to decontaminate personnel and equipment that might become contaminated by radiological materials. On March 15, sensitive instrumentation on the USS *George Washington* in Yokosuka detected low levels of radioactivity from the Fukushima plant.

As the crisis surrounding the stricken reactors at the Fukushima Dai-ichi facility intensified, it appeared that the United States was stepping up efforts to assist the government of Japan (GoJ). On March 16, news outlets reported that the Global Hawk drone would fly over the reactor site in order to collect data and imagery for the GoJ.[8] On March 17, the U.S. Navy Seventh Fleet reported that five high-pressure water pumps from Sasebo and 100 Nuclear, Biological, Chemical

[4] Cheryl Pellerin, "Military Gears Up to Help Japan," *American Forces Press Service*, March 11, 2001.

[5] Operational Update provide to CRS by the Office of Secretary of Defense Office for Legislative Affairs, March 17, 2011 and Erik Slavin, "Navy to Begin Voluntray Evacuation of Families in Japan," *Stripes.com*, March 17, 2011.

[6] Information in this section is taken from Fred W. Baker III, "U.S. Forces Provide Relief Aid to Japan," *American Forces Press Service*, March 13, 2011; Chris Carroll et al, "Relief Efforts Limited Days After the Earthquake," *American Forces Press Service*, March 13, 2011; and Phil Stewart, "More U S. Ships Head to Japan, Radiation Risk Eyed," *Reuters.com*, March 14, 2011.

[7] "Japan, U.S. Engage in Record-scale Cooperation for Quake Relief," *Sankei News*, March 17, 2011.

[8] "Northrop Drone Set to Overfly Japan Reactor, Seek Data on Damage," *Bloomberg News*, March 16, 2011.

(NBC) suits and masks were delivered to the government of Japan to be employed at the troubled Fukushima plant. The Naval Disometer Center is sending 2,000 personal disometers (devices to monitor radiation exposure on individuals) to Japan. The U.S. military also contributed two fire trucks to Japanese authorities for use at the site.

Naval Activities[9]

The USS *Ronald Reagan* Carrier Strike Group, which includes the cruiser USS *Chancellorsville*, the destroyer USS *Preble*, and the combat support ship USS *Bridge*, was diverted from military exercises around Korea and is now conducting operations off the coast of east Honshu. The USS *Ronald Reagan*, with its 3,200 sailors and 2,480 aviators and air wing personnel and 85 aircraft, in addition to conducting flight operations, is expected to serve as a refueling platform for helicopters from the Japanese SDF, Japanese Coast Guard, and civilian authorities involved in rescue and recovery efforts. Seventeen members of the *Reagan's* crew were exposed to low-level radiation and were successfully decontaminated.[10]

Guided missile destroyers USS *Fitzgerald*, USS *John S. McCain*, USS *McCampbell*, and the USS *Curtis Wilbur* are also operating in close proximity to the USS *Ronald Reagan* Group, and the destroyer USS *Mustin* is at sea south of the disaster site. As of March 16, the group has already flown scores of sorties to deliver around 40 tons of humanitarian supplies to the affected areas.

The USS *Tortuga*, an amphibious dock landing ship that had been docked at the U.S. naval base in Sasebo, picked up over 90 SDF vehicles and nearly 300 SDF forces from Hokkaido, Japan's northernmost island, and delivered them to northern Honshu. The Tortuga also transported 5,000 bottles of water and 5,000 Meals Ready to Eat (MREs).

The USS *Essex*, an amphibious assault ship with the 31st Marine Expeditionary Unit aboard, and the USS *Harpers Ferry* and USS *Germantown* amphibious dock landing ships have arrived in the Sea of Japan and will conduct operations from Japan's west coast due to concerns about radiation levels closer to the Fukushima reactor site on the east coast. This position will allow access to undamaged roads to deliver relief supplies. One primary mission will be the re-opening of the severely damaged Sendai airport in order for it to serve as an operating base for disaster response in the surrounding area.

The USS *Blue Ridge*, the Seventh Fleet's command ship, arrived in the Okinawa vicinity and loaded personnel and additional supplies. It is expected in the disaster region within the next day.

Marine Corps Ground Activities

The III Marine Expeditionary Force is opening a command element and two forward refueling points at the Yamagata airport, located about 35 miles from Sendai.

Two U.S. Marine Corp Humanitarian Assistance Support (HAS) teams from the III Marine Expeditionary Force have arrived in the affected area, with two more HAS teams expected in the

[9] Information reported on U.S. Navy Seventh Fleet Facebook page, March 16-17, 2011.

[10] Cheryl Pellerin, "Ships, Aircraft Support Japan Relief Effort," *American Forces Press Service*, March 16, 2011.

region in the coming days. Landing in a heavily damaged Air SDF airfield, the Marines worked with ASDF personnel to unload relief supplies headed for a survivors' refuge center near Kesennuma, a coastal city north of Sendai particularly hard hit by the tsunami. The HAS teams will deliver water and other supplies, survey damaged infrastructure in need of repair, and monitor the spread of potential disease among the displaced population.

Air Activities[11]

In the early hours immediately following the earthquake, Yokota Air Base was used to recover airline traffic and as an alternate airfield for planes that could not land at Tokyo's Narita Airport. Initial air operations from Naval Air Facility Atsugi and the USS *Ronald Reagan* were focused on identifying survivors in need of assistance as well as delivering water, blankets, and food. Additional helicopters conducted surveys of the at-sea debris fields, looking for survivors, and also conducted search and rescue missions along the coastline. Two U.S. Navy P-3 Orion aircraft also participated in survey operations.

U.S. Air Force and Marine helicopters and transport aircraft have been moved from Okinawa to U.S. military bases on Honshu to assist with operations. In addition, Carrier Airwing Five began relocating scores of tactical fixed-wing aircraft from Atsugi to Okinawa and Guam to provide for incoming aircraft to be used in relief operations. Delivery of generators and helicopters to Misawa is ongoing.

An RQ-4 Global Hawk, an unmanned, long-endurance aircraft that performs surveys of large geographic areas, was deployed from Anderson Air Force Base in Guam to assist with disaster relief. Using radar and optical surveillance, the aircraft will be able to assess damage to infrastructure throughout the affected area.[12]

Ground Activities[13]

The U.S. Army in Japan reportedly provided a 10-person team of translators, communications experts, and combat medics upon request of the Japanese Self-Defense Forces to help with disaster assessment efforts in the Sendai area. It was also reported that throughout Japan, similar efforts were undertaken at the request of local Japanese authorities by DOD personnel to aid and assist Japanese communities affected by the earthquake and tsunami. In addition, the U.S. Army Corps of Engineers Japan District provided an administrative system to help the U.S. Army Japan disaster assessment team with debris-removal efforts, and the Corps is also working on a plan to clear debris from airfields that are critical to logistic and humanitarian efforts.[14]

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[11] Information in this section is taken from Fred W. Baker III, "U.S. Forces Provide Relief Aid to Japan," *American Forces Press Service*, March 13, 2011; Chris Carroll et al, "Relief Efforts Limited Days After the Earthquake," *American Forces Press Service*, March 13, 2011; and Phil Stewart, "More U.S. Ships Head to Japan, Radiation Risk Eyed," *Reuters.com*, March 14, 2011.

[12] "Air Force Officials Use Global Hawk to Support Japan Relief Efforts," *Air Force News Today*, March 16, 2011.

[13] Chris Carroll et al, "Relief Efforts Limited Days After the Earthquake," *American Forces Press Service*, March 13, 2011 and Devon James, "Misawa Sailors Assist Clean Up at Local Fishing Port," United States Pacific Command, March 14, 2011.

[14] Cheryl Pellerin, "Ships, Aircraft Support Japan Relief Effort," *American Forces Press Service*, March 16, 2011.

Background: U.S. Military Presence in Japan[15]

Current U.S. military presence in Japan consists of approximately 38,000 military personnel, 43,000 dependents, 5,000 DOD civilian employees, and 25,000 Japanese workers. U.S. forces are stationed in Japan pursuant to the U.S.-Japan Treaty of Mutual Cooperation and Security of 1960.

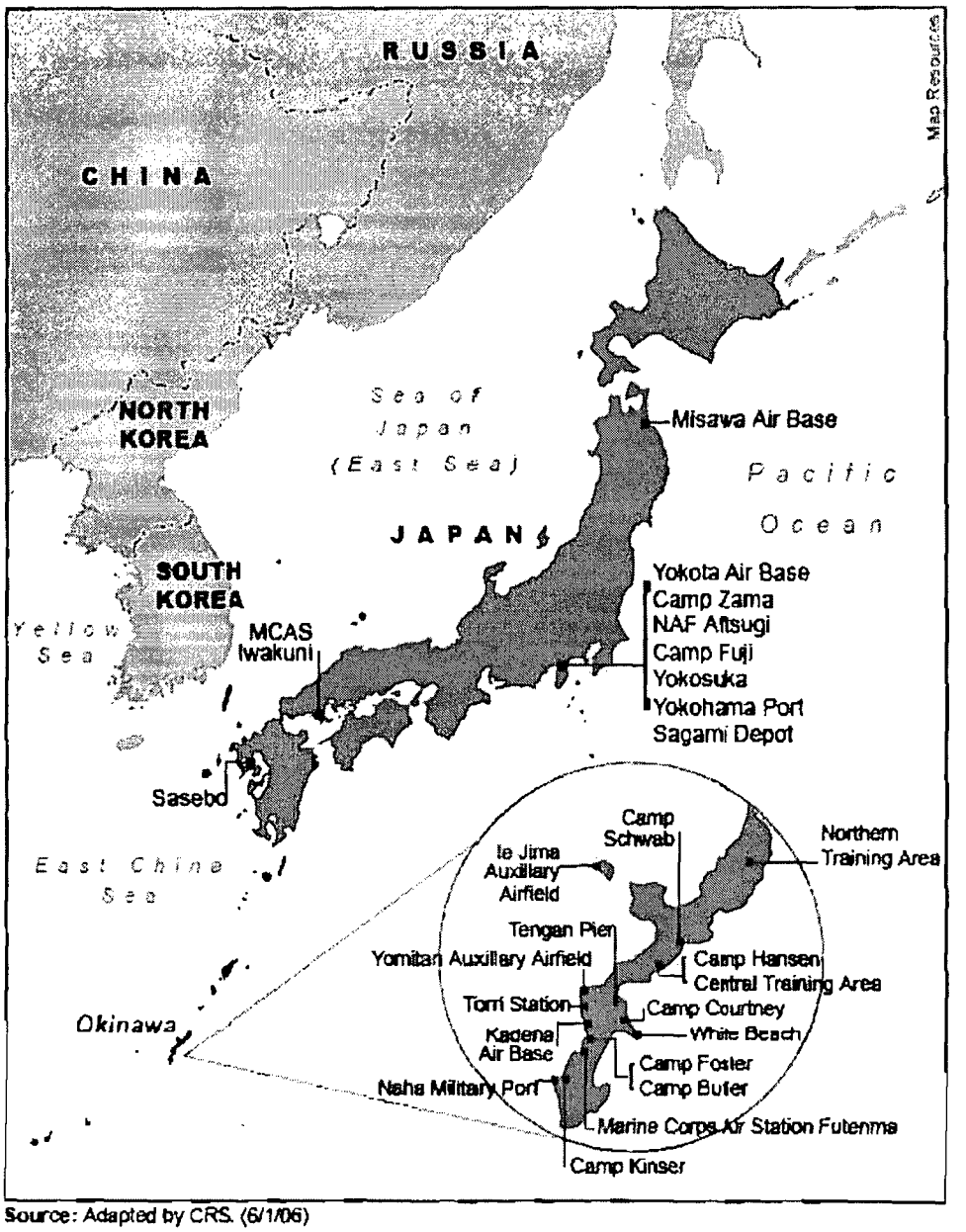
U.S. military strength in Japan is about 38,000 ashore and 11,000 afloat, and U.S. forces are dispersed among 85 facilities located on Honshu, Kyushu, and Okinawa.[16] Total acreage of U.S. bases is approximately 77,000 acres. United States Forces Japan (USFJ) bases and facilities range in size from a several-thousand-acre training area to a single antenna site.

On mainland Japan, there are seven different bases/posts: Yokota and Misawa, representing the Air Force; Camp Zama, representing the Army; Iwakuni; the Marine Corps; and Yokosuka, Atsugi, and Sasebo, the Navy.

[15] Information in this section is taken directly from the U.S. Forces Japan website, http://www.usfj.mil/, accessed on March 16, 2011.

[16] See Figure 1.

Figure 1. U.S. Bases in Japan



Source: Adapted by CRS. (6/1/06)

U.S. Army, Japan (USARJ)[17]

U.S. Army, Japan (USARJ) consists of about 2,000 soldiers and is charged, during peacetime, with operating port facilities and a series of logistics installations throughout Honshu and Okinawa. USARJ participates actively with the Japan Ground Self Defense Force in bilateral training exercises and the development of bilateral plans. It commands and supports U.S. Army assigned units, attached units, and augmentation forces and employs these forces in support of the Commander. USARJ maintains defense facilities, war reserves, and operational project stocks. USARJ/9th Theater Support Command (TSC) is headquartered at Camp Zama.

U.S. Marine Corps

The III Marine Expeditionary Force (MEF), which is under the operational command of Marine Forces Pacific, consists of approximately 16,000 Marines, who are garrisoned primarily on Okinawa and southern Honshu. III MEF is headquartered at Camp Courtney, Okinawa.

U.S. Marine Corps Bases, Japan[18]

U.S. Marine Corps Bases, Japan, consists of approximately 9,000 military and civilian personnel and includes two air stations and nine camps/housing areas throughout Okinawa and mainland Japan. Its primary mission is to provide installation support and services, including force protection and quality of life, to forward-deployed Marine and Naval forces, other service members, civilians, retirees, family members, and others associated with U.S. Marine Corps Bases, Japan. HQs, U.S. Marine Corps Bases, Japan, is located at Camp Foster, Okinawa.

U.S. Navy[19]

Commander, Naval Forces, Japan, consisting of about 6,000 personnel, is responsible for maintaining and operating the port facilities and providing base and logistic support for those surface, subsurface, aviation, and amphibious elements of the U.S. Seventh Fleet that operate from Japan as part of the Forward Deployed Naval Forces (FDNF). U.S. Commander Navy Forces, Japan, participates with the Japan Maritime Self Defense Force in exercises and planning. CNFJ is headquartered at Yokosuka.

U.S. Seventh Fleet

U.S. Seventh Fleet, which is under the operation control of Commander, Pacific Fleet, has about 13,000 sailors, 18 ships, and 100 airplanes operating from Japan as part of the Forward Deployed Naval Forces.

[17] Information in this section is taken directly from the U.S. Forces Japan website, http://www.usfj.mil/, accessed on March 16, 2011.

[18] Ibid.

[19] Ibid.

U.S. Air Force Japan (USAFJ)[20]

The U.S. Air Forces, Japan/Fifth Air Force mission is to maintain the deterrent force posture of the United States and to conduct offensive and defensive air operations, should deterrence fail. Supporting that mission are approximately 13,000 military and civilian personnel located at units throughout Japan. In addition to the tactical air roles, USAFJ provides theater airlift and operational support with cargo airlift. USAFJ participates with the Japan Air Self Defense Force in bilateral training exercises and the development of bilateral plans. Fifth Air Force is headquartered at Yokota Air Base and is commanded by Commander, U.S. Forces Japan in a dual-hatted capacity.

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[20] Ibid.

From: McIntyre, David
To: Costello, Tom (NBC NEWS)
Cc: Burnell, Scott
Subject: RE: GREAT
Date: Friday, March 25, 2011 12:34:00 PM

You're welcome!

> **From:** Costello, Tom (NBC NEWS) [mailto:Tom.Costello@nbcuni.com]
> **Sent:** Friday, March 25, 2011 12:33 PM
> **To:** McIntyre, David
> **Subject:** GREAT
>
> THANK YOU

> **From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]
> **Sent:** Friday, March 25, 2011 12:29 PM
> **To:** Burnell, Scott; Costello, Tom (NBC NEWS)
> **Subject:** RE: Hello Scott
>
> Hi Tom –
> Scott's right in that we don't have that information in the format and detail that tie it up nicely for media. I wish we did. There is some good information (on tons of SNF in pools and casks, and number of casks) contained in this Congressional Research Service report before the Blue Ribbon Commission. This is from last year and is as of end of CY 2009; the report also states the amount of spent fuel increases by 2,000 to 2,400 tons per year nationwide. NRC and DOE/NNSA have a database that tracks "special nuclear material" – essentially enriched uranium and plutonium – but this data is not broken down to distinguish spent from fresh fuel, and the information is not publicly available for security reasons.
>
> On your other questions: Commercially, all the casks are on plant properties or former plant properties (there are some decommissioned plants where the spent fuel remains onsite because DOE never took possession). The only exception to this is the Idaho National Laboratory, a DOE facility, which does have some licensed casks that store some commercial fuel (most notably the fuel from the damaged Three Mile Island reactor). I don't know of any being buried; however, the old Ft Saint Vrain reactor site in Colorado has some stored in vaults rather than casks.
>
> I hope this helps.

David McIntyre
Public Affairs Officer
U.S. Nuclear Regulatory Commission

0000/158

(301) 415-8206 (direct)
(b)(6) (mobile)
Protecting People & the Environment

From: Burnell, Scott
Sent: Friday, March 25, 2011 12:20 PM
To: Costello, Tom (NBC NEWS); McIntyre, David
Subject: RE: Hello Scott

Hi Tom;

My colleague David McIntyre's in the best position to discuss that, though we don't have all the level of detail you're looking for. Thanks.

Scott

From: Costello, Tom (NBC NEWS) [mailto:Tom.Costello@nbcuni.com]
Sent: Friday, March 25, 2011 12:13 PM
To: Burnell, Scott
Subject: RE: Hello Scott

Wondering if there's a stat on the TOTAL number of spent nuclear fuel rods in America today....
How many are stored in casks – or how many casks there are.
And how many are stored in pools.
Also – are ALL casks sitting on plant properties?
Has ANY spent fuel ever been buried?

From: Burnell, Scott [mailto:Scott.Burnell@nrc.gov]
Sent: Friday, March 25, 2011 12:09 PM
To: Costello, Tom (NBC NEWS)
Subject: RE: Hello Scott

Topic?? Still pressed for time these days... Thanks,

From: Costello, Tom (NBC NEWS) [mailto:Tom.Costello@nbcuni.com]
Sent: Friday, March 25, 2011 12:00 PM
To: Burnell, Scott
Subject: Hello Scott

Do you have time for a quick phone call?

I'm at (b)(6) – if you have a minute for clarification.

Or I can call you.

Many Thanks

Tom Costello

From: Burnell, Scott [mailto:Scott.Burnell@nrc.gov]
Sent: Thursday, March 17, 2011 5:22 PM
To: Costello, Tom (NBC NEWS)
Subject: RE: Can you confirm?

Tom;

No member of the public has been injured or killed by radiation associated with a U.S. nuclear power plant. Of course there have been industrial accidents at nuclear power plants, but no worker deaths due to radiation.

Scott

From: Costello, Tom (NBC NEWS) [mailto:Tom.Costello@nbcuni.com]
Sent: Thursday, March 17, 2011 5:18 PM
To: Burnell, Scott
Subject: Can you confirm?

That no one has ever been injured or killed in a U.S. nuclear power plant accident?

From: Diamond, Steven Civ USAF PACAF HO/HO
To: McIntyre, David
Subject: RE: radiation
Date: Friday, March 25, 2011 1:25:52 PM

Got it, thanks.

Steve

Steve Diamond
Command Historian
PACAF/HO
Hickam AFB, HI 96853

DSN 315-449-3921
Commercial 808-449-3921

-----Original Message-----
From: McIntyre, David [mailto:David.McIntyre@nrc.gov]
Sent: Friday, March 25, 2011 7:22 AM
To: Diamond, Steven Civ USAF PACAF HO/HO
Subject: RE: radiation

Steve - in the For What It's Worth Dept., we do have a special web page set up relating to Japan.

http://www.nrc.gov/japan/japan-info.html

Dave

-----Original Message-----
From: Diamond, Steven Civ USAF PACAF HO/HO
[mailto: (b)(6)
Sent: Friday, March 25, 2011 1:06 PM
To: McIntyre, David
Subject: RE: radiation

Dave,

Anything you shoot out to John Q. Public, or that you feel would be of historical note, please feel free to cc PACAF/HO: (b)(6) ... thanks! I have one historian doing nothing but tracking the nuclear disaster and related topics (PI pills, dosimeter distribution, etc.).

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Glad you're working out ... me too, although not with much regularity given our "ops rhythm."

Cheers,

Steve

Steve Diamond

Command Historian

PACAF/HO

Hickam AFB, HI 96853

DSN 315-449-3921

Commercial 808-449-3921

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

From: McIntyre, David [mailto:David.McIntyre@nrc.gov]

Sent: Friday, March 25, 2011 2:53 AM

To: Diamond, Steven Civ USAF PACAF HO/HO

Subject: RE: radiation

Yes, we have a team of folks over there, with more arriving today I think.

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

From: Diamond, Steven Civ USAF PACAF HO/HO

[mailto: (b)(6)

Sent: Thursday, March 24, 2011 11:06 PM

To: McIntyre, David

Subject: RE: radiation

Hi Dave,

No one asked me to come up with the graphic, it's just something I thought of searching for. They're still developing the common "standard" graphic to distribute to our DoD personnel & dependents in Japan. I just hoed one of the expert functional agencies like yours might have one on the shelf.

We have loads of radiation experts, medical staff, et al., including one or more from NRC (I heard) who will be collocating with DOD and American nuclear industry experts at TEPCO headquarters in Japan.

Hope to talk later,

Thanks,

Steve

Steve Diamond

Command Historian

PACAF/HO

Hickam AFB, HI 96853

DSN 315-449-3921

Commercial 808-449-3921

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

From: McIntyre, David [mailto:David.McIntyre@nrc.gov]

Sent: Thursday, March 24, 2011 11:09 AM

To: Diamond, Steven Civ USAF PACAF HO/HO

Subject: RE: radiation

Hi Steve - sorry I missed your call - I was at the fitness center for my first workout in 10 days. Much needed.

I've asked several health physicists for suggestions. But I'm curious why they asked the historian! - does the base have a Radiation Safety Officer?

Dave

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

From: Diamond, Steven Civ USAF PACAF HO/HO

[mailto: (b)(6)

Sent: Thursday, March 24, 2011 3:33 PM

To: McIntyre, David

Subject: RE: radiation

Aloha Dave,

Thanks for the quick reply. AS I mentioned in my phone msg, we're just trying to build a simple graphic to help allay people's fears. I guess we'll have to do it from scratch ... or maybe there's an old "friendly and safe Atomic-power" poster fm the 1940s-50s that we can revive ...

If you have a DSN line, let me know.

Take care,

Steve

Steve Diamond

Command Historian

PACAF/HO

Hickam AFB, HI 96853

DSN 315-449-3921

Commercial 808-449-3921

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

From: McIntyre, David [mailto:David.McIntyre@nrc.gov]

Sent: Thursday, March 24, 2011 2:34 AM

To: Diamond, Steven Civ USAF PACAF HO/HO

Subject: radiation

Hi Steve - we don't have anything that good, I'm afraid. What we have is on our website here <http://www.nrc.gov/about-nrc/radiation.html> . EPA has some here <http://www.epa.gov/radiation/index.html> .

24/7 - I hope you have some help. We've been pulling extra shifts here in public affairs, too, as you can imagine. I can't recall ever being so tired, except maybe after riding the mules in the Grand Canyon. But that was a good tired.

Cheers,

Dave

David McIntyre

Public Affairs Officer

U.S. Nuclear Regulatory Commission

(301) 415-8206 (direct)

(b)(6) (mobile)

Protecting People & the Environment

From: Breskovic, Clarence
To: McIntyre, David
Subject: RE: BWR backgrounder
Date: Friday, March 25, 2011 2:26:13 PM

OK, thanks!

From: McIntyre, David
Sent: Friday, March 25, 2011 2:25 PM
To: Breskovic, Clarence
Subject: RE: BWR backgrounder

The only thing I can think of is our Japan page on the public NRC site.

> **From:** Breskovic, Clarence
> **Sent:** Friday, March 25, 2011 2:24 PM
> **To:** McIntyre, David
> **Subject:** RE: BWR backgrounder
>
> Dave,
>
> I created a Tsunami SharePoint site:
> http://portal.nrc.gov/OCM/ip/countries/japan/tsunami2011/default.aspx?PageView=Shared
>
> I know it's a bit late in the game to do this and I am looking for content. Can you think of anything that might be useful to populate the site?
>
> Thanks,
> Cal
>
> **From:** McIntyre, David
> **Sent:** Friday, March 25, 2011 12:36 PM
> **To:** Breskovic, Clarence
> **Subject:** RE: BWR backgrounder
>
> Brilliant! Thanks.
>
>> **From:** Breskovic, Clarence
>> **Sent:** Friday, March 25, 2011 12:36 PM
>> **To:** McIntyre, David
>> **Subject:** RE: BWR backgrounder
>>
>> It is in the Japan document library:
>> http://portal.nrc.gov/OCM/ip/countries/japan/Shared%20Documents/Forms/AllItems.aspx
>>
>> It is the first document: ANSN BRW Paper
>>
>> **From:** McIntyre, David
>> **Sent:** Friday, March 25, 2011 12:33 PM
>> **To:** Breskovic, Clarence
>> **Subject:** BWR backgrounder
>>
>> Hi Cal – thanks for all your emails with these reports on the Japan situation. They've been valuable and interesting reading.
>>
>> If memory serves, very early on in this crisis you sent around a background paper on

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BWRs. I think I may have deleted it because of its size – could you please resend? It was about 40 pages, I think.

Thanks!
Dave Mc, OPA

From: Breskovic, Clarence
Sent: Friday, March 25, 2011 12:13 PM
To: Breskovic, Clarence
Subject: Recent CRS Reports on Earthquakes, Japan, Fukushima....

Please see attached PDF files.

Earthquakes: Risk, Detection, Warning, and Research
U.S. Tsunami Programs: A Brief Overview
Japan 2011 Earthquake: U.S. Department of Defense (DOD) Response
Fukushima Nuclear Crisis
Japan 2011 Disaster: CRS Experts

Clarence Breskovic
International Policy Analyst
U.S. Nuclear Regulatory Commission
Office of International Programs
11555 Rockville Pike
Rockville, MD 20852, USA
Tel: 1-301-415-2364
Fax: 1-301-415-2395
Alternate Email: (b)(6)

From: Burnell, Scott
To: McIntyre, David; Brenner, Eliot
Subject: Fw: Science Mag on SNF pool #4 at Fukushima req b
Date: Friday, March 25, 2011 2:53:31 PM

I'm kicking both of these up to eliot -- he's right that we can't tell Sandia what to say about questions outside of NRC study space.

Sent from an NRC Blackberry
Scott Burnell
(b)(6)

From: Eli Kintisch <ekintisch@aaas.org>
To: Burnell, Scott
Cc: McIntyre, David
Sent: Fri Mar 25 14:49:57 2011
Subject: Science Mag on SNF pool #4 at Fukushima req b

Scott:

My story's due on Monday morning, but I will have till tuesday AM to add information if need be. Could I speak to NRC staff about this on Sunday or Monday? Jaczko?

Best, Eli

Eli Kintisch, Reporter
Science Magazine
202 326 6446

>>> Eli Kintisch 3/25/2011 2:49 PM >>>
Scott:

1. Would NRC let me speak to Sandia scientists for a story about what we know occurred in this pool? There's a lot of wrong information out there, and I'd like some experts to help me lay out the facts as we know them.

Below is a preliminary sketch I've prepared to help me write my story. In an interview with Sandia staff, I'd go through the evidence for

2. Here is an email I just sent Sandia's press person Jim D:

Jim: I get that NRC would ask Sandia not to comment on Sandia _studies_ on nuclear matters, but I don't see why they have authority to tell you not to comment on Fukushima.

a) You're just contractors for them, and your work is not related to japan
b) your paychecks are not from NRC, but nnsa/sandia. In fact I'm sure some of your best experts who have worked on reactors/SNF studies do work for other clients, not just the NRC.

Thanks, Eli

On 15 March a hydrogen explosion blew out the outer structure of Reactor #4 at Fukushima Daiichi Nuclear Power Plant in Japan. Since then, crews have extinguished multiple fires

while struggling to keep spent nuclear fuel in the pool there cool. Scientists had theorized that the spent fuel, if allowed to heat up, could cause an explosion, but it had never happened before. Now experts are asking several key questions as they piece together events:

1. **What caused the loss of water in the pool, and low did the water level get?** Whether the water drained, evaporated or boiled off would provide clues for what happened next. U.S. Nuclear Regulatory Commission chair Greg Jaczko claimed on 16 March that the pool, which holds Tk,000 liters of water was empty at one point
2. **What caused the hydrogen explosion?** Zirconium alloy, which makes up the tubes in which uranium fuel pellets, reacts with steam to form hydrogen, which can ignite in the presence of oxygen. But without chemical samples and temperature or pressure readings its hard to know for sure that this was what caused the explosion.
3. **What temperature was the water?** For several days after the crisis began, Japanese authorities were reporting a constant temperature of 84 deg C for the pool. Then they stopped reporting it. Such relatively cool temperatures are inconsistent with the 600 deg C + temperatures that the Zirconium reaction requires.
4. **Why have recorded levels of Cesium-137 outside the plant remained low?** If multiple fires have ravaged the spent fuel pools, there is a risk that long-lived radionuclides, primarily cesium, have melted and aerosolized. But while high radiation levels have kept crews from Reactor 4, there has been few reports of cesium particles escaping from the plant.

Eli Kintisch, Reporter
Science Magazine
202 326 6446

From: Brenner, Eliot
To: Burnell, Scott; McIntyre, David
Subject: RE: Science Mag on SNF pool #4 at Fukushima req a
Date: Friday, March 25, 2011 3:22:26 PM

These both are so far ahead of what is known it's almost funny. I doubt that Sandia has any better information than we do. Technically, we can't keep these guys from talking but DOE can. I will reply that if they have discussions that do not touch on NRC-contracted work that's up to Sandia, but we recommend going through NNSA or DOE.

Eliot

From: Burnell, Scott
Sent: Friday, March 25, 2011 2:54 PM
To: Brenner, Eliot; McIntyre, David
Subject: Fw: Science Mag on SNF pool #4 at Fukushima req a

And the other

Sent from an NRC Blackberry
Scott Burnell
(b)(6)

From: Eli Kintisch <ekintisch@aaas.org>
To: Burnell, Scott
Cc: McIntyre, David
Sent: Fri Mar 25 14:49:31 2011
Subject: Science Mag on SNF pool #4 at Fukushima req a

Scott:

1. Would NRC let me speak to Sandia scientists for a story about what we know occurred in this pool? There's a lot of wrong information out there, and I'd like some experts to help me lay out the facts as we know them.

Belowis a preliminary sketch I've prepared to help me write my story. In an interview with Sandia staff, I'd go through the evidence for

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Jim: I get that NRC would ask Sandia not to comment on Sandia _studies_ on nuclear matters, but I don't see why they have authority to tell you not to comment on Fukushima.

a) You're just contractors for them, and your work is not related to japan

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b) your paychecks are not from NRC, but nnsa/sandia. In fact I'm sure some of your best experts who have worked on reactors/SNF studies do work for other clients, not just the NRC.

Thanks, Eli

On 15 March a hydrogen explosion blew out the outer structure of Reactor #4 at Fukushima Daiichi Nuclear Power Plant in Japan. Since then, crews have extinguished multiple fires while struggling to keep spent nuclear fuel in the pool there cool. Scientists had theorized that the spent fuel, if allowed to heat up, could cause an explosion, but it had never happened before. Now experts are asking several key questions as they piece together events:

1. **What caused the loss of water in the pool, and low did the water level get?** Whether the water drained, evaporated or boiled off would provide clues for what happened next. U.S. Nuclear Regulatory Commission chair Greg Jaczko claimed on 16 March that the pool, which holds Tk,000 liters of water was empty at one point

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4. **Why have recorded levels of Cesium-137 outside the plant remained low?** If multiple fires have ravaged the spent fuel pools, there is a risk that long-lived radionuclides, primarily cesium, have melted and aerosolized. But while high radiation levels have kept crews from Reactor 4, there has been few reports of cesium particles escaping from the plant.

Eli Kintisch, Reporter
Science Magazine
202 326 6446

From: Milligan, Patricia
To: McIntyre, David
Subject: RE: Associated Press getting in touch re: NRC's use of RadNet data
Date: Friday, March 25, 2011 3:28:19 PM

How 'bout "we work with States to develop"

-----Original Message-----
From: McIntyre, David
Sent: Friday, March 25, 2011 3:28 PM
To: Milligan, Patricia
Subject: RE: Associated Press getting in touch re: NRC's use of RadNet data

Fair to say we advise states on their protective action recommendations?

-----Original Message-----
From: Milligan, Patricia
Sent: Friday, March 25, 2011 3:27 PM
To: McIntyre, David
Subject: RE: Associated Press getting in touch re: NRC's use of RadNet data

Only if we think they are way off base. We only confirm them. If we disagree we will say so, but once the decision is made we are good little soldiers and march on.

-----Original Message-----
From: McIntyre, David
Sent: Friday, March 25, 2011 3:26 PM
To: Milligan, Patricia
Subject: RE: Associated Press getting in touch re: NRC's use of RadNet data

Thanks. Don't we recommend protective measures to the states during events?

-----Original Message-----
From: Milligan, Patricia
Sent: Friday, March 25, 2011 3:24 PM
To: McIntyre, David
Subject: RE: Associated Press getting in touch re: NRC's use of RadNet data

-----Original Message-----
From: McIntyre, David
Sent: Friday, March 25, 2011 3:15 PM
To: Milligan, Patricia
Subject: FW: Associated Press getting in touch re: NRC's use of RadNet data

-----Original Message-----
From: Burke, Garance [mailto:gburke@ap.org]
Sent: Friday, March 25, 2011 3:00 PM
To: McIntyre, David
Subject: Associated Press getting in touch re: NRC's use of RadNet data

Dear David,
I'm an AP reporter based in San Francisco and am writing to ask a few urgent questions for a deadline story I'm writing with a colleague today about federal efforts to track particulate impacts from the

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earthquake-damaged nuclear reactor in Japan.
Here are my questions, which I also sent to the Nuclear Regulatory Commission press office via the main number, (301) 415-8200:

--How, specifically, does NRC use monitoring data gathered by the Environmental Protection Agency's RadNet system to predict the path of radiation clouds and determine whether protective action is needed?

NRC does not rely on EPA's RadNet. Nor does NRC make protective action recommendations for the US population on US soil. That is the responsibility of the state.

--If one or more RadNet monitors are down or not sending data in real time, what other systems does NRC rely on to determine, in real time, whether radiation has reached hazardous levels?

NRC does not monitor airborne contamination. NRC relies on licensees to monitor, track and report during normal and abnormal events at their facility. If there is an event at a NPP, the State will also send out field monitoring teams in addition to the licensee. NRC does not monitor or require their licensees to monitor for radionuclides traveling the jet stream. This responsibility lies with EPA and DOE. I am not sure why DOE would suggest that NRC does that.

--What is the typical time delay between when the radiation is detected by the EPA monitors to when it arrives at the NRC division that receives the data?

The NRC has no direct access to EPA monitors. I would suggest she call the National Air and Radiation Environmental Lab at (334) 270-3400. They are responsible for the monitors.

I'm interested to know whether NRC's aerial measuring or surveillance systems, for instance, would pick small amounts of radioactive particulates, or whether any additional emergency monitors are checking for potential environmental contamination. I checked in with DOE and they told me NRC is the lead agency for this type of federal effort.

NRC licensees have detected very small amounts of airborne activity attributed to the events at the Fukashima site. NRC does not, itself, perform any monitoring or measuring. EPA and DOE do that along with States.

I look forward to hearing back from you as soon as possible via email, or the best number to reach me is 415-495-1708. I am on deadline for the next hour.
Thanks in advance,
Garance

Garance Burke
Reporter
The Associated Press
San Francisco
gburke@ap.org
@garanceburke
T 415-495-1708
C (b)(6)

From: McIntyre, David
To: Burke, Garance
Subject: RE: Associated Press getting in touch re: NRC's use of RadNet data
Date: Friday, March 25, 2011 3:55:00 PM

Garance – here are our answers. You may attribute them to me. In general, it is important to note that NRC is not tracking the radiation from Japan. EPA is the main agency for that. Some nuclear power plants have reported positive readings of very small levels of radiation that apparently emanated from Fukushima, but these are nowhere near any level that would cause alarm or suggest a need for protective actions.

1) NRC does not rely on EPA's RadNet; at best, information from RadNet is used to confirm readings we receive from our licensees. Nor do we issue protective action recommendations – the state would do that, though we would consult with them.
2) The nuclear power plants have monitors all over their property, including inside buildings, as well as effluent monitors for any liquid discharges from the plant. If higher-than-normal radiation levels are detected, these monitors will trigger an alarm. So even if RadNet is inoperative, any release from a US nuclear plant would be detected. If there is an event unfolding at a nuclear power plant, the licensee and the state will deploy field teams to set up and operate radiation monitors in the community around the plant. These monitors will detect and report any elevated radiation levels offsite. The state may also request DOE to deploy aerial monitoring during an event.
3) The NRC has no direct access to the EPA monitors. We suggest you call the National Air and Radiation Environmental Lab at 334-270-3400; they are responsible for the monitors.

David McIntyre
Office of Public Affairs
U.S. Nuclear Regulatory Commission
(301) 415-8200

-----Original Message-----
From: Burke, Garance [mailto:gburke@ap.org]
Sent: Friday, March 25, 2011 3:00 PM
To: McIntyre, David
Subject: Associated Press getting in touch re: NRC's use of RadNet data

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--What is the typical time delay between when the radiation is detected by the EPA monitors to when it arrives at the NRC division that receives the data?

I'm interested to know whether NRC's aerial measuring or surveillance systems, for instance, would pick small amounts of radioactive particulates, or whether any additional emergency monitors are checking for potential environmental contamination. I checked in with DOE and they told me NRC is the lead agency for this type of federal effort.
I look forward to hearing back from you as soon as possible via email, or the best number to reach me is 415-495-1708. I am on deadline for the next hour.
Thanks in advance,
Garance

Garance Burke
Reporter
The Associated Press
San Francisco
gburke@ap.org
@garanceburke
T 415-495-1708
C (b)(6)

From: McIntyre, David
To: Ahlers, Mike
Subject: RE: CNN question
Date: Friday, March 25, 2011 4:15:00 PM

Hi Mike – This would be the page to bookmark and check regularly:
http://www.nrc.gov/public-involve/public-meetings/schedule.html

That's the Commission schedule. If you mean Tuesday's briefing on small modular reactors, I would not expect that to discuss Japan. But the others added there (we don't call them hearings, but I'm assuming that's what you're referring to) are meant to be the periodic updates to the Commission from the two-tiered review we (finally) announced on Wednesday.

Dave

> **From:** Ahlers, Mike [mailto:Mike.Ahlers@turner.com]
> **Sent:** Friday, March 25, 2011 4:07 PM
> **To:** McIntyre, David
> **Subject:** CNN question
>
> David,
> Hi there.
> Could you please call me when you have a minute?
> I've got a couple questions. Chief among them: I see there is an NRC meeting and we're interested in knowing if Fukushima – or the NRC response to Fukushima – is going to be discussed.
> Also, I see that some hearings have been scheduled to discuss the NRC response to Japan, and I want to make sure I have the complete list thus far.
> Finally, I want to make sure I'm not missing anything else ... thanks—Mike
>
> Mike Ahlers
> Senior Producer, Homeland Security
> CNN Washington
> 202-898-7917 (o)
> (b)(6) (cell)
> mike.ahlers@turner.com

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From: Burnell, Scott
To: Mayfield, Michael; Coffin, Stephanie; McIntyre, David
Subject: RE: Tuesday"s Commission Briefing
Date: Monday, March 28, 2011 7:58:31 AM

Oh, joy.

From: Mayfield, Michael
Sent: Monday, March 28, 2011 7:58 AM
To: Coffin, Stephanie; McIntyre, David; Burnell, Scott
Subject: RE: Tuesday's Commission Briefing

To our surprise, Chris Mowry (B&W) has a slide entitled "Protection against "Fukushima-type" Events". Oh well. His slides came in Sunday afternoon and will be posted by SECY this morning (may already be up).

That is the only slide in any of the presentations that goes to this subject.

From: Coffin, Stephanie
Sent: Saturday, March 26, 2011 12:02 PM
To: McIntyre, David
Cc: Mayfield, Michael
Subject: RE: Tuesday's Commission Briefing

There is no discussion of Japan planned by either the external panel members or by the staff for this meeting.

From: McIntyre, David
Sent: Friday, March 25, 2011 4:29 PM
To: Coffin, Stephanie
Subject: Tuesday's Commission Briefing

Hi Stephanie – OPA is getting several inquiries from media wondering if your small modular reactors briefing to the Commission next Tuesday might be devoted to Japan. Have you had any inkling that might happen?

Thanks,
Dave Mc

David McIntyre
Public Affairs Officer
U.S. Nuclear Regulatory Commission
(301) 415-8206 (direct)
(b)(6) (mobile)
Protecting People & the Environment

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From: Brenner, Eliot
To: McIntyre, David
Subject: FW: Chairman Jaczko press statement
Date: Monday, March 28, 2011 8:30:46 AM

-----Original Message-----
From: Chang, Benjamin [mailto:ChangBE@state.gov]
Sent: Monday, March 28, 2011 8:30 AM
To: Brenner, Eliot; Batkin, Joshua; Wall, Marc M; Zumwalt, James P
Cc: Fuller, Matthew G; Phillips, Leslie M; Dorman, Dan; Foggie, Kirk; Webster, Jessica M (TDY/ECN); Monninger, John
Subject: Re: Chairman Jaczko press statement

http://japan.usembassy.gov/e/p/tp-20110328-72.html

----- Original Message -----
From: Chang, Benjamin
Sent: Monday, March 28, 2011 07:32 AM
To: 'Eliot.Brenner@nrc.gov' <Eliot.Brenner@nrc.gov>; 'Joshua.Batkin@nrc.gov' <Joshua.Batkin@nrc.gov>; Wall, Marc M; Zumwalt, James P
Cc: Fuller, Matthew G; Phillips, Leslie M; 'Dan.Dorman@nrc.gov' <Dan.Dorman@nrc.gov>; 'Kirk.Foggie@nrc.gov' <Kirk.Foggie@nrc.gov>; Webster, Jessica M (TDY/ECN); 'John.Monninger@nrc.gov' <John.Monninger@nrc.gov>
Subject: Re: Chairman Jaczko press statement

It's out - I'll get link and send around...

----- Original Message -----
From: Brenner, Eliot [mailto:Eliot.Brenner@nrc.gov]
Sent: Monday, March 28, 2011 07:17 AM
To: Chang, Benjamin; Batkin, Joshua <Joshua.Batkin@nrc.gov>; Wall, Marc M; Zumwalt, James P
Cc: Fuller, Matthew G; Phillips, Leslie M; Dorman, Dan <Dan.Dorman@nrc.gov>; Foggie, Kirk <Kirk.Foggie@nrc.gov>; Webster, Jessica M (TDY/ECN); Monninger, John <John.Monninger@nrc.gov>
Subject: Re: Chairman Jaczko press statement

What is approximate ETA for release?

Eliot
Eliot Brenner
Director, Office of Public Affairs
US Nuclear Regulatory Commission
Protecting People and the Environment
301 415 8200
C: (b)(6)
Sent from my Blackberry

----- Original Message -----
From: Chang, Benjamin <ChangBE@state.gov>
To: Batkin, Joshua; Wall, Marc M <WallMM@state.gov>; Zumwalt, James P <ZumwaltJP@state.gov>
Cc: Fuller, Matthew G <FullerMG@state.gov>; Brenner, Eliot; Phillips, Leslie M <PhillipsLM@state.gov>; Dorman, Dan; Foggie, Kirk; Webster, Jessica M (TDY/ECN) <TDYWebsterJM@state.gov>; Monninger, John
Sent: Mon Mar 28 06:58:21 2011
Subject: Re: Chairman Jaczko press statement

0000167

For D.C colleagues (and repeating for some in Tokyo):

Visit of NRC Chairman Jaczko: The Chairman met with GOJ officials from the Prime Minister's Office, NISA, and TEPCO. There was no press coverage – no camera sprays nor stakeouts (as low-key as it gets). The Embassy just issued the statement below. The GOJ will only reply if asked and will echo the same points.

The Chairman of the Nuclear Regulatory Commission, Dr. Gregory Jaczko, traveled to Tokyo on March 28 to convey directly to his Japanese counterparts a message of support and cooperation, and to assess the current situation.

Following his meetings with senior Japanese government and TEPCO officials, Chairman Jaczko said, "Our nuclear experts are working closely with their Japanese counterparts, and we both continue to share expert analysis as we move forward to address this challenge. I reconfirmed in my meetings that we are prepared to provide any assistance we can in the days to come."

Chairman Jaczko further added, "The unprecedented challenge before us remains serious and our best experts remain fully engaged to help Japan address the situation."

----- Original Message -----
From: Chang, Benjamin
Sent: Monday, March 28, 2011 02:49 AM
To: 'Joshua.Batkin@nrc.gov' <Joshua.Batkin@nrc.gov>; Wall, Marc M; Zumwalt, James P
Cc: Fuller, Matthew G; 'Eliot.Brenner@nrc.gov' <Eliot.Brenner@nrc.gov>; Phillips, Leslie M; 'Dan.Dorman@nrc.gov' <Dan.Dorman@nrc.gov>; 'Kirk.Foggie@nrc.gov' <Kirk.Foggie@nrc.gov>; Webster, Jessica M (TDY/ECN); 'John.Monninger@nrc.gov' <John.Monninger@nrc.gov>
Subject: Re: Chairman Jaczko travel

The latest statement draft is below, tweaked a bit - this format, while different from our standard out of Washington, better feeds the Japanese press - they would report quotes directly as printed below for stories...
The Ambassador and Chairman will review one more time after this afternoon's meetings.

Embassy Tokyo Press Statement on the visit of NRC Chairman Jaczko to Tokyo

Chairman of the Nuclear Regulatory Commission, Dr. Gregory Jaczko, traveled to Tokyo on March 28 to convey directly to Japanese counterparts a message of support and cooperation, and to assess the current situation.

Following his meetings with senior Japanese government and TEPCO officials, Chairman Jaczko said, "Our nuclear experts are working closely with their Japanese counterparts, and we both continue to share data and expert analysis as we move forward to address this challenge. I reconfirmed in my meetings that we are prepared to provide any assistance we can in the days to come."

Chairman Jaczko further added, "The unprecedented challenge before us remains serious and our best experts remain fully engaged to help Japan address the situation."

----- Original Message -----
From: Batkin, Joshua [mailto:Joshua.Batkin@nrc.gov]
Sent: Sunday, March 27, 2011 07:53 PM
To: Chang, Benjamin; Wall, Marc M; Zumwalt, James P
Cc: Fuller, Matthew G; Brenner, Eliot <Eliot.Brenner@nrc.gov>; Phillips, Leslie M; Dorman, Dan <Dan.Dorman@nrc.gov>; Foggie, Kirk <Kirk.Foggie@nrc.gov>; Webster, Jessica M (TDY/ECN); Monninger, John <John.Monninger@nrc.gov>
Subject: Re: Chairman Jaczko travel

+John Monninger

Joshua C. Batkin
Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

----- Original Message -----
From: Chang, Benjamin <ChangBE@state.gov>
To: Batkin, Joshua; Wall, Marc M <WallMM@state.gov>; Zumwalt, James P <ZumwaltJP@state.gov>
Cc: Fuller, Matthew G <FullerMG@state.gov>; Brenner, Eliot; Phillips, Leslie M <PhillipsLM@state.gov>; Dorman, Dan; Foggie, Kirk; Webster, Jessica M (TDY/ECN) <TDYWebsterJM@state.gov>
Sent: Sun Mar 27 19:50:35 2011
Subject: Re: Chairman Jaczko travel

(Adding a few NRC folks to avoid multiple lists)

Do we have a latest schedule?

----- Original Message -----
From: Batkin, Joshua [mailto:Joshua.Batkin@nrc.gov]
Sent: Sunday, March 27, 2011 08:46 AM
To: Chang, Benjamin; Wall, Marc M; Zumwalt, James P
Cc: Fuller, Matthew G; Brenner, Eliot <Eliot.Brenner@nrc.gov>; Phillips, Leslie M
Subject: Re: Chairman Jaczko travel

Ben - looks good from here. Thanks, Josh

Joshua C. Batkin
Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

----- Original Message -----
From: Chang, Benjamin <ChangBE@state.gov>
To: Wall, Marc M <WallMM@state.gov>; Batkin, Joshua; Zumwalt, James P <ZumwaltJP@state.gov>
Cc: Fuller, Matthew G <FullerMG@state.gov>; Brenner, Eliot; Phillips, Leslie M <PhillipsLM@state.gov>
Sent: Sun Mar 27 04:26:51 2011
Subject: Re: Chairman Jaczko travel

(+ Leslie, now in Tokyo)

A draft press plan - comments welcome:

Visit of NRC Chairman Jaczko 3-28-11

Press posture

Before arrival (note the Embassy has notified the Japanese government of his visit and is working on his schedule.):

- The NRC is not issuing any media advisory or announcement of the visit.

- If asked, they will confirm on background and refer inquiries for further details to the Embassy.

- If pressed on the short duration of the trip, they will point out that the Chairman is testifying before the Senate Appropriations Committee on Wednesday.

Embassy is not issuing any announcement of his visit.

If asked, we will, on background:

- confirm his visit,
- note that he is visiting his team and Japanese officials to demonstrate at the highest level our continued support and close cooperation.

Monday's Schedule:

It is likely that the Chairman will encounter press (reporters & cameras) as he exits his meetings at either the NISA, TEPCO, the Prime Minister's Office, or the Cabinet.

There may also be a camera spray laid on at the top of one of the meetings [NRC/ECON – can you raise this question with our counterparts? We would not press for one but it is their prerogative.]

The Chairman would not speak to the press but rather the Embassy will release a statement in his name at the conclusion of his meetings [worth considering issuing that statement before the Cabinet meeting given the late hour].

Draft press statement elements:

- I traveled to Tokyo today to convey directly to our Japanese friends a message of support and cooperation, and to visit our team here to express my appreciation for all they are doing as we work together to resolve this crisis.

- Our nuclear experts are working side-by-side with their Japanese counterparts, and we continue to share scientific information as we move forward to resolve this challenge.

- We will continue to stand with the people of Japan as they overcome this tragedy, and we stand ready to continue to provide any assistance we can in the days to come.

- As President Obama said, we will stand with the people of Japan as they recover from this hardship and rebuild their great nation; the friendship and alliance between our two nations is unshakable.

----- Original Message -----
From: Chang, Benjamin
Sent: Sunday, March 27, 2011 01:30 AM
To: Wall, Marc M; 'Joshua.Batkin@nrc.gov' <Joshua.Batkin@nrc.gov>; Zumwalt, James P
Cc: Fuller, Matthew G; 'Eliot.Brenner@nrc.gov' <Eliot.Brenner@nrc.gov>
Subject: Re: Chairman Jaczko travel

Thank you.

All inquiries to the press section will come to me...

----- Original Message -----
From: Wall, Marc M
Sent: Sunday, March 27, 2011 01:25 AM
To: Chang, Benjamin; 'Joshua.Batkin@nrc.gov' <Joshua.Batkin@nrc.gov>; Zumwalt, James P
Cc: Fuller, Matthew G; 'Eliot.Brenner@nrc.gov' <Eliot.Brenner@nrc.gov>
Subject: RE: Chairman Jaczko travel

We've informed MOFA, the Kantei, NISA, and TEPCO.

This email is UNCLASSIFIED

-----Original Message-----
From: Chang, Benjamin
Sent: Sunday, March 27, 2011 12:44 PM
To: 'Joshua.Batkin@nrc.gov'; Zumwalt, James P
Cc: Wall, Marc M; Fuller, Matthew G; 'Eliot.Brenner@nrc.gov'
Subject: Re: Chairman Jaczko travel

Thanks

NRC is not issuing any sort of media advisory on the visit.

Do we know when we are informing the Japanese of the visit?

----- Original Message -----
From: Batkin, Joshua [mailto:Joshua.Batkin@nrc.gov]
Sent: Saturday, March 26, 2011 11:29 PM
To: Chang, Benjamin; Zumwalt, James P
Cc: Wall, Marc M; Fuller, Matthew G; Brenner, Eliot <Eliot.Brenner@nrc.gov>
Subject: Re: Chairman Jaczko travel

+Eliot Brenner, NRC public affairs director.
Ben, good to talk to you. Sounds like you have a good plan and if we're asked about the trip here, we'll simply confirm on background that he's coming out to meet with US and GOJ counterparts, refer folks to the embassy for further details, and be ready to correct any mistaken notions that it is some sort of urgent trip by pointing out it is short simply because of his full schedule midweek, including testifying before the Senate Appropriations Energy and Water Subcommittee on Wednesday morning.

Joshua C. Batkin
Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

----- Original Message -----
From: Chang, Benjamin <ChangBE@state.gov>
To: Zumwalt, James P <ZumwaltJP@state.gov>; Batkin, Joshua
Cc: Wall, Marc M <WallMM@state.gov>; Fuller, Matthew G <FullerMG@state.gov>
Sent: Sat Mar 26 22:44:51 2011
Subject: Re: Chairman Jaczko travel

Hi, Joshua. We are primed here to be of support for the visit and the messaging.

I've been in touch with the NSC and discussed with the Ambassador and front office and think there is a way to keep this low-key while getting a solid positive message of support and partnership out as a result of his visit. Happy to discuss anytime.

Ben

----- Original Message -----
From: Zumwalt, James P
Sent: Saturday, March 26, 2011 10:33 PM
To: 'Batkin, Joshua' <Joshua.Batkin@nrc.gov>; Chang, Benjamin
Cc: Wall, Marc M; Fuller, Matthew G
Subject: RE: Chairman Jaczko travel

Joshua --

The Ambassador agrees this visit should be low key. Ben Chang has been handling the public affairs aspects of this visit for the Embassy and I'll ask him to contact you directly to discuss.

Appreciate Ben if you could continue to cc this group on press issues.

Jim

James P. Zumwalt
Deputy Chief of Mission
U.S. Embassy, Tokyo
1-10-5 Akasaka
Minato ku Tokyo 107-8420
(03) 3224-5550
http://tokyo.usembassy.gov/zblog/e/zblog-emain.html

-----Original Message-----
From: Batkin, Joshua [mailto:Joshua.Batkin@nrc.gov]
Sent: Sunday, March 27, 2011 11:31 AM
To: Zumwalt, James P
Subject: Re: Chairman Jaczko travel

Thank you. Please let the us know how public you'd like the visit to be. The Chairman's expectation is that it will be low-key but he's also comfortable doing press if you think it would be beneficial. If so, can we ask for the support of the press person at the embassy whom the WH speaks highly of? Thank you and your staff again for all the support - the Chairman's looking forward to the visit. Please let me know if you or the Ambassador have any questions prior to his arrival monday morning.

Thanks,
Josh
(b)(6) c

Joshua C. Batkin
Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

----- Original Message -----
From: Zumwalt, James P <ZumwaltJP@state.gov>
To: JapanEmbassy, TaskForce <JapanEmbassyTaskForce@state.gov>; Batkin, Joshua
Cc: Wert, Robert A <WertRA@state.gov>; Bare, Robert A <BareRA@state.gov>; Hardin, Alexander K <HardinAK2@state.gov>; Wall, Marc M <WallMM@state.gov>; Forbes, James A <ForbesJA@state.gov>; Howard, E. Bruce <HowardEB@state.gov>; Cherry, Ronald C <CherryRC@state.gov>; Duncan, Aleshia D <DuncanAD@state.gov>; Fuller, Matthew G <FullerMG@state.gov>; Angelov, Bonnie A <AngelovBA@state.gov>; Basalla, Suzanne I <BasallaSI@state.gov>; Deming, Rust M <DemingRM@state.gov>; Pace, Patti; Coggins, Angela; Foggie, Kirk; Bradford, Anna; Webster, Jessica M (Hanoi) <WebsterJM@state.gov>
Sent: Sat Mar 26 22:13:40 2011
Subject: RE: Chairman Jaczko travel

Looping in Jessica Webster who is also working with the NRC team on planning this visit.

James P. Zumwalt
Deputy Chief of Mission
U.S. Embassy, Tokyo
1-10-5 Akasaka
Minato ku Tokyo 107-8420
(03) 3224-5550
http://tokyo.usembassy.gov/zblog/e/zblog-emain.html

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

From: JapanEmbassy, TaskForce
Sent: Sunday, March 27, 2011 9:56 AM
To: 'Batkin, Joshua'; JapanEmbassy, TaskForce
Cc: Wert, Robert A; Bare, Robert A; Hardin, Alexander K; Wall, Marc M; Forbes, James A; Howard, E. Bruce; Cherry, Ronald C; Duncan, Aleshia D; Zumwalt, James P; Fuller, Matthew G; Angelov, Bonnie A; Basalla, Suzanne I; Deming, Rust M; Pace, Patti; Coggins, Angela; Foggie, Kirk; Bradford, Anna
Subject: RE: Chairman Jaczko travel

Thanks Josh. I just spoke with Kirk Foggie and he will work directly with the Embassy's General Services Office (Robert Bare and Alex Hardin) on ground transportation and hotel reservations.

Cheers,
Mike

This email is UNCLASSIFIED

-----Original Message-----
From: Batkin, Joshua [mailto:Joshua.Batkin@nrc.gov]
Sent: Sunday, March 27, 2011 9:43 AM
To: JapanEmbassy, TaskForce
Cc: Wert, Robert A; Bare, Robert A; Hardin, Alexander K; Wall, Marc M; Forbes, James A; Howard, E. Bruce; Cherry, Ronald C; Duncan, Aleshia D; Zumwalt, James P; Fuller, Matthew G; Angelov, Bonnie A; Basalla, Suzanne I; Deming, Rust M; Pace, Patti; Coggins, Angela; Foggie, Kirk; Bradford, Anna
Subject: Re: Chairman Jaczko travel

Travelers: NRC Chairman Gregory B. Jaczko traveling on a (b)(6) and his Policy Director Angela B. Coggins traveling on an (b)(6) Can you please also help with in-country transportation and hotel reservations? Please let me know if you need additional information and thank you so much for your assistance on short notice.

Here is their flight information:

Travel to Japan:

Saturday March 26th

United 924

IAD – LHR

10:05PM – 10:15AM

Sunday March 27th

Virgin Atlantic 900

LHR – Narita (NRT)

1:45PM – 9:30AM (Monday March 28th)

Return Travel to US:

Tuesday March 29

United 9682

NRT – IAD

11:05AM – 10:40AM (Same day)

Sincerely,
Josh
(b)(6) c

Joshua C. Batkin
Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

----- Original Message -----
From: JapanEmbassy, TaskForce <JapanEmbassyTaskForce@state.gov>
To: Batkin, Joshua
Cc: Wert, Robert A <WertRA@state.gov>; Bare, Robert A <BareRA@state.gov>; Hardin, Alexander K <HardinAK2@state.gov>; Wall, Marc M <WallMM@state.gov>; Forbes, James A <ForbesJA@state.gov>; Howard, E. Bruce <HowardEB@state.gov>; Cherry, Ronald C <CherryRC@state.gov>; Duncan, Aleshia D <DuncanAD@state.gov>; Zumwalt, James P <ZumwaltJP@state.gov>; JapanEmbassy, TaskForce <JapanEmbassyTaskForce@state.gov>; Fuller, Matthew G <FullerMG@state.gov>; Angelov, Bonnie A <AngelovBA@state.gov>; Basalla, Suzanne I <BasallaSI@state.gov>; Deming, Rust M <DemingRM@state.gov>
Sent: Sat Mar 26 20:24:13 2011
Subject: RE: Chairman Jaczko travel

Josh,

Greetings from Tokyo. Could you please send us the flight information for the chairman and the names of the people in the traveling party?

Thanks,
Mike Daschbach
Embassy Japan Emergency Command Center

This email is UNCLASSIFIED

-----Original Message-----
From: Forbes, James A
Sent: Sunday, March 27, 2011 9:08 AM
To: Bare, Robert A; JapanEmbassy, TaskForce; Hardin, Alexander K
Cc: Wert, Robert A
Subject: RE: Chairman Jaczko travel

And the number of people accompanying the chairman?

This email is UNCLASSIFIED

-----Original Message-----
From: Bare, Robert A
Sent: Sunday, March 27, 2011 9:07 AM
To: JapanEmbassy, TaskForce; Hardin, Alexander K
Cc: Forbes, James A; Wert, Robert A
Subject: Re: Chairman Jaczko travel

Can the task force find out arrival details? Milair or commair?

Thanks,

Robert

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

From: JapanEmbassy, TaskForce
To: Hardin, Alexander K; Bare, Robert A
Cc: Forbes, James A; Wert, Robert A
Sent: Sat Mar 26 19:58:57 2011
Subject: FW: Chairman Jaczko travel

This email is UNCLASSIFIED-----Original Message-----
From: Horowitz, Paul D
Sent: Sunday, March 27, 2011 8:56 AM
To: JapanEmbassy, TaskForce
Subject: Fw: Chairman Jaczko travel

----- Original Message -----
From: Cherry, Ronald C
To: Wall, Marc M; Horowitz, Paul D; Howard, E. Bruce; Duncan, Aleshia D
Sent: Sat Mar 26 19:54:57 2011
Subject: FW: Chairman Jaczko travel

Please note NRC Chairman visit -- could be tomorrow.

SBU
This email is UNCLASSIFIED

-----Original Message-----
From: Russel, Daniel R. [mailto: (b)(6)
Sent: Sunday, March 27, 2011 8:06 AM
To: Cherry, Ronald C; 'Steven.Aoki@nnsa.doe.gov'
Subject: FW: Chairman Jaczko travel

FYI

-----Original Message-----
From: Russel, Daniel R.
Sent: Saturday, March 26, 2011 6:44 PM
To: 'Batkin, Joshua'; John V. Roos (roosj@state.gov); James Zumwalt (ZumwaltJP@state.gov); Matthew G Fuller (FullerMG@state.gov); Angelov, Bonnie A; Basalla, Suzanne I
Cc: Jaczko, Gregory; Bader, Jeffrey A.; Rust Deming (demingrm@state.gov); Donovan, Joseph R
Subject: RE: Chairman Jaczko travel

Josh - Adding Embassy Tokyo contacts who can work directly with you. Also adding State Department.

-----Original Message-----
From: Batkin, Joshua [mailto:Joshua.Batkin@nrc.gov]
Sent: Saturday, March 26, 2011 6:37 PM
To: Russel, Daniel R.; Bader, Jeffrey A.
Cc: Jaczko, Gregory
Subject: Chairman Jaczko travel

Gentleman - The Chairman is prepared to travel to Japan this weekend. The itinerary that works best is a departure later tonight, arrival in Tokyo in the morning on Monday (japan time) and a departure mid-day on Tuesday (japan time). Please confirm that works for the Embassy and we'll get him there.
Thank you, Josh

Joshua C. Batkin

Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

From: McIntyre, David
To: Brenner, Eliot
Subject: RE: Questions fro NHK
Date: Monday, March 28, 2011 8:41:00 AM

OK

-----Original Message-----
From: Brenner, Eliot
Sent: Monday, March 28, 2011 8:41 AM
To: McIntyre, David
Subject: RE: Questions fro NHK

Doubt it. they can queue up and cover the hearings like anyone else. But I will ask.

-----Original Message-----
From: McIntyre, David
Sent: Monday, March 28, 2011 8:41 AM
To: Brenner, Eliot
Subject: RE: Questions fro NHK

OK - any chance he'd give NHK an interview when he comes back?

-----Original Message-----
From: Brenner, Eliot
Sent: Monday, March 28, 2011 8:40 AM
To: McIntyre, David
Subject: RE: Questions fro NHK

Beyond the statement given by the embassy, we do not discuss the chairman's itinerary. On background only -- This was a short stay to talk with the NRC team and consult with his counterparts in the Japanese government and the utility. It is short because he has congressional hearings to attend Wednesday and Thursday.

-----Original Message-----
From: McIntyre, David
Sent: Monday, March 28, 2011 8:37 AM
To: Brenner, Eliot
Subject: FW: Questions fro NHK

Since I'm clueless on this, anything we can say?

-----Original Message-----
From: sakurai@nhkdc.com [mailto:sakurai@nhkdc.com]
Sent: Monday, March 28, 2011 8:35 AM
To: McIntyre, David
Subject: Questions fro NHK

David,
I heard from the US embassy in Japan that the Chairman is in Tokyo. I would like to know if he would be in Japan for a few days, or whether he is already on his way back, and how long his stay is/was. Has he visited only Japan, or has he gone elsewhere near Fukushima?I also want to know if he would be willing to do an interview with us in Japan or here in DC.Thank you so much for your attention, as always!
Best,
Reiko Sakurai
NHK/Japan Broadcasting Corporation
(b)(6) cell

0000/168

Sent via BlackBerry by AT&T

From: Brenner, Eliot
To: Hayden, Elizabeth; Akstulewicz, Brenda; Chandrathil, Prema; McIntyre, David; Screnci, Diane; Harrington, Holly; Couret, Ivonne; Janbergs, Holly; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Burnell, Scott; Uselding, Lara; Shannon, Valerie; Dricks, Victor; Mitlyng, Viktoria
Subject: Jaczko japan trip
Date: Monday, March 28, 2011 8:44:36 AM

Here is the statement put out by the embassy. Refer callers to this and go no further please, other than on background to say this is a short trip because the chairman has to be back to attend a congressional hearing wednesday:

The Chairman of the Nuclear Regulatory Commission, Dr. Gregory Jaczko, traveled to Tokyo on March 28 to convey directly to his Japanese counterparts a message of support and cooperation, and to assess the current situation.

Following his meetings with senior Japanese government and TEPCO officials, Chairman Jaczko said, "Our nuclear experts are working closely with their Japanese counterparts, and we both continue to share expert analysis as we move forward to address this challenge. I reconfirmed in my meetings that we are prepared to provide any assistance we can in the days to come."

Chairman Jaczko further added, "The unprecedented challenge before us remains serious and our best experts remain fully engaged to help Japan address the situation."

Eliot Brenner
Director, Office of Public Affairs
Nuclear Regulatory Commission
Rockville, Md.
O: 301-415-8200
C: (b)(6)

0000169

From: McIntyre, David
To: sakurai@nhkdc.com
Subject: RE: Questions fro NHK
Date: Monday, March 28, 2011 8:46:00 AM

Hi Reiko - I'm afraid we are not discussing details of the Chairman's itinerary - except to say, ON BACKGROUND and not for attribution - that he is scheduled to testify on Capitol Hill on Wednesday and Thursday. As for an interview, I'll put you on the list, but it is a very long list at this point.

-----Original Message-----
From: sakurai@nhkdc.com [mailto:sakurai@nhkdc.com]
Sent: Monday, March 28, 2011 8:35 AM
To: McIntyre, David
Subject: Questions fro NHK

David,
I heard from the US embassy in Japan that the Chairman is in Tokyo. I would like to know if he would be in Japan for a few days, or whether he is already on his way back, and how long his stay is/was. Has he visited only Japan, or has he gone elsewhere near Fukushima?I also want to know if he would be willing to do an interview with us in Japan or here in DC.Thank you so much for your attention, as always!
Best,
Reiko Sakurai
NHK/Japan Broadcasting Corporation
(b)(6) cell
Sent via BlackBerry by AT&T

0000/170

From: Brenner, Eliot
To: McIntyre, David
Subject: RE: Questions fro NHK
Date: Monday, March 28, 2011 8:56:13 AM

Yes, but I am not certain of which committees. You should probably get that from Amy. Also, borchardt's on the hill tomorrow along with pete lyons and we are going to have to staff that as well.

-----Original Message-----
From: McIntyre, David
Sent: Monday, March 28, 2011 8:43 AM
To: Brenner, Eliot
Subject: RE: Questions fro NHK

The hearings this week are public info, no?

-----Original Message-----
From: Brenner, Eliot
Sent: Monday, March 28, 2011 8:40 AM
To: McIntyre, David
Subject: RE: Questions fro NHK

Beyond the statement given by the embassy, we do not discuss the chairman's itinerary. On background only -- This was a short stay to talk with the NRC team and consult with his counterparts in the Japanese government and the utility. It is short because he has congressional hearings to attend Wednesday and Thursday.

-----Original Message-----
From: McIntyre, David
Sent: Monday, March 28, 2011 8:37 AM
To: Brenner, Eliot
Subject: FW: Questions fro NHK

Since I'm clueless on this, anything we can say?

-----Original Message-----
From: sakurai@nhkdc.com [mailto:sakurai@nhkdc.com]
Sent: Monday, March 28, 2011 8:35 AM
To: McIntyre, David
Subject: Questions fro NHK

David,
I heard from the US embassy in Japan that the Chairman is in Tokyo. I would like to know if he would be in Japan for a few days, or whether he is already on his way back, and how long his stay is/was. Has he visited only Japan, or has he gone elsewhere near Fukushima?I also want to know if he would be willing to do an interview with us in Japan or here in DC.Thank you so much for your attention, as always!
Best,
Reiko Sakurai
NHK/Japan Broadcasting Corporation
(b)(6) cell
Sent via BlackBerry by AT&T

0000171

From: Brenner, Eliot
To: McIntyre, David
Subject: RE: Questions fro NHK
Date: Monday, March 28, 2011 9:13:41 AM

Not real high at the moment. Will see a bit later whether he would stand for anything at the airport, but don't tell them that.

eliot

-----Original Message-----
From: McIntyre, David
Sent: Monday, March 28, 2011 9:06 AM
To: Brenner, Eliot
Subject: FW: Questions fro NHK

How are we for token interviews?

-----Original Message-----
From: sakurai@nhkdc.com [mailto:sakurai@nhkdc.com]
Sent: Monday, March 28, 2011 9:05 AM
To: McIntyre, David
Subject: Re: Questions fro NHK

David,
Thank you for getting back to me very quickly. Chairman's schedule for Wednesday and Thursday has been already publicly announced from the Hill, and already published in the week ahead.
As for the interview, would it be at all possible to do an interview in Tokyo, or as soon as he gets back?
I do understand there would be tremendous requests at this time; however ALL Japanese people and around the globe are watching NHK regarding Fukushima Daiicchi.If you would consider this situation, and regard this interview as a token of friendship to Japan, we would very much appreciate it.
Thank you in advance for your kind consideration!
Best,
Reiko

Reiko Sakurai
(b)(6)
Correspondent
NHK/Japan Broadcasting Corporation

------ ------
: McIntyre, David
To: sakurai@nhkdc.com
: RE: Questions fro NHK
: 2011/3/28 8:46 AM

Hi Reiko - I'm afraid we are not discussing details of the Chairman's itinerary - except to say, ON BACKGROUND and not for attribution - that he is scheduled to testify on Capitol Hill on Wednesday and Thursday. As for an interview, I'll put you on the list, but it is a very long list at this point.

-----Original Message-----
From: sakurai@nhkdc.com [mailto:sakurai@nhkdc.com]
Sent: Monday, March 28, 2011 8:35 AM
To: McIntyre, David
Subject: Questions fro NHK

David,
I heard from the US embassy in Japan that the Chairman is in Tokyo. I would like to know if he would

be in Japan for a few days, or whether he is already on his way back, and how long his stay is/was. Has he visited only Japan, or has he gone elsewhere near Fukushima?I also want to know if he would be willing to do an interview with us in Japan or here in DC.Thank you so much for your attention, as always!
Best,
Reiko Sakurai
NHK/Japan Broadcasting Corporation
(b)(6) cell
Sent via BlackBerry by AT&T

Sent via BlackBerry by AT&T

From: Regina Bediako
To: Brenner, Eliot
Cc: McIntyre, David
Subject: RE: Chairman Jaczko in Japan
Date: Monday, March 28, 2011 10:34:09 AM

Thanks for the quick response, Eliot. I understand about his schedule and the interview – but definitely let us know if something changes and there might be any opportunities going forward to set something up.

Best,
Regina

From: Brenner, Eliot [mailto:Eliot.Brenner@nrc.gov]
Sent: Monday, March 28, 2011 10:27 AM
To: Regina Bediako
Cc: McIntyre, David
Subject: RE: Chairman Jaczko in Japan

Regina: All I can say about his schedule is that he will be back in time for the hearing Wednesday. I regret that he does not have time while in Tokyo to do any individual interviews. I recognize the importance of NHK in Japan, but right now I cannot give you any assurance of an individual session with the chairman when he is back. However, I will bring it up with him – and all the other individual requests -- when I have the opportunity.

Eliot

From: Regina Bediako [mailto:bediako@nhkdc.com]
Sent: Monday, March 28, 2011 10:21 AM
To: Brenner, Eliot
Subject: Chairman Jaczko in Japan
Importance: High

Hello Eliot,

I'm the producer from NHK Japan Broadcasting who was at the Russell Rotunda two weeks ago, during Chairman Jaczko's interview round-up – thanks again for helping us to set ours up!

We've heard that the Chairman is currently in Japan, and thought you might also be there too. Would you be able to let us know what Dr. Jaczko's schedule will be while he is there, and when he plans to return to the US (will that be sometime tomorrow, before Wednesday's Senate hearing)?

I'd also like to see if it would be possible to set up an interview with our Tokyo bureau while Dr. Jaczko is in Japan, or with our reporter Reiko Sakurai when he is back in the States. I understand

that he is very busy at this time, but hopefully you can agree that having an interview with Japan's national broadcaster would be a useful means of communicating to the public the NRC's goals for cooperation with Japan in their crisis response. Just let us know what we should do next in order to arrange this interview.

Thank you,
Regina

Regina Bediako
NHK (Japan Broadcasting Corporation)
2030 M St NW, Suite 706
Washington, D.C. 20036
Office: (202) 828-5180, ext. 111 Cell: (b)(6)

From:	Couret, Ivonne
To:	Brenner, Eliot; Hayden, Elizabeth
Cc:	Janbergs, Holly; Harrington, Holly; Burnell, Scott; McIntyre, David; Sorenci, Diane; Sheehan, Neil; Dricks, Victor; Uselding, Lara; Chandrathil, Prema; Mitlyng, Viktoria; Hannah, Roger; Ledford, Joey; Medina, Veronika; Hollan, Brian; Valentine, Nicholee
Subject:	FYI - Hearing on the hill this week
Date:	Monday, March 28, 2011 2:49:47 PM
Importance:	High

FYI this week's schedule of hearing. Ivonne

From: Riley (OCA), Timothy
Sent: Monday, March 28, 2011 2:46 PM
To: Couret, Ivonne
Subject: RE: Hearing on the hill this week

Here are the hearings for this week:
Tuesday, March 29, 10:00 am,– Senate Energy and Natural Resources Committee
366 Dirksen Senate Office Building
Mr. Bill Borchardt: **Update on Fukushima**

Wednesday, March 30, 10:00 am, House Transportation and Infrastructure Subcommittee on Economic Development, Public Buildings, and Emergency Management
2253 Rayburn House Office Building
Mr. Mike Weber: **Emergency Management Programs**

Wednesday, March 30, 10:00 am, Senate Appropriations Energy and Water Subcommittee
138 Dirksen Senate Office Building
Chairman Jaczko: **Review of Nuclear Safety**

Thursday, March 31, 10:00 am, House Appropriations Energy and Water Subcommittee
2362B Rayburn House Office Building
Chairman Jaczko

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry: (b)(6)

From: Couret, Ivonne
Sent: Monday, March 28, 2011 12:11 PM
To: Riley (OCA), Timothy
Subject: Hearing on the hill this week

Can you send me a link to the different Hearing on the Hill that the NRC will be participating this week and next. Thanks, Ivonne

0000/174

Ivonne L. Couret
Public Affairs Officer
Office of Public Affairs
Media Desk
opa.resource@nrc.gov
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!
http://www.nrc.gov/reading-rm/photo-gallery/

2010-2011 Information Digest - Where you can find NRC Facts at a Glance
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/

From: McIntyre, David
To: Brian Hatheway
Subject: RE: REPLY - RE: Media - College Paper - Radiation Exposure
Date: Monday, March 28, 2011 3:46:00 PM

Thank you - you, too.

> **From:** Brian Hatheway [mailto: (b)(6)]
> **Sent:** Monday, March 28, 2011 3:45 PM
> **To:** McIntyre, David
> **Subject:** Re: REPLY - RE: Media - College Paper - Radiation Exposure
>
> It does help. Thanks again for your time and good luck with future endeavors.
>
> -Brian Hatheway
> CCAC Voice
>
> On Mon, Mar 28, 2011 at 2:58 PM, McIntyre, David <David.McIntyre@nrc.gov> wrote:
> Hi Brian –
>
> 1) We are not really in a position to comment on the radiation levels experienced in Tokyo. To my knowledge, the Japanese authorities have not issued any protective action guidelines for Tokyo, other than to interdict certain produce originating from the region closer to Fukushima.
>
> 2) It depends. You can get a sunburn fairly quickly. The workers trying to fix the plant may experience rapid symptoms due to their extreme exposure to dangerous amounts of radiation. In general, however, radiation is considered to add incrementally to the risk of cancer – which can take decades to develop.
>
> 3) It's not expected to, given the very long distance and the dispersion of the jet stream as it would travel across the ocean. But I imagine local authorities and USDA may be ready to monitor food supplies, as the Japanese authorities are doing. (To guard against the secondary exposure of ingesting food that has concentrated amounts of radionuclides, as opposed to the primary exposure of being directly hit by radiation.)
>
> 4) These would be primarily exposure to workers from contamination at the site, and the need to guard against the further spread of contamination.
>
> I hope this helps.

David McIntyre
Office of Public Affairs

0000 | 175

U.S. Nuclear Regulatory Commission
(301) 415-8200

From: Brian Hatheway [mailto: (b)(6)
Sent: Monday, March 28, 2011 2:36 PM
To: McIntyre, David
Subject: Re: REPLY - RE: Media - College Paper - Radiation Exposure

What effects can the low levels of Sieverts in Tokyo have on its residents?
How long does radiation exposure take to have serious effects?
What risks can we expect if the radiation plume actually hits the west coast with some force?
What are the risks associated with cleaning up such a catastrophic nuclear accident?

Thanks again,
-Brian Hatheway
CCAC Voice

On Mon, Mar 28, 2011 at 1:58 PM, McIntyre, David <David.McIntyre@nrc.gov> wrote:
Hi Brian – There is some basic information on the biological effects of radiation on our website, under the "Radiation Protection" button on www.nrc.gov. EPA also has some good information. I'd be happy to try and assist you with any other questions you might have.

David McIntyre
Office of Public Affairs
U.S. Nuclear Regulatory Commission
(301) 415-8200

From: Couret, Ivonne
Sent: Monday, March 28, 2011 1.07 PM
To: McIntyre, David
Subject: STILL NEED TO BE RESOLVED NRC - REPLY - RE: Media - College Paper - Radiation Exposure

Dave,
Can you follow up? Thanks, Ivonne

From: Brian Hatheway [mailto: (b)(6)
Sent: Monday, March 28, 2011 1:02 PM
To: Couret, Ivonne
Subject: Re: NRC - REPLY - RE: Media - College Paper - Radiation Exposure

Before this email I had not received a response. I was just interested in any information you could pass along about radiation exposure and its long term health effects. I was also interested in a short interview with a representative from the NRC if that's possible.

Thanks again for your time,
-Brian Hatheway
CCAC Voice

On Mon, Mar 28, 2011 at 12:03 PM, Couret, Ivonne
<Ivonne.Couret@nrc.gov> wrote:
Brian,
I'm emailing trying to decipher if our Public Affairs Office responded to your query if not please advise. Ivonne

Ivonne L. Couret
Public Affairs Officer
Office of Public Affairs
Media Desk
opa.resource@nrc.gov
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!
http://www.nrc.gov/reading-rm/photo-gallery/

2010-2011 Information Digest - Where you can find NRC Facts at a Glance
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/

-----Original Message-----
From: Brian Hatheway [mailto: (b)(6)
Sent: Friday, March 25, 2011 10:35 AM
To: OPA Resource
Subject: Radiation Exposure

Below is the result of your feedback form. It was submitted by

Brian Hatheway ((b)(6)) on Friday, March 25, 2011 at 10:34:43
---

comments: I'm a reporter for the CCAC Voice newspaper and I'm doing an article of the health effects of radiation exposure. I was hoping there was someone within the USNRC that could answer a few questions concerning the subject. Thanks for your time and I hope to talk soon.

-Brian Hatheway
CCAC Voice

organization: CCAC Voice (collegiate newspaper)

address1: 824 Perry Hwy

address2:

city: Pittsburgh

state: PA

zip: 15229

country: America

phone: 412-477-5015

Phalen, Martin

From: Sejkora, Kenneth J J [ksejkor@entergy.com]
Sent: Tuesday, March 29, 2011 9:59 AM
Subject: FW: Protocol for Reporting Radiological Data from Fukushima to Industry Organizations and Federal Government Agencies

Importance: High

Hello RETS-REMP peers,

Ellen Anderson at NEI asked me to forward this message out to the RETS-REMP Community. NEI has been requested to compile utility REMP data that indicate measurable radioactivity from the Fukushima event. The Radiation Protection Managers at your facilities will be emailed a password which your site will use to access the NEI database and input your data. Please consider contributing your site's results to NEI's data-gathering efforts, as such data-sharing is an important outreach tool that demonstrates the industry's interest in responding to stakeholder needs

Thank you

Ken Sejkora, RETS-REMP Steering Committee
phone. 508-830-8469
fax: 508-830-8939
email: ksejkor@entergy.com

From: PIETRANGELO, Tony
Sent: Tuesday, March 29, 2011 9:05 AM
Subject: Protocol for Reporting Radiological Data from Fukushima to Industry Organizations and Federal Government Agencies

March 29, 2011

To: Nuclear Strategic Issues Advisory Committee Steering Group

Subject: Protocol for Reporting Radiological Data from Fukushima to Industry Organizations and Federal Government Agencies

NEI has been requested to collect and disseminate radiological data resulting from the Fukushima event from U.S. nuclear plant sites. This data will be made available (READ ONLY) to INPO, EPRI, NRC, EPA and the White House Office of Science of Technology and Policy (OSTP).

Today we will be launching a new website for your plant personnel to input any environmental data that you may have collected as a result of the events at Fukushima. Our objective is to provide data to federal government agencies and industry organizations in a manner that minimizes burden on individual plant personnel.

Your plant Radiation Protection Manager will receive an email later today containing a User ID and password. Each site will have one User ID and password. We have asked your staff to populate the web page with any previous data that you may have collected since the events at Fukushima.

Should you have any questions or require any additional information, please contact me, Ralph Andersen at 202.739.8111 or rla@nei.org, or Ellen Anderson at 202.739.8043 or exa@nei.org.

0000/176

Anthony R. Pietrangelo
Senior Vice President and Chief Nuclear Officer

Nuclear Energy Institute
1776 I Street NW, Suite 400
Washington, DC 20006
www.nei.org

P: 202-739-8081
F: 202-533-0182
M: (b)(6)
E: arp@nei.org

Rihm, Roger

From: Rihm, Roger
Sent: Tuesday, March 29, 2011 10:04 AM
To: Sanfilippo, Nathan
Subject: FW: 3/29/11 Testimony
Attachments: Concurrence March 29 Senate Energy testimony.docx

In the interest of full disclosure (and I just thought of it), for today, Bill has both an oral testimony (sent to you) AND a longer "statement for the record" (from which his oral statement was drawn, except for the couple of paragraphs that provide status of Japan events). Here is the longer record statement.

From: Riley (OCA), Timothy
Sent: Monday, March 28, 2011 4:26 PM
To: Rihm, Roger
Subject: FW: 3/29/11 Testimony

Here's the final copy.

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry: (b)(6)

From: Riley (OCA), Timothy
Sent: Monday, March 28, 2011 4:03 PM
To: Schmidt, Rebecca
Cc: Belmore, Nancy
Subject: 3/29/11 Testimony

Becky,
Attached is the final concurrence copy of the testimony for the Senate Energy and Nat. Resources hearing 3/29. It's also on the G: drive under testimony...

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry: (b)(6)

0000/177

STATEMENT OF R. WILLIAM BORCHARDT
EXECUTIVE DIRECTOR FOR OPERATIONS
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

NRC RESPONSE TO RECENT NUCLEAR EVENTS IN JAPAN AND THE CONTINUING SAFETY OF THE U.S. COMMERCIAL NUCLEAR REACTOR FLEET

MARCH 29, 2011

The staff of the U.S. Nuclear Regulatory Commission is deeply saddened by the tragedy in Japan. I and many of my colleagues on the NRC staff have had many years of very close and personal interaction with our regulatory counterparts and we would like to extend our condolences to them.

Introduction

The NRC is mindful that our primary responsibility is to ensure the adequate protection of the public health and safety of the American people. We have been very closely monitoring the activities in Japan and reviewing all currently available information. Review of this information, combined with our ongoing inspection and licensing oversight, allows us to say with confidence that the U.S. plants continue to operate safely. There has been no reduction in the licensing or oversight function of the NRC as it relates to any of the U.S. licensees.

We have a long history of conservative regulatory decision-making. We have been using risk insights to help inform our regulatory process, and, over more than 35 years of civilian nuclear power in this country, we have never stopped making improvements to our regulatory framework as we learn from operating experience.

Notwithstanding the very high level of support being provided to respond to events in Japan, we continue to maintain our focus on our domestic responsibilities.

I'd like to begin with a brief overview of our immediate and continuing response. I then want to spend the bulk of my time discussing the reasons for our confidence in the safety

of the U. S. commercial nuclear reactor fleet, and the path forward that we will take to ensure we learn any lessons we need to from events in Japan.

The NRC's immediate and Continuing Response to Events in Japan

On Friday, March 11th an earthquake hit Japan, resulting in the shutdown of more than 10 reactors. From what we know now, it appears possible that the reactors' response to the earthquake went according to design. The ensuing tsunami, however, appears to have caused the loss of normal and emergency AC power to the six units at the Fukushima Daiichi site; it is those six units that have received the majority of our attention since that time. Units One, Two, and Three at the site were in operation at the time of the earthquake. Units Four, Five, and Six were in previously scheduled outages.

Shortly after 4:00 AM EDT on Friday, March 11th, the NRC Emergency Operations Center made the first call, informing NRC management of the earthquake and the potential impact on U.S. plants. We went into the monitoring mode at the Emergency Operations Center and the first concern for the NRC was possible impacts of the tsunami on U.S. plants and radioactive materials on the West Coast, and in Hawaii, Alaska, and U.S. Territories in the Pacific.

On that same day, we began interactions with our Japanese regulatory counterparts and dispatched two experts to help at the U.S. embassy in Japan. By Monday, we had dispatched a total of 11 staff to Japan. We have subsequently rotated in additional staff to continue our on-the-ground assistance in Japan. The areas of focus for this team are: 1) to assist the Japanese government with technical support as part of the USAID response; and 2) to support the U.S. ambassador. While our focus now is on helping Japan in any way that we can, the experience will also help us assess the implications for U.S. citizens and the U.S. reactor fleet in as timely a manner as possible.

We have an extensive range of stakeholders with whom we have ongoing interaction,

including the White House, Congressional staff, our state regulatory counterparts, a number of other federal agencies, and international regulatory bodies around the world.

The NRC response in Japan and our Emergency Operations Center continue with the dedicated efforts of over 250 NRC staff on a rotating basis. The entire agency is coordinating and pulling together in response to this event so that we can provide assistance to Japan while continuing the normal activities necessary to fulfill our domestic responsibilities.

Let me also just note here in concluding this section of my remarks that the U.S. government has an extensive network of radiation monitors across this country. Monitoring equipment at nuclear power plants and in the U. S. Environmental Protection Agency's (EPA) system has not identified any radiation levels of concern in this country. In fact, natural background radiation from sources such as rocks, the sun, and buildings, is 100,000 times more than doses attributed to any level of the radiation from this event that has been detected in the U.S. to date. Therefore, we feel confident, based on current data, that there is no reason for concern in the United States regarding radioactive releases from Japan.

Continuing Confidence in the Safety of U.S. Nuclear Power Plants

I will now turn to the factors that assure us of ongoing domestic reactor safety. We have, since the beginning of the regulatory program in the United States, used a philosophy of Defense-in-Depth, which recognizes that nuclear reactors require the highest standards of design, construction, oversight, and operation, and does not rely on any single layer for protection of public health and safety. We begin with designs for every individual reactor in this country that take into account site-specific factors and include a detailed evaluation for any natural event, such as earthquakes, tornadoes, hurricanes, floods, and tsunamis, as they relate to that site.

There are multiple physical barriers to radiation in every reactor design. Additionally, there are both diverse and redundant safety systems that are required to be maintained in

operable condition and frequently tested to ensure that the plant is in a high condition of readiness to respond to any scenario.

We have taken advantage of the lessons learned from previous operating experience to implement a program of continuous improvement for the U.S. reactor fleet. We have learned from experience across a wide range of situations, including most significantly, the Three Mile Island accident in 1979. As a result of those lessons learned, we have significantly revised emergency planning requirements and emergency operating procedures. We have addressed many human factors issues regarding how control room employees operate the plant, added new requirements for hydrogen control to help prevent explosions inside of containment, and created requirements for enhanced control room displays of the status of pumps and valves.

The NRC has a post-accident sampling system that enables the monitoring of radioactive material release and possible fuel degradation. One of the most significant changes after Three Mile Island was expansion of the Resident Inspector Program, which has at least two full-time NRC inspectors on site at each nuclear power plant. These inspectors have unfettered access to all licensees' activities.

As a result of operating experience and ongoing research programs, we have developed requirements for severe accident management guidelines. These are components and procedures developed to ensure that, in the event all of the above precautions failed and a severe accident occurred, the plant would still protect public health and safety. The requirements for severe accident management have been in effect for many years and are frequently evaluated by the NRC inspection program.

As a result of the events of September 11, 2001, we identified important pieces of equipment that, regardless of the cause of a significant fire or explosion at a plant, we want licensees to have available and staged in advance, as well as new procedures, training requirements, and policies that would help deal with a severe situation.

Our program of continuous improvement based on operating experience will now include evaluation of the significant events in Japan as well as what we can learn from them. We already have begun enhancing inspection activities through temporary instructions to our inspection staff, including the resident inspectors and the region-based inspectors in our four Regional offices, to look at licensees' readiness to deal with both the design basis accidents and the beyond-design basis accidents. The information that we gather will be used to evaluate the industry's readiness for similar events, and will aid in our understanding of whether additional regulatory actions need to be taken in the immediate term.

We have also issued an information notice to the licensees to make them aware of the events in Japan, and the kinds of activities we believe they should be engaged in to verify their readiness. Specifically, we have requested them to verify that their capabilities to mitigate conditions that result from severe accidents, including the loss of significant operational and safety systems, are in effect and operational. Licensees are verifying the capability to mitigate a total loss of electric power to the nuclear plant. They also are verifying the capability to mitigate problems associated with flooding and the resulting impact on systems both inside and outside of the plant. Also, licensees are confirming the equipment that is needed is in place for the potential loss of equipment due to seismic events appropriate for the site, because each site has its own unique seismic profiles.

During the past 20 years, there have been a number of new rulemakings that have enhanced the domestic fleet's preparedness against some of the problems we are seeing in Japan. The "station blackout" rule requires every plant in this country to analyze what the plant response would be if it were to lose all alternating current so that it could respond using batteries for a period of time, and then have procedures in place to restore alternating current to the site and provide cooling to the core.

The hydrogen rule requires modifications to reduce the impacts of hydrogen

generated for beyond-design basis events and core damage. There are equipment qualification rules that require equipment, including pumps and valves, to remain operable under the kinds of environmental temperature and radiation conditions that you would see under a design basis accident. With regard to the type of containment design used by the most heavily damaged plants in Japan, the NRC has had a Boiling Water Reactor Mark I Containment Improvement Program since the late 1980s, which has required installation of hardened vent systems for containment pressure relief, as well as enhanced reliability of the automatic depressurization system.

The final factor I want to mention with regard to our belief in the ongoing safety of the U.S. fleet is the emergency preparedness and planning requirements in place that provide ongoing training, testing, and evaluations of licensees' emergency preparedness programs. In coordination with our federal partner, the Federal Emergency Management Administration (FEMA), these activities include extensive interaction with state and local governments, as those programs are evaluated and tested on a periodic basis.

The Path Ahead

Beyond the initial steps to address the experience from the events in Japan, the Chairman, with the full support of the Commission, directed the NRC staff to establish a senior level agency task force to conduct a methodical and systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system and make recommendations to the Commission for its policy direction. This activity will have both near-term and longer-term objectives.

For the near term effort, we are beginning a 90-day review. This review will evaluate all of the currently available information from the Japanese events to identify immediate or near-term operational or regulatory issues potentially affecting the 104 operating reactors in the U.S., including their spent fuel pools. Areas of investigation will include the ability to

protect against natural disasters, response to station blackouts, severe accidents and spent fuel accident progression, radiological consequence analysis, and severe accident management issues regarding equipment. Over this 90-day period, we will develop recommendations, as appropriate, for changes to inspection procedures and licensing review guidance, and recommend whether generic communications, orders, or other regulatory requirements are needed.

This 90-day effort will include a 30-day "Quick Look Report" to the Commission to provide a snapshot of the regulatory response and the condition of the U.S. fleet based on information we have available at that time. Preparing a "Quick Look Report" will also ensure that the Commission is both kept informed of ongoing efforts and prepared to resolve any policy recommendations that surface. I believe we will have limited stakeholder involvement in the first 30 days to accomplish this. However over the 90-day and longer-term efforts we will seek additional stakeholder input. At the end of the 90-day period, a report will be provided to the Commission and to the public. The task force's longer-term review will begin as soon as the NRC has sufficient technical information from the events in Japan.

The task force will evaluate all technical and policy issues related to the event to identify additional potential research, generic issues, changes to the reactor oversight process, rulemakings, and adjustments to the regulatory framework that should be pursued by the NRC. We also expect to evaluate potential interagency issues, such as emergency preparedness, and examine the applicability of any lessons learned to non-operating reactors and materials licensees. We expect to seek input from stakeholders during this process. A report with appropriate recommendations will be provided to the Commission within 6 months of the start of this evaluation. Both the 90-day and final reports will be made publicly available in accordance with normal Commission processes.

Conclusion

In conclusion, I want to reiterate that we continue to make our domestic responsibilities for licensing and oversight of the U.S. licensees our top priority and that the U.S. plants continue to operate safely. In light of the events in Japan, there is a near-term evaluation of their relevance to the U.S. fleet underway, and we are continuing to gather the information necessary for us to take a longer, more thorough look at the events in Japan and their lessons for us. Based on these efforts, we will take all appropriate actions necessary to ensure the continuing safety of the U.S. fleet.

Rihm, Roger

From: Rihm, Roger
Sent: Tuesday, March 29, 2011 11:28 AM
To: Turk, Sherwin
Subject: FW: 3/29/11 Testimony
Attachments: Concurrence March 29 Senate Energy testimony.docx

This is where I got it! This testimony was based on Borchardt's remarks at the recent Commission meeting. I used both the SRM and this testimony to draft the Markey letter. The fact that he said it (and that it stayed in here after OCA and Commission review) doesn't necessarily mean it's correct, however, and I think it would be better to remove the two words you suggested deleting.

From: Riley (OCA), Timothy
Sent: Monday, March 28, 2011 4:26 PM
To: Rihm, Roger
Subject: FW: 3/29/11 Testimony

Here's the final copy.

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry: (b)(6)

From: Riley (OCA), Timothy
Sent: Monday, March 28, 2011 4:03 PM
To: Schmidt, Rebecca
Cc: Belmore, Nancy
Subject: 3/29/11 Testimony

Becky,
Attached is the final concurrence copy of the testimony for the Senate Energy and Nat. Resources hearing 3/29. It's also on the G: drive under testimony...

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry (b)(6)

0000/178

STATEMENT OF R. WILLIAM BORCHARDT
EXECUTIVE DIRECTOR FOR OPERATIONS
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

NRC RESPONSE TO RECENT NUCLEAR EVENTS IN JAPAN AND THE CONTINUING SAFETY OF THE U.S. COMMERCIAL NUCLEAR REACTOR FLEET

MARCH 29, 2011

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including the White House, Congressional staff, our state regulatory counterparts, a number of other federal agencies, and international regulatory bodies around the world.

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There are multiple physical barriers to radiation in every reactor design. Additionally, there are both diverse and redundant safety systems that are required to be maintained in

operable condition and frequently tested to ensure that the plant is in a high condition of readiness to respond to any scenario.

We have taken advantage of the lessons learned from previous operating experience to implement a program of continuous improvement for the U.S. reactor fleet. We have learned from experience across a wide range of situations, including most significantly, the Three Mile Island accident in 1979. As a result of those lessons learned, we have significantly revised emergency planning requirements and emergency operating procedures. We have addressed many human factors issues regarding how control room employees operate the plant, added new requirements for hydrogen control to help prevent explosions inside of containment, and created requirements for enhanced control room displays of the status of pumps and valves.

The NRC has a post-accident sampling system that enables the monitoring of radioactive material release and possible fuel degradation. One of the most significant changes after Three Mile Island was expansion of the Resident Inspector Program, which has at least two full-time NRC inspectors on site at each nuclear power plant. These inspectors have unfettered access to all licensees' activities.

As a result of operating experience and ongoing research programs, we have developed requirements for severe accident management guidelines. These are components and procedures developed to ensure that, in the event all of the above precautions failed and a severe accident occurred, the plant would still protect public health and safety. The requirements for severe accident management have been in effect for many years and are frequently evaluated by the NRC inspection program.

As a result of the events of September 11, 2001, we identified important pieces of equipment that, regardless of the cause of a significant fire or explosion at a plant, we want licensees to have available and staged in advance, as well as new procedures, training requirements, and policies that would help deal with a severe situation.

Our program of continuous improvement based on operating experience will now include evaluation of the significant events in Japan as well as what we can learn from them. We already have begun enhancing inspection activities through temporary instructions to our inspection staff, including the resident inspectors and the region-based inspectors in our four Regional offices, to look at licensees' readiness to deal with both the design basis accidents and the beyond-design basis accidents. The information that we gather will be used to evaluate the industry's readiness for similar events, and will aid in our understanding of whether additional regulatory actions need to be taken in the immediate term.

We have also issued an information notice to the licensees to make them aware of the events in Japan, and the kinds of activities we believe they should be engaged in to verify their readiness. Specifically, we have requested them to verify that their capabilities to mitigate conditions that result from severe accidents, including the loss of significant operational and safety systems, are in effect and operational. Licensees are verifying the capability to mitigate a total loss of electric power to the nuclear plant. They also are verifying the capability to mitigate problems associated with flooding and the resulting impact on systems both inside and outside of the plant. Also, licensees are confirming the equipment that is needed is in place for the potential loss of equipment due to seismic events appropriate for the site, because each site has its own unique seismic profiles.

During the past 20 years, there have been a number of new rulemakings that have enhanced the domestic fleet's preparedness against some of the problems we are seeing in Japan. The "station blackout" rule requires every plant in this country to analyze what the plant response would be if it were to lose all alternating current so that it could respond using batteries for a period of time, and then have procedures in place to restore alternating current to the site and provide cooling to the core.

The hydrogen rule requires modifications to reduce the impacts of hydrogen

generated for beyond-design basis events and core damage. There are equipment qualification rules that require equipment, including pumps and valves, to remain operable under the kinds of environmental temperature and radiation conditions that you would see under a design basis accident. With regard to the type of containment design used by the most heavily damaged plants in Japan, the NRC has had a Boiling Water Reactor Mark I Containment Improvement Program since the late 1980s, which has required installation of hardened vent systems for containment pressure relief, as well as enhanced reliability of the automatic depressurization system.

The final factor I want to mention with regard to our belief in the ongoing safety of the U.S. fleet is the emergency preparedness and planning requirements in place that provide ongoing training, testing, and evaluations of licensees' emergency preparedness programs. In coordination with our federal partner, the Federal Emergency Management Administration (FEMA), these activities include extensive interaction with state and local governments, as those programs are evaluated and tested on a periodic basis.

The Path Ahead

Beyond the initial steps to address the experience from the events in Japan, the Chairman, with the full support of the Commission, directed the NRC staff to establish a senior level agency task force to conduct a methodical and systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system and make recommendations to the Commission for its policy direction. This activity will have both near-term and longer-term objectives.

For the near term effort, we are beginning a 90-day review. This review will evaluate all of the currently available information from the Japanese events to identify immediate or near-term operational or regulatory issues potentially affecting the 104 operating reactors in the U.S , including their spent fuel pools. Areas of investigation will include the ability to

protect against natural disasters, response to station blackouts, severe accidents and spent fuel accident progression, radiological consequence analysis, and severe accident management issues regarding equipment. Over this 90-day period, we will develop recommendations, as appropriate, for changes to inspection procedures and licensing review guidance, and recommend whether generic communications, orders, or other regulatory requirements are needed.

This 90-day effort will include a 30-day "Quick Look Report" to the Commission to provide a snapshot of the regulatory response and the condition of the U.S. fleet based on information we have available at that time. Preparing a "Quick Look Report" will also ensure that the Commission is both kept informed of ongoing efforts and prepared to resolve any policy recommendations that surface. I believe we will have limited stakeholder involvement in the first 30 days to accomplish this. However over the 90-day and longer-term efforts we will seek additional stakeholder input. At the end of the 90-day period, a report will be provided to the Commission and to the public. The task force's longer-term review will begin as soon as the NRC has sufficient technical information from the events in Japan.

The task force will evaluate all technical and policy issues related to the event to identify additional potential research, generic issues, changes to the reactor oversight process, rulemakings, and adjustments to the regulatory framework that should be pursued by the NRC. We also expect to evaluate potential interagency issues, such as emergency preparedness, and examine the applicability of any lessons learned to non-operating reactors and materials licensees. We expect to seek input from stakeholders during this process. A report with appropriate recommendations will be provided to the Commission within 6 months of the start of this evaluation. Both the 90-day and final reports will be made publicly available in accordance with normal Commission processes.

Conclusion

In conclusion, I want to reiterate that we continue to make our domestic responsibilities for licensing and oversight of the U.S. licensees our top priority and that the U.S. plants continue to operate safely. In light of the events in Japan, there is a near-term evaluation of their relevance to the U.S. fleet underway, and we are continuing to gather the information necessary for us to take a longer, more thorough look at the events in Japan and their lessons for us. Based on these efforts, we will take all appropriate actions necessary to ensure the continuing safety of the U.S. fleet.

From: Brenner, Eliot
To: Burnell, Scott; McIntyre, David
Subject: Fw: CNN: Senate testimony
Date: Tuesday, March 29, 2011 1:45:41 PM

???
Eliot Brenner
Director, Office of Public Affairs
US Nuclear Regulatory Commission
Protecting People and the Environment
301 415 8200
C: (b)(6)
Sent from my Blackberry

From: Ahlers, Mike <Mike.Ahlers@turner.com>
To: Brenner, Eliot; McIntyre, David
Cc: Meserve, Jeanne <Jeanne.Meserve@turner.com>
Sent: Tue Mar 29 13:34:27 2011
Subject: CNN: Senate testimony

Eliot, David,

Hi there.

We are working on a story about today's Senate hearing on Fukushima.

UCS's David Lochbaum testified (speaking about batteries) that "Eleven U.S. reactors are designed to cope with a station blackout lasting eight hours, as were the reactors in Japan. Ninety-three of our reactors are designed to cope for only four hours."

We understand that he is speaking only about battery power (as opposed to emergency generators, etc.) We intend to use those numbers in the story. Are those numbers correct? Thanks – Mike

Mike Ahlers
Senior Producer, Homeland Security
CNN Washington
202-898-7917 (o)
(b)(6) (cell)
mike.ahlers@turner.com

0000|179

From: Kery Murakami
To: McIntyre, David
Subject: RE: press inquiry
Date: Tuesday, March 29, 2011 2:36:29 PM

---

no that was very helpful. Thanks very much

Kery Murakami
Newsday
Suffolk County Reporter
631-843-2780 (work)
(b)(6) (cell)

>>> "McIntyre, David" <David.McIntyre@nrc.gov> 3/29/2011 1:51 PM >>>
FEMA has the lead on emergency planning and works with the local jurisdictions. NRC would focus primarily on the plant itself, though we cooperate with other agencies.

I meant that the 10-mile zone could be expanded during a crisis if the situation warranted. That actually might be a "yes" to both of your formulations, though I don't mean to be unhelpful.

> **From:** Kery Murakami [mailto:Kery.Murakami@newsday.com]
> **Sent:** Tuesday, March 29, 2011 1:48 PM
> **To:** McIntyre, David
> **Subject:** RE: press inquiry
>
> Hi David, thanks for this and excuse me for not knowing more about this issue. Just to clarify because if there is no plan, it would inhibit protective actions. Do you mean that local jurisdictions can plan beyond the ten miles if they want and then take protective actions?
> or do you mean that say there were an evacuation plan for just within the ten miles, local jurisdictions would be free to evacuate people beyond the ten miles, even if there is no plan.
>
> also who exactly is supposed to come up with the plan? The local emergency response agency or the federal government?
>
> Kery Murakami
> Newsday
> Suffolk County Reporter
> 631-843-2780 (work)
> (b)(6) (cell)
>
> >>> "McIntyre, David" <David.McIntyre@nrc.gov> 3/29/2011 1:43 PM >>>
> Hi Kery –
> The 10-mile emergency planning zone has always been viewed as a "scalable" radius for planning purposes, meaning that protective actions could be extended beyond that should a situation warrant it. I'm sure that this question will be raised during the NRC's task force review of nuclear plant safety following the Fukushima situation.
>
> Regards,
>
> ***David McIntyre***
> *Office of Public Affairs*
> *U.S. Nuclear Regulatory Commission*
> *(301) 415-8200*

From: Medina, Veronika
Sent: Tuesday, March 29, 2011 12:53 PM

0000/180

To: McIntyre, David
Subject: FW: press inquiry

Dave,

Could you follow up with this reporter?

Thanks,
Veronika

From: Janbergs, Holly **On Behalf Of** OPA Resource
Sent: Tuesday, March 29, 2011 11:47 AM
To: Medina, Veronika
Subject: FW: press inquiry

From: Kery Murakami [mailto:Kery.Murakami@newsday.com]
Sent: Tuesday, March 29, 2011 11:34 AM
To: OPA Resource
Subject: press inquiry

Hi I'm doing a little short on this for tomorrow, and i was looking for a reaction about this county legislator's call for extending the evacuation plan around nuclear sites to 25 miles given the situation in japan

Kery Murakami
Newsday
Suffolk County Reporter
631-843-2780 (work)
(b)(6) (cell)

>>> "Stark, Catherine" <catherine.stark@suffolkcountyny.gov> 3/29/2011 11:00 AM >>>

Jay H. Schneiderman
Suffolk County Legislator
Second District

75 Washington St. / P.O. Box 1827
Sag Harbor, New York 11963
631-852-8400 / Fax 631-852-8404

FOR IMMEDIATE RELEASE **March 29, 2011**
Contact: Christina DeLisi (631) 852-8400

Schneiderman Calls on Federal Reps to Extend Radius from Nuclear Power Plants for Emergency Evacuation Planning

In a letter sent this week to Senators Gillibrand and Schumer and Congressman Bishop, Suffolk County Legislator Jay Schneiderman urged them to press for expanding the current federally required 10 mile radius from nuclear facilities for developing evacuation plans to a minimum of 25 miles based on the experience at the Fukushima Daiichi plant in Japan. Schneiderman in his letter noted that the Japanese government evacuated to a 25 mile radius and President Obama urged US citizens within a 50 mile radius to evacuate the area. Schneiderman noted that much of the North and South Fork lie within the 25 mile radius and no plans exist for evacuating these areas in a nuclear emergency. The text of the letter appears below:

If one lesson can be clearly learned from the nuclear incident at the Fukushima Daiichi plant in Japan, it is that the current US requirement of evacuation planning within 10 miles of a nuclear facility is woefully inadequate. Our own president urged that any US citizen within 50 miles of the Fukushima Daiichi plant be evacuated. Both forks of Eastern Long Island sit within a 50 mile radius of the aging Millstone II nuclear power plant in Waterford, Connecticut. The Japanese government required evacuations within 25 miles of the leaking power plant. A 25 mile radius from the Millstone facility would include the entire Town of East Hampton, Shelter Island, Southold, the Village of Sag Harbor, North Haven, Greenport and large areas of Southampton Town. Currently, no evacuation plans exist for these areas in the event of a nuclear disaster be it accidental, through a natural disaster, or from an act of terrorism.

As a Federal representative of this region, I call on you to press for a minimum radius of 25 miles for evacuation planning from a nuclear facility. Thank you for your prompt attention and consideration.

Jay Schneiderman

Catherine Stark
Legislative Aide, 2nd District
Legislator Jay Schneiderman
75 Washington Street
PO Box 1827, Sag Harbor, NY 11963
*Phone 631-852-8400 * Fax 631-852-8404*

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From: Marcano, Jonathan
To: Hannah, Roger; McIntyre, David
Cc: Smith, James; Campbell, Larry
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities
Date: Tuesday, March 29, 2011 4:57:12 PM
Attachments: NMSS Seismic Q&As_REV3_March 29 2011.docx
Importance: High

Roger and David,

Did you had a chance to review the document containing the Seismic Q&As for fuel cycle facilities? We need to provide this document to Cathy Haney tomorrow by COB and would like to know if you have any comments/suggestions.

Thanks,

Jonathan Marcano-Lozada, EIT

From: Smith, James
Sent: Friday, March 25, 2011 6:14 PM
To: Hannah, Roger; McIntyre, David; Romano, Michelle; Sykes, Marvin
Cc: Harrington, Holly; Couret, Ivonne; Campbell, Larry; Marcano, Jonathan; Tschiltz, Michael; Kinneman, John; Gody, Tony; Cobey, Eugene; Hiltz, Thomas; Reilly, Breeda; Liu, Tilda; Thompson, Richard; Diaz, Marilyn; Rodriguez, Rafael; Baker, Merritt; Ramsey, Kevin; Smith, Brian; Johnson, Timothy; Johnson, Robert; Naquin, Tyrone; Ryder, Christopher; Tiktinsky, David; Mattern, Kevin; Ramsey, Kevin; Morrissey, Kevin; Siurano-Perez, Osiris; Downs, James
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Hi Roger, David, Marvin, and Michelle -

The attached contains an update of the information for the GDPs at Portsmouth and Paducah, and the Conversion Facility at Honeywell.

Thanks,

Jim Smith

James Smith
Technical Assistant
US Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Fuel Cycle Safety and Safeguards
MS [illegible]
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James.Smith@nrc.gov
(301) 492-3234 Work
(b)(6) Blackberry
USNRC

From: Couret, Ivonne
Sent: Thursday, March 24, 2011 11:44 AM
To: Smith, James
Cc: McIntyre, David; Harrington, Holly; Hannah, Roger
Subject: RE: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

0000/181

Jim,
David McIntyre and Roger Hannah are best equipped to examine these. I have included then in this email. I would also encourage re-examination of the NMSS Information Digest section to see if we need to enhance verbiage to be more inclusive for public concerns on these issues.

Ivonne L. Couret
Public Affairs Officer
Office of Public Affairs
Media Desk
opa.resource@nrc.gov
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!
http://www.nrc.gov/reading-rm/photo-gallery/

2010-2011 Information Digest - Where you can find NRC Facts at a Glance
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/

From: Smith, James
Sent: Thursday, March 24, 2011 10:36 AM
To: Couret, Ivonne; Culp, Lisa
Cc: Campbell, Larry; Bailey, Marissa; Marcano, Jonathan; Romano, Michelle; Sykes, Marvin
Subject: Heads up- Qs&As for Seismic Events at Fuel Cycle Facilities

Ivonne and Lisa-

In light of the recent events in Japan, FCSS/NMSS and RII are developing a list of Qs&As for expected effects and responses to Seismic Events (and other natural phenomenon) at Fuel Cycle Facilities to be used by NRC staff in addressing concerns that the public may bring up during public meetings in the near future, the NFS LPR being the next one I am aware of.

After we have put the data and information together, would you two take a look to see if there is anything you would add from the PA/Communications point of view, remembering that these will be official use only and that there is no plan to distribute them to the press.

The plan is to have these finalized and to Cathy Haney by next Wednesday. I plan to have the drafts done sometime after 1pm today. Ivonne, if you are unavailable to take a look, can you recommend someone else from OPA who may be able to assist.

Thanks

James Smith
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USNRC

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Questions related to the March 11, 2011 Japanese Earthquake for Fuel Cycle Facilities, Source Material and Gaseous Diffusion Plants

Date: March 29, 2011

Draft Revision: Rev. 3.0

Contents

Background Information:

Fuel Cycle Facilities are regulated under 10 CFR Part 70. The regulations in Part 70 identify risk-informed performance requirements and require applicants and existing licensees to conduct an integrated safety analysis (ISA) and submit an ISA Summary.

As defined 10 CFR Part 70.4, an integrated safety analysis (ISA):

> *"means a systematic analysis to identify facility and external hazards and their potential for initiating accident sequences, the potential accident sequences, their likelihood and consequences, and the items relied on for safety. As used here, integrated means joint consideration of, and protection from, all relevant hazards, including radiological, nuclear criticality, fire, and chemical. However, with respect to compliance with the regulations of this part, the NRC requirement is limited to consideration of the effects of all relevant hazards on radiological safety; prevention of nuclear criticality accidents, or chemical hazards directly associated with NRC licensed radioactive material. An ISA can be performed process by process, but all processes must be integrated, and process interactions considered."*

Source materials and Gaseous Diffusion Plans are licensed under 10 CFR Parts 40 and 76 and are also required to perform analysis of potential accidents and consequences to establish the basis for limiting conditions for operation.

Definition of terms:

"g": is the acceleration of gravity 9.8 (m/s^2) or the strength of the gravitational field (N/kg). When there is an earthquake, the forces caused by the shaking can be measured as a percentage of gravity, or percent g.

"Seismic Zone": A seismic zone is a region in which the rate of seismic activity remains fairly consistent. This may mean that seismic activity is incredibly rare, or that it is extremely common. It is categorized by increasing numbers of zero to four (0-4).

GE-Hitachi Laser-Based Uranium Enrichment Facility (GLE)

Point of Contact: Tim Johnson
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the facility?**

   The NRC staff is currently in the process of evaluating GLEs license application. If approved, the design basis earthquake for the GLE facility is 0.17g based on the Safe Shutdown Earthquake method in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," Revision 1, Appendix D. GLE will use the International Building Code as its design basis standard. The proposed site of the facility is located in Wilmington, North Carolina. This location is considered a low earthquake hazard area. The proposed facility is located inland 10 miles west and 26 miles north of the Atlantic Ocean. In the guidance is NUREG/CR-6966, "Tsunami Hazard Assessment at Nuclear Power Plant Sites in the United States of America," this location is greater than 1 mile inland from the coast and is not considered susceptible to a tsunami.

2. **What are the potential impacts of an earthquake that exceeded the design of the facility?**

   The NRC staff is currently in the process of evaluating GLEs license application. Based on the information included in their license application if an earthquake exceeds the design basis for the facility, it is anticipated that the Operations Building will collapse onto components containing licensed material causing a release having high consequences for a nearby worker and low consequences for a member of the public. However, if GLE agrees to nuclear-grade quality assurance standards, a risk reduction factor of 4 can be used for earthquakes exceeding the design basis earthquake in accordance with DOE-STD-1020, "Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities." This risk reduction factor incorporates conservatisms from the design standards employed to accommodate some earthquakes exceeding the design basis.

3. **What would happen if an earthquake occurred in the vicinity of the facility?**

   At the proposed GLE facility, operating systems would shut down to a fail-safe configuration without operator actions and on loss of power. No power is required for actuation of safety systems.

4. **How would the NRC and GLE respond to an earthquake at the facility?**

   NRC and GLE would respond consistent with standard procedures for emergency events. GLE procedures are described in its Radiological Contingency and Emergency Plan.

5. **What happens if the facility were to lose offsite power as a result of an earthquake?**

   Safety systems for the proposed facility are not dependent on electrical power. Safety systems fail to a safe configuration on loss of power without the need for operator actions.

6. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?**

   Emergency diesel generators and associated structures, systems and components (SSCs) are not constructed to withstand earthquakes as safety systems are not dependent on electrical power. On loss of electrical power, safety systems fail to a safe configuration without the need for operator actions.

7. **Are special procedures employed for other natural phenomena events?**

   For hurricanes and other natural phenomena events where advance warning can be provided, GLE will shutdown operations and place systems into a safe configuration in advance of the event.

Louisiana Enrichment Services (LES)

Point of Contact: Ty Naquin
Draft Revised: March 29, 2011

1. What is the design basis earthquake for the facility?

A site-specific probabilistic seismic hazard analysis was performed for LES using the seismic source zone geometries and earthquake recurrence models. The modeling included attenuation models suited for the regional and local seismic wave transmission characteristics. Total seismic ground motion hazard to a site results from summation of ground motion effects from all distant and local seismically active areas. The 250-year and 475-year return period peak horizontal ground accelerations are estimated at 0.024 g and 0.036 g, respectively. The respective 10,000- and 100,000-year return period peak horizontal ground accelerations were estimated at 0.15 and 0.31g. This return period is equivalent to a mean annual probability of E-4. The associated peak vertical ground motion is estimated at 0.10 g. The seismic hazard calculated for facility site is similar to that calculated for the nearby Waste Isolation Pilot Plant. The calculated 10,000-year return period peak ground acceleration at the Waste Isolation Pilot Plant is slightly less than 0.15 g. Based on all the information available, the staff concludes that the seismic hazard described in the ISA Summary is acceptable because it is based on a method that follows current industry practice and includes available data.

2. What are the potential impacts of an earthquake that exceeded the design of the facility?

All buildings and structures, including such items as equipment supports, are designed to withstand the earthquake loads defined in Sections 1615 through 1617 of the International Building Code. The applicant proposed the method outlined in DOE–STD–1020 (DOE, 2002) or ASCE/Structural Engineering Institute (SEI) 43-05, "Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities" (ASCE/SEI, 2005) to demonstrate compliance to a target performance goal of 1.0×10^{-5} annual probability by designing to a seismic hazard of 1.0×10^{-4} annual probability.

3. What would happen if an earthquake occurred in the vicinity of the facility?

The majority of earthquakes in the United States are located in the tectonically active western portion of the country. However, areas within New Mexico and the southwestern United States also experiences earthquakes, although at a lower rate and at lower intensities. Earthquakes in the region around the NEF site are isolated or occur in small clusters of low to moderate size events toward the Rio Grande Valley of New Mexico and in Texas, southeast of the NEF site. The largest earthquake within 322 km (200 mi) of the NEF is the August 16, 1931 earthquake located near Valentine, Texas. This earthquake has an estimated magnitude of 6.0 to 6.4 and produced a maximum epicentral intensity of VIII on the Modified Mercalli Intensity (MMI) Scale. The intensity observed at the NEF site is IV on the MMI scale. (Table included)

Modified Mercalli Intensity Scale
Intensity Value Description

I Not felt except by a very few under especially favorable circumstances.

II Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

III Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing automobiles may rock slightly. Vibration like passing of truck.

IV During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing automobiles rocked noticeably.

V Felt by nearly everyone, many awakened. Some dishes, windows, and so on broken; cracked plaster in a few places; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.

VI Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster and damaged chimneys. Damage slight.

VII Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars.

VIII Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving cars disturbed.

IX Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.

X Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed, slopped over banks.

XI Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.

XII Damage total. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown in the air.

4. How would the NRC and LES respond to an earthquake at the facility?

NRC and LES would respond consistent with standard procedures for emergency events. LES procedures are described in its Radiological Contingency and Emergency Plan.

5. What happens if the facility were to lose offsite power as a result of an earthquake?

LES's overall electrical power system is designed with a high level of redundancy to maintain a reliable power supply to the process equipment for investment protection. Total loss of electrical power does not have any safety implications. Safety systems for the facility are not dependent on electrical power. Safety systems fail to a fail-safe configuration on loss of power without the need for operator actions.

6. Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?

Standby Diesel Generators are provided to power equipment that can tolerate a short break (short break load) in the normal power supply. This capability is needed to allow for an orderly shutdown of the facility. Each of the Standby Diesel Generators is sized for 100% of the short break load requirement of the equipment to which it is connected. The Standby Diesel Generators are not required for safe operation of the facility and are installed to provide protection of investment only. The functional requirement of the Standby Diesel Generator System is to provide backup power within approximately 10 seconds after a normal power interruption.

A security diesel generator is provided to power select security equipment. The security diesel generator is not required for safe operation of the facility. Uninterruptible Power Supply (UPS) systems are provided to power the facility process equipment that do not tolerate a break (no break load) in the normal power supply. Input power for this UPS system is normally provided by the short break power system with backup from the Standby Diesel Generators. Batteries power the UPS if all other input power is lost. Each of the UPS systems is sized for 100% of its connected load.

Additional UPS systems with battery backup are installed to provide no break power to support systems such as emergency lighting. These systems are sized and located as necessary to provide the requirements of the equipment served. Systems requiring no break power are listed in Section 3.5.2.4, Operating Characteristics.

Duplicate batteries supply operating power for the 13 kV switchgear. Batteries provide starting power for each Standby Diesel Generator and operating power for each UPS system. The Standby Diesel Generator System provides backup 480V power to the NEF during a loss of normal power. The Standby Diesel Generator System is not a

requirement for safe operation of the plant and is installed to provide protection of investment only. The Standby Diesel Generator System is comprised of two, 100% rated generators that supply the total backup power required. The Standby Diesel Generator System is installed in the Central Utilities Building. In the event of normal power failure, the Standby Diesel Generator System maintains plant services that protect the capital investment.

7. **Are special procedures employed for other natural phenomena events?**

For hurricanes and other natural phenomena events where advance warning can be provided, LES will shutdown operations and place systems into a safe configuration in advance of the event.

American Centrifuge Plant (ACP)

Point of Contact: Osiris Siurano-Perez
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the ACP?**

Seismic specifications for the ACP design are based on the risks and potential consequences from seismic events involving the primary facilities. This approach results in two criteria being applied depending upon whether or not the normal operations therein involve liquid UF6. Facilities where liquid UF6 operations occur are required to withstand the forces resulting from a 10,000-year return period seismic event (Peak Ground Acceleration - PGA 0.48 G). All other primary facilities are required to withstand the forces resulting from a 1,000-year return period seismic event (PGA 0.15 G) because UF6 operations therein involve UF6 in either gas or solid form.

The existing buildings utilized by the ACP are designed and constructed to withstand a 1,000-year seismic event. All newly constructed buildings, including extensions to existing buildings, are designed to withstand a 1,000-year seismic event. The Customer Services Building will be the only building within the complex that will handle liquid UF6 and is designed to withstand a 10,000-year seismic event. Process-related equipment in the ACP buildings will also be seismically qualified to meet the 1000-year or 10,000-year return earthquake, as applicable. Therefore, while the unprevented frequency of a seismic event that would be expected to impact these buildings is estimated to be "Not Unlikely," no release of hazardous material is expected during a design basis seismic event.

2. **What are the potential impacts of an earthquake that exceeded the design of the facility?**

While a seismic event of a magnitude beyond the design of the facility could result in damage to the buildings and equipment, a review of design calculations for these buildings show significant reserve with respect to the design basis seismic capacity. The models and assumptions used in these calculations indicate that the capacity of the structural components would exceed the basic requirements with significant margin. If a seismic event were to occur such that there was a breach of process systems and equipment containing UF_6 in these facilities, it is unlikely that a release of licensed material would produce any significant impact to the off-site public because the systems and equipment operate below atmospheric conditions, contain low inventories of licensed material, and the structures and equipment are not expected to fail catastrophically. Previous experience with similar equipment (at the GDP) has shown that a breach in equipment operating below atmospheric pressure has resulted in

minimal release to the environment (the ACP operates at much lower pressures than the GDP). Besides, some of the ACP equipment (i.e., autoclaves with roll or tilt capability) are designed to withstand a 100,000-year return period seismic event.

The Customer Service building would be expected to survive the beyond design basis earthquake without experiencing a release of hazardous material that would produce a significant impact to the off-site public. However, since UF_6 in liquid state could be located within the building during a seismic event, the building is considered to be a high seismic risk location and, as such, the margin of safety for the design has been increased appropriately. Liquid UF6 would be in cylinders and piping, all of which in turn would be located in autoclaves. Given this configuration, it is unlikely that the seismic damage suffered would be sufficient to breach a cylinder or process piping. Therefore, no release of hazardous material would result.

3. What would happen if an earthquake occurred in the vicinity of the ACP?

There are no major geologic fault structures in the vicinity of the ACP and there have been no historical earthquake epicenters within 25 miles from the site. However, there have been eight earthquake epicenters within 50 miles. The maximum event had an epicenter intensity of over IV on the Modified Mercalli (MM) scale. These events had intensities between I and IV. The maximum peak ground acceleration (PGA) of a MM level IV event roughly corresponds to 0.02 G. Historically, the maximum earthquake-induced PGA experienced at the reservation was in 1955 and had a value of only 0.005 gravity.

Independent calculations and a review of the seismic hazard analyses for the reservation were performed by the USGS and the results were documented. For a return period of 500 years, the PGA was determined to have a value of 0.10 G. For a return period of 250 years, the PGA was determined to have a value of 0.05 G. Earthquakes with large ruptures are highly unlikely to occur near the reservation because of low values of maximum magnitude.

4. How would the NRC and USEC respond to an earthquake at the facility?

NRC and the ACP would respond consistent with standard procedures described in its Emergency Plan.

5. What happens if the ACP were to lose offsite power as a result of an earthquake?

Should an earthquake occur that causes the loss of offsite power, emergency backup power is or will be available to support an orderly shutdown of the enrichment processes. The enrichment processes are based on fail-safe operation so there are no active safety systems that are required to support safe shutdown. However, critical

business operations do indicate a need for cost effective shutdown of enrichment equipment.

The ACP essential electrical system designs shall provide for continued operation of essential utility services in accordance with 10 CFR 70.64(a)(7). The ACP's essential electrical systems will be provided reliable electrical power as recommended by Articles 700 and 702 of ANSI C1/NFPA 7O-2005. Each EMCC will be connected to a power source derived from the X-5000 Substation via a local single or double-ended 480V substation and another power source consisting of a standby diesel-generator set. This configuration will ensure reliable power for the essential electrical systems that support various systems that are necessary to protect life safety, maintain critical communications systems, and protect valuable process equipment.

Installation of cables, cable trays, and conduit systems will comply with ANSI C1/NFPA 70-7005. The cables will be suitable for their environment (hot, cold, wet, dry, and./or corrosive) and comply with applicable flame retardancy requirements. Physical supports for conduits, trays, panels, and cabinets will equal or exceed ANSI C1/NFPA 70-2005 requirements.

6. **Are the emergency power diesels built to withstand the effects of an earthquake? If not what happens when power to the facility is lost?**

The ACP maintains emergency power diesel generators that have been designed for key operational areas/buildings. The ACP maintains, inspects, and tests the emergency power diesel generators to ensure they are capable of activation in the event power is lost to the facility for they are supporting. The emergency power diesel generators are designed to support the critical items within a facility until such time that primary power can be restored. The existing buildings utilized by the ACP are designed and constructed to withstand a 1,000-year seismic event. All newly constructed buildings, including extensions to existing buildings, are designed to withstand a 1,000-year seismic event. In some cases, uninterruptable power supplies and batteries are in place. Although the emergency power diesels are not specifically designed for a seismic event, the facilities for they are in, or supporting are designed to withstand a 1,000-year seismic event.

Key facilities within ACP, or supporting ACP, with emergency power diesels include: X-104 Guard Headquarters, X-112 Computer Support Facility, X-300 Plant Control Facility, X-1007 Fire Station, X-1020 Emergency Operations Center, X-3001 Process Building, and X-3012 Process Support Building. The X-3002, X-3346, and X-7725 will have emergency power diesels as well.

The X-640-1 and X-6644 Fire Water Pump Houses are equipped with emergency diesel fire water pumps.

7. **Are special procedures employed for other natural phenomena?**

Yes. The ACP's Emergency Plan describes emergency measures to be taken in response to emergencies such as accidents or natural phenomena events (i.e., earthquake, flood, high winds/tornadoes, lightning strikes, and snow load hazards). It describes the protective actions to be implemented on-site and off-site to ensure exposures of personnel and members of the public are limited in case of an accidental release of licensed material to the environment.

On-site protective actions include evacuation, shelter in place, accountability, search and rescue, and monitoring and decontamination.

For off-site protective actions the ACP's Incident Commander (IC) is responsible for providing protective action recommendations to local officials. These recommendations are based on assessment actions and an understanding of the actual or potential conditions. Recommendations include sheltering in place, evacuation or advisories that no action is needed. Appropriate off-site authorities are responsible for alerting and notifying the public on the recommended off-site protective actions.

Eagle Rock Enrichment Facility (EREF)

Point of Contact: Breeda Reilly
Draft Revised: March 29, 2011

1. What is the design basis earthquake for the facility?

Applicant: AREVA Enrichment Services, LLC
Site Location: Bonneville County, Idaho (18 miles west of Idaho Falls)

The license application was submitted in December 2008 and is currently under review. The applicant submitted and staff reviewed a site-specific probabilistic seismic hazard assessment (PSHA) for the proposed EREF. The design basis earthquake for the EREF has a peak ground acceleration of 0.16 g. The EREF design will allow it to withstand, without serious consequences to the public, the effects of earthquakes that have less than a one in 100,000 chance of occurring.

The proposed EREF site is situated in a seismically inactive region of the Eastern Snake River Plain. The largest historical earthquake to strike the Snake River Plain was the 1905 Shoshone earthquake, with an estimated magnitude of between 5.3 and 5.7.

2. What are the potential impacts of an earthquake that exceeds the design of the facility?

Although the facility is designed to withstand an earthquake with a one in 10,000 chance of occurring, analysis of the design shows that the facility design has sufficient margin to be able to maintain radiological safety even if it is shaken by an earthquake with a one in 100,000 chance of occurrence

In the case of an earthquake which leads to a breach in the piping for the uranium hexafluoride (UF_6) systems, it is assumed that there would be a release of UF_6. Although the uranium feed material is radioactive, the primary consideration with regard to human health and safety is chemical rather than radiological. Thus, in the event of an unmitigated release, the chemical effects are greater health and environmental concerns than the amount of radiation that might be released. The NRC has modeled the potential consequences from such a release. Based on its modeling, NRC has found that the consequences to workers are potentially high, while consequences to offsite public are low (below the appropriate Acute Exposure Guideline Level). Mitigating measures will further reduce the consequences.

3. **How would the NRC and AES respond to an emergency, such as an earthquake, at the facility?**

NRC regulations require that the proposed EREF have an emergency plan. The emergency plan contains onsite and offsite Protective Action Recommendations (PARs) for emergencies. The EREF will have an onsite Emergency Response Organization with first aid, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, and hospital. In the event of an alert or site area emergency, as part of the emergency plan, AES would notify key offsite agencies, namely the Bonneville County Emergency Management Services, Idaho Bureau of Homeland Security, and the NRC Emergency Operations Center. Once notified, NRC staff would monitor the situation.

4. **What happens if the facility were to lose offsite power?**

Items relied on for safety for the proposed EREF will be designed to maintain their safety functions or to fail into a safe state in the event of a loss of off-site power. Standby diesel generators will be provided for investment protection purposes only.

5. **What would be the impact of a tsunami or flood at the site?**

The proposed EREF site is located inland, approximately 575 miles from the coast. Additionally, the site is not located near any large body of water that could cause a flood at the site. The nearest large surface waters are the Snake River which is about 20 miles east and Lake Wolcott with is approximately 75 miles southwest of the proposed site.

6. **How many people live near the site?**

The distance to the nearest resident to the proposed EREF is approximately 5 miles. The population density around the site and region is generally low. The nearest population center is Idaho Falls which is about 20 miles southeast of the site. Its estimated population is 52,786 (based on 2006 data).

7. **Are special procedures employed for other natural phenomena?**

As part of the license review, the resistance of the proposed EREF to natural phenomena was evaluated, including consideration of: seismic hazards, volcanic hazards, tornado hazard, high winds, extreme precipitation, flood, snow, and lightning.

Areva Richland (NP)

Point of Contact: Marilyn Diaz
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the Areva Richland fuel fabrication facility?**

   There is no design basis earthquake per se. Buildings were constructed in accordance with the local commercial building code in effect at the time of construction. Buildings constructed recently were designed to meet the seismic load resistance specified in the code for UBC Zone IIB. The code design loads are based on an earthquake with a 2,500 year return period and a peak ground acceleration of 0.20 g. The peak ground acceleration for a ground motion with an annual exceedance probability of 10^{-4} is 0.398g.

   The staff determined that it would not be likely that the structures at the facility would suffer severe damage from a seismic event with a peak ground acceleration of 0.398g, because of sufficient safety margin associated with the design.

2. **What are the potential impacts of an earthquake that exceeded the design of the facility?**

   Building codes incorporate occupant safety margins such as maintaining structural integrity long enough to allow occupants to leave the building. Maintaining structural integrity would reduce the damage that could lead to fires and releases of hazardous materials. If an earthquake exceeded the design of the facility, structural failure would be more likely increasing the risk that occupants would be injured and unable to escape.

   The likelihood of fires and releases would increase. Although offsite impacts may increase, the potential for radiation doses large enough to cause an acute fatality or early injury to a member of the public is not considered plausible.

3. **What would happen if an earthquake occurred in the vicinity of the facility?**

   A significant earthquake could cause damage resulting in fires or the release of hazardous materials. Earthquakes are considered an unlikely cause of a criticality accident because such accidents require enriched uranium must be accumulated in an unsafe, critical mass. The contents of broken pipes and containers tend to be dispersed, not accumulated.

4. **How would the NRC and the licensee respond to an earthquake at the facility?**

   The NRC has a resident inspector at the nearby Columbia generating Station facility. NRC Headquarters and Region IV Emergency Response staff from the Fuel Cycle Safety Team and Protective Measures Team would monitor the situation.

5. **What preparations are currently in place to respond to such an emergency?**

The site Emergency Plan contains instructions and Protective Action Recommendations (PARs) for the postulated emergencies. The facility has an onsite Plant Emergency Response Team with medical, incipient fire fighting, and incipient hazardous material response capabilities. Agreements are in place with the City of Richland fire department, police, and hospital. For these types of events Notifications are made to the Richland Emergency Dispatch Center, which in turn notifies both Benton and Franklin Counties Emergency Management personnel and the City of Richland. Additional assistance is available from the DOE Hanford fire department, approximately ½ mile away. The DOE Richland Operations Office is notified. The Washington State Emergency Management Division is notified.

6. **What happens if the facility were to lose offsite power as a result of an earthquake?**

There are no safety significant scenarios which would result from a loss of offsite power. Back-up power batteries are installed to allow an orderly shutdown of plant operations.

7. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?**

The emergency diesels are not seismically qualified. There are no safety significant scenarios which would result from a loss of offsite power. Risk-significant safety controls are passive or fail to a safe position without relying upon electric power.

8. **What would be the impact of a tsunami or flood at the site?**

The site is located approximately 120 miles from the Pacific Ocean. The Columbia River is approximately 1 1/2 miles east of the site. The facility is located approximately 25 feet above the Columbia River and 370 feet above sea level.

The combination of the Probable Maximum Flood (PMF) and failure of any of the dams on the Columbia River upstream of the Hanford area has been calculated to be $1 E^{-6}$. It is also noted that following an upstream event, some time would be available for site personnel to place the facility in a safe shutdown mode.

9. **How many people live near the site?**

The closest resident to the facility is approximately 1 ½ miles to the southwest in the City of Richland.

Offsite population totals are as follows:
1 mile: 0
2 miles: 376
3 miles: 5020
4 miles: 15,560

10. Does the site have a spent fuel storage area?

No

11. What are the most significant hazards at the site?

A criticality accident represents the potential for a lethal radiation dose to a worker within 10 to 50 feet of the criticality, and lesser but significant doses out to 100 feet or more. The total radiation to an individual at the site boundary would exceed regulatory limits, but would not result in the potential for radiation doses large enough to cause injury. There are no criticality scenarios that would be initiated by an earthquake or loss of offsite power event.

Babcock and Wilcox Nuclear Operations Group (B&W NOG)

Point of Contact: Nick Baker
Draft Revised: March 29, 2011

1. What is the design basis earthquake for the B&W NOG facility?

The B&W NOG site is located near the western limit of the Piedmont physiographic province. Seismic activity in the Central Virginia region is classified as moderate. The site falls within the western part of the Central Virginia cluster region which is classified as Seismic Zone 2, indicating that moderate damage could occur as the result of earthquakes. Since 1774, there have been 18 earthquakes reported as having an intensity VI or higher on the Modified Mercalli Scale, defined as "felt by all, many frightened and run indoors, falling plaster and chimney bricks, damage small." It is comparable to 4.5 on the Richter scale.

There is no design basis earthquake per se. Buildings were constructed in accordance with the local commercial building code in effect at the time of construction. Buildings constructed recently were designed to meet the seismic load resistance specified in the BOCA (Building Officials and Code Administrators, International) code. The code design loads are based on an earthquake with a 1,200 year return period and a peak ground acceleration of 0.075 g.

2. What are the potential impacts of an earthquake that exceeded the design of the facility?

Building codes incorporate occupant safety margins such as maintaining structural integrity long enough to allow occupants to leave the building. Maintaining structural integrity would reduce the damage that could lead to fires and releases of hazardous materials. If an earthquake exceeded the design of the facility, structural failure would be more likely increasing the risk that occupants would be injured and unable to escape.

The likelihood of fires and releases would increase. Although offsite impacts may increase, the potential for radiation doses large enough to cause an acute fatality or early injury to a member of the public is not considered plausible.

3. What would happen if an earthquake occurred in the vicinity of the facility?

A significant earthquake could cause damage resulting in fires or the release of hazardous materials. Earthquakes are considered an unlikely cause of a criticality accident because such accidents require enriched uranium must be accumulated in an unsafe, critical mass. The contents of broken pipes and containers tend to be dispersed, not accumulated.

4. **How would the NRC and the licensee respond to an earthquake at the facility?**

The NRC has a resident inspector at the facility. NRC Headquarters and Region II Emergency Response staff from the Fuel Cycle Safety Team and Protective Measures Team would monitor the situation. If warranted by events, NRC will dispatch a emergency site team to monitor licensee activities and serve in an advisory role to state and local officials who may be considering protective actions to further ensure the protection on the public.

5. **What preparations are currently in place to respond to such an emergency?**

The site Emergency Plan contains instructions and Protective Action Recommendations (PARs) for the postulated emergencies. The facility has an onsite Emergency Team with medical, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, and hospital. For these types of events B&W NOG notifies the Virginia Department of Emergency Services, and Campbell, Amherst, and Appomattox counties. Recommendations are based on the release quantity/chemical/physical state and atmospheric conditions and are discussed with the agencies listed above. Campbell County officials are the decision-makers for evacuations.

6. **What happens if the facility were to lose offsite power as a result of an earthquake?**

There are no safety significant consequences that would result from a loss of offsite power. Back-up power supplies are installed to allow an orderly shutdown of plant operations. There are no plant processes that require continuous electrical power after shutdown.

7. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?**

The emergency diesels are not seismically qualified. There are no safety significant consequences that would result from a loss of offsite power. Risk-significant safety controls are passive or fail to a safe position without relying upon electric power.

8. **What would be the impact of a tsunami, hurricane, or flood at the site?**

B&W NOG is located approximately 170 miles from the Atlantic Ocean and at an elevation of 820 feet above sea level where any impact from a hurricane or tsunami is very unlikely. The James River borders three sides of the site. Flooding of the James River occurs infrequently. There have been 11 significant floods since 1771, which averaged 28 feet above the normal river elevation. The main manufacturing facility is

located approximately 110 feet above the river, and 75 feet above the 100-year flood level.

9. How many people live near the site?

The closest resident to the facility is approximately 4,500 feet directly west. The nearest potential off-site worker would be an occupational worker at the AREVA facility, approximately 3,000 feet to the northeast.

Offsite population totals are as follows:
1 mile: 302
2 miles: 1100
3 miles: 2424
4 miles: 4557
5 miles: 9070

10. Does the site have a spent fuel storage area?

The Lynchburg Technology Center has a cask unloading pool. Note, however, that unlike a power reactor site, the LTC does not possess large quantities of fuel elements immediately following refueling, and is limited to a maximum of 4 irradiated fuel assemblies.

It is possible that a shielded cask could fall into the pool, causing a fuel element to rupture. The worst case would be the sudden and complete release of fission gases in the transfer canal. Normally, these gases are filtered by HEPA filters and flow up the stack. A significant earthquake which caused damage to the filters, exhaust system, or stack would not result in the potential for radiation doses large enough to cause an acute fatality or early injury to a member of the public.

11. What are the most significant hazards at the site?

A criticality accident represents the potential for a lethal radiation dose to a worker within 10 to 50 feet of the criticality, and lesser but significant doses out to 100 feet or more. The total radiation to an individual at the site boundary would exceed regulatory limits, but would not result in the potential for radiation doses large enough to cause injury. There are no criticality scenarios that would be initiated by an earthquake or loss of offsite power event.

Westinghouse Columbia Fuel Fabrication Facility (CFFF)

Point of Contact: Chris Ryder
Draft Revised: March 29, 2011

1. What is the design basis earthquake for the facility?

The original manufacturing building, designed in 1968 was designed to comply with the Standard Building Code, 1965 Edition, with only minor exceptions. The building was designed to meet Seismic Zone I criteria. A building addition, designed in 1978 by Lockwood Greene, was designed to comply with the Standard Building Code, 1976 Edition.

The CFFF site is far from any center of significant earthquake activity. Several major earthquakes have occurred at distant points, and some minor to moderate shocks have occurred nearer to the site. No significant earthquake has been located nearer than about 20 mi from the site.

The large largest seismic event was the Charleston earthquake which was a magnitude 7.0 on August 31, 1886, which is the strongest earthquake documented in the southeastern United States in historic time. The earthquake was located about 90 mi southeast of Columbia and was felt as far away as Boston, Milwaukee, New York City, Cuba, and Bermuda. Damage from the earthquake was reported in Columbia, SC where Modified Mercalli (MM) intensities of VII-VIII were observed.

The nearest earthquake to the CFFF site occurred on April 20, 1964. The event had a magnitude of 3.5 and was located about 15 mi southwest of Columbia, South Carolina.

For the area near Columbia, a peak ground acceleration (PGA) of about 0.3 g would be expected for a 2,475-yr return period.

2. What are the potential impacts of an earthquake that exceeded the design of the facility?

Earthquakes can cause damage which results in fires and releases of hazardous materials. Earthquakes are considered an unlikely cause of a criticality accident because such accidents require enriched uranium to accumulate in an unsafe, critical mass. The contents of broken pipes and containers tend to be dispersed, not accumulated.

Structure, systems and components were evaluated using a combination of the NRC-approved experience data methodology utilized by the Seismic Qualification Utilities Group of utilities to resolve natural phenomena hazards vulnerability and traditional structural risk assessment techniques. Preliminary findings indicate that a severe

earthquake could result in toppling of equipment and collapse of structural walls and members, causing a release of uranium to the environment, and possibly a nuclear criticality accident, potentially resulting in a high consequence event to workers.

The seismic review was only a screening review. Detail fragility analyses have not been performed, it is not possible to reliably determine what size earthquake would result in severe damage to the building structure. The analyses indicate that an earthquake with a 0.2 g PGA most likely would result in some damage. Seismic engineers, estimate that buildings should withstand an earthquake of up to 0.05 g PGA. For the Columbia region, the United States Geologic Survey (USGS) estimates a PGA of 0.07 g at a 500-year return period.

3. What would happen if an earthquake occurred in the vicinity of the facility?

An analysis was performed to determine the consequences of the materials that would likely be released in a severe earthquake. The analysis indicated that an Intermediate Consequence event would occur for facility workers. The public is not at risk to high or intermediate consequence events.

The major chemical of concern is the tank of anhydrous ammonia is the tank farm. If a tank ruptured, a Emergency Response Planning Guidelines(ERPG)-2 hazard would be created for about one mile. The nearby hydrogen tank is a local fire and explosion hazard. UF_6 cylinders in the storage area are not of concern; filled cylinders are at ground level; empty cylinders are racks above the filled cylinders. UF_6 cylinders in the autoclaves are not of concern. The autoclaves are heavy-walled vessels that are partially recessed in the concrete floor of the plant.

A natural gas transmission pipeline is 2,800 ft north of the main manufacturing building. If the pipe were to rupture, a fire and explosion would occur.

Two diesel-powered fire pumps provide high water pressure to the above fire suppression equipment when these systems are activated. A total of 450,000 gal of water can be stored
on site in two water storage tanks to provide water to fight a fire.

4. How would the NRC and the licensee respond to an earthquake at the facility?

NRC Headquarters and Region II Emergency Response staff from the Fuel Cycle Safety Team and Protective Measures Team would monitor the situation.

The site Emergency Plan contains instructions and Protective Action Recommendations (PARs) for the postulated emergencies. The facility has an onsite Emergency Team with medical, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, and hospital. For these types of events, Westinghouse notifies the Department of South Carolina Department of Health

and Environmental Control. Responses are based on the characteristics (e.g., chemical, quantity, physical state, atmospheric conditions). County officials would be notified.

5. **What happens if the facility were to lose offsite power as a result of an earthquake?**

Emergency generators and Uninterruptable Power Supply (UPS) provide backup power for critical loads, including crucial process equipment;

- emergency lighting systems
- cooling system pumps
- fire alarm, hazard alarm, and other designated safety alarm systems
- conversion control room alarms
- health physics sampling systems
- emergency ventilation systems (including scrubbers)

6. **Are the emergency power diesels built to withstand the effects of an earthquake, If not what happens when power to the facility is lost?**

In a station blackout scenario, the most significant hazard would be the gradual buildup of Ammonia from the vented vessels in the ADU process. Power is necessary to operate the ammonia scrubbers in the conversion area. Worker Safety is assured through use of appropriate PPE (Primarily Respiratory protection). Offsite Ammonia releases are not postulated to exceed thresholds for public safety from a loss of power event.

7. **What would be the impact of a tsunami or flood at the site?**

The site is not susceptible to a tsunami. Westinghouse is 100 miles from the nearest point of the Atlantic coast.

8. **How many people live near the site?**

Within 1 mile:	6
Within 3 miles:	963
Within 5 miles:	7,870

9. **Does the site have a spent fuel storage area?**

The site does not have spent fuel. Occasionally, fuel assemblies are returned to the site because of minor damage or defects. Such assemblies have never been irradiated in a reactor; they pose no danger.

10. What are the most significant hazards at the site?

The most significant hazards at the site are the chemical hazards in the tank farm. The anhydrous ammonia tank has a capacity of 30,000 gallons; usually, only 10,000 gallons is present. Another fire and explosion hazard is from a tank of liquid hydrogen.

11. What would be the worse-case scenarios from an accident at the site?

The worse-case scenario from a seismic event would be a catastrophic failure of the tank containing anhydrous ammonia concurrent with a complete loss of power to emergency equipment.

Global Nuclear Fuels – Americas (GNFA)

Point of Contact: Rafael Rodriguez
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the GNF-A facility?**

   The GNF-A facility was built to the Uniform Building Code (UBC) in effect at the time of construction. The UBC has identified the facility area as Seismic Zone 1 and considers seismic events of minor magnitude (5.5 to 6.0 in the Richter scale). Since there are no significant geologic features in the Wilmington region that would produce a "major" earthquake, it is highly unlikely that a "major" earthquake could affect the GNF-A facility.

2. **What are the potential impacts of an earthquake that exceeded the design of the facility?**

   Impacts to the facility will depend on the magnitude of the earthquake and the location of its epicenter. However, based on the inventory of material that GNF-A is licensed to possess, it is unlikely that there will be a significant release of radioactive material.

3. **What would happen if an earthquake occurred in the vicinity of the facility?**

   Impacts to the facility will depend on the magnitude of the earthquake and the location of its epicenter. The licensee will implement its emergency plan and will coordinate with local and State emergency management agencies and organizations to respond to the event.

4. **How would the NRC and the licensee respond to an earthquake at the facility?**

   Local (New Hanover County) and the State of North Carolina emergency management agencies are both notified.

   The licensee provides recommendations based on the release quantity/chemical / physical state and atmospheric conditions.

5. **What preparations are currently in place to respond to such an emergency?**

   The site Emergency Plan contains instructions and Protective Action Recommendations (PARs) for the postulated emergencies. The facility has an onsite Emergency Team with medical, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, hospitals, New Hanover County and the State of North Carolina to provide support and assistance if there is an emergency

6. **What happens if the facility were to lose offsite power as a result of an earthquake?**

Process equipment will fail safe if the electrical service is interrupted. Emergency power is provided for a supervised alarm system and essential equipment. There are four emergency diesel generators onsite. Additionally, the facility has emergency power capabilities for support services, the controlled areas, and the emergency control center. A diesel-operated generator will provide an automatic startup and a switch over to the emergency system in the event of a power failure.

7. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?**

The emergency diesels are not seismically qualified. There are no safety significant scenarios which would result from a loss of offsite power. Risk-significant safety controls are passive or fail to a safe position without relying upon electric power.

8. **What would be the impacts of a tsunami or a flood at the site? How would the NRC and the licensee respond to these events?**

The facility is more than 10 miles from the Atlantic coastline and at an elevation 25–30 feet above sea level. Tidal bores are also highly unlikely given the distance from the coastline, the quick dissipation as bores travel upstream, and the elevation of the facility site.

9. **How many people live near the facility?**

Population Center	Population	Distance
Castle Hayne	1,116	3 miles N
Wilmington	75,838	6 miles S
Wrightsville Beach	3,182	11 miles SE
Burgaw	3,337	16 miles N
Carolina Beach	5,095	20 miles S

10. **What are the most significant hazards at the site?**

A criticality accident represents the potential for a lethal radiation dose to a worker within 10 to 50 feet of the criticality, and lesser but significant doses out to 100 feet or more. The total radiation to an individual at the site boundary would exceed regulatory limits, but would not result in the potential for radiation doses large enough to cause injury. There are no criticality scenarios that would be initiated by an earthquake or loss of offsite power event.

Nuclear Fuels Services (NFS)

Point of Contact: Kevin Ramsey
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the NFS facility?**

   The NFS site is located in the moderately active Appalachian Tectonic Belt, Seismic Zone 2, indicating that moderate damage could occur as the result of earthquakes. There is no evidence of capable faults (as defined by 10 CFR Part 100) in the immediate vicinity of the NFS site.

   Buildings were constructed in accordance with the Standard Building Code in effect at the time of construction. Buildings constructed recently were designed to meet the seismic load resistance specified in American Society of Civil Engineers (ASCE) Standard 7, Minimum Design Loads for Buildings and Other Structures. The ASCE 7 design loads are based on an earthquake with a 2500 year return period and a peak ground acceleration of 0.31 g.

2. **What are the potential impacts of an earthquake that exceeded the design of the facility?**

   Earthquakes can cause damage which results in fires and releases of hazardous materials. Earthquakes are considered an unlikely cause of a criticality accident because such accidents require enriched uranium to be accumulated in a critical mass. The contents of broken pipes and containers tend to be dispersed, not accumulated.

   Building codes incorporate occupant safety margins such as maintaining structural integrity long enough to allow occupants to leave the building. Maintaining structural integrity would reduce the damage that could lead to fires and releases of hazardous materials. If an earthquake exceeded the design of the facility, structural failure would be more likely increasing the risk that occupants would be injured and unable to escape. The likelihood of fires and releases would increase. Although offsite impacts may increase, the potential for radiation doses large enough to cause an acute fatality or early injury to a member of the public is not considered plausible.

3. **What would happen if an earthquake occurred in the vicinity of the facility?**

   If an earthquake occurred near NFS, it is expected that the facility will experience structural damage, but not catastrophic collapse of the buildings. The vast majority of uranium is in solid form or liquid form. We would expect some material to be spilled, but most of it would remain inside the buildings. Fires from broken gas lines and other

flammable materials are possible. Firefighting efforts may be hampered by blocked roads, broken water lines, and other earthquake related damage. A major fire may require protective actions (i.e., evacuation and/or sheltering) within one mile of the site. This would be similar to other industrial accidents such as the release of a hazardous chemical from a railroad tank car.

4. Would overpressurized uranium hexafluoride cylinders stored at NFS greatly increase the risk to members of the public during an earthquake?

No. Our analysis of the potential breakdown of uranium hexafluoride (UF_6) into uranium pentafluoride (UF_5) and elemental fluorine (F_2) concluded that potential consequences are low. All of the cylinders are small. A few are about two gallons in size, but most are less than a quart each. They are stored in shipping containers inside buildings. If the containers were outside and all were to fail simultaneously, a person standing on the property line might notice a strong odor and experience discomfort and irritation, which would be of short duration and cease when the person moves away. However, it is unlikely all cylinders would fail simultaneously. The cylinders are stored in multiple shipping containers which would confine any releases. In addition, the buildings would help confine any materials that managed to escape the shipping containers. It is unlikely that a person standing on the property line would experience anything more than an unpleasant odor.

5. How would the NRC and the licensee respond to an earthquake at the facility?

NFS would declare an emergency, activate its emergency response organization and begin implementing its emergency plan. NFS would promptly notify State and local authorities and recommend protective actions NFS believes should be implemented for the public offsite. NRC would be notified immediately after State and local authorities are notified. Licensee resources would be focused on controlling the immediate safety hazards at the site (i.e., safe shutdown, fire fighting, etc.). NRC would activate its emergency response organization and begin an independent assessment of site conditions and protective actions being taken. NRC would share its independent assessment with State and local authorities. If warranted by events, NRC will dispatch an emergency site team to monitor licensee activities and serve in an advisory role to state and local officials who may be considering protective actions to further ensure the protection on the public. In addition, NRC would coordinate assistance from other Federal agencies if needed.

6. What happens if the facility were to lose offsite power as a result of an earthquake?

If electrical power is lost, most of the processing equipment would shut down. Most of the processing equipment can be stopped safely, however furnaces take a few hours to cool down. Site emergency power is available from two independent, uninterruptible

power supply (UPS) systems. The UPS systems would maintain power to safety related equipment such as criticality alarms, fire alarms, security systems, radiation detectors, and emergency lighting. Each UPS would transfer load to batteries, send a start signal to the diesel generator, and transfer the load to the generator when the appropriate voltage is reached.

7. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?**

We don't know of any special earthquake protection. Buildings housing diesel generators would meet the same building code requirements as other buildings on the site. Processing equipment would stop operating when normal power is lost. Emergency systems (detectors, alarms, lighting, etc.) would stop operating if emergency power is lost. At that point, emergency response workers would rely on portable equipment such as survey meters, flashlights, and portable breathing air equipment.

8. **Can an earthquake as large as happened in Japan also happen here?**

This earthquake occurred on a "subduction zone", which is the type of tectonic region that produces earthquakes of the largest magnitude. A subduction zone is a tectonic plate boundary where one tectonic plate is pushed under another plate. Subduction zone earthquakes are also required to produce the kind of massive tsunami seen in Japan. In the continental US, the only subduction zone is the Cascadia subduction zone which lies off the coast of northern California, Oregon and Washington. So, a continental earthquake and tsunami as large as in Japan could only happen there. The only nuclear plant near the Cascadia subduction zone is the Columbia Generating Station. This plant is located a large distance from the coast (approximately 225 miles) and the subduction zone (approximately 300 miles), so the ground motions estimated at the plant are far lower than those seen at the Fukushima plants. This distance also precludes the possibility of a tsunami affecting the plant. Outside of the Cascadia subduction zone, earthquakes are not expected to exceed a magnitude of approximately 8. Magnitude is measured on a log scale and so a magnitude 9 earthquake is ten times larger than a magnitude 8 earthquake.

9. **What would be the impact of a tsunami, hurricane, or flood at the site?**

NFS is located approximately 350 miles from the Atlantic Ocean and at an elevation of 1640 feet above sea level where any impact from a hurricane or tsunami is very unlikely. The NFS site is on the edge of the 100 year floodplain for the Nolichucky River. It is possible that water could get inside buildings during a severe flood. However, there would be flood warnings, evacuation orders, and other notices that would allow the licensee to secure processing equipment, seal containers, and prepare for the flood. We believe such actions would prevent a release having a significant impact on the environment.

Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF)

Point of Contact: David Tiktinsky
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) facility?**

   The MFFF is located on Department of Energy's (DOE) Savannah River Site (SRS) near Aiken, South Carolina. At the SRS, there are no known capable or active faults within the 320-km (200-mile) radius that influence the seismicity of the region, with the exception of faults associated with the Charleston seismic zone (MFFF License Application). Earthquakes that could affect safe operations in the MFFF are associated with two seismic sources, repeat of Charlestown 1886 earthquake and small shallow earthquake of the South Carolina Piedmont. The MFFF facility is design to nuclear power plant requirements and utilizes the spectrum that is found in Regulatory Guide (RG) 1.60 anchored at 0.20g PGA.

2. **What are the potential impacts of an earthquake that exceeded the design of the facility?**

   The MFFF facility was design using DOE's methodologies for natural phenomena hazards that establishes performance goals for nuclear facilities. In the unlikely event of an earthquake exceeding the design basis of the MFFF, it is expected that major structures such as buildings will suffer major damage, but the damage is limited in the extent such that the occupants can safely exit the building.

3. **What would happen if an earthquake occurred in the vicinity of the facility?**

   In the event that an earthquake occurs in the vicinity of the facility the seismic monitoring and trip system initiates a shutdown of process-related systems if a seismic event exceeds a specified set point. The seismic monitoring and trip system shuts down normal and standby power systems, ensuring that all movements of nuclear material are stopped in a safe manner.

4. **Would overpressurized uranium hexafluoride cylinders stored at MFFF greatly increase the risk to members of the public during an earthquake?**

   No. There are no large inventories of Special Nuclear Material (SNM) stored or used in a gaseous or highly dispersible form similar to the uranium hexafluoride at the MFFF facility. The primary form of SNM in the MOX facility would be powder. There are no significant additional hazards to members of the public due to the powder form during an earthquake.

5. **How would the NRC and the licensee respond to an earthquake at the facility?**

MOX Services will follow the DOE Savannah River Emergency plan during an event at the facility. MOX Services will contact the NRC and DOE and interactions with State and local officials are conducted through the SRS Emergency Duty Officer who oversees the SRS Operations Center. The MFFF emergency preparedness program incorporates plans for radiation monitoring, repair and recovery efforts, search and rescue, and initial medical response.

6. **What happens if the facility were to lose offsite power as a result of an earthquake?**

The design of the MFFF electric power supply system consists of a normal power system, a standby power system, and an emergency power system. Two separate and independent incoming offsite power feeders supply MFFF facility. In the rare event of a total loss of all incoming power to the facility, a standby power system composed of two independent standby diesel generators will automatically start and continue the supply of electrical power to the facility.

7. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens when power to the facility is lost?**

In the unlikely event that a total loss of all incoming power occurs and both standby diesel generator systems fail to start as discussed before, an independent and redundant seismically qualified emergency power system will provide electrical power to the facility. The emergency power system consists of two redundant and independent emergency diesel generator systems each of which has been designed to carry all important loads during an extended period of time until either the normal or standby power system can be restored. The emergency power system is qualified to survive the MFFF design-basis earthquake.

8. **Can an earthquake as large as happened In Japan also happen here?**

Near the SRS, instrumented historical seismic records indicate that seismicity associated with the SRS and surrounding region is closely related to the earthquake activity within the South Carolina Piedmont. This activity is characterized by shallow, small-magnitude and infrequent earthquakes. At the SRS, there are no known capable or active faults within the 320-km (200-mile) radius that influence the seismicity of the region, with the exception of faults associated with the Charleston seismic zone (MFFF License Application).

Honeywell International Metropolis Works Facility

Point of Contact: Kevin Mattern
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the Honeywell Metropolis Works (MTW) facility?**

The site area is in the northern part of the Mississippi Embayment, which has had a long history of seismic activity. The only major earthquakes in historic times were the New Madrid earthquakes of 1811-1812, centered about 60 miles southwest of the site. This earthquake was one of the strongest on record in this country. Major faults, trending toward New Madrid, are found approximately twenty-five to thirty miles east and west of the site. These faults, which occurred millions of years ago, have not been active in geologically recent time. Seismologists are unable to accurately predict the recurrence rates for destructive earthquakes such as those of 1811-1812 because of their infrequent occurrences. Nevertheless, experience indicates that major earthquakes originating along the New Madrid fault zone are capable of causing extensive damage in the Metropolis area. One such estimate concluded that a recurrence of an earthquake of the New Madrid intensity had a maximum likelihood of occurring once in 100-300 years in the entire seismic region.

While MTW is clearly located in a high seismicity zone, the original plant construction, which began in the late 1950s, did not adequately address seismic concerns. A 1993 report identified structural modifications to the Feed Materials Building and the tank farm to assure adequate performance. The structural modifications are designed to withstand a 475-yr recurrence site-specific earthquake. This is judged to be reasonably consistent with NUREG 1520 requirements even though NUREG 1520 specifies that the 500-yr earthquake be used, since the uncertainty in earthquake prediction is large relative to the small difference between recurrence periods. It is also stressed that MTW is not currently required to meet NUREG 1520, and other reasonable safety standards can be used.

The USGS completed the National Seismic Hazard Mapping Project in 1996. This project resulted in the development of new earthquake ground motion maps. These maps are also the referenced basis for IBC 2006 standards. A comparison of the 1996 ground motion parameters to that used in the Metropolis 1993 study shows considerable difference with the 1996 being more intense. As a result, MTW is in the process of investigating this new information and assessing the potential impacts and possible need for plant and system modifications.

2. **What are the potential impacts of an earthquake that exceeded the design of the MTW facility?**

Under the current design and analysis, we identify that the greatest impact of an earthquake most likely would be structural failure increasing the risk that occupants would be injured and unable to escape. Additionally, the likelihood of fires and releases would increase. Although offsite impacts may increase, the potential for radiation doses large enough to cause an acute fatality or early injury to a member of the public is not considered plausible.

As stated, a review is underway based on new USGS information.

3. **What would happen if an earthquake occurred in the vicinity of the MTW facility?**

In the current seismic assessment, a seismic event has the potential to result in a release of HF or UF_6. The seismic event probability is low. However, considerable work has been done to identify potential seismic risk to the Metropolis Works. Therefore the structural modifications constitute robust passive engineering to mitigate the event with low probability of failure.

As stated, a review is underway based on new USGS information.

4. **How would the NRC and the licensee respond to an earthquake at the MTW facility?**

The NRC currently has two permanent resident inspectors on site at the Paducah USEC facility which is approximately 15 miles from MTW. These inspectors are available and on call 24/7 in the case of any plant emergency including an earthquake. These inspectors could quickly respond to an emergency at MTW from the USEC site if necessary. If applicable the licensee would notify the NRC Operations Center and additional resources would be mobilized from the R-II office or headquarters depending on the severity of the hazard and the particular area of concerns within the plant. The onsite NRC inspectors dispatched from PGDP would relay pertinent information through the Operations Center to the appropriate headquarters staff to continually reassess the hazards and the agency response. The NRC Operations Center would also assist in coordinating additional government agency responses. It is important to note that the licensee would have the lead in the response and the NRC would monitor the licensee's response providing oversight, assistance and coordination as necessary.

New responses and strategies may be developed as a result of the new assessment underway.

5. **What preparations are currently in place to respond to such an emergency?**

The site Emergency Response Plan contains responsibilities, procedures, instructions, protective actions, and exposure guidelines for the postulated emergencies. The facility has an onsite emergency response organization with some limited medical, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, and hospital for additional emergency response resources as needed. Recommendations are based on the release quantity/chemical/physical state and atmospheric conditions and are discussed with participating government agencies as appropriate. The state and county have overall responsibility and authority for conducting appropriate emergency response and local implementation of recommended protective actions.

New responses and strategies may be developed as a result of the new assessment underway.

6. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens if the MTW facility were to lose offsite power as a result of an earthquake?**

The plant itself has many redundant safety systems, such as sensors and mitigation systems. Critical safety systems have back-up power sources in case of a power outage and it is expected those systems would perform as designed. The plant also has an uninterruptable power supply (UPS) system that immediately provides power in the event of a power failure to assist us to shut down the plant processes safely.

Standby utilities are maintained in order to facilitate a safe and orderly shutdown of the process units during a complete power failure. Standby electrical power is provided from an electrical generator located in the Powerhouse Building. The standby electrical generator is diesel powered and delivers 480 volts AC. In the event that electrical power is interrupted, the standby generator automatically starts and comes to a standby mode. The standby power is then distributed, as required. As described in (1) above, MTW is in the process of investigating new seismic information and assessing the potential impacts and possible need for plant and system modifications.

New responses and strategies may be developed as a result of the new assessment underway.

7. **What would be the impact of a tsunami or flood at the MTW site?**

The MTW site is located inland, approximately 550 miles from the coast, so a tsunami is not a plausible scenario. Additionally, the site is not located near any large body of

water that could cause a flood at the site. The nearest large surface waters are the Ohio River forms the site perimeter to the south. Flood control on the Ohio River is provided by dams. The nearest dam is located 7 miles (11 km) upriver at Brookport, Illinois. The historic maximum elevation flood at Metropolis was 342 feet in 1937. The 100-yr recurrence flood level developed by FEMA in 1983 is 337 feet. The 375' MTW site is at a relatively high elevation point. The town of Metropolis, for example is at a nominal elevation of 350', and the Kentucky side of the river is at about 350' elevation for a wide area. The West Kentucky Airpark (15 miles SE) landing strips are at 338' elevation. The Flood Map for Massac County indicates that the site is in flood zone C, which is not in either the 100-yr or 500-yr flood plain, and has no flood exposure. Thus the relative elevations make it apparent that the MTW site is not susceptible to rising river water floods. Therefore, flooding by the Ohio River can be considered a non-credible hazard. Although not credible, flooding caused by rising water in the Ohio River could cause building or tank farm damage leading to containment breach and release of contents. Flooding is also under reassessment and new responses and strategies may be developed as a result.

8. How many people live near the MTW site?

The plant site is located in a predominantly agricultural area. Within a two mile radius of the plant, approximately 68% of the land is undeveloped (e.g., cropland, forest, or wetland) and the remainder is developed. Within a one-mile radius of the facility, the total population is 558 persons; most of these are concentrated in the E to ESE sectors near the city of Metropolis. The nearest residence sampling device is currently located between the two nearest residences, approximately 1850 feet NNE of the Feed Materials Building. MTW is located in Massac County, IL which has approximately 15,000 residents in the year 2000. The nearest cities are Metropolis, IL which has about 6,500 people and is located 1 mile from the site. Paducah, KY is located 10 miles from the site and has a population of approximately 25,000. Within a 50 mile radius there are approximately 500,000 people. There are no facilities that would present significant evacuation problems within the immediate vicinity of the site. In addition, the Protective Action Recommendations provided in the Emergency Response Plan are limited to shelter-in-place only; no provisions are required for evacuation of the near-site public.

9. Does the MTW site have a spent fuel storage area?

No. The conversion stage of the fuel cycle, which converts U_3O_8 into UF_6, occurs prior to the enriched UF_6 being fabricated into UO_2 fuel for use in nuclear reactors. Therefore the radioactive material currently being generated or previously generated at a conversion plant has never been used in a nuclear reactor and there is no need to store spent fuel at such a site.

10. What are the most significant hazards at the MTW site?

The most significant radiological hazard at the MTW site is the release of UF_6 material. The most significant chemical hazard is the release of HF or NH_3.

Although significant changes are not expected, new results may be obtained as a result of the assessment underway.

11. Can an earthquake as large as Japan also happen at MTW?

The Japan earthquakes experienced a ground motion corresponding to 2.7 g. Under current design bases for MTW the maximum credible ground motion at MTW is between than 0.4 g and 1 g. Thus, an earthquake as large as the Japan event was not plausible.

Under the new USGS information, a ground acceleration of 2.124g is associated with the Maximum Credible Earthquake. However, MTW is in the process of investigating this new information and assessing the potential impacts and possible need for plant and system modifications.

Portsmouth Gaseous Diffusion Plant (GDP)

Point of Contact: Kevin Mattern
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the Portsmouth Gaseous Diffusion Plant (PORTS) facility?**

   The evaluation basis earthquake is a 250 year return period event with a 0.05 g peak ground acceleration. No direct release of UF_6 is expected due to the evaluation basis earthquake. The results of the analyses show that the evaluation guidelines would not be exceeded beyond the site boundary. The evaluation basis seismic event may cause release of lubricating oil used to service the compressor motors, creating potential ignition sources; however, with mitigating measures in place, a large fire in the process building following a seismic event is unlikely.

2. **What are the potential impacts of an earthquake that exceeded the design of the PORTS facility?**

   Earthquakes can cause damage which results in fires and releases of hazardous materials. Earthquakes are considered an unlikely cause of a criticality accident because such accidents require enriched uranium to accumulate in an unsafe, critical mass. The contents of broken pipes and containers tend to be dispersed, not accumulated. Preliminary findings indicate that a severe earthquake could result in toppling of equipment and collapse of structural walls and members, causing a release of uranium to the environment, and possibly a nuclear criticality accident, potentially resulting in a high consequence event to plant site workers.

3. **What would happen if an earthquake occurred in the vicinity of the PORTS facility?**

   There are no major geologic fault structures in the vicinity of the PORTS and there have been no historical earthquake epicenters within 25 miles from the site. However, there have been eight earthquake epicenters within 50 miles. The maximum event had an epicenter intensity of over IV on the Modified Mercalli (MM) scale. These events had intensities between I and IV. The maximum peak ground acceleration (PGA) of a MM level IV event roughly corresponds to 0.02 G. Historically, the maximum earthquake-induced PGA experienced at the reservation was in 1955 and had a value of only 0.005 gravity.

Independent calculations and a review of the seismic hazard analyses for the reservation were performed by the USGS and the results were documented. For a return period of 500 years, the PGA was determined to have a value of 0.10 G. For a return period of 250 years, the PGA was determined to have a value of 0.05 G. Earthquakes with large ruptures are highly unlikely to occur near the reservation because of low values of maximum magnitude.

A Design Basis seismic event does not result in significant release of UF_6 or other radiological material from USEC operations. Any small release from USEC remaining operations would not result in any significant impact offsite. The potential chemical impact is <1 mg U and <2 ppm HF at the site boundary. It is possible, although highly unlikely, that a Design Basis seismic event could result in a criticality accident. Water systems are not designed for seismic loads and could present a ready moderator. However, the size of the buildings, the leakage area between floors, and the barriers between the UF_6 and the fire suppression systems make criticality a remote possibility. Nevertheless, emergency procedures require that appropriate conditions be established for reentry to an evacuated facility. For the USEC facility closest to the site boundary, the potential radiological impact from a criticality accident is 1.94 rem

4. **How would the NRC and the licensee respond to an earthquake at the PORTS facility?**

If applicable the licensee would notify the NRC Operations Center and resources would be mobilized from the R-II office or headquarters depending on the severity of the hazard and the particular area of concerns within the plant. The Operations Center and appropriate headquarters staff would continually assess the hazards and the agency response. The NRC Operations Center would also assist in coordinating additional government agency responses. It is important to note that the licensee would have the lead in the response and the NRC would monitor the licensee's response providing oversight, assistance and coordination as necessary.

5. **What preparations are currently in place to respond to such an emergency?**

The site Emergency Response Plan contains responsibilities, procedures, instructions, protective actions, and exposure guidelines for the postulated emergencies. The facility has an onsite emergency response organization with some limited medical, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, and hospital for additional emergency response resources as needed. Recommendations are based on the release quantity/chemical/physical state and atmospheric conditions and are discussed with participating government agencies as appropriate. In support of emergency response operations at the plant, the USEC

Emergency Operations Facility (EOF), located in Bethesda, Maryland, provides oversight, makes appropriate notifications, coordinates interactions with the public and media, and may request assistance from Federal agencies. The state and county have overall responsibility and authority for conducting appropriate emergency response and local implementation of recommended protective actions.

6. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens if the PGDP facility were to lose offsite power as a result of an earthquake?**

Safety systems for the proposed facility are not dependent on electrical power. Safety systems fail to a safe configuration on loss of power without the need for operator actions. There is no safety impact from a loss of all offsite power. The equipment shuts down and cools to ambient temperatures by natural means. There are no residual heat issues.

7. **What would be the impact of a tsunami or flood at the PORTS site?**

The PORTS site is located inland, approximately 500 miles from the coast, so a tsunami is not a plausible scenario. Additionally, the site is not located near any large body of water that could cause a flood at the site. The nearest large surface water is the Scioto River (tributary of the Ohio River) which is about 20 miles from the PORTS site. The largest lake, Lake Erie, is located approximately 200 miles from the site.

8. **How many people live near the PORTS site?**

PORTS is located in rural Pike County in south central Ohio. The permanent residential population of Pike County was 28,000 in 2010. The facility is about 70 miles south of Columbus, Ohio (population of 800,000 in 2010) and 75 miles east of Cincinnati, Ohio (population of 300,000 in 2010), two of the closest metropolitan areas. The cities of Portsmouth and Chillicothe, Ohio, are located approximately 25 miles from the facility.

9. **Does the PORTS site have a spent fuel storage area?**

No. The enrichment stage of the fuel cycle occurs prior to the enriched UF_6 being fabricated into UO_2 fuel for use in nuclear reactors. Therefore the radioactive material currently being generated or previously generated at an enrichment plant has never been used in a nuclear reactor and there is no need to store spent fuel at such a site.

10. What are the most significant hazards at the PORTS site?

A criticality accident represents the potential for a lethal radiation dose to a worker within 10 to 50 feet of the criticality, and lesser but significant doses out to 100 feet or more. The total radiation to an individual at the site boundary would exceed regulatory limits, but would not result in the potential for radiation doses large enough to cause injury. There are no likely criticality scenarios that would be initiated by an earthquake or loss of offsite power event. The onsite components that could cause criticality are gaseous UF6, uranium solutions, slurries of low-density uranium compounds, and low-density dry forms of uranium compounds, with and without moderation control for criticality safety purposes. Another significant offsite hazard is the potential release of UF_6 due to an earthquake via damage to process structures, systems and components.

11. Can an earthquake as large as Japan also happen at PORTS?

The most recent earthquake in Japan was caused by a "subduction zone" event, which is the type of mechanism that produces the largest magnitude earthquakes. A subduction zone is a tectonic plate boundary where one tectonic plate is pushed under another plate. In the continental US, the only subduction zone is the Cascadia subduction zone which lies off the coast of northern California, Oregon and Washington. So, an earthquake and tsunami this large could only happen in that region. The Japan earthquakes experienced a ground motion corresponding to 2.7 g and the maximum credible ground motion at PORTS is less than 0.1 g.

Paducah Gaseous Diffusion Plant (GDP)

Point of Contact: Kevin Mattern
Draft Revised: March 29, 2011

1. **What is the design basis earthquake for the Paducah Gaseous Diffusion Plant (PGDP)?**

   Design Basis seismic event causes (0.165g peak ground acceleration) rupture of cascade process piping (expansion joints) operating above atmospheric pressure. The failures predicted at withdrawal facilities either do not involve UF_6 or else occur in piping and equipment that contains gaseous UF_6 operating at subatmospheric pressure, therefore, no UF_6 release is postulated for the withdrawal facilities. Process building oil systems can withstand the design basis earthquake. All facilities that store significant quantities of UF_6 were analyzed for seismic effects up to the evaluation bases earthquake. All facilities have structural capacities at least equal to this peak ground acceleration, i.e. no building collapse.

2. **What are the potential impacts of an earthquake that exceeded the design of the PGDP facility?**

   Earthquakes can cause damage which results in fires and releases of hazardous materials. Earthquakes are considered an unlikely cause of a criticality accident because such accidents require enriched uranium to accumulate in an unsafe, critical mass. The contents of broken pipes and containers tend to be dispersed, not accumulated. Liquid and gaseous UF_6 operations as well as waste storage are potentially at risk in the seismic event. A severe earthquake could result in toppling of equipment and collapse of structural walls and members, causing a release of uranium to the environment, and possibly a nuclear criticality accident, potentially resulting in a high consequence event to workers.

3. **What would happen if an earthquake occurred in the vicinity of the PGDP facility?**

   Only failures of cascade UF_6 piping operating above atmospheric pressure contribute to exposures from a seismic event. It is possible, although highly unlikely, that a Design Basis seismic event could result in a criticality accident. The radiological consequence of a seismic event is 37 mrem at the site boundary. The chemical consequence of a seismic event is 4 mg U and 2 ppm HF at the site boundary. The consequence of a criticality accident is 7.74 rem at the site boundary.

4. **How would the NRC and USEC respond to an earthquake at the PGDP facility?**

The NRC currently has two permanent resident inspectors on site at Paducah. These inspectors are available and on call 24/7 in the case of any plant emergency including an earthquake. If applicable the licensee would notify the NRC Operations Center and additional resources would be mobilized from the R-II office or headquarters depending on the severity of the hazard and the particular area of concerns within the plant. The onsite NRC inspectors would relay pertinent information through the Operations Center to the appropriate headquarters staff to continually reassess the hazards and the agency response. The NRC Operations Center would also assist in coordinating additional government agency responses. It is important to note that the licensee would have the lead in the response and the NRC would monitor the licensee's response providing oversight, assistance and coordination as necessary.

5. **What preparations are currently in place to respond to such an emergency?**

The site Emergency Response Plan contains responsibilities, procedures, instructions, protective actions, and exposure guidelines for the postulated emergencies. The facility has an onsite emergency response organization with some limited medical, fire fighting, and hazardous material response capabilities. Agreements are in place with the local fire department, police, and hospital for additional emergency response resources as needed. Recommendations are based on the release quantity/chemical/physical state and atmospheric conditions and are discussed with participating government agencies as appropriate. In support of emergency response operations at the plant, the USEC Emergency Operations Facility (EOF), located in Bethesda, Maryland, provides oversight, makes appropriate notifications, coordinates interactions with the public and media, and may request assistance from Federal agencies. The state and county have overall responsibility and authority for conducting appropriate emergency response and local implementation of recommended protective actions.

6. **Are the emergency power diesels built to withstand the effects of an earthquake, if not what happens if the PGDP facility were to lose offsite power as a result of an earthquake?**

Loss of electrical power ("station blackout") is not a design basis event at PGDP. Loss of electrical power results in: UF_6 compressors stop; autoclaves' containment valves shut (fail-safe); withdrawal compression sources (Normetex pumps) stop; UF_6 cylinder handling cranes fail "as-is". No residual heat removal is required at PGDP. PGDP is supplied by 18 individual 161-KV power lines from three separate suppliers connected to four interconnected site switchyards. Diesel-driven electric generators are installed in all process buildings. These are not safety systems. The process buildings have large electrical storage battery banks to provide backup DC power. Loss of cascade compressors reduces cascade pressure to below atmospheric pressure (most of the cascade was below atmospheric pressure initially) and UF_6 cools by ambient heat loss to

solid state. Diesel generators provide power to close cascade valves for economic reasons, but are not safety significant. Liquid UF_6 in cylinders and piping cools by ambient heat loss to solid state. Ambient heat loss is the normal cooling method for liquid UF_6 in cylinders. Liquid UF_6 cylinder handling cranes are seismically qualified: load remains suspended. HPFW is supplied by the C-611-R elevated storage tank and the diesel-driven fire pump. In summary, there is no safety impact from a loss of all offsite power. The equipment shuts down and cools to ambient temperatures by natural means. There are no residual heat issues.

7. What would be the impact of a tsunami or flood at the PGDP site?

The PGDP site is located inland, approximately 550 miles from the coast, so a tsunami is not a plausible scenario. Additionally, the site is not located near any large body of water that could cause a flood at the site. The nearest large surface waters are the Ohio, Mississippi, Tennessee, and Cumberland Rivers which are about 20 miles from the PGDP site. PGDP is at least 12 feet above any conceivable flooding event, and, therefore, there is no safety impact from a flood at PGDP.

8. How many people live near the PGDP site?

Paducah, Kentucky, approximately 10 miles east, with a 2010 population of 25,000 is the largest city in the immediate region. The city of Metropolis, Illinois, with a 2010 population of about 6,000, is situated approximately 5 miles east of the plant. Two unincorporated communities, Grahamville and Heath, are located approximately 2 miles east of the plant. Part of 28 counties in 4 states fall within a 50-mile radius of the plant.

9. Does the PGDP site have a spent fuel storage area?

No. The enrichment stage of the fuel cycle occurs prior to the enriched UF_6 being fabricated into UO_2 fuel for use in nuclear reactors. Therefore the radioactive material currently being generated or previously generated at an enrichment plant has never been used in a nuclear reactor and there is no need to store spent fuel at such a site.

10. What are the most significant hazards at the PGDP site?

A criticality accident represents the potential for a lethal radiation dose to a worker within 10 to 50 feet of the criticality, and lesser but significant doses out to 100 feet or more. The total radiation to an individual at the site boundary would exceed regulatory limits, but would not result in the potential for radiation doses large enough to cause injury. There are no likely criticality scenarios that would be initiated by an earthquake or loss of offsite power event. Another significant offsite hazard is the potential release of UF_6 due to an earthquake via damage to process structures, systems and components.

11. Can an earthquake as large as Japan also happen at PGDP?

The most recent earthquake in Japan was caused by a "subduction zone" event, which is the type of mechanism that produces the largest magnitude earthquakes. A subduction zone is a tectonic plate boundary where one tectonic plate is pushed under another plate. In the continental US, the only subduction zone is the Cascadia subduction zone which lies off the coast of northern California, Oregon and Washington. So, an earthquake and tsunami this large could only happen in that region. The Japan earthquakes experienced a ground motion corresponding to 2.7 g and the maximum credible ground motion at MTW is between than 0.4 g and 1 g.

Generic Criticality Safety:
Criticality Safety Q's & A's

1. **Can a U.S. fuel cycle facility have a criticality accident as the result of an earthquake?**

In general, fuel cycle facilities are constructed to the local Uniform Building Code so as to withstand anticipated earthquakes. Facilities' Integrated Safety Analyses (ISAs) also consider natural phenomena hazards, including earthquakes and severe weather, and must demonstrate that chemical and radiological hazards, including criticality, have an acceptable level of risk. For example, criticality accidents must be shown to be highly unlikely.

Criticality, in general, requires the accumulation of a sufficient mass of nuclear material into a compact geometry, such as a sphere. It also requires a certain quantity of moderator, materials that slow down neutrons and enhance their ability to cause fission, the most common of which is water. During an earthquake, nuclear material would tend to be dispersed over a wide area, the opposite of what is needed for criticality. Nuclear facilities are required to be designed so that at least two unlikely, independent, and concurrent changes in process conditions would be needed before criticality is possible. Accumulation, rather than dispersion, of nuclear material, in the right geometric shape and with the right quantity of moderator for criticality to occur, would require the occurrence of several unlikely events and is considered to be very unlikely.

2. **What would be the consequences of a criticality accident to a member of the public?**

A criticality accident is considered a high consequence event to a worker in the immediate area. Outside approximately fifteen feet, a lethal dose is unlikely. Beyond approximately 200 feet, a significant dose is unlikely. Fuel cycle facilities are required to perform analyses to evaluate the chemical and radiological consequences to members of the public. Most fuel facilities in the U.S. are situated on sites where the distance to the site boundary, and the presence of shielding material, such as concrete walls and steel containers, precludes any significant exposure to members of the public. Criticality is therefore considered a localized industrial hazard with little or no off-site consequences.

From: McIntyre, David
To: Burnell, Scott
Subject: RE: Argus - questions on safety reviews
Date: Tuesday, March 29, 2011 5:27:00 PM

But you said 4 hours in your original response. Should that be 8? I'm about to send to her ...

> **From:** Burnell, Scott
> **Sent:** Tuesday, March 29, 2011 5:26 PM
> **To:** McIntyre, David
> **Subject:** RE: Argus - questions on safety reviews
>
> 8-hour "coping" is the term. That's NRR's answer.
>
> **From:** McIntyre, David
> **Sent:** Tuesday, March 29, 2011 5:15 PM
> **To:** Burnell, Scott
> **Subject:** RE: Argus - questions on safety reviews
>
> Does this jibe with Lochbaum's lament that only a few plants have 8 hour batteries?
>
>> **From:** Burnell, Scott
>> **Sent:** Tuesday, March 29, 2011 5:01 PM
>> **To:** McIntyre, David
>> **Subject:** RE: Argus - questions on safety reviews
>>
>> The NRC only allows up to a 4 hour coping with batteries, anything longer requires an alternate AC source. The coping time using an alternate AC source ranges from 2 to a maximum of16 hours. 44 plants are battery coping plants, 60 plants are alternate AC source plants. The definition of coping is the time until off site power is restored or an emergency diesel generator is restored (.i.e. on site or off site power is restored)
>>
>> **From:** McIntyre, David
>> **Sent:** Tuesday, March 29, 2011 4:53 PM
>> **To:** Burnell, Scott
>> **Subject:** RE: Argus - questions on safety reviews
>>
>> I'll be happy to, provided you tell me what to say about minimum battery backup – is that 4 hours? Or do we even specify?
>>
>>> **From:** Burnell, Scott
>>> **Sent:** Tuesday, March 29, 2011 4:31 PM
>>> **To:** McIntyre, David
>>> **Subject:** FW: Argus - questions on safety reviews
>>>
>>> Hey – you've got 18 whole hours to respond! If you don't mind, of course.

0000/182

From: tracy sutherland [mailto: (b)(6)
Sent: Tuesday, March 29, 2011 3:21 PM
To: Burnell, Scott
Subject: Argus - questions on safety reviews

Hi Scott,

I hope things have slowed for you a little.

I am revisiting the nuclear issue for Argus US Carbon again this week.

Can you answer the following questions please:

- what are the current regulations on how much/and for how long fuel rods can be stored in water pools?
- can you confirm all 104 reactors in the US have spent fuel stored in pools onsite?
- are there any current regulations dictating when spent fuel rods should be moved to dry casks? What are they please?
- do you know how many US reactors store spent fuel in dry casks? (your website does not specify)
- is the issue of how spent fuel rods are stored in the US to be reviewed in the wake of the Japan crisis?
- what is the minimum time that back up generator batteries must be able to run at US reactors?
- is this also being reviewed in the wake of Japan?
- should all the pending new nuclear plant licence applications be reviewed for safety issues like the above before licences are issued?

My deadline in midday Wednesday.

All assistance much appreciated Scott - a big thanks in advance for your efforts

Kind regards,

Tracy Sutherland
(b)(6)
www.argusmedia.com

From: tracy sutherland
To: McIntyre, David
Subject: Re: Argus - questions on safety reviews
Date: Tuesday, March 29, 2011 5:34:41 PM

A big thanks David, appreciate this is a busy time, Tracy

On Wed, Mar 30, 2011 at 8:33 AM, McIntyre, David <David.McIntyre@nrc.gov> wrote:

Hi Tracy –

Some answers in red below your questions. Scott asked me to respond since I cover spent fuel issues.

David McIntyre

Office of Public Affairs

U.S. Nuclear Regulatory Commission

(301) 415-8200

From: tracy sutherland [mailto: (b)(6)
Sent: Tuesday, March 29, 2011 3:21 PM
To: Burnell, Scott
Subject: Argus - questions on safety reviews

Hi Scott,

I hope things have slowed for you a little.

0000/183

I am revisiting the nuclear issue for Argus US Carbon again this week.

Can you answer the following questions please:

- what are the current regulations on how much/and for how long fuel rods can be stored in water pools? There is no maximum limit. Individual pools of course have capacity limits, and as they get full the utilities have moved some of the fuel to dry cask storage to make room for more.

- can you confirm all 104 reactors in the US have spent fuel stored in pools onsite? Yes, they all do.

- are there any current regulations dictating when spent fuel rods should be moved to dry casks? What are they please? NRC has approved transfer as early as 3 years, but generally we prefer 5. The industry average is apparently about 10 years.

- do you know how many US reactors store spent fuel in dry casks? (your website does not specify) That's because the number keeps changing! There are now 63 licensed "independent spent fuel storage facilities" – however, there is some duplication (for regulatory reasons) and some of these are not reactor sites. It's about 55 dry cask storage facilities at operating and decommissioned reactor sites.

- is the issue of how spent fuel rods are stored in the US to be reviewed in the wake of the Japan crisis? Yes.

- what is the minimum time that back up generator batteries must be able to run at US reactors? Per Scott: The NRC only allows up to a 4 hour coping with batteries, anything longer requires an alternate AC source. The coping time using an alternate AC source ranges from 2 to a maximum of16 hours. 44 plants are battery coping plants, 60 plants are alternate AC source plants. The definition of coping is the time until off site power is restored or an emergency diesel generator is restored (.i.e. on site or off site power is restored).

- is this also being reviewed in the wake of Japan? Yes.

- should all the pending new nuclear plant licence applications be reviewed for safety issues like the above before licences are issued? All new plant license applications are thoroughly scrutinized for a wide variety of safety issues. If our post-Japan review identifies any changes or improvements to our review process that would increase safety, we would implement them. As of now though we see no technical reasons to halt or otherwise alter our review process.

My deadline in midday Wednesday.

All assistance much appreciated Scott - a big thanks in advance for your efforts

Kind regards,

Tracy Sutherland

(b)(6)

www.argusmedia.com

Rihm, Roger

From: Rihm, Roger
Sent: Tuesday, March 29, 2011 5:34 PM
To: Barkley, Richard
Subject: RE: Never Did Get a Copy of Mike Weber's Testimony Wednesday
Attachments: Final testimony

Hot off the presses (I was on the phone when you just called)

From: Barkley, Richard
Sent: Tuesday, March 29, 2011 5:33 PM
To: Rihm, Roger
Subject: Never Did Get a Copy of Mike Weber's Testimony Wednesday

Thanks!

Richard S. Barkley, PE
Nuclear & Environmental Engineer
(610) 337-5065 Work
(b)(6) Cell

0000/184

STATEMENT
BY MICHAEL WEBER, DEPUTY EXECUTIVE DIRECTOR FOR
MATERIALS, WASTE, RESEARCH, STATE, TRIBAL AND COMPLIANCE PROGRAMS
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND EMERGENCY MANAGEMENT

MARCH 30, 2011

Good morning, Mr. Chairman and Members of the Subcommittee. I am pleased to appear before you on behalf of the United States Nuclear Regulatory Commission (NRC) to discuss our emergency planning and preparedness programs at nuclear power facilities in the United States, and to discuss the protective action guidance recently issued by the U.S. Ambassador to American citizens in Japan in response to the events at the Fukushima-Daiichi nuclear power plant site.

NRC's primary mission is to regulate nuclear reactors, materials, and waste facilities in a manner that protects the health and safety of the public and promotes the common defense and security. Emergency preparedness is a key element of the "defense in depth" safety philosophy we employ for nuclear power plants. This philosophy ensures high quality in design, construction, and operation of nuclear power plants; requires redundant safety systems that reduce the chances that malfunctions will lead to accidents; and recognizes that in spite of all these precautions, unforeseen events could occur. Through emergency planning and preparedness, mechanisms are in place to protect the public in the unlikely event that these measures fail.

The NRC emergency preparedness and planning regulations are extensive and require the licensee to develop and demonstrate an effective emergency plan as a condition of their

STATEMENT
BY MICHAEL WEBER, DEPUTY EXECUTIVE DIRECTOR FOR
MATERIALS, WASTE, RESEARCH, STATE, TRIBAL AND COMPLIANCE PROGRAMS
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND EMERGENCY MANAGEMENT

MARCH 30, 2011

Good morning, Mr. Chairman and Members of the Subcommittee. I am pleased to appear before you on behalf of the United States Nuclear Regulatory Commission (NRC) to discuss our emergency planning and preparedness programs at nuclear power facilities in the United States, and to discuss the protective action guidance recently issued by the U.S. Ambassador to American citizens in Japan in response to the events at the Fukushima-Daiichi nuclear power plant site.

NRC's primary mission is to regulate nuclear reactors, materials, and waste facilities in a manner that protects the health and safety of the public and promotes the common defense and security. Emergency preparedness is a key element of the "defense in depth" safety philosophy we employ for nuclear power plants. This philosophy ensures high quality in design, construction, and operation of nuclear power plants; requires redundant safety systems that reduce the chances that malfunctions will lead to accidents; and recognizes that in spite of all these precautions, unforeseen events could occur. Through emergency planning and preparedness, mechanisms are in place to protect the public in the unlikely event that these measures fail.

The NRC emergency preparedness and planning regulations are extensive and require the licensee to develop and demonstrate an effective emergency plan as a condition of their

license. The nuclear power plant operator is required to provide extensive emergency response training to emergency plant workers. For example, they are required to provide severe accident management training to control room operators, and to demonstrate personnel response in a rigorous drill and exercise program. The NRC inspects licensees to ensure that they are meeting emergency preparedness requirements and monitors performance indicators related to emergency preparedness.

To form a coordinated system of emergency preparedness and response, the NRC works with licensees; Federal agencies; State, Tribal, and local officials; and first responders. This program includes an every-other-year full participation exercise that engages both the onsite and offsite response organizations as well as Federal Emergency Management Agency (FEMA). These exercises are evaluated by both FEMA (offsite) and NRC (onsite) staff. NRC resident inspectors also observe licensee on-site emergency drills and exercises. It is safe to say that over the 30-plus years of operating history and at 104 operating nuclear power plants, there have been thousands of drills and exercises designed to ensure optimum response to abnormal and emergency conditions.

For planning purposes, we define two emergency planning zones, or EPZs, around nuclear power plant sites. The first zone, called the Plume Exposure Pathway EPZ, is an area covering a 10-mile radius around a nuclear power plant. This is the area that would require the most immediate protective actions as it has the greatest potential for exposure from a release. Planning for this area is comprehensive and includes such protective actions as evacuation, sheltering, and administration of potassium iodide, as appropriate, for members of the public.

Consideration of these protective actions is prompted at very low projected dose levels. A second emergency planning zone, called the Ingestion Pathway EPZ, covering a 50- mile radius

around each plant is also established to deal with potential lower-level, long-term risks primarily due to exposure from ingestion of contaminated food, milk, and water. This comprehensive planning within the 10 and 50 mile EPZs provides a substantial basis for expansion of response efforts in the event that this is necessary.

Let me now address the NRC's recent protective action recommendation for U.S citizens in Japan to evacuate out to 50 miles from the Fukushima-Daiichi site. That decision was based on the best information available during an evolving event. NRC began monitoring the event when the tsunami warning was issued for Hawaii and the west coast of the United States. The information flow from the Fukushima site was often confusing and conflicting. In order to provide timely information to the U.S. Ambassador to Japan, and to best protect the health and safety of U.S. citizens in Japan, we based our assessment on the conditions as we understood them at the time. This site has six nuclear power plants and 4 of the plants are facing extraordinary challenges. Units 1, 3 and 4 appeared to have suffered significant damage as a result of reported hydrogen explosions. We suspected that the concrete, secondary containment buildings were severely damaged by the explosions and may not be capable to perform their function of stopping the release of radiation. Unit 4 was in a refueling outage and its entire core had been transferred to the spent fuel pool a little more than 3 months earlier. This means that there was irradiated fuel that had been freshly loaded into the spent fuel pool that was in danger of overheating if the water level dropped, and there were indications that was happening. Additionally, radiation monitors were showing very high levels of radiation on the plant site, which would pose challenges to plant crew attempting to stabilize the reactors, and there were offsite readings indicating that fuel damage had occurred.

Since communications were limited and there was a large degree of uncertainty about plant conditions at the time, it was difficult to accurately assess the radiological hazard. In order to

determine the proper evacuation distance, the NRC staff performed a series of calculations using NRC's RASCAL computer code to assess possible offsite consequences. The computer models used meteorological model data appropriate for the Fukushima Daiichi vicinity. Source terms were based on hypothetical, but not unreasonable estimates of fuel damage, containment, and other release conditions. These calculations demonstrated that the Environmental Protection Agency's Protective Action Guidelines could be exceeded at a distance of 50 miles from the Fukushima site, if a large-scale release occurred from the reactors or spent fuel pools. We understood that some of our assumptions were conservative, but believed that it was better to err on the side of protection, especially in the case of a seemingly rapidly deteriorating situation.

If this situation had occurred in the United States, the NRC has resident inspector staff at the plants that can report back to the Region and Headquarters on conditions as they are evolving. In addition, we are able to readily access "live-time" plant parameters and radiation monitors, as well as talk directly to our licensee and emergency management officials allowing us to refine our understanding and consequence assessments. The licensee would then make a recommendation to State or local officials on what protective actions to take. With the Fukushima event we had to make our best decision with what we had available. The Emergency Preparedness framework provides for the expansion of the emergency planning zones as conditions require. Acting in accordance with this framework and with the best information available at the time, the NRC determined that evacuation out to 50 miles for U.S. citizens was an appropriate course of action, and we made that recommendation to other U.S. Government agencies.

This concludes my testimony. Thank you for the opportunity to present this testimony. I would be happy to answer your questions.

From:
To: McIntyre, David
Subject: Re: MEDIA - : MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q."S FOR STORY
Date: Wednesday, March 30, 2011 3:53:25 PM

David,OK, mucho gracias for this info. Cheers, M
-----Original Message-----
From: McIntyre, David <David.McIntyre@nrc.gov>
To: , [(b)(6)]
Sent: Wed, Mar 30, 2011 3:51 pm
Subject: RE: MEDIA - : MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q.'S FOR STORY

Some of our personnel in Japan have already returned, and others have been sent. No word on how long they'll be needed there.

We issued a press release on our review on March 23, and Chairman Jaczko and EDO Bill Borchardt testified about it on Capitol Hill yesterday and today. The Commission ordered a 90-day review, followed by a longer-term look at the Japan crisis.

> **From:** , [mailto:[(b)(6)]
> **Sent:** Wednesday, March 30, 2011 3:17 PM
> **To:** McIntyre, David
> **Subject:** Re: MEDIA - : MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q.'S FOR STORY
>
> Hello David, OK, understood, but here are some questions that are in relation to your brief e-mail of a few minutes ago: 1) Is the reason that the NRC can't "comment on the technical aspects of the situation in Japan" (to use your wording) because it is still an ongoing matter ? (I am assuming so)?, 2) Is that "team of experts in Japan providing whatever assistance we can" (again, your wording) going to be there for awhile ? How many months? Are more than one team going to be sent to Japan?, 3) Regarding your "thorough review of nuclear power plant safety here in the United States"---when do you expect this report to be completed? By the end of summer (i.e., August) ? By the end of 2011? I realize that the situation i Japan is ongoing, but if you could provide answers to the few q.'s above, it would greatly be appreciated. Cheers from Florida, Mark Weisenmiller, [(b)(6)]---E-Mail Address
> -----Original Message-----
> From: McIntyre, David <David.McIntyre@nrc.gov>
> To: mwupi <[(b)(6)]>
> Sent: Wed, Mar 30, 2011 3:07 pm
> Subject: RE: MEDIA - : MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q.'S FOR STORY
>
> Mark --
> I'm afraid we really can't comment on the technical aspects of the situation in Japan or the needs of the eventual cleanup of the Fukushima site. As you are aware, we have a team of experts in Japan providing whatever assistance we can, and we as a country and an agency will do whatever we can to assist in the future, should the Japanese authorities request our help.

0000/185

We have also launched a thorough review of nuclear power plant safety here in the United States to learn whatever lessons we can from the Japanese crisis and apply them to our regulatory oversight here in the United States.

Regards,

David McIntyre
Office of Public Affairs
U.S. Nuclear Regulatory Commission
(301) 415-8200

From: Couret, Ivonne
Sent: Wednesday, March 30, 2011 3:01 PM
To: McIntyre, David
Subject: MEDIA - : MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q.'S FOR STORY
Importance: High

Can you answer his questions? Ivonne

From: Janbergs, Holly **On Behalf Of** OPA Resource
Sent: Wednesday, March 30, 2011 2:45 PM
To: Couret, Ivonne
Subject: FW: MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q.'S FOR STORY

From: , [mailto: (b)(6)
Sent: Wednesday, March 30, 2011 2:42 PM
To: OPA Resource
Subject: MARK W. FL. REPORTER ECONOMIST-XINHUA 3/30/2011 Q.'S FOR STORY

March 30, 2011
To: Office of Public Affairs, Nuclear Regulatory Commission
From: Mark Weisenmiller, Florida-based Reporter, The Economist, as well as the international Chinese news wire agency Xinhua (pronounced SHIN-WA)
To Whom It May Concern,
I am currently working on a story for Xinhua about the damaged Fukishima nuclear power plant in Japan and have some questions for the NRC. After speaking with Deana there, she told me to e-mail the questions up to this e-mail address. For your information, the story will be appearing on the English-language news wire agency of Xinhua and that web site is www.xinhua.com. You can e-mail me back your aswers to the questions, to (b)(6), and the deadline for doing so is THIS FRIDAY AFTERNOON AT 5.30 PM ET (although if need be, I can extend the deadline a bit). Herewith the questions:
1) Even though the March earthquake and subsequent tsunami in Japana in March were very unexpected, did it still surprise the NRC to hear of the extent of the damage to the nuclear power plant in Japan, especially considering the fact that Japan is a world wide leader in nuclear power plant safety?, 2) What is the easiest and hardest parts of the subsequent cleanup operations at the damaged nuclear power plant?, 3) Is safe decommission and deconstruction of the damaged Japanese nuclear power plant even an option now, considering that high levels of radiation are being recorded in and around the immediate area?, 4) Can the NRC, or any agency affiliated with

the United Nations, provide help to the Japanese, in regards to the clean-up operations?, 5) In one of the many articles that have been published about the damag

From: Simon Murphy @ The Sovereign Independent
To: ratomail@epa.gov; emc@epa.gov; nelson.peg@epa.gov; Hotline.IRIS@epa.gov; lucs@icma.org; Radon@ksu.edu; list-nrcinfo@comdt.uscg.mil; tri.help@epa.gov; press@epa.gov
Cc: McIntyre, David; Couret, Ivonne
Subject: RE: MEDIA - FW: Erroneous Radiation Plume Model
Date: Wednesday, March 30, 2011 9:18:48 PM

Hi,

I'm am trying to find an official graph of the radiation plume across the continental US since the Japan earthquake. The Radiological Protection Institute of Ireland has detected the presence of trace amounts of radioactivity from the Fukushima accident in Ireland and there has also been detection reports as far as Switzerland. Can you also tell me who independently checks the United States readings other than government agencies, and if you work in conjunction with any other agencies in Ireland, Canada or the UK etc.

I would also like to point out that Radioactive iodine rose to 3,355 times the regulated safety limit as reported by Hidehiko Nishiyama from Japan's nuclear safety agency and I would like to question how this might be affecting the US / Canada and the rest of the world?

Any more information or iodine readings you might have regarding this would be appreciated.

Regards,

Simon Murphy
The Sovereign Independent News

From: McIntyre, David [mailto:David.McIntyre@nrc.gov]
Sent: 30 March 2011 18:46 PM
To: Couret, Ivonne; simon@sovereignindependent.ie
Subject: RE: MEDIA - FW: Erroneous Radiation Plume Model

Simon – Thank you for being responsive about that false plume map. We've been chasing that across the Internet ever since the earthquake. We do not have an official projection – radiation monitoring is done by the US Environmental Protection Agency, and they have reported that trace amounts have been detected already at various monitoring stations across the United States. These have been at levels several times below what would raise any public health concerns.

David McIntyre
Office of Public Affairs
U.S. Nuclear Regulatory Commission
(301) 415-8200

From: Couret, Ivonne

00001/186

Sent: Wednesday, March 30, 2011 1:33 PM
To: McIntyre, David
Subject: MEDIA - FW: Erroneous Radiation Plume Model
Importance: High

Can you follow up with this reporter. Ivonne

From: Janbergs, Holly **On Behalf Of** OPA Resource
Sent: Wednesday, March 30, 2011 1:25 PM
To: Couret, Ivonne
Subject: FW: Erroneous Radiation Plume Model

From: Simon Murphy @ The Sovereign Independent [mailto:simon@sovereignindependent.ie]
Sent: Wednesday, March 30, 2011 1:22 PM
To: OPA Resource
Cc: Watkins, Charles
Subject: RE: Erroneous Radiation Plume Model

Hi I was wondering if you could supply me with a graphic of the predicated flow of the radiation plume from Japan's nuclear power plants. We posted an article on our website with the graphic that has been shared around the internet and we were informed by Charles from the Cyber Situational Awareness Team that the graphic was not released by your agency. We were not aware that this was a fake but we would like an official image or report to replace the graphic. We pride ourselves on telling the truth in our newspaper and website and would like to correct this mistaken image,

Please refer to the email below for more information.

Look forward to hearing from you,

Regards,

Simon Murphy
The Sovereign Independent News

From: Watkins, Charles [mailto:Charles.Watkins@nrc.gov]
Sent: 30 March 2011 17:51 PM
To: Simon Murphy @ The Sovereign Independent; simon@sovereignindependent.com
Subject: RE: Erroneous Radiation Plume Model

Simon, We appreciate you taking down that graphic as soon as you can. All media inquiries should be directed to the NRC Office of Public Affairs at OPA@nrc.gov or 301-415-.8200.

Charles Watkins II, CISSP, EnCE
Cyber Situational Awareness Team
NRC, Computer Security Office
(301) 415-6199 Work Phone

(b)(6) **Work Cell**

From: Simon Murphy @ The Sovereign Independent [mailto:simon@sovereignindependent.ie]
Sent: Wednesday, March 30, 2011 12:36 PM
To: Watkins, Charles; simon@sovereignindependent.com
Subject: Erroneous Radiation Plume Model

Hi Charles,

I will arrange for that to be taken down as soon as possible. It was posted as an article from another source rather than one of our own. I also noticed this image being used on CNN or some other main stream media report as well as Russia Today. Can you please provide us with an official graph of how the US Nuclear Regulatory Commission think the plume will travel across the world or even just to the US. We are based in Ireland and our main broadcaster has reported the highly sophisticated detection equipment in Dublin has found radioactive iodine in the atmosphere. It makes me wonder if the image you refer to is not actually correct even though it was not officially released by your agency.

I await your response,

Regards,

Simon Murphy
The Sovereign Independent News

From: sovereig@rodimusprime.fastsecurehost.com
[mailto:sovereig@rodimusprime.fastsecurehost.com] **On Behalf Of** Charles Watkins - US NRC
Sent: 30 March 2011 15:31 PM
To: simon@sovereignindependent.com
Subject: Erroneous Radiation Plume Model

From: Charles Watkins - US NRC <charles.watkins@nrc.gov>
Subject: Erroneous Radiation Plume Model

Message Body:
Your web site has an erroneous graphic of a radiation plume model on it. This graphic is incorrect and is not published by the US Nuclear Regulatory Commission. Request that you have this graphic removed from the below listed web site. Thank you.

http://www.sovereignindependent.com/?p=16608

Charles Watkins II, CISSP, EnCE
Cyber Situational Awareness Team
NRC, Computer Security Office
(301) 415-6199 Work Phone
(b)(6) Work Cell

--
This mail is sent via contact form on Sovereign Independent http://www.sovereignindependent.com

---

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1209 / Virus Database: 1500/3538 - Release Date: 03/29/11

From:	Betancourt, Luis
To:	Couret, Ivonne
Cc:	Rivera-Lugo, Richard; Roche, Robert; Pires, Jose; Ake, Jon; Sydnor, Russell; Hogan, Rosemary; Burnell, Scott; McIntyre, David; Harrington, Holly; Kammerer, Annie
Subject:	RE: Spanish translation
Date:	Thursday, March 31, 2011 7:42:09 AM
Attachments:	QAs (Spanish) 03-31-2011 FINAL.DOCX

Hi Ivonne,

We just made a change in one of the wordings in the document (Spanish version). Please see attached.

Thanks.

LUIS BETANCOURT DIGITAL I&C ENGINEER (EIT)
[illegible] Luis.Betancourt@nrc.gov
[illegible]

Please consider the environment before printing this e-mail

From: Kammerer, Annie
Sent: Wednesday, March 30, 2011 7:23 PM
To: Betancourt, Luis; Couret, Ivonne
Cc: Rivera-Lugo, Richard; Roche, Robert; Pires, Jose; Ake, Jon; Sydnor, Russell; Reeves, Rosemary; Burnell, Scott; McIntyre, David; Harrington, Holly
Subject: RE: Spanish translation

Actually we found a couple of very minor typos. In the English version. I'm sure that they were addressed in the Spanish version. Please see attached.

Annie

Dr. Annie Kammerer, P.E.
US NRC/RES/DE
(301) 251-7695 Office
(b)(6) Mobile

From: Betancourt, Luis
Sent: Wednesday, March 30, 2011 1:01 PM
To: Couret, Ivonne
Cc: Rivera-Lugo, Richard; Roche, Robert; Pires, Jose; Kammerer, Annie; Ake, Jon; Sydnor, Russell; Reeves, Rosemary
Subject: RE: Spanish translation

Hi Ivonne,

Please find attached the updated public FAQ (English version) and the translated Spanish version documents. I would like to give credit to the staff from the Structural, Geotechnical & Seismic Eng Branch at RES/DE, especially to Richard Rivera-Lugo, Robert Roche and Jose Pires for their efforts in translating this document. They were significant key players

in finding the right translation for the technical contents shown in the FQAs.

As we agreed we plan to send you in the following days an updated translated Spanish version for the revised set of questions(see attachment). If you have any questions just let me know.

Thanks,

LUIS BETANCOURT DIGITAL I&C ENGINEER (EIT)
RES/DE/DIC/B1 | 301-251-7489 | MS C-2A07M | Luis.Betancourt@nrc.gov
U.S. Nuclear Regulatory Commission
Please consider the environment before printing this e-mail

From: Couret, Ivonne
Sent: Thursday, March 24, 2011 2:47 PM
To: Betancourt, Luis
Cc: Rivera-Lugo, Richard
Subject: RE: Spanish translation

That is fine for tomorrow. Remember try to make it simple not difficult it is for the public who have no clue on nuclear. Thanks again, Ivonne

From: Betancourt, Luis
Sent: Thursday, March 24, 2011 2:46 PM
To: Couret, Ivonne
Cc: Rivera-Lugo, Richard
Subject: RE: Spanish translation

Hi Ivonne,

I'm going through the translation and looking at it will take me more time than I anticipated. I asked Richard Rivera-Lugo, one of the Structural Engineers at RES to help me get a better translation since this is more of his background. I wanted to asked you if we can give you the revised translation tomorrow morning?

Let me know what you think.

Thanks,

LUIS BETANCOURT DIGITAL I&C ENGINEER (EIT)
RES/DE/DIC/B1 | 301-251-7489 | MS C-2A07M | Luis.Betancourt@nrc.gov
U.S. Nuclear Regulatory Commission
Please consider the environment before printing this e-mail

From: Couret, Ivonne
Sent: Thursday, March 24, 2011 1:48 PM
To: Betancourt, Luis
Subject: RE: Spanish translation

Thanks, Ivonne

NRC frequently asked questions related to the March 11, 2011 Japanese Earthquake and Tsunami

3-29-11 Version

Compiled by Annie Kammerer, Jon Ake, Cliff Munson, and Michelle Bensi for submission to OPA and NRR. We would appreciate getting an edited word file back to assure that the public comments and the internal document are consistent.

List of Questions

1) Can an earthquake and tsunami as large as happened in Japan also happen here?

The March 2011 Tohoku earthquake occurred on a "subduction zone," which is the type of tectonic region that produces earthquakes of the largest magnitude. A subduction zone is a tectonic plate boundary where one tectonic plate is pushed under another plate. Severe tsunamis like the one experienced in Japan are only produced by earthquakes occurring at this type of plate boundary. The only subduction zone that could affect the continental US is the Cascadia subduction zone, which lies off the coasts of Oregon, Washington, and the northernmost portion of California. Consequently, a continental earthquake and tsunami as large as the one experienced in Japan could only happen in that coastal region. The only nuclear plant near the Cascadia subduction zone is the Columbia Generating Station. This plant is located a large distance from both the coast (approximately 225 miles) and the offshore subduction zone. Because of the distance between the plant and the Cascadia subduction zone, the strength of ground motion expected at the plant is far lower than the ground motion experienced at the Fukushima plants during the Tohoku earthquake. The large distance between the Columbia Generating Station and the coast also precludes the possibility of a tsunami affecting the plant. Outside of the Cascadia subduction zone, earthquakes are not expected to exceed a magnitude of approximately 8.25, which is significantly smaller than the magnitude of the Tohoku earthquake. Magnitude is measured on a log scale and thus a magnitude 9 earthquake produces about ten times stronger shaking and releases about 32 times more energy than a magnitude 8 earthquake. See Question (15) for additional information about earthquake magnitude.

2) Did the Japanese underestimate the size of the maximum credible earthquake that could affect the plants?

The magnitude of the Tohoku earthquake was somewhat greater than was expected for the part of the subduction zone on which the earthquake occurred. However, the Japanese nuclear plants were recently reassessed using ground motion levels similar to those that are believed to have occurred at the sites during the Tohoku earthquake. The ground motions against which the Japanese nuclear plants were reassessed were expected to result from earthquakes that were of smaller magnitude, but that were much closer to the sites.

3) How high was the tsunami at the Fukushima nuclear plants? Was it higher than was expected?

The tsunami modeling team at the National Oceanic and Atmospheric Administration's Pacific Marine Environmental Lab have estimated the wave height just offshore (at the 5 meter bathymetric line) to be approximately 8 meters in height at Fukushima Daiichi and approximately 7 meters at Fukushima Daini. This estimate is based on recordings from NOAA's Deep-ocean Assessment and Reporting of Tsunamis (DART) buoys and a high resolution numerical model developed for the tsunami warning system.

A recent estimate released by TEPCO indicates that the tsunami water at the Fukushima Daiichi site reached a height of 14 meters. The report also indicates that the design basis tsunami height was 5.7 meters and that the emergency diesel generators were located 10-13 meters above sea level. This data was provided by TEPCO and has not been confirmed by the NRC. Because a tsunami will rise up as it comes ashore, water level estimates of 8 meters offshore and 14 meters onshore appear to be consistent.

4) Was the damage to the Japanese nuclear plants mostly from the earthquake or the tsunami?

Because this event occurred in Japan, it will be hard for NRC staff to understand exactly what happened until comprehensive assessments can be performed. Preliminary information suggests that important safety systems performed their required function in the period between the occurrence of the earthquake and the impact of the tsunami. It appears that the emergency diesel generators successfully started once offsite power was lost. Therefore, the tsunami appears to have played a key role in the loss of backup power sources at the site (including the diesel generators), ultimately resulting in a condition known as station blackout. The station blackout was a critical factor in the problems experienced at Fukushima Daiichi nuclear plant.

5) Have any lessons for US nuclear plants been identified?

The NRC is in the process of following and reviewing the events in real time. This review will undoubtedly lead to the identification of issues that warrant further study. A complete understanding of lessons learned will require more information than is currently available to NRC staff.

6) Was there any damage to US reactors from either the earthquake or the resulting tsunami?

No.

7) Is radiation in the US expected to reach levels that are harmful to humans as a result of the events in Japan?

No.

8) How many US reactors are located in active earthquake zones?

Although we often think of the US as having "active" and "non-active" earthquake zones, earthquakes can actually happen almost anywhere. Seismologists typically separate the US into low, moderate, and high seismicity zones. However, the boundaries between the zones are not well defined and depend on the interpretation of the various seismic sources. The United States Geological Survey (USGS) provides an interpretation of seismic hazard in the US. The USGS Earthquake Hazards Program website provides information about earthquakes in the US and around the world: http://earthquake.usgs.gov/. USGS also provides earthquake hazard maps and data: http://earthquake.usgs.gov/hazards/products/.

In the US, there are approximately 9 nuclear plants located in moderate seismicity zones and two plants located in high seismicity zones. These numbers may vary slightly depending on the scientific interpretation of earthquake hazard that is used. The NRC requires that every nuclear plant be designed for site-specific earthquake ground motions that are appropriate for its location. In addition, the NRC has specified a minimum ground motion level to which nuclear plants must be designed.

9) What level of earthquake hazard are the US reactors designed for?

Each reactor is designed for a ground motion level that is determined on a site-specific basis. The existing nuclear plants were designed using a "deterministic" or "scenario earthquake" approach that accounted for the largest earthquakes expected in the area around the plant, without consideration of the likelihood of the earthquakes occurring. New reactors are designed using probabilistic techniques that characterize both the ground motion levels and associated uncertainty in the assessment of the seismic hazard at the proposed site. These probabilistic techniques account for the ground motions that may result from all potential seismic sources in the region around the site. Technically speaking, new

nuclear plants are designed for the ground motion with an annual frequency of occurrence of . This can be thought of as the ground motion that occurs every 10,000 years, on average. One important aspect associated with the use of probabilistic seismic hazard and other risk-assessment techniques is that they account for beyond-design basis events. NRC's Generic Issue 199 (GI-199) project is using state-of-the-art probabilistic techniques to review the seismic safety of the existing plants. [see questions (17)to (22) for more information about GI-199]

10) What magnitude earthquake are currently operating US nuclear plants designed to?

Ground motion is a function of the magnitude of an earthquake, the distance from the earthquake source to the site, and other geologic characteristics. Nuclear plants, and in fact all engineered structures, are designed based on *ground motion* levels, not earthquake magnitudes. The existing nuclear plants were designed using a "deterministic" or "scenario earthquake" approach that accounted for the largest earthquakes expected in the area around the plant. A margin is further added to the predicted ground motions to provide additional robustness.

11) Have the events in Japan changed our perception of earthquake risk to the nuclear plants in the US?

The NRC continues to determine that US nuclear plants are safe. The events transpiring in Japan following the Tohoku earthquake do not change the NRC's perception of earthquake hazard (i.e. ground motion levels) at US nuclear plants. It is too early to identify the lessons that may be learned from the Tohoku earthquake. The NRC will look closely at all aspects of the response of the Fukushima plants to the earthquake and tsunami to determine if any actions need to be taken in US nuclear plants and if any changes are necessary to NRC regulations.

12) Can significant damage to a nuclear plant like we saw in Japan happen in the US due to an earthquake? Are the Japanese nuclear plants similar to US nuclear plants?

All US nuclear plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even nuclear plants that are located in areas with low and moderate seismic activity are designed for safety in the event of such natural disasters. In addition to the design of the plants, significant effort is devoted to emergency response planning and severe accident management. This approach is called defense-in-depth.

The Japanese facilities at Fukushima are similar in design to some US facilities. However, the NRC has required modifications to US plants since they were designed and built. Examples of these modifications include design changes to control hydrogen and pressure in the containment. The NRC also requires plants to have additional equipment and measures in place to mitigate damage stemming from large fires and explosions resulting from a beyond-design-basis event. The measures include providing core and spent fuel pool cooling and an additional means to power other equipment on site.

In addition, the NRC instituted a rule in the 1980s that required nuclear plants to further assure that a loss of both offsite and onsite emergency AC power systems (a condition known as a station blackout) would not adversely affect public health and safety. As a result of this rule, all plants have (1) established station blackout coping and recovery procedures; (2) completed training for these procedures; (3) implemented modifications as necessary to cope with a station blackout; and (4) ensured a 4-16 hour coping capability. Subsequently, studies conducted by the NRC have shown that the hardware and procedures that have been implemented to meet the station blackout requirements have resulted in a significant risk reduction and have further enhanced defense-in-depth.

13) What is the likelihood of the design basis or "SSE" ground motions being exceeded over the life of a nuclear plant?

The ground motion that is used as the seismic design basis at US nuclear plants is called the Safe Shutdown Earthquake ground motion (SSE). It is important to remember that structures, systems and components are required to have "adequate margin," meaning that they must be able to withstand shaking levels that are above the plant's design basis. In the mid to late 1990s, the NRC staff reviewed the potential for ground motions beyond the design basis as part of the Individual Plant Examination of External Events (IPEEE). From this review, the staff determined that seismic designs of operating nuclear plants in the US have adequate safety margins for withstanding earthquakes. Currently, the NRC is in the process of conducting GI-199 to again assess the resistance of US nuclear plants to earthquakes. Based on NRC's preliminary analyses to date, the mean probability of ground motions exceeding the SSE over the life of the plant, for the plants in the Central and Eastern United States, is less than about 1%.

14) Which reactors are located along coastal areas that could be affected by a tsunami?

Many nuclear plants are located in coastal areas that could potentially be affected by a tsunami. Two nuclear plants, Diablo Canyon and San Onofre, are on the Pacific Coast, which is known to have a tsunami hazard. Two nuclear plants on the Gulf Coast, South Texas and Crystal River, could also be affected by tsunami. There are many nuclear plants on the Atlantic Coast or on rivers that may be affected by a tidal bore resulting from a tsunami. These include St. Lucie, Turkey Point, Brunswick, Oyster Creek, Millstone, Pilgrim, Seabrook, Calvert Cliffs, Salem/Hope Creek, and Surry. Tsunami on the Gulf and Atlantic Coasts occur, but are very rare. Generally, the flooding anticipated from hurricane storm surge exceeds the flooding expected from a tsunami for nuclear plants on the Atlantic and Gulf Coast. Regardless, all nuclear plants are designed to withstand the tsunami level appropriate for their site as well as other natural hazards such as earthquakes and hurricanes.

15) What is magnitude? What is the Richter Scale? What is intensity?

An earthquake's magnitude is a measure of the strength of the earthquake as determined from seismographic observations. Magnitude is essentially an objective, quantitative measure of the size of an earthquake. The magnitude can be expressed in various ways based on seismographic records (e.g., Richter Local Magnitude, Surface Wave Magnitude, Body Wave Magnitude, and Moment Magnitude). Currently, the most commonly used magnitude measurement is the Moment Magnitude, Mw, which is based on the strength of the rock that ruptured, the area of the fault that ruptured, and the average amount of slip. Moment magnitude is, therefore, a direct measure of the *energy* released during an earthquake. Because of the logarithmic basis of the scale, each whole number increase in magnitude corresponds to a tenfold increase in measured wave amplitude and about 32 times more energy.

The Richter magnitude scale was developed in 1935 by Charles F. Richter of the California Institute of Technology and was based on the behavior of a specific seismograph that was manufactured at that time. The instruments are no longer in use and the magnitude scale is, therefore, no longer used in the technical community. However, the Richter Scale is a term that is so commonly used by the public that scientists generally just answer questions about "Richter" magnitude by substituting moment magnitude without correcting the misunderstanding. Like moment magnitude, the Richter Scale is a logarithmic scale.

The intensity of an earthquake is a qualitative assessment of the effects of the earthquake at a particular location. The intensity is assigned based on observed effects on humans, on human-built structures, and on the earth's surface at a particular location. The most commonly used scale in the US is the Modified Mercalli Intensity (MMI) scale, which has values ranging from I to XII in the order of severity.

MMI of I indicates an earthquake that was not felt except by a very few, whereas MMI of XII indicates total damage of all works of construction, either partially or completely. While an earthquake has only one magnitude, it produces a range of intensities that depend on the effects at each particular location.

16) How do magnitude and ground motion relate to each other?

The ground motion experienced at a particular location is a function of the magnitude of the earthquake, the distance from the fault to the location of interest, and other elements such as the geologic materials through which the seismic waves pass.

17) What is Generic Issue 199 about?

GI-199 investigates the safety and risk implications of updated earthquake-related data and models on existing nuclear plants. For some nuclear plants in the Central and Eastern United States, these updated data and models suggest that there has been a slight increase in the estimated probability that the earthquake ground motion experienced at the site during a future earthquake could exceed the seismic design basis. While the updated data and models suggest that this probability has increased slightly relative to previous estimates, it is important to understand that, overall, this probability remains low.

18) Does GI-199 provide rankings of US nuclear plants in terms of safety?

The NRC does not rank nuclear plants by seismic risk. The objective of the GI-199 Safety/Risk Assessment was to evaluate whether further investigations of seismic safety for operating reactors in the central and eastern US (CEUS) are warranted, consistent with NRC directives. The results of the GI-199 safety risk assessment should not be interpreted as definitive estimates of plant-specific seismic risk because some analyses were conservative. The nature of the information used in the analyses makes these estimates useful only as a screening tool.

19) What are the current findings of GI-199?

Currently operating nuclear plants in the US remain safe, with no need for immediate action. This determination is based on NRC staff reviews of updated seismic hazard information and the conclusions of the safety/risk assessment stage of GI-199. Existing nuclear plants were designed, with considerable margin, to be able to withstand the ground motions from the "deterministic" or "scenario earthquake," which accounted for the largest earthquakes expected in the area around the plant. The results of the GI-199 assessment demonstrate that the probability of exceeding the design basis ground motion may have increased at some sites, but only by a relatively small amount. In addition, the probabilities of seismic core damage are lower than the guidelines for taking immediate action. Although there is not an immediate safety concern, the NRC is focused on assuring safety even during very rare and extreme events. Therefore, the NRC has determined that assessment of updated seismic hazards and plant performance should continue. GI-199 originally focused on the 96 reactors located in the Central and Eastern United States. As a result of the Tohoku earthquake, the NRC has expanded the scope of the next stage of the GI-199 assessment activities to include all 104 operating reactors.

20) What do you mean by "increased estimates of seismic hazards" at nuclear plant sites?

Seismic hazard (earthquake hazard) represents the chance (or probability) that a specific level of ground motion could be observed or exceeded at a given location. Our estimates of seismic hazard at some Central and Eastern United States locations have changed based on results from recent research, indicating that earthquakes occurred more often in some locations than previously estimated. Our estimates of seismic hazard have also changed because the models used to predict the level of ground motion experienced at a site during an earthquake have improved. The increased estimates of seismic

hazard at some locations in the Central and Eastern United States were discussed in a memorandum to the Commission, dated July 26, 2006. (The memorandum is available in the NRC Agencywide Documents Access and Management System [ADAMS] under Accession No. ML052360044). It is important to note that it is not the underlying seismic hazard that has changed, but rather our scientific ability to understand and assess the hazard that has improved.

21) Does the Seismic Core Damage Frequency represent a measurement of the risk of radiation release or only the risk of core damage (not accounting for additional containment)?

Seismic core damage frequency is the probability of damage to the core resulting from a seismic initiating event. It does not imply either a meltdown or the loss of containment, which is necessary for radiological release to occur. The likelihood of radiation release is far lower than the core damage frequency.

22) Where can I get current information about Generic Issue 199?

The public NRC Generic Issues Program (GIP) website (http://www.nrc.gov/about-nrc/regulatory/gen-issues.html) contains program information and documents, background and historical information, generic issue status information, and links to related programs. The latest Generic Issue Management Control System quarterly report, which has regularly updated GI-199 information, is publicly available at http://www.nrc.gov/reading-rm/doc-collections/generic-issues/quarterly/index.html. Additionally, the US Geological Survey provides data and results that are publicly available at http://earthquake.usgs.gov/hazards/products/conterminous/2008/.

23) Could an accident sequence like the one at Japan's Fukushima Daiichi nuclear plants happen in the US?

It is difficult to answer this question until we have a better understanding of the precise problems and conditions that faced the operators at Fukushima Daiichi. We do know, however, that Fukushima Daiichi Units 1-3 lost all offsite power and emergency diesel generators. This situation is called "station blackout." The Nuclear Regulatory Commission's detailed regulations address this scenario. US nuclear plants are designed to cope with a station blackout event that involves a loss of offsite power and onsite emergency power. In addition to design features, US nuclear plants are required to conduct a "coping" assessment, perform modifications if necessary, and develop a strategy to demonstrate to the NRC that they could maintain the plant in a safe condition during a station blackout scenario. These assessments, proposed modifications to the plant, and operating procedures were reviewed and approved by the NRC. Several plants added additional AC power sources to comply with this regulation. Additional information about the NRC's station blackout rule is contained in question (12).

In addition, in response to the terrorist events of September 11, 2001, the NRC issued an Interim Compensatory Measures (ICM) Order requiring licensees to take certain actions to mitigate severe accident scenarios such as aircraft impact. These scenarios include the complete loss of offsite power and all on-site emergency power sources.

24) Are the spent fuel pools designed to resist earthquake shaking?

Spent fuel pools are constructed of reinforced concrete, several feet thick, with a stainless steel liner to prevent leakage and maintain water quality. Due to their configuration, spent fuel pools are inherently structurally-rugged and are designed to the same seismic requirements and ground motion levels as the nuclear plant.

25) Does the NRC have a research program that studies seismic and tsunami issues?

There is an extensive seismic and structural research program ongoing at the NRC. The Office of Nuclear Regulatory Research has several ongoing projects related to seismic hazard assessment for the Central and Eastern US. Research topics include seismic source characterization, development of improved ground motion prediction equations, and development of practical procedures to standardize the application of probabilistic seismic hazard assessment to nuclear plants. The Office of Nuclear Regulatory Research also manages a tsunami research program that focuses on bringing state-of the-art technical advances to the NRC regulatory process. Key focus areas of the program include landslide-induced tsunami, development of probabilistic methods of tsunami hazard assessment, and development of technical bases for new NRC guidance. Though the tsunami research program focuses on topics related specifically to nuclear facilities, more general scientific advances in assessment of tsunami hazard on the Atlantic Coast of the US has resulted from collaboration between NRC staff, the US Geological Survey (USGS), and the National Oceanic and Atmospheric Administration (NOAA). Information about the above programs and other NRC research activities can be found in NUREG-1925, which is available online at: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1925/r1/.

From: Haeg, Lucas
To: Orlikowski, Robert
Cc: Scarbeary, April; Riemer, Kenneth
Subject: FW: Puddle Sample Results
Date: Thursday, March 31, 2011 9:40:59 AM

FOIA 2011-0147 in-scope item

Lucas Haeg
Senior Resident Inspector - Duane Arnold
US Nuclear Regulatory Commission
lucas.haeg@nrc.gov
319-851-5111 (office)
(b)(6) (cell)

From: Haeg, Lucas
Sent: Friday, March 25, 2011 7:20 AM
To: Ring, Mark
Cc: Cameron, Jamnes
Subject: RE: Puddle Sample Results

That's correct. Do you need any more background on this?

I'll copy you & Jamnes on any new info while Ken is out of the office.

Lucas Haeg
US Nuclear Regulatory Commission
Senior Resident Inspector - Duane Arnold
lucas.haeg@nrc.gov
319-851-5111 (office)
(b)(6) (cell)

From: Ring, Mark
Sent: Friday, March 25, 2011 7:18 AM
To: Haeg, Lucas
Subject: RE: Puddle Sample Results

Luke,

I don't see what the isotope is – I-131?

-Mark

From: Haeg, Lucas
Sent: Friday, March 25, 2011 7:11 AM
To: Ring, Mark
Subject: FW: Puddle Sample Results

Sorry Mark – meant for Mitchell (although you would probably find the information interesting).

Lucas Haeg

0000/188

US Nuclear Regulatory Commission
Senior Resident Inspector - Duane Arnold
lucas.haeg@nrc.gov
319-851-5111 (office)
(b)(6) (cell)

From: Haeg, Lucas
Sent: Friday, March 25, 2011 7:09 AM
To: Riemer, Kenneth; Shah, Nirodh; Ring, Mark; Dickson, Billy; Phalen, Martin; Cassidy, John
Cc: Murray, Robert
Subject: FW: Puddle Sample Results

FYI. Some of you may have seen this already. Bob Porter should be providing their monitoring plan (air and rainwater) today.

Lucas Haeg
US Nuclear Regulatory Commission
Senior Resident Inspector - Duane Arnold
lucas.haeg@nrc.gov
319-851-5111 (office)
(b)(6) (cell)

From: Porter, Robert L [mailto:Robert.L.Porter@fpl.com]
Sent: Thursday, March 24, 2011 5:35 PM
To: Costanzo, Christopher; Curtland, Dean; Pry, Glen; Wheaton, Ray; Catron, Steve; Harter, Roy; Murray, Robert; Haeg, Lucas; Mitchell, Mark; Hansen, Paul; O'Hare, Kevin
Subject: FW: Puddle Sample Results

Fyi below from our sampling of offsite water today.

Robert L Porter Jr
Manager of Radiation Protection and Chemistry
NextEra Energy - Duane Arnold
3277 DAEC Rd
Palo, IA 52324
319-851-7891 office
(b)(6) *blackberry*
cell
pager

NEXTera ENERGY
DUANE ARNOLD

From: Funk, Steve
Sent: Thursday, March 24, 2011 5:32 PM
To: Porter, Robert L
Cc: Gordon, Tom; Karrick, John

Subject: Puddle Sample Results

Location	Sample Type	Date/Time	pCi/liter	Remarks
Onsite - ;etween River and "D" Well	Precip/Puddle	3/23/2011 10:00	24.5 pCi/liter	Puddle 120 meters SW of REMP D-19
Hiawatha - uthridge Park	Precip/Puddle	3/24/2011 07:50	<7.6 pCi/liter	Puddle water near REMP D-3 Sample collected from low spot in grass.
'edar Rapids - 'rairie Creek Station	Precip/Puddle	3/24/2011 08:20	23.1 pCi/liter	Puddle water near REMP D-1
:enter Point - New High School	Precip/Puddle	3/24/2011 08:50	23.8 pCi/liter	Puddle water near REMP D-6
Shellsburg - ;rain Elevator	Precip/Puddle	3/24/2011 09:30	23.2 pCi/liter	Puddle water near REMP D-3

Nelson, Robert

From: Nelson, Robert
Sent: Thursday, March 31, 2011 3:48 PM
To: Leeds, Eric
Subject: RE: FYI: NRR Comm Team SitRep - 3/31
Attachments: image001 png

Thanks. These guys are great!

NELSON

From: Leeds, Eric
Sent: Thursday, March 31, 2011 3:47 PM
To: Nelson, Robert
Cc: Markley, Michael
Subject: RE: FYI: NRR Comm Team SitRep - 3/31

OUTSTANDING!!!!! Kudos to the team!

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
301-415-1270

From: Nelson, Robert
Sent: Thursday, March 31, 2011 3:15 PM
To: Leeds, Eric; Grobe, Jack; Boger, Bruce; LIA06 Hoc; Steger (Tucci), Christine; Landau, Mindy; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Croteau, Rick; Burnell, Scott; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Quay, Theodore; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry
Cc: Burkhardt, Janet; Orf, Tracy; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott; Guzman, Richard; Lyon, Fred; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric
Subject: FYI: NRR Comm Team SitRep - 3/31

1. NRR Q&A database is up & running. **Try it, you'll like it!** Link:

http://portal.nrc.gov/edo/nrr/dorl/japan/Shared%20Documents/Questions%20and%20Answers.aspx

All have read access. Updates limited to selected NRR/DORL staff. Suggested additional Qs & As should be sent to Mike Markley & Eric Oesterle
Kudos to Mike Markley, Tracey Orf, Eric Oesterle & Janet Burkhardt for their ingenuity, creativity and efforts to envision and develop this tool in a very short period of time while managing the overall NRR Q&A process.

2. Met with Mindy Landau and her staff to coordinate communication activities.
3. Updated/developed 3 EPZ Qs & As; added to the database.
4. Continued to work with Eric Leeds on NGA presentation for 4/4.
5. Heads-Up: We got another expansive FOIA, this one from Greenpeace.
6. Short turnaround green tickets are beginning to impact licensing activities. Details to follow in e-mail with narrower distribution.

0000\189

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | (b b) | Fax: (301) 415-2102|
PS I turn (b) on Sunday

From: McIntyre, David
To: Medina, Veronika
Subject: Re: Media- question regarding operating license
Date: Tuesday, April 05, 2011 5:03:12 PM

Yes

David McIntyre
NRC Office of Public Affairs
(b)(6) (mobile)
301-415-8200 (office)
Sent from my BlackBerry, which is wholly respnsble for all typoos.

----- Original Message -----
From: Medina, Veronika
To: McIntyre, David
Sent: Tue Apr 05 16:47:59 2011
Subject: Media- question regarding operating license

Dave,

The answer to the first question is 40 years with the option of renewing the license for another 20 years, right?
Can you answer the other questions?

Please let me know.

Thanks,
Veronika

-----Original Message-----
From: takao ikeuchi [mailto: (b)(6)]
Sent: Tuesday, April 05, 2011 4:44 PM
To: Medina, Veronika
Subject: question regarding operating license

Dear Veronika,

My name is Takao Ikeuchi from Kyodo News. I am a Japanese news agency's correspondent who covers nuclear accident in Japan.

I am writing this email because I'd like to ask you a question regarding NRC regulation. Could you tell me how long operating license for nuclear power plant works generally? When will it expire once a company get a license?

There are many coverages in US about renewal of license these days. So I would like know the license system in US to compare the regulations in Japan.

I would appreciate if you could answer my question.

Sincerely,
Takao Ikeuchi

0000|190

Takao Ikeuchi

Staff Correspondent
Kyodo News Washington Bureau

529 14th St.,NW Suite400
Washington D.C. U.S.A. 20045
Tel:(202)347-5767
Fax:(202)393-2342
Mobile: (b)(6)
e-mail ikeuchi.takao@kyodonews.jp

Howe, Allen

From: Howe, Allen
Sent: Thursday, March 31, 2011 6:08 PM
To: Nelson, Robert; Giitter, Joseph
Cc: Cox, Linda
Subject: RE: FYI: Conference Call Tonight

DORL should not be on the call.

From: Nelson, Robert
Sent: Wednesday, March 30, 2011 1:04 PM
To: Giitter, Joseph; Howe, Allen
Cc: Cox, Linda
Subject: FYI: Conference Call Tonight

A conference call, "Industry Consortium Daily Call," appeared on DORLCAL for 10 AM today. This call has been postponed until 8 PM tonight. Agenda is attached & reproduced below. I have a conflict @ 8 PM and I don't see a compelling need for DORL involvement.

Call in: (b)(6)
Pass code: (b)(6)

NELSON

Purpose of the Meeting: Alignment of US Government and US Nuclear Industry support for Japan in responding to the Fukushima Nuclear Event.

Expected Outcome: Reinforce roles and responsibilities; identify problems and open issues surrounding our support

Meeting Chair: US NRC

- Roll Call
- Continued discussion of organizational Issues / Roles and Responsibilities
  - US Agency Roles and Leads
  - US Industry Support Structure and Roles
- INPO report on status of material requests
- INPO team report status of on-going work on requests for technical support
- Review Current Action Items Spreadsheet
- New Actions

0000/191

From: RST01B Hoc
Sent: Thursday, March 31, 2011 6:43 PM
To: Versluis, Rob
Subject: FW: 1800 EDT (March 31, 2011) USNRC Earthquake/Tsunami Status Update
Attachments: USNRC Earthquake-Tsunami Update.033111.1800EDT.pdf

Rob Versluis, PhD, DOE NE-71, 301-903-1890 (o) (b)(6) (m)

* * *

From: LIA07 Hoc
Sent: Thursday, March 31, 2011 5:56 PM
Subject: 1800 EDT (March 31, 2011) USNRC Earthquake/Tsunami Status Update

Attached, please find a 1800 EDT, March 31, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

This update contains new clarifying information regarding the Unit 4 spent fuel pool that is less optimistic than information shared earlier today.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Sara

Sara K. Mroz
Executive Briefing Team Coordinator
Office of Nuclear Security and Incident Response
US Nuclear Regulatory Commission
Sara.Mroz@nrc.gov
LIA07.HOC@nrc.gov (Operations Center)

Nelson, Robert

From: Nelson, Robert
Sent: Friday, April 01, 2011 10:44 AM
To: ExtensionRequest, EDO
Cc: FAST Resource, Wittick, Brian; Giitter, Joseph; Cox, Linda; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter, Thomas, Eric
Subject: Extension Request - G20110216
Attachments: Draft Interim Response on Japan; image001.png

Green Ticket: G20110216

Current Due Date: April 7, 2011

Action: Prepare response to 20+ questions raised by Dr. Nicholas R. White re: implications for US plants from the Fukushima Daiichi nuclear plant accident including concurrence from EDO and OCM.

Request: Please extend the due date to April 30, 2011

Reason for request: Response to this individual should be delayed until the proposed approach for responding to related Congressional inquiries (attached) is resolved to ensure consistency.

R.A. Nelson

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | (b6) | Fax: (301) 415-2102

0000/193

Rihm, Roger

From: Rihm, Roger
Sent: Friday, April 01, 2011 11:11 AM
To: Wittick, Brian
Cc: Meighan, Sean
Subject: RE: request as per Eric Leeds
Attachments: Testimony_Oral__March29_2011.docx

See attached. Note: the paragraph (starting bottom page 1) on current status in Japan may need some updating.

From: Wittick, Brian
Sent: Friday, April 01, 2011 11:00 AM
To: Rihm, Roger
Subject: FW: request as per Eric Leeds

Request final copy of Bill's presentation on the hill this week

Thanks
Brian Wittick
Executive Technical Assistant for Reactors
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-2496 (w) (b)(6) (c)

From: Meighan, Sean
Sent: Friday, April 01, 2011 10:54 AM
To: Wittick, Brian
Subject: request as per Eric Leeds

Brian:

Eric requested I obtain a copy of the briefing/presentation that the EDO presented on the hill this week. Eric is giving a presentation to the National Governors' Association (their energy people) Monday.

Very Respectfully

Sean C. Meighan
Technical Assistant
Nuclear Reactor Regulation
Division of Operating Reactor Licensing
U.S. Nuclear Regulatory Commission
301-415-1020

0000/194

NRC Response to Recent Nuclear Events in Japan and the Continuing Safety of the U.S. Commercial Nuclear Reactor Fleet

The staff of the NRC is deeply saddened by the tragedy in Japan. I and many of my colleagues on the NRC staff have had many years of very close and personal interaction with our regulatory counterparts and we would like to extend our condolences to them.

Introduction

The NRC is mindful that our primary responsibility is to ensure the adequate protection of the public health and safety of the American people. We have been very closely monitoring the activities in Japan and reviewing all currently available information. Review of this information, combined with our ongoing inspection and licensing oversight, allows us to say with confidence that the U.S. plants continue to operate safely. There has been no reduction in the licensing or oversight function of the NRC as it relates to any of the U.S. licensees. Notwithstanding the very high level of support being provided as a result of events in Japan, we continue to maintain our focus on our domestic responsibilities.

Overview of Events and the NRC's Immediate and Continuing Response to Events in Japan

On Friday, March 11th an earthquake hit Japan, resulting in the shutdown of more than 10 reactors. From what we know now, it appears that the reactors' response to the earthquake went according to design. The ensuing tsunami, however, appears to have caused the loss of normal and emergency AC power to six units at the Fukushima Daiichi site; and it is those six units that have received the majority of our attention since that time.

At this time, it is our assessment that Units One, Two, and Three have experienced some degree of core damage, but that they are currently stable and being cooled with fresh water. Units Two and Three appear to have some primary containment damage. There have been releases of radioactivity that are of continuing significant concern, including significant

contamination in the lower levels of the Unit 2 and Unit 3 turbine buildings. The spent fuel pools on Units One through Four have experienced varying water levels, but also have been receiving seawater from helicopters and spray systems. The Unit 2 spent fuel pool has now started receiving fresh water and they are trying to change all the units from fire trucks to normal pumping in the next few days. Tokyo Electric Power Company has restored electric power to the site and the six reactor control rooms, and the situation, in general, continues to further stabilize, although many hurdles remain.

Shortly after 4:00 AM on Friday, March 11th, the NRC Emergency Operations Center made the first call to inform NRC management of the earthquake. We went into the monitoring mode at the Emergency Operations Center and the first concern for the NRC was possible impacts of a tsunami on U.S. plants and radioactive materials on the West Coast, and in Hawaii, Alaska, and U.S. Territories in the Pacific.

On that same day, we began interactions with our Japanese regulatory counterparts and dispatched two experts to Japan to help at the embassy. By Monday, March 14th, we had dispatched a total of 11 staff to Japan. We have subsequently rotated in additional staff to continue our on-the-ground assistance in Japan. The areas of focus for this team are: 1) to assist the Japanese government with technical support as part of the USAID response; and 2) to support the U.S. ambassador. While our focus now is on helping Japan in any way that we can, the experience will also help us assess the implications for U.S. citizens and the U.S. reactor fleet in as timely a manner as possible.

Let me also just note here in concluding this section of my remarks that the.U.S. government has an extensive network of radiation monitors across the country. We feel confident, based on current data from monitoring at nuclear power plants and through the Environmental Protection Agency's system, that there is no reason for concern in the U.S. regarding radioactive releases from Japan.

Continuing Confidence in the Safety of U.S. Nuclear Power Plants

I will now turn to the factors that assure us of ongoing domestic reactor safety. We have, since the beginning of the regulatory program in the United States, used a philosophy of Defense-in-Depth, which recognizes that nuclear reactors require the highest standards of design, construction, oversight, and operation, and does not rely on any single level of protection for public health and safety.

There are multiple physical barriers to fission product release at every reactor design, and beyond that, there are both diverse and redundant safety systems that are required to be maintained in operable condition and frequently tested to ensure that the plant is in a high condition of readiness to respond to any scenario.

Beyond this, we've taken advantage of the lessons learned from previous operating experience to implement a program of continuous improvement for the U.S. reactor fleet. We have learned from experience across a wide range of situations, including, most significantly, the Three Mile Island accident in 1979. As a result of those lessons learned, we have significantly revised emergency planning requirements and emergency operating procedures. We have addressed many human factors issues regarding how control room employees operate the plant, we added new requirements for hydrogen control to help prevent explosions inside of containment, and we also created requirements for enhanced control room displays of the status of pumps and valves.

We have a post-accident sampling system that enables the monitoring of radioactive material release and possible fuel degradation. And, one of the most significant changes after Three Mile Island was expansion of the Resident Inspector Program, which has at least two full-time NRC inspectors on site at each facility who have unfettered access to all licensees' activities 24 hours a day, seven days a week.

As a result of operating experience and ongoing research programs, we have developed requirements for severe accident management guidelines.

Our program of continuous improvement based on operating experience will now include

evaluation of the significant events in Japan. We've already begun enhancing inspection activities through temporary instructions to our inspection staff to look at licensees' readiness to deal with both design basis accidents and beyond-design basis accidents. We've also issued an information notice to licensees to make them aware of the events in Japan, and advising them to verify their capabilities to mitigate conditions that result from severe accidents.

Over the past 20 years, there have been a number of new rulemakings that have enhanced the domestic fleet's preparedness against some of the problems we are seeing in Japan. For example, the station blackout rule requires every plant in this country to analyze what the plant response would be if it were to lose all alternating current so that it could respond using batteries for a period of time, and then have procedures in place to restore alternating current to the site and provide cooling to the core.

The hydrogen rule requires modifications to reduce the impacts of hydrogen generated for beyond-design basis events and core damage. Regarding the type of containment design used by the most heavily damaged plants in Japan, we have had a Boiling Water Reactor Mark I Containment Improvement Program since the late 1980s, which has required installation of hardened vent systems for containment pressure relief, as well as enhanced reliability of the automatic depressurization system.

The Path Ahead

Beyond the initial steps to address the experience from the events in Japan, the Chairman, with the full support of the Commission, directed the NRC staff to establish a senior level agency task force to conduct a methodical and systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system and make recommendations to the Commission for its policy direction. This activity will have both near-term and longer-term objectives.

For the near term effort, we are beginning a 90-day review. This review will evaluate all of the currently available information from the Japanese events to identify immediate or

near-term operational or regulatory issues potentially affecting the 104 operating reactors in the U.S., including their spent fuel pools. Areas of investigation will include the ability to protect against natural disasters, response to station blackouts, severe accidents and spent fuel accident progression, radiological consequence analysis, and severe accident management issues regarding equipment. Over this 90-day period, we will develop recommendations, as appropriate, for changes to inspection procedures and licensing review guidance, and recommend whether generic communications, orders, or other regulatory requirements are needed.

This 90-day effort will include a 30-day Quick Look Report to the Commission to provide a snapshot of the regulatory response and the condition of the U.S. fleet based on information we have available at that time. At the end of the 90-day period, a report will be provided to the Commission.

The task force's longer-term review will begin as soon as the NRC has sufficient technical information from the events in Japan. The task force will evaluate all technical and policy issues related to the event to identify additional potential research, generic issues, changes to the reactor oversight process, rulemakings, and adjustments to the regulatory framework that should be pursued by the NRC. A report with appropriate recommendations will be provided to the Commission within 6 months of the start of this evaluation. Both the 90-day and final reports will be made publicly available in accordance with normal Commission processes.

Conclusion

In conclusion, I want to reiterate that we continue to make our domestic responsibilities for licensing and oversight of the U.S. licensees our top priority and that the U.S. plants continue to operate safely. At the same time, we are undertaking a thorough look at the events in Japan and their lessons for us. Based on these efforts, we will take all appropriate actions necessary to ensure the continuing safety of U.S. nuclear power plants.

Nelson, Robert

From: Nelson, Robert
Sent: Friday, April 01, 2011 3:17 PM
To: Burnell, Scott
Subject: RE: FYI: NRR Comm team SitRep - 4/1
Attachments: image001.png

Briefing is to Nat'l Governors Assoc Center for Best Practices. Therefore, I don't believe governors will be there. I believe the presentation is in-person. Eric is preparing slides and talking points.

NELSON

From: Burnell, Scott
Sent: Friday, April 01, 2011 3:06 PM
To: Nelson, Robert
Subject: RE: FYI: NRR Comm team SitRep - 4/1

To the governors themselves, right? Telecon or in person? I don't recall Eliot mentioning it, and this could attract a good deal of media attention.

From: Nelson, Robert
Sent: Friday, April 01, 2011 3:05 PM
To: Burnell, Scott
Subject: RE: FYI: NRR Comm team SitRep - 4/1

Correct

NELSON

From: Burnell, Scott
Sent: Friday, April 01, 2011 2:53 PM
To: Nelson, Robert
Subject: RE: FYI: NRR Comm team SitRep - 4/1

Bob – Eric's briefing who on Monday? National Governor's Association?

From: Nelson, Robert
Sent: Friday, April 01, 2011 2:52 PM
To: Boger, Bruce; Burnell, Scott; LIA06 Hoc; Leeds, Eric; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Croteau, Rick; Landau, Mindy; Steger (Tucci), Christine; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Quay, Theodore; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry
Cc: Hay, Michael; West, Steven; Shear, Gary; Orf, Tracy; Stang, John; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott; Guzman, Richard; Lyon, Fred; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric
Subject: FYI: NRR Comm team SitRep - 4/1

1. Responded to 6 quick turn-around Qs & As from Region I to support a meeting with the NH State Legislature on Monday

0000/195

2. Responded to three quick turn-around Qs from OCA regarding hydrogen generation/recombiners to support a Congressional hearing on Wednesday. Many thanks to Tracey Orf & John Stang who researched all plant tech specs for related tech spec requirements.
3. Responded to a Q from the Chairman's office.
4. Screened one potentially sensitive licensing action on Thursday – result was normal processing. None was awaiting review on Friday.
5. Continued support for Eric Leeds brief to NGA on 4/4. Expect to complete by COB but will support this weekend if needed.

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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Protecting People and the Environment

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Nelson, Robert

From: Nelson, Robert
Sent: Monday, April 04, 2011 9:49 AM
To: ExtensionRequest, EDO
Subject: RE: Extension Request - G20110216
Attachments: image001.png

Thanks!

NELSON

From: ExtensionRequest, EDO
Sent: Monday, April 04, 2011 9:46 AM
To: ExtensionRequest, EDO; Nelson, Robert
Cc: FAST Resource; Wittick, Brian; Giitter, Joseph; Cox, Linda; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric
Subject: RE: Extension Request - G20110216

Nelson,

After looking at the calendar, the new OEDO due date will be 04/29/11 and the new due date to SECY will be 05/03/11.

Thanks,
Kathy

From: ExtensionRequest, EDO
Sent: Monday, April 04, 2011 7:58 AM
To: Nelson, Robert
Cc: FAST Resource; Wittick, Brian; Giitter, Joseph; Cox, Linda; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric
Subject: RE: Extension Request - G20110216

Nelson,

OEDO has approved your extension request. The new OEDO due date is 04/30/11.

Kathy

From: Nelson, Robert
Sent: Friday, April 01, 2011 10:44 AM
To: ExtensionRequest, EDO
Cc: FAST Resource; Wittick, Brian; Giitter, Joseph; Cox, Linda; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric
Subject: Extension Request - G20110216

Green Ticket: G20110216

Current Due Date: April 7, 2011

Action: Prepare response to 20+ questions raised by Dr. Nicholas R. White re: implications for US plants from the Fukushima Daiichi nuclear plant accident including concurrence from EDO and OCM.

0000/196

Request: Please extend the due date to April 30, 2011

Reason for request: Response to this individual should be delayed until the proposed approach for responding to related Congressional inquiries (attached) is resolved to ensure consistency.

R.A. Nelson

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
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Nelson, Robert

From:	Nelson, Robert
Sent:	Monday, April 04, 2011 4:01 PM
To:	Leeds, Eric; Boger, Bruce; LIA06 Hoc; Burnell, Scott; Landau, Mindy; Steger (Tucci), Christine; Croteau, Rick; Lara, Julio; Kennedy, Kriss; Roberts, Darrell, Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie, Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian, Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry
Cc:	Shear, Gary, West, Steven; Hay, Michael; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold, Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott
Subject:	FYI: NRR Comm Team SitRep - 4/4
Attachments:	image001.png

1. Drafted response to Lt Gov of NY; placed in concurrence.
2. Screened two potentially sensitive licensing actions (3 TACs) resulting in normal processing.
3. Responding to comments on Eric Leeds presentation.
4. Reviewed & concurred on a RI response to the County Executive for Westchester County (which hosts Indian Point).
5. Responded to a comment from Commissioner Ostendorff's office concerning draft testimony.

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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0000/197

Nelson, Robert

From: Nelson, Robert
Sent: Monday, April 04, 2011 4:09 PM
To: Markley, Michael; Oesterle, Eric
Subject: ACTION: Testimony
Attachments: Testimony_April6_2011_Rev3.docx

Importance: High

High priority for Tuesday

NELSON

From: Giitter, Joseph
Sent: Monday, April 04, 2011 4:07 PM
To: Nelson, Robert; Howe, Allen
Subject: FW: Testimony

I might be useful to have someone in DORL look this over and identify any major factual errors.

From: Rihm, Roger
Sent: Monday, April 04, 2011 4:02 PM
To: Giitter, Joseph; McDermott, Brian
Cc: Nelson, Robert; Howe, Allen; Marshall, Jane
Subject: RE: Testimony

This testimony was based on Bill Borchardt's remarks before the Commission a couple of weeks ago. He gave similar testimony before congress last week. The "horse has already left the barn" on this one, but if NRR has substantive concerns, please get back to me ASAP. Marty is giving testimony on Weds.

From: Giitter, Joseph
Sent: Monday, April 04, 2011 3:59 PM
To: McDermott, Brian
Cc: Rihm, Roger; Nelson, Robert; Howe, Allen; Marshall, Jane
Subject: RE: Testimony

Thanks Brian. I agree. Could you forward me the attachment and we'll take a look at it.

From: McDermott, Brian
Sent: Monday, April 04, 2011 3:08 PM
To: Rihm, Roger; Marshall, Jane
Cc: Giitter, Joseph; Nelson, Robert; Howe, Allen
Subject: Re: Testimony

Roger,

I would recommend to OCA that they vette the statement with NRR. I recall some of the post TMI items, such as the post accident sampling station, being removed under a licensing action at one site. It may have been because they developed an alternative however the program office would be the best group to validate broad statements regarding the current state of required post TMI equipment.

Regards,
Brian

0000/198

Brian J. McDermott
(D6)

From: Rihm, Roger
To: Marshall, Jane
Cc: McDermott, Brian
Sent: Mon Apr 04 10:24:55 2011
Subject: RE: Testimony

Thanks, Jane. I'll let you know if OCA wants anything additional. I appreciate your efforts.

From: Marshall, Jane
Sent: Sunday, April 03, 2011 12:29 PM
To: Rihm, Roger; Schmidt, Rebecca
Cc: McDermott, Brian
Subject: Testimony

Here is the testimony with additional information on the incident response program changes that resulted from the TMI experience. If you have any questions, please let me know.

Nelson, Robert

From: Nelson, Robert
Sent: Tuesday, April 05, 2011 10:55 AM
To: Wertz, Trent
Subject: RE: Action: NRR Comm Team SitRep - 4/4
Attachments: image001.png

Thanks!

NELSON

From: Wertz, Trent
Sent: Tuesday, April 05, 2011 10:52 AM
To: Nelson, Robert; Meighan, Sean; Nguyen, Quynh
Cc: Markley, Michael; Oesterle, Eric; Ruland, William
Subject: RE: Action: NRR Comm Team SitRep - 4/4

I've got it.

From: Nelson, Robert
Sent: Tuesday, April 05, 2011 10:51 AM
To: Meighan, Sean; Nguyen, Quynh; Wertz, Trent
Cc: Markley, Michael; Oesterle, Eric; Ruland, William
Subject: Action: NRR Comm Team SitRep - 4/4
Importance: High

One of you, please take the lead and get together with Bill to determine the types of Qs & As that he needs Then query the database & advise Markley of any gaps that the team needs to fill.

Please respond to me with the agreed upon lead.

NELSON

From: Ruland, William
Sent: Tuesday, April 05, 2011 8:31 AM
To: Nelson, Robert
Subject: RE: FYI: NRR Comm Team SitRep - 4/4

Nelson,

I will be leading the effort for the staff briefing of the ACRS on Thursday. I'd appreciate it if you could compile some Q&A's for my review so that I give consistent answers if asked.

Thanks a bunch.

Bill

From: Nelson, Robert
Sent: Monday, April 04, 2011 4:01 PM
To: Leeds, Eric; Boger, Bruce; LIA06 Hoc; Burnell, Scott; Landau, Mindy; Steger (Tucci), Christine; Croteau, Rick; Lara, Julio; Kennedy, Kriss; Roberts, Darrell; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee,

0000/199

Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry
Cc: Shear, Gary; West, Steven; Hay, Michael; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott
Subject: FYI: NRR Comm Team SitRep - 4/4

1. Drafted response to Lt Gov of NY; placed in concurrence.
2. Screened two potentially sensitive licensing actions (3 TACs) resulting in normal processing.
3. Responding to comments on Eric Leeds presentation.
4. Reviewed & concurred on a RI response to the County Executive for Westchester County (which hosts Indian Point).
5. Responded to a comment from Commissioner Ostendorff's office concerning draft testimony.

R.A. Nelson

Robert A. Nelson
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Nelson, Robert

From: Nelson, Robert
Sent: Wednesday, April 06, 2011 8:33 AM
To: Cheok, Michael
Cc: Burnell, Scott; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric; Wertz, Trent
Subject: RE: Information request from Cong. staffer

1. Let us know if you need help
2. If you prepare Qs & As, keep us informed so we can add to our database.
3. Let us know the date/time of the briefing/telecom.

Thanks

NELSON

From: Cheok, Michael
Sent: Wednesday, April 06, 2011 8:20 AM
To: Nelson, Robert
Subject: FW: Information request from Cong. staffer
Importance: High

Nelson – FYI as Comm Czar.

I have proposed that Steve Laur and I will be the contacts. What else should I be doing in terms of keeping you in the loop?

From: Wertz, Trent
Sent: Tuesday, April 05, 2011 4:25 PM
To: Cheok, Michael
Cc: Lee, Samson; Harrison, Donnie; Nguyen, Quynh
Subject: FW: Information request from Cong. staffer
Importance: High

Mike,

See request below. Do you have someone in mind?

Thanks,
Trent

From: Wittick, Brian
Sent: Tuesday, April 05, 2011 4:22 PM
To: Wertz, Trent; Nguyen, Quynh
Subject: Fw: Information request from Cong. staffer

Request a POC to discuss PRA as below.

Thanks

Sent from NRC BlackBerry
Brian Wittick
(b6)

0000/200

From: Riley (OCA), Timothy
To: Wittick, Brian
Sent: Tue Apr 05 16:09:37 2011
Subject: Information request from Cong. staffer

Good afternoon,
A staffer from Rep. Markey's office would like to better understand Probabilistic Risk Analysis that the NRC uses. I would like to have someone who can explain the concepts and parameters of our PRA program to him conduct a phone briefing, if possible.
Here is my gist of his questions:
The GI-199 contains finite risk calculations and, apparently, risk thresholds. How are those thresholds determined? Are there thresholds for other safety concerns like there are for seismic, e.g. flood or tsunami? Does the NRC have a risk calculation for each plant?
In licensing and license renewal, I understand the NRC takes into account site-specific risks and then determines if the plant could withstand that threat. Is there some way of analyzing which plants have comparatively more or less risk than others?

Please recommend an appropriate staff representative who might be able to explain these concepts.
Thank you,

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
(b6)

Nelson, Robert

From: Nelson, Robert
Sent: Wednesday, April 06, 2011 9:31 AM
To: Beasley, Benjamin
Cc: Markley, Michael; Oesterle, Eric
Subject: RE FAQ repository in NRR
Attachments: image001.png

Thanks for your assistance. Please keep me informed of your Q&A progress.

When you forward us your OPA-approved Qs & As, please also provide suggested key words so we can update the database search criteria.

Regarding our Qs & As, they were developed by technical experts, not our Comm Team, or technically reviewed before they were forwarded to OPA for approval The database now includes over 120 Qs & As. I simply don't have the resources to conduct a wholesale review If you have comments on specific Qs & As, please forward them to me and we'll review.

Again, thanks for your help.

R.A. Nelson

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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United States Nuclear Regulatory Commission
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From: Beasley, Benjamin
Sent: Wednesday, April 06, 2011 9:07 AM
To: Hiland, Patrick; Nelson, Robert
Cc: Kauffman, John; Bensi, Michelle; Hogan, Rosemary; Correia, Richard
Subject: RE: FAQ repository in NRR

Robert,

Regarding the GI-199 Comm Plan Q&As, it was a unanimous feeling among NRR, RES and OPA that we could release them to the public. I think it would be very helpful if they were posted publicly.

Regarding other Q&As, we have an extensive set (see attached outline) of questions that originated from RES staff in the Ops Center. (I believe your Q&As originated from the same source.) We are editing and correcting the set now. We are checking against your SharePoint Q&As to prevent duplicates

In addition to the OPA review, I recommend that you consider a technical review of your Q&As before releasing them to the public. We have found that not all answers were accurate due to the haste in which they were assembled.

We will complete our set and forward them to OPA as soon as possible.

0003/201

Regards,
Ben Beasley

From: Hiland, Patrick
Sent: Wednesday, April 06, 2011 8:42 AM
To: Nelson, Robert
Cc: Beasley, Benjamin; Kauffman, John
Subject: RE: FAQ repository in NRR

Nelson, the GI-199 communication plan (ML081850477) has a number of Qs and As. I believe folks were trying to make the entire communication plan a public document, but inclusion of the Qs and As in your site seems appropriate. Research owns the communication plan, so I've cc'd cognitive folks who could weigh in.

From: Nelson, Robert
Sent: Wednesday, April 06, 2011 7:52 AM

Subject: FAQ repository in NRR

As you may know, NRR has established a very comprehensive SharePoint site for Frequently Asked Questions regarding the Japan event. These questions were initially intended to be used internally so that all staff responding to questions from stakeholders could provide a consistent response and so that similar questions would not have to be researched several times over. The site is located at: http://portal.nrc.gov/edo/nrr/dorl/japan/Shared%20Documents/Questions%20and%20Answers.aspx

We would like to make this FAQ site available to the public as the primary consolidated site for all FAQs related to the event. To this end, I am asking your assistance by notifying us as to whether FAQs have been gathered in your office and would be appropriate for the public site. The FAQs should be sufficiently "high-level" so that they would typically be asked by a member of the public. We are not seeking very technical, detailed FAQs. They should also be FAQs that do not already appear on the SharePoint site. If your office has developed such FAQs, please send them to Beth Hayden, in OPA, who has agreed to review them to ensure they are appropriate for public release. You should then forward the OPA-approved FAQs to NRR (Eric Oesterle) for incorporation on to the SharePoint site.

Our goal is to make the site available over the course of the next week or so and then incorporate any additional OPA-vetted FAQs on to the site as soon as practicable.

Please let Mindy Landau or I know if you have any questions and thank you for your assistance and thank to NRR for this outstanding initiative!

Mary

From: Breskovic, Clarence
To: Breskovic, Clarence
Subject: Magnitude 7.4 earthquake hits off Japan coast
Date: Thursday, April 07, 2011 11:03:13 AM

Seattle Post Intelligencer
Updated 07:51 a.m., Thursday, April 7, 2011

TOKYO (AP) — Japan's northeastern coast has been rattled by a strong aftershock. The Japan meteorological agency has issued a tsunami warning for a wave of up to one meter. The warning was issued for a coastal area already ravaged by last month's tsunami.

Officials say the quake was a 7.4-magnitude and hit 25 miles (40 kilometers) under the water and off the coast of Miyagi prefecture. The quake that preceded last month's tsunami was a 9.0-magnitude.

Buildings as far away as Tokyo shook for about a minute.

USGS Data: http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/usc0002ksa.php#maps

Clarence Breskovic
International Policy Analyst
U.S. Nuclear Regulatory Commission
Office of International Programs
11555 Rockville Pike
Rockville, MD 20852, USA
Tel: 1-301-415-2364
Fax: 1-301-415-2395
Alternate Email: (b)(6)

0000/202

Dentel, Glenn

From: Dentel, Glenn
Sent: Thursday, April 07, 2011 2:29 PM
To: Patel, Amar
Subject: FW: Earthquake Update as of 11 am
Attachments: NPP_Japan_map2011.pdf

From: Dentel, Glenn
Sent: Friday, March 11, 2011 3:46 PM
To: Perry, Neil; Ibarrola, Sherlyn; Casey, Lauren; Hunegs, Gordon; Kolaczyk, Kenneth; Dempsey, Douglas; Patel, Amar; Hawkins, Justin; Cronk, Kevin
Subject: FW: Earthquake Update as of 11 am

FYI on Japan.

From: Clifford, James
Sent: Friday, March 11, 2011 3:24 PM
To: Bellamy, Ronald; Burritt, Arthur; Dentel, Glenn; Gray, Mel; Jackson, Donald; Krohn, Paul; Powell, Raymond
Subject: FW: Earthquake Update as of 11 am

More earthquake information

Jim Clifford
Deputy Director
Division of Reactor Projects
Region I

From: Brown, Frederick
Sent: Friday, March 11, 2011 12:20 PM
To: Cheok, Michael; Christensen, Harold; Croteau, Rick; Roberts, Darrell; Clifford, James; Jones, William; Kennedy, Kriss; Miller, Chris; Moorman, James; Munday, Joel; OBrien, Kenneth; Reynolds, Steven; Shear, Gary; Pruett, Troy; Vegel, Anton; West, Steven; Wilson, Peter
Subject: FW: Earthquake Update as of 11 am

FYI – item 4c of most interest

From: Thomas, Eric
Sent: Friday, March 11, 2011 11:13 AM
To: Brown, Frederick
Cc: Thorp, John; Garmon-Candelaria, David; Bernardo, Robert; Haskell, Russell; Pannier, Stephen
Subject: Earthquake Update as of 11 am

Fred,

I have been monitoring the phone and email traffic as best I can this morning. There is a lot of repetition so I think it may be useful to summarize the salient points every couple of hours. Here is what I have as of 11:00. I am going over to the Ops Center to see what I can pickup on the 11:00 and 11:45 calls. Based on the amount of traffic going around, you may find it useful (or not) to forward this to ET/LT members.

0000/203

The following information was gathered from several different sources. The best online source of information we have noted thus far is the Tokyo Electric Power Company (TEPCO) website: http://www.tepco.co.jp/en/index-e.html which is issuing hourly press releases on the status of its facilities.

1. A magnitude 8.9 earthquake occurred approximately 80 km east of Onagawa NPP and 150 km NE of Fukushima Daichi. USGS believes the quake may have actually been a 7.9. 5 aftershocks measuring between 6.2 and 7.1 on the Richter Scale have been reported.
2. Based on stack monitoring, no radiation releases have occurred from any nuclear facilties.
3. All units that were operating at the time at the Onagawa, Fukushima Daichi, Fukushima Daini, and Tokai Daini sites (11 units in all) automatically shutdown when the earthquake hit at 2:45 pm local time on 3/11.
4. The following complications occurred:
    a. Onagawa – A small fire occurred in the turbine building and was extinguished.
    b. Fukushima Daichi – A small fire occurred in a service building and was subsequently extinguished.
    c. Fukushima Daichi – A first level emergency was declared at 3:42 pm local on 3/11 due to a loss of offsite power and subsequent failure of EDGs which resulted in a station blackout. The loss of EDGs may have been due to a seawater cooling issue. A backup EDG was being brought in on a truck to provide power. An evacuation has been ordered out to 3 km, and residents have been told to shelter in place out to 10 km.
    d. Fukushima Daini – RCIC is providing cooling to all 4 units that shutdown. In Unit 1, ECCS actuated due to a possible RCS leak into containment. The first level emergency declaration also applies to Fukushima Daini Unit 1.

Eric Thomas
U.S. Nuclear Regulatory Commission
NRR/DIRS/IOEB
OWFN-7E24
eric.thomas@nrc.gov
301-415-6772 (office)
(b)(6) (mobile)

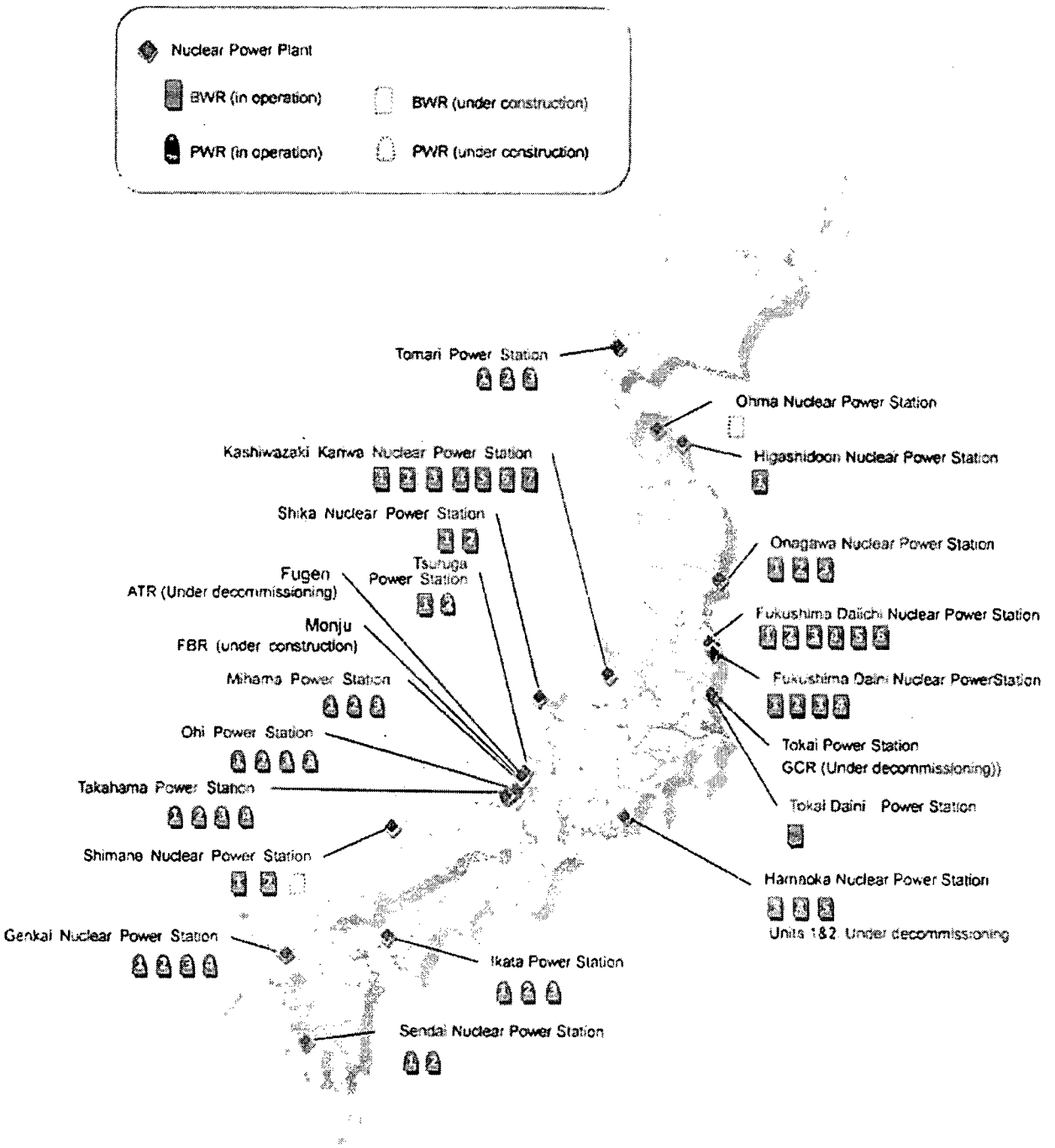

Fig. A-2 Locations of Nuclear Installations

Dentel, Glenn

From: Dentel, Glenn
Sent: Thursday, April 07, 2011 2:34 PM
To: Patel, Amar
Subject: FW: March 13, 2011, 3:00pm Japan Nuclear Facility Updates
Attachments: 2011 rev. 1 TOKYO ELECTRIC POWER COMPANY.docx

---Original Message----
From: samuel hansell [mailto: (b)(6)
Sent: Sunday, March 13, 2011 4:55 PM
To: Dean, Bill; Lew, David; Wilson, Peter; Roberts, Darrell; Collins, Daniel; Lorson, Raymond; Baker, Pamela; Walker, Tracy; Sunil.Weerakoddy@nrc.gov; Clifford, James; Miller, Chris
Cc: Screnci, Diane; Sheehan, Neil; Trapp, James; McNamara, Nancy; Tifft, Doug; Dentel, Glenn; Hansell, Samuel; Hinson, Felicia; raymond.McKinely@nrc.gov
Subject: March 13, 2011, 3:00pm Japan Nuclear Facility Updates

Everyone,

Jim Trapp has arrived in Tokyo at the US Ambassador Office and has successfully provided a good source of current Japanese nuclear plant data. He has a scheduled

meeting with Japanese officials in four hours to obtain additional information related to the status of the nuclear power plants.

Fukushima Daiichi Units 1 and 3 have experienced core damage; the reactor cores were completely uncovered for a period of time; reactor water level was restored on Unit 1.

Sea water injection is in progress on Unit 3, however there is no indication that the reactor water level is restored above the fuel zone level on Unit 3.

Fukushima Daiichi Unit 2 reactor condition has improved. DC electrical power has been restored and Reactor Core Isolation Cooling (RCIC) has restored water level to above the fuel zone.

Latest information has stated that the reactor vessel and primary containment structures are still intact for all of the nuclear units; there is intermittent venting of the primary

containment (to the atmosphere) to maintain internal pressure within design limits.

The radiation readings on the US aircraft carrier Ronald Reagan was measured at
0.6 millirem; this radiation reading is consistent with the containment venting operation of the Fukushima reactors.

NRC has issued a press release stating that "no harmful radiation release has reached the US; additional press releases to follow.

The NRC Chairman's Senate Hearing scheduled for this Wednesday will now focus on the Japanese nuclear plant followup actions and not the previous budget discussion topic.

An erroneous release of projected Japanese plant release plume data, using the NRC logo without our knowledge, contains information that the release rates could be as high as 75 Rem and reach Colorado, USA.

0000\204

There has been an attempt to remove this mis-leading and unauthorized information; however the info still may exist on some social media locations.

Next Japan update call is tonight at 11:30 pm; I plan to listen in on the call.

Thanks,
Sam H

Tokyo Electric Power Company recent updates (recent press release details attached):

- The value of radioactive material (iodine, etc) is increasing according to the monitoring car at the site (outside).

- We are currently coordinating with the relevant authorities and departments as

to how to cool down the water in the spent nuclear fuel pool.

Daiichi Unit 2's latest report noted that the high pressure Reactor Core Isolation Cooling (RCIC) system is injecting water into the reactor vessel; however vessel level is below normal levels and this reactor could be vulnerable

to further degradation.

The US aircraft carrier Ronald Reagan is 100 miles off the coast of Japan and is

being used by helicoptersfor supply delivery and rescueefforts. The radiation air monitors are detecting radiation releases form the nuclear plants; when asked the HQs briefer could not provide the initial radiation levels until they're verified with backup readings. Also, the helicoptersreturning to the aircraft carrier were found to have low levels of contamination; again no values

of the contamination levels at this time.

The White House plans to issue a press release "soon" that will stress the need for effective communication of the Japanese nuclear plants' status; the ongoing US support for the Japanese emergency response efforts; and the fact that the US

plants are not at risk.

The NRC has prepared a press release and will release if the White House press release does not include sufficient details about the ongoing nuclear reactor recovery efforts

Press Release (Mar 13,2011)
Plant Status of Fukushima Daiichi Nuclear Power Station (as of 9pm March 13th)

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down.

[There is no update from the previous press release.]

Unit 1(Shut down)
- Reactor has been shut down. However, the unit is under inspection due to the explosive sound and white smoke that was confirmed after the big quake occurred at 3:36PM.
- We have been injecting sea water and boric acid which absorbs neutron into the reactor pressure vessel.

Unit 2(Shut down)
- Reactor has been shut down and Reactor Core Isolation Cooling System has been injecting water to the reactor. Current reactor water level is lower than normal level, but the water level is steady. After fully securing safety, measures to lowering the pressure of reactor containment vessel has been taken, under the instruction of the national government.

Unit 3(Shut down)
- Reactor has been shut down. However, as High Pressure Core Injection System has been automatically shut down and water injection to the reactor was interrupted, following the instruction by the government and with fully securing safety, steps to lowering the pressure of reactor containment vessel has been taken. Spraying in order to lower pressure level within the reactor containment vessel has been cancelled.

- After that, safety relief valve has been opened manually, lowering the pressure level of the reactor, which was immediately followed by injection of boric acid water which absorbs neutron, into the reactor pressure vessel.

Unit 4 (shut down due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 5 (outage due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 6 (outage due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Others

- We are currently coordinating with the relevant authorities and departments as to how to secure the cooling water to cool down the water in the spent nuclear fuel pool.

- We measured radioactive materials inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is higher than ordinary level. Also, the level at monitoring post is higher than ordinary level. We will continue to monitor in detail the possibility of radioactive material being discharged from exhaust stack or discharge canal. The national government has instructed evacuation for those local residents within 20km radius of the periphery because it's possible that radioactive materials are discharged.

- We will continue to take all measures to restore the security of the site and to monitor the environment of the site periphery.

Corporate Information

Press Releases

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Press Release (Mar 13,2011)
Impact to TEPCO's Facilities due to Miyagiken-Oki Earthquake (as of 3:00PM)

Below is major impact to TEPCO's facilities due to the Miyagiken-Oki Earthquake that occurred yesterday at 2:46PM.
*new items are underlined

[Nuclear Power Station]
Fukushima Daiichi Nuclear Power Station:
Units 1 to 3: shutdown due to earthquake
Units 4 to 6: outage due to regular inspection

* The national government has instructed evacuation for those local residents within 20km radius of the site periphery.

*** The value of radioactive material (iodine, etc) is increasing according to the monitoring car at the site (outside).**

* Since the amount of radiation at the boundary of the site exceeds the limits, we decide at 4:17PM, Mar 12 and we have reported and/or noticed the government agencies concerned to apply the clause 1 of the Article 15 of the Radiation Disaster Measure at 5PM, Mar 12. The radiation dose at the monitoring post decreased once. Today, the measured value revamped and the radiation dose measured at site boundary exceeded the limiting value again. As such, at 8:56AM, today, it was determined that a specific incident stipulated in article 15, clause 1 occurred and at 09:01AM, today, notified accordingly.
After that, the measured value by the monitoring car decreased once, however the value revamped and the radiation dose measured at site boundary exceeded the limitation again. As such, at 2:15PM, today, it was determined that a specific incident stipulated in article 15, clause 1 occurred and at 02:23PM, today, notified accordingly.
* In addition, a vertical earthquake hit the site and big explosion has happened near the Unit 1 and smoke breaks out around 3:36PM, Mar 12th.
* Unit 1: We started injection of sea water into the reactor core at 8:20PM, Mar 12 and then boric acid subsequently. We are coordinating with the relevant authorities and departments as to how to cool down water in the spent nuclear fuel pool.
* Unit 2: Reactor has been shut down and Reactor Core Isolation Cooling System has been injecting water to the reactor. Current reactor water level is lower than normal level, but the water level is steady. After fully securing safety, we are preparing to implement a measure to reduce the pressure of the reactor containment vessels under the instruction of the national government. To do so, we operated the vent valve and completed the operation at 11:00AM, Mar 13.
* Unit 3: High Pressure Coolant Injection System automatically stopped. We endeavored to restart the Reactor Core Isolation Cooling System but failed. Also, we could not confirm the water inflow of Emergency Core Cooling System. As such, we decided at 5.10AM, Mar 12, and we reported and/or noticed the government agencies concerned to apply the clause 1 of the Article 15 of the Radiation Disaster Measure at 5:58AM, Mar 13.
In order to fully secure safety, we operated the vent valve to reduce the

pressure of the reactor containment vessels (partial release of air containing radioactive materials) and completed the procedure at 8:41AM, Mar 13 (successfully completed at 09:20AM, Mar 13. After that, we began injecting water containing boric acid that absorbs neutron into the reactor by the fire pump from 09:25AM, Mar 13.
Taking account of the situation that the water level within the pressure vessel did not rise for a long time and the radiation dose is increasing, we cannot exclude the possibility that the same situation occurred at Unit 1 on Mar 12 will occur. We are considering the countermeasure to prevent that.
* We continue endeavoring to secure the safety that all we can do and monitoring the periphery.

Fukushima Daini Nuclear Power Station:
Units 1 to 4: shutdown due to earthquake
* The national government has instructed evacuation for those local residents within 10km radius of the periphery.
* At present, we have decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety.
These measures are considered to be implemented in Units 1, 2 and 3 and accordingly, we have reported and/or noticed the government agencies concerned.
* Unit 3 has been stopped and being "nuclear reactor cooling hot stop" at 12:15PM.
* The operator trapped in the crane operating console of the exhaust stack was transferred to the ground at 5:13PM and confirmed the death at 5:17PM.

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Press Releases

Press Release (Mar 13,2011)
Plant Status of Fukushima Daiichi Nuclear Power Station (as of 2pm March 13th)

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down.

Unit 1(Shut down)
- Reactor has been shut down. However, the unit is under inspection due to the explosive sound and white smoke that was confirmed after the big quake occurred at 3:36PM.
- We have been injecting sea water and boric acid which absorbs neutron into the reactor pressure vessel.

Unit 2(Shut down)
- Reactor has been shut down and Reactor Core Isolation Cooling System has been injecting water to the reactor. Current reactor water level is lower than normal level, but the water level is steady. After fully securing safety, measures to lowering the pressure of reactor containment vessel has been taken, under the instruction of the national government.

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- Reactor has been shut down. However, as High Pressure Core Injection System has been automatically shut down and water injection to the reactor was interrupted, following the instruction by the government and with fully securing safety, steps to lowering the pressure of reactor containment vessel has been taken. Spraying in order to lower pressure level within the reactor containment vessel has been cancelled.
- After that, safety relief valve has been opened manually, lowering the pressure level of the reactor, which was immediately followed by injection of boric acid water which absorbs neutron, into the reactor pressure vessel.
- After that, following decrease of the water level and increase of the pressure level in the reactor, injection of sea water is being attempted.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 4 (shut down due to regular inspection)
- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 5 (outage due to regular inspection)
- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 6 (outage due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Casualty

- 2 workers of cooperative firm were injured at the occurrence of the earthquake, and were transported to the hospital.
- 1 TEPCO employee who was not able to stand by his own with his hand holding left chest was transported to the hospital by an ambulance.
- 1 subcontract worker at important earthquake-proof building was unconscious and transported to the hospital by an ambulance.
- The radiation exposure of 1 TEPCO employee, who was working inside the reactor building, exceeded 100mSv and was transported to the hospital.
- 2 TEPCO employees felt bad during their operation in the central control rooms of Unit 1 and 2 while wearing full masks, and were transferred to Fukushima Daini Power Station for consultation with a medical advisor.
- 4 workers were injured and transported to the hospital after explosive sound and white smoke were confirmed around the Unit 1.
- Presence of 2 TEPCO employees at the site are not confirmed

Others

- We are currently coordinating with the relevant authorities and departments as to how to cool down the water in the spent nuclear fuel pool.
- We measured radioactive materials inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is higher than ordinary level. Also, the level at monitoring post is higher than ordinary level. We will continue to monitor in detail the possibility of radioactive material being discharged from exhaust stack or discharge canal. The national government has instructed evacuation for those local residents within 20km radius of the periphery because it¡Çs possible that radioactive materials are discharged.
- We will continue to take all measures to restore the security of the site and to monitor the environment of the site periphery.

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Press Releases

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- After that, safety relief valve has been opened manually, lowering the pressure level of the reactor, which was immediately followed by injection of boric acid water which absorbs neutron, into the reactor pressure vessel.
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- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.

- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 6 (outage due to regular inspection)
- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

- 2 TEPCO employees felt bad during their operation in the central control rooms of Unit 1 and 2 while wearing full masks, and were transferred to Fukushima Daini Power Station for consultation with a medical advisor.
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Press Releases

Press Release (Mar 13,2011)
Impact to TEPCO's Facilities due to Miyagiken-Oki Earthquake (as of 1:00PM)

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*new items are underlined

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* The value of radioactive material (iodine, etc) is increasing according to the monitoring car at the site (outside).

* Since the amount of radiation at the boundary of the site exceeds the limits, we decide at 4:17PM, Mar 12 and we have reported and/or noticed the government agencies concerned to apply the clause 1 of the Article 15 of the Radiation Disaster Measure at 5PM, Mar 12. After that, the radiation dose at the monitoring post decreased once. Today, the measured value revamped and the radiation dose measured at site boundary exceeded the limiting value again. As such, at 8:56AM, today, it was determined that a specific incident stipulated in article 15, clause 1 occurred and at 09:10AM, today, notified accordingly.

* In addition, a vertical earthquake hit the site and big explosion has happened near the Unit 1 and smoke breaks out around 3:36PM, Mar 12th.

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In order to fully secure safety, we operated the vent valve to reduce the pressure of the reactor containment vessels (partial release of air

containing radioactive materials) and completed the procedure at 8:41AM, Mar 13 (successfully completed at 09:20AM, Mar 13). **After that, we began injecting water containing boric acid that absorbs neutron into the reactor by the fire pump from 09:25AM, Mar 13.**

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These measures are considered to be implemented in Units 1, 2 and 3 and accordingly, we have reported and/or noticed the government agencies concerned.

* Unit 3 has been stopped and being "nuclear reactor cooling hot stop" at 12:15PM.

* The operator trapped in the crane operating console of the exhaust stack was transferred to the ground at 5:13PM and confirmed the death at 5:17PM.

[Blackout in TEPCO's Service Area]
Total of about 0.26 million households are out of power.
Tokyo: 0
Kanagawa Pref.: 0
Tochigi Pref.: 7,366
Chiba Pref.: 301
Saitama Pref: 0
Gunma Pref.: 0
Ibaraki Pref: 247,853
Yamanashi Pref: 0
Shizuoka Pref: 0 (east of Fuji River)

Because TEPCO's facilities have been seriously damaged, power shortage may occur. TEPCO appreciates customers' cooperation in reducing electricity usage by avoiding using unnecessary lighting and electrical equipment.

Please do NOT touch cut-off electric wires.

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Press Releases

Press Release (Mar 13,2011)
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into the reactor pressure vessel.

Unit 2 (Shut down)

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Unit 3 (Shut down)

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- 1 subcontract worker at important earthquake-proof building was unconscious and transported to the hospital by an ambulance.
- The radiation exposure of 1 TEPCO employee, who was working inside the reactor building, exceeded 100mSv and was transported to the hospital.
- 4 workers were injured and transported to the hospital after explosive sound and white smoke were confirmed around the Unit 1.
- Presence of 2 TEPCO employees at the site are not confirmed

Others

- We measured radioactive materials inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is higher than ordinary level. Also, the level at monitoring post is higher than ordinary level. We will continue to monitor in detail the possibility of radioactive material being discharged from exhaust stack or discharge canal. The national government has instructed evacuation for those local residents within 20km radius of the periphery because it's possible that radioactive materials are discharged.

- We will continue to take all measures to restore the security of the site and to monitor the environment of the site periphery.

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Press Release (Mar 13,2011)
Occurrence of a Specific Incident Stipulated in Article 15, Clause 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness (Extraordinary increase of radiatior dose at site boundary)

At 2:48PM on March 11th, turbines and reactors of Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station Unit 1 (Boiling Water Reactor, rated output 460 Megawatts) and Units 2 and 3 (Boiling Water Reactor, Rated Output 784 Megawatts) that had been operating at rated power automatically shutdown due to the Miyagiken-oki Earthquake.

After the shut down, the values of radioactive materials (iodine, etc) measured by the monitoring car have been increasing. Increase in the measured value has also been recognized in one of the monitoring posts.

Furthermore, at 3:29PM, Mar 12, radiation dose measured at site boundary has exceeded the limiting value. Therefore, at 4:17PM, Mar 12, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.

(as per the previous press release)

After that, the radiation dose at the monitoring post decreased once. Today, the measured value revamped and the radiation dose measured at site boundary exceeded the limiting value again. As such, at 8:56AM, today, it was determined that a specific incident stipulated in article 15, clause 1 occurred.

We will endeavor to secure the safety and alongside, continue monitoring the environment of the site periphery.

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Press Releases

Press Release (Mar 13,2011)
Plant Status of Fukushima Daiichi Nuclear Power Station (as of 9am March 13th)

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down.

Unit 1(Shut down)
- Reactor has been shut down. However, the unit is under inspection due to the explosive sound and white smoke that was confirmed after the big quake occurred at 3:36PM.
- We have been injecting sea water and boric acid which absorbs neutron into the reactor core.

Unit 2(Shut down)
- Reactor has been shut down and Reactor Core Isolation Cooling System has been injecting water to the reactor. Current reactor water level is lower than normal level, but the water level is steady. After fully securing safety, we are preparing to implement a measure to reduce the pressure of

the reactor containment vessels under the instruction of the national government.

Unit 3(Shut down)

- Reactor has been shut down. However, High Pressure Core Injection System has been automatically shut down and water injection to the reactor is currently interrupted. We are examining alternative way to inject water. Also, following the instruction by the government and with fully securing safety, steps to lowering the pressure of reactor containment vessel has been taken. Spraying in order to lower pressure level within the reactor containment vessel has been cancelled.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 4 (shut down due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 5 (outage due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 6 (outage due to regular inspection)

- Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Casualty

- 2 workers of cooperative firm were injured at the occurrence of the earthquake, and were transported to the hospital.
- 1 TEPCO employee who was not able to stand by his own with his hand holding left chest was transported to the hospital by an ambulance.
- 1 subcontract worker at important earthquake-proof building was unconscious and transported to the hospital by an ambulance.
- The radiation exposure of 1 TEPCO employee, who was working inside the reactor building, exceeded 100mSv and was transported to the hospital.
- 4 workers were injured and transported to the hospital after explosive sound and white smoke were confirmed around the Unit 1.
- Presence of 2 TEPCO employees at the site are not confirmed

Others

- We measured radioactive materials inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is higher than ordinary level. Also, the level at monitoring post is higher than ordinary level. We will continue to monitor in detail the possibility of radioactive material being discharged from exhaust stack or discharge canal. The national government has instructed evacuation for those local residents within 20km radius of the periphery because it's possible that radioactive materials are discharged.

- We will continue to take all measures to restore the security of the site and to monitor the environment of the site periphery.

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Press Releases

Press Release (Mar 13,2011)
Occurrence of a Specific Incident Stipulated in Article 15, Clause 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness

At 2:46PM on March 11th 2011, turbines and reactors of Fukushima Daiichi Nuclear Power Station Unit 1 (Boiling Water Reactor, rated output 460 Megawatts) and Units 2 and 3 (Boiling Water Reactor, Rated Output 784 Megawatts) that had been operating at rated power automatically shutdown due to the Tohoku-Chihou-Taiheiyou-Oki Earthquake.

In all 3 Units, one offsite power system out of two was lost and diesel generators were automatically activated.

At 3:41PM, diesel generators failed and as a result, all the AC power was lost in Unit 1, 2 and 3. Following this incident, at 3:42PM, it was determined that a specific incident stipulated in article 15, clause 1 has occurred, and level 1 emergency status was announced, together with the notification to Ministry of Economy, Technology and Industry, Governor of Fukushima prefecture, Mayors of Okuma town and Futaba town, and related institutions in accordance with the law.
(already announced)

Afterwards, in Unit 3, High Pressure Core Injection System has been automatically shut down. Re-activation of Reactor Core Isolation Cooling System was attempted but failed, and as we were unable to confirm the level of water injection to the reactor by the Emergency Core Cooling

System, at 5:10 on March 13th, it was determined that a specific incident (Emergency Core Cooling System water injection inability) stipulated in article 15, clause 1 has occurred.

Press Releases

Press Release (Mar 13,2011)
Impact to TEPCO's Facilities due to Miyagiken-Oki Earthquake (as of 8AM)

Below is major impact to TEPCO's facilities due to the Miyagiken-Oki Earthquake that occurred yesterday at 2:46PM.
*new items are underlined

[Nuclear Power Station]
Fukushima Daiichi Nuclear Power Station:
Units 1 to 3: shutdown due to earthquake
Units 4 to 6: outage due to regular inspection
* The national government has instructed evacuation for those local residents within 20km radius of the site periphery.
* The value of radioactive material (iodine, etc) is increasing according to the monitoring car at the site (outside of the site). One of the monitoring posts is also indicating higher than normal level.
* Since the amount of radiation at the boundary of the site exceeds the limits, we decide at 4:17PM, Mar 12 and we have reported and/or noticed the government agencies concerned to apply the clause 1 of the Article 15 of the Radiation Disaster Measure at 5PM, Mar 12.
* In addition, a vertical earthquake hit the site and big explosion has happened near the Unit 1 and smoke breaks out around 3:36PM, Mar 12th.
* We started injection of sea water into the reactor core of Unit 1 at 8:20PM, Mar 12 and then boric acid subsequently.
* High Pressure Coolant Injection System of Unit 3 automatically stopped. We endeavored to restart the Reactor Core Isolation Cooling System but failed. Also, we could not confirm the water inflow of Emergency Core Cooling System. As such, we decided at 5.10AM, Mar 12, and we reported and/or noticed the government agencies concerned to apply the clause 1 of the Article 15 of the Radiation Disaster Measure at 5:58AM, Mar 13. In order to fully secure safety, we operated the vent valve to reduce the pressure of the reactor containment vessels (partial release of air containing radioactive materials) and completed the procedure at 8:41AM, Mar 13.
* We continue endeavoring to secure the safety that all we can do and monitoring the periphery.

Fukushima Daini Nuclear Power Station:
Units 1 to 4: shutdown due to earthquake
* The national government has instructed evacuation for those local residents within 10km radius of the periphery.
* At present, we have decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. These measures are considered to be implemented in Units 1, 2 and 3 and accordingly, we have reported and/or noticed the government agencies

concerned.
* Unit 3 has been stopped and being "nuclear reactor cooling hot stop" at 12:15PM.
* The operator trapped in the crane operating console of the exhaust stack was transferred to the ground at 5:13PM and confirmed the death at 5:17PM.

Kashiwazaki Kariwa Nuclear Power Station:
Units 1, 5, 6, 7: normal operation
Units 2 to 4: outage due to regular inspection

[Thermal Power Station]
Hirono Thermal Power Station Units 2 and 4: shutdown due to earthquake
Hitachinaka Thermal Power Station Unit 1: shutdown due to earthquake
Kashima Thermal Power Station Units 2, 3, 5, 6: shutdown due to earthquake
Ohi Thermal Power Station Units 2, 3: shutdown due to earthquake
Higashi-Ohgishima Thermal Power Station Unit 1: shutdown due to earthquake

[Hydro Power Station]
* All the stations have been restored.

[Transmission System, etc.]
4 substations shown below have been shutdown:
- Naka Substation
- Shin Motegi Substation
- Joban Substation
- Ibaraki Substation
- Nishi Mito Substation

[Blackout in TEPCO's Service Area]
Total of about 0.31 million households are out of power.
Tokyo: 0
Kanagawa Pref.: 0
Tochigi Pref.: 7,221
Chiba Pref.: 301
Saitama Pref: 0
Gunma Pref.: 0
Ibaraki Pref: 298,977
Yamanashi Pref: 0
Shizuoka Pref: 0 (east of Fuji River)

[Supply and Demand Status within TEPCO's Service Area to Secure Stable Power Supply]
Backup supply from Shinshinano Conversion Station: 600MW
Backup supply from Sakuma Conversion Station: 300MW
Backup supply from Higashi Shimizu Conversion Station: 100MW

Because TEPCO's facilities have been seriously damaged, power shortage may occur. TEPCO appreciates customers' cooperation in reducing electricity usage by avoiding using unnecessary lighting and electrical equipment.

We are taking all measures to restore power, however, we expect extremely difficult situation in power supply for tomorrow as well.
We kindly ask our customers to cooperate with us in reducing usage of power.

Please do NOT touch cut-off electric wires.

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From: OST01 HOC
Sent: Friday, April 08, 2011 8:33 AM
To: LIA08 Hoc; PMT11 Hoc; PMT02 Hoc; Hoc, PMT12; RST01 Hoc
Cc: FOIA Response.hoc Resource
Subject: FW: official notice (08/04/2011) Documents of the briefing
Attachments: document1-9.tif; image001.jpg

From: HOO Hoc
Sent: Friday, April 08, 2011 7:15 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: official notice (08/04/2011) Documents of the briefing

Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From: Hinds, Lynda J [mailto:HindsLJ@state.gov] **On Behalf Of** Tokyo Staff Assistant
Sent: Friday, April 08, 2011 6:54 AM

(b)(6)

Subject: FW: official notice (08/04/2011) Documents of the briefing

0000/205

Lynda Hinds
Staff Assistant
(03) 3224- 5370

From: PROTOCOLOFFICE-EM [mailto:protocoloffice-em@mofa.go.jp]
Sent: Friday, April 08, 2011 7:44 PM
To: PROTOCOLOFFICE-EM
Subject: official notice (08/04/2011) Documents of the briefing

—Urgent—

Official Notice

(8 April 20 11)

To All Missions (Embassies, Consular posts and International Organizations in Japan)

The Ministry of Foreign Affairs has the honour to send for the perusal of Missions documents which were distributed at the briefing on 8th April, 2011 at 16:00 for your reference.

Furthermore, the Ministry would like to inform the missions that the expected removal of shipment restriction of raw milk in Fukushima Prefecture will apply to:

Kitakata-city, Bandai-city, Inawashiro-cho, Mishima-cho, Aizu-misato-cho, Shimogo-cho and Minami-aizu-cho

List of attachments

1. List of briefers from Ministries other than the MOFA (8th April)
2. "Environmental Emergency Response" of Japan Meteorological Agency (Japan Meteorological Agency)
3. Time Integrated Surface-500M Layer Concentration (Japan Meteorological Agency)
4. Levels of radioactive contaminants in foods (data reported on 7 April 2011) (Ministry of Health, Labour and Welfare)
5. Press Rele ase (Evaluation of Environmental Radiation Monitoring Results (16:45 o n April 7, 2011) (Nuclear Safety Commission, Cabinet Office)
6. 【Japanese Document】福島第一 サブドレン等核種分析結果 (The results of nuclide analyses of radioactive materials of Fukushima Dai-ichi Nuclear Power Station (TEPCO))
7. News Release (Seismic Damage Information (the 78th, 79th and 80th Release)) (Nuclear and Industrial Safety Agency)
8. Regarding the Injection of Nitrogen to the Reactor Containment Vessel (Nuclear and Industrial Safety Agency)
9. Conditions of Fukushima Dai-ichi Nuclear Power Station Unit1-6 (Nuclear and Industrial Safety Agency)

(END)

From: Mai Denawa
To: Brenner, Eliot; McIntyre, David
Subject: April 14 open Commission hearing open press?
Date: Friday, April 08, 2011 9:50:03 AM

Good morning, my name is Mai and I am a producer with NHK Japan Broadcasting.

I saw this release http://pbadupws.nrc.gov/docs/ML1108/ML110821123.pdf and we were hoping to cover the open commission meeting regarding the status of the NRC to the Japan earthquake on April 14. Would we be permitted to send a producer and cameraman to cover the event?

If you could let us know at your earliest convenience, I'd be most grateful.

Thank you so much!

Sincerely,

Mai Denawa
Producer
NHK - Japan Broadcasting Corporation
2030 M Street N.W. #706
Washington, D.C. 20036
(202) 828 5180 (office)
(b)(6) (cell)
denawa@nhkdc.com

0000/206

Nelson, Robert

From: Nelson, Robert
Sent: Monday, April 11, 2011 12:24 PM
To: Chernoff, Harold
Subject: RE Action: request to NRC to facilitate detection measurements

Correct

NELSON

From: Chernoff, Harold
Sent: Monday, April 11, 2011 11:58 AM
To: Nelson, Robert
Cc: Markley, Michael
Subject: RE: Action: request to NRC to facilitate detection measurements.

I understand that Mike is working this now.

From: Nelson, Robert
Sent: Monday, April 11, 2011 8:00 AM
To: Chernoff, Harold
Subject: Action: request to NRC to facilitate detection measurements.

Plant visit request at bottom of e-mail string.

NELSON

From: Leeds, Eric
Sent: Saturday, April 09, 2011 10:27 AM
To: Zimmerman, Roy; Virgilio, Martin
Cc: OST01 HOC; Weber, Michael; ET05 Hoc; Giitter, Joseph; Boger, Bruce; Nelson, Robert; Howell, Art
Subject: Re: request to NRC to facilitate detection measurements.

NRR will coordinate with the regions to make it happen. We're all over it.

From: Zimmerman, Roy
To: Virgilio, Martin; Leeds, Eric
Cc: OST01 HOC; Weber, Michael; ET05 Hoc
Sent: Fri Apr 08 18:34:05 2011
Subject: RE: request to NRC to facilitate detection measurements.

I'd suggest my good friend Eric take this one and his staff work with NNSA and then regions.....if he is agreeable. However, If preferred, we will work it from the Ops Center

---

From: Virgilio, Martin
Sent: Friday, April 08, 2011 6:26 PM
To: Zimmerman, Roy; Leeds, Eric
Cc: OST01 HOC; Weber, Michael
Subject: RE: request to NRC to facilitate detection measurements.

Roy

0000/207

I would tend to agree this is either an NRR or a Regional issue. Although I must confess that I do not understand what they are asking for.

Marty

From: Zimmerman, Roy
Sent: Friday, April 08, 2011 5:43 PM
To: Leeds, Eric; Virgilio, Martin
Cc: OST01 HOC; Weber, Michael
Subject: RE: request to NRC to facilitate detection measurements.

Would suggest this be handled by the line organization, pls advise, thx

---

From: OST01 HOC
Sent: Friday, April 08, 2011 5:09 PM
To: Zimmerman, Roy
Subject: FW: request to NRC to facilitate detection measurements.

FYI.

From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Friday, April 08, 2011 4:27 PM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: request to NRC to facilitate detection measurements.

From: NITOPS[SMTP:NITOPS@NNSA.DOE.GOV]
Sent: Friday, April 08, 2011 4:26:34 PM
To: HOO Hoc; Hoc, PMT12
Subject: FW: request to NRC to facilitate detection measurements.
Auto forwarded by a Rule

NITOPS,

Lon Horiuchi (CONTR)

From: Tilden, Jay
Sent: Friday, April 08, 2011 4:20 PM
To: NITOPS
Cc: Georgevich, Vladimir (CONTR); Aoki, Steven; 'Joseph.Rivers@nrc.gov'
Subject: RE: request to NRC to facilitate detection measurements.

NITOPS - please pass on to NRC Operations Center for action.

NRC Ops,

We are requesting your help with facilitating access to a reactor for three of our scientist to calibrate diagnostic equipment at one of the nuclear power plants listed below. We would like this radiation diagnostic team to be given permission to enter one of the US reactor plants to take radiation measurements for the purpose of calibrating the instrumentation in the presence of an operating reactor with a realistic shielding and operational core geometry

configurations that are most similar to the reactors in Japan. Our goal is to validate whether this equipment could be used at the Fukushima NPP and determine additional details regarding damaged core geometry.

We need NRC's help in getting appropriate permissions. We have identified four reactors in the US that fit that profile. They are ranked 1-4 in terms of convenience for our detection folks to get to them. These reactors are:

1) Cooper-Nebraska
2) Palo-Iowa
3) Oyster Creek-New Jersey
4) Nine Mile Point-New York

The diagnostic team would comprise of 3 Q cleared individuals with appropriate Radiation Worker Training. We would welcome help from hosting plant by providing us with the following:

1. 2 day access to various points in and around the plant to calibrate equipment (a list could be compiled if needed)
2. Escort by knowledgeable Facilities Engineering Tech Rep who knows the facility and its materials, thicknesses, etc.
3. Plant POC contact info to work out the details prior to deployment.

Vlad Georgevich is the POC/coordinator for this request. He can be contacted at cell (b)(6)

Jay A. Tilden
Japan Logistics Coordinator &
Dir.
NA-47, NNSA
202-586-3165

Wittick, Brian

From: Wittick, Brian
Sent: Monday, April 11, 2011 2:25 PM
To: LIA02 Hoc
Subject: Re: Status of KI

You would have to check with medical or admin. Also look at the return checklist to make sure it is on there

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: LIA02 Hoc
To: Wittick, Brian
Sent: Mon Apr 11 14:20:51 2011
Subject: RE: Status of KI

Brian,

Have previous staff who have returned, brought theirs back.

Steve

From: Wittick, Brian
Sent: Monday, April 11, 2011 2:20 PM
To: LIA02 Hoc
Subject: Re: Status of KI

I think as a matter of policy it is a good idea for NRC to continue to issue to each team member, and ensure they return it when finished. Do we want the team to manage a bulk supply...I don't think so.

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: LIA02 Hoc
To: Wittick, Brian
Sent: Mon Apr 11 14:13:07 2011
Subject: RE: Status of KI

Wanted to know if new travelers should bring over more.

From: Wittick, Brian
Sent: Monday, April 11, 2011 2:12 PM
To: LIA02 Hoc
Subject: Re: Status of KI

I don't understand the question. Each person on the team was issued some, the embassy has a bunch, the military has truckloads, and the japanese have a ton. Since guidance says you shouldn't take it if over forty, most of the team has spare to donate to a worthy cause.

0030/208

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: LIA02 Hoc
To: Emche, Danielle; Stahl, Eric; Wittick, Brian
Sent: Mon Apr 11 13:45:31 2011
Subject: Status of KI

How much KI is over there.. do you think we need anymore.

Steve

From: Mitlyng, Viktoria
To: McIntyre, David
Subject: Re: Emergency Petition to Suspend Nuclear Reactor Licensing --NRC response?
Date: Friday, April 15, 2011 9:47:50 AM

Thanks, Dave. Didn't have a chance to check the TNT - was getting geared up for the public meeting.
(Sent from my Blackberry)

From: McIntyre, David
To: Mitlyng, Viktoria
Sent: Fri Apr 15 08:15:11 2011
Subject: RE: Emergency Petition to Suspend Nuclear Reactor Licensing --NRC response?

Sounds good to me! Eliot had a little extra in last night's TNT.

From: Mitlyng, Viktoria
Sent: Thursday, April 14, 2011 5:19 PM
To: McIntyre, David
Subject: Fw: Emergency Petition to Suspend Nuclear Reactor Licensing --NRC response?

Dave,

Below is my reply to a question I got late Thursday on the attached petition. It's our standard language and assume it works. Let me know if I should provide the reporter with any other messages.

Thanks!

Vika
(Sent from my Blackberry)

From: Mitlyng, Viktoria
To: (b)(6)
Sent: Thu Apr 14 17:15:11 2011
Subject: Re: Emergency Petition to Suspend Nuclear Reactor Licensing --NRC response?

Hi Eartha,

We will review this petition and provide a response after having had the opportunity to do so.

Viktoria
(Sent from my Blackberry)

From: Eartha Melzer (b)(6)
To: Mitlyng, Viktoria
Sent: Thu Apr 14 16:33:26 2011
Subject: Emergency Petition to Suspend Nuclear Reactor Licensing --NRC response?

Hi Viktoria,

I am writing about this petition to suspend reactor licensing for tomorrow.
Does NRC have a response to this petition yet?

0000209

Thanks,

Eartha Melzer
Reporter
www.michiganmessenger.com
(231) 933-3249

FUKUSHIMA FALLOUT: 45 GROUPS AND INDIVIDUALS PETITION NRC TO SUSPEND ALL NUCLEAR REACTOR LICENSING AND CONDUCT A "CREDIBLE" THREE MILE ISLAND-STYLE REVIEW
Beyond Nuclear, Citizens for Alternatives to Chemical Contamination, Citizens Environment Alliance, Don't Waste Michigan, Green Party of Ohio, Sierra Club Michigan Chapter, are Among Those Urging NRC to Delay Licensing While NRC and Presidential Commission Conduct a Full Study of Implications of Japan Reactor Crisis.

WASHINGTON, April 14, 2011 /PRNewswire-USNewswire/ -- A total of 45 groups and individuals from across the nation are formally asking the U.S. Nuclear Regulatory Commission (NRC) to immediately suspend all licensing and other activities at 21 proposed nuclear reactor projects in 15 states until the NRC completes a thorough post-Fukushima reactor crisis examination comparable to the process set up in the wake of the serious, though less severe, 1979 accident at Three Mile Island.

The petitioners also are asking the NRC to supplement its own investigation by establishing an independent commission.

The petition seeks suspension of six existing reactor license renewal decisions (Columbia, Davis-Besse, Diablo Canyon, Indian Point, Pilgrim, and Seabrook); 13 new reactor combined construction permit and operating license decisions (Bellefonte Units 3 and 4, Bell Bend, Callaway, Calvert Cliffs, Comanche Peak,Fermi, Levy County, North Anna, Shearon Harris, South Texas, Turkey Point, Vogtle, and William States Lee);a construction permit decision (Bellefonte Units 1 and 2); and an operating license decision (Watts Bar). In addition, the petition asks the NRC to halt proceedings to approve the standardized AP1000 and ESBWR reactor designs.

Available online at http://www.nuclearbailout.org, the petition explains that the action is needed to review "the safety and environmental implications of the ongoing catastrophic radiological accident at the Fukushima Daiichi Nuclear Power Station, Units 1-6 ('Fukushima'), in Okumu, Japan." According to the petition, the needed NRC review should include a close look at "whether the March 11, 2011 Tohoku-Chihou-Taiheiyo-Oki earthquake and ensuing radiological accident poses new and significant information that must be considered in environmental impact statements to support the licensing

decisions for all new reactors and renewed licenses."

Emergency action by the NRC is necessary because a number of the pending licensing proceedings are approaching completion, including for Pilgrim, Vogtle, and the AP1000 design certification proceeding. The NRC was subjected to extensive criticism when it extended the license for the controversial and problem-plagued Vermont Yankee reactor just days after the Fukushima reactor disaster.

An attorney for the petitioners, Diane Curran of Harmon, Curran, Spielberg & Eisenberg, LLP, said: "NRC violated the law by re-licensing the Vermont Yankee reactor at the same time it launched an investigation into whether U.S. safety and environmental standards are strong enough in light of the Fukushima accident. The National Environmental Policy Act requires the NRC to learn and apply the lessons of Fukushima before it allows another reactor to operate. By establishing a Task Force and ordering the investigation of the regulatory implications of the Fukushima accident for U.S. reactors, the NRC has obligated itself to consider those implications in all prospective licensing decisions. We demand that the NRC establish a credible process for studying and applying the lessons learned from the Fukushima accident, in keeping with the precedent created after Three Mile Island."

Curran also said: "Suspension of licensing decisions pending investigations of lessons learned also would be consistent with the course followed by the Commission following the Three Mile Island accident, when the Commission delayed new licensing actions for a year and a half while it studied the implications of the accident for reactor safety." In addition, Curran said, the Commission should request the appointment of an independent Presidential Commission, as was done after the Three Mile Island accident.

Sara Barczak, high risk energy director for petitioner Southern Alliance for Clean Energy, a regional organization, , said: "Utilities across the Southeast have aggressively pursued building costly new reactors in spite of the risks that poses to ratepayers and taxpayers. It's of paramount importance that federal regulators take the time needed to carefully reassess the concerns the Fukushima disaster raises here in the U.S. and not yield to the nuclear industry's unreasonable timelines. It is important to take a step back before billions of more dollars are spent."

Jane Swanson, spokesperson for petitioner San Luis Obispo Mothers for Peace, San Luis Obispo, CA, said: "Fukushima has given the NRC a clear warning. The agency is obligated by its responsibilities for public safety to hit the pause button on all licensing applications until all the lessons to be learned are thoroughly understood."

Mary Lampert, director of petitioner Pilgrim Watch, Duxbury, MA, said: "Pilgrim, located in America's Hometown, is the same design as the Fukushima plants, is older than most of them, and has even more spent fuel in

its single spent fuel pool. The major cause of the Fukushima disaster was the loss of off-site power; but it doesn't take a tsunami to cause that. The U.S. Nuclear Regulatory Commission told all Americans within 50 miles of Fukushima to evacuate; several million people live within a 50 mile radius of Pilgrim."

Dr. Arjun Makhijani, president, Institute for Energy and Environmental Research (IEER), said: "The Fukushima Daiichi plant is rewriting the book on nuclear reactor accidents. There are multiple major sources of emissions from the same site at the same time, including more than one reactor and more than one spent fuel pool. For the first time, major portions of three reactor buildings have been blown away by hydrogen explosions. Backup power arrangements have been shown to be grossly inadequate. Freshwater was not available for essential cooling functions for an extended period. The situation is far from being under control more than one month after the start of the accident. Continuing business as usual in licensing and reactor certification in the face of the unprecedented, hugely complicated, and ongoing Fukushima accident would be rash and contrary to the mandate of the NRC to ensure safety and protect public health."

Among the groups and individuals seeking the emergency action on the part of the NRC are: Beyond Nuclear; Blue Ridge Environmental Defense League (BREDL); Center for a Sustainable Coast; Citizens Allied for Safe Energy; Don't Waste Michigan; Georgia Women's Action for New Directions; Mothers Against Tennessee River Radiation; Missouri Coalition for the Environment; Missourians for Safe Energy; National Parks Conservation Association; North Carolina Waste Reduction and Awareness Network; Northwest Environmental Advocates; Nuclear Information and Resource Service; Nuclear Watch South; Public Citizen; San Luis Obispo Mothers for Peace; Savannah Riverkeeper; Seacoast Anti-Pollution League; Sierra Club (Michigan and South Carolina chapters); Southern Alliance for Clean Energy (SACE); Sustainable Energy and Economic Development (SEED) Coalition; and the Village of Pinecrest, Florida.

The petition calls for the following:

* The Commission should suspend all decisions regarding the issuance of construction permits, new reactor licenses, combined construction permits and operating licenses (COLs), early site permits (ESPs), license renewals, or standardized design certification pending completion by the NRC's Task Force of its investigation of the near-term and long-term lessons of the Fukushima accident and the issuance of any proposed regulatory decisions and/or environmental analyses of those issues;
* The Commission should suspend all proceedings with respect to hearings or opportunities for public comment, on any reactor-related or spent fuel pool-related issues that have been identified for investigation in the Task Force's Charter of April 1, 2011, including external event issues (i.e., seismic, flooding, fires, severe weather); station blackout; severe accident measures (e.g.,

combustible gas control, emergency operating procedures, severe accident management guidelines); implementation of NRC regulations regarding response to explosions or fire; and emergency preparedness. The Commission should also instruct hearing judges who are considering contentions to permit the parties an opportunity to make arguments regarding the relevance of their concerns to the Fukushima accident.

* The Commission should suspend all licensing and related rulemaking proceedings with regard to any other issues that are identified by the Task Force as the subject of its investigation. The proceedings should be suspended pending completion of the Task Force's investigation into those issues and the issuance of any proposed regulatory decisions and/or environmental analyses of those issues.

* The Commission should conduct an analysis, as required by the National Environmental Policy Act (NEPA), of whether the March 11, 2011 Tohoku-Chihou-Taiheiyo-Oki earthquake and ensuing radiological accident poses new and significant information that must be considered in environmental impact statements to support the licensing decisions for all new reactors and renewed licenses. All environmental assessments should be published in draft form for public comment.

* The Commission should conduct a safety analysis of the regulatory implications of the March 11, 2011 Tohoku-Chihou-Taiheiyo-Oki earthquake and ensuing radiological accident. While emergency safety measures that arise from that analysis may be issued as enforcement orders, any long-term requirements should be issued as proposed rules, with appropriate opportunities for comment.

* The Commission should establish procedures and a timetable for raising new issues relevant to the Fukushima accident in pending licensing proceedings. The Commission should allow all current interveners in NRC licensing proceedings, all petitioners who seek to re-open closed licensing and relicensing proceedings, and all parties who seek to comment on design certification proposed rules, a period of 60 days following the publication of proposed regulatory measures or environmental decisions, in which to raise new issues relating to the Fukushima reactor accidents. The Commission should suspend requirements to justify the late-filing of new issues if their relevance to the Fukushima accident can be demonstrated.

A streaming audio replay of the news event will be available on the Web at http://www.nuclearbailout.org as of 4 p.m. EDT on April 14, 2011.

http://www.prnewswire.com/news-releases/fukushima-fallout--45-groups-and-individuals-petition-nrc-to-suspend-all-nuclear-reactor-licensing-and-conduct-a-credible-three-mile-island-style-review-119844504.html

Wittick, Brian

From: Wittick, Brian
Sent: Wednesday, April 13, 2011 7:41 AM
To: 'oshima-toshiyuki@meti.gp.jp'
Subject: FW: NRC Information Coordination Request

Dear Oshima-san,

Below is the email I had provided to Nei-san. I look forward to discussions on this at tomorrow's meeting.

Kind Regards,
Brian

From: Wittick, Brian
Sent: Wednesday, April 13, 2011 4:04 AM
To: 'nei.hisanori@meti.go.jp'
Cc: Collins, Elmo
Subject: NRC Information Coordination Request

Dear Nei-san

At the Cabinet meeting last Friday Hosono-san had agreed to establish a system for notification should a further significant event occur at the Fukushima site, such as the large earthquake on Monday that resulted in a loss of the emergency cooling services. We would like to meet with whoever will be responsible for such notifications to establish the details of the notification process and appreciate your assistance to put me in communication for the discussions.

Thank you for your assistance.

Kind regards,
Brian Wittick
U.S. NRC Liaison Team
(b)(6)

0000/210

Wittick, Brian

From: Wittick, Brian
Sent: Wednesday, April 13, 2011 8:20 PM
To: Emche, Danielle; 'bannai-toshihiro@meti.go.jp', 'satoh.takashi@tepco.co.jp'; 'nei-hisanori@meti.go.jp'; 'oshima-toshiyuki@meti.go jp'; 'koyama-masaomi@meti.go.jp'
Cc: Casto, Chuck; 'y-uemura@simul.co.jp'; Reynolds, Steven
Subject: RE: NRC Meetings for 14 April 2011
Attachments: NRC Meetings 14-April-2011.docx

Dear Bannai-san and Satoh-san,

Please find the schedule for NRC meetings today (attached). If you have any questions or concerns, please let me know.

Best regards,
Brian Wittick
U.S. Nuclear Regulatory Commission
Japan Team International Liaison
Tel: 81-33-22-45-066
Mob/ (b)(6)

0000/211

U.S. Nuclear Regulatory Commission Meetings
Thursday, 14 April 2011

Time	Organization-Topic	Location
1100	NISA & TEPCO - Daily Status	TEPCO

Wittick, Brian

From: Wittick, Brian
Sent: Thursday, April 14, 2011 4:35 AM
To: '?? ??'
Cc: 'tanabeyx@state.gov'; 'smckenna@ofda.gov'
Subject: RE: Interpreter for April 15th

Dear Yoriko,

This is correct that we need a second interpreter to cover the afternoon meetings tomorrow.

Please let me know what the plan will be for the interpreters to meet up for each of the groups.

If there are questions or issues during the day, my phone number is (b)(6)

Thank you,
Brian Wittick

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Thursday, April 14, 2011 3:00 AM
To: Wittick, Brian
Cc: 'tanabeyx@state.gov'; Stahl, Eric; 'smckenna@ofda.gov'
Subject: Interpreter for April 15th

Dear Brian-san,

Ms. Nagai has just informed me of the schedule of 15th as below

1.
11:00- @ TEPCO

2.
13:30- @TEPCO

3.
14:00- @NISA

4.
15:00- Kantei Building

5.
16:00- with NISA

6.
17:30- with NISA

Can we assign an extra interpreter for 3 and 5?
Ms. Nagai will interpret at 1,2,4 and 6.

If this is okay with you, I will make an arrangement accordingly.

0000|212

Thank you.

Best regards,
Yoriko

上村（うえむら）依子／コミュニケーション事業部
(株)サイマル・インターナショナル
http://www.simul.co.jp
TEL: 03-3524-3177(直通)　FAX: 03-3524-3105
〒104-0045
東京都中央区築地 1-12-6　築地えとビル 5 階

Merzke, Daniel

From: Merzke, Daniel
Sent: Thursday, April 14, 2011 8:41 AM
To: Bush-Goddard, Stephanie
Subject: RE: Go Book

Yes, the Q&As were a section in the Go Book. The package was due today; it was very short notice so we'll have to do the best we can.

From: Bush-Goddard, Stephanie
Sent: Thursday, April 14, 2011 8:39 AM
To: Merzke, Daniel
Subject: RE: Go Book

Thanks,

To jog my memory: The update Q&As related to the Japan event and seismic issues was also included in the "go book." Correct?

Also, just fyi

The BC in DRP for Watts bar is aware of the briefing book and will send it by 10am tomorrow. I have a 4 hr turnaround time to get it to CMR Ostendorff's office at 2pm.

Might want to you1

-Stephanie

From: Merzke, Daniel
Sent: Thursday, April 14, 2011 8:30 AM
To: Evans, Michele
Cc: Muessle, Mary; Andersen, James; Bush-Goddard, Stephanie
Subject: RE: Go Book

The Go Book has been delivered to CMR Ostendorff's office.

From: Evans, Michele
Sent: Thursday, April 14, 2011 7:03 AM
To: Merzke, Daniel
Subject: Fw: Go Book

Sent from an NRC Blackberry
Michele Evans

From: Nieh, Ho
To: Evans, Michele
Sent: Thu Apr 14 06:59:55 2011
Subject: RE: Go Book

0000|213

Hi Michele – hope all is well with you.

Is it possible to receive the materials today? We are leaving Sunday.

Thanks.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Evans, Michele
Sent: Wednesday, April 13, 2011 9:12 PM
To: Virgilio, Martin; Marshall, Jane; Wiggins, Jim
Cc: Nieh, Ho; Merzke, Daniel; Andersen, James
Subject: RE: Go Book

Will do.

From: Virgilio, Martin
Sent: Wednesday, April 13, 2011 5:54 PM
To: Marshall, Jane; Evans, Michele; Wiggins, Jim
Cc: Nieh, Ho; Merzke, Daniel; Andersen, James
Subject: Go Book

Michelle

Can you please create a "go book" for Commissioner Ostendorff. He will be traveling to Watts Bar with a member of Congress who is going in response to the events in Japan. We want the Commissioner to have the latest information on conditions in Japan. I believe we can use "off the shelf" information.

Dan will be your EDO contact.

Marty

Wittick, Brian

From: Wittick, Brian
Sent: Thursday, April 14, 2011 2:26 PM
To: Andersen, James
Subject: Re: Japan Trip reports

Thanks Jim

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: Andersen, James
To: Wittick, Brian
Cc: Williams, Shawn; Muessle, Mary
Sent: Thu Apr 14 11:42:20 2011
Subject: RE: Japan Trip reports

Brian, we discussed this a little this morning, no need for a pre-trip or post-trip report. With the communications going on and all the briefings, all key stakeholders are informed. Hope all continues to go well.

Jim A.

From: Wittick, Brian
Sent: Wednesday, April 13, 2011 2:34 AM
To: Muessle, Mary
Cc: Andersen, James; Williams, Shawn
Subject: Japan Trip reports

Mary,

We haven't noted anyone doing pre-trip and post trip reports for the Japan trips. Elmo is interested as to whether that requirement of the OEDO procedure on foreign travel is officially waved.

Thanks,
Brian

0000/214

Wittick, Brian

From: Wittick, Brian
Sent: Thursday, April 14, 2011 9:59 PM
To: Casto, Chuck
Subject: Fw: NRC Meetings for 15 April 2011

Chuck
Can Mariko. (Interpreter) meet you at TEPCO?

VR

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

---- Original Message ----
From: ?? ? <satoh.takashi@tepco.co.jp>
To: Wittick, Brian
Sent: Thu Apr 14 21:47:53 2011
Subject: Re: NRC Meetings for 15 April 2011

Dear Wittick,

Thank you very much.

Takashi Sato
TEPCO

TEL:03-6373-4721
FAX:03-3596-8538
E-Mail:satoh.takashi@tepco.co.jp

---- Original Message ----
From: "Wittick, Brian" <Brian.Wittick@nrc.gov>
To: <bannai-toshihiro@meti.go.jp>; <satoh.takashi@tepco.co.jp>; <nei-hisanori@meti.go.jp>; <oshima-toshiyuki@meti.go.jp>; <koyama-masaomi@meti.go.jp>
Cc: "Casto, Chuck" <Chuck.Casto@nrc.gov>; "Reynolds, Steven" <Steven.Reynolds@nrc.gov>; <y-uemura@simul.co.jp>, "Wittick, Brian" <Brian.Wittick@nrc.gov>
Sent: Friday, April 15, 2011 9:59 AM
Subject: NRC Meetings for 15 April 2011

Dear Bannai-san and Satoh-san,

Please find the schedule for NRC meetings today (attached). If you have any questions or concerns, please let me know.
Please note: Brian Wittick (copied on this email), will be replacing me as the NRC Team International Liaison. Tomorrow is my last day in Tokyo and I have enjoyed meeting with all of you. Do not hesitate to contact me in the future.
Best regards,

0000/215

Brian Wittick
U.S. Nuclear Regulatory Commission
Japan Team International Liaison
Tel: 81-33-22-45-066
Mob: (b)(6)

Wittick, Brian

From: Wittick, Brian
Sent: Friday, April 15, 2011 1:27 AM
To: 'bannai-toshihiro@meti.go.jp'
Cc: Casto, Chuck
Subject: Re: Communication Plan draft document

Dear Toshihiro-san

I am now at the 1400 meeting at METI building and will come visit as you request below.

Best

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

---- Original Message ----
From: Toshihiro Bannai <bannai-toshihiro@meti.go.jp>
To: Wittick, Brian
Cc: nei-hisanori@meti.go.jp <nei-hisanori@meti.go.jp>; oshima-toshiyuki@meti.go.jp <oshima-toshiyuki@meti.go.jp>; koyama-masaomi@meti.go.jp <koyama-masaomi@meti.go.jp>; noda-tomoki@meti.go.jp <noda-tomoki@meti.go.jp>
Sent: Fri Apr 15 00:20:56 2011
Subject: RE: Communication Plan draft document

Dear Brian-san,

Would you kindly come to our office (room325 in the annex building of METI) after the meeting on spent fuel removal held in the same building from 16:00?

Best,
Toshihiro

----Original Message----
From: Wittick, Brian [mailto:Brian.Wittick@nrc.gov]
Sent: Friday, April 15, 2011 10:12 AM
To: 'bannai-toshihiro@meti.go.jp'
Cc: 'nei-hisanori@meti.go.jp'; 'oshima-toshiyuki@meti.go.jp'
Subject: FW: Communication Plan draft document

Dear Bannai-san

Attached please find an updated draft of our proposed communication plan.
This update incorporates your insights from yesterday and an input request from our Department of Energy. Our leadership also suggested, given concerns about the number of criteria, that maybe we could simplify several of the criteria to one that is more general and outcome driven such as "events that cause a site evacuation" or similar. I hope that we are able to dialogue on this more today so we can incorporate your thoughts.

0000/216

Best regards,

Brian Wittick

U.S. Nuclear Regulatory Commission

Wittick, Brian

From: Wittick, Brian
Sent: Friday, April 15, 2011 5 22 AM
To: '?? ??'
Subject: RE Interpreter for April 16th&17th

Dear Yoriko-san

Thank you for the information I do not anticpate we will need an extra interpreter over the weekend. In fact, it is possible we will not need any interpreters this weekend. I will let you know as soon as possible.

Kind regards,
Brian

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Friday, April 15, 2011 4:21 AM
To: Wittick, Brian
Subject: Interpreter for April 16th&17th

Dear Brian-san,

As I informed you before, we have assigned Ms. Sumita for 9-17 this weekend.
She will visit the Embassy @9:00.
If any change of the arrangement is required, please let me know.

I won't be able to check my office PC during weekend.
Please call my cell phone when you need an extra interpreter this weekend.
My number is (b)(6)

Thank you.

Best regards,
Yoriko

上村（うえむら）依子／コミュニケーション事業部
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http://www.simul.co.jp
TEL: 03-3524-3177(直通)　FAX: 03-3524-3105
〒104-0045
東京都中央区築地 1-12-6　築地えとビル５階

From: Wittick, Brian [mailto:Brian.Wittick@nrc.gov]
Sent: Thursday, April 14, 2011 6:07 PM

00000/217

To: 上村 依子
Subject: RE: Interpreter for April 15th

Thank you.

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Thursday, April 14, 2011 5:01 AM
To: Wittick, Brian
Cc: 'tanabeyx@state.gov'; 'smckenna@ofda.gov'
Subject: RE: Interpreter for April 15th

Dear Brian-san,

Thank you for your updated information.
I added the interpreters' name to each meeting.

1. Nagai
11:00- @ TEPCO
2. Nagai
13:30- @TEPCO
3. Ohno
14:00- @NISA
4. Nagai
15:00- Kantei Building
5. Ohno
16:00- with NISA
6. Nagai
17:30- with NISA

Ms. Nagai will visit the Embassy at 9:00 tomorrow like she did today.
Ms. Ohno will also visit the Embassy at 13:30.

I updated the schedule of interpreters as attached.

Thank you.

Best regards,
Yoriko

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From: Wittick, Brian [mailto:Brian.Wittick@nrc.gov]
Sent: Thursday, April 14, 2011 5:35 PM
To: 上村 依子
Cc: 'tanabeyx@state.gov'; 'smckenna@ofda.gov'
Subject: RE: Interpreter for April 15th

Dear Yoriko,

This is correct that we need a second interpreter to cover the afternoon meetings tomorrow.

Please let me know what the plan will be for the interpreters to meet up for each of the groups.

If there are questions or issues during the day, my phone number is (b)(6)

Thank you,
Brian Wittick

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Thursday, April 14, 2011 3:00 AM
To: Wittick, Brian
Cc: 'tanabeyx@state.gov'; Stahl, Eric; 'smckenna@ofda.gov'
Subject: Interpreter for April 15th

Dear Brian-san,

Ms. Nagai has just informed me of the schedule of 15th as below

1.
11:00- @ TEPCO

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Can we assign an extra interpreter for 3 and 5?
Ms. Nagai will interpret at 1, 2, 4 and 6.

If this is okay with you, I will make an arrangement accordingly.

Thank you.

Best regards,
Yoriko

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Wittick, Brian

From: Wittick, Brian
Sent: Friday, April 15, 2011 8:47 PM
To: '?? ??'
Cc: 'McKenna, Surin (DCHA/OFDA)'
Subject: RE: Interpreter for April 16th&17th

Dear Yoriko-san,

This is to confirm our conversation that we do not require interpreter services for the rest of the weekend. Interpreters will be needed again on Monday.

Kind regards,
Brian

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Friday, April 15, 2011 4:21 AM
To: Wittick, Brian
Subject: Interpreter for April 16th&17th

Dear Brian-san,

As I informed you before, we have assigned Ms. Sumita for 9-17 this weekend.
She will visit the Embassy @9:00.
If any change of the arrangement is required, please let me know.

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Please call my cell phone when you need an extra interpreter this weekend.
My number is (b)(6)

Thank you.

Best regards,
Yoriko

==========
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From: Wittick, Brian [mailto:Brian.Wittick@nrc.gov]
Sent: Thursday, April 14, 2011 6:07 PM

0000/218

To: 上村 依子
Subject: RE: Interpreter for April 15th

Thank you.

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Thursday, April 14, 2011 5:01 AM
To: Wittick, Brian
Cc: 'tanabeyx@state.gov'; 'smckenna@ofda.gov'
Subject: RE: Interpreter for April 15th

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Ms. Ohno will also visit the Embassy at 13:30.

I updated the schedule of interpreters as attached.

Thank you.

Best regards,
Yoriko

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Sent: Thursday, April 14, 2011 5:35 PM
To: 上村 依子
Cc: 'tanabeyx@state.gov'; 'smckenna@ofda.gov'
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Thank you,
Brian Wittick

From: 上村 依子 [mailto:y-uemura@simul.co.jp]
Sent: Thursday, April 14, 2011 3:00 AM
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Cc: 'tanabeyx@state.gov'; Stahl, Eric; 'smckenna@ofda.gov'
Subject: Interpreter for April 15th

Dear Brian-san.

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Ms. Nagai will interpret at 1, 2, 4 and 6.

If this is okay with you, I will make an arrangement accordingly.

Thank you.

Best regards,
Yoriko

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From: Kammerer, Annie
To: Case, Michael; Hogan, Rosemary; Richards, Stuart; Uhle, Jennifer; Sheron, Brian
Subject: planning mtg for work flow and communication in the next phase of our response
Date: Thursday, March 17, 2011 12:02:13 PM

All,

FYI, see email chain below.

To date we have had what I would characterize as really good coordination between RES, NRO, and NRR, particularly given the circumstances. This has been, in part because things have been centralized through the Ops Center and OPA.

As we move into the next (post-emergency) phase, we will need a way to continue to coordinate our response in a very clear way. NRO is suggesting a planning meeting to figure out how to do that.

I have never dealt with something of this magnitude before; but many of you dealt with TMI and Chernobyl and probably have thoughts as to how this would work best.

Please think about what we may suggest, and plan on being contacted by NRO management.

(BTW, normally I'd talk to Rosemary, who'd talk to Mike, who'd talk to Brian); but I though it was better to just spam all of you with this since I don't know when they'll call over).

Also FYI, I just received notice that Meena has been tasked as the NRR lead on both seismic and tsunami. So we need to bring her in.

Cheers,
Annie

-----Original Message-----
From: Chokshi, Nilesh
Sent: Thursday, March 17, 2011 10:21 AM
To: Munson, Clifford; Kammerer, Annie; Flanders, Scott; Karas, Rebecca
Subject: Re: planning mtg

I agree. I proposed this to upper management.

Sent from NRC Blackberry
Nilesh
(b)(6)

----- Original Message -----
From: Munson, Clifford
To: Kammerer, Annie; Flanders, Scott; Chokshi, Nilesh; Karas, Rebecca
Sent: Thu Mar 17 10:13:48 2011
Subject: planning mtg

We are going to become quickly overwhelmed (if not already) with requests for briefings, to prepare briefing materials, respond to articles in press, etc. The green tickets should start coming in any day as we already have
letters from Senators, Congressmen, etc. Maybe we should take the time to plan and organize when we have a brief interlude - next week?

Cliff

0000/219