

Cohen, Shari

From: Leeds, Eric *NR*
Sent: Friday, March 11, 2011 12:28 PM
To: 'Diane.JACKSON@oecd.org'
Subject: RE: OECD/NEA - Japan Friday 11 March 13:45 UTC - Evacuation order to residents

Thanks, Diane - outstanding help!

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
301-415-1270

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

From: Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]
Sent: Friday, March 11, 2011 7:58 AM
To: Jean.GAUVAIN@oecd.org; wgpcnews@oecd-nea.org
Cc: add-cnra@oecd-nea.org; add-cnra-o@oecd-nea.org; add-wgip@oecd-nea.org; add-cnra-wgoe@oecd-nea.org; add-csni@oecd-nea.org; add-csni-o@oecd-nea.org; add-iage@oecd-nea.org; Javier.REIG@oecd.org; Greg.LAMARRE@oecd.org; Alejandro.HUERTA@oecd.org; add-iageseism@oecd-nea.org
Subject: RE: OECD/NEA - Japan Friday 11 March 13:45 UTC - Evacuation order to residents

Dear all -

Please find attached, additional articles from Japan.

Best, Diane Jackson

From: GAUVAIN Jean, NEA/SURN
Sent: Friday, March 11, 2011 1:51 PM
To: wgpcnews@oecd-nea.org
Cc: add-cnra@oecd-nea.org; add-cnra-o@oecd-nea.org; add-wgip@oecd-nea.org; add-cnra-wgoe@oecd-nea.org; add-csni@oecd-nea.org; add-csni-o@oecd-nea.org; add-iage@oecd-nea.org; REIG Javier, NEA/SURN; JACKSON Diane, NEA/SURN; LAMARRE Greg, NEA/SURN; HUERTA Alejandro, NEA/SURN; add-iageseism@oecd-nea.org
Subject: FW: OECD/NEA - WGPC Secretariat - Japan Friday 11 March 13:45 UTC - Evacuation order to residents

WGPC Members

Cc CNRA, CSNI, WGOE, WGIP, IAGE, IAGESEISM Please read below update and correction to previous message

Jean Gauvain - NEA/NSD - Phone +33 1 45 24 10 52 - Mobile

(b)(6)

From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]
Sent: Friday, March 11, 2011 13:41
Subject: [Yama] Evacuation order to residents

The people of a town near Fukushima Daiichi Units (Within 2 km) were ordered to evacuate their homes.

I was mentioned previous emails with regard to ECCS but I think this is very strange that ECCS are really being driven even diesel generators has failed to start.

Please correct that following plants are just in the emergency mode and not in the ECCS mode.

Fukushima 1-1 - State of emergency
Fukushima 1-2 - Call off the emergency
Fukushima 1-3 - State of emergency
Fukushima 2-1 - State of emergency
Fukushima 2-2 - State of emergency
Fukushima 2-4 - State of emergency

Yama

+++++

Akihiro YAMAMOTO
Ageing Management Specialist,
Nuclear Safety Measurement Division
Fukui Prefectural Government

Telephone: +81 (0) 776 20 0314

E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp<mailto:a-yamamoto@houshasen.tsuruga.fukui.jp>

+++++

From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]

Sent: Friday, March 11, 2011 8:00 PM

To: 'Akihiro YAMAMOTO'; Jean.GAUVAIN@oecd.org

Cc: Javier.REIG@oecd.org; Luis.ECHAVARRI@oecd.org; Uichiro.YOSHIMURA@oecd.org;
Serge.GAS@oecd.org; Axel.BREEST@oecd.org; Elisabeth.MAUNY@oecd.org; Greg.LAMARRE@oecd.org;
Radomir.REHACEK@oecd.org; Alejandro.HUERTA@oecd.org; Diane.JACKSON@oecd.org;
Jean.GAUVAIN@oecd.org; John.NAKOSKI@oecd.org; Philippe.GRESS@oecd.org;
Lawrence.BURKHART@oecd.org; 'Carlo Vitanza'; Abdallah.amri@oecd.org
Subject: [Yama] Situation update (19:45 Japan time)

NISA is now holding a press conference.

Fukushima 1-1 (ECCS mode)

Fukushima 1-2 (ECCS mode) - Call off the emergency Fukushima 1-3 (ECCS mode) Fukushima 2-1 (ECCS mode)

The problem is that they can't monitor water injection (ECCS).

It might be a problem of the monitoring system.

In fact, TEPCO called off the emergency of unit 1-2 a while ago because they are able to monitoring the water level in the reactor now.

Yama

+++++

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E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp<mailto:a-yamamoto@houshasen.tsuruga.fukui.jp>

+++++

From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]
Sent: Friday, March 11, 2011 7:30 PM
To: 'Jean.GAUVAIN@oecd.org'
Cc: 'Javier.REIG@oecd.org'; 'Luis.ECHAVARRI@oecd.org'; 'Uichiro.YOSHIMURA@oecd.org';
'Lydie.GUYOT@oecd.org'; 'Marie-Laure.PEYRAT@oecd.org'; 'Serge.GAS@oecd.org';
'Axel.BREEST@oecd.org'; 'Elisabeth.MAUNY@oecd.org'; 'Greg.LAMARRE@oecd.org';
'Radomir.REHACEK@oecd.org'; 'Alejandro.HUERTA@oecd.org'; 'Diane.JACKSON@oecd.org';
'Jean.GAUVAIN@oecd.org'; 'John.NAKOSKI@oecd.org'; 'Philippe.GRESS@oecd.org';
'Lawrence.BURKHART@oecd.org'; 'Nicolina.IANNOLO@oecd.org'; 'Roopa.CHAUHAN@oecd.org';
'christele.tephanympnia@oecd.org'; 'Aileen.LITTLE@oecd.org'; 'Carlo Vitanza'; 'Abdallah.amri@oecd.org'
Subject: [Yama] Situation now - ECCS mode

Dear all,

TEPCO (Tokyo Electric Power Company) declared the state of emergency of following NPPs:
Fukushima 1-1
Fukushima 1-2
Fukushima 1-3
Fukushima 2-1 (ECCS mode now)

I am trying to get information why DG can't start up (problem of intake sea water for the cooling DG system?)

There is a fire from turbine building (B1 floor) at Onagawa NPP unit 1 but the fire fighting was completely succeeded.

<http://www.yomiuri.co.jp/dy/national/20110311dy01.htm>

A while ago, Fukui (my office located) had also earthquake (M4.1). We have 15 NPPs but no damage to the NPPs.

Yama

+++++

Akihiro YAMAMOTO
Ageing Management Specialist,
Nuclear Safety Measurement Division
Fukui Prefectural Government

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E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp<mailto:a-yamamoto@houshasen.tsuruga.fukui.jp>

+++++

From: Brown, Frederick *me*
To: Leeds, Eric; Grobe, Jack; Boger, Bruce; Bahadur, Sher; Blount, Tom; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Glitter, Joseph; Givvius, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; Lund, Louise; Mark Cunningham; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David; Weerakkody, Sunil
Cc: Thomas, Eric; Thorp, John; Westreich, Barry
Subject: FW: NRR/IOEB Earthquake Update as of 4:00 pm (***Internal NRC Use Only***)
Date: Friday, March 11, 2011 4:18:09 PM
Attachments: NPP Japan map2011.pdf

We continue to believe that Units 1 and 2 are in SBO, though there are reports of one or more portable generators on-site (no info on size – whether covering control power for RCIC post-battery or larger).

From: Thomas, Eric
Sent: Friday, March 11, 2011 4:12 PM
To: Brown, Frederick
Cc: Thorp, John; Garmon-Candelaria, David; Bernardo, Robert; Haskell, Russell; Pannier, Stephen; King, Mark; Wegner, Mary; McGinty, Tim
Subject: NRR/IOEB Earthquake Update as of 4:00 pm (***Internal NRC Use Only***)

~~***Internal NRC Use Only***~~

The following is a summary of the past 3 press releases from Tokyo Electric Power Company
<http://www.tepco.co.jp/en/index-e.html> :

Fukushima Daiichi (Units 1,2,3 shutdown automatically due to earthquake; Units 4-6 were already down for outages)

1. Unit 1: Cooling is provided by the Isolation Condenser. The plant may require venting based on a decrease in reactor water level. The government instructed evacuation for residents inside 3 km, and sheltering in place for residents between 3 and 10 km.
2. Unit 2: Cooling is provided by RCIC. Level can be monitored by temporary instrumentation and remains steady. There is still the possibility of a release if reactor level decreases. This is also part of the basis for the above government evacuation/sheltering instructions.
3. Unit 3: Cooling is provided by RCIC. No indication of leakage inside containment.
4. Units 4-6: Shutdown prior to earthquake. Reactor water levels are steady. No leakage concerns.
5. No indications of radioactive release based on on-site and off-site measurements
6. 2 contract workers injured (one with a broken bone) and were transported to the hospital
7. 2 TEPCO employees are not accounted for.

Fukushima Daini (All 4 units shutdown automatically due to earthquake)

1. Offsite power is available to all 4 units
2. Reactor water is stable at all 4 units and there are no signs of leakage
3. Control rods are fully inserted and MSIVs are closed on all 4 units.
4. One worker is seriously injured and trapped in a crane operating console in the exhaust stack. Breathing and pulse cannot be confirmed. Another worker received

PP/2

- injuries (sprained ankle and cuts on knees) during the quake.
5. No missing personnel reported
 6. No indications of radioactive release based on on-site and off-site measurements

Eric Thomas

U.S. Nuclear Regulatory Commission

NRR/DIRS/IOEB

OWFN-7E24

eric.thomas@nrc.gov

301-415-6772 (office)

(b)(6)

mobile)

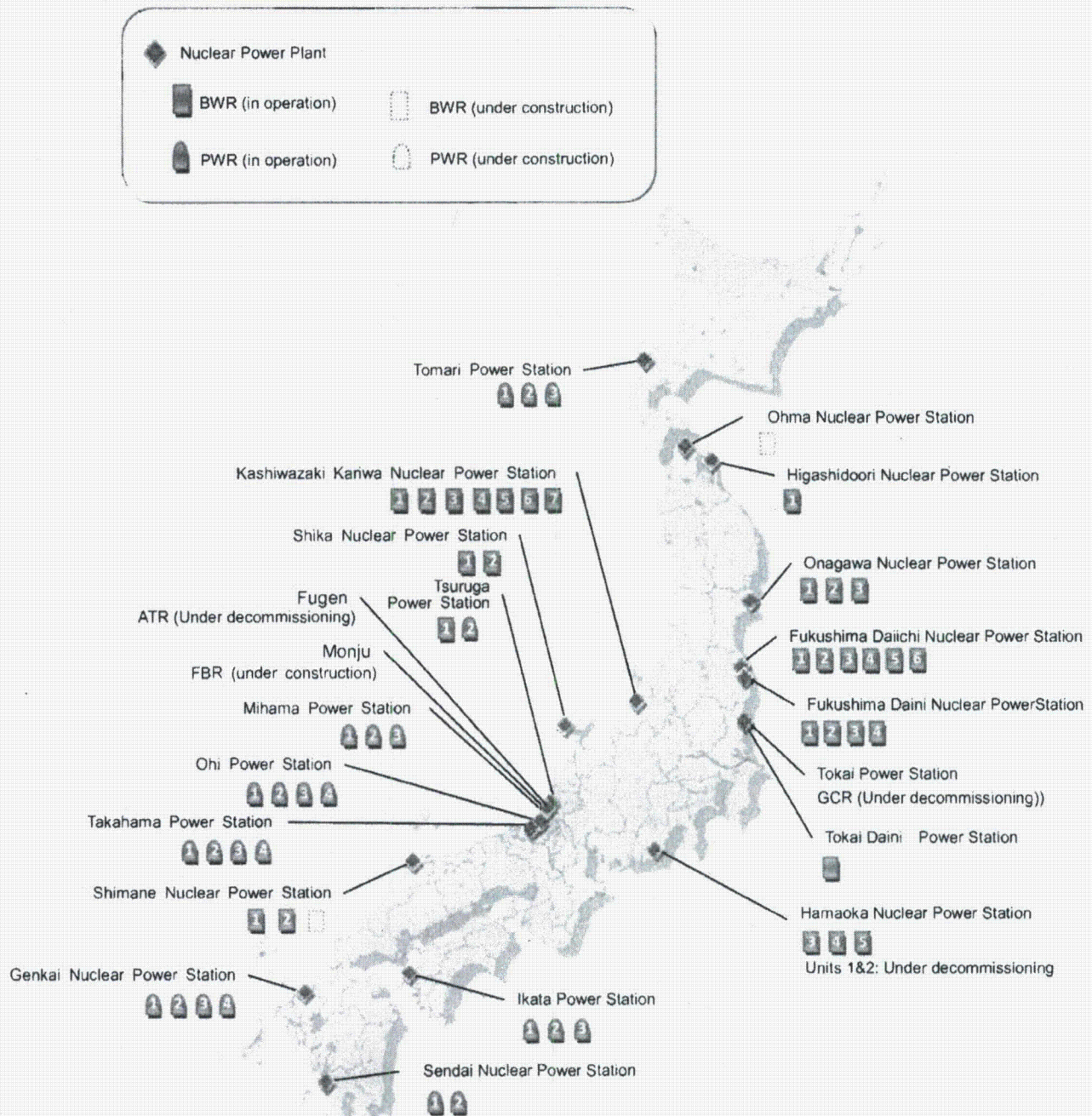


Fig. A-2 Locations of Nuclear Installations

From: Howe, Allen
To: Lubinski, John; Thomas, Brian; Gitter, Joseph; Nelson, Robert; McGinty, Tim; Quay, Theodore; Blount, Tom; Cheok, Michael; Lee, Samson; Ruland, William; Bahadur, Sher; Brown, Frederick; Hiland, Patrick; Skeen, David
Cc: Boger, Bruce; Grobe, Jack; Leeds, Eric; Campbell, Stephen
Subject: Re: Watts Bar 2 Management Report
Date: Friday, March 11, 2011 9:17:03 AM

All

Apparently webmail does not forward attachments to emails. I will resend when I return on Monday. Apologies for any confusion.

Allen

Allen Howe
Sent from NRC Blackberry
(b)(6)

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

From: Howe, Allen
To: Lubinski, John; Thomas, Brian; Gitter, Joseph; Nelson, Robert; McGinty, Tim; Quay, Theodore; Blount, Tom; Cheok, Michael; Lee, Samson; Ruland, William; Bahadur, Sher; Brown, Frederick; Hiland, Patrick; Skeen, David
Cc: Boger, Bruce; Grobe, Jack; Leeds, Eric; Campbell, Stephen
Sent: Thu Mar 10 22:01:24 2011
Subject: Watts Bar 2 Management Report

All - attached is the current Watts Bar 2 Management report. The environmental information has been added. We have also identified some areas where more information is needed or new issues were identified. Steve has coordinated with the branch chiefs. Busy week this week; you should have next week's update earlier in the week.

Allen

From: Campbell, Stephen
Sent: Wednesday, March 09, 2011 6:58 AM
To: Howe, Allen
Subject: Management Report

Allen:

Attached is the latest management report that incorporates feedback from my discussions with the BCs yesterday. Please use attached. I will bring you hard copies.

Stephen J. Campbell,
Branch Chief
NRR/DORL/LP-WB
U.S. Nuclear Regulatory Commission
Office - O8H1
Mail Stop - O8H4A
Washington, DC 20555

• E-mail: stephen.campbell@nrc.gov | • Office: (301) 415-3353 | NRC Cell: (b)(6) | 7 Fax: (301) 415-1885 |
[cid:image001.jpg@01CBDE25.F31C3760]

PP/3

From: Grobe, Jack
To: "ArthurPJ@inpo.org"
Subject: Re: Sendai earthquake
Date: Friday, March 11, 2011 12:14:24 PM

It is amazing. When the "dust" settles I fear there may be many casualties. One nuke may have had challenges. Still collecting information.
Jack Grobe, Deputy Director, NRR

From: Arthur, Peter J. (INPO) <ArthurPJ@inpo.org>
To: Grobe, Jack
Sent: Fri Mar 11 08:45:28 2011
Subject: Sendai earthquake

Looks like we missed all the fun....

Peter J Arthur
Sr. Evaluator MA/WM
Office (770) 644-8395

Cell

(b)(6)

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Thank you.

PP/4

From: Grobe, Jack - *NRD*
To: "arthurj@inpo.org"
Subject: Fw: Earthquake Update as of 11 am
Date: Friday, March 11, 2011 12:23:26 PM
Attachments: NPP Japan map2011.pdf

Fyi
Jack Grobe, Deputy Director, NRR

From: Brown, Frederick - *NRD*
To: Boger, Bruce; Leeds, Eric; Grobe, Jack; Bahadur, Sher; Blount, Tom; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Gitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; Lund, Louise; Mark Cunningham <Mark.Cunningham@nrc.gov>; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David; Weerakkody, Sunil
Sent: Fri Mar 11 12:19:10 2011
Subject: FW: Earthquake Update as of 11 am

FYI – item 4c of most interest

From: Thomas, Eric - *NRD*
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. *release*

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 facilities.
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.

PP/5

- 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)

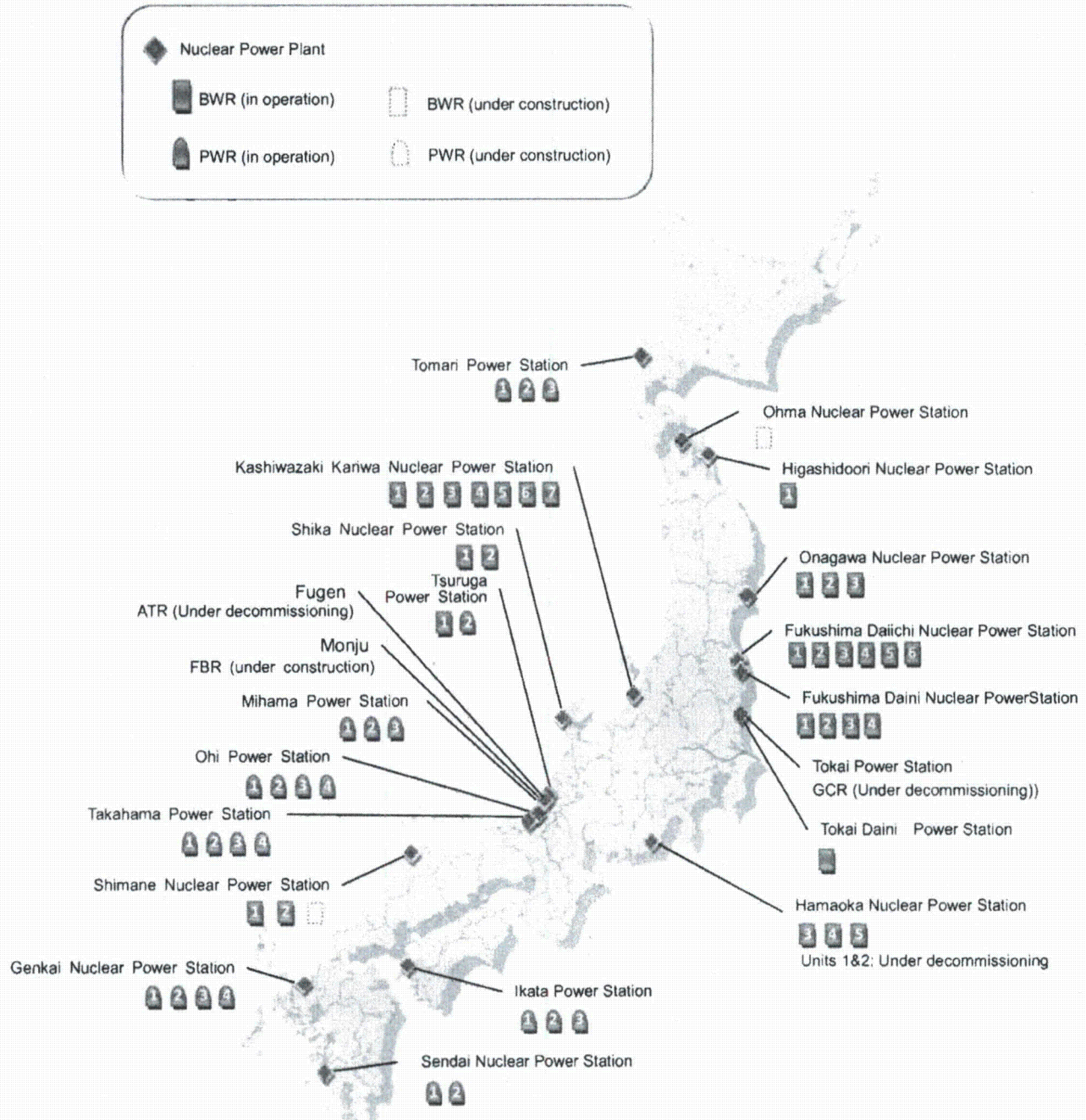


Fig. A-2 Locations of Nuclear Installations

104R
From: Rick DeVercelly
To: Nguyen, Quynh; Carter, Mary
Cc: Devercelly, Richard; Leeds, Eric; Boger, Bruce
Subject: RE: Travel for Richard Devercelley
Date: Monday, March 14, 2011 8:08:57 PM

I have received my reservation and will be on my way tomorrow. Thank you all for your help.

Rick DeVercelly

RE
From: Nguyen, Quynh [mailto:Quynh.Nguyen@nrc.gov] *NR R*
Sent: Monday, March 14, 2011 5:03 PM
To: Carter, Mary
Cc: Devercelly, Richard; (b)(6) Leeds, Eric; Boger, Bruce
Subject: Travel for Richard Devercelley
Importance: High *edp*

Mary,

I understand that logistics are still being worked out (military or commercial).

Rick is leaving his duty station to work on trip preparations.

His personal email is on "cc" and his cell phone is (b)(6) *edp*

Thanks,
Quynh "Quin"
NRR Office Technical Assistant

PP/6

Date: Monday, March 14, 2011 7:20:27 PM
Posted At: itrezzo EPS Backups
Conversation: itrezzo EPS Backups: 3/14/2011 19:20
Subject: itrezzo EPS Backups: 3/14/2011 19:20
Attachments: [Chuck Casto.msg](#)
[Sean Meighan.msg](#)

The following 2 contact(s) were updated with current information:

- Sean Meighan (b)(6)
- Chuck Casto (b)(6)

NOTE: If itrezzo EPS overwrites any important data in your contacts, you can find the original, unchanged contacts attached to this message.

PP/7

Attachment Chuck Casto.msg (2560 Bytes) cannot be converted to PDF format.

Attachment Sean Meighan.msg (2560 Bytes) cannot be converted to PDF format.

Markley, Michael

From: Markley, Michael
Sent: Monday, March 14, 2011 2:55 PM
To: Nelson, Robert; Giitter, Joseph; Howe, Allen
Subject: FW: New 2.206 (Mr. Saporito - related to the quake in Japan)
Attachments: FW: <<< 2.206 PETITION >>>

FYI. We are going to need a strategy once these start piling up.

From: Mensah, Tanya
Sent: Monday, March 14, 2011 8:18 AM
To: Blount, Tom; Burnell, Scott; Rosenberg, Stacey
Cc: Quay, Theodore; McGinty, Tim; Orf, Tracy; Jaegers, Cathy; Meighan, Sean; Gulla, Gerald; Hott, Christopher; Scott, Catherine; Rosenberg, Stacey; Banic, Merrilee; Russell, Andrea; Markley, Michael
Subject: New 2.206 (Mr. Saporito - related to the quake in Japan)

Good morning Scott and Tom,

I had a similar thought and looks like we have our first 2.206 petition – from Mr. Saporito. He is seeking immediate enforcement action (immediate shut-down of all nuclear power reactors in the USA which are known to be located on or near an earthquake fault-line). We will need to coordinate closely with DORL since this will likely involve multiple plants/licensees.

Cathy: Can you please ticket the attached 2.206 to NRR? Thank you.

Sean: Copying you for awareness only so that you can forward to appropriate DORL management. A green ticket should be coming soon.

Tanya

Outside of Scope

From: Burnell, Scott
To: Mensah, Tanya; Blount, Tom; Rosenberg, Stacey
Sent: Sun Mar 13 04:59:07 2011
Subject: A thought for the coming week

Hello all;

I mentioned this to Tom late Saturday night/early Sunday morning (it's sort of a blur), but I thought I'd be redundant:

PP/8

I think it's highly likely the earthquake/tsunami and related accidents are going to generate quite a few 2.206 petitions for immediate action on Diablo Canyon, San Onofre, Mark I BWRs in general and perhaps other coastal sites. Perhaps a little advance planning to line up resources might be in order – for example, is it possible for a single review board to handle several similar petitions at the same time?

Scott

From: American Nuclear Society
To: Grobe, Jack
Subject: American Nuclear Society 2011 election login information below
Date: Monday, March 14, 2011 2:28:24 PM

The American Nuclear Society election is open through April 26, 2011 11:59:59 AM, Central Standard Time, USA.

To cast your vote, please login using your unique credentials:

(b)(6)
(b)(6)

Go to:
<https://www.directvote.net/ans/>

Candidate information is available on the on-line ballot.

For technical support (available Monday - Friday 8:00 am - 5:00 pm Central Time USA excluding holidays) call 952-974-2339 or <mailto:support@directvote.net>.

For other questions or to request a paper ballot please call at 1-800-323-3044 or email <mailto:governance@ans.org>

This message was sent by American Nuclear Society election vendor Survey and Ballot Systems 7653 Anagram Drive, Eden Prairie, MN 55344.

To remove yourself from receiving future mailings, please visit:
<https://www.directsurv.net/stopemails.asp>

PP/9

NRR
From: Boger, Bruce
To: Nguyen, Quynh
Cc: Meighan, Sean
Subject: RE: Travel for Richard Devercelley
Date: Monday, March 14, 2011 5:09:00 PM

Thanks, Quynh. I finally caught up to the emails and see Rick's concern. I'll send the last one.

From: Nguyen, Quynh
Sent: Monday, March 14, 2011 5:03 PM
To: Carter, Mary
Cc: Devercelly, Richard [richarddevercelly@yahoo.com]; Leeds, Eric; Boger, Bruce
Subject: Travel for Richard Devercelley
Importance: High

Mary,

I understand that logistics are still being worked out (military or commercial).

Rick is leaving his duty station to work on trip preparations.

His personal email is on "cc" and his cell phone is (b)(6)

Thanks,
Quynh "Quin"
NRR Office Technical Assistant

PP/10

Tran, Frank

From: Tran, Frank
Sent: Monday, March 14, 2011 7:27 AM
To: Lerch, Robert; Giessner, John
Subject: FW: Talking Points from ANS National: Japan Situation
Attachments: ANS Talking Points - 2011-03-13 R1_2.pdf; ANS Japan Backgrounder.pdf

Informative slides.

From: Becker, Kimberly A. [mailto:kabecker@anl.gov]
Sent: Monday, March 14, 2011 7:03 AM
To: (b)(6)
Subject: Talking Points from ANS National: Japan Situation

Greetings, Section Members,

For those that may not have received the talking points on the Japan Nuclear Crisis from Joe Colvin, ANS President, I am forwarding them to our section.

Kimberly

Kimberly Becker
Argonne National Laboratory
Nuclear Engineering Division
National Security & Nonproliferation Dept
9700 S Cass Avenue, Building 315
Argonne, IL 60439
(630) 252-0197 phone
(b)(6) mobile

PP/11

Tran, Frank

From: Becker, Kimberly A. [kabecker@anl.gov]
Sent: Monday, March 14, 2011 7:03 AM
To: anschicagosecretary@yahoo.com
Subject: Talking Points from ANS National: Japan Situation
Attachments: ANS Talking Points - 2011-03-13 R1_2.pdf; ANS Japan Backgrounder.pdf

Greetings, Section Members,

For those that may not have received the talking points on the Japan Nuclear Crisis from Joe Colvin, ANS President, I am forwarding them to our section.

Kimberly

Kimberly Becker

Argonne National Laboratory
Nuclear Engineering Division
National Security & Nonproliferation Dept
9700 S Cass Avenue, Building 315
Argonne, IL 60439
(630) 252-0197 phone
(b)(6) mobile

The predominance of ANS members reside in the U.S. As we interact with our family, neighbors and citizens in our communities many questions will come based on news coverage of the nuclear power plant situation in Japan. These talking points key on the theme 'could it happen in the U.S.?' *

ANS Member Talking Points

Implications to U.S. nuclear energy program from the Japanese earthquake

It is premature for the technical community to draw conclusions from the earthquake and tsunami tragedy in Japan with regard to the U.S. nuclear energy program. Many opposed to nuclear power will try to use this event to call for changes in the U.S. Japan is facing beyond a "worst case" disaster since we, the technical community, did not hypothesize an event of this magnitude. Thus far, even the most seriously damaged of Japan's 54 reactors have not released radiation at levels that would harm the public. That is testament to the way professionals in our profession operate: our philosophy of defense in-depth, excellent designs, high standards of construction, conduct of operations, and most important the effectiveness of employees in following emergency preparedness planning.

The Nuclear Science and Technology (NS&T) community takes very seriously our commitment to safe operation of any nuclear facility and will incorporate lessons learned based on this experience into our safety and operating procedures. The ANS will facilitate the sharing of technical information so that these lessons receive wide distribution and be archived for future stewards of this technology. Some points to remember from this week:

- Nuclear power plants have proven their value to society in Japan, the United States and elsewhere. They provide large amounts of base load electricity on an around-the-clock basis, and they do so cost-effectively with the lowest electricity production costs of any large energy source. Both Japan and the United States have benefited greatly from nuclear energy; it has been instrumental in the nations' economic success over the past half century and their high standard of living.
- Our hallmark as a NS&T organization is to incorporate operating experience and lessons learned. When we fully understand the facts surrounding the event in Japan, we will share, document and use those insights to make NS&T even safer.
- Nuclear energy has been and will continue to be a key element in meeting America's energy needs. The nuclear industry sets the highest standards for safety and, through our focus on continuous learning; we will incorporate lessons learned from the events in Japan. The dominant factors determining technology used for new generation will be demand for new generation, the competitiveness of nuclear energy in comparison with other sources of electricity generation, and the continued safe operation of U.S. nuclear power plants.

- There has not been a rush to judgment on the part of U.S. policymakers during the first few days of this situation. We believe that is due in part to the recognition on their part that nuclear energy must continue to play a key role in a diversified energy portfolio that strengthens U.S. energy security and fuels economic growth.

* The genesis of this document is the NEI "Talking Points - Implications to U.S. nuclear energy program of the Japanese earthquake" dated March 13, 2011

American Nuclear Society Backgrounder: Japanese Earthquake/Tsunami; Problems with Nuclear Reactors

3/12/2011 5:22 PM EST

To begin, a sense of perspective is needed... right now, the Japanese earthquake/tsunami is clearly a catastrophe; the situation at impacted nuclear reactors is, in the words of IAEA, an "Accident with Local Consequences."

The Japanese earthquake and tsunami are natural catastrophes of historic proportions. The death toll is likely to be in the thousands. While the information is still not complete at this time, the tragic loss of life and destruction caused by the earthquake and tsunami will likely dwarf the damage caused by the problems associated with the impacted Japanese nuclear plants.

What happened?

Recognizing that information is still not complete due to the destruction of the communication infrastructure, producing reports that are conflicting, here is our best understanding of the sequence of events at the Fukushima I-1 power station.

- The plant was immediately shut down (scrammed) when the earthquake first hit. The automatic power system worked.
- All external power to the station was lost when the sea water swept away the power lines.
- Diesel generators started to provide backup electrical power to the plant's backup cooling system. The backup worked.
- The diesel generators ceased functioning after approximately one hour due to tsunami induced damage, reportedly to their fuel supply.
- An Isolation condenser was used to remove the decay heat from the shutdown reactor.
- Apparently the plant then experienced a small loss of coolant from the reactor.
- Reactor Core Isolation Cooling (RCIC) pumps, which operate on steam from the reactor, were used to replace reactor core water inventory, however, the battery-supplied control valves lost DC power after the prolonged use.
- DC power from batteries was consumed after approximately 8 hours.
- At that point, the plant experienced a complete blackout (no electric power at all).
- Hours passed as primary water inventory was lost and core degradation occurred (through some combination of zirconium oxidation and clad failure).

- Portable diesel generators were delivered to the plant site.
- AC power was restored allowing for a different backup pumping system to replace inventory in reactor pressure vessel (RPV).
- Pressure in the containment drywell rose as wetwell became hotter.
- The Drywell containment was vented to outside reactor building which surrounds the containment.
- Hydrogen produced from zirconium oxidation was vented from the containment into the reactor building.
- Hydrogen in reactor building exploded causing it to collapse around the containment.
- The containment around the reactor and RPV were reported to be intact.
- The decision was made to inject seawater into the RPV to continue to the cooling process, another backup system that was designed into the plant from inception.
- Radioactivity releases from operator initiated venting appear to be decreasing.

Can it happen here in the US?

- While there are risks associated with operating nuclear plants and other industrial facilities, the chances of an adverse event similar to what happened in Japan occurring in the US is small.
- Since September 11, 2001, additional safeguards and training have been put in place at US nuclear reactors which allow plant operators to cool the reactor core during an extended power outage and/or failure of backup generators – “blackout conditions.”

Is a nuclear reactor "meltdown" a catastrophic event?

- Not necessarily. Nuclear reactors are built with redundant safety systems. Even if the fuel in the reactor melts, the reactor's containment systems are designed to prevent the spread of radioactivity into the environment. Should an event like this occur, containing the radioactive materials could actually be considered a "success" given the scale of this natural disaster that had not been considered in the original design. The nuclear power industry will learn from this event, and redesign our facilities as needed to make them safer in the future.

What is the ANS doing?

ANS has reached out to The Atomic Energy Society of Japan (AESJ) to offer technical assistance.

ANS has established an incident communications response team.

This team has compiling relevant news reports and other publicly available information on the ANS blog, which can be found at ansnuclearcafe.org.

The team is also fielding media inquiries and providing reporters with background information and technical perspective as the events unfold.

Finally, the ANS is collecting information from publicly available sources, our sources in government agencies, and our sources on the ground in Japan, to better understand the extent and impact of the incident.

From: Karas, Rebecca
To: Ross-Lee, MaryJane; Kammerer, Annie; Brown, Frederick; Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura
Cc: McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Seber, Dogan; Li, Yong; Cook, Christopher
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link
Date: Monday, March 14, 2011 11:23:28 PM

Our people are plugged into Annie, so we are communicating, but we have many more resources. Niles Chokshi and Cliff Munson are here on day shift, and can provide tsunami and seismic expertise, and access to all of our staff. Our GIS people we are currently staffing the ops center with (Dogan Seber and Yong Li) also have seismology expertise. We have a geologist coming for GIS operation on afternoon shift. Someone also asked today about volcanologists. We have people with some of that experience as well who are normally on day shift. Suggest coordinating directly with Niles and Cliff on day shift, and me on evenings for any call-outs or emergent support.

We have tsunami material from previous briefings. Cliff emailed them to a large cast earlier today, and we can put together something specific for what is needed. From the earlier email below that says:

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Is this what is needed?

From: Ross-Lee, MaryJane
Sent: Monday, March 14, 2011 7:45 PM
To: Kammerer, Annie; Brown, Frederick; Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca
Cc: McDermott, Brian; Hasselberg, Rick
Subject: Re: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

There are a number of resources in NRO that could help. Becky Karas is poc.

Sent from my blackberry

MJ (b)(6)

From: Kammerer, Annie
To: Brown, Frederick; Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura
Cc: McDermott, Brian; Ross-Lee, MaryJane; Hasselberg, Rick
Sent: Mon Mar 14 12:45:21 2011
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

I have a fair amount of info on tsunami. I don't recall ever seeing a tsunami fact sheet, but could be wrong.

My suggestion, if we don't have one, is to get Henry Jones and Goutam Bagchi working on one. I lead the RES work, but can't really dig into this until tomorrow. Goutam and Henry are the two people in NRO who I work most closely with on this topic. They could give us

PP/12

an excellent start. Should I ask them?

BTW, there is a good (and only slightly out of date) summarization of our regulatory approach and regulatory research in an appendix on US practice that I wrote for an IAEA guide on flooding (DS417). Also, Goutam, Henry and I wrote a paper for an IAEA workshop last year.

Annie

From: Brown, Frederick
Sent: Monday, March 14, 2011 7:13 AM
To: Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura
Cc: McDermott, Brian; Ross-Lee, MaryJane; Kammerer, Annie; Hasselberg, Rick
Subject: FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI

From: King, Mark
Sent: Monday, March 14, 2011 7:08 AM
To: Thorp, John; Boger, Bruce
Cc: Brown, Frederick; Thomas, Eric
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We had a NUREG issued on this subject back in March 2009.

TSUNAMI HAZARD ASSESSMENT AT NUCLEAR POWER PLANT SITES IN THE UNITED STATES OF AMERICA
Click link to view: [\[NUREG/CR-6966\]](#)

<http://pbadupws.nrc.gov/docs/ML0915/ML091590193.pdf>

From: Thorp, John
Sent: Monday, March 14, 2011 6:57 AM
To: Boger, Bruce
Cc: Brown, Frederick; King, Mark; Thomas, Eric
Subject: RE: (Action) Tsunami Fact Sheet

We'll look for it; If we don't find it quickly, we'll start producing one. (Mark King, please start looking)

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Thanks,

John

From: Boger, Bruce

Sent: Monday, March 14, 2011 6:48 AM
To: Thorp, John
Cc: Brown, Frederick
Subject: Tsunami Fact Sheet

I seem to recall that OpE developed a tsunami fact sheet? Should we dust it off?

From: iTrezzo Admin
To: Roger, Bruce
Subject: BlackBerry Contact Update
Date: Monday, March 14, 2011 7:20:27 PM

To be prepared in an urgent situation, the NRC Emergency Preparedness Software has updated one or more of your Outlook Contacts.

The following 2 contact(s) were updated with current information:

- Sean Meighan (b)(6)
- Chuck Casto (b)(6)

These changes will synchronize with the address book on your BlackBerry. Contact CSC at (301) 415-1234 if these changes do not appear on your BlackBerry within 24 hours.

DP/13

From: DC NAYGN
To: (b)(6)
Subject: Information on the Japanese earthquake and reactors in that region
Date: Monday, March 14, 2011 7:59:22 AM

To: DC NA-YGN Members

Courtesy of Women in Nuclear

A dedicated page on NEI's website provides current information on the status of Japan's nuclear plants in the wake of the country's earthquake. Included are links to information from the Japan Industry Forum (JAIF), Japan's Nuclear and Industrial Safety Agency (NISA), Tokyo Electric Power Company and Tokohu Electric Power Company. Also provided on the web page is a link to NEI's fact sheet, "Nuclear Plants Designed and Constructed to Withstand Earthquakes".

NEI will provide periodic updates on the current status of events in Japan and on tsunami preparations for West Coast nuclear facilities.



DP/1A

From: Arndt, Steven *— r. Arndt*
To: Hiland, Patrick; Grobe, Jack; Sween, David
Subject: Re: My travel
Date: Monday, March 14, 2011 1:24:48 AM

Pat

I just got on my plane to Germany. I will be back next week.

If NRC has plans to send more people to Japan please remember I have experience work with AID from my Chernobyl days. If I am needed, I am happy to go.

Sent from a NRC blackberry
Steven Arndt

(b)(6) *et 6*

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

From: Hiland, Patrick
To: Arndt, Steven
Cc: Grobe, Jack
Sent: Sat Mar 12 08:41:50 2011
Subject: RE: My travel

Thanks Steven. I believe that a watch bill was made up last night to provide insights for commissioners. Plan on continuing your travel plans unless you get a call.

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

From: Arndt, Steven
Sent: Saturday, March 12, 2011 7:33 AM
To: Hiland, Patrick
Subject: My travel

Pat,

I will be back in Washington this evening. I was planning to leave for Germany tomorrow evening. I can cancel and be available to the op center and you if needed (at one time I ran the MECORE and severe accident program for RES).

I don't want to get in the way if you don't need me, but if you do I can be there. If you have time please let me know.

Thanks

Sent from a NRC blackberry
Steven Arndt

(b)(6) *et 6*

PP/15

From: Grobe, Jack
To: (b)(6)
Subject: Fw: Talking Points on Implications of Fukushima Accident to U.S. Nuclear Plants
Date: Monday, March 14, 2011 7:10:44 AM
Attachments: ANS Talking Points - 2011-03-13 R1 2.pdf

Jack Grobe, Deputy Director, NRR

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

From: Joe Colvin <president@ans.org>
To: Grobe, Jack
Sent: Mon Mar 14 00:32:38 2011
Subject: Talking Points on Implications of Fukushima Accident to U.S. Nuclear Plants

Dear ANS Members:

Over the last two days, the ANS Crisis Communications team has been very proactive and has handled a multitude of media and press calls. ANS spokespersons have participated in national television, radio and press interviews providing the views of the nuclear science and technology experts within the Society. We are particularly grateful to Dr. Dale Klein who has given tremendous support to the Society and the public in response to the events at Fukushima.

We have begun fielding media inquiries about the implications of the problems at Fukushima on the US program. We have prepared the attached talking points to assist responders to this line of questions. The talking points are consistent with the talking points prepared by the Nuclear Energy Institute (NEI) on the same subject.

Thank you all for your strong support!

Joe

PP/16

The predominance of ANS members reside in the U.S. As we interact with our family, neighbors and citizens in our communities many questions will come based on news coverage of the nuclear power plant situation in Japan. These talking points key on the theme 'could it happen in the U.S.?' *

ANS Member Talking Points

Implications to U.S. nuclear energy program from the Japanese earthquake

It is premature for the technical community to draw conclusions from the earthquake and tsunami tragedy in Japan with regard to the U.S. nuclear energy program. Many opposed to nuclear power will try to use this event to call for changes in the U.S. Japan is facing beyond a "worst case" disaster since we, the technical community, did not hypothesize an event of this magnitude. Thus far, even the most seriously damaged of Japan's 54 reactors have not released radiation at levels that would harm the public. That is testament to the way professionals in our profession operate: our philosophy of defense in-depth, excellent designs, high standards of construction, conduct of operations, and most important the effectiveness of employees in following emergency preparedness planning.

The Nuclear Science and Technology (NS&T) community takes very seriously our commitment to safe operation of any nuclear facility and will incorporate lessons learned based on this experience into our safety and operating procedures. The ANS will facilitate the sharing of technical information so that these lessons receive wide distribution and be archived for future stewards of this technology. Some points to remember from this week:

- Nuclear power plants have proven their value to society in Japan, the United States and elsewhere. They provide large amounts of base load electricity on an around-the-clock basis, and they do so cost-effectively with the lowest electricity production costs of any large energy source. Both Japan and the United States have benefited greatly from nuclear energy; it has been instrumental in the nations' economic success over the past half century and their high standard of living.
- Our hallmark as a NS&T organization is to incorporate operating experience and lessons learned. When we fully understand the facts surrounding the event in Japan, we will share, document and use those insights to make NS&T even safer.
- Nuclear energy has been and will continue to be a key element in meeting America's energy needs. The nuclear industry sets the highest standards for safety and, through our focus on continuous learning; we will incorporate lessons learned from the events in Japan. The dominant factors determining technology used for new generation will be demand for new generation, the competitiveness of nuclear energy in comparison with other sources of electricity generation, and the continued safe operation of U.S. nuclear power plants.

- There has not been a rush to judgment on the part of U.S. policymakers during the first few days of this situation. We believe that is due in part to the recognition on their part that nuclear energy must continue to play a key role in a diversified energy portfolio that strengthens U.S. energy security and fuels economic growth.

* The genesis of this document is the NEI "Talking Points - Implications to U.S. nuclear energy program of the Japanese earthquake" dated March 13, 2011

From: Boger, Bruce *MBR*
To: Galloway, Melanie
Cc: Holian, Brian
Subject: RE: Response to Request for RO and SROs at BWRs
Date: Monday, March 14, 2011 11:03:00 AM

Thanks, Melanie.

From: Galloway, Melanie *MBR*
Sent: Monday, March 14, 2011 9:41 AM
To: Boger, Bruce
Cc: Holian, Brian
Subject: FW: Response to Request for RO and SROs at BWRs

Bruce,

As requested, here are individuals in DLR with SRO or RO backgrounds on BWRs.
I don't know their availability to go to Japan at this point.

Melanie

From: Sakai, Stacie *MBR*
Sent: Friday, March 11, 2011 4:46 PM
To: Ruland, William
Cc: Glitter, Joseph; Holian, Brian; Galloway, Melanie; Dias, Antonio; Pelton, David; Kichline, Michelle; Brittner, Donald
Subject: Response to Request for RO and SROs at BWRs

Bill,

In response to Joe Glitter's request of staff who were licensed operators at BWRs, I am sending you the names of two individuals that DLR has identified.

Their names, availability, and contact information are as follows:

Name	Availability	Contact Information
Michelle Kichline, SRO	Sunday only	(b)(6)
Donald Brittner, RO	Anytime	(b)(6) <i>eff</i>

Stacie

DP/17

From: Karas, Rebecca
To: Case, Michael
Cc: Devlin, Stephanie; Munson, Clifford; Chokshi, Nilesh; Kammerer, Annie
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link
Date: Tuesday, March 15, 2011 10:37:00 AM

If needed, we could actually give you one. In general, so you know, the GIS people we have supporting (Yong Li, Stephanie Devlin, and Dogan Seber) are also seismologists, although they haven't been working with the Q&A document. They are on the PMT. Stephanie is on backshift, so she could help with any questions, or Cliff, Annie or Nilesh could be called through the operator, depending on the complexity of the question and whether there is already an established Q&A that Stephanie could refer to. Cliff/Annie, suggest you include Stephanie on emails of the file in case Mike needs her to help with anything on backshift.

Rebecca Karas, Chief
Geosciences and Geotechnical Engineering Branch 1
Division of Site and Environmental Reviews
Office of New Reactors
U.S. Nuclear Regulatory Commission
Phone: 301-415-7533
Fax: 301-415-5397

From: Case, Michael
Sent: Tuesday, March 15, 2011 10:31 AM
To: Karas, Rebecca
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks. Nobody helps me on the back shift (but then again, there aren't many folks around asking questions)

From: Karas, Rebecca
Sent: Tuesday, March 15, 2011 10:29 AM
To: Case, Michael
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We actually have people embedded with the RST now on day and afternoons working on the Q&As and providing more direct access for OPA and the ET. Cliff is covering days, and Annie afternoons (except that Nilesh will cover Thursday days). This has all been coordinated through the ops center scheduler now.

Rebecca Karas, Chief
Geosciences and Geotechnical Engineering Branch 1
Division of Site and Environmental Reviews
Office of New Reactors
U.S. Nuclear Regulatory Commission
Phone: 301-415-7533
Fax: 301-415-5397

PP/18

From: Case, Michael
Sent: Tuesday, March 15, 2011 10:28 AM
To: Karas, Rebecca
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks Becky. I don't know of any more short term requests from the Ops Center, but we'll keep those folks in mind.

From: Karas, Rebecca
Sent: Monday, March 14, 2011 11:23 PM
To: Ross-Lee, MaryJane; Kammerer, Annie; Brown, Frederick; Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura
Cc: McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Seber, Dogan; Li, Yong; Cook, Christopher
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Cc: McDermott, Brian; Hasselberg, Rick
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MJ (b)(6)

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Cc: McDermott, Brian; Ross-Lee, MaryJane; Hasselberg, Rick
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Annie

From: Brown, Frederick

Sent: Monday, March 14, 2011 7:13 AM

To: Giitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura

Cc: McDermott, Brian; Ross-Lee, MaryJane; Kammerer, Annie; Hasselberg, Rick

Subject: FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI

From: King, Mark

Sent: Monday, March 14, 2011 7:08 AM

To: Thorp, John; Boger, Bruce

Cc: Brown, Frederick; Thomas, Eric

Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

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Click link to view: [\[NUREG/CR-6966\]](#)

<http://pbadupws.nrc.gov/docs/ML0915/ML091590193.pdf>

From: Thorp, John

Sent: Monday, March 14, 2011 6:57 AM

To: Boger, Bruce

Cc: Brown, Frederick; King, Mark; Thomas, Eric

Subject: RE: (Action) Tsunami Fact Sheet

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To: Thorp, John
Cc: Brown, Frederick
Subject: Tsunami Fact Sheet

I seem to recall that OpE developed a tsunami fact sheet? Should we dust it off?

From: Carpenter, Gene
To: Brenner, Eliot; Burnell, Scott; Hayden, Elizabeth
Cc: Case, Michael; Gavrilas, Mirela
Subject: RE: Invitation to speak at CSPO - Monday, March 21, 6PM
Date: Monday, March 14, 2011 3:39:43 PM

That was certainly my first inclination, but thought I'd throw it up the chain in case someone else at higher paygrade had a differing opinion.

From: Brenner, Eliot
Sent: Monday, March 14, 2011 3:35 PM
To: Carpenter, Gene; Burnell, Scott; Hayden, Elizabeth
Cc: Case, Michael; Gavrilas, Mirela
Subject: RE: Invitation to speak at CSPO - Monday, March 21, 6PM

Don't think we should be participating at this early stage. Certainly not delivering a 45 minute lecture on an unfolding situation.

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

From: Carpenter, Gene
Sent: Monday, March 14, 2011 3:34 PM
To: Burnell, Scott; Brenner, Eliot; Hayden, Elizabeth
Cc: Case, Michael; Gavrilas, Mirela
Subject: FW: Invitation to speak at CSPO - Monday, March 21, 6PM

FYI

(b)(6)

Would the NRC like to Support Mahmud?

Gene

From: Mahmud Farooque [Mahmud.Farooque@asu.edu]
Sent: Monday, March 14, 2011 12:10 PM
To: Carpenter, Gene
Subject: Invitation to speak at CSPO - Monday, March 21, 6PM

Hello Gene,

Hope you are doing well. This request comes with an apology for the extremely short notice. I had a last minute cancellation and I am scrambling to find a speaker for our seminar series scheduled for Monday, March 21st at 6PM. Treating the setback as an opportunity to change the topic, I am writing to explore if you or anyone from NRC would be interested in talking about nuclear safety, regulation, proliferation or S&T policy issues in the U.S. in light of the unfolding crisis in Japan.

These seminars are designed to offer CSPO's students, postdocs and faculty located in Arizona an opportunity to learn about a contemporary policy issue directly from an expert in the nation's capitol. We use our video conferencing facility in our Washington DC office to bring the seminar to CSPO's Tempe community. The talk is about 45 minutes with 15 minutes of discussion and Q&A. In addition to Tempe, we expect a small audience in our DC office as well.

Kindly let me know so we can proceed with our planning and publicity with the little time we have in hand. Thanks for your time and consideration.

I do apologize for the short lead time.

Best Wishes,

PP/19

Mahmud

Mahmud Farooque, Ph.D.
Associate Director, DC Office
Consortium for Science, Policy, & Outcomes (CSPO)
Arizona State University, DC Center
1834 Connecticut Ave, NW
Washington, DC 20009
Off-campus: (b)(6)
on-campus: x 20397
mahmud.farooque@asu.edu

From: (b)(6)
To: albert.frischknecht@ensl.ch; Grobe_Jack_cgy@csn.es; M.Licari@iaea.org; M.Syab@iaea.org
Subject: Regarding Raporteur task (personal communication)
Date: Monday, March 14, 2011 11:26:51 PM

Dear Colleagues in Country Group 1

From Fumio Kudo (Kudough)

Personal communication

As you know, Fukushima Dai-ichi Nuclear Power Station is in a critical condition.

After coming back from Vienna I was preparing NSC's Rapportuer task, but I was dispatched to the Government Emergency Response Center (ERC) in the NISA office immediately after the occurrence of the earthquake (15:00 11th, March).
(NISA: Nuclear and Industrial Safety Agency)

I worked at the ERC until the next morning.
Since then I was in a midnight shift.
My task was to prepare English disseminating documents regarding earthquake and tsunami damage of nuclear power stations.

Since this morning (15th) I have returned back to a day shift at JNES to prepared NSC's Rapporteur task.

Currently, Fukushima Dai-ichi Unit 2 is in a critical conditon, as you know, and I am likely to be dispatched again to the ERC.

Currently since my schedule to go to Vienna has not been changed yet, I'm continuing my best to prepare the Rapporteur task.

On the other hand, the situation of Unit 2 is worsening hourly.
(Sheltering area has been augmented to 30km radius this morning.)
(Evacuation area is already set as 20km radius.)

In view of the current situation, in my personal view, my visit itself to Vienna could be cancelled by the Government.
(This is not certain of course.)

In that case, I should have to ask a Rapporteur substitution to someone.
This is, of course, my personal view and this is a personal alerting mail just in case.

Best Regards;
Fumio

rcd/mak
PP/20

From: [SNL Energy](#)
To: [Grobe, Jack](#)
Subject: Registration now open for the 2011 Power Policy Forum
Date: Wednesday, March 16, 2011 2:00:22 PM



Get an inside look at critical upcoming Federal policy and regulatory developments.
Register now and save \$150!

SNL Energy Power Policy Forum

[Register now and save \\$150!](#)



June 7, 2011 • The Union League Club • New York, NY

Website: www.snlcenter.com/EPF

The **SNL Power Policy Forum** brings panels of Washington insiders to New York to clarify and opine on Federal action in the energy sector and its impact on power companies and their investors. If you develop corporate strategy, advise on it, or assess it, come prepared for a full day of intelligence-gathering on potentially market-moving developments driven by Federal action.

Key topics:

- The impact of primacy decisions and cost allocation on the expansion of America's transmission infrastructure
- Dodd-Frank, the Commodity Futures Trading Commission and energy trading
- The effect on utilities and the energy chain of proposed EPA revisions to the Clean Air Act
- The congressional legislative agenda under the current political regime

Click [here](#) to see the agenda.

Registration is easy:

Online: www.snlcenter.com/EPF

Phone: (434) 951-7786

Early bird price: \$725 (Good through 4/22/11. Price afterward will be \$875)

Confirmed speakers:

- **Kevin Book** – Managing Director, Research, ClearView Energy Partners, LLC
- **McKie Campbell** – Republican Staff Director, Senate Energy and Natural Resources

Committee

- **Bruce Edelston** – President, Energy Policy Group, LLC
- **Craig Glazer** – Vice President, Federal Government Policy, PJM Interconnection
- **James J. Hoecker** – Senior Counsel, Husch Blackwell LLP
- **Mary Johannes** – Senior Director, Head of U.S. Public Policy, International Swaps and Derivatives Association
- **James Lucier** – Managing Director, Capital Alpha Partners
- **Mike McKenna** – President, MWR Strategies
- **Phillip Moeller** – Commissioner, Federal Energy Regulatory Commission
- **Christine Tezak** – Director; Senior Energy and Environmental Analyst, Robert W. Baird & Company

Additional speakers are confirming their attendance. Click [here](#) for updates.

Also of interest in the power sector:

Essentials of Regulatory Finance

June 9-10 – Washington, D.C. • October 18-19 – Denver, CO • [More info](#)

Principles of Power Valuation

September 21-23 – Denver, CO • December 5-7 – Houston, TX • [More info](#)

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- M. K.

From: Leeds, Eric
To: Nguyen, Quynh
Cc: Grobe, Jack
Subject: RE: Thanks for going to Japan! We've got your back!
Date: Tuesday, March 15, 2011 12:57:37 PM

OUTstanding Quynh!

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
301-415-1270

- M. K.

From: Nguyen, Quynh
Sent: Tuesday, March 15, 2011 9:45 AM
To: Ulses, Anthony; Nakanishi, Tony; Kolb, Timothy
Cc: Leeds, Eric; Boger, Bruce; Grobe, Jack; Givvines, Mary; Meighan, Sean; Dorsey, Cynthia; Ruland, William
Subject: Thanks for going to Japan! We've got your back!
Importance: High

Gentlemen,

Thank you for serving your country by helping our friends in Japan! Hope you all arrived safely!

Please continue to work with your POC; however, I am here to help work things on your behalf so feel free to keep me in the loop if you need further assistance. If your colleagues from other Offices, need help, I will do my best to help them as well.

Just for Ulses:

efb

We've been trying to reach your (b)(6) at this number (b)(6) to no avail. We have a shipping number (b)(6) FedEx Shipping Acct Number (b)(6) so (b)(6) can send you some of your clothes.

Tim and Tony N., if you need similar support, let us know!

Thanks,
Quynh

(b)(6) (Blackberry)

efb

PP/21

Date: Tuesday, March 15, 2011 7:19:43 PM
Posted At: itrezzo EPS Backups
Conversation: itrezzo EPS Backups: 3/15/2011 19:19
Subject: itrezzo EPS Backups: 3/15/2011 19:19
Attachments: Chuck Casto.msg

The following 1 contact(s) were updated with current information:

- Chuck Casto (b)(6)

NOTE: If itrezzo EPS overwrites any important data in your contacts, you can find the original, unchanged contacts attached to this message.

PP/22

2/4

Attachment Chuck Casto_1.msg (2560 Bytes) cannot be converted to PDF format.

NAR
From: Glitter, Joseph
To: Campbell, Stephen
Cc: Howe, Allen; Boger, Bruce; Leeds, Eric
Subject: RE: NRR BLN 1 input into NRO Monthly Commission Report
Date: Tuesday, March 15, 2011 5:07:57 PM

Looks O.K. to me.

NAR
From: Campbell, Stephen
Sent: Tuesday, March 15, 2011 3:23 PM
To: Glitter, Joseph
Cc: Howe, Allen; Boger, Bruce; Leeds, Eric
Subject: NRR BLN 1 input into NRO Monthly Commission Report
Importance: High

R.L.
Joe:

The Watts Bar Special Projects Team reviewed and approved this. I need to get it to NRO by COB on March 17. Please review and comment as necessary.

Stephen J. Campbell,
Branch Chief
NRR/DORL/LP-WB
U.S. Nuclear Regulatory Commission
Office - O8H1
Mail Stop - O8H4A
Washington, DC 20555
E-mail: stephen.campbell@nrc.gov | Office: (301) 415-3353 | NRC Cell: (b)(6) | Fax: (301) 415-1885



PP/23

NRR

From: Nguyen, Quynh
To: Thomas, Eric; Sigmon, Rebecca; Powell, Amy; Riley, (OCA), Timothy; Browder, Rachel; Erickson, Randy; Tift, Doug; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Barker, Allan; Logaras, Harriet; Maier, Bill
Cc: Stone, Rebecca; Westreich, Barry; Scales, Kerby; Leeds, Eric; Boger, Bruce; Grobe, Jack; Dec, David; Deegan, George; Williams, Donna; Rini, Brett; Witick, Brian; Andersen, James; Brenner, Elot; Couriel, Ivonne; Burnell, Scott; Harrington, Holly; Azeem, Almas; Cartwright, William; Cusumano, Victor; Hesta, Bruce; Mahoney, Michael; Meighan, Sean; Nguyen, Quynh; Roquecruz, Carla; Susco, Jeremy; Titus, Brett; Valentine, Nicholas; Wertz, Trent; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheek, Michael; Evans, Michele; Galloway, Melanise; Gitter, Joseph; Givvins, Mary; Hilland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; Lund, Louise; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David
Subject: Launch of FAQ Related to Events Occuring in Japan
Date: Tuesday, March 15, 2011 1:16:02 PM
Importance: High

All,

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The below SharePoint link is the location of our INTERNAL USE ONLY activities regarding the Japan Events and the effects on their nuclear operations. Again, NO PUBLIC RELEASE of any documents.

Given lessons learned from 9-11, we want to **ensure clear, concise messages in alignment with the Chairman and focus of our safety mission in the United States**. To this end, we established this SharePoint as a centralized location to collect our questions from stakeholders and our draft responses. These draft responses will be vetted by OPA and once approved by OPA – it is OK for use by the staff to answer questions from stakeholders.

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Note: "Chairman JaczkoQA7_031511" contains parts that are PUBLIC and additional information for NRC staff.

All correspondence to the public should be directed to our Office of Public Affairs (OPA)!

Additionally, if questions arise out of the Region, please let us know. We'll do our best to coordinate the answer and ensure that we get OPA's blessing.

Thank you for all your support during this time and understanding!

POC:
Quynh Nguyen (301) 415-5844; [BlackBerry
Sean Meighan (301) 415-1020

(b)(6)

46

PP/24

From: Nguyen, Quynh
To: Grobe, Jack
Subject: Re: NEXT STEP? SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making
Date: Tuesday, March 15, 2011 8:56:15 PM

Rulandsguys were working it during comment period

Sent from an NRC blackberry.

Quynh Nguyen

(b)(6)

From: Grobe, Jack
To: Leeds, Eric; Nguyen, Quynh; Boger, Bruce
Cc: Ruland, William; Meighan, Sean
Sent: Tue Mar 15 19:06:37 2011
Subject: Re: NEXT STEP? SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making

Got it
Jack Grobe, Deputy Director, NRR

From: Leeds, Eric
To: Nguyen, Quynh; Boger, Bruce; Grobe, Jack
Cc: Ruland, William; Meighan, Sean
Sent: Tue Mar 15 17:30:20 2011
Subject: RE: NEXT STEP? SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making

Jack - Please take the lead on this one.

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
301-415-1270

From: Nguyen, Quynh
Sent: Tuesday, March 15, 2011 3:33 PM
To: Leeds, Eric; Boger, Bruce; Grobe, Jack
Cc: Ruland, William; Meighan, Sean
Subject: NEXT STEP? SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making

How should we proceed with this? I know we had guys comment on it...

The staff should provide to the Commission, within 6 months, a plan for the development of guidance that will ensure that the formal utilization of expert judgment is applied consistently in regulatory decision making throughout the Agency. This plan should describe the staff's approach, schedule, and estimated resources. This plan should recognize that the development of the guidance should include the following:

- i. a summary of past and ongoing significant NRC activities that utilized expert judgment to identify the lessons-learned, document the approaches^[1], and identify significant differences among the approaches,
- ii. a survey of recent research to identify promising new approaches (or techniques that can be applied within the broader approach) to expert judgment that may be appropriate for use in nuclear applications,
- iii. an evaluation of recent activities within other agencies that relied on expert judgment to identify the lessons-learned, document the approaches, and identify differences among the approaches and those used in NRC activities,
- iv. options that match the approach with the nature and significance of the issue and the extent to which expert judgment is relied upon in regulatory decision making,
- v. estimates of resources associated with each option for planning purposes,
- vi. guidance that is prescriptive enough to ensure consistent application of expert judgment within the Agency, yet is sufficiently flexible to account for the wide diversity of issues that the Agency faces. The user should be able to tailor the approach to be applicable to the unique issue of concern, and
- vii. guidance must allow flexibility in application and the use of highly stylized approaches by individual researchers, as long as scrutability is maintained.

From: RidsNrrOd Resource

Sent: Tuesday, March 15, 2011 3:04 PM

To: Meighan, Sean

Cc: Nguyen, Quynh

Subject: FW: SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making

From: RidsEdoDraftSrmVote Resource

Sent: Tuesday, March 15, 2011 12:52 PM

To: Ash, Darren; Borchardt, Bill; Boyd, Lena; Buckley, Patricia; Clarke, Deanna; Cohen, Miriam; EDO_Staff_Assistants; Flory, Shirley; Fry, Jeannie; Garland, Stephanie; Johnson, Michael; Mamish, Nader; Matakas, Gina; Miles, Patricia; Miller, Charles; Owen, Lucy; Riddick, Nicole; RidsAdmMailCenter Resource; RidsCsoMailCenter Resource; RidsFsmeOd Resource; RidsHrMailCenter Resource; RidsNmssOd Resource; RidsNroMailCenter Resource; RidsNrrOd Resource; RidsNsirMailCenter Resource; RidsOeMailCenter Resource; RidsOiMailCenter Resource; RidsOIS Resource; RidsResOd Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; RidsSbcrMailCenter Resource; Thomas, Loretta; Virgilio, Martin; Walker, Dwight; Weber, Michael

Subject: FW: SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making

From: Lewis, Antoinette

Sent: Tuesday, March 15, 2011 11:11 AM

To: Vietti-Cook, Annette; Baggett, Steven; Bates, Andrew; Batkin, Joshua; Blake, Kathleen; Bollwerk, Paul; Bozin, Sunny; Bradford, Anna; Brown, Theron; Bubar, Patrice; Bupp, Margaret; Burns, Stephen; Chairman Temp; Clark, Lisa; Coggins, Angela; Cordes, John; Crawford, Carrie; Cutchin, James; Davis, Roger; Fopma, Melody; Franovich, Mike; Gibbs, Catina; Hackett, Edwin; Hart, Ken; Harves, Carolyn; Hawkins, Roy; Hayden, Elizabeth; Henderson, Karen; Herr, Linda; Hipschman, Thomas; Hudson, Sharon; KLS Temp; Kock, Andrea; Lepre, Janet; Loyd, Susan; Mamish, Nader; Marshall, Michael; Mitchell, Reggie; Monninger, John; Moore, Scott; OCA Distribution; OPA Resource; Orders, William;

Pace, Patti; Poole, Brooke; Rabideau, Peter; Reddick, Darani; Laufer, Richard; RidsEdoDraftSrmVote Resource; RidsOcaaMailCenter Resource; RidsOcfoMailCenter Resource; RidsOgcMailCenter Resource; RidsOigMailCenter Resource; RidsOipMailCenter Resource; Bovol, Rochelle; Rothschild, Trip; Joosten, Sandy; Savoy, Carmel; Sharkey, Jeffry; Shea, Pamela; Snodderly, Michael; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, WCO; Temp, WDM; Thoma, John; Warren, Roberta; Zorn, Jason; Temp, GEA; Apostolakis, George; Tadesse, Rebecca; Butler, Gail; Perry, Jamila; Doane, Margaret; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Muessle, Mary; Nieh, Ho; Ostendorff, William; Warnick, Greg; Pearson, Laura; Lui, Christiana

Cc: Wright, Darlene; Lewis, Antoinette

Subject: SRM - COMGEA-11-0001 - Utilization of Expert Judgment in Regulatory Decision Making

(ML110740304)

In an effort to keep the NRC staff informed of Commission decisions in a timely manner, attached for your information are the Staff Requirements Memoranda (SRMs) signed by the Secretary on March 15, 2011. Please make additional distribution to interested staff members in your office.

If you have any questions, please give me a call on 415-1969.

[1] The expert judgment approach refers to the process used to elicit information from experts, analyze this information to develop results, and determine the implications of the results to support regulatory decision making.

From: Boger, Bruce - *NRK*
To: Leeds, Eric; Grobe, Jack; Glitter, Joseph; Regan, Christopher; Quay, Theodore
Subject: FW: FYI..German news
Date: Tuesday, March 15, 2011 11:23:12 AM
Attachments: image001.png

FYI

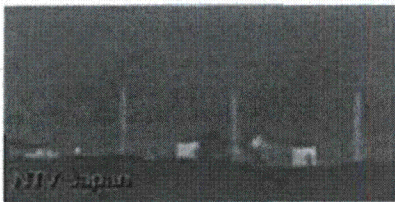
From: Holian, Brian - *NRK*
Sent: Tuesday, March 15, 2011 11:12 AM
To: Boger, Bruce
Cc: Galloway, Melanie; Burnell, Scott; Dacus, Eugene
Subject: FW: FYI..German news

From: Barkley, Richard - *RI*
Sent: Tuesday, March 15, 2011 11:01 AM
To: Holian, Brian
Subject: See Article That Just Came Out

There will be members of Congress pushing for this tomorrow morning.

Germany to shut down 7 reactors temporarily

AP Associated Press



AP - In this image made off Japan's NTV/NNN Japan television footage, flames from the Fukushima Dai-ichi nuclear ...
- Tue Mar 15, 7:06 am ET

BERLIN - Chancellor Angela Merkel says Germany will take seven of its 17 reactors offline for three months while the country reconsiders plans to extend the life of its nuclear power plants.

Merkel said Tuesday that Germany will temporarily shut down reactors that went into operation before the end of 1980, affecting seven reactors. The decision comes amid fears sparked by the crisis under way at Japan's tsunami-stricken nuclear power plant.

Merkel spoke after meeting with the governors of states that have nuclear power plants.

PP/26

A previous government decided a decade ago to shut all 17 German nuclear plants by 2021, but Merkel's administration last year moved to extend their lives by an average 12 years. That decision was suspended for three months on Monday.

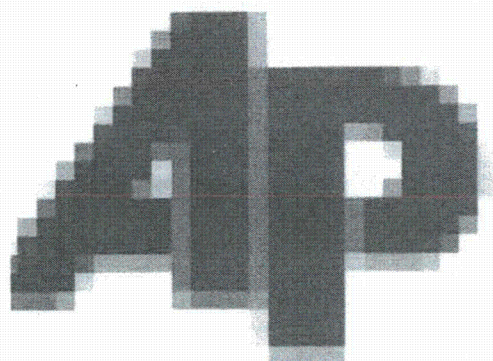
Richard S. Barkley, PE
Nuclear & Environmental Engineer

(610) 337-5065 Work

(b)(6)

Cell

etf



Associated Press

- NRR

From: Nguyen, Quynh
To: Thomas, Eric; Saper, Rebecca; Cross, Amy; Eby, Jody; Finkler, Brenda; Rachel Jackson, Randy; Lott, David; McManus, Nancy; Tronkowski, Robert; Woodruff, Gina; Baker, Alan; Legates, Henry; Murr, Bill
Cc: Stone, Rebecca; Westrich, Barry; Scales, Kirby; Leeds, Eric; Bader, Bruce; Gabe, Jack; Dick, David; Gorman, George; Williams, Donna; Ben, Brett; Wilcox, Brian; Anderson, James; Ruttner, Eric; Court, Leanne; Bursell, Scott; Harrington, Holly; Azeez, Akin; Carlwright, William; Cusumano, Victor; Hedd, Bruce; Mulvey, Michael; Meighan, Sean; Bismuth, Quynh; Beauchamp, Carly; Sisco, Jeremy; Tisa, Brett; Valentine, Nicholas; Wertz, Trent; Bismuth, Sher; Blount, Tom; Brown, Frederick; Chish, Michael; Evans, Michael; Gallozzi, Melane; Gitter, Joseph; Givovich, Mary; Hladik, Patrick; Holan, Brian; Howe, Allen; Lee, Samuel; Lumsden, John; Lund, Kevin; McGee, Ben; Nelson, Robert; Quin, Theodore; Rufano, William; Schein, David
Subject: Launch of FAQ Related to Events Occurring in Japan
Date: Tuesday, March 15, 2011 1:16:04 PM
Importance: High

All,

Per Eric Leeds' request and working closely with NSIR and OPA...

The below SharePoint link is the location of our INTERNAL USE ONLY activities regarding the Japan Events and the effects on their nuclear operations. Again, NO PUBLIC RELEASE of any documents.

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<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occurring%20in%20Japan/Forms/AllItems.aspx>

Note: "Chairman JaczkoQA7_031511" contains parts that are PUBLIC and additional information for NRC staff.

All correspondence to the public should be directed to our Office of Public Affairs (OPA)!

Additionally, if questions arise out of the Region, please let us know. We'll do our best to coordinate the answer and ensure that we get OPA's blessing.

Thank you for all your support during this time and understanding!

POC:
Quynh Nguyen (301) 415-5844; BlackBerry
Sean Meighan (301) 415-1020

(b)(6)

216

vet/qa-2

PP/27

Caponiti, Kathleen

From: Taylor, Robert
Sent: Tuesday, March 15, 2011 4:38 PM
To: Brenner, Eliot; McIntyre, David; Harrington, Holly
Subject: RE: Can I Use Bill Borchardt's Last Paragraph in His OEDO Update?

PP/198C

It is Mike Dudek at USAID. I will let him know to mark it OUO and only share it within the government.

From: Brenner, Eliot
Sent: Tuesday, March 15, 2011 4:34 PM
To: McIntyre, David; Harrington, Holly
Cc: Taylor, Robert
Subject: Re: Can I Use Bill Borchardt's Last Paragraph in His OEDO Update?

Office of federal disaster assistance I think. I think it is ok if we suggest it is OUO. I mentioned it to bill and he didn't blanch.

Eliot Brenner
Director, Office of Public Affairs
US Nuclear Regulatory Commission
Protecting People and the Environment
301 415 8200

C(b)(6) e16
Sent from my Blackberry

From: McIntyre, David
To: Harrington, Holly
Cc: Brenner, Eliot; Taylor, Robert
Sent: Tue Mar 15 16:14:28 2011
Subject: RE: Can I Use Bill Borchardt's Last Paragraph in His OEDO Update?

We're trying to figure it out. We think it's an NRC person embedded with some other agency. Even if it goes outside, though, it's consistent with what we've been telling reporters.

From: Harrington, Holly
Sent: Tuesday, March 15, 2011 3:41 PM
To: McIntyre, David
Subject: RE: Can I Use Bill Borchardt's Last Paragraph in His OEDO Update?

The e-mail address from the person requesting permission looked to me to be from outside NRC

From: McIntyre, David
Sent: Tuesday, March 15, 2011 3:38 PM
To: Harrington, Holly
Subject: RE: Can I Use Bill Borchardt's Last Paragraph in His OEDO Update?

But an OEDO Update is internal, is it not?

From: Harrington, Holly
Sent: Tuesday, March 15, 2011 3:32 PM
To: McIntyre, David
Subject: RE: Can I Use Bill Borchardt's Last Paragraph in His OEDO Update?

PP/28

From: ITrazzo Admin
To: Boger, Bruce
Subject: BlackBerry Contact Update
Date: Tuesday, March 15, 2011 7:19:44 PM

To be prepared in an urgent situation, the NRC Emergency Preparedness Software has updated one or more of your Outlook Contacts.

The following 1 contact(s) were updated with current information:

- Chuck Casto (b)(6)

These changes will synchronize with the address book on your BlackBerry. Contact CSC at (301) 415-1234 if these changes do not appear on your BlackBerry within 24 hours.

PP/29
efb

REL

From: ANS Broadcasts
To: Boger, Bruce
Subject: ANS Public Information: Japan Nuclear Reactors
Date: Tuesday, March 15, 2011 8:26:30 PM
Attachments: Fact React 1.pdf
Responding to inaccurate information in the news media.pdf

-
1. SERVE AS A MEDIA CONTACT
 2. HELP CORRECT INACCURATE AND/OR MISLEADING NEWS REPORTS
 3. SEND US YOUR THOUGHTS, ANECDOTES, SUGGESTIONS OR EXPERTISE TO SHARE ON THE ONGOING JAPAN SITUATION
-

Dear ANS Member,

Many of you have told us you are frustrated when you see someone on TV, in a newspaper, or the Internet, claiming to be a "nuclear expert" sharing inaccurate and misleading information about the situation in Japan or nuclear energy generally. **You can do something about it!**

We have established Japanfacts@ans.org to serve as a centralized communications email address for ANS member communications to ANS Headquarters on the Japan situation. ANS staff will make sure the proper person gets your email.

SERVE AS A MEDIA CONTACT

There is an **URGENT NEED** for ANS members who can serve as media contacts. The need is particularly urgent for experts on radiation and human health effects, but we are also seeking people who can speak to reactor design and operation, licensing and safety issues, and crisis response activities.

Email Japanfacts@ans.org with **MEDIA** in the subject line-include your name, city/state, phone numbers, area of expertise, and any additional information you think we should know

HELP CORRECT INACCURATE AND/OR MISLEADING NEWS REPORTS

Directly engage local news media when you read, hear, or view reports that contain technical information about nuclear energy topics that are not factually correct. See the **guidance document** attached that provides some "rules of the road" for talking with the news media.

Inform the ANS Public Information Committee about what you've communicated to the news media and the outcome, if any. **Send your reports to** Japanfacts@ans.org with **FACT REACT** in the subject line.

Ask for help if you need it. We have cadre of specialists in TV, print and social media who are talking round the clock on how to best address news media coverage of the situation in Japan.

Email Japanfacts@ans.org with **HELP** in the subject line.

SEND US YOUR THOUGHTS, ANECDOTES, SUGGESTIONS OR EXPERTISE TO SHARE ON THE ONGOING JAPAN SITUATION

PP/30

Email them to Japanfacts@ans.org with JAPAN in the subject line.

ANS RESOURCES

ANS continues to provide a news aggregation service on the ANS Nuclear Cafe blogsite at <http://ansnuclearcafe.org/>. I urge you to share this link with friends, colleagues, and your social networks.

The ANS Professional Divisions are currently engaged in an urgent effort to develop talking points on the Japan situation for distribution to members. Additionally, ANS-HQ will be providing a periodic update of communications efforts under a 'What's New' link at <http://www.ans.org/>.

Thank you all for your efforts in supporting the nuclear community during these challenging times. Our professional responsibility is to provide credible information based on the information on hand, realizing that this information may be incomplete and/or evolving.

Sincerely,

Candace Davison
Chair, ANS Public Information Committee

[Dan Yurman
Social Media rep, Public Information Committee
Email: (b)(6) Twitter: @djysrv
Mobile: (b)(6)]

Laura Scheele
American Nuclear Society
Communications & Outreach
Email: lscheele@ans.org Twitter: @lscheele
Phone: (708) 579-8224

-
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 2. **HELP CORRECT INACCURATE AND/OR MISLEADING NEWS REPORTS**
 3. **SEND US YOUR THOUGHTS, ANECDOTES, SUGGESTIONS OR EXPERTISE TO SHARE ON THE ONGOING JAPAN SITUATION**
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Candace Davison
Chair, ANS Public Information Committee

Dan Yurman
Social Media rep, Public Information Committee
Email: (b)(6) Twitter: @djysrv
Mobile: (b)(6) *etb*

Laura Scheele
American Nuclear Society
Communications & Outreach
Email: lscheele@ans.org Twitter: @lscheele
Phone: (708) 579-8224

Responding to inaccurate information in the news media

Take it as a given that in dealing with the technical complexities of the nuclear crisis in Japan, the mainstream news media is going to make mistakes. You can do something about it, but you must use proven methods to do so.

It is OK to reach out to local or national news media using email or telephone, but don't hit the keyboard or keypad before you assemble the facts.

First, ask yourself, "am I technically qualified to really address this issue?" Assuming the answer is yes, assemble a brief set of one-liners that explain your expertise. Use plain English.

Next, tackle the issue at hand. What's factually wrong with the news media report? What facts are needed to make it correct?

Assemble the facts in a rough order of descending order of importance. Keep an eye on the big picture. Do not get wrapped up in hair splitting details.

Write your response using the active voice and in talking points format. Remember, general assignment reporters will not follow detailed technical arguments. You must keep it simple.

Be sure to include your contact information and a summary of your expertise at the end of the talking points.

Once you have your talking points prepared, you are ready to contact the reporter or their editor by email or phone.

How talk to a journalist

Do not argue with a journalist. Stick to the facts.

Communicating with journalists makes a difference. It does not have to be perfect. When you write to journalists, be factual, not rhetorical. Do not personally attack them; that's more likely to convince them that they're in the right. Address them in the language that most journalists are trained to understand - plain English.

Remember, you are responding as expert and viewer. **You are NOT responding on behalf of ANS or your employer.**

Please send us a copy of your emails or notes about telephone conversations (published and unpublished) to japanfact@ans.org.

Writing letters to the editor

Letters that are intended for publication should usually be drafted more carefully. Here are some tips to keep in mind:

Make one point (or at most two) in your letter, email, or fax. State the point clearly, ideally in the first sentence.

Make your letter timely. If you are not addressing a specific article, editorial or letter that recently appeared in the paper you are writing to, then try to tie the issue you want to write about to a recent event.

Familiarize yourself with the coverage and editorial position of the paper to which you are writing. Refute or support specific statements, address relevant facts that are ignored, but do avoid blanket attacks on the media in general or the newspaper in particular.

Check the letter specifications of the newspaper to which you are writing. Length and format requirements vary from paper to paper. (Generally, roughly two short paragraphs are ideal.) You also must include your name, signature, address and phone number.

Be sure to say something, even one sentence, about your technical expertise, in the letter. You can provide more but don't expect it to be published.

Look at the letters that appear in your paper. Is a certain type of letter usually printed?

Support your facts. If the topic you address is controversial, consider sending documentation along with your letter. But don't overload the editors with too much info.

Keep your letter brief. Type it whenever possible.

Find others to write letters when possible. This will show that other individuals in the community are concerned about the issue. If your letter doesn't get published, perhaps someone else's on the same topic will.

Monitor the paper for your letter. If your letter has not appeared within a week or two, follow up with a call to the editorial department of the newspaper.

An increasing number of broadcast news programs (60 Minutes, All Things Considered, etc.) also solicit and broadcast "letters to the editor." Don't forget these outlets.

Remember, you are responding as expert and viewer. **You are NOT responding on behalf of ANS or your employer.**

Please send us a copy of your letters (published and unpublished) to japanfacts@ans.org.

How to Write an Op-Ed

Op-eds are longer than letters to the editor, and there is more competition for space. You may want to call the paper for length requirements (usually 600-800 words).

Try to write on a controversial issue being covered at that time. If you can use a professional title that suggests authority, do so. If you work for an organization, get permission to sign the op-ed as a representative of that organization.

Feel free to send it to papers far from where you live, but avoid sending it to two newspapers in the same "market." (Sending to the San Francisco Examiner and the Seattle Times is OK, but not to the Examiner and the San Francisco Chronicle.)

"National" newspapers like the New York Times, Los Angeles Times, Washington Post, Christian Science Monitor and USA Today generally do not accept op-eds that are also being offered to other papers. But you can easily submit the same piece to five or ten local dailies in different regions—greatly increasing your chances of being published.

Assure the op-ed editor in your cover letter that the piece has not been submitted to any other paper in their market. If, on the other hand, you sent it to only one paper, let that paper know you are offering them an exclusive.

In writing op-eds, avoid excessive rhetoric. State the subject under controversy clearly. You are trying to persuade a middle-of-the-road readership. If you rely on facts not commonly found in mainstream media, cite your sources.

Try to think of a catchy title. If you don't, the paper will be more likely to run its own—which may not emphasize your central message. (Even if you do write your own headline, don't be surprised if it appears under a different one.)

Be prepared to shorten and re-submit your article as a letter to the editor in case it does not get accepted as an op-ed.

From: Boger, Bruce *N.R.*
To: Meighan, Sean
Subject: RE: Followup - Services from NRC Health Center for International Travel
Date: Tuesday, March 15, 2011 7:53:00 AM

REL
Great note. Thanks for the feedback.

From: Meighan, Sean *N.R.*
Sent: Tuesday, March 15, 2011 7:42 AM
To: Dempsey, Jeanne
Cc: Leeds, Eric; Boger, Bruce
Subject: RE: Followup - Services from NRC Health Center for International Travel

Good Morning Jeanne:

Once I get the chance to brief Eric Leeds on my perspective on the support of the Health Services I would think he will follow up with feedback to appropriate staff. Until then.... the whole staff on the 2nd floor could not have been any more helpful, receptive, supportive, professional and willing to go above and beyond then demonstrated yesterday. They honestly dropped everything to ensure NRC staff members being deployed to Japan were fully supported from a personal/public health standpoint.

It is obvious that Dr. Cadoux has a vast amount of experience in preparing personnel to enter the type of environment that those deployed may encounter. The benefit of having his expertise and experience cannot be overstated. Having the support that was provided yesterday is a necessary element to mission success, and is very much appreciated.

Very Respectfully
Sean Meighan

From: Dempsey, Jeanne *HR*
Sent: Tuesday, March 15, 2011 7:25 AM
To: Meighan, Sean
Subject: Followup - Services from NRC Health Center for International Travel

Hi Sean,
I am the Health Services Program Manager in HR and also manage our contract with Take Care Health Systems to run the NRC Health Center. I didn't want to bother you yesterday as I knew you must be terribly busy, but I did want to touch base with you at some point. I would be interested in your feedback and views on how things went with the preparations. I am teleworking today and other than a conference call with Take Care Health, I should be relatively available. My blackberry number is (b)(6) if you wish to call.

Thanks
Jeanne *etlo*

JEANNE DEMPSEY
HEALTH SERVICES PROGRAM MANAGER
WORK LIFE AND BENEFITS BRANCH, OHR
[PHONE] 301-415-2909
[MAIL STOP] 03 E17A

PP/31

NR
From: Boger, Bruce
To: Nguyen, Quynh
Cc: Leeds, Eric; Grobe, Jack; Meighan, Sean
Subject: RE: Thanks for going to Japan! We've got your back!
Date: Tuesday, March 15, 2011 9:51:00 AM

NR
Most excellent. Thanks, Quynh.

NR
From: Nguyen, Quynh
Sent: Tuesday, March 15, 2011 9:45 AM
To: Ulses, Anthony; Nakanishi, Tony; Kolb, Timothy
Cc: Leeds, Eric; Boger, Bruce; Grobe, Jack; Givvines, Mary; Meighan, Sean; Dorsey, Cynthia; Ruland, William
Subject: Thanks for going to Japan! We've got your back!
Importance: High

Gentlemen,

Thank you for serving your country by helping our friends in Japan! Hope you all arrived safely!

Please continue to work with your POC; however, I am here to help work things on your behalf so feel free to keep me in the loop if you need further assistance. If your colleagues from other Offices, need help, I will do my best to help them as well.

Just for Ulses:

We've been trying to reach your (b)(6) at this number (b)(6) to no avail. We have a shipping number (b)(6) FedEx Shipping Acct Number) so (b)(6) can send you some of your clothes. e16
e16

Tim and Tony N., if you need similar support, let us know!

Thanks,
Quynh

(b)(6) (Blackberry) e16

PP/32

Schaperow, Jason

From: Schaperow, Jason
Sent: Tuesday, March 15, 2011 9:59 AM
To: Prato, Robert
Subject: RE: Update on Japan Situation

O.K. Thanks.

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

From: Prato, Robert
Sent: Tuesday, March 15, 2011 9:30 AM
To: Schaperow, Jason; Tinkler, Charles
Subject: RE: Update on Japan Situation

I really feel for those people, I volunteered to go if they need anyone. Let me know if I can help in any way.

Bob

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

From: Schaperow, Jason
Sent: Tuesday, March 15, 2011 9:27 AM
To: Prato, Robert; Tinkler, Charles
Subject: RE: Update on Japan Situation

Thanks for the email. You are correct.

By the way, Charlie and I are been pretty deeply involved with the Fukushima event. I have worked on it exclusively since it began on Friday, and have not been working on SOARCA.

Jason

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

From: Prato, Robert
Sent: Tuesday, March 15, 2011 8:47 AM
To: Schaperow, Jason; Tinkler, Charles
Subject: FW: Update on Japan Situation
Importance: High

Charlie, Jason

Read the attached letter, we need to look at it from SOARCA's perspective. It may help to develop a short white paper to send up the chain of command to better understand what we learned and how our B.5.b stuff can help to deal with the Japanese situation. It may help to provide leverage for us to convince a little more investment (a few more pieces of equipment, better prestaging, etc.) and training to the industry.

I am working at home today. I writing an inspection report this week but should be able to update my input into SOARCA next week. Charlie, if you want to talk about black start we can.

This is an opportunity for us, we should not let pass.

Bob

PP/33

H - (301) 620-0036

C - (b)(6)

W - X 6035

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

From: Talbot, Frank

Sent: Monday, March 14, 2011 2:28 PM

To: Peralta, Juan; Belen, Aixa; Clarke, Brent; Diaz-Castillo, Yamir; Galletti, Greg; Kavanagh, Kerri; Patel, Raju; Kendzia, Thomas; Prato, Robert; Vaaler, Marlayna

Subject: FW: Update on Japan Situation

Everyone,

For those of you who are not ANS members, please read email sent from the ANS President concerning the events at Fukushima Unit 1 in Japan.

Francis X. Talbot, P.E.

Reactor Operations Engineer

Quality and Vendor Branch 1 (AP1000/U.S. APWR) Division of Construction Inspection & Operational Programs Office of New Reactors U.S. NRC

PN: 301-415-3146

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

From: Joe Colvin [<mailto:president@ans.org>]

Sent: Saturday, March 12, 2011 8:56 PM

To: Talbot, Frank

Subject: Update on Japan Situation

Dear ANS Members:

I'm sure you are aware of the rapidly developing situation in Japan. The ANS is working on multiple fronts to collect credible information on the incident, and distribute that information through mainstream and social media outlets.

We have communicated with our counterparts at the Atomic Energy Society of Japan to offer any technical or other assistance which may be of help.

We have set up a special page on the ANS blog (<http://ansnuclearcafe.org>) to aggregate media reports and provide additional information when we consider it to be credible.

We are also working to organize television appearances and other media availabilities for our members so that some of the misinformation that has been presented by anti-nuclear groups can be rebutted with facts. Our goal is not necessarily to be the first on the air, but to be the most credible.

Attached you will find some talking points, along with our current analysis of the sequence of events at Fukushima I-1. I encourage you to talk to your social networks to ensure that people have the right facts and the proper perspective on this incident.

Let me know what other actions our Society should be taking during this nuclear incident.

My thoughts and prayers go out to the people of Japan.

Respectfully,

Joe Colvin

From: Cohen, Shari
To: Grobe, Jack
Subject: RE: Just in case you want to dial in to this it is going on right now
Date: Wednesday, March 16, 2011 11:30:51 AM

now

Shari Cohen, Contract Secretary
Office of Nuclear Reactor Regulation, USNRC
Room – O-13H18 / Mail Stop - O13H16M
Phone – 301-415-1270
Fax - 301 - 415-8333
Email - shari.cohen@nrc.gov

From: Grobe, Jack
Sent: Wednesday, March 16, 2011 11:20 AM
To: Cohen, Shari
Subject: Re: Just in case you want to dial in to this it is going on right now

What time
Jack Grobe, Deputy Director, NRR

From: Cohen, Shari
To: Grobe, Jack
Sent: Wed Mar 16 11:18:23 2011
Subject: Just in case you want to dial in to this it is going on right now

Mr. Eric Leeds has requested a teleconference with the regions. He wants to update you and ask for your support – teleconference information below:

Phone: 888-469-2155

Pass code: (b)(6)

Headquarters:

Eric Leeds

Please forward to appropriate AA and DAAs(actors or delegation of authority):

Region 1: Bill Dean, David Lew, Darrell Roberts, Peter Wilson

Region 2: Victor McCree, Len Wert, Chuck Casto, Richard Croteau, Joel Munday

Region 3: Mark Satorius, Cindy Pederson, Steve West, Steve Reynolds

Region 4: Elmo Collins, Art Howell, Kriss Kennedy, Anton Vogel

Shari Cohen, Contract Secretary
Office of Nuclear Reactor Regulation, USNRC
Room – O-13H18 / Mail Stop - O13H16M

PP/3A

Phone – 301-415-1270
Fax - 301 - 415-8333
Email - shari.cohen@nrc.gov

From: Grobe, Jack
Sent: Wednesday, March 16, 2011 11:16 AM
To: Cohen, Shari
Subject: Fw: Date change for Administrative Control of Funds
Importance: High

Pls cancel me out of this course.
Jack Grobe, Deputy Director, NRR

From: PDC Resource
To: Brockington, Tamyra; Ronewicz, Lynn; Safford, Carrie; Madden, Edward; Baum, Richard; Miller, Fred; Le, Hong; Ballam, Nick; Blond, Tamoria; Walston, Chris; Clark, Theresa; Trent, Glenn; Magnanelli, Paula; Blount, Barbara; Boyer, Rachel; Machalek, Woody; Benney, Kristen; Giacinto, Joseph; Kauffman, John; Heck, James; Powell, Marlon; Valentin, Andrea; Kim, Sunny; King, Katrina; Allen, Linda; Robinson, Debra; Lee, Mike; Abraham, Susan; Kuk, Jennifer; Simpson, JoAnn; King, Shannon; Podolak, Kathleen; Tafazzoli, Sheiba; Moss, Mary; Mitchell-Funderburk, Natalie; Randiki, Caroline; Grobe, Jack
Cc: Orlando, Dennise; Johnson, Robin; Swann, Tawanda; Daniels, Kiviette; Redhead, Rhonda
Sent: Wed Mar 16 09:33:42 2011
Subject: Date change for Administrative Control of Funds

Hello All, enrolled, pending, and waitlisted,

Due to instructor availability, this session (Administrative Control of Funds) has been changed from April 6-7, 2011 to May 4-5, 2011.

We apologize for any inconvenience this may cause. You have been enrolled in the May session, if this new date does not fit your schedule, please withdraw via iLearn or respond to this e-mail for withdrawal.

Currently, there is another session available, please see below.

Course 33 (Rev 1 - 12/14/2000 12:00 PM ET)	Administrative Control of Funds	8/10/2011 08:30 AM ET	8/11/2011 04:00 PM ET	GW_PDC
--------------------------------------------	---------------------------------	-----------------------	-----------------------	--------

PDC Staff,

PDC...Gateway (301) 492-2000
7201 Wisconsin Ave. Suite 425
Bethesda, Md. 20814

From: Murphy, Andrew
To: Case, Michael
Subject: RE: IRC Staffing
Date: Wednesday, March 16, 2011 10:53:52 AM

Mike,

I have expertise in the seismology area – seismicity and tectonics and can provide support in that area for the OpCenter. Do not have systems experience or health physics (radiation).

Home phone (b)(6) and cell phone (b)(6)

Andy

From: Case, Michael
Sent: Wednesday, March 16, 2011 7:16 AM
To: Graves, Herman; Hogan, Rosemary; Csontos, Aladar; Koshy, Thomas; Lin, Bruce; Boyce, Tom (RES); Ali, Syed; Murphy, Andrew; Tregoning, Robert; Gavrilas, Mirela; Sydnor, Russell; Lorette, Phillip
Cc: Richards, Stuart
Subject: FW: IRC Staffing

Can you all start to think about this and let me know of any potential names by around noon?

From: Sheron, Brian
Sent: Tuesday, March 15, 2011 5:27 PM
To: Coyne, Kevin; Case, Michael; Coe, Doug; Correia, Richard; Gibson, Kathy; Lui, Christiana; Richards, Stuart; Sangimino, Donna-Marie; Scott, Michael; Uhle, Jennifer; Valentin, Andrea
Cc: Dion, Jeanne
Subject: IRC Staffing

I participated on a conference call with other ODs and led by Michele Evans, acting deputy OD in NSIR at 4 pm today.

The purpose of the conference call was to discuss staffing for the IRC for the near future. The IRC is currently staffed with members of the Reactor safety team, the Protective Measures team, Liaison Team, etc. There is also an ET member there. None of the teams are at their full compliment. What Michele is looking for is people that can staff the IRC and relieve the staff that are currently there. She said they are currently running 3 shifts (11pm-7am, 7am – 3pm, and 3pm to 11 pm). They would like to find staff that can work shifts for 4 days in a row (I think she wants 4 days on, 3 days off). She said the staff do not have to have had IRC training.

Several of us said we would certainly canvas our staff to see who was qualified to work in the IRC and could work there, but we needed to know what technical disciplines they were looking for. Michele did not have a list of needed disciplines, but said she would generate one and send it out. As of 5:15 pm I have not received a list yet.

However, I am assuming they will be looking for staff with expertise in such areas as systems analysis, severe accidents, radiological dose assessment, etc. In anticipation that

PP/35

these are the technical disciplines of interest, can you please start identifying your staff that you believe have some of the requisite skills needed for the IRC, and start asking if they would be available to work shifts in the IRC if asked to. HR said they would be eligible for normal overtime compensation.

Also, they will be looking for staff to go to Japan and relieve the technical staff that recently went there. There were 2 BWR experts that left over the weekend, and a team of 9 more (6 engineers and 3 OIP staff) left yesterday. The thinking is that the staff that recently went over would come back in 2 weeks, which is when they want to send a replacement team over there. So please check to see if you have any staff with the proper technical credentials, are reasonably good communicators, and would be willing to spend about 2 weeks in Japan as part of the team there.

I will forward the list of desired disciplines as soon as I receive them from Michele. Michele said she will be looking for the list of potential IRC replacements by COB tomorrow (3/16/11), thus, I will need your candidates by mid-afternoon.

For the team that will replace the one that was just sent to Japan, she said she would like us to update the list we previously sent by COB 3/17.

- NWL

From: Karwoski, Kenneth
To: Thomas, Eric
Cc: Taylor, Robert; Lubinski, John
Subject: FW: Fukushima Technical Presentation - Initial Event Summary
Date: Wednesday, March 16, 2011 9:14:41 PM
Attachments: RowleyC-Fukushima Daiichi Nuclear Plant - Initial Event Summary.pdf

FYI. This information is from an ASME colleague - probably not new information.

Ken

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

From: (b)(6)

Sent: Wednesday, March 16, 2011 4:24 PM

To: Karwoski, Kenneth

Subject: Fukushima Technical Presentation - Initial Event Summary

Gentlemen,

More technical information (dozen slides) for your information.

Best Regards / Wes

=====

C. W. Rowley, PE

Vice President / The Wesley Corporation P. O. Box 747, Green Valley, AZ 85622 Office 520-777-8941 /
Fax 520-777-8942 Cell (b)(6)

PP/36

This email was brought to you through the ASME Volunteer Contact Center by C. Wesley Rowley , PE.

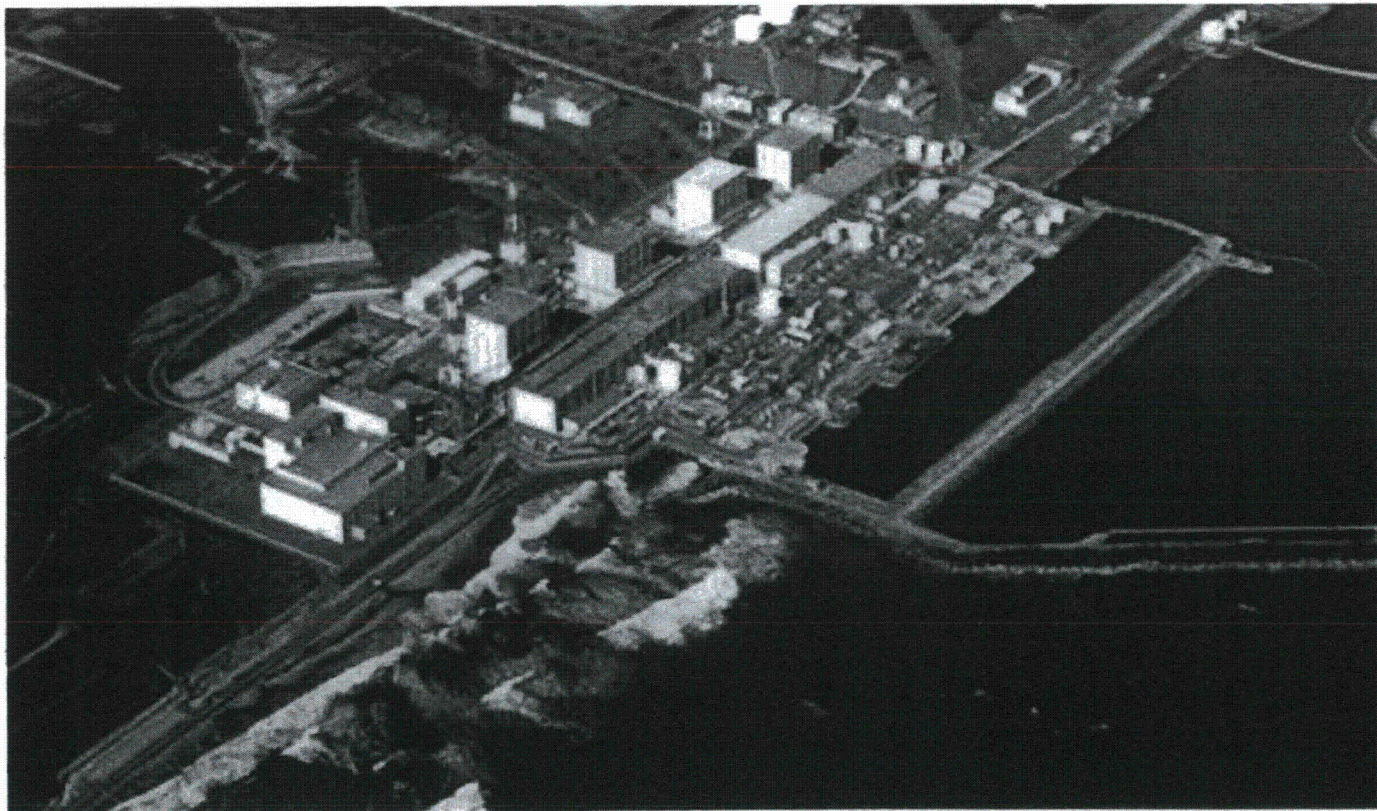
Committee Distribution List:
Board on Nuclear Codes and Standards

Committee cc Distribution List:
None

Member Distribution List:
None

Member cc Distribution List:
None

Fukushima Daiichi Nuclear Plant Initial Event Summary



Fukushima Daiichi Nuclear Station

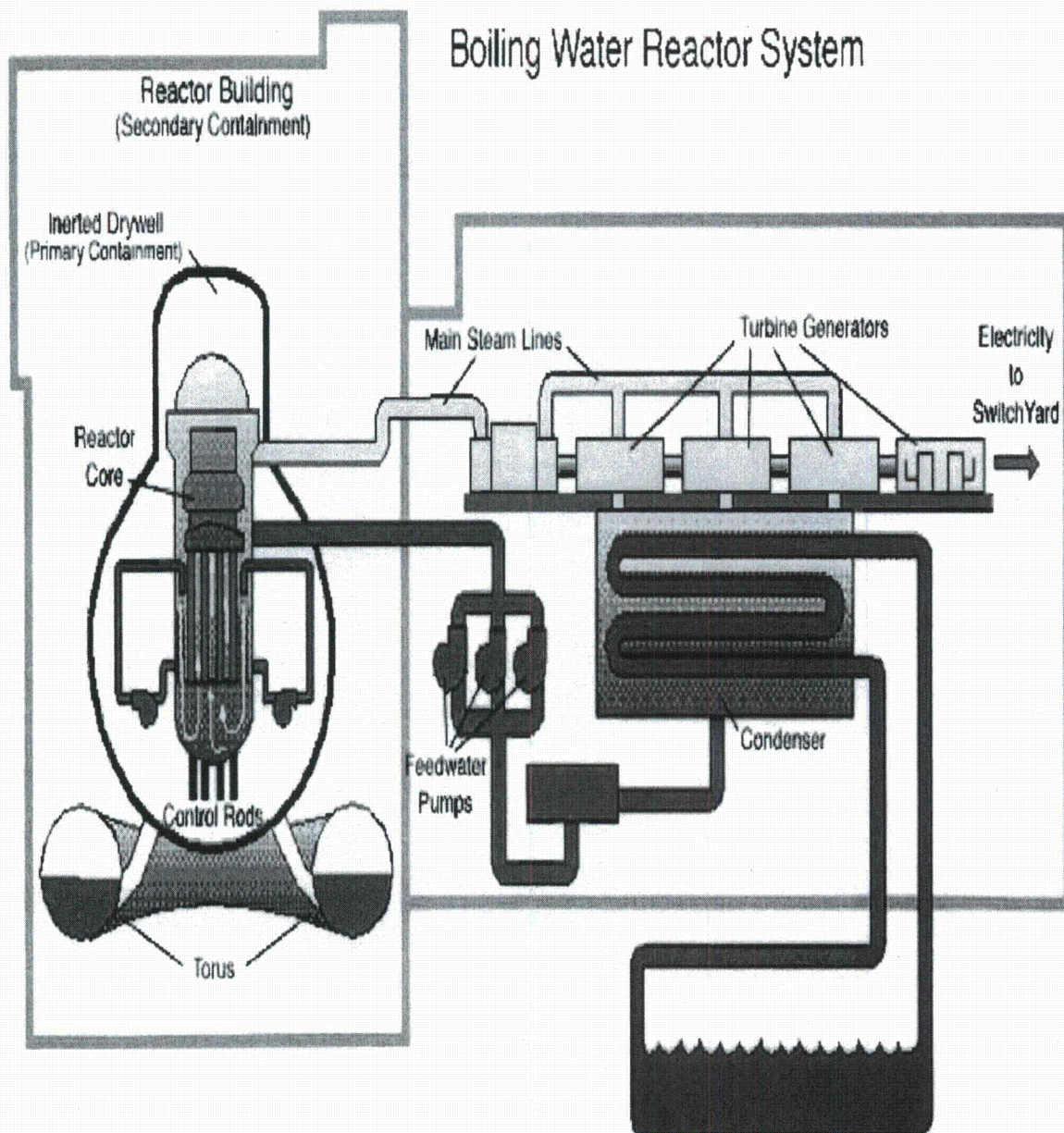
- Six BWR units at the Fukushima Nuclear Station:
 - Unit 1: 439 MWe BWR, 1971 (unit was in operation prior to event)
 - Unit 2: 760 MWe BWR, 1974 (unit was in operation prior to event)
 - Unit 3: 760 MWe BWR, 1976 (unit was in operation prior to event)
 - Unit 4: 760 MWe BWR, 1978 (unit was in outage prior to event)
 - Unit 5: 760 MWe BWR, 1978 (unit was in outage prior to event)
 - Unit 6: 1067 MWe BWR, 1979 (unit was in outage prior to event)



Unit 1

Fukushima Daiichi Unit 1

- Typical BWR 3 and 4 Reactor Design



Fukushima Daiichi Unit 1

■ Mechanism of Boiling Water Reactor Power Station

Primary Containment Vessel (Dry Well)

It would confine radioactive substances discharged from the reactor facilities if some pipes were broken by accident.

Reactor Pressure Vessel

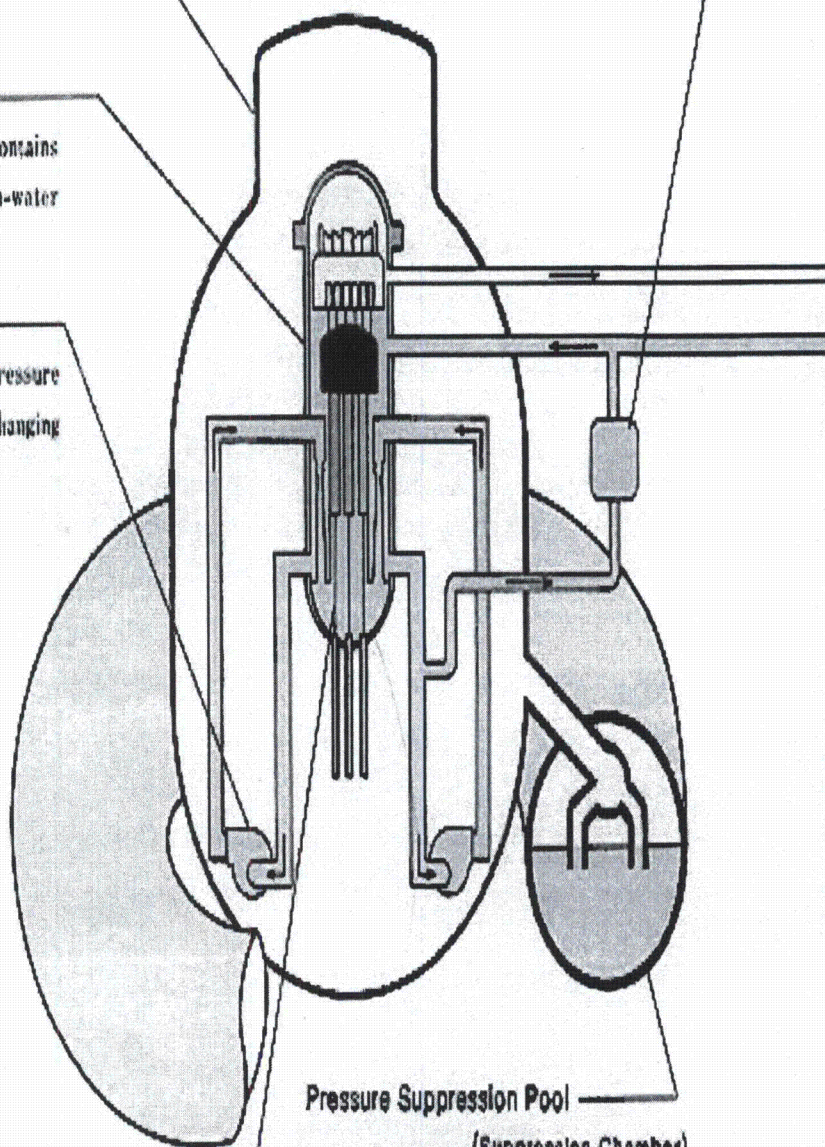
It is made of 12cm thick steel and contains fuel, control rods, jet pumps, steam-water separator and steam dryer.

Primary Recirculation pump

It circulates water in the reactor pressure vessel and changes reactor power by changing water quantity.

Cleanup Water System

It maintains the purity of the water circulating through the reactor.



Pressure Suppression Pool

(Suppression Chamber)

It always contains water. Should pipes in the primary containment vessel ever break, leaked steam would be conducted into the pool, where it would be cooled down and condensed with a large amount of water to suppress any rise in pressure in the primary containment vessel.

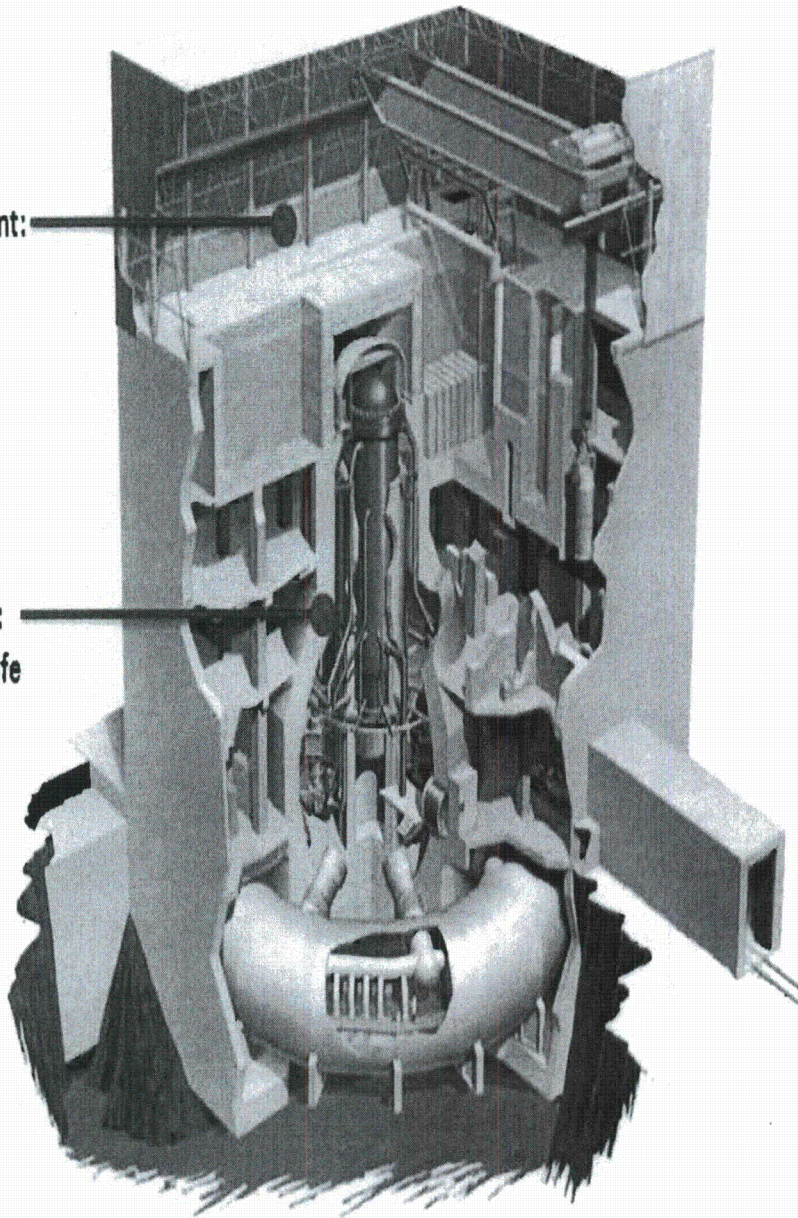
Control Rods

They are used to start and stop the reactor and to change reactor power (amount of nuclear fission) by individually inserting and extracting from the bottom of the reactor.

Fukushima Daiichi Unit 1

Secondary containment:
Area of explosion at
Fukushima Daiichi 1

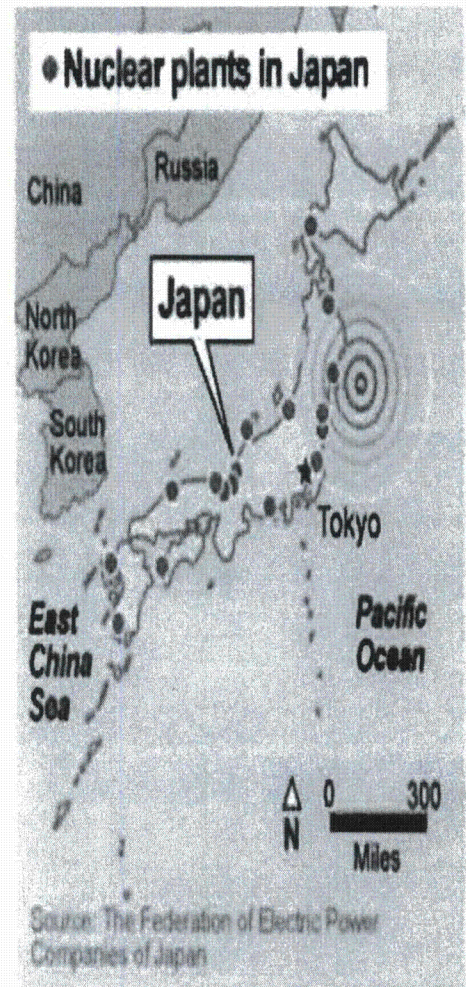
Primary containment:
Remains intact and safe



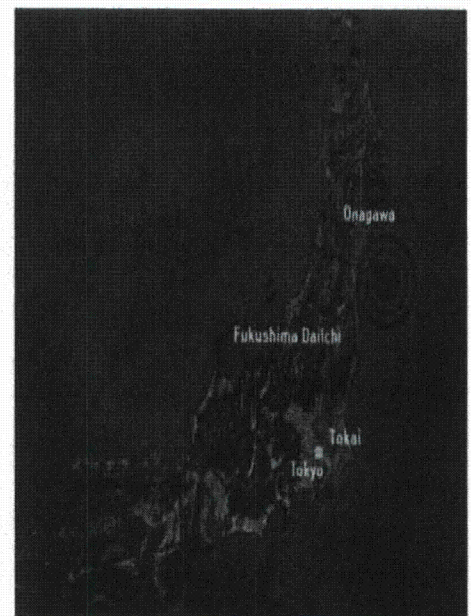
Boiling Water Reactor Design

Event Initiation

- The Fukushima nuclear facilities were damaged in a magnitude 8.9 earthquake on March 11 (Japan time), centered offshore of the Sendai region, which contains the capital Tokyo.
 - Plant designed for magnitude 8.2 earthquake. An 8.9 magnitude quake is 7 times in greater in magnitude.
- Serious secondary effects followed including a significant tsunami, significant aftershocks and a major fire at a fossil fuel installation.



By Janet Loehrke USA TODAY



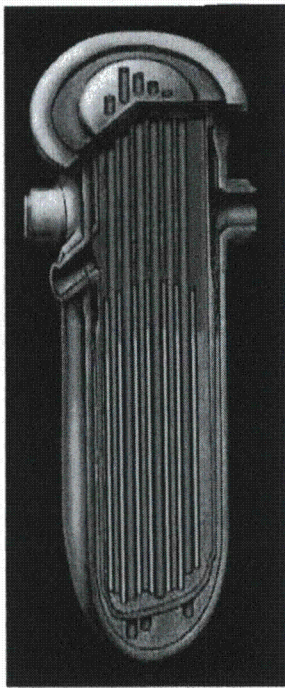
Initial Response

- Nuclear reactors were shutdown automatically. Within seconds the control rods were inserted into core and nuclear chain reaction stopped.
- Cooling systems were placed in operation to remove the residual heat. The residual heat load is about 3% of the heat load under normal operating conditions.
- Earthquake resulted in the loss of offsite power which is the normal supply to plant.
- Emergency Diesel Generators started and powered station emergency cooling systems.
- One hour later, the station was struck by the tsunami. The tsunami was larger than what the plant was designed for. The tsunami took out all multiple sets of the backup Emergency Diesel generators.
- Reactor operators were able to utilize emergency battery power to provide power for cooling the core for 8 hours.
- Operators followed abnormal operating procedures and emergency operating procedures.

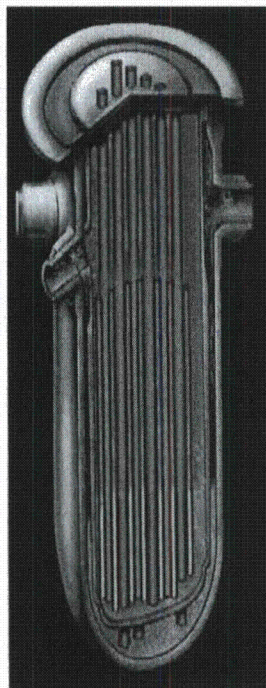
Loss of Makeup

- Offsite power could not be restored and delays occurred obtaining and connecting portable generators.
- After the batteries ran out, residual heat could not be carried away any more.
- Reactor temperatures increased and water levels in the reactor decreased, eventually uncovering and overheating the core.
- Hydrogen was produced from metal-water reactions in the reactor.
- Operators vented the reactor to relieve steam pressure - energy (and hydrogen) was released into the primary containment (drywell) causing primary containment temperatures and pressures to increase.
- Operators took actions to vent the primary containment to control containment pressure and hydrogen levels. Required to protect the primary containment from failure.
- Primary Containment Venting is through a filtered path that travels through duct work in the secondary containment to an elevated release point on the refuel floor (on top of the reactor building).
- A hydrogen detonation subsequently occurred while venting the secondary containment. Occurred shortly after and aftershock at the station. Spark likely ignited hydrogen.

Core Damage Sequence



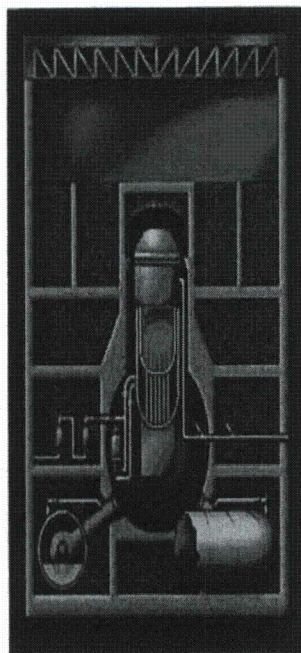
Core Uncovered



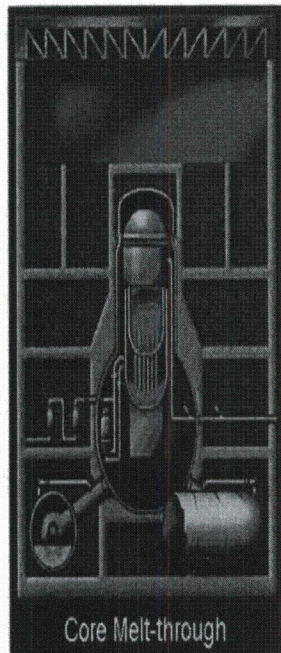
Fuel Overheating



Fuel melting - Core
Damaged

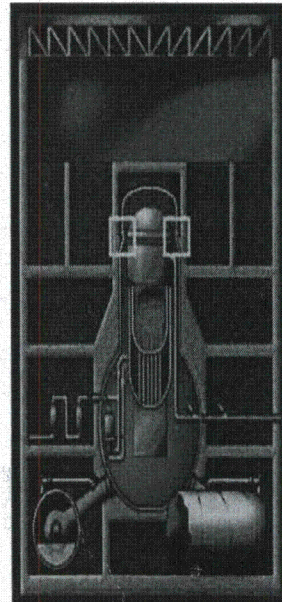


Core Damaged but retained
in vessel

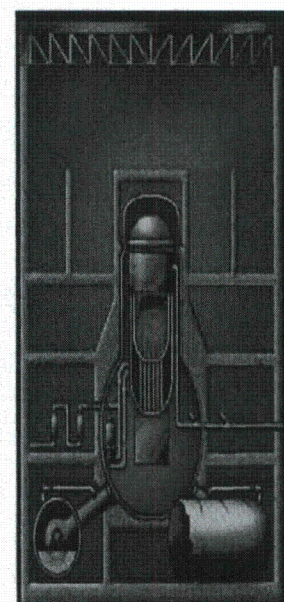


Core Melt-through

Some portions of core melt
into lower RPV head

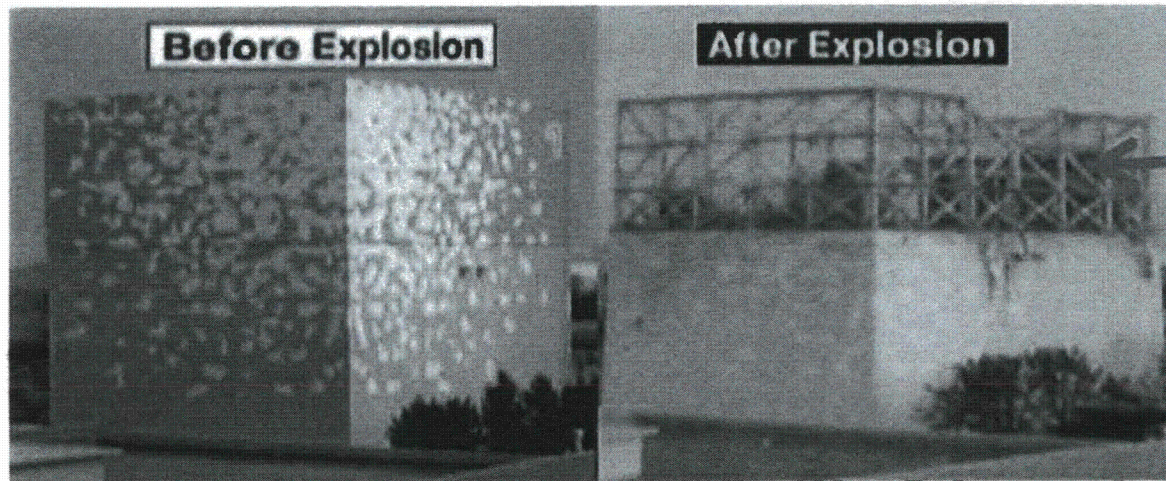
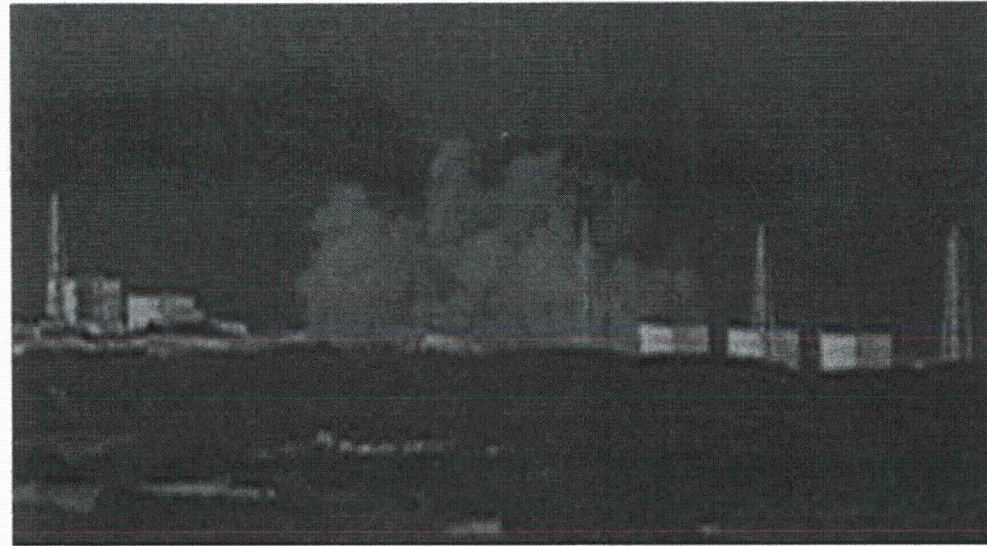


Containment pressurizes.
Leakage possible at drywell
head



Releases of hydrogen into
secondary containment

Hydrogen Detonation at Unit 1



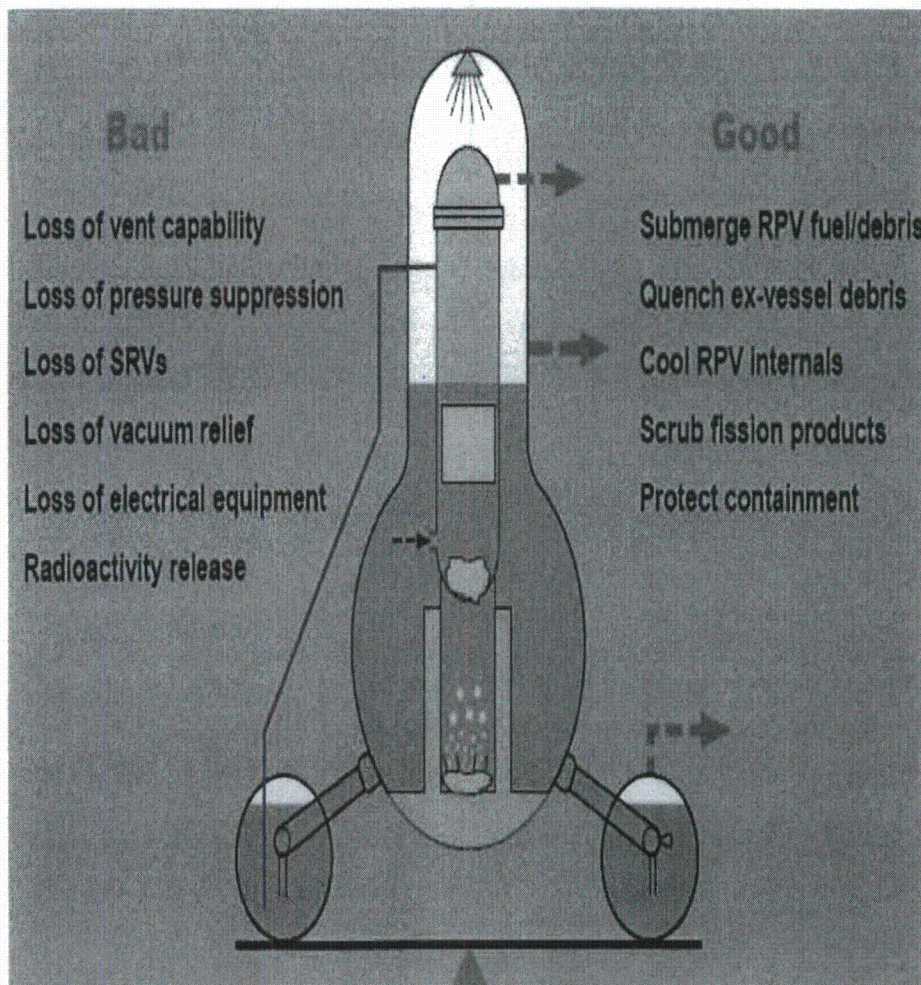
Refuel Floor

Reactor Building

Mitigating Actions

- The station was able to deploy portable generators and utilize a portable pump to inject sea water into the reactor and primary containment.
- Station was successful in flooding the primary containment to cool the reactor vessel and debris that may have been released into the primary containment.
- Boric acid was added to the seawater used for injection. Boric acid is "liquid control rod". The boron captures neutrons and speeds up the cooling down of the core. Boron also reduces the release of iodine by buffering the containment water pH.

Containment Flooding Effects



Emergency Response

- Equivalent of General Emergency declared to the event at Unit 1.
- Evacuation of public performed within 20 km (13 miles) of plant; approximately 200,000 people evacuated.
- Similar hydrogen detonation subsequently occurred at Unit 3 on Sunday, March 14th (Japan time). Primary containment remained intact at Unit's 1 and 3 throughout the accident. There was considerable damage to the secondary containment (reactor building).
- Highest recorded radiation level at the Fukushima Daiichi site was 155.7 millirem. Radiation levels were subsequently reduced to 4.4 millirem after the after the containment was flooded. The NRC's radiation dose limit for the public is 100 millirem per year.
- Several fatalities occurred at the station along with numerous injured workers.
- Authorities distributed Potassium-iodide tablets to protect the public from potential health effects of radioactive isotopes of iodine that could potentially be released. This is quickly taken up by the body and its presence prevents the take-up of iodine-131 should people be exposed to it.
- Over 300 after shocks have occurred and continue to challenge station response.

From: Nguyen, Quynh — *N.R.*
To: Grobe, Jack; Dorsey, Cynthia; Givvines, Mary
Subject: FW: Thanks for going to Japan! We've got your back!
Date: Wednesday, March 16, 2011 7:56:55 AM
Importance: High

Jack,

If Kolb got it, I gotta think Ulses got it. I gotta think our guys talk and will piggy back on the shipment?

Quynh

PS Cindy will keep calling Ulses' home (keeps getting busy signal) and I'll let you know as soon as I hear something concrete. *telegraph*

From: Kolb, Timothy — *N.R.*
Sent: Tuesday, March 15, 2011 11:29 PM
To: Nguyen, Quynh
Subject: Re: Thanks for going to Japan! We've got your back!

I'm good for now. I packed for 7 days.
Thanks,
Tim

From: Nguyen, Quynh — *N.R.*
To: Ulses, Anthony; Nakanishi, Tony; Kolb, Timothy
Cc: Leeds, Eric; Boger, Bruce; Grobe, Jack; Givvines, Mary; Meighan, Sean; Dorsey, Cynthia; Ruland, William
Sent: Tue Mar 15 09:44:43 2011
Subject: Thanks for going to Japan! We've got your back!

Gentlemen,

Thank you for serving your country by helping our friends in Japan! Hope you all arrived safely!

Please continue to work with your POC; however, I am here to help work things on your behalf so feel free to keep me in the loop if you need further assistance. If your colleagues from other Offices, need help, I will do my best to help them as well.

Just for Ulses:

We've been trying to reach your (b)(6) at this number (b)(6) to no avail. We have a shipping number (b)(6) FedEx Shipping Acct Number (b)(6) so (b)(6) can send you some of your clothes. *Tim*

Tim and Tony N., if you need similar support, let us know!

Thanks,
Quynh

PP/37/102

(b)(6)

(Blackberry)

From: Grobe, Jack
To: Kelly, Glenn
Subject: Re: Hello, Jack
Date: Wednesday, March 16, 2011 11:23:30 AM

Great to hear from you. INPO just issued a required response event report to all plants with four actions confirm B5b strategies, SAMGS, SBO strategies and fire/floodinf/seismic procedures. I'll send it to you.

Jack Grobe, Deputy Director, NRR

From: Kelly, Glenn
To: Grobe, Jack - *JK*
Sent: Wed Mar 16 08:24:35 2011
Subject: Hello, Jack

Jack,

I thought you might like to talk some time about B.5.b and how it does or does not provide protection from events such as in Japan. This is especially important for PWRs on the west and east coast lines. I expect many questions will arise as to how well the U.S. plants are prepared for such an event, including very large earthquakes and tsunamis (these are severe accident areas in which I have spent some time).

I now am a contractor for NRC through Energy Research, Inc. here over on Executive Blvd in Rockville. Give me a buzz if you like.

Thanks again for the nice letter of recommendation you wrote.

Glenn

(301).881-0866 (office)
(b)(6) (cell) *efp*

74/38

NCR
From: Leeds, Eric
To: Raghavan, Rags; Boger, Bruce
Subject: RE: (b)(6)
Date: Wednesday, March 16, 2011 5:24:46 PM

Hoo-ray!!!!!! Thanks for the great news! We've been swamped here with the Japanese events. I'll call now.

REL
Eric J. Leeds, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
301-415-1270

NCR
From: Raghavan, Rags
Sent: Wednesday, March 16, 2011 9:07 AM
To: Leeds, Eric; Boger, Bruce
Subject: withdrawal of my retirement

Eric/ Bruce:

(b)(6)

(b)(6)

(b)(6)

I sincerely appreciate all your support in this matter.

On a different subject, Ashok from TVA called me re: BLN CP extension that I would like to discuss with you before he calls. Please call me when you can at (b)(6)

Regards

rag

PP/39

From: Birla, Sushil
To: Kammerer, Annie
Cc: Case, Michael
Subject: RE: Calls for answering questions on earthquakes, etc, in support of Japanese event activities
Date: Wednesday, March 16, 2011 12:36:56 PM

Annie

The document is marked "OUO."

If I am asked questions outside the NRC, e.g., in public places, am I allowed to use these answers?

Sushil Birla (phonetically Su-sheel)
Senior Technical Advisor - Digital Instrumentation and Control
Office of Nuclear Regulatory Research, Mail Stop C5-A24M
U.S. Nuclear Regulatory Commission
21 Church Street, Rockville, MD 20850, USA
Phone: 301-251-7660

Mobile: (b)(6)

Fax: 301-251-7425

Email address: Sushil.Birla@nrc.gov

Postal address: Mail Stop C5-A24M, Washington DC 20555-0001

It's time to meet: <http://www.internal.nrc.gov/news/nrcreporter/2010/profiles/Sushil-Birla.html>



From: Kammerer, Annie
Sent: Wednesday, March 16, 2011 12:18 PM
To: RES Distribution
Cc: Karas, Rebecca
Subject: FW: Calls for answering questions on earthquakes, etc, in support of Japanese event activities

All,

Please read Becky's email below and follow the procedures she laid out to NRO staff.

It is important that we keep the NRC's message consistent and moving through appropriate channels. I have added the latest version of the seismic Q&As for the convenience of those of you who are getting in-house questions related to your projects and responsibilities. Currently we are updating this daily with the questions (and answers) we collect each day.

Thanks,
Annie

From: Karas, Rebecca
Sent: Wednesday, March 16, 2011 12:05 PM
To: NRO_DSER Distribution
Cc: Chokshi, Nilesh; Kammerer, Annie; Munson, Clifford

PP/40

Subject: Calls for answering questions on earthquakes, etc, in support of Japanese event activities

All,

Based on what just happened, individuals within NRC appear to be either randomly calling geologists/geophysicists/hydrologists or people they happen to know to answer questions.

For callers who are NRC staff who ask you a question, please direct them to call the Ops Center and ask to be connected to the RST seismologist (Cliff on day shift, Annie on evening shift). That person will coordinate all question responses (if Cliff or Annie call you, provide any support they need to help answer these questions).

For callers who are NOT NRC staff (including people from other agencies), please continue to follow the direction of the EDO here:

THIS IS NOT A DRILL

The Office of Public Affairs is expecting a large volume of calls from media and the general public regarding the latest statements from the State Department and the NRC regarding the situation in Japan. ALL CALLS from media or the general public on this topic must be referred to the 301-415-8200 number.

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response to the events in Japan. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's Headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC Incident Responders at Headquarters have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. NRC representatives with expertise on boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the Federal government agency primarily responsible for providing assistance to countries recovering from disasters.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety significant structures, systems, and components be designed to take in account the most severe natural phenomena historically estimated for the site and surrounding area.

The NRC will not provide information on the status of Japan's nuclear power plants. For the latest information on NRC actions see the NRC's web site at www.nrc.gov or blog at <http://public-blog.nrc-gateway.gov>.

Two important reminders:

It is possible that some of us will be requested by colleagues in another country to provide technical advice and assistance during this emergency. It is essential that all such communications be handled through the NRC Operations Center. Any assistance to a foreign government or entity must be coordinated through the NRC Operations Center and the U.S. Department of State (DOS). If you receive such a request, contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) immediately.

If you receive information regarding this or any emergency (foreign or domestic) and you are not certain that the NRC's Incident Response Operations Officer is already aware of that information, you should contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) and provide that information.

Other Sources of Information:

USAID – www.usaid.gov

U.S. Department of State – www.state.gov

FEMA – www.fema.gov

White House – www.whitehouse.gov

Nuclear Energy Institute – www.nei.org

International Atomic Energy Agency – www.iaea.org/press

No response to this message is required.

THIS IS NOT A DRILL

Rebecca Karas, Chief
Geosciences and Geotechnical Engineering Branch 1
Division of Site and Environmental Reviews
Office of New Reactors
U.S. Nuclear Regulatory Commission
Phone: 301-415-7533
Fax: 301-415-5397

Date: Wednesday, March 16, 2011 7:17:51 PM
Posted At: itrezzo EPS Backups
Conversation: itrezzo EPS Backups: 3/16/2011 19:17
Subject: itrezzo EPS Backups: 3/16/2011 19:17
Attachments: Quynh Nguyen.msg

The following 1 contact(s) were updated with current information:

- Quynh Nguyen (b)(6)

NOTE: If itrezzo EPS overwrites any important data in your contacts, you can find the original, unchanged contacts attached to this message.

PP/41
e/b

Attachment Quynh Nguyen.msg (2560 Bytes) cannot be converted to PDF format.

Lee, Samson

From: Howe, Allen
Sent: Wednesday, March 16, 2011 4:47 PM
To: Ruland, William; Brown, Frederick; McGinty, Tim; Blount, Tom; Quay, Theodore; Lubinski, John; Thomas, Brian; Nelson, Robert; Gitter, Joseph; Westreich, Barry; Bahadur, Sher; Holian, Brian; Cheek, Michael; Lee, Samson; Wilson, George; Hiland, Patrick; Skeen, David
Cc: Martin, Robert; Meighan, Sean
Subject: Response requested: Assistance with Commission Brief
Attachments: Scheduling NoteMar2011_JapaneseEvent agh 3-16-2011.docx; commission meeting outline 3-16-2011.docx

Importance: High

LT – I am looking for the right folks to pull together background information, slides, key messages, talking points and possible Q&A for the Commission briefing on the Japan event. The briefing is likely to happen Monday. Looks like a busy weekend. I will attend the ET standup tomorrow to discuss. Please let me know who will support. The areas where NRR has the lead and where specific support is needed are as follows:

Situation Assessment For US Reactors and Applicants – Marty Virgilio– lead NRR, RES support

- External Events
 - Seismic – DE
 - Flood -DE
 - Tsunamis - DE
- Severe Accidents
 - SBO - DE/DRA
 - B.5.b/50.54 (hh)(2) – DRA/DIRS
 - SAMGs - DSS
 - Hydrogen control DSS
 - Emergency planning - NSIR
- Spent fuel – DSS, NMSS support for dry casks

Path Forward and Priorities – Eric Leeds – lead NRR

- Near Term Actions
 - In Support of Response
 - Near term regulatory actions - DPR
 - TI for inspections - DIRS
 - Generic Communications - DPR
 - Licensing actions – DORL

- Longer Term Actions

Lessons Learned From this Event – process based on past lessons learned e.g. TMI, Chernobyl, Davis-Besse, Japan earthquake at KK

Resolution of GSI 199 - DE

- Industry actions

Thanks - Allen

SCHEDULING NOTE

Title: BRIEFING ON JAPANESE EVENT and US RESPONSE (Public?)

Purpose: To provide the Commission a status on the recent event in Japan, and to provide an overview of staff actions to date, early planned actions

Scheduled: March XX, 2011
9:00 am

Duration: Approx. 1.5 hours

Location: Commissioners' Conference Room OWFN

Participants:	Presentation
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<u>NRC Staff Panel</u>	50 mins.*
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Bill Borchardt , Executive Director for Operations	15 mins.*
<u>Topic:</u> Overview of Japanese Event and U.S. response	

Mike Weber , Deputy Executive Director Materials, Waste, Research, State, Tribal and Compliance Programs	10 mins.*
<u>Topic:</u> Potential consequences; what will be seen in U.S.	

Marty Virgilio , Deputy Executive Director for Reactor and Preparedness Programs	10 mins.*
<u>Topic:</u> Situation assessment for U.S. reactors and applicants	

Elliot Brenner , OPA	5 mins.*
<u>Topic:</u> Communication Challenges	

Eric Leeds , Director, NRR	10 mins.*
<u>Topic:</u> Path forward; Near term and longer term	

Commission Q & A	30 mins.
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Discussion – Wrap-up	5 mins.
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Documents:

Staff background material due to SECY: March __, 2011.

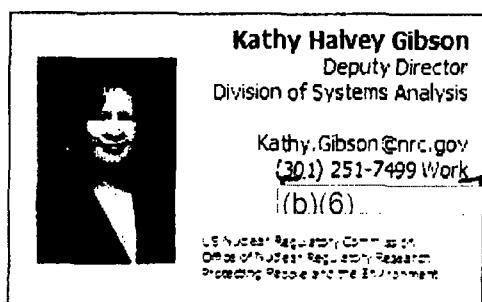
Slides due to SECY: March __, 2011.

Greenwood, Carol

From: Gibson, Kathy - RES
Sent: Tuesday, November 09, 2010 2:00 PM
To: Uhle, Jennifer
Subject: RE:
Attachments: Kathy Halvey Gibson.vcf; image001.jpg

We need to keep Jim Lyons in the loop on anything we are changing or redirecting since he is the Steering Committee chair. He was informed of the dates we were briefing the regions, so if we are changing that we should tell him.

I am uncomfortable delaying all these things without thinking them through and especially without Jimi's view. Could look like we are acting behind his back.



From: Uhle, Jennifer
Sent: Tuesday, November 09, 2010 1:56 PM
To: Gibson, Kathy
Subject: FW:

Jason said that the Regions II and III wanted to delay our briefings so I figured it was okay provided we get to them once we get organized.

From: Schaperow, Jason
Sent: Tuesday, November 09, 2010 12:56 PM
To: Uhle, Jennifer
Subject:

Hi Jennifer,

I recommend that we take the following actions to help mitigate the issues that we are facing with SOARCA:

Schedule:

- Postpone briefings for Regions II and III that are scheduled for Dec 8, 9 – Since you are O.K. with postponing these briefings, I asked Jon Barr to contact Regions II and III right away.
- Postpone NRR ET briefing scheduled for Dec 15.
- Postpone ACRS full committee meeting being scheduled for Jan 13.

Peer review: At the October peer review committee meeting, Jimi asked the peer review committee for 3 deliverables. I recommend we immediately ask the peer review committee to stop work on these deliverables, because it is premature.

- List of open items – early November
- Peer reviewers' reports on the Uncertainty Analysis Plan – mid-November

- Final peer reviewers' reports on the SOARCA NUREG (version of NUREG dated 2/15/10) – end of November

Project management:

- Extend peer reviewers sub-contracts with Sandia – Since you are O.K. with extending their subcontracts, I will ask Sandia to do this.

I appreciate your consideration of my concerns.

Jason

DRAFT Commission Meeting Outline 3/16/2011

NRC Response to Core Damage Accident in Japan

EVENT OVERVIEW AND U.S. RESPONSE – Bill Borchardt

Current Status of Fukushima Daiichi – lead OPS Center

- Reactors
- Spent Fuel Pools

NRC Response Objectives

- Support of US Citizens in Japan - lead OIP
- Support of the Japanese Government - lead OIP
- Advance Our Understanding of Safety and Risk - lead RES

NRC Response Actions – lead OPS Center

- In Japan
- At HQ

US Government Response – lead OCA

- NRC Partners and Stakeholders

POTENTIAL CONSEQUENCES – Mike Weber

Consequence Projections – lead FSME/RES

- In Japan
- In US

COMMUNICATION CHALLENGES – Eliot Brenner – lead OPA

- Information
- Coordination

Situation Assessment For US Reactors and Applicants – Marty Virgilio– lead NRR, W/RES, NMSS support

- External Events
 - Seismic
 - Flood
 - Tsunamis
- Severe Accidents
 - SBO
 - B.5.b/50.54 (hh)(2)

- SAMGs
 - Hydrogen control
 - Emergency planning
- Spent fuel – NMSS support for dry casks

Path Forward and Priorities – Eric Leeds – lead NRR

- Near Term Actions
 - In Support of Response
 - Near term regulatory actions
 - TI for inspections
 - Generic Communications
 - Licensing actions
- Longer Term Actions
 - Lessons Learned From this Event – process based on past lessons learned e.g. TMI, Chernobyl, Davis-Besse, Japan earthquake at KK
 - Resolution of GSI 199
- Industry actions

Office Points of Contact:

RES – Jeanne Dion 301-251-7482

NRO – Donna Williams x1322

FSME – George Deegan x7834

NMSS – Chris Bajwa 301-492-3333

NRR – Allen Howe

NSIR - John Vanden Berghe and Alan Shropshire

OCA/OPA – Susan Wittick

(b)(6)



From: Pires, Jose
To: Case, Michael
Cc: Graves, Herman
Subject: FW: Earthquake - CTL group
Date: Wednesday, March 16, 2011 2:03:17 PM

Mike,

Dr. Gene Corley and his firm, the CTL Group, are world known experts on concrete as a construction material. They offered assistance and I am forwarding the information if there is need for expertise.

Below is the contact information for his associate Mr. Peter Kolf who can be reached more easily.

Peter R. Kolf
Principal Structural Engineer

CTLGROUP

Building Knowledge. Delivering Results.

5400 Old Orchard Road

Skokie, IL 60077-1030

Direct 847-972-3214 Cell (b)(6)

PKolf@CTLGroup.com

www.CTLGroup.com

[Download my vCard](#)

From: Corley, Gene [mailto:GCorley@ctlgroup.com]
Sent: Wednesday, March 16, 2011 12:20 PM
To: Pires, Jose
Cc: Kolf, Peter
Subject: RE: Earthquake

Our firm and I would be pleased to participate in the efforts to assist in Japan. As you know, we have expertise in damage detection and repair.

If you hear of any need for assistance, we have people who can be sent immediately.

Gene

NOTICE OF CONFIDENTIALITY: This e-mail and any attachments is covered by the Electronic Communications Privacy Act, 18 U.S.C. 2510-2521 and may contain privileged, confidential, copyrighted, or other legally protected information. If you are not the intended recipient, you may not use, copy, or retransmit this e-mail. If you have received this by mistake please notify us by return e-mail, then delete.

pp/43

Weaver, Tonna

From: Ulses, Anthony *ink*
Sent: Wednesday, March 16, 2011 11:21 PM
To: LIA07 Hoc
Subject: Re: Two Pager - Please Review

Not from me. NARAC wants to see this. Can I release this to them?

Sent from NRC BlackBerry
Anthony Ulses

From: LIA07 Hoc *ink*
To: Ulses, Anthony
Sent: Wed Mar 16 23:19:56 2011
Subject: RE: Two Pager - Please Review

We have been sending this out to augment the status update. The information in here is the same as the unit information in the status update. We wanted it to be fact checked by your team there. Are there additional changes?
-Sara

From: Ulses, Anthony *ink*
Sent: Wednesday, March 16, 2011 11:19 PM
To: LIA07 Hoc
Subject: Re: Two Pager - Please Review

Is this a final product?

Thanks,

Tony

Sent from NRC BlackBerry
Anthony Ulses

From: LIA07 Hoc *ink*
To: Cook, William; Smith, Brooke; Casto, Chuck; Devercelly, Richard; Foggie, Kirk; Foster, Jack;
(b)(6) Kolb, Timothy; Monninger, John; Nakanishi,
Tony; Ulses, Anthony
Sent: Wed Mar 16 23:07:57 2011
Subject: RE: Two Pager - Please Review

Thank you very very much!
-Sara

From: Cook, William
Sent: Wednesday, March 16, 2011 10:59 PM
To: Smith, Brooke; LIA07 Hoc; Casto, Chuck; Devercelly, Richard; Foggie, Kirk; Foster, Jack;
(b)(6) Kolb, Timothy; Monninger, John; Nakanishi, Tony; Ulses, Anthony
Subject: RE: Two Pager - Please Review

Please find attached a revision to the two pager. We have limited availability to facility status, but provided the best available info in the revision. Sorry for the delay in turn-around of the document.

Bill Cook

From: Smith, Brooke *BS*

Sent: Wednesday, March 16, 2011 7:21 PM

To: LIA07 Hoc; Casto, Chuck; Cook, William; Devercelly, Richard; Foggie, Kirk; Foster, Jack;
(b)(6) Kolb, Timothy; Monninger, John; Nakanishi, Tony; Ulses, Anthony

Subject: Re: Two Pager - Please Review

Will do once we get lap tops up and running. We are working off of BB right now.

Sent from an NRC Blackberry.

Brooke G. Smith

(b)(6)

From: LIA07 Hoc *MSR*

To: Casto, Chuck; Cook, William; Devercelly, Richard; Foggie, Kirk; Foster, Jack; Jim Trapp

(b)(6); Kolb, Timothy; Monninger, John; Nakanishi, Tony; Smith, Brooke; Ulses, Anthony

Sent: Wed Mar 16 19:15:54 2011

Subject: Two Pager - Please Review

The ET has requested that someone on your team please review this and mark it up as necessary. We want to make sure that we are capturing accurate information. Edits can be sent back to me or if it is easier, you can call in and we can walk through the document.

Thank you very much!

-Sara

Valentine, Nicholee

From: Regan, Christopher - NRK
Sent: Wednesday, March 16, 2011 8:39 AM
To: Astwood, Heather; Craig, Jocelyn; Cullingford, Michael; Dinitz, Ira; Dusaniwskyj, Michael; Harwell, Shawn; Hopkins, Jon; Lois, Kosmas; Pittiglio, Clayton; Purdie, Michael; Quinones, Lauren; Regan, Christopher; Richter, Brian; Rodriguez, Veronica; Simmons, Anneliese; Simpson, JoAnn; Szabo, Aaron; Fredrichs, Thomas
Subject: FYI: Branch Meeting POP
Attachments: POPweeklstaffmtg02.doc

See attached. Some background material regarding Japan included.
Chris

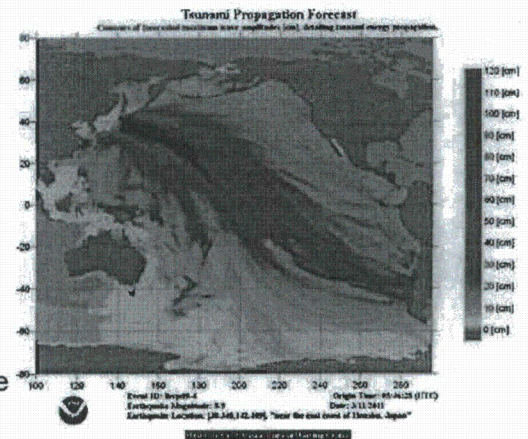
PP/45

POP
PFIB Weekly Branch Meeting

March 16, 2011
09:00-10:00 AM
(Rm. O 7B4)

Purpose: To share information regarding PFIB activities.

Objective: To convey information pertinent to staff activities, inform the staff of information important to their work, and ensure accomplishments are properly recognized and documented.



Process:

- Regan - PFIB Notables;
 - Japanese Nuclear Crisis
 - NPV Workshop and NEI letter
 - Travel (domestic) – clarification
 - Govt. shutdown?
 - Actor – 3/18
 - Work Tracking List Updates
- Upcoming meetings
 - 3/17 DOJ Amergen Mtg
 - 3/21 Virgilio Brief – Decommissioning funding issues
- Staff / Around the room
 - The Rumor Mill? (Government Operating Status)

"A nuclear power plant is infinitely safer than eating because 300 people choke to death on food every year."

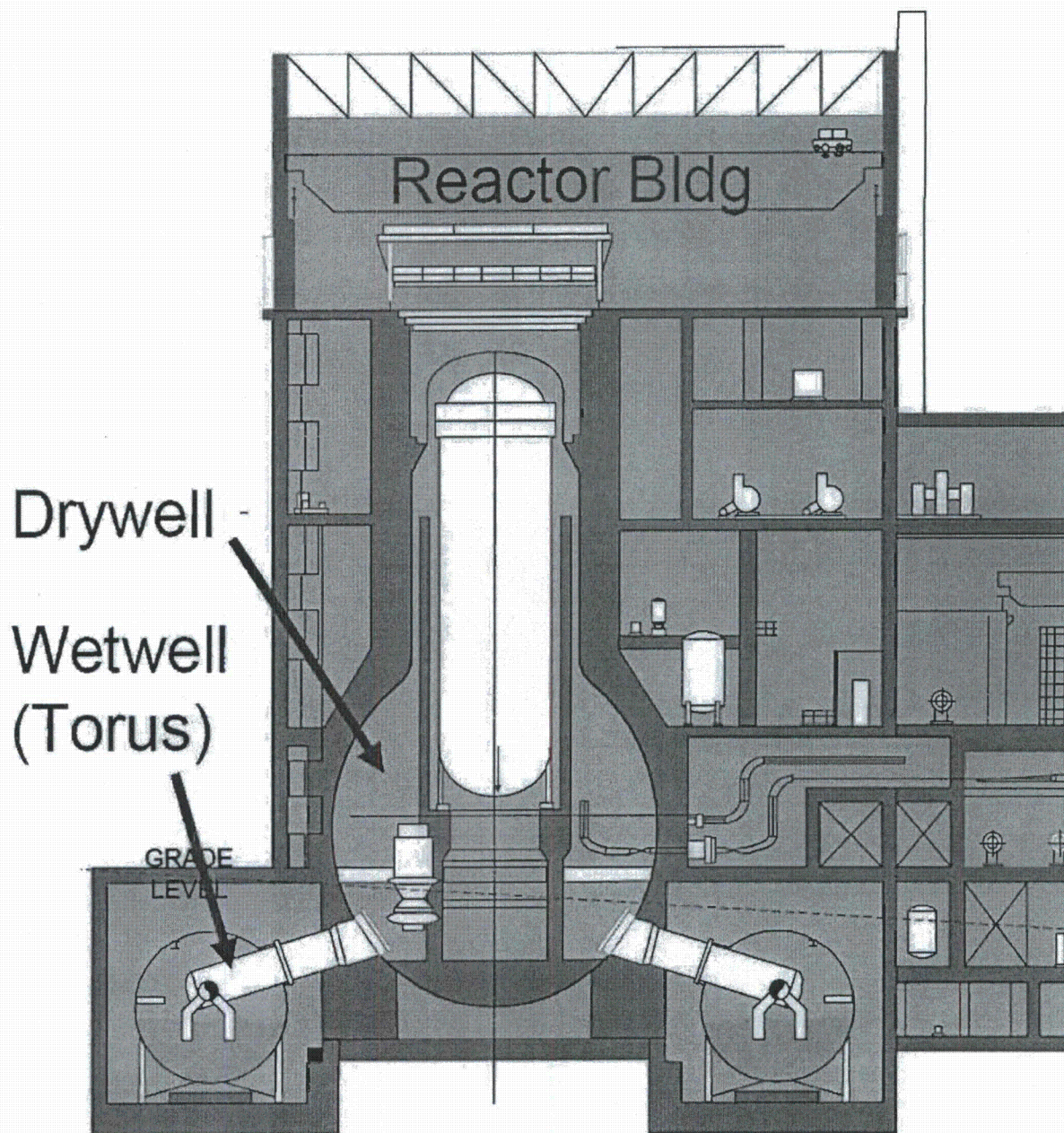
Dixie Lee Ray. Atomic Energy Commission chairwoman. 1977

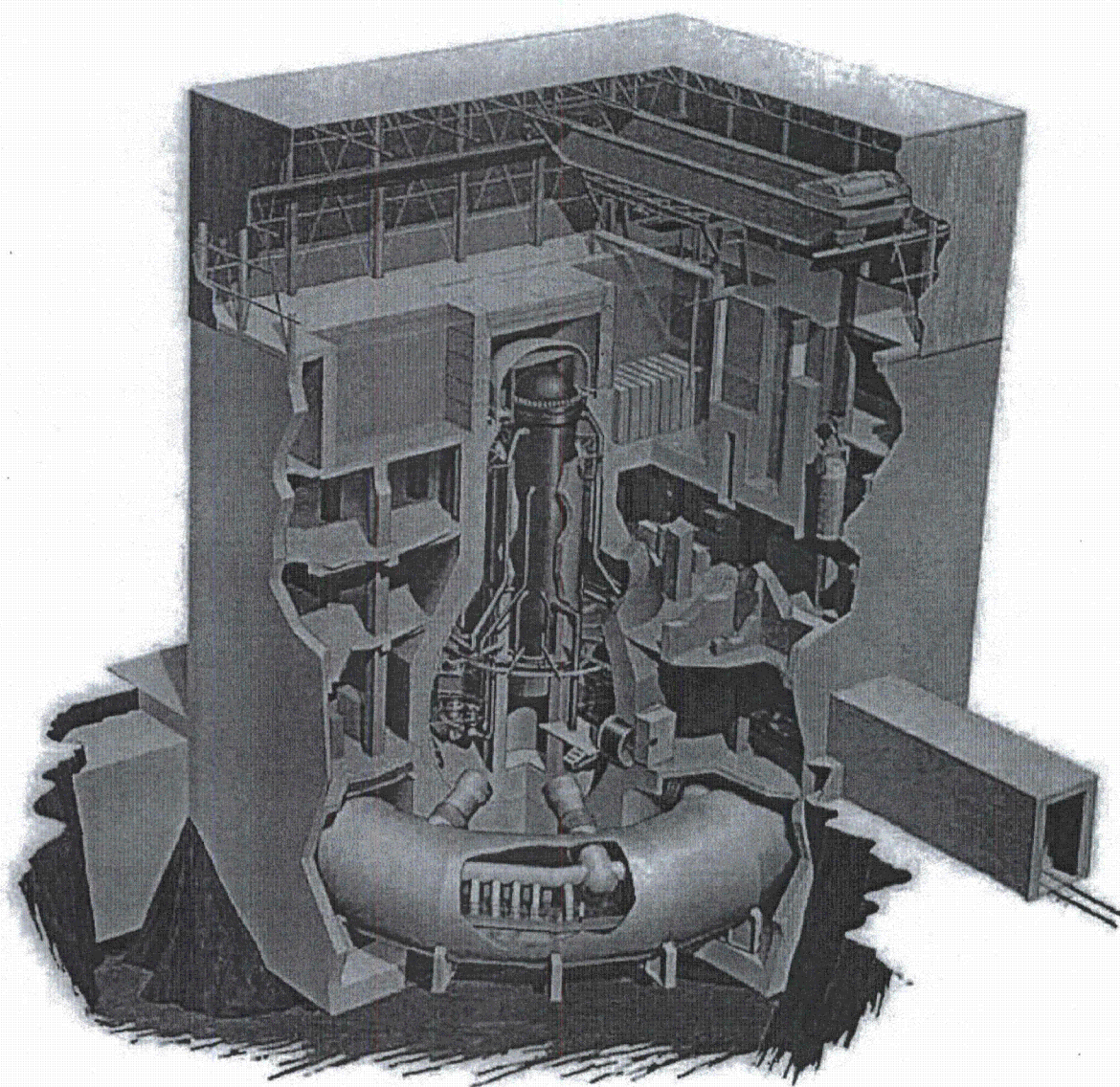
Reference TAC #'s

ZG0000 – General Administration
ZG0013 - General Staff meetings
ZG0004 - Combined federal Campaign
ZG0005 - Contract Administration
ZG0006 - Controlled/Ticketed Correspondence
ZG0009 - Drug testing
ZG0010 - EEO/Cultural Awareness activities
ZG0014 - Human Resources activities
ZG0016 - Operating Plan Development and management
ZG0021 - Reorganization/Office moves
ZG0024 - Special Projects and task Forces

ZG0025 - Support of OIG Audit activities
ZG0027 - Travel management
ZM0000 - Management supervision
ZM0001 – Management Supervision: International
ZT0000 - Training & developmental assignments (not formal)
ZF0000 - FOIA
ZC0000 - Technical coordination and support
ZN0009 - Operating Plan
ZN0011 - Time and labor reporting
M78003 – Generic Reviews – Financial Qual Reviews

888-813-9964 passcode: (b)(6)





From: Trezzo Admin
To: Roger, Bruce
Subject: BlackBerry Contact Update
Date: Wednesday, March 16, 2011 7:17:52 PM

To be prepared in an urgent situation, the NRC Emergency Preparedness Software has updated one or more of your Outlook Contacts.

The following 1 contact(s) were updated with current information:

- Quynh Nguyen (b)(6)

These changes will synchronize with the address book on your BlackBerry. Contact CSC at (301) 415-1234 if these changes do not appear on your BlackBerry within 24 hours.

PP/410
off

From: Lew, David
To: Nelson, Robert; Wert, Leonard; Pederson, Cynthia; Howell, Arthur;
Cc: Glitter, Joseph; Leeds, Eric; Boger, Bruce; Ruland, William; Meighan, Sean; Nguyen, Quynh; Thomas, Eric; Thorp, John; Roberts, Darrell
Subject: RE: Event Response - Communications and Qs&As
Date: Wednesday, March 16, 2011 7:07:05 PM
Attachments: image001.png

Bob, Thanks for taking the lead on this. Darrell Roberts, DRP Director, will be the point of contact. Dave

RFL
From: Nelson, Robert
Sent: Wednesday, March 16, 2011 3:13 PM
To: Lew, David; Wert, Leonard; Pederson, Cynthia; Howell, Arthur
Cc: Glitter, Joseph; Leeds, Eric; Boger, Bruce; Ruland, William; Meighan, Sean; Nguyen, Quynh; Thomas, Eric; Thorp, John
Subject: Event Response - Communications and Qs&As

I've been assigned as the NRR Communications Coordinator for matters dealing with our response to the events in Japan.

1. I understand that you were recently sent the Chairman's Qs&As. I understand that EOC meetings are beginning next week and the regional staff need to be prepared for stakeholder questions that will arise regarding the events & our plants. Are these Qs&As sufficient? If not, what additional areas do you want addressed?
2. Please identify a POC in your region that my team & I can coordinate with on communications issues.
3. I understand that a concern was raised about the Ops Center contacting a family member and that a protocol is needed for such contact. I'm working on it.
4. We will likely formulate a "tiger team" to prepare responses to written inquiries. I'll keep you advised.
5. Communications with the regions, particularly those requesting information regarding specific plants, should be coordinated thru my team. If you have concerns in this regard, please contact me.

Robert Nelson

Robert A. Nelson
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation



E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | Cell: (b)(6) | Fax: (301) 415-2102

PR/47

From: Gray, Kathy *NRR*
To: Thomas, Eric; King, Mark; Thorp, John; Brown, Frederick; Leeds, Eric; Boger, Bruce; Grobe, Jack
Cc: Rihm, Roger; Bowman, Eric; Garmon-Candelaria, David
Subject: RE: INPO Event Report Level 1 on Japanese Earthquake
Date: Thursday, March 17, 2011 12:32:10 PM

The INPO document has been posted ... IER 11-11-1 - Fukushima Daiichi Nuclear Station Fuel Damage Caused by Earthquake and Tsunami

From: Thomas, Eric — *NRR*
Sent: Wednesday, March 16, 2011 1:43 PM
To: King, Mark; Thorp, John; Brown, Frederick; Leeds, Eric; Boger, Bruce; Grobe, Jack — *NRR*
Cc: Rihm, Roger; Bowman, Eric; Gray, Kathy; Garmon-Candelaria, David
Subject: INPO Event Report Level 1 on Japanese Earthquake

We will post this to the INPO Documents link on the OpE Gateway as soon as possible.

Eric

Eric Thomas

U.S. Nuclear Regulatory Commission

NRR/DIRS/IOEB

OWFN-7E24

eric.thomas@nrc.gov

301-415-6772 (office)

(b)(6)

(mobile)] *qf*

PP/48

From: Cunningham, Liza - NRR
To: Bahadur, Sher
Cc: Thorp, John; HOO Hoc; Gray, Kathy; ROO hoc; Lubinski, John; Cheok, Michael
Subject: RE: NRR Emergency Officer Duty Schedule March 22, 2011 - March 29, 2011
Date: Thursday, March 17, 2011 1:44:46 PM

Ok, thanks Sher for letting us know.

From: Bahadur, Sher - NRR
Sent: Thursday, March 17, 2011 1:05 PM
To: Cunningham, Liza
Cc: Thorp, John; HOO Hoc; Gray, Kathy; ROO hoc; Lubinski, John; Cheok, Michael
Subject: RE: NRR Emergency Officer Duty Schedule March 22, 2011 - March 29, 2011

Liza,

John Lubinski is actively involved in Op Center over the Japanese situation. He has cut short his EO duty and handed it over to Mike Cheok effective today [Thursday, March 17]. Also, Mike Cheok and I have swapped the EO duty as follows: Mike Cheok: 3/22; Sher Bahadur: 5/10

Call me if any Qs

Sher

SHER BAHADUR; DEPUTY DIRECTOR, NRR/DSS
301-415-3283
sher.bahadur@nrc.gov

From: Cunningham, Liza - NRR
Sent: Thursday, March 17, 2011 9:41 AM
To: Bahadur, Sher
Cc: Thorp, John; HOO Hoc; King, Mark; Thomas, Eric; Gray, Kathy; ROO hoc; Brown, Frederick; Cunningham, Liza; Lubinski, John; Glitter, Joseph
Subject: NRR Emergency Officer Duty Schedule March 22, 2011 - March 29, 2011

Dear Sher Bahadur,

I am sending this email confirming that you will become the EO on Tuesday, March 22, 2011. You should receive the EO briefcase from John Lubinski on Tuesday, March 22, 2011, and on Tuesday, March 29, 2011, you will turn over the EO briefcase to Joe Glitter.

As the ongoing EO, please be sure to attend the events briefing of the ET in Room O-13D20 on March 22, 2011 at 7:45 am.

If you have any questions, please contact Kathy Gray at 415-1166 or by email Kathy.Gray@nrc.gov.

John Thorp is the Daytime EO and can be reached at (b)(6)
When John is not available for Daytime EO duty, his alternate can be identified and contacted via the HOO. The current list of alternate daytime EO's in call-first priority order is Eric Thomas, Mark King and Fred Brown.

PP/49

Thanks,
Liza

Elizabeth (Liza) Cunningham
Nuclear Regulatory Commission
NRR/DIRS/IOEB
M/S O-12G13
301-415-3226
liza.cunningham@nrc.gov

NCR

From: Nelson, Robert
To: Kammerer, Annie
Cc: Roberts, Darrell; Croteau, Rick; Kennedy, Kris; Lara, Julia; West, Steven; Shear, Gary; Ruland, William; Boner, Bruce; McElahan, Sean; Nguyen, Quynh; Gitter, Joseph
Subject: Action: Seismic Q&As
Date: Thursday, March 17, 2011 2:18:01 PM
Attachments: image001.png
Importance: High

Annie:

REL

The regions have a critical need for publicly releasable seismic info (Qs & As) to support public meetings beginning next week. We need a releasable version of your document. Can you assemble the info that you have prepared that you believe is good to go. We can then get that reviewed by OPA. Need your input tomorrow.

Robert Nelson

Robert A. Nelson
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation



E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | Cell: (b)(6) | Fax: (301) 415-2102

From: Kammerer, Annie
Sent: Thursday, March 17, 2011 2:36 AM
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Gitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snoderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas
Subject: Seismic Q&As March 17th 2am update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know...

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occurring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also pulling relevant questions from the congressional inquiries we just received; and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet...a description of the tsunami research is still to come from RES.

Some good news: Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours, with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,
Annie

PP/50

Dr. Annie Kammerer, PE
Senior Seismologist and Earthquake Engineer
US Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington DC 20555

(b)(6) mobile
(b)(6) BB

From: Kammerer, Annie
Sent: Tuesday, March 15, 2011 3:41 AM
To: Hiland, Patrick; Skeen, David

Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael
Subject: latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

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Annie

Dr. Annie Kammerer, PE
Senior Seismologist and Earthquake Engineer
US Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington DC 20555

(b)(6) mobile
(b)(6) BB

NRK

From: Nguyen, Quynh
To: Landau, Mindy; Barkley, Richard
Cc: Roberts, Darrell; Meighan, Sean; Dean, Bill; McNamara, Nancy; Tift, Doug; Lew, David; Elmers, Glenn; Nelson, Robert; Leeds, Eric; Roget, Bruce; Grobe, Jack; McCree, Victor; Satorius, Mark; Collins, Elmo; Lee, Michael; Brenner, Eliot; Thomas, Eric; Courte, Leanna; Burnell, Scott; McIntyre, David; Wituck, Brian; Virgilio, Rosetta
Subject: FOR INTERNAL USE BY STAFF: Sharepoint Site on the Fukushima Event
Date: Thursday, March 17, 2011 10:50:36 AM
Importance: High

Mindy,

REC We placed the OPA-approved documents to the NRR SharePoint Site. We understand the need to keep staff informed. It links directly to the documents.

<http://portal.nrc.gov/edo/nrr/default.aspx>

NRR ET/LT agreed that the "FAQ" SharePoint site needs limited access so we can put draft working documents there for ease of use by those directly responding to Japan-related actions. Again, Robert Nelson (NRR SES) has been assigned to lead the Q&A effort.

Thank you everyone for the continued support and understanding.
Quynh

EDO

From: Landau, Mindy
Sent: Thursday, March 17, 2011 8:47 AM
To: Barkley, Richard; Nguyen, Quynh
Cc: Roberts, Darrell; Meighan, Sean; Dean, Bill; McNamara, Nancy; Tift, Doug; Lew, David; Elmers, Glenn
Subject: RE: Sharepoint Site on the Fukushima Event

Quynh – can we reference the cite as a resource for the entire NRC staff?

Mindy

RT

From: Barkley, Richard
Sent: Thursday, March 17, 2011 8:45 AM
To: Nguyen, Quynh
Cc: Roberts, Darrell; Meighan, Sean; Dean, Bill; Landau, Mindy; McNamara, Nancy; Tift, Doug; Lew, David
Subject: RE: Sharepoint Site on the Fukushima Event

Thanks very much Quynh!

NRK

From: Nguyen, Quynh
Sent: Thursday, March 17, 2011 8:31 AM
To: Barkley, Richard
Cc: Roberts, Darrell; Meighan, Sean
Subject: RE: Sharepoint Site on the Fukushima Event

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

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RT

From: Barkley, Richard
Sent: Wednesday, March 16, 2011 5:59 PM
To: Wertz, Trent; Virgilio, Rosetta; Sheehan, Neil; Nguyen, Quynh
Subject: Sharepoint Site on the Fukushima Event
Importance: High

Word is there is a Sharepoint site on the Fukushima event that can be annexed by employees.

I can't find the link – Have any leads?? Thanks!

I promised to share it with the Region I staff.

PP/51

Richard S. Barkley, PE
Nuclear & Environmental Engineer

(610) 337-5065 Work
[(b)(6)] Cell

effb

From: Burnell, Scott *OPA*
To: McGinty, Tim; Nelson, Robert; Howe, Allen; Westreich, Barry; Brown, Frederick; Cheok, Michael; Hiland, Patrick; Thomas, Eric; Skeen, David; Williamson, Edward; Glitter, Joseph; Evans, Michele; Harrington, Holly; Boger, Bruce; McDermott, Brian; Leeds, Eric; Blount, Tom; Quay, Theodore; Bowman, Eric; Rosenberg, Stacey
Cc:
Subject: Re: FYI: Plans to Draft and Issue an NRC Information Notice on the Japanese Earthquake/Tsunami Effects on Japanese Power Plants
Date: Thursday, March 17, 2011 11:51:51 AM

All;

Please keep OPA in the loop; the press release will most likely be handled through the Ops Ctr OPA team. Thanks.

REL
Scott

Sent from an NRC Blackberry
Scott Burnell

(b)(6) *Refb*

From: McGinty, Tim *NRC*
To: Nelson, Robert; Howe, Allen; Westreich, Barry; Brown, Frederick; Cheok, Michael; Hiland, Patrick; Thomas, Eric; Skeen, David; Burnell, Scott; Williamson, Edward; Glitter, Joseph; Evans, Michele
Cc: Boger, Bruce; McDermott, Brian; Leeds, Eric; Blount, Tom; Quay, Theodore; Bowman, Eric; Rosenberg, Stacey
Sent: Thu Mar 17 11:17:04 2011
Subject: FYI: Plans to Draft and Issue an NRC Information Notice on the Japanese Earthquake/Tsunami Effects on Japanese Power Plants

This is an FYI:

DPR staff (Eric Bowman, lead) is developing an Information Notice on the above Subject for near-term issuance.

I anticipate that it will go into concurrence today, and we will ask concurrence of DIRS, DE, and NSIR.

Upon having the necessary comments and concurrences (by noon tomorrow), we plan to share the draft for "awareness" to ensure full coordination prior to issuance. For awareness, we anticipate sharing with the DRA's, DORL, OPA, OGC and the Executive Team in the Operations Center. Our goal is to be in a position to issue the Information Notice early next week.

We are open to suggestions on this plan, so please don't hesitate. If you want to identify a primary contact for us to work with, in your organization, please respond to Eric Bowman, Stacey Rosenberg or myself.

Thanks in Advance for your Support, Tim

PP/52

Nelson, Robert

From: Nelson, Robert, *NR*
Sent: Thursday, March 17, 2011 3:58 PM
To: Tschiltz, Michael
Subject: RE: Japan event Q&As - additional info
Attachments: Seismic Q&As March 17th 2am update

See our SharePoint site

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

Only the bottom 4 documents on this site have been cleared by OPA for public release.

Attached is a draft document on seismic currently being scrubbed for public release.

I'll keep you informed.

NELSON

From: Tschiltz, Michael *INMSS*
Sent: Thursday, March 17, 2011 2:57 PM
To: Nelson, Robert
Cc: Haney, Catherine; Kinneman, John; Gody, Tony; Cobey, Eugene; Bailey, Marissa
Subject: FW: Japan event Q&As - additional info

Bob.. we are developing Qs and As for fuel cycle facilities and would like to get a copy of what your group is doing to make sure we are asking and answering similar questions.

Can you send me a copy?

Thanks, Mike

From: Leeds, Eric *NR*
Sent: Thursday, March 17, 2011 2:38 PM
To: Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo; Lew, David; Wert, Leonard; Pederson, Cynthia; Howell, Art; Boger, Bruce; Grobe, Jack; Wiggins, Jim; Evans, Michele; Sheron, Brian; Uhle, Jennifer; Johnson, Michael; Holahan, Gary; Haney, Catherine; Dorman, Dan; Miller, Charles; Moore, Scott; Doane, Margaret; Mamish, Nader; Boyce, Thomas (OIS); Schmidt, Rebecca; Powell, Amy; Brenner, Eliot; Hayden, Elizabeth; McDermott, Brian
Cc: Virgilio, Martin; Weber, Michael; Ash, Darren; Nguyen, Quynh; Meighan, Sean; Kammerer, Annie; Landau, Mindy; Wittick, Brian; Morris, Scott; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Galloway, Melanie; Glitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David
Subject: Japan event Q&As - additional info

I've assigned Bob Nelson, Deputy Director, Division of Operating Reactor Licensing, as the NRR Coordinator for External Communications related to NRR's response to the recent events in Japan. Nelson and his team will be responsible for coordinating the development and review of related Qs & As, and coordinating the response to related controlled correspondence tasked to NRR, including related 2.206 petitions. Assisting Nelson will be Sean Meighan and Quynh Nguyen from the NRR front office, Eric Thomas from DIRS and a communications "tiger team" being formulated in DORL headed by Mike Markley. Harold Chernoff will also provide assistance as needed. Please forward all of your requests for support in this area to Nelson. (Extension 7298 and cell (b)(6))

Eric J. Leeds, Director

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
301-415-1270

REL

From: Nguyen, Quynh
To: Nelson, Robert
Cc: Boger, Bruce; Leeds, Eric; Grobe, Jack; Meighan, Sean; Thomas, Eric
Subject: COMMAND DECISION: Sharepoint Site on the Fukushima Event
Date: Thursday, March 17, 2011 9:09:32 AM
Importance: High

NRR

Nelson,

Manage expectations? Define purpose of the site?

My fault... I gave the link to Rich Barkley and Darrell Roberts (Comm Specialist and POC in Region I).

I'm just concerned with inadvertent printing out of works in progress and the like.

Thanks,
Quynh

REL

From: Nguyen, Quynh
Sent: Thursday, March 17, 2011 8:57 AM
To: Landau, Mindy; Barkley, Richard
Cc: Roberts, Darrell; Meighan, Sean; Dean, Bill; McNamara, Nancy; Tift, Doug; Lew, David; Ellmers, Glenn
Subject: RE: Sharepoint Site on the Fukushima Event
Importance: High

NRR

Hold on.... I'm checking with the NRR ET, OPA, OEDO...

Of course we want the staff informed but we also don't want inadvertent info release as we have been storing work in progress that hasn't been officially blessed.

From: Landau, Mindy
Sent: Thursday, March 17, 2011 8:47 AM
To: Barkley, Richard; Nguyen, Quynh
Cc: Roberts, Darrell; Meighan, Sean; Dean, Bill; McNamara, Nancy; Tift, Doug; Lew, David; Ellmers, Glenn
Subject: RE: Sharepoint Site on the Fukushima Event

OEDO

Quynh - can we reference the cite as a resource for the entire NRC staff?

Mindy

REL

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Cc: Roberts, Darrell; Meighan, Sean; Dean, Bill; Landau, Mindy; McNamara, Nancy; Tift, Doug; Lew, David
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Thanks very much Quynh!

NRR

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To: Barkley, Richard
Cc: Roberts, Darrell; Meighan, Sean
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Subject: Sharepoint Site on the Fukushima Event
Importance: High

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PP/54

I can't find the link—Have any leads?? Thanks!

I promised to share it with the Region I staff.

Richard S. Barkley, PE

Nuclear & Environmental Engineer

(610) 337-5065 Work

(b)(6) Cell

efly

REL

NR

From: Nelson, Robert
To: Leeds, Eric; Roger, Bruce
Cc: Ruland, William; Glitter, Joseph; Melghan, Sean; Nguyen, Quynh
Subject: Request: Message Regarding My Role as Comm Coordinator
Date: Thursday, March 17, 2011 11:05:00 AM
Attachments: SUGGESTED COMMUNICATION.docx

Please see attached for a suggested e-mail. Also included are the suggested recipients. I take no pride in authorship so please revise as needed.

Thanks for your help.

NELSON

PP/55

SUGGESTED COMMUNICATION

I've assigned Bob Nelson, Deputy Director, Division of Operating Reactor Licensing, as the NRR Coordinator for External Communications related to NRR's response to the recent events in Japan. Nelson and his team will be responsible for coordinating the development and review of related Qs & As, and coordinating the response to related controlled correspondence tasked to NRR, including related 2.206 petitions. Assisting Nelson will be Sean Meighan and Quynh Nguyen from the NRR front office, Eric Thomas from DIRS and a communications "tiger team" being formulated in DORL headed by Mike Markley. Harold Chernoff will also provide assistance as needed. Please forward all of your requests for support in this area to Nelson. (Extension 7298 and cell: (b)(6) ef

TO:

NRR ET
NRR Div Dirs & Deputies
Op Center Liaison Team
Annie Kammerer
Mindy Landau
Brian Wittick
Brian McDermott
Scott Morris
Jane Marshall
Bill Gott
Elliot Brenner
Elizabeth Hayden

CC:

Marty Virgilio
John Thorp
Sean Meighan
Quynh Nguyen
Mike Markley
Harold Chernoff
Eric Thomas

- NRC

From: Wilson, George
To: Meighan, Sean; Ruland, William
Cc: Skeen, David; Hiland, Patrick; Thomas, Brian; Lubinski, John; Holian, Brian; Galloway, Melanie; Lupold, Timothy; Imboden, Andy; Khanna, Meena; Evans, Michele
Subject: Support in Japan
Date: Friday, March 18, 2011 11:52:24 AM

Structural Evaluations

#1 - Abdul Sheikh. (b)(6) willing to go (b)(6)
#2 - Andrew Prinaris. (b)(6) willing to go (b)(6)
(b)(6)

Evaluation of pressure vessels.

#1 - Bob Hardies, (b)(6) willing to go (b)(6)
#2 - Matt Mitchell (b)(6) willing to go (b)(6)

George Wilson
USNRC
EICB Branch Chief, Division of Engineering
Mail Stop O12H2
301-415-1711

PP/56

From: Weber, Michael
To: Case, Michael
Subject: RESPONSE - Seismic Q&As March 18th Sam update
Date: Friday, March 18, 2011 4:57:18 PM

Thanks, Mike

From: Case, Michael
Sent: Friday, March 18, 2011 12:50 PM
To: Weber, Michael
Subject: FW: Seismic Q&As March 18th Sam update

Hi Mike. Brian had asked that we send you the latest copy of the "Seismic Questions"

From: Kammerer, Annie
Sent: Friday, March 18, 2011 6:51 AM
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screnci, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean
Subject: RE: Seismic Q&As March 18th Sam update

All,

Please see the updated version of the Seismic Q&As.

Among today's highlights:

- *We added a Terms and Definitions section at the end of the document. (We know that an acronyms list would be helpful too, but it will have to wait a little)

- *The "additional information" section has been split into tables, plots, and fact sheets

- *A high-level draft fact sheet on NRC's seismic regulations has been added

- *We added a section to track outstanding questions that have come in from congress. This will support those who get the tickets in the short terms (most likely NRR). The questions will be moved to the appropriate sections long term (as long as they are not duplicates.)

I'm sure we all agree this has been a crazy week!. We're hoping that the weekend workload is lighter (if only because we won't get as many email from in house) and we can clean up this document and fill in some of the missing answers in preparation for the news story changing. We're trying hard to get out in front of the next wave.

Cheers,
Annie

From: Kammerer, Annie
Sent: Thursday, March 17, 2011 2:36 AM
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Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas
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PP/57

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Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,
Annie

Dr. Annie Kammerer, PE
Senior Seismologist and Earthquake Engineer
US Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington DC 20555

(b)(6) mobile

(b)(6) BB

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Annie

Dr. Annie Kammerer, PE
Senior Seismologist and Earthquake Engineer
US Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington DC 20555

(b)(6) mobile

(b)(6) BB

Weaver, Tonna

From: NRC Announcement [nrc.announcement@nrc.gov]
Sent: Friday, March 18, 2011 10:34 AM
To: NRC Announcement
Subject: Event: Supplemental Information on Today's All-Employees Meeting

NRC Daily Announcements

HRID
Human Resources
Information
Development

Is Upgrading eLearn

USNRC

Summer 2011

Friday March 18, 2011 -- Headquarters Edition

♦ Event: Supplemental Information on Today's All-Employees Meeting

Event: Supplemental Information on Today's All-Employees Meeting

As mentioned in a previous Network Announcement, there will be an All-Employees meeting today at 2:00 p.m. in the TWFN auditorium, led by EDO Bill Borchardt, to discuss events in Japan. VTC will be available to the regions, TTC, and headquarters satellite offices. Please note the following additional information:

- The bridgeline (call-in number: 888-820-8960; passcode: (b)(6)) is intended for employees who are teleworking today. If you are not working at home, please attend the meeting in person or via VTC to avoid overloading the bridgelines.
- There will be a sign-language interpreter in the auditorium for the hearing-impaired.
- The event will videotaped for later viewing.
- The slides that will be used during the presentation are available on the OEDO Sharepoint site.

(2011-03-18 00:00:00.0)

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[Frequently Asked Questions About the NRC Daily Announcements Email](#)

PP/58

Date: Friday, March 18, 2011 7:22:06 PM
Posted At: itrezzo EPS Backups
Conversation: itrezzo EPS Backups: 3/18/2011 19:22
Subject: itrezzo EPS Backups: 3/18/2011 19:22
Attachments: Barry Westreich.msg

The following 1 contact(s) were updated with current information:

- Barry Westreich (b)(6) *etf*

NOTE: If itrezzo EPS overwrites any important data in your contacts, you can find the original, unchanged contacts attached to this message.

PP/59

Attachment: Barry Westreich.msg (2560 Bytes) cannot be converted to PDF format.

Weaver, Tonna

From: NRC Announcement [nrc.announcement@nrc.gov]
Sent: Friday, March 18, 2011 8:49 AM
To: NRC Announcement
Subject: Employee News: NRC Viewing of the NRC All-Hands Meeting to Address the Nuclear Crisis in Japan

NRC Daily Announcements



Friday March 18, 2011 -- Headquarters Edition

☛ Employee News: NRC Viewing of the NRC All-Hands Meeting to Address the Nuclear Crisis in Japan

Employee News: NRC Viewing of the NRC All-Hands Meeting to Address the Nuclear Crisis in Japan

On Friday, March 18, 2011, at 2:00 p.m., there will be an All-Hands Meeting in the Two White Flint North (TWFN) Auditorium to address the ongoing nuclear crisis at the Fukushima Nuclear Reactor site in Japan. Staff is encouraged to view the proceedings at one of the following video teleconferencing (VTC) locations:

- One White Flint Commission Hearing Room
- TWFN Exhibit Area
- TWFN Building 2B5
- One White Flint North Building 3B4
- Executive Boulevard Building 1B15
- Twinbrook Building 5E01
- Church Street Building 2C19
- Gateway Building 4B02
- Region I*
- Region II*
- Region III*
- Region IV*
- Technical Training Center*

*Regional and TTC staff will be notified of the VTC viewing location by their VTC coordinator.

The meeting will also be broadcast throughout the White Flint Complex on cable channels 46 and 47. Staff without access to VTC facilities may access the audio portion of the proceedings by utilizing the NRC telephone bridge line by calling 888-820-8960; pass code: (b)(6)

For more information about event viewing locations, contact Jason Wright at 415-5446 or Christine Kundrat at 415-6130.

1-11

(2011-03-18 00:00:00.0)

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PP/leo

Search Announcements: term term [Go]
Frequently Asked Questions About the NRC Daily Announcements Email

From: Trezzo Admin
To: Boger, Bruce
Subject: BlackBerry Contact Update
Date: Friday, March 18, 2011 7:22:07 PM

To be prepared in an urgent situation, the NRC Emergency Preparedness Software has updated one or more of your Outlook Contacts.

The following 1 contact(s) were updated with current information:

- Barry Westreich (b)(6) EY6

These changes will synchronize with the address book on your BlackBerry. Contact CSC at (301) 415-1234 if these changes do not appear on your BlackBerry within 24 hours.

PP/61

From: (b)(6)
To: Boger, Bruce
Subject: NRC SAFETY REVIEW
Date: Friday, March 18, 2011 10:54:39 AM

Bruce,

REL I was great to see you at the RIC last week. Every time we meet I can't help thinking about the clogging episode in Gatlinburg. Anyway, that was a long time ago in a galaxy far away.

This incident in Japan rekindles my interest in the nuclear power and how much I learned during my time with NRC. I'm contacting you because I heard today that the agency will be undertaking a new safety review of all plants. What that will encompass, I have no way of knowing, but I would be very interested in becoming part of team that plans and performs such a review. My expertise and contribution would be in the area of a broad knowledge of agency regulations and the nuclear industry, having experienced Browns Ferry, Three Mile Island, Davis Besse and other incidents/issues including Shoreham and Seabrook. I spent a fair amount of time looking at emergency planning. I believe that I would be in an excellent position to be part of such a team particularly as related to (1) interviewing knowledgeable staff/industry experts and (2) the QA function for such a review. Although there no 100% certainties, the QA function would serve to close the loop on such a comprehensive NRC review.

Thanks for taking the time to read my email. I always enjoyed our good working relationship and I look forward to again being of value to the NRC.

Tony Lipuma

email: (b)(6)
day:
cell:

efl

PP/62

From: Sharon Cohen
To: Eric
Cc: [REDACTED]
Subject: [REDACTED]
Date: Thursday, March 17, 2011 3:34 PM
Attachments: [REDACTED]

Jack: I got the missing YOU are covering for Eric tomorrow wrong. Eric is covering the Alignment meeting for Bill Burkhart and you are covering UWC Planning Conference Call with Trent for Eric. Materials are in a folder on your chair. The bridge number if you want to call in is 1-888-261-2252 and the pass code is (b)(6)

Sharon Cohen, Contract Secretary
Office of Nuclear Reactor Regulation, USNRC
Room - D-13H18 / Mail Stop - Q13H16M
Phone - 301-415-1270
Fax - 301-415-8533
Email - sharon.cohen@nrc.gov

PP/63

Microsoft Outlook - Grobe, Jack - Calendar

File Edit View Go Tools Actions ADAMS Help Adobe PDF

Calendar Day Week Month

March 2011

March 18, 2011

18 Friday

Acting for Marty

Bruce: Ops Center 3:00 pm to 11:00 pm

Sherry (b)(6)

Jack: OCFO/OEDO Periodic Budget Meeting
T:VFH 281
Dyer, Jim

OCFO OEDO Budget Review w/OEDOs, AO (VTC)
T:281
Borchardt, Bill

No Meeting

Blocked

Periodic with Commissioner Ostendorf
C:8 QL, Lead, Eric

Blocked

Alignment Meeting on 3/21 CM re: Japanese Event & U.S. Response
C:1784
Borchardt, Bill

UWC Planning Conference Call March 2011
T:638-261-2252 ext (b)(6)
Wiegand, Christopher

13 Items

All folders are up to date. Connected to Microsoft Exchange

Grebe, Jack - Calendar - Microsoft Outlook

File Edit View Go Tools Actions ADAMS Help Adobe PDF

Calendar

March 2011

March 18, 2011

Friday

DCI - Lubinski Ops Center 7 - 3 (B.Thomas acting)

DE-Hiland (Al-Skeen)

DRA - Lee

Drop-in Time

OCFO OEDO Budget Review w/DEDOs, AO (YTC)

Reading Time

KM Meeting

Hiring Advisory Council Mtg - Bridge

Alignment Meeting on 3/21 CM re: Japanese Event & U.S. Response

Conference call with Marie Gillman and Jack Grobe, NRC NRR (they will call us)

4 Items

All folders are up to date. Connected to Microsoft Exchange

W
x

1MR

From: Cohen, Shari
To: Ross, Robin; Moore, Tove
Cc: Grobe, Jack
Subject: Number for Eric if needed
Date: Friday, March 18, 2011 10:49:22 AM

Ladies: Eric just left for the Ops Center and is not sure when he will return. Jack is here now but I am not sure for how long. If you need to reach Eric please know he can be reached in two ways:

1. Dial out and then come back in to get to the Ops Center - 9,1, 301 816-5100
 2. He is also available by his blackberry device on (b)(6)
- } Ref

Shari Cohen, Contract Secretary
Office of Nuclear Reactor Regulation, USNRC
Room - O-13H18 / Mail Stop - O13H16M
Phone - 301-415-1270
Fax - 301 - 415-8333
Email - shari.cohen@nrc.gov

PP/65

NR

From: Thomas, Brian
To: Lupold, Timothy
Cc: Lubinski, John; Mitchell, Matthew; Hardies, Robert; Wolfgang, Robert; Karwoski, Kenneth; Cusumano, Victor; McMurtray, Anthony
Subject: RE:
Date: Friday, March 18, 2011 12:54:44 PM

Tim, Matt, Vic,
Thanks for the nice job in pulling this together quickly.
..brian

NR

From: Lupold, Timothy
Sent: Friday, March 18, 2011 12:29 PM
To: Ruland, William; Meighan, Sean; Wilson, George; Brown, Frederick; Howe, Allen
Cc: Thomas, Brian; Lubinski, John; Mitchell, Matthew; Hardies, Robert; Wolfgang, Robert; Karwoski, Kenneth; Cusumano, Victor; McMurtray, Anthony
Subject:

DCI offers the following individuals to support the Fukushima recovery effort for the following categories:

Excellent general technical skills:

Tim Lupold: (b)(6)
Matt Mitchell: (b)(6)
Bob Wolfgang: (b)(6)
Bob Hardies: (b)(6)
Ken Karwoski: (b)(6)
Vic Cusumano: (b)(6)
Tony McMurtray: (b)(6)

Great with people skills/Engineers:

Matt Mitchell: (b)(6)
Bob Hardies: (b)(6)
Ken Karwoski: (b)(6)
Vic Cusumano: (b)(6)

Structural assessment (for pressure vessels, (b)(6)
(b)(6)

Bob Hardies: (b)(6)
Matt Mitchell: (b)(6)

(b)(6)

If future waves of support are required, names can be drawn from this list for that support. This information has been cleared through DCI's acting Deputy Director, Brian Thomas.

Timothy Lupold, Chief

PP/leb

Piping & NDE Branch
Office of Nuclear Reactor Regulation
O9H5
301-415-6448

- NRR
From: Brown, Frederick
To: Ruland, William; Meighan, Sean
Cc: Bahadur, Sher; Blount, Tom; Cheek, Michael; Galloway, Melanie; Glitter, Joseph; Givvines, Mary; Hiland, Patrick; Hollan, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David; Wilson, George; Imboden, Andy; Lupold, Timothy
Subject: NRR nominees for General Technical and Dose Assessment
Date: Friday, March 18, 2011 1:10:05 PM

General Technical (many excellent volunteers, only one BC/SL nominated at this time):

Dave Pelton (BC, SRI)

(b)(6)

Kristy Bucholtz (recent BWR SRO)

(b)(6)

Dose Assessment/PMT (only one strong recommendation could be confirmed in time available):

Sean Meighan

(b)(6)

PP/67

- OTS

From: [NRC Announcement](#)
To: [NRC Announcement](#)
Subject: Event: Supplemental Information on Today's All-Employees Meeting
Date: Friday, March 18, 2011 10:34:48 AM

NRC Daily Announcements

Highlighted Information and Messages

Friday March 18, 2011 -- Headquarters Edition

Event: Supplemental Information on Today's All-Employees Meeting

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- There will be a sign-language interpreter in the auditorium for the hearing-impaired.
- The event will videotaped for later viewing.
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(2011-03-18 00:00:00.0)

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PP/68

From: Ali, Syed
To: Case, Michael; Hogan, Rosemary; Richards, Stuart
Subject: FW: Deployment to Japan
Date: Saturday, March 19, 2011 7:54:14 PM

FYI

From: Evans, Michele
Sent: Saturday, March 19, 2011 11:42 AM
To: Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Cadoux, Claude; Dempsey, Jeanne; Linnerooth, Sarah; Buchholz, Jeri; Sheron, Brian; McCree, Victor; Pederson, Cynthia; Lubinski, John; Holian, Brian; Leeds, Eric; Lew, David; Lorson, Raymond; Mamish, Nader
Subject: Deployment to Japan

Thank you for volunteering for deployment to Japan. This work is of highest priority for the agency and your efforts are enormously appreciated.

The plan is for Mike Scott (RES) and Alan Blamey (RII) to leave the USA on Tuesday, March 22.

The remaining team members, Jack Giessner (RIII), Rob Taylor (NRR), Todd Jackson (RI), Marie Miller (RI), Syed Ali (RES), Abdul Sheikh (NRR), Ralph Way (NSIR), and Jack Ramsey (OIP) will depart on or about March 24. The intent is that your stay will be two weeks or less, depending on how the situation in Japan evolves.

The Operations Center Liaison Team (LT) will be contacting you later today to handle the logistic for your trip. This includes items such as flights, passports, country clearances, health immunizations, international blackberry service, dosimetry and KI tablets.

In addition, HR has requested that I provide you the information below:

-Please contact NRC Health Services on Monday morning on 301-415-8400 to schedule an appointment with Dr. Cadoux for health screening and counseling. If at all possible, it is important that you meet with Dr. Cadoux face-to-face. However, if you are located in the Region or if you are notified and deployed in a very short time frame so that medical screening is not possible, this screening will be conducted by phone. Please be aware that medical services available in Tokyo are limited at this time. Additionally, working conditions are such that controlling diet, sleep, exercise, and routine may be impossible. All of these factors can impact your health. Please review any medical conditions that you may have with Dr. Cadoux so that he can provide you with advice and counseling on managing your medical condition while deployed.

-Before you deploy we recommend that you speak briefly with the NRC Employee Assistance Program counselor, Sarah Linnerooth. Sarah can be reached on 301-415-7113. While you are deployed, EAP services are available to both you and your family, including extended family members such as Grandparents. The telephone number is for EAP service is 1-800-896-0276. More information is available on the EAP on the web at www.eapconsultants.com <<http://www.eapconsultants.com>>. To

PP/69

learn more about the EAP and the services provided click on the member services tab. The NRC passcode is "nuclear". Please be sure to share this information with your family.

At this point, I ask that you hold any questions that you may have until the LT contacts you directly. However, after that time, if you have any additional questions or concerns that have not been addressed, please call or email me.

Thank you.

Michele Evans

Acting Deputy OD, NSIR

Michele.evans@nrc.gov <<mailto:Michele.evans@nrc.gov>>

ABB: (b)(6)

From: Kammerer, Annie
To: Nelson, Robert
Cc: Roberts, Darrell; Croteau, Rick; Kennedy, Kriss; Lara, Julio; West, Steven; Shear, Gary; Ruland, William; Boger, Bruce; Meighan, Sean; Nguyen, Quynh; Gitter, Joseph; Burnell, Scott; Brenner, Eliot; Case, Michael; Munson, Clifford; Ake, Jon; Hogan, Rosemary
Subject: RE: Action: Seismic Q&As
Date: Saturday, March 19, 2011 8:33:32 AM
Attachments: Frequently asked questions related to the March 11 2011 Earthquake and Tsunami 3-19-2011.docx
image001.png

OK. Here is the proposed set of public Q&As for publication next week. I think it's pretty good, at least it's the best I can do. Jennifer Uhle did a pretty thorough review for me.

I didn't end up including the plant specific questions because it was too awkward. We could theoretically do a separate add on.

Annie

From: Nelson, Robert
Sent: Thursday, March 17, 2011 2:18 PM
To: Kammerer, Annie
Cc: Roberts, Darrell; Croteau, Rick; Kennedy, Kriss; Lara, Julio; West, Steven; Shear, Gary; Ruland, William; Boger, Bruce; Meighan, Sean; Nguyen, Quynh; Gitter, Joseph
Subject: Action: Seismic Q&As
Importance: High

Annie:

The regions have a critical need for publicly releasable seismic info (Qs & As) to support public meetings beginning next week. We need a releasable version of your document. Can you assemble the info that you have prepared that you believe is good to go. We can then get that reviewed by OPA. Need your input tomorrow.

Robert A. Nelson

Robert A. Nelson
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation



E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | Cell: (b)(6) | Fax: (301) 415-2102

From: Kammerer, Annie
Sent: Thursday, March 17, 2011 2:36 AM
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Gitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffery; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas
Subject: Seismic Q&As March 17th 2am update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know...

<http://portal.nrc.gov/edq/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occurring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also pulling relevant questions from the congressional inquiries we just received; and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet...a description of the tsunami research is still to come from RES.

Some good news: Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to

PP/10

get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours, with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,
Annie

Dr. Annie Kammerer, PE
Senior Seismologist and Earthquake Engineer
US Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington DC 20555

(b)(6) mobile
(b)(6) BB

From: Kammerer, Annie
Sent: Tuesday, March 15, 2011 3:41 AM
To: Hiland, Patrick; Skeen, David
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Gitter, Joseph; Howe, Allen; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael
Subject: latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Annie

Dr. Annie Kammerer, PE
Senior Seismologist and Earthquake Engineer
US Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington DC 20555

(b)(6) mobile
(b)(6) BB

Draft-OUO

NRC frequently asked questions related to the March 11, 2011 Japanese Earthquake and Tsunami

3-19-11 Version

Compiled by Annie Kammerer, Jon Ake, and Cliff Munson 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.

Printed 4/8/2011 12:58 PM

Draft-OUO

List of Questions

1) Can an earthquake and tsunami as large as happened in Japan also happen here?	1
2) Did the Japanese underestimate the size of the maximum credible earthquake and tsunami that could affect the plants?	1
3) How high was the tsunami at the Fukushima nuclear plants?	1
4) Was the damage to the Japanese nuclear plants mostly from the earthquake or the tsunami? 1	
5) Have any lessons for US nuclear plants been identified?	1
6) Was there any damage to US reactors from either the earthquake or the resulting tsunami?... 2	
7) How many US reactors are located in active earthquake zones?	2
8) What level of earthquake hazard are the US reactors designed for?	2
9) What magnitude earthquake are currently operating US nuclear plants designed to?	2
10) Have events in Japan changed our perception of earthquake risk to the nuclear plants in the US? 2	
11) Can significant damage to a nuclear plant like we see in Japan happen in the US due to an earthquake? Are the Japanese nuclear plants similar to US nuclear plants?	2
12) What is the likelihood of the design basis or "SSE" ground motions being exceeded over the life of a nuclear plant?	3
13) Which reactors are along coastal areas that could be affected by a tsunami?	3
14) What is magnitude anyway? What is the Richter Scale? What is intensity?	3
15) How do magnitude and ground motion relate to each other?	4
16) What is Generic Issue 199 about?	4
17) Does GI-199 provide rankings of US nuclear plants in terms of safety?	4
18) What are the current findings of GI-199?	4
19) What do you mean by "increased estimates of seismic hazards" at nuclear plant sites?	5
20) Does the Seismic Core Damage represent a measurement of the risk of radiation release or only the risk of core damage (not accounting for additional containment)?	5
21) Where can I get current information about Generic Issue 199?	5
22) Could an accident sequence like the one at Japan's Fukushima Daiichi nuclear plants happen in the US?	5
23) Are US plants susceptible to the same kind of loss of power as happened in Japan?	Error!

Bookmark not defined.

1) Can an earthquake and tsunami 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.

2) Did the Japanese underestimate the size of the maximum credible earthquake and tsunami that could affect the plants?

The magnitude of the earthquake was somewhat greater than was expected for that part of the subduction zone. However, the Japanese nuclear plants were recently reassessed using ground motion levels similar to those that are believed to have occurred at the sites. The ground motions against which the Japanese nuclear plants were reviewed were expected to result from earthquakes that were smaller, but were much closer to the sites. The NRC does not currently have information on the maximum tsunami height that was expected at the sites.

3) How high was the tsunami at the Fukushima nuclear plants?

The tsunami modeling team at the National Oceanic and Atmospheric Administration's Pacific Marine Environmental Lab have estimated the wave height just offshore to be approximately 8 meters in height at Fukushima Daiichi and approximately 7 meters in Fukushima Daini. This 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. If plant recordings exist they were not yet provided to the NRC.

4) Was the damage to the Japanese nuclear plants mostly from the earthquake or the tsunami?

Because this event happened in Japan, it is hard for NRC staff to make the assessment necessary to understand exactly what happened at this time. In the nuclear plants there may have been some damage from the shaking, and the earthquake caused the loss of offsite power. However, the tsunami appears to have played a key role in the loss of other power sources at the site producing station blackout, which is a critical factor in the ongoing problems.

5) Have any lessons for US nuclear plants been identified?

The NRC is in the process of following and reviewing the event in real time. This will undoubtedly lead to the identification of issues that warrant further study. However, 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) 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. The NRC requires that every nuclear plant be designed for site-specific ground motions that are appropriate for their locations. In addition, the NRC has specified a minimum ground motion level to which nuclear plants must be designed.

8) What level of earthquake hazard are the US reactors designed for?

Each reactor is designed for a different ground motion that is determined on a site-specific basis. The existing nuclear plants were designed on a "deterministic" or "scenario earthquake" basis that accounted for the largest earthquakes expected in the area around the plant, without consideration of the likelihood of the earthquakes considered. New reactors are designed using probabilistic techniques that characterize both the ground motion levels and uncertainty 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, this is the ground motion with an annual frequency of occurrence of 1×10^{-4} /year, but this can be thought of as the ground motion that occurs every 10,000 years on average. One important aspect is that probabilistic hazard and risk-assessment techniques account for beyond-design basis events. NRC's Generic Issue 199 (GI-199) project is using the latest probabilistic techniques used for new nuclear plants to review the safety of the existing plants. [see questions 16 to 21 for more information about GI-199]

9) What magnitude earthquake are currently operating US nuclear plants designed to?

Ground motion is a function of both the magnitude of an earthquake and the distance from the fault to the site. Nuclear plants, and in fact all engineered structures, are actually designed based on ground motion levels, not earthquake magnitudes. The existing nuclear plants were designed based on a "deterministic" or "scenario earthquake" basis 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 added robustness.

10) Have 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. This does not change the NRC's perception of earthquake hazard (i.e., ground motion levels) at US nuclear plants. It is too early to tell what the lessons from this earthquake are. The NRC will look closely at all aspects of response of the 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.

11) Can significant damage to a nuclear plant like we see 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 those nuclear plants that are located within areas with low and moderate seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account even rare and extreme seismic

and tsunami events. In addition to the design of the plants, significant effort goes into emergency response planning and accident management. This approach is called defense-in-depth.

The Japanese facilities are similar in design to some US facilities. However, the NRC has required modifications to the plants since they were built, including design changes to control hydrogen and pressure in the containment. The NRC has also required plants to have additional equipment and measures to mitigate damage stemming from large fires and explosions 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.

12) What is the likelihood of the design basis or "SSE" ground motions being exceeded over the life of a nuclear plant?

The ground motions that are used as seismic design bases at US nuclear plants are called the Safe Shutdown Earthquake ground motion (SSE). 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 analyses to date, the probability of ground motions exceeding the SSE for the plants in the Central and Eastern United States is less than 2%, with values ranging from a low of 0.1% to a high of 6%.

It is important to remember that structures, systems and components are required to have "adequate margin," meaning that they must continue be able withstand shaking levels that are above the plant's design basis.

13) Which reactors are 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 a tsunami.

14) What is magnitude anyway? 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 represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step

in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

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.

The intensity of an earthquake is a qualitative assessment of effects of the earthquake at a particular location. The intensity assigned is 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, intensity depends on the effects at each particular location.

15) 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 waves pass.

16) What is Generic Issue 199 about?

GI-199 investigates the safety and risk implications of updated earthquake-related data and models. These data and models suggest that the probability for earthquake ground motion above the seismic design basis for some nuclear plants in the Central and Eastern United States, although is still low, is larger than previous estimates.

17) 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 perform a conservative, screening-level assessment to evaluate if 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 very conservative making the calculated risk higher than in reality. The nature of the information used (both seismic hazard data and plant-level fragility information) make these estimates useful only as a screening tool.

18) 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 first 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" that 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

~~Draft - ODO~~

concern, the NRC is focused on assuring safety during even very rare and extreme events. Therefore, the NRC has determined that assessment of updated seismic hazards and plant performance should continue.

19) 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, as caused by a specific magnitude earthquake at a certain distance from a site, changed. 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).

20) Does the Seismic Core Damage 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 would be required for radiological release to occur. The likelihood of radiation release is far lower.

21) 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/>.

22) Could an accident sequence like the one at Japan's Fukushima Daiichi nuclear plants happen in the US?

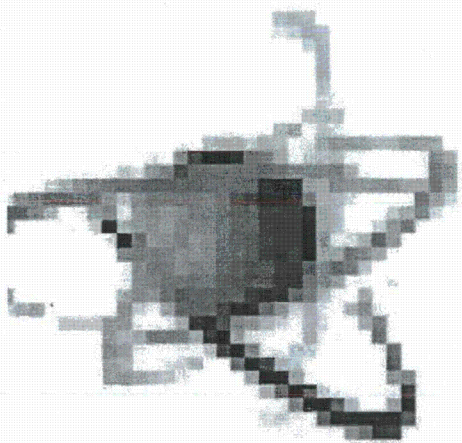
It is difficult to answer this question until we have a better understanding of the precise problems and conditions that faced the operators at Fukushima Daiichi. We do know, however, that Fukushima Daiichi Units 1-3 lost all offsite power and emergency diesel generators. This situation is called "station blackout." US nuclear power plants are designed to cope with a station blackout event that involves a loss of offsite power and onsite emergency power. The Nuclear Regulatory Commission's detailed regulations address this scenario. US nuclear plants are required to conduct a "coping" assessment 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.

In addition, US nuclear plant designs and operating practices since the terrorist events of September 11, 2001, are designed to mitigate severe accident scenarios such as aircraft impact, which include the complete loss of offsite power and all on-site emergency power sources.

~~Draft - ODO~~

~~Draft - OUO~~

US nuclear plant designs include consideration of seismic events and tsunamis'. It is important not to extrapolate earthquake and tsunami data from one location of the world to another when evaluating these natural hazards. These catastrophic natural events are very region- and location-specific, based on tectonic and geological fault line locations.



U.S. NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Scott, Michael

From: Scott, Michael
Sent: Monday, March 21, 2011 9:23 PM
To: Blamey, Alan
Subject: RE: Japan Briefing

I have your BB! In case you want to give number to whoever, it is:

(b)(6)

Mike

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

From: Blamey, Alan
Sent: Monday, March 21, 2011 11:21 AM
To: Scott, Michael
Subject: RE: Japan Briefing

I believe that you and I will be traveling to Japan on Tuesday. My blackberry number is

(b)(6)

I have

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

From: Scott, Michael
Sent: Monday, March 21, 2011 10:07 AM
To: Kreuter, Jane; Ramsey, Jack; Blamey, Alan; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Giessner, John
Subject: Japan Briefing

I am leaving for Japan tomorrow. Can we have this today?

Sent from my NRC blackberry
Michael Scott

(b)(6)

PP/71

From: Alejandro.HUERTA@oecd.org
To: [Ali, Syed](#); [Tregoning, Robert](#)
Cc: [Eisenberg, Wendy](#); [Murphy, Andrew](#); [Sangimino, Donna-Marie](#); Andrei.Blahoianu@cnscccsn.gc.ca; [Case, Michael](#); [Richards, Stuart](#); [Hogan, Rosemary](#); [Sheron, Brian](#)
Subject: RE: CSNI Meeting on 4/2/11
Date: Monday, March 21, 2011 12:15:32 PM

Dear Syed,

It is pity that you will not be able to attend the WGIAGE April meetings but we understand. Please take care.

Alejandro Huerta

OECD Nuclear Energy Agency (NEA)

Tel.: +33 (0)1 45 24 10 57; Mobile (b)(6)

From: Ali, Syed [<mailto:Syed.Ali@nrc.gov>]
Sent: Monday, March 21, 2011 16:41
To: Tregoning, Robert; HUERTA Alejandro, NEA/SURN
Cc: Eisenberg, Wendy; Murphy, Andrew; Sangimino, Donna-Marie; Andrei.Blahoianu@cnscccsn.gc.ca; Case, Michael; Richards, Stuart; Hogan, Rosemary; Sheron, Brian
Subject: RE: CSNI Meeting on 4/2/11

Hello Alejandro and Andrei:

I am writing to follow-up on the email below from Rob Tregoning. This weekend I was told that I was to go to Japan on March 24 for a period of up to 2 weeks. This work is of highest priority for NRC and takes precedence over all other work. I apologize for this inconvenience at the last moment but I have no choice in the matter.

I hope that you can find somebody else to act as the Chairman of the Concrete subgroup for this meeting. I will try to update the NRC presentation for the meeting. If I am able to do that, Dr. Andrew Murphy has agreed to make the presentation on behalf of NRC at the Concrete meeting.

With best regards,
Syed

Dr. Syed A. Ali, P.E.
Senior Technical Advisor for Civil/Structural Engrg Issues
Division of Engineering (DE)
Office of Nuclear Regulatory Research
United States Nuclear Regulatory Commission

Phone: 301-251-7658
Email: Syed.Ali@nrc.gov

Mailing Address:
Syed A. Ali
M/S CS-5A24M

PP/12

US Nuclear Regulatory Commission
Washington, DC 20555-0001

From: Tregoning, Robert
Sent: Monday, March 21, 2011 10:52 AM
To: Alejandro.HUERTA@oecd.org
Cc: Eisenberg, Wendy; Murphy, Andrew; Ali, Syed; Sangimino, Donna-Marie
Subject: FW: CSNI Meeting on 4/2/11

Alejandro:

I'm not sure if you're aware of this or not, but Dr. Syed Ali will not be traveling to the CSNI meetings this April. Please contact Syed or myself if you would like more information or if you need help coordinating the Seismic Subgroup meeting in Syed's absence.

I also wanted to let you know that I will not be in attendance at the WGIAGE meeting on Friday, April 8th. Dr. Andy Murphy will represent the NRC in my absence. I'm looking forward to meeting with you during the meetings earlier that week.

Regards,
Rob

Robert Tregoning
Technical Advisor for Materials
US Nuclear Regulatory Commission
21 Church Street, M/S CS-5A24
Rockville, MD 20850
ph: 301-251-7662
mobile: (b)(6)
fax: 301-251-7425

From: Eisenberg, Wendy
Sent: Monday, March 21, 2011 8:50 AM
To: Murphy, Andrew; Tregoning, Robert
Subject: CSNI Meeting on 4/2/11

Andy and Rob:

Donna-Marie asked that we let CSNI know that Syed Ali will not be attending this meeting:
Andrew Murphy, DE 159
R. Tregoning
S. Ali
4/2-9/11
Paris, France
Represent NRC/RES at OECD/NEA/CSNI WGIAGE annual mtg

Do you know who we should contact to let them know?

Apparently Donna-Marie tried to call this morning but did not get through.

Thanks.

Lee, Richard

From: Santiago, Patricia
Sent: Tuesday, March 22, 2011 9:42 AM
To: Wagner, Katie; Lee, Richard
Subject: Re: SOARCA data requested for briefing to Secretary of Energy

Yes

Sent from an NRC BlackBerry /
Patricia Santiago

(b)(6)

From: Wagner, Katie
To: Lee, Richard
Cc: Santiago, Patricia
Sent: Tue Mar 22 09:37:14 2011
Subject: SOARCA data requested for briefing to Secretary of Energy

Richard – Is this item considered “complete” now? – Thanks, Katie

From: Burns, Shawn [<mailto:spburns@sandia.gov>]
Sent: Tuesday, March 22, 2011 8:54 AM
To: Wagner, Katie
Cc: Santiago, Patricia; Chang, Richard; Tinkler, Charles
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

Katie,

Attached is the information I sent to INL a few minutes ago for the briefing they are putting together for the Secretary of Energy. Please reference Brian’s approval attached.

Sorry you did not receive my request last night as well but I had copied your name down incorrectly yesterday.

Best regards,

Shawn

From: Burns, Shawn
Sent: Tuesday, March 22, 2011 6:42 AM
To: 'Joy L Rempe'
Cc: Gauntt, Randall O; Pickering, Susan Y
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

Joy,

NRC has approved release of the attached. John and Brian are also working on ways of getting information released faster as well.

I have marked the attached slides as OUO per Brian’s instructions. We actually don’t have a hydrogen generation plot in the data we have in the SOARCA documentation so I included the lime line figure instead.

Please let me know if you need anything more.

Best regards,

Shawn

From: Sheron, Brian [<mailto:Brian.Sheron@nrc.gov>]

Sent: Tuesday, March 22, 2011 6:18 AM

To: Burns, Shawn; 'kathy.wagner@nrc.gov'

Cc: Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles; Elkins, Scott; Gibson, Kathy; Uhle, Jennifer

Subject: RE: SOARCA data requested for briefing to Secretary of Energy

No problem releasing information to DOE, but make sure it is marked Official Use Only (OUO).

From: Burns, Shawn [<mailto:spburns@sandia.gov>]

Sent: Tuesday, March 22, 2011 3:58 AM

To: Sheron, Brian; 'kathy.wagner@nrc.gov'

Cc: Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles

Subject: SOARCA data requested for briefing to Secretary of Energy

Brian and Kathy,

I prepared the attached to fulfill a request for information for a briefing to be given to the Secretary of Energy on Tuesday, March 22, 2011 regarding the Fukushima event. The slides reflect data taken directly from the Peach Bottom long term station blackout analysis that Sandia prepared for the SOARCA project and are intended to show various levels of core damage progression in this type of event as well as potential environmental releases. John Kelly (DOE/NE-7) sent Brian an e-mail regarding this request at approximately 11:00 EDT on March 21.

I am requesting NRC approval to forward this information to Idaho National Laboratories so that it can be included in the briefing they are preparing for the Secretary. At this time I do not know what the scheduled time for the briefing is on the 22nd.

Best regards,

Shawn

Shawn P. Burns, Ph.D., P.E.
Manager, Risk and Reliability Analysis
Department 6761

Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185-0748

Phone: (505)844-6200

Mobile: (b)(6)

Fax: (505)844-2829

e-mail: spburns@sandia.gov

Web: <http://www.sandia.gov/ERN/nuclear-energy/index.html>

Lee, Richard

From: Santiago, Patricia
Sent: Tuesday, March 22, 2011 11:18 AM
To: Navarro, Carlos
Cc: Zigh, Ghani; Elkins, Scott; Gibson, Kathy; Wagner, Katie; Lee, Richard
Subject: Re: Request for BWR Test videos from DOE

This is a separate request that will be logged

Kathy asked we talk to the nei pms and I sent those to u to contact. Are you redacting the report as noted before or are u both recommending full release.

Thanks for ur help.

Sent from an NRC BlackBerry
Patricia Santiago
(b)(6)

From: Navarro, Carlos
To: Santiago, Patricia
Cc: Zigh, Ghani
Sent: Tue Mar 22 11:13:07 2011
Subject: FW: Request for BWR Test videos from DOE

Pat,

DOE/NE (I guess stands for "Nuclear Engineering") is requesting the BWR SFP Final report.

We advised Sandia to wait until we give them instruction, as appropriate, to respond to requests for OUO documents.

Since there is a similar request pending advise from Brian (RES/D), we hope you can provide us some feedback how to follow up with Sandia.

C.

From: Durbin, Samuel [<mailto:sdurbin@sandia.gov>]
Sent: Tuesday, March 22, 2011 11:01 AM
To: Navarro, Carlos; Zigh, Ghani
Cc: Sorenson, Ken B
Subject: Request for BWR Test videos from DOE

Ghani and Carlos,

We have received a request from DOE/NE (Patrick Scwab) for the two executive test videos. Please advise immediately if this release is acceptable.

Sam

PP/14

Lee, Richard

From: Wagner, Katie
Sent: Tuesday, March 22, 2011 7:56 AM
To: Lee, Richard
Subject: RE: SOARCA data requested for briefing to Secretary of Energy

Is this "complete" now?

From: Lee, Richard
Sent: Tuesday, March 22, 2011 7:52 AM
To: Wagner, Katie
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

Hi, Katie:
Please log this in. Thx.
Richard

From: Lee, Richard
Sent: Tuesday, March 22, 2011 7:51 AM
To: Elkins, Scott
Subject: RE: SOARCA data requested for briefing to Secretary of Energy

No problem at all. Please do.

From: Elkins, Scott
Sent: Tuesday, March 22, 2011 7:39 AM
To: Lee, Richard
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

Richard, I understand that you are the clearing house on what can be released to whom. Is there any reason this cannot be released to DOE?
Thanks, Scott

From: Sheron, Brian
Sent: Tuesday, March 22, 2011 7:33 AM
To: Elkins, Scott
Cc: Tinkler, Charles; Uhle, Jennifer; Gibson, Kathy
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

You're acting. Any problem with SNL giving this to DOE?

From: Burns, Shawn [<mailto:spburns@sandia.gov>]
Sent: Tuesday, March 22, 2011 3:58 AM
To: Sheron, Brian; 'kathy.wagner@nrc.gov'
Cc: Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles
Subject: SOARCA data requested for briefing to Secretary of Energy

Brian and Kathy,

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type of event as well as potential environmental releases. John Kelly (DOE/NE-7) sent Brian an e-mail regarding this request at approximately 11:00 EDT on March 21.

I am requesting NRC approval to forward this information to Idaho National Laboratories so that it can be included in the briefing they are preparing for the Secretary. At this time I do not know what the scheduled time for the briefing is on the 22nd.

Best regards,

Shawn

~~~~~  
Shawn P. Burns, Ph.D., P.E.  
Manager, Risk and Reliability Analysis  
Department 6761

Sandia National Laboratories  
P.O. Box 5800  
Albuquerque, NM 87185-0748

Phone: (505)844-6200

Mobile: (b)(6)

Fax: (505)844-2829

e-mail: [spburns@sandia.gov](mailto:spburns@sandia.gov)

Web: <http://www.sandia.gov/ERN/nuclear-energy/index.html>

**Lee, Richard**

---

**From:** Wagner, Katie  
**Sent:** Tuesday, March 22, 2011 8:20 AM  
**To:** Lee, Richard  
**Subject:** RE: SOARCA data requested for briefing to Secretary of Energy

Richard,

Ok. Please let me know if there is anything I can do, ie. is there anyone specifically you would like me to follow up with?

Katie

---

**From:** Lee, Richard  
**Sent:** Tuesday, March 22, 2011 8:17 AM  
**To:** Wagner, Katie  
**Subject:** FW: SOARCA data requested for briefing to Secretary of Energy

Katie:

FYI. We need to follow up with RES FO.

Richard

---

**From:** Elkins, Scott  
**Sent:** Tuesday, March 22, 2011 8:14 AM  
**To:** Sheron, Brian  
**Cc:** Tinkler, Charles; Uhle, Jennifer; Gibson, Kathy; Lee, Richard; Santiago, Patricia  
**Subject:** RE: SOARCA data requested for briefing to Secretary of Energy

Brian, DSA has no problem with this being released as long as the slides are marked OUO.

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 7:33 AM  
**To:** Elkins, Scott  
**Cc:** Tinkler, Charles; Uhle, Jennifer; Gibson, Kathy  
**Subject:** FW: SOARCA data requested for briefing to Secretary of Energy

You're acting. Any problem with SNL giving this to DOE?

---

**From:** Burns, Shawn [mailto:spburns@sandia.gov]  
**Sent:** Tuesday, March 22, 2011 3:58 AM  
**To:** Sheron, Brian; 'kathy.wagner@nrc.gov'  
**Cc:** Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles  
**Subject:** SOARCA data requested for briefing to Secretary of Energy

Brian and Kathy,

I prepared the attached to fulfill a request for information for a briefing to be given to the Secretary of Energy on Tuesday, March 22, 2011 regarding the Fukushima event. The slides reflect data taken directly from the Peach Bottom long term station blackout analysis that Sandia prepared for the SOARCA project and are intended to show various levels of core damage progression in this type of event as well as potential environmental releases. John Kelly (DOE/NE-7) sent Brian an e-mail regarding this request at approximately 11:00 EDT on March 21.

I am requesting NRC approval to forward this information to Idaho National Laboratories so that it can be included in the briefing they are preparing for the Secretary. At this time I do not know what the scheduled time for the briefing is on the 22<sup>nd</sup>.

Best regards,

Shawn

~~~~~  
Shawn P. Burns, Ph.D., P.E.
Manager, Risk and Reliability Analysis
Department 6761

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Fax: (505)844-2829

e-mail: spburns@sandia.gov

Web: <http://www.sandia.gov/ERN/nuclear-energy/index.html>

Esmaili, Hossein

From: Carlson, Donald
Sent: Tuesday, March 22, 2011 8:38 PM
To: Esmaili, Hossein; Shea, James; Williams, Joseph
Subject: FW: TEPCO meeting at the US Embassy - Notes for consideration in tonight's call

Importance: High

FYI

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

From: Carlson, Donald
Sent: Tuesday, March 22, 2011 8:34 PM
To: RST01 Hoc; RST07 Hoc
Cc: Norton, Charles; Yarsky, Peter
Subject: TEPCO meeting at the US Embassy - Notes for consideration in tonight's call
Importance: High

To: RST, Chuck Norton

I will not be joining tonight's 9:00pm TEPCO phone call, but am forwarding Pete Yarsky's (RES) excellent notes and suggestions. Highlights follow.

Notes for Consideration

1. Salt Accumulation

The RST may want to consider whether the bottom drain line suction and additional FWCI makeup might be a useful suggestion for evaluation. Since the RPV lower head will have high concentration, taking suction from here might at least provide additional time before core cooling is potentially compromised.

2. Recriticality

Some additional data regarding the timing of seawater injection and specific neutron flux indications could be used to establish an estimate of the control inventory prior to injection. This would give a more rigorous yes or no to the question of blade melt.

Please do let me know if I can be of further assistance.

Don Carlson, NRO/ARP
Cell: (b)(6)

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

From: Yarsky, Peter
Sent: Tuesday, March 22, 2011 12:20 AM
To: Carlson, Donald; Scott, Harold
Cc: Elkins, Scott
Subject: RE: TEPCO meeting at the US Embassy Monday.

Don,

Here are my notes and thoughts from the call. First, thanks for including me, I found it very enlightening and appreciated the opportunity to be of some use (albeit not too much).

PP/77

(1) salt accumulation

I think that Sam Miranda best described this phenomenon when he tried to draw a distinction between distillation and precipitation, but I do think that resulted in more confusion overall. The salt concentration builds up in the vessel because inventory loss is purely through boil-off whereas the supply of coolant is at a constant salt concentration leading to an ever increasing concentration in the vessel. As the concentration increases beyond the saturation limit at the current pressure/temperature in the vessel precipitation will occur. I concur with the participants that we would expect the salt to fall out of solution and build up in the lower head.

As for the core coolability criterion that TEPCO is trying to set (which dictates the time-til-loss-of-cooling), I was a little concerned that a steady build up of solid salt in the RPV lower head may lead to an interruption of flow when this level reaches the bottom of the shroud skirt for those units with recirculation line injection (that is entirely conjectural, however, since I do not know the flow conditions, etc.). From the call it would seem that TEPCO considered this in their assessment.

I was curious to hear for a call for suggestions to remove the salt. Sweeping in a pure liquid environment I do not think to be a prudent strategy (while that would work for a PWR - is not tenable for a BWR - I imagine even successful attempts at this strategy would result in suppression pool overflow).

Don, I was hoping you could communicate with the RST and see if bottom drain line suction and additional FWCI makeup might be a useful suggestion for evaluation. Since the RPV lower head will have high concentration taking suction from here might at least provide additional time before core cooling is potentially compromised.

(2) recriticality and hydrogen explosion

I heard on the call that neutron flux measurements were made as water was restored to the vessel. From that, one could actually infer (or at least get a good estimate) of core k-eff using the subcritical multiplying medium equation, since flux levels remained low throughout restoration of level that would appear to indicate the continued presence of strong neutron absorber (rods) in the core. If level is continuing to be maintained to provide steam cooling, I generally concur with TEPCO's assessment. Some additional data regarding the timing of seawater injection and specific neutron flux indications could be used to establish an estimate of the control inventory prior to injection. This would give a more rigorous yes or no to the question of blade melt.

As far as to the question of hydrogen explosion, I don't understand the nature of the topic here. I was a bit confused as to whether the concerns were in regard to the vessel or containment. Rapid increase in vessel hydrogen would be expected once AC power is restored and significant injection takes place.

I think I heard some talk about consideration of alternative injection lines. In that case, I would wonder about: condensate line, RWCU and CRD cooling.

I dropped off the call after these topics.

Thanks

Pete

From: Carlson, Donald
Sent: Monday, March 21, 2011 11:46 PM
To: Scott, Harold
Cc: Yarsky, Peter
Subject: RE: TEPCO meeting at the US Embassy Monday.

Harold,

The meeting focused almost entirely on the question of when precipitating seasalt might accumulate in the lower head to the point where core cooling becomes seriously compromised.

Hossein Esmaili is very active on the RST and made some good observations with team members in the background. So far, as indicated in their slides, TEPCO believes salt accumulation in the bottom of the RPV might cause flow obstruction when it reaches the nominal level of the bottom of the fuel, which is estimated to happen around the end of the month. Len Ward discussed analogies with boric acid precipitation in PWRs. Pete Yarsky (on Cc) asked some good clarifying questions and suggested a potential for earlier core cooling obstruction when salt reaches the shroud skirt.

Recriticality was only briefly mentioned. TEPCO seems to be assuming that the control blades and fuel are still geometrically intact. So their stated concern seems to be about recriticality should control blades melt first when/if core cooling is obstructed. So far we've said almost nothing on this. There will be more phone calls tomorrow and Wednesday nights. Everyone is glad I got Pete involved.

Tony Ulses was not on the call and the RST members don't seem to know what he's been up to.

Thanks again,
Don

From: Scott, Harold
Sent: Monday, March 21, 2011 8:23 PM
To: Carlson, Donald
Subject: RE: TEPCO meeting at the US Embassy Monday.

Document Title

NUREG/CR-6042, Rev. 2, "Perspectives on Reactor Safety".

see chapter 3.7

<http://adamswebsearch2.nrc.gov/IDMWS/ViewDocByAccession.asp?AccessionNumber=ML091250169>

From: Carlson, Donald
Sent: Monday, March 21, 2011 8:09 PM
To: RST01 Hoc; Yarsky, Peter; Ward, Leonard
Cc: RST07 Hoc; RST02 Hoc; Scott, Harold
Subject: RE: TEPCO meeting at the US Embassy Monday.

All,

I just found my hardcopy of the 1990 PNL study for RES, NUREG/CR-5653, "Recriticality in a BWR Following a Core Damage Event." Harold Scott and I are still hunting for an electronic copy.

The abstract says:

"Based on a conservative bounding analysis, this report concludes that there is a potential for recriticality in BWRs if core reflood occurs after control blade melting has begun but prior to significant fuel rod melting.

However, a recriticality event will most likely not generate a pressure pulse significant enough to fail the vessel. Instead, a quasi-steady power level would result and the containment pressure and temperature would increase until the containment failure pressure is reached, unless actions are taken to terminate the event.

Two strategies are identified that would aid in regaining control of the reactor and terminate the recriticality event before containment failure pressures are reached. The first strategy involves initiating boration injection at or before the time of core reflood. The second strategy involves initiating residual heat removal suppression pool cooling to remove the heat load generated by the recriticality event and thus extend the time available for boration."

Also, I had just found the attached 1992 follow-up paper by ORNL when Pete Yarsky sent me the corresponding ORNL report, NUREG/CR-5869. See Pete's excellent message attached.

Actually, Tony Ulises probably knows quite a lot about all this. But he is on the ground in Japan.

Don

Cell: (b)(6)

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

From: RST01 Hoc

Sent: Monday, March 21, 2011 7:06 PM

To: Yarsky, Peter; Ward, Leonard; Carlson, Donald

Cc: RST07 Hoc; RST02 Hoc

Subject: FW: TEPCO meeting at the US Embassy Monday.

Call into the HOO for the call:

1) 301-816-5100

2) Transfer to the Reactor Safety Team (RST) Bridge

>

> Phone: +81-240-32-2486

> Fax: +81-240-32-3881

> E-mail: kawano.akira@tepcoco.jp

> URL: <http://www.tepcoco.jp/fukushima1-np/index-j.html>

Lee, Richard

From: Wagner, Katie
Sent: Tuesday, March 22, 2011 9:37 AM
To: Lee, Richard
Cc: Santiago, Patricia
Subject: SOARCA data requested for briefing to Secretary of Energy
Attachments: PB_LTSBO.pptx

Richard – Is this item considered “complete” now? – Thanks, Katie

From: Burns, Shawn [<mailto:spburns@sandia.gov>]
Sent: Tuesday, March 22, 2011 8:54 AM
To: Wagner, Katie
Cc: Santiago, Patricia; Chang, Richard; Tinkler, Charles
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

Katie,

Attached is the information I sent to INL a few minutes ago for the briefing they are putting together for the Secretary of Energy. Please reference Brian’s approval attached.

Sorry you did not receive my request last night as well but I had copied your name down incorrectly yesterday.

Best regards,

Shawn

From: Burns, Shawn
Sent: Tuesday, March 22, 2011 6:42 AM
To: 'Joy L Rempe'
Cc: Gauntt, Randall O; Pickering, Susan Y
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

Joy,

NRC has approved release of the attached. John and Brian are also working on ways of getting information released faster as well.

I have marked the attached slides as OUO per Brian’s instructions. We actually don’t have a hydrogen generation plot in the data we have in the SOARCA documentation so I included the lime line figure instead.

Please let me know if you need anything more.

Best regards,

Shawn

From: Sheron, Brian [<mailto:Brian.Sheron@nrc.gov>]
Sent: Tuesday, March 22, 2011 6:18 AM

To: Burns, Shawn; 'kathy.wagner@nrc.gov'

Cc: Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles; Elkins, Scott; Gibson, Kathy; Uhle, Jennifer

Subject: RE: SOARCA data requested for briefing to Secretary of Energy

No problem releasing information to DOE, but make sure it is marked Official Use Only (OUO).

From: Burns, Shawn [<mailto:spburns@sandia.gov>]

Sent: Tuesday, March 22, 2011 3:58 AM

To: Sheron, Brian; 'kathy.wagner@nrc.gov'

Cc: Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles

Subject: SOARCA data requested for briefing to Secretary of Energy

Brian and Kathy,

I prepared the attached to fulfill a request for information for a briefing to be given to the Secretary of Energy on Tuesday, March 22, 2011 regarding the Fukushima event. The slides reflect data taken directly from the Peach Bottom long term station blackout analysis that Sandia prepared for the SOARCA project and are intended to show various levels of core damage progression in this type of event as well as potential environmental releases. John Kelly (DOE/NE-7) sent Brian an e-mail regarding this request at approximately 11:00 EDT on March 21.

I am requesting NRC approval to forward this information to Idaho National Laboratories so that it can be included in the briefing they are preparing for the Secretary. At this time I do not know what the scheduled time for the briefing is on the 22nd.

Best regards,

Shawn

~~~~~  
Shawn P. Burns, Ph.D., P.E.

Manager, Risk and Reliability Analysis

Department 6761

Sandia National Laboratories

P.O. Box 5800

Albuquerque, NM 87185-0748

Phone: (505)844-6200

Mobile: (b)(6)

Fax: (505)844-2829

E-mail: [spburns@sandia.gov](mailto:spburns@sandia.gov)

Web: <http://www.sandia.gov/ERN/nuclear-energy/index.html>

**Lee, Richard**

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 9:33 PM  
**To:** Lee, Richard  
**Subject:** RE: Nuclear science group conference call - Wednesday

You need to respond to Ian, tell him you will be participating for me, and let him know if both times are acceptable to you.

---

**From:** Lee, Richard  
**Sent:** Tuesday, March 22, 2011 9:29 PM  
**To:** Sheron, Brian  
**Subject:** RE: Nuclear science group conference call - Wednesday

Brian: Any time is fine with me. Just let me know when they want the conference call.

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 9:27 PM  
**To:** Lee, Richard  
**Subject:** FW: Nuclear science group conference call - Wednesday

Richard, note request for time change. Please respond. Thanks.

---

**From:** Aoki, Steven [Steven.Aoki@nnsa.doe.gov]  
**Sent:** Tuesday, March 22, 2011 7:25 PM  
**To:** Adams, Ian; Binkley, Steve; Bob Budnitz; Sheron, Brian; Dick Garwin; Dick Garwin; Finck, Phillip; Grossenbacher, John (INL); Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Per Peterson; Rolando Szilard; Steve Fetter  
**Cc:** Narendra, Blake; Fitzgerald, Paige; [kpitzer@ostp.eop.gov](mailto:kpitzer@ostp.eop.gov); Claxton, Dionne (CONTR); Chambers, Megan (S4); Smith, Haley  
**Subject:** RE: Nuclear science group conference call - Wednesday

Both times are fine for me

---

**From:** Adams, Ian  
**Sent:** Tuesday, March 22, 2011 7:04 PM  
**To:** Adams, Ian; Aoki, Steven; Binkley, Steve; Bob Budnitz; Brian Sheron; Dick Garwin; Dick Garwin; Finck, Phillip; Grossenbacher, John (INL); Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Per Peterson; Rolando Szilard; Steve Fetter  
**Cc:** Narendra, Blake; Fitzgerald, Paige; [kpitzer@ostp.eop.gov](mailto:kpitzer@ostp.eop.gov); Claxton, Dionne (CONTR); Chambers, Megan (S4); Smith, Haley  
**Subject:** Nuclear science group conference call - Wednesday

Good evening,

We need to change the time of tomorrow's call to later in the day. Please let me know if 6:00pm EDT Wednesday and 5:00pm EDT Thursday would work for you.

Thanks,  
Ian

PP/79

Nuclear science group conference call . - proposed schedule:

Wednesday: 6:00pm-7:00pm EDT

Thursday: 5:00pm-6:00pm EDT

Conference call information:

Please dial into (b)(6)

No PIN is needed.

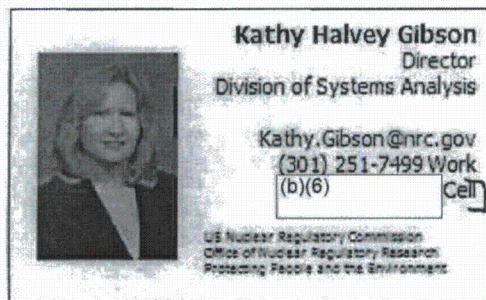
**Lee, Richard**

---

**From:** Gibson, Kathy  
**Sent:** Tuesday, March 22, 2011 7:15 PM  
**To:** Lee, Richard  
**Cc:** Wagner, Katie  
**Subject:** FW: Conference call  
**Attachments:** Kathy Halvey Gibson.vcf; image001.jpg

**Importance:** High

Can you do this? If not, let me know right away so we can identify another appropriate participant.



---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 6:20 PM  
**To:** Gibson, Kathy  
**Subject:** Conference call

Recall last week Richard Lee and I went down to a meeting at DOE with secretary Chu. He was pulling together a brain trust from academia and the national labs to "think outside the box" about ways to help the Japanese cope with the Fukushima disaster.

After the meeting, they agreed to get back together via conference calls.

I missed the call yesterday because I was briefing hill staffers at the time of the call.

I participated in the one today. It was scheduled for an hour, but took 1.5 hours. The Secretary of Energy was on the call initially, although I did not hear him participate in the conversations, so he might have slipped out the back door.

The gist of these conversations is this brain trust pontificating about how to measure water level in the SFP, how to get fresh water into the reactor, etc.

Interesting as it is, I think I have more important things to focus on right now. Is it possible for Richard to participate in these calls for me? He attended the meeting, so he know who the people are that are on the phone.

The next conference call is at 12:30 pm tomorrow. The call-in number is (b)(6)

Let me know if Richard can participate in the call. Thanks.

PP/80

**Orlikowski, Robert**

---

**From:** Krsek, Robert  
**Sent:** Tuesday, March 22, 2011 1:18 PM  
**To:** Kunowski, Michael; Cassidy, John  
**Cc:** Barclay, Kevin; Jandovitz, John  
**Subject:** Kewaunee Rainfall I-131 and Outage update....

FYI –

Kewaunee Rainfall I-131: What the licensee is doing to confirm that the rain water collected from this past Sunday, is in fact, I-131, is they are going to let the sample decay (half-life is 8 days) further (until this afternoon or tomorrow) and then recount the samples. If the samples have decayed appropriately, then they can confirm the I-131 is from the world events....

Emergency Diesel Generator 'A': Further review of the test data has revealed that towards the end of the run last night, EDG A frequency (i.e., speed) decreased. The licensee believes an adjustment of the governor clutch is warranted and we will be following those activities this afternoon. The licensee is aware of the recent McGuire Part 21 on ESI supplied Woodward Governors, they did not identify any paint chips in the governor during their installation last week (confirmed with sys. Eng.). When they perform the clutch adjustment, I will also take a look for myself.

Mode 4: There are a number of issues they must complete prior to the Mode 4 transition. Therefore, Mode 4 will probably not take place on day shift today. These issues include: resolution of high vibrations on the newly installed B containment fan coil unit fan; resolution of a potential service water leak on the new installed C containment fan coil unit coils; return the MAT to service; containment cleanliness closeout; and the A EDG governor clutch adjustment.

Winter Storm Warning In Effect: from 13:00 to 19:00 tomorrow. 4-8 inches of snow/ice expected. Will affect work in the switchyard (Operations cancelled Line Q-303 outage scheduled to start today). When the licensee transitions to Mode 4, they will again be using EOOS, not the safe shutdown assessment for risk, and Kewaunee will be yellow risk (due to TDAFW being out of service combined with the winter storm warning).

Thanks,

Robert G. Krsek  
Senior Resident Inspector  
Kewaunee Power Station  
Office: 920.388.3156  
Cell: (b)(6)

pp/81



**Orlikowski, Robert**

---

**From:** Krsek, Robert  
**Sent:** Tuesday, March 22, 2011 5:02 PM  
**To:** Cassidy, John  
**Cc:** Barclay, Kevin; Kunowski, Michael; Jandovitz, John  
**Subject:** Licensee Confirmed I-131....

So, the RP/Chem Manager stopped by. They have confirmed the rainwater is I-131, they hit 25+ peaks on the spectrum.

They also had a chemistry technician grab water samples from his home rain barrel at lunch and it had the same I-131 spectrum.

The licensee will continue to monitor and sample rain water so that they can establish adequate background readings for the site.

If you would like, I can keep updating you if and when they start finding other isotopes...

Thanks,

Robert G. Krsek  
Senior Resident Inspector  
Kewaunee Power Station  
Office: 920.388.3156  
Cell: (b)(6)

PP/82

Lee, Richard

---

**From:** Wagner, Katie  
**Sent:** Tuesday, March 22, 2011 2:08 PM  
**To:** Lee, Richard  
**Subject:** FW: Station blackout questions  
**Attachments:** image001.jpg

**Importance:** High

To confirm, is this complete now or still pending?

---

**From:** Wagner, Katie  
**Sent:** Tuesday, March 22, 2011 1:53 PM  
**To:** Burnell, Scott  
**Cc:** Lee, Richard; Gibson, Kathy  
**Subject:** Station blackout questions  
**Importance:** High

Good Afternoon Scott,

Kevin Coyne of RES/DRA has provided a preliminary response to Mr. Soraghan's questions (see below), however he did not understand the third question and recommends that George Wilson of NRR/DE/EEEB review the preliminary response.

Thanks,

Katie Wagner  
DSA POC for Japan-Related Requests

---

**From:** Coyne, Kevin  
**Sent:** Tuesday, March 22, 2011 1:40 PM  
**To:** Lee, Richard  
**Cc:** Wagner, Katie; Wilson, George; Demoss, Gary; Beasley, Benjamin; Coe, Doug  
**Subject:** RE: Station blackout questions  
**Importance:** High

Richard –

We've taken a first cut at responding to the questions, but George Wilson from the NRR electrical engineering branch has been very active in this area and should review the question and answers before a response goes back to OPA (particularly for the first question...). I've cc'ed George, but Katie should coordinate the response with him before providing a final answer back to Scott Burnell.

-Kevin

First, has there been any update to these numbers?

- Unknown. However, our understanding is that NUREG-1776 (<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1776/>) is the most recent study specific to the station blackout rule that has been prepared by RES.

PP/83

**"Coping time in hours" – is that the amount of battery power? And is it the amount the plant has, or is required to have?**

- 10 CFR 50.63, "Loss of all alternating current power," requires that the station blackout duration shall be based on (i) redundancy of the onsite emergency power ac power sources; (2) the reliability of the onsite emergency ac power sources; (3) the expected frequency of loss of offsite power; and (4) the probably time needed to restore offsite power. RG 1.155, "Station Blackout," (August 1988), provides guidance for determining a plant specific coping time based on these factors. In general, coping times range from 2 to 16 hours, though licensees may propose alternate durations based on plant specific factors relating to the reliability of their ac power systems.
- Licensees must demonstrate that systems have sufficient capacity and capability to ensure core cooling and containment integrity are maintained for the duration of the specified coping time. Although station batteries are one of the necessary systems, other systems that provide water inventory and containment functions must also be available

**"Loss of Power events" – if a combined plant with two reactors lists two events, did each shut down for a total of four?**

- Do not understand question – can a reference to a specific table or graph be provided by the questioner?

**Also, is there updated figures for the "loss of power events?"**

- NUREG/CR-6890, "Reevaluation of Station Blackout Risk at Nuclear Power Plants," (<http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6890/>) examined data from 1986-2004 for four categories of loss of offsite power events: plant-centered, switchyard centered, grid-related, and weather-related.
- The NRC also maintains an active data collection program on operating experience. The most recent data for loss of offsite power events can be found at the following website: <http://nrcoe.inel.gov/results/index.cfm?fuseaction=LOSP.showMenu>

---

**From:** Lee, Richard  
**Sent:** Tuesday, March 22, 2011 12:49 PM  
**To:** Coyne, Kevin  
**Cc:** Wagner, Katie  
**Subject:** FW: Station blackout questions

Kevin:

We need to respond to inquiry on this. Could you please have someone in your Branch or Division to take a look at this. There is also another report, NUREG/CR-6890 on station blackout too.

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6890/>

If you know other staff in NRO or NRR knows the answers, please let me know.

Thanks, Richard

---

**From:** Wagner, Katie  
**Sent:** Tuesday, March 22, 2011 12:13 PM  
**To:** Santiago, Patricia; Hoxie, Chris; Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek  
**Cc:** Lee, Richard

**Subject:** Station blackout questions

**Importance:** High

All,

Do any of you know who the lead should be to answer these questions about station blackout (the questions are from a reporter see the highlighted section at the bottom of this email)? It may be another RES division or one in NRR?

Thank you,

Katie Wagner

DSA POC for Japan-Related Requests

---

**From:** Gibson, Kathy

**Sent:** Tuesday, March 22, 2011 11:59 AM

**To:** Wagner, Katie

**Cc:** Lee, Richard

**Subject:** FW: Station blackout questions

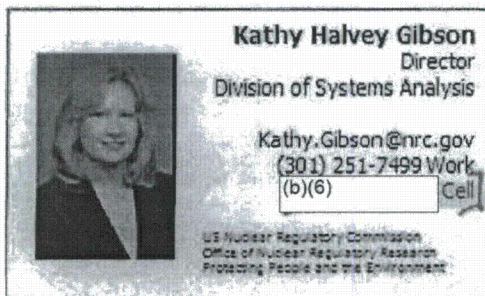
**Importance:** High

See if you can find this report in ADAMS and who was the cognizant office, branch, and staff.

If that doesn't work or in parallel, send an email request to our BCs and see if any of them know who the lead should be to answer these questions.

It may be another RES division or NRR, I am not sure.

If you need help processing this, see me or Richard Lee.



---

**From:** Burnell, Scott

**Sent:** Tuesday, March 22, 2011 9:49 AM

**To:** Gibson, Kathy; Scott, Michael

**Cc:** Elkins, Scott

**Subject:** FW: Station blackout questions

**Importance:** High

Kathy, Mike;

I'm thinking NUREG-1776 (Regulatory Effectiveness of the Station Blackout Rule) was done by the predecessor to your division, probably under Scott's branch. I need help answering the reporter's four questions below. Thanks very much.

Scott

**From:** Mike Soraghan [mailto:msoraghan@eenews.net]  
**Sent:** Thursday, March 17, 2011 6:06 PM  
**To:** Burnell, Scott  
**Subject:** Station blackout questions

Mr. Burnell,

Thank you for taking my call a moment ago. I am looking at doing a story on station black out, with a little on seismic, that looks at all u.s. plants.

My simplest question is whether there is a list of the design basis each of the 104 reactors must meet in terms of what magnitude earthquake they must be able to withstand. I've been told that's not likely, so I'm pulling the information from news reports.

I have the 2000 report (attached) "Regulatory Effectiveness of the Station Blackout Rule." I've been looking at this, particularly the plant-by-plant chart, and I'm seeking some guidance.

First, has there been any update to these numbers?

"Coping time in hours" – is that the amount of battery power? And is it the amount the plant has, or is required to have?

"Loss of Power events" – If a combined plant with two reactors lists two events, did each shut down for a total of four?

Also, is there updated figures for the "loss of power events?"

Thank you,

**Mike Soraghan**

Reporter

[msoraghan@eenews.net](mailto:msoraghan@eenews.net)

202-446-0423 (desk)

(b)(6) (cell)

(b)(6) Google Voice)

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**Orlikowski, Robert**

---

**From:** Krsek, Robert  
**Sent:** Tuesday, March 22, 2011 10:03 AM  
**To:** Kunowski, Michael  
**Cc:** Cassidy, John; Barclay, Kevin  
**Subject:** Two Updated Items

- 1) The licensee is now stepping away from saying the I-131 in Sunday's rain water is from Japan...more to follow on this in the future....
- 2) The licensee will be retracting the Door-3 Event Notification from January 2011 sometime today. The licensee's final HELB/Gothic analysis shows that the Cardox room and the B EDG room will only be in a mild environment (<116F) therefore all equipment would have functioned sat.

Thanks,

Robert G. Krsek  
Senior Resident Inspector  
Kewaunee Power Station  
Office: 920.388.3156  
Cell: (b)(6)

PP/84



**Lee, Richard**

---

**From:** Dacus, Eugene  
**Sent:** Tuesday, March 22, 2011 6:38 PM  
**To:** Santiago, Patricia; Gibson, Kathy  
**Cc:** Uhle, Jennifer; Weber, Michael; Sheron, Brian; Lee, Richard  
**Subject:** RE: House E&C request  
**Attachments:** image001.jpg

Thanks Patricia.

---

**From:** Santiago, Patricia  
**Sent:** Tuesday, March 22, 2011 6:36 PM  
**To:** Gibson, Kathy; Dacus, Eugene  
**Cc:** Uhle, Jennifer; Weber, Michael; Sheron, Brian; Lee, Richard  
**Subject:** Re: House E&C request

Yes we have it marked and may need to zip the file. We will send it first thing tomorrow morning.

Sent from an NRC BlackBerry

Patricia Santiago

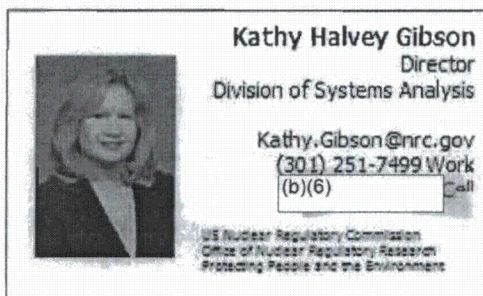
(b)(6)

---

**From:** Gibson, Kathy  
**To:** Dacus, Eugene  
**Cc:** Uhle, Jennifer; Weber, Michael; Sheron, Brian; Santiago, Patricia; Lee, Richard  
**Sent:** Tue Mar 22 15:41:19 2011  
**Subject:** RE: House E&C request

I have forwarded the request to the staff.

Richard/Pat: Please coordinate with Eugene on this request.



---

**From:** Dacus, Eugene  
**Sent:** Tuesday, March 22, 2011 3:33 PM  
**To:** Sheron, Brian  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Weber, Michael  
**Subject:** RE: House E&C request

Thanks Brian

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 3:17 PM

PP/85

**To:** Dacus, Eugene  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Weber, Michael  
**Subject:** RE: House E&C request

Probably not. We need to mark it "DRAFT." Call Kathy Gibson. Her staff can get it to you.

---

**From:** Dacus, Eugene  
**Sent:** Tuesday, March 22, 2011 3:09 PM  
**To:** Sheron, Brian  
**Cc:** Powell, Amy; Lund, Louise  
**Subject:** RE: House E&C request

Thanks Brian. Is there a reason we cannot provide the information to Congress?

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 2:58 PM  
**To:** Dacus, Eugene  
**Cc:** Powell, Amy; Lund, Louise  
**Subject:** RE: House E&C request

During the briefing I gave to House staffers last week, I referred to the SOARCA analysis of Peach Bottom. I did not mention relicensing or license renewal.

The SOARCA results are not yet publicly available.

---

**From:** Dacus, Eugene  
**Sent:** Tuesday, March 22, 2011 2:48 PM  
**To:** Sheron, Brian  
**Cc:** Powell, Amy; Lund, Louise  
**Subject:** FW: House E&C request

Brian,

Help. One of the staffers you briefed last week has asked for some documentation. See trail below.

Grrr

---

**From:** Lund, Louise  
**Sent:** Tuesday, March 22, 2011 10:14 AM  
**To:** Dacus, Eugene  
**Cc:** Galloway, Melanie; Holian, Brian  
**Subject:** RE: House E&C request

Gene,

Brian H. brings up a good point. You may want to close the loop with Brian Sheron to see if he was referring to the SAMA reviews or the SORCA.

Louise

---

**From:** Holian, Brian  
**Sent:** Tuesday, March 22, 2011 9:59 AM  
**To:** Dacus, Eugene; Lund, Louise



**Cc:** Galloway, Melanie  
**Subject:** Re: House E&C request

I believe sheron is talking about SORCA reviews. These were done independent of license renewal. PB was one plant looked at in depth

---

**From:** Dacus, Eugene  
**To:** Lund, Louise  
**Cc:** Holian, Brian  
**Sent:** Mon Mar 21 16:49:47 2011  
**Subject:** RE: House E&C request

Thanks Louise. Really appreciate your help on this. You always come through for us.

---

**From:** Lund, Louise  
**Sent:** Monday, March 21, 2011 4:47 PM  
**To:** Dacus, Eugene  
**Cc:** Holian, Brian  
**Subject:** RE: House E&C request

Gene,

I talked with Sam Lee (DRA), and we both think Brian was referring to the SAMA (Severe Accident Mitigation Alternatives) analysis in the plant-specific supplement to the Environmental Impact Statement that DLR issues as part of the license renewal process. It is publicly available, and contained in Section 5 of the following link on our web page to the Supplemental EIS:

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement10/>

Louise

---

**From:** Dacus, Eugene  
**Sent:** Monday, March 21, 2011 4:17 PM  
**To:** Lund, Louise  
**Subject:** FW: House E&C request

Louise,

I hate to bug you, but I don't have a contact for PB. The e-mail below is from a staffer on the House Energy and Commerce Committee. He's asking for data relating to the Peach Bottom relicensing.

---

**From:** Baran, Jeff [<mailto:Jeff.Baran@mail.house.gov>]  
**Sent:** Friday, March 18, 2011 4:56 PM  
**To:** Powell, Amy  
**Cc:** Dotson, Greg; Cassady, Alison  
**Subject:** Follow-up

Hi Amy,

We had a very informative discussion with Brian Sheron earlier. Thanks for helping to set that up. He mentioned that, for the Peach Bottom license renewals, NRC ran several scenarios as part of a risk assessment to calculate the consequences of certain severe events. We're interested in reviewing the documentation regarding these scenarios. If the document(s) is/are on ADAMS and you can point me in the right direction, that'd be great. If it's not publicly available, we'd still be very interested in getting copies of the documents next week.

Feel free to call if you have any questions.

Thanks,

Jeff

## Scott, Michael

---

**From:** Scott, Michael  
**Sent:** Tuesday, March 22, 2011 12:14 PM  
**To:** 'RMTPACTSU\_CRC@ofda.gov'  
**Subject:** Re: TA for Michael Scott

Got it - at airport all okay. Thanks!

Sent from my NRC blackberry

Michael Scott

(b)(6)

Ex 2

---

**From:** RMTPACTSU\_CRC <[RMTPACTSU\\_CRC@ofda.gov](mailto:RMTPACTSU_CRC@ofda.gov)>  
**To:** Scott, Michael  
**Cc:** RMTPACTSU\_ELNRC <[RMTPACTSU\\_ELNRC@ofda.gov](mailto:RMTPACTSU_ELNRC@ofda.gov)>  
**Sent:** Tue Mar 22 10:57:46 2011  
**Subject:** FW: TA for Michael Scott

See below for Michael Scott's completed TA.

Katie Johnston  
Pacific Tsunami and Japan Earthquake Response Management Team  
USAID/DHCA/OFDA  
[Rmtpactsu\\_crc@ofda.gov](mailto:Rmtpactsu_crc@ofda.gov)  
202-712-0036

---

**From:** RMTPACTSU\_AC  
**Sent:** Tuesday, March 22, 2011 10:34 AM  
**To:** RMTPACTSU\_CRC  
**Subject:** FW: TA for Michael Scott

---

**From:** Friedman, Ara  
**Sent:** Tuesday, March 22, 2011 10:30 AM  
**To:** RMTPACTSU\_AC  
**Cc:** travel; [USAID@MANASSASTRAVEL.COM](mailto:USAID@MANASSASTRAVEL.COM)  
**Subject:** TA for Michael Scott

Hi Surin,

Please see attached for approved TA for Michael Scott leaving for Japan today. Manassas Travel will issue his ticket shortly. Please let us know if you have any questions. Thanks!

Ara Friedman  
Program Support Specialist  
USAID/Office of Foreign Disaster Assistance  
529 14th Street NW, Suite 700  
Washington, D.C. 20045  
(202) 661-9308

(b)(6)

(bb) Ex 6

PP/86

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Tuesday, March 22, 2011 3:10 PM  
**To:** Zaki, Tarek  
**Subject:** Re: No word?

Great - thanks

Sent from my NRC blackberry  
Michael Scott

(b)(6)

---

**From:** Zaki, Tarek  
**To:** Scott, Michael  
**Sent:** Tue Mar 22 15:09:14 2011  
**Subject:** RE: No word?

Just spoke with her. We'll postpone until you come back. Take care. Tarek

---

**From:** Scott, Michael  
**Sent:** Tuesday, March 22, 2011 3:06 PM  
**To:** Zaki, Tarek  
**Cc:** Williams, Barbara  
**Subject:** Re: No word?

Tarek: I sent Barbara Williams an email proposing to postpone to late april - no reply so far. Pls make contact with her before deciding fate of training. Think it better I be there. Thanks

Sent from my NRC blackberry  
Michael Scott

(b)(6)

---

**From:** Zaki, Tarek  
**To:** Scott, Michael  
**Sent:** Tue Mar 22 15:02:08 2011  
**Subject:** FW: No word?

FYI - I responded earlier but didn't cc you (didn't want to clog your email box). BTW, I assume the DISC is on so I sent a reminder to NARB staff. Thanks. Tarek

---

**From:** Zaki, Tarek  
**Sent:** Tuesday, March 22, 2011 2:06 PM  
**To:** Spencer, Ruth  
**Cc:** Stout, Kathleen  
**Subject:** RE: No word?

Nothing yet. I'll let you know as soon as I hear from them. Thanks. Tarek

(btw (b)(6) that's why I didn't cc him)

PP/87

**From:** Spencer, Ruth  
**Sent:** Tuesday, March 22, 2011 1:51 PM  
**To:** Scott, Michael; Zaki, Tarek  
**Cc:** Stout, Kathleen  
**Subject:** No word?

Hi there --

We've heard nothing further from NRO's PMDA about what cuts RES might be facing in the New Reactors Business Line.

Did y'all hear anything final on the NGNP numbers?

Thanks,

***Ruth***

\*\*\*\*\*

Ruth Spencer, NRC/RES

Mailstop C6-D20M, Washington, DC 20555-0001

Phone 301 251 7921 FAX 301 251 7426

eMail: [Ruth.Spencer@NRC.GOV](mailto:Ruth.Spencer@NRC.GOV)

Office Location: C06-D19

<< OLE Object: Picture (Device Independent Bitmap) >>

**Lee, Richard**

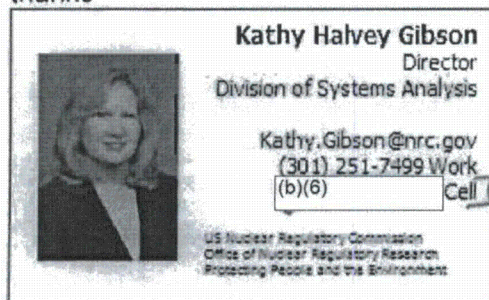
---

**From:** Gibson, Kathy  
**Sent:** Tuesday, March 22, 2011 3:36 PM  
**To:** Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Scott, Michael; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Cc:** Armstrong, Kenneth; Ramirez, Annie  
**Subject:** FW: ACTION: DRAFT SRM - COMGBJ-11-0002 (NRC Actions Following the Events in Japan)  
**Attachments:** gbj11-0002.srm.docx; Kathy Halvey Gibson.vcf; image001.jpg  
**Importance:** High

Please provide any comments to Ken and Annie ASAP, I will consider any comments received prior to **4pm today**.

Comments should be limited to "ensure that the Commission decision is clear and understandable and that resource, scheduler, and legal constraints are properly considered".

thanks



---

**From:** Rini, Brett  
**Sent:** Tuesday, March 22, 2011 3:27 PM  
**To:** Case, Michael; Richards, Stuart; Gibson, Kathy; Elkins, Scott; Coe, Doug; Coyne, Kevin  
**Cc:** Rivera-Lugo, Richard; Armstrong, Kenneth; Ibarra, Jose; Ramirez, Annie; Sheron, Brian; Uhle, Jennifer  
**Subject:** ACTION: DRAFT SRM - COMGBJ-11-0002 (NRC Actions Following the Events in Japan)  
**Importance:** High

Division Directors,

Please see the attached SRM regarding follow-up actions from the events in Japan. As indicated below, "as provided in the Internal Commission Procedures, the staff is "...afforded an opportunity to review the SRM to ensure that the Commission decision is clear and understandable and that resource, scheduler, and legal constraints are properly considered."

Please send me any major problems that you see with the attached by **COB today**.

Thank you in advance for addressing this (additional) short turnaround request.

Brett

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 2:04 PM  
**To:** Rini, Brett

PP/88

**Subject:** FW: DRAFT SRM - COMGBJ-11-0002 (NRC Actions Following the Events in Japan)

**Importance:** High

Brett, please have division review and let me know if any major problems or show-stoppers.

---

**From:** RidsEdoDraftSrmVote Resource

**Sent:** Tuesday, March 22, 2011 1:58 PM

**To:** Ash, Darren; Borchardt, Bill; Boyd, Lena; Buckley, Patricia; Clarke, Deanna; Cohen, Miriam; EDO\_Staff\_Assistants; Flory, Shirley; Fry, Jeannie; Garland, Stephanie; Johnson, Michael; Mamish, Nader; Matakas, Gina; Miles, Patricia; Miller, Charles; Owen, Lucy; Riddick, Nicole; RidsAdmMailCenter Resource; RidsCsoMailCenter Resource; RidsFsmeOd Resource; RidsHrMailCenter Resource; RidsNmssOd Resource; RidsNroMailCenter Resource; RidsNrrOd Resource; RidsNsirMailCenter Resource; RidsOeMailCenter Resource; RidsOiMailCenter Resource; RidsOIS Resource; RidsResOd Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; RidsSbcrMailCenter Resource; Thomas, Loretta; Virgilio, Martin; Walker, Dwight; Weber, Michael

**Subject:** FW: DRAFT SRM - COMGBJ-11-0002 (NRC Actions Following the Events in Japan)

**Importance:** High

---

**From:** Wright, Darlene

**Sent:** Tuesday, March 22, 2011 1:19 PM

**To:** Baggett, Steven; Bates, Andrew; Batkin, Joshua; Baval, Rochelle; Blake, Kathleen; Bozin, Sunny; Bradford, Anna; Bubar, Patrice; Bupp, Margaret; Burns, Stephen; Chairman Temp; Clark, Lisa; Coggins, Angela; Cordes, John; Crawford, Carrie; Davis, Roger; Fopma, Melody; Franovich, Mike; Gibbs, Catina; Hackett, Edwin; Hart, Ken; Harves, Carolyn; Henderson, Karen; Herr, Linda; Hipschman, Thomas; Hudson, Sharon; Joosten, Sandy; KLS Temp; Kock, Andrea; Laufer, Richard; Lepre, Janet; Loyd, Susan; Mamish, Nader; Marshall, Michael; Monninger, John; Moore, Scott; Orders, William; Pace, Patti; Poole, Brooke; Reddick, Darani; RidsEdoDraftSrmVote Resource; Rothschild, Trip; Savoy, Carmel; Sharkey, Jeffry; Shea, Pamela; Snodderly, Michael; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, GEA; Temp, WCO; Temp, WDM; Thoma, John; Vietti-Cook, Annette; Warren, Roberta; Zorn, Jason; Tadesse, Rebecca; Joosten, Sandy; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Muessle, Mary; Nieh, Ho; Ostendorff, William; Warnick, Greg; Apostolakis, George; Pearson, Laura; Lui, Christiana; Lisann, Elizabeth

**Cc:** Lewis, Antoinette

**Subject:** DRAFT SRM - COMGBJ-11-0002 (NRC Actions Following the Events in Japan)

**Importance:** High

The attached file contains a draft SRM which is being circulated for Commission review. Your response is requested as soon as practical today. As provided in the Internal Commission Procedures, the staff is "...afforded an opportunity to review the SRM to ensure that the Commission decision is clear and understandable and that resource, schedular, and legal constraints are properly considered." Please provide any responses to Ken Hart (KRH), Richard Laufer (RJL), Rochelle Baval (RCB5), and Pam Shea (PWS).

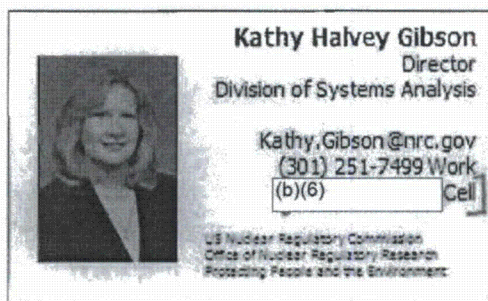


## Lee, Richard

---

**From:** Gibson, Kathy  
**Sent:** Tuesday, March 22, 2011 7:18 PM  
**To:** Santiago, Patricia; Hoxie, Chris; Wagner, Katie; Lee, Richard; Ghosh, Tina  
**Cc:** Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek; Schaperow, Jason  
**Subject:** RE: Station blackout questions  
**Attachments:** Kathy Halvey Gibson2.vcf; image001.jpg

I'm trying to deflect requests away from your staff. Katie is working this, so unless your guys hear from her, they don't need to do anything on this. Thanks



---

**From:** Santiago, Patricia  
**Sent:** Tuesday, March 22, 2011 6:47 PM  
**To:** Hoxie, Chris; Wagner, Katie; Lee, Richard; Ghosh, Tina  
**Cc:** Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek; Gibson, Kathy; Schaperow, Jason  
**Subject:** Re: Station blackout questions

I think I asked Jason earlier and later today asked Tina to follow up with him or Charlie. Thx

Sent from an NRC BlackBerry  
Patricia Santiago  
(b)(6)

---

**From:** Hoxie, Chris  
**To:** Wagner, Katie; Lee, Richard  
**Cc:** Santiago, Patricia; Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek; Gibson, Kathy  
**Sent:** Tue Mar 22 17:59:53 2011  
**Subject:** RE: Station blackout questions

The regulatory effectiveness NUREG was done by the part of RES that used to be AEOD. I don't know where they reside now. PRA or SOARCA should be the best source of info in RES. For plant information either PRA or DE in NRR should be the cognizant people.

Chris L. Hoxie, PhD  
Branch Chief, Code Development  
Division of Systems Analysis  
Office of Nuclear Regulatory Research  
United States Nuclear Regulatory Commission  
Room: CH3-D04  
Phone: 301-251-7562  
Cell: (b)(6)

PP/89



---

**From:** Wagner, Katie  
**Sent:** Tuesday, March 22, 2011 12:52 PM  
**To:** Lee, Richard  
**Cc:** Santiago, Patricia; Hoxie, Chris; Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek; Gibson, Kathy  
**Subject:** RE: Station blackout questions

All,

In case it helps anyone here is information about NUREG-1776:

ADAMS: ML032450542.

NRC Project Manager was William S. Raughley

Foreword was signed by:  
Farouk Eltawila, Director  
Division of Systems Analysis and Regulatory Effectiveness  
Office of Nuclear Regulatory Research

Thanks,  
Katie

---

**From:** Lee, Richard  
**Sent:** Tuesday, March 22, 2011 12:46 PM  
**To:** Wagner, Katie  
**Cc:** Santiago, Patricia; Hoxie, Chris; Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek  
**Subject:** RE: Station blackout questions

Katie:

Let me ask DRA, Kevin Coyne on this. There is PRA stuff in here.

Richard

---

**From:** Wagner, Katie  
**Sent:** Tuesday, March 22, 2011 12:13 PM  
**To:** Santiago, Patricia; Hoxie, Chris; Elkins, Scott; Bush-Goddard, Stephanie; Zaki, Tarek  
**Cc:** Lee, Richard  
**Subject:** Station blackout questions  
**Importance:** High

All,

Do any of you know who the lead should be to answer these questions about station blackout (the questions are from a reporter see the highlighted section at the bottom of this email)? It may be another RES division or one in NRR?

Thank you,

Katie Wagner  
DSA POC for Japan-Related Requests

---

**From:** Gibson, Kathy  
**Sent:** Tuesday, March 22, 2011 11:59 AM  
**To:** Wagner, Katie

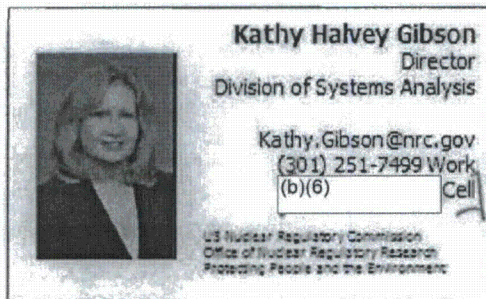
**Cc:** Lee, Richard  
**Subject:** FW: Station blackout questions  
**Importance:** High

See if you can find this report in ADAMS and who was the cognizant office, branch, and staff.

If that doesn't work or in parallel, send an email request to our BCs and see if any of them know who the lead should be to answer these questions.

It may be another RES division or NRR, I am not sure.

If you need help processing this, see me or Richard Lee.



---

**From:** Burnell, Scott  
**Sent:** Tuesday, March 22, 2011 9:49 AM  
**To:** Gibson, Kathy; Scott, Michael  
**Cc:** Elkins, Scott  
**Subject:** FW: Station blackout questions  
**Importance:** High

Kathy, Mike;

I'm thinking NUREG-1776 (Regulatory Effectiveness of the Station Blackout Rule) was done by the predecessor to your division, probably under Scott's branch. I need help answering the reporter's four questions below. Thanks very much.

Scott

---

**From:** Mike Soraghan [mailto:msoraghan@eenews.net]  
**Sent:** Thursday, March 17, 2011 6:06 PM  
**To:** Burnell, Scott  
**Subject:** Station blackout questions

Mr. Burnell,

Thank you for taking my call a moment ago. I am looking at doing a story on station black out, with a little on seismic, that looks at all u.s. plants.

My simplest question is whether there is a list of the design basis each of the 104 reactors must meet in terms of what magnitude earthquake they must be able to withstand. I've been told that's not likely, so I'm pulling the information from news reports.

I have the 2000 report (attached) "Regulatory Effectiveness of the Station Blackout Rule." I've been looking at this, particularly the plant-by-plant chart, and I'm seeking some guidance.

First, has there been any update to these numbers?

"Coping time in hours" – is that the amount of battery power? And is it the amount the plant has, or is required to have?

"Loss of Power events" – if a combined plant with two reactors lists two events, did each shut down for a total of four?

Also, is there updated figures for the "loss of power events?"

Thank you,

**Mike Soraghan**

Reporter

[msoraghan@eenews.net](mailto:msoraghan@eenews.net)

202-446-0423 (desk)

(b)(6) (cell)

(b)(6) (Google Voice)

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**Lee, Richard**

---

**From:** Parks, Cecil V. [parkscv@ornl.gov]  
**Sent:** Tuesday, March 22, 2011 8:48 AM  
**To:** Lee, Richard; Wagner, John C.  
**Cc:** Aissa, Mourad; Gauld, Ian C.  
**Subject:** RE: Peach Bottom

Some heuristic info:

When we certified "wet" casks for transport back in the early days, they were usually designed for 90 days cooling minimum.

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

**From:** Lee, Richard [mailto:Richard.Lee@nrc.gov]  
**Sent:** Tuesday, March 22, 2011 8:37 AM  
**To:** Wagner, John C.  
**Cc:** Aissa, Mourad; Parks, Cecil V.; Gauld, Ian C.  
**Subject:** RE: Peach Bottom

John:

Thanks for your further thinking on this. If someone asks, your assessment at this time, is a good answer. At this time, let's leave it as it. It is an important message here, MOST LIKELY FOR ALL SFPs, we CANNOT UNLOAD the entire spent fuel pool inventories to dry casks.

Richard

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

**From:** Wagner, John C. [mailto:wagnerjc@ornl.gov]  
**Sent:** Tuesday, March 22, 2011 8:23 AM  
**To:** Lee, Richard; Gauld, Ian C.  
**Cc:** Aissa, Mourad; Parks, Cecil V.  
**Subject:** RE: Peach Bottom

Richard,

I don't readily know the answer to your question, but will look into it. My initial guess is that in order to maintain the limit on peak clad temperature in dry storage, some period of cooling will be required even for a single assembly (if we are assuming dry storage). A thought that may be worthy of fleshing out is "what about wet cask storage?". I cannot comment at this point on the merits of investigating that option, but I do believe there are one or more utilities that do wet transfers among pools and sites. Let me know if you want to have someone look into this a bit.

Thanks,

John C. Wagner, PhD  
Oak Ridge National Laboratory  
Phone: (865) 241-3570  
Mobile: (b)(6)

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

**From:** Lee, Richard [mailto:Richard.Lee@nrc.gov]  
**Sent:** Monday, March 21, 2011 2:01 PM  
**To:** Gauld, Ian C.

PP/90

Cc: Aissa, Mourad; Wagner, John C.; Parks, Cecil V.  
Subject: RE: Peach Bottom

Thanks, Ian:

It is much clearer now. Earlier, I thought one can remove all the fuel. But it is not the case.

Another hypothetical question, "If one has no limit on cost, availability of number of casks and siting for dry casks storage, can one remove the rest of the remaining assemblies?" The least amount one can load into a cask is one bundle per cask (can it take a heat load and shielding requirement?).

Richard

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

From: Gauld, Ian C. [mailto:gauldi@ornl.gov]  
Sent: Monday, March 21, 2011 1:53 PM  
To: Lee, Richard  
Cc: Aissa, Mourad; Wagner, John C.; Parks, Cecil V.  
Subject: RE: Peach Bottom

Richard

Figures adjusted and annotated. The pool inventory in 2001 (assemblies with pool locations identified by utility) was actually closer to 3000 - this number is consistent with our 2003 PB pool MELCOR analysis. Note when data are plotted by cask, the 2 curves are similar over first ~8 casks. This is because fuel 3-5 years old is loaded at half cask capacity, but has a heat load about twice that of the hottest 5+ year old fuel, so net reduction BY CASK is similar.

Ian

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

From: Lee, Richard [mailto:Richard.Lee@nrc.gov]  
Sent: Monday, March 21, 2011 8:46 AM  
To: Wagner, John C.; Parks, Cecil V.  
Cc: Gauld, Ian C.; Aissa, Mourad  
Subject: RE: Peach Bottom

John, Cecil & Ian:

Thanks for generating these results so quickly.

In looking at the VGs, please let me know on VG4, after removing all 3300 assemblies from the SFP, why is there still radionuclide activities left in the pool?

Richard

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

From: Wagner, John C. [mailto:wagnerjc@ornl.gov]  
Sent: Monday, March 21, 2011 8:14 AM  
To: Parks, Cecil V.; Lee, Richard  
Cc: Gauld, Ian C.  
Subject: RE: Peach Bottom

All,

A couple of quick comments:

- 1) on the first slide, e.g., bullet "Maximum heat reduction achievable ~82% (remove all 5+ year assemblies)". This does not mean an ~82% reduction, but rather that the heat load can be reduced to ~82% of its original total head load (i.e., an ~18% reduction).
- 2) a nice next step at some point would be to look at this in terms of days to pool boiling with loss of cooling (or something similar).

John C. Wagner, PhD  
Oak Ridge National Laboratory  
Phone: (865) 241-3570  
Mobile: (b)(6)

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

From: Parks, Cecil V.  
Sent: Monday, March 21, 2011 7:46 AM  
To: Lee, Richard (Richard.Lee@nrc.gov)  
Cc: Gauld, Ian C.; Wagner, John C.  
Subject: FW: Peach Bottom

Richard:

Take a look at these and provide us some feedback. Note that this is not based on current inventory, but rather what we had from 2003. If you can work to get us up-to-date inventory, we can update. Also, is this the type and form of the info you want. Note we looked (quickly and briefly) at a scenario where storage casks with thermal limits that would allow 3-y cooled fuel to be added and guessed at an assembly inventory in those postulated casks at 34 assemblies.

Again, we can improve this both in terms of timeliness of data and accuracy (e.g., how much could be put in cask for 3-y old fuel?) if you would like. Also, we can look at risk by looking at operational issues such as dose to workers and additional dose for site based on increased casks on pads. Operational risks with loading high-volume of casks can be assessed also, but need to discuss that more.

Cecil

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

From: Gauld, Ian C.  
Sent: Sunday, March 20, 2011 6:57 PM  
To: Parks, Cecil V.  
Subject: RE: Peach Bottom

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

From: Parks, Cecil V.  
Sent: Sunday, March 20, 2011 9:54 AM  
To: Gauld, Ian C.  
Cc: Wagner, John C.  
Subject: RE: Peach Bottom  
Importance: High

Ian:

Looks like you have a reasonable pool inventory, but the plots need to be more like we discussed this morning (impact on pool of removing assemblies vs. cask number on x axis). As I mentioned, on y-axis, I can see

having plots of "fraction of pool assemblies", "fraction of decay heat", "fraction of volatile radionuclides", "fraction of FPs", etc. Two sets of plots would be nice: one where you assume existing cask fleet with 5-y cooling required and one set where you assume 3-y cooling required (and reduced loading). In each case the casks should be loaded casks with hottest allowed (e.g., 5 y) moving to coolest in pool.

Thanks,  
Cecil

PS - attached is e-mail sent from Richard. Call if you interpret it differently than we've discussed.

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

From: Gauld, Ian C.  
Sent: Saturday, March 19, 2011 6:29 PM  
To: Parks, Cecil V.  
Cc: Wagner, John C.  
Subject: RE: Peach Bottom

Attached are figures of pool heat loads. See if this makes any sense and is something Richard could use. This is based entirely on the data from our 2003 analysis, but I don't think values would change much at all with current discharge data. The 2003 operating data we got actually shows higher discharge burnups than shown in the 2007 nuclear reactor handbook. The other thing is that the hottest assemblies in this case already had 88 days cooling. Of course the overall heat loads will increase if we pushed it up to say, 30 days or less cooling, but trends would be similar. I can also plot the cumulative activities (Ci) the same way, but trends will be much the same I expect. This is just a swag. Let me know what you think of this presentation of data, if we need to update with shorter decay times (or longer - up to next outage), and for full pool inventory (3700 vs. current 3000), and what else we might add. Same data shown as a percentage of the total might be very instructive.

Was not able to find anything better in ADAMS. They did do several dry cask loading operations in 2009 and 2010, so its not clear what the current inventory is. I suspect what we have now is close.

Ian

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

From: Parks, Cecil V.  
Sent: Saturday, March 19, 2011 2:51 PM  
To: Gauld, Ian C.  
Cc: Wagner, John C.  
Subject: RE: Emailing: Peach\_Bottom.pdf

Have you checked on line or within NRC ADAMS to get pool size. Often pool capacity info is in public.

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

From: Gauld, Ian C.  
Sent: Saturday, March 19, 2011 2:40 PM  
To: Parks, Cecil V.  
Cc: Wagner, John C.  
Subject: Emailing: Peach\_Bottom.pdf

The peach bottom pool was the first source term analysis we did to support MELCOR accident analyses (2003). We have data for every assembly in the pool - at the time. It appears source data were prepared for each batch of fuel. May be able to use these data, but need to update for additional assemblies. Does anyone have the pool capacity? I'll look this over with aim of getting data in some useful form. -Ian

**Scott, Michael**

---

**From:** RMTPACTSU\_ELNRC [RMTPACTSU\_ELNRC@ofda.gov]  
**Sent:** Tuesday, March 22, 2011 7:35 AM  
**To:** Scott, Michael  
**Subject:** Today's Travel

Michael,

During turnover this morning, I heard that you had additional questions regarding your trip today. I would like to help in any way that I can. USAID's process isn't as clean-cut as the NRCs but we are working through it. ☺ I can be reached at

(b)(6) Ex 6

Thanks!  
Michael I. Dudek

---

**From:** Scott, Michael [mailto:Michael.Scott@nrc.gov]  
**Sent:** Monday, March 21, 2011 10:01 PM  
**To:** RMTPACTSU\_ELNRC  
**Subject:** RE: TAs for NRC travelers tomorrow!

Me again. I'm locked out of E2 for this trip. Thought I had the password but evidently not. Can you please provide me the phone number to call to get it unlocked?

Thanks!

Mike

---

**From:** RMTPACTSU\_ELNRC [mailto:RMTPACTSU\_ELNRC@ofda.gov]  
**Sent:** Monday, March 21, 2011 9:33 PM  
**To:** Scott, Michael  
**Subject:** FW: TAs for NRC travelers tomorrow!

Hi Scott,

I believe that you should already have the first attached travel authorization from the NRC Ops Center, but I'm sending it along just in case. The approvals appear to be on pages 5 and 7. Per the second attached email, NRC staff deploying to Japan should report to their hotel, get rest, report to the US Embassy in the morning. I also found your travel reservations attached to two additional email (third and fourth attachments). I'll call you in a little bit.

I hope this helps! Travel safely! ☺

Cheers,  
Leigh

---

**From:** RMTPACTSU\_ELNRC  
**Sent:** Monday, March 21, 2011 5:16 PM  
**To:** LIA11.Hoc@nrc.gov; LIA01.Hoc@nrc.gov; LIA02 Hoc (LIA02.Hoc@nrc.gov); LIA07.Hoc@nrc.gov; lia08.hoc@nrc.gov  
**Cc:** et07.hoc@nrc.gov  
**Subject:** FW: TAs for NRC travelers tomorrow!

FYI



**Lee, Richard**

---

**From:** Elkins, Scott  
**Sent:** Tuesday, March 22, 2011 7:44 AM  
**To:** Santiago, Patricia  
**Cc:** Lee, Richard  
**Subject:** RE: SOARCA data requested for briefing to Secretary of Energy

Don't know but from reading Shawn's e-mail I think asap since the briefing to S-1 is today.

---

**From:** Santiago, Patricia  
**Sent:** Tuesday, March 22, 2011 7:42 AM  
**To:** Elkins, Scott  
**Subject:** Re: SOARCA data requested for briefing to Secretary of Energy

I am talkin to richard to make a recommendation. When I'd a decision needed.

Sent from an NRC BlackBerry  
Patricia Santiago

(b)(6)

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**From:** Elkins, Scott  
**To:** Santiago, Patricia  
**Sent:** Tue Mar 22 07:36:54 2011  
**Subject:** FW: SOARCA data requested for briefing to Secretary of Energy

Do you see an reason not to allow SNL to send this to DOE?  
Thanks,  
Scott

---

**From:** Sheron, Brian  
**Sent:** Tuesday, March 22, 2011 7:33 AM  
**To:** Elkins, Scott  
**Cc:** Tinkler, Charles; Uhle, Jennifer; Gibson, Kathy  
**Subject:** FW: SOARCA data requested for briefing to Secretary of Energy

You're acting. Any problem with SNL giving this to DOE?

---

**From:** Burns, Shawn [<mailto:spburns@sandia.gov>]  
**Sent:** Tuesday, March 22, 2011 3:58 AM  
**To:** Sheron, Brian; 'kathy.wagner@nrc.gov'  
**Cc:** Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles  
**Subject:** SOARCA data requested for briefing to Secretary of Energy

Brian and Kathy,

I prepared the attached to fulfill a request for information for a briefing to be given to the Secretary of Energy on Tuesday, March 22, 2011 regarding the Fukushima event. The slides reflect data taken directly from the Peach Bottom long term station blackout analysis that Sandia prepared for the SOARCA project and are intended to show various levels of core damage progression in this type of event as well as potential environmental releases. John Kelly (DOE/NE-7) sent Brian an e-mail regarding this request at approximately 11:00 EDT on March 21.

I am requesting NRC approval to forward this information to Idaho National Laboratories so that it can be included in the briefing they are preparing for the Secretary. At this time I do not know what the scheduled time for the briefing is on the 22<sup>nd</sup>.

Best regards,

Shawn

~~~~~  
Shawn P. Burns, Ph.D., P.E.
Manager, Risk and Reliability Analysis
Department 6761

Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185-0748

Phone: (505)844-6200

Mobile: (b)(6)

Fax: (505)844-2829

e-mail: spburns@sandia.gov

Web: <http://www.sandia.gov/ERN/nuclear-energy/index.html>

Lee, Richard

From: Elkins, Scott
Sent: Tuesday, March 22, 2011 8:14 AM
To: Sheron, Brian
Cc: Tinkler, Charles; Uhle, Jennifer; Gibson, Kathy; Lee, Richard; Santiago, Patricia
Subject: RE: SOARCA data requested for briefing to Secretary of Energy

Brian, DSA has no problem with this being released as long as the slides are marked OUO.

From: Sheron, Brian
Sent: Tuesday, March 22, 2011 7:33 AM
To: Elkins, Scott
Cc: Tinkler, Charles; Uhle, Jennifer; Gibson, Kathy
Subject: FW: SOARCA data requested for briefing to Secretary of Energy

You're acting. Any problem with SNL giving this to DOE?

From: Burns, Shawn [<mailto:spburns@sandia.gov>]
Sent: Tuesday, March 22, 2011 3:58 AM
To: Sheron, Brian; 'kathy.wagner@nrc.gov'
Cc: Santiago, Patricia; Chang, Richard; Gauntt, Randall O; Pickering, Susan Y; Tinkler, Charles
Subject: SOARCA data requested for briefing to Secretary of Energy

Brian and Kathy,

I prepared the attached to fulfill a request for information for a briefing to be given to the Secretary of Energy on Tuesday, March 22, 2011 regarding the Fukushima event. The slides reflect data taken directly from the Peach Bottom long term station blackout analysis that Sandia prepared for the SOARCA project and are intended to show various levels of core damage progression in this type of event as well as potential environmental releases. John Kelly (DOE/NE-7) sent Brian an e-mail regarding this request at approximately 11:00 EDT on March 21.

I am requesting NRC approval to forward this information to Idaho National Laboratories so that it can be included in the briefing they are preparing for the Secretary. At this time I do not know what the scheduled time for the briefing is on the 22nd.

Best regards,

Shawn

~~~~~  
Shawn P. Burns, Ph.D., P.E.  
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P.O. Box 5800  
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e-mail: [spburns@sandia.gov](mailto:spburns@sandia.gov)

Web: <http://www.sandia.gov/ERN/nuclear-energy/index.html>

PP/93

## Hogan, Rosemary

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**From:** Case, Michael  
**Sent:** Wednesday, March 23, 2011 7:02 AM  
**To:** Hogan, Rosemary; Richards, Stuart  
**Subject:** FW: Re-evaluation of Safety at US NPPs  
**Attachments:** image001.emz; image003.emz; image004.png

FYI

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**From:** Makeig, Katy [mailto:KMakeig@atlintl.com]  
**Sent:** Tuesday, March 22, 2011 4:51 PM  
**To:** Valentin, Andrea; Uhle, Jennifer; Case, Michael; Holian, Brian  
**Subject:** Re-evaluation of Safety at US NPPs

Dear Directors,

I have just had a meeting with Barry Elliot (b)(6) who I believe you all know. He has signed up to be a consultant for my company, ATL. He suggested that I get in touch with the four of you to offer our services and ideas for the review of the domestic reactors that NRC is undertaking in light of the Japanese situation. To that end, I would like to share a letter that I sent to the NRC yesterday (see below).

I would like to have an opportunity to discuss some ideas that Barry has, and possibly bring along another member of our staff, Dr. P.T. Kuo, who is a former Director of NRR/DLR and has considerable seismic engineering experience. I will be calling you in the next couple of days to see if you are receptive to a short meeting.

In the meantime, thank you for any consideration you can give us.

Katy Makeig



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Gaithersburg, MD 20878-1461  
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Fax: 301.972.6904  
[WWW.ATLINTL.COM](http://WWW.ATLINTL.COM)

March 21, 2011

Dr. R. William Borchardt, Executive Director for Operations  
Dr. Eric Leeds, Director, Office of Nuclear Reactor Regulation (NRR)  
Dr. Brian Sheron, Director, Office of Nuclear Regulatory Research (RES)  
Dr. Catherine Haney, Director, Office of Nuclear Material Safety and Safeguards (NMSS)

U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852

Subject: President Obama's Request for U.S. Nuclear Reactor Safety Reviews

Last Thursday it was reported that President Obama asked the NRC for a comprehensive review of the safety of U.S. nuclear power plants in light of the events in Japan's Fukushima Dai-ichi plant. Senator Bernie Sanders, a member of the Environment and Public Works Committee, has called for an independent review by a special presidential commission with broad authority and a mandate to independently review the safety of every existing nuclear reactor and waste site in the United States. He also has called for the suspension of any new license renewal approvals. This will put a monumental burden on NRC resources.

Advanced Technologies and Laboratories International, Inc. (ATL) also is concerned about how events in Japan will affect the public's perception regarding the safety of nuclear power, the planned construction of new plants, and the approval of licenses to continue operation – beyond 40 and 60 years. We have been supporting the NRC for over 17 years. ***We stand poised to assist the NRC in their time-critical efforts to reassure the public of the safety of the domestic fleet.***

Our engineers are experienced in nuclear power plant construction, operation, aging, and decommissioning. Many of these experts are retired from the NRC, the Department of Energy, the utility industry, or the National Laboratories. They are subject matter experts in the areas of nuclear engineering, risk assessment, nuclear safety, health physics, nuclear physics, criticality, mechanical engineering, electrical engineering, structural engineering, materials science, corrosion, fatigue, fire safety engineering, spent fuel, time-limited aging analysis, failure analysis, metallurgy, instrumentation and controls, and chemistry. We also have expertise in seismic engineering and hydrology/hydrogeology that is specifically geared to the generation of nuclear power.

We just helped NRC/DLR complete the update to the Generic Aging Lessons Learned (GALL) Report. ATL has been performing safety audits of plants in the license renewal process for the last five years, with reviews of 12 plants and associated contributions to the Safety Evaluation Reports (SERs). In fact, our engineers recently have performed these safety reviews at Pilgrim, Beaver Valley, Diablo Canyon, and Three Mile Island, four of the top ten plants that NRC has ranked as sites with the highest risk of core damage from an earthquake. In addition, ATL engineers with probabilistic risk assessment (PRA) expertise were involved in the Independent Assessment of the Implementation of Corrective Actions at the Davis-Besse Nuclear Power Station (DBNPS) Unit 1 that concluded with a report in 2009 regarding the effectiveness of the actions taken to correct the issues associated with the reactor vessel head corrosion.

Our corporate offices are located in Gaithersburg, Maryland, which makes us immediately accessible to the NRC staff. I would be happy to meet with you at your convenience to discuss how we might be of assistance. Please contact me at my office at 301-515-6799 or by email at [kmakeig@atlintl.com](mailto:kmakeig@atlintl.com). I look forward to hearing from you.

Sincerely,

*Kathryn S. Makeig*

Kathryn S. Makeig, Director  
Environment and Nuclear Services  
ATL International, Inc.

Cc: Brian Holian, Director, NRC/DLR

**Katy Makeig**  
**Director of Nuclear and Environmental Services**  
**ATL International, Inc.**  
**555 Quince Orchard Road, Suite 500**  
**Gaithersburg, MD 20878**  
**301-515-6799 office**  
**(b)(6) cell**  
**301-972-6904 fax**  
**[kmakeig@atlintl.com](mailto:kmakeig@atlintl.com)**  
**[www.atlintl.com](http://www.atlintl.com)**

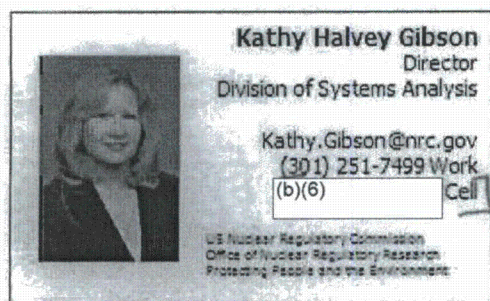
**Lee, Richard**

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**From:** Gibson, Kathy  
**Sent:** Wednesday, March 23, 2011 5:03 PM  
**To:** Wagner, Katie  
**Cc:** Lee, Richard  
**Subject:** RE: Ops Center Action Item for Ticketing  
**Attachments:** Kathy Halvey Gibson2.vcf; image001.jpg

Yes, and ask them to factor this information into their response.

Thanks



---

**From:** Wagner, Katie  
**Sent:** Wednesday, March 23, 2011 4:35 PM  
**To:** Gibson, Kathy  
**Cc:** Lee, Richard  
**Subject:** RE: Ops Center Action Item for Ticketing

Kathy,

Should I forward the attached table and Richard's response to George Deegan and Larry Camper in FSME?

Thanks, Katie

---

**From:** Lee, Richard  
**Sent:** Wednesday, March 23, 2011 4:02 PM  
**To:** Wagner, Katie  
**Cc:** Gibson, Kathy  
**Subject:** RE: Ops Center Action Item for Ticketing

Katie:

These are all long term related activities.

Most of the questions are related to decommissioning and entombment. If decommissioning is in FSME, then let them answer the question. Criteria for materials selection for entombment (developed by ORNL) is attached.

For the TMI-2, we need to go back ask someone on this. Would not be able to answer this for awhile.

Richard

PP/95



Regarding the best type of enclosure for the plant, does NRC have any thoughts? Do we have any regulations applicable to this condition or thoughts on the role of the regulatory authority in this decision?

-What licensing requirements apply to decommissioning and regulatory review of the decommissioning plan?

-What should the Japanese be considering with respect to criticality prevention and decay heat removal during the entombment period?

-The NRC's TMI fact sheet notes that the first manned entry into the Unit 2 reactor building occurred after a venting of Krypton in July 1980 (16 months after the accident). What actions occurred during those 16 months that could inform their planning?"

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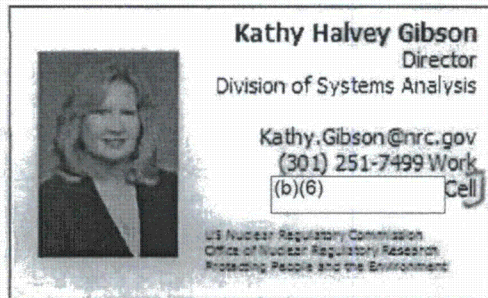
**From:** Wagner, Katie  
**Sent:** Wednesday, March 23, 2011 3:47 PM  
**To:** Lee, Richard  
**Subject:** FW: Ops Center Action Item for Ticketing

Most recent I have on this. . . they want answers by 1800 tonight

---

**From:** Gibson, Kathy  
**Sent:** Wednesday, March 23, 2011 1:53 PM  
**To:** Lee, Richard; Wagner, Katie  
**Subject:** FW: Ops Center Action Item for Ticketing

More info



---

**From:** Bowman, Gregory  
**Sent:** Wednesday, March 23, 2011 1:45 PM  
**To:** Richards, Stuart  
**Cc:** Case, Michael; Gibson, Kathy; Scott, Michael; Rini, Brett  
**Subject:** RE: Ops Center Action Item for Ticketing

Sorry if my e-mail wasn't clear...we only need a response to the four questions from the 11:23 am e-mail from RST01 Hoc.

I would recommend coordinating with George Deegan and Larry Camper in FSME. I was CC'd on the attached e-mail from Larry a little while ago, and it looks like they might be best equipped to cover most (or all) of the questions.

---

**From:** Richards, Stuart  
**Sent:** Wednesday, March 23, 2011 1:07 PM

**To:** Bowman, Gregory  
**Cc:** Case, Michael; Gibson, Kathy; Scott, Michael  
**Subject:** RE: Ops Center Action Item for Ticketing  
**Importance:** High

Greg

Are we trying to respond to all of the issues in Dan Dorman's e-mail, or just the items highlighted in the 11:23 am e-mail from RST01 Hoc ?

Thanks  
Stu

---

**From:** Bowman, Gregory  
**Sent:** Wednesday, March 23, 2011 12:08 PM  
**To:** Case, Michael; Richards, Stuart; Gibson, Kathy; Scott, Michael  
**Subject:** FW: Ops Center Action Item for Ticketing  
**Importance:** High

FYI – I just sent this information request from the Ops Center to Brett. I sent it to him because I wasn't sure which division in RES would be the right one to help with this, but I figured I'd pass it along to you, as well, given that the Ops Center is looking for a response by the end of the day.

---

**From:** Bowman, Gregory  
**Sent:** Wednesday, March 23, 2011 11:51 AM  
**To:** Rini, Brett; Deegan, George  
**Cc:** Frazier, Alan; Brock, Kathryn  
**Subject:** FW: Ops Center Action Item for Ticketing  
**Importance:** High

Brett and George,

We got the request below from the Ops Center. We think there should be one coordinated response back to the Ops Center from RES and FSME, but none of us are sure which division would be best able to respond. Can you help with this? Note that the Ops Center has asked for a response by 18:00 tonight.

Greg

---

**From:** RST01 Hoc  
**Sent:** Wednesday, March 23, 2011 11:23 AM  
**To:** Andersen, James; Muessle, Mary  
**Cc:** Brown, Frederick  
**Subject:** Ops Center Action Item for Ticketing

Jim and Mary,

Per Fred Brown, RST Director here in the Ops Center, Please ticket the following item to RES and FSME:

"Respond to Dan Dorman's email on long-term issue questions from Japan. Provide responses or estimates of when the responses can be expected to Dan by 18:00 EDT. If additional information is needed, let the site team know of any questions that can be brought back to NISA.

-Regarding the best type of enclosure for the plant, does NRC have any thoughts? Do we have any regulations applicable to this condition or thoughts on the role of the regulatory authority in this decision?



-What licensing requirements apply to decommissioning and regulatory review of the decommissioning plan?

-What should the Japanese be considering with respect to criticality prevention and decay heat removal during the entombment period?

-The NRC's TMI fact sheet notes that the first manned entry into the Unit 2 reactor building occurred after a venting of Krypton in July 1980 (16 months after the accident). What actions occurred during those 16 months that could inform their planning?"

Dan Dorman's email pasted below:

**From:** Dorman, Dan  
**Sent:** Tuesday, March 22, 2011 3:05 AM  
**To:** OST01 HOC; Casto, Greg; Monninger, John; ET07 Hoc  
**Subject:** RE:

Additional tasks from meeting with NISA et al this morning. Lower priority than the Cabinet level issues we just discussed on the phone, but any responses available by 1800 EDT on 3/22 would be greatly appreciated along with an estimate of when the remainder may be expected. If you need additional info, please identify any questions we can bring back to NISA (keeping in mind please that their plant data is also very limited, i.e., keep your data expectations modest).

1. Sea water injection continues to reactors 1-3. NISA is concerned about the radiolytic disassociation of H<sub>2</sub> and O<sub>2</sub>. NISA would like NRC's perspective on the significance of this concern and how to treat this concern as they transition to freshwater injection.
2. At what point does salt deposits become a problem for flow during pending freshwater injection?
3. NISA is conducting simulations to project the extent of damage to fuel in the reactors. Has NRC developed any views on the extent of fuel damage?
4. NISA is interested to obtain any reference material regarding core-concrete interaction (not because they think they have a current issue but against that eventuality) including the conditions under which that occurs and any associated data.
5. In addition to the H<sub>2</sub>/O<sub>2</sub> disassociation in item 1 above, they are concerned that there may be residual H<sub>2</sub> in the containments and welcome NRC's thoughts on how to treat such a condition.

NISA is beginning to look at long term issues and has the following Qs in this area (note some of these may only apply to Japan's regulatory framework, but if we have insights from our post-TMI actions they would be greatly appreciated):

6. Regarding the best type of enclosure for the plant, does NRC have any thoughts? Do we have any regulations applicable to this condition or thoughts on the role of the regulatory authority in this decision?
7. What licensing requirements apply to decommissioning and regulatory review of the decommissioning plan?
8. What should they be considering with respect to criticality prevention and decay heat removal during the entombment period?
9. The NRC's TMI Fact Sheet notes that the first manned entry into the Unit 2 reactor building occurred after a venting of Krypton in July 1980 (16 months after the accident). What actions occurred during those 16 months that could inform their planning?

Regarding the spent fuel pools, NISA asserted that the Unit 1 SFP is above TAF with over 20 days margin due to low decay heat. They are not injecting to the Unit 1 SFP. For Unit 2, they are injecting seawater to the SFP via installed piping. For Units 3 and 4, they are spraying from pumper trucks within the RBs to put water on the top of the pools (In response to a question, they indicated that these sprays were put in place after the explosive events in those buildings.) Based on this information, NISA is assuming that the SFPs are all below 100C. The team here has questions relative to the latter buildings and other information available, for example, lack of visual evidence of steaming on Unit 4. We would appreciate HQ's thoughts on the SFPs and apparent inconsistencies with the status provided by NISA.

Dan Dorman

Thanks,

Eric Thomas  
RST Coordinator

**From:** Carlson, Donald *NYO*  
**To:** Wagner, John C.; Parks, Cecil V.; Hopper, Calvin Mitchell; Lee, Richard; Wood, Kent; VanWert, Christopher  
**Cc:** Scott, Michael; Ulses, Anthony; Yarsky, Peter; Giessner, John; Taylor, Robert; Gehin, Jess C.; Mueller, Don; Marshall, William BJ J.  
**Subject:** RE: Support for Japan - SFP Criticality Potential Update  
**Date:** Tuesday, March 29, 2011 7:21:41 AM  
**Importance:** High

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John,

Thank you so very much.

I of course agree with your new statement as well as your comments and questions and especially appreciate the additional information and considerations noted in your presentation.

FYI - I was not aware until now of any TEPCO information provided via EPRI and NEI. I will now try to confirm with RST members that they have the same information summarized in your presentation and will let you know if they have anything else. That limited information is indeed confusing.

Thanks again,

Don

(b)(6)

**From:** Wagner, John C. [mailto:wagnerjc@ornl.gov]  
**Sent:** Monday, March 28, 2011 11:32 PM  
**To:** Carlson, Donald; Parks, Cecil V.; Hopper, Calvin Mitchell; Lee, Richard; Wood, Kent; VanWert, Christopher  
**Cc:** Scott, Michael; Ulses, Anthony; Yarsky, Peter; Giessner, John; Taylor, Robert; Gehin, Jess C.; Mueller, Don; Marshall, William BJ J.  
**Subject:** RE: Support for Japan - SFP Criticality Potential Update

Don,

As you stated, the previous assessment was based on information at the time, which was that the SFPs all had high-density, borated SS racks. Given the high melting temperature of SS, we expected the neutron absorbers to remain effective up to temperatures at which concern about criticality would be overtaken by concerns related to significant release of radiation due to fuel damage.

We have since learned that the initial information on the racks was incorrect. Specifically, from EPRI and NEI we have the following information (received in the past 2 days):

*"-->Units 1, 2, 3 have both aluminum racks as well as borated aluminum racks.  
Unit 4 has only non-borated stainless racks."*

This information is consistent with the information you have below.

**The above information raises questions/concerns**

*pp/96*

- Available information suggests the Unit 4 SFP racks are high-density (no flux traps)
- Yet, based on our experience, high-density requires neutron absorber panels, e.g., Boral, borated SS, etc.
- So, we need more information on the Unit 4 SFP racks to fully assess criticality potential there
- Concern is that the Unit 4 SFP racks may be similar to the Unit 1-3 SFP racks, i.e., borated Al (not SS), and that if the Unit 4 SFP racks were uncovered for some period of time, the neutron absorber effectiveness could be compromised. If this is the case, reflooding with un-borated water could very well be a PROBLEM.
- Another issue is that if the racks are truly SS without Boron, then some large spacing and/or flux traps would be required. Damage to the racks could decrease spacing, which would be a concern, particularly given the statement from below "Japanese concerns that the racks may have shifted".
- We do know that the Unit 4 SFP has >100 assemblies in the peak reactivity burnup range that are stored together.

Generally speaking, if the effectiveness of the racks is maintained (geometric separation of individual assemblies and absorption properties), we do not expect fuel degradation/reconfiguration to offset the inherent safety margins required by international standards and regulatory requirements for spent fuel pool criticality safety analyses, e.g., all assemblies at their peak reactivity, 0.05 margin in keff, and the various standard conservatisms in typical safety analyses (e.g., analyses based on most reactive lattice design, conservative depletion assumptions, ambient spent fuel pool water temperature, etc.).

So, coming back around to your specific question: **Do we now see a need to modify or expand the above technical opinion? If so, how?**

Answer: "yes" My revised position is the following:

"Given that the overall efficacy of the racks has been maintained, in terms of geometric separation of assemblies and neutron absorption characteristics, my opinion is that criticality in the spent fuel pools is very unlikely, particularly if boron is being used, and that the consequences of criticality in one of the spent fuel pools will not be significant in comparison to the consequences of the pool remaining empty/exposed. Provided the nuclear criticality safety analyses for the spent fuel pools were performed accurately and consistent with US Nuclear Regulatory Commission requirements and that the spent fuel racks were manufactured, installed and loaded consistent with the supporting nuclear criticality safety analyses, sufficient margin should be present to offset potential increases in reactivity associated with fuel reconfiguration. (Note: under normal circumstances, BWR spent fuel pools do not have borated water, and hence are designed and analyzed to be safe when flooded with un-borated water). If

the efficacy of the racks is in question, I strongly suggest continued use of borated water until/unless the condition and design of the racks can be properly assessed. These are my personal/professional opinions, based on the information available to me at this time, and should be treated as such."

Once I get input from others at ORNL, we will provide a collective position.

Note, depending on how hot the Unit 1-3 SFPs have been, I may have some concern about criticality in those pools since they utilize aluminum and borated aluminum racks.

**Questions for you:**

- 1) Can we get the design specifications for the SFP racks, particularly those in the Unit 4 SFP, ASAP?
- 2) Can we get the nuclear criticality safety analyses that was performed in support of the SFP rack licensing?
- 3) Can we get any photos or assessments of the condition of the spent fuel and spent fuel racks, particularly in Unit 4 SFP, ASAP? I was told video of the Unit 4 SFP (from a camera mounted on top of the fill pipe) would be available on 3/24, but I have yet to see it.

FYI – we have prepared a set of slides (attached) for the DOE related to this issue that has some additional information/basis that may be useful to you. These slides have yet to be provided to DOE and are likely to be revised to include the above, revised assessment pending review.

If you have any questions whatsoever, please do not hesitate to call me at any time – day or night – on my mobile number.

Best Regards,

**John C. Wagner, PhD**

Oak Ridge National Laboratory

Phone: (865) 241-3570

Mobile: (b)(6)

**From:** Carlson, Donald [mailto:Donald.Carlson@nrc.gov]

**Sent:** Monday, March 28, 2011 9:14 PM

**To:** Wagner, John C.; Parks, Cecil V.; Hopper, Calvin Mitchell; Lee, Richard; Wood, Kent; VanWert, Christopher

**Cc:** Scott, Michael; Ulses, Anthony; Yarsky, Peter; Giessner, John; Taylor, Robert

**Subject:** RE: Support for Japan - SFP Criticality Potential Update

**Importance:** High

All,

Rob Taylor (NRC/NRR, on Cc) called from Japan to revisit the Unit 4 pool criticality issue. He provides

the following details:

- Unit 4 racks are not borated
- Switching to unborated fresh water injection on 3/29
- Shutdown last November with 1/3 of the core offload being 1<sup>st</sup> cycle fuel
- 204 fresh fuel assemblies were present in the pool
- Japanese concerns that the racks may have shifted
- Fuel damage due to uncover

Our NRC+ORNL technical opinion as of March 19 was as follows:

**Statement: Criticality is very unlikely for any likely configuration in the SFP, especially if boron is being added. Moreover, if criticality were to occur, it would be of much less consequence than an empty pool.** (The statement also included reminders that the water in BWR SFPs is generally not borated and that criticality is not possible without water.)

That opinion may have been based in part on a preliminary understanding that the Unit 4 SFP had low-density racks of borated stainless steel.

**Question: Do we now see a need to modify or expand the above technical opinion? If so, how?**

Responses or questions provided by 10:00am EST Tuesday would be especially appreciated.

As always, your help and advice is deeply appreciated.

Best regards,  
Don

Donald E. Carlson  
NRO/ARP/ARB1  
Cell: (b)(6)  
Office: 301-415-0109

---

**From:** Taylor, Robert  
**Sent:** Monday, March 28, 2011 6:59 PM  
**To:** Carlson, Donald; Brown, Frederick  
**Cc:** Scott, Michael; Wood, Kent; Ulses, Anthony; Yarsky, Peter; VanWert, Christopher; Giessner, John  
**Subject:** RE: Support for Japan - SFP Criticality Potential

Don,

The RST has given us their bridge line for a call at 2000 EST.

301-816-5120 Passcode 6105.

Info for consideration during the call:

Unit 4 racks are not borated  
Switching to fresh water injection on 3/29  
Shutdown last November with 1/3 of the core offload being 1<sup>st</sup> cycle fuel  
204 fresh fuel assemblies were present in the pool  
Japanese concerns that the racks may have shifted.  
Fuel damage due to uncover

Regards,  
Rob

---

**From:** Carlson, Donald  
**Sent:** Monday, March 28, 2011 6:23 PM  
**To:** Taylor, Robert; Brown, Frederick  
**Cc:** Scott, Michael; Wood, Kent; Ulses, Anthony; Yarsky, Peter; VanWert, Christopher; Giessner, John  
**Subject:** RE: Support for Japan - SFP Criticality Potential

Rob,

It would be helpful to get some confirmation/clarification on which pools are of most concern and their respective rack designs and fuel loadings.

The core off-load in the Unit 4 pool was the main concern when we provided the technical opinion over a week ago, with the preliminary understanding that those racks were of borated stainless steel and not high-density.

FYI – When I call your cell phone number, AT&T says more information is needed, then asks to enter the number again to leave a voice message, and then says the voice mailbox has not been set up.

My cell phone number is (b)(6) Or I can plan to report to the RST at 2000 EDT or 0530 EST. Please let me know how I can best help.

Thanks,  
Don

---

**From:** Taylor, Robert  
**Sent:** Monday, March 28, 2011 5:59 PM  
**To:** Carlson, Donald; Brown, Frederick  
**Cc:** Scott, Michael; Wood, Kent; Ulses, Anthony; Yarsky, Peter; VanWert, Christopher; Giessner, John  
**Subject:** RE: Support for Japan - SFP Criticality Potential

Don,

I missed your call last night. The cell number works but isn't my normal blackberry number so I don't know if the message is set up correctly. I would still like to chat briefly to ensure we are still aligned on this issue. Can we set up something for 0900 JST (2000 EDT) or 1830 JST (0530 EST)

Rob

---

**From:** Carlson, Donald  
**Sent:** Monday, March 28, 2011 1:07 PM  
**To:** Brown, Frederick  
**Cc:** Taylor, Robert; Scott, Michael; Wood, Kent; Ulses, Anthony; Yarsky, Peter; VanWert, Christopher  
**Subject:** RE: Support for Japan - SFP Criticality Potential

All,

Pending contact with Rob Taylor in Japan, here is a quick recap of the statement we made when

asked over a week ago to advise on SFP criticality concerns:

**Statement: Criticality is very unlikely for any likely configuration in the SFPs, especially if boron is being added. Moreover, if criticality were to occur, it would be of much less consequence than an empty pool.**

- This statement was based in part on a preliminary understanding that the plants' SFPs have low-density racks made of borated stainless steel. The statement also included reminders that the water in BWR SFPs is generally not borated and that criticality is physically impossible without water.

- The statement was drafted and concurred on by ORNL (John Wagner, Cecil Parks, Calvin Hopper), NRC/RES (Richard Lee), and NRC/NRO (Don Carlson) and provided to the Hoc Reactor Safety Team.

- The statement was also discussed briefly last week at a meeting of the NRC Interoffice Technical Advisory Group (TAG) for Nuclear Criticality Safety. The TAG meeting was attended by Kent Wood (NRR) and Chris VanWert (NRO) in their respective roles for reviewing SFP criticality safety at existing reactors and new reactors.

Don

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

From: Carlson, Donald  
Sent: Monday, March 28, 2011 9:30 AM  
To: Brown, Frederick  
Cc: Taylor, Robert; Scott, Michael  
Subject: RE: Support for Japan

Fred,

That phone number doesn't work.

Don

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

From: Brown, Frederick  
Sent: Sunday, March 27, 2011 9:11 PM  
To: Carlson, Donald  
Cc: Taylor, Robert; Scott, Michael  
Subject: Support for Japan

Don,

Can you please call Rob Taylor in Japan (noting the time difference, please call very early on day shift or in the evening)? He would like to have a follow-up conversation on SFP criticality potential.

His cell is (b)(6)

Thanks,  
Fred



**Lee, Richard**

---

**From:** Gauntt, Randall O [rogaunt@sandia.gov]  
**Sent:** Wednesday, March 23, 2011 2:42 PM  
**To:** 'JohnE.Kelly@Nuclear.Energy.Gov'; Burns, Shawn; 'Joy.Rempe@inl.gov'; 'elizabeth.connell@inl.gov'; 'Douglas.Burns@inl.gov'; 'Christine.White@inl.gov'; McClellan, Yvonne; 'kcw@dycoda.com'; Lee, Richard; Tinkler, Charles  
**Subject:** Re: have any good graphics on bwr damage and melt progression... it would help with a briefing for tomorrow (to Chu) i tended to focus on tmi-2 stuff over the years...  
**Attachments:** image001.jpg

Sandia did look at spray cooling of exposed fuel. I shall forward this on to find the report on this.

KC - can you point us to the right report?

Randy

---

**From:** Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]  
**Sent:** Wednesday, March 23, 2011 11:57 AM  
**To:** Burns, Shawn; 'Joy L Rempe' <Joy.Rempe@inl.gov>; Connell, Elizabeth <elizabeth.connell@inl.gov>; 'Douglas E Burns' <Douglas.Burns@inl.gov>; Gauntt, Randall O; 'Christine E White' <Christine.White@inl.gov>  
**Subject:** RE: have any good graphics on bwr damage and melt progression... it would help with a briefing for tomorrow (to Chu) i tended to focus on tmi-2 stuff over the years...

has anyone modeled spent fuel uncovered in pool and then spray from fire hose to see if it would ignite or quench?  
Anyone look at nitrogen or argon inerting?

---

**From:** Burns, Shawn [mailto:spburns@sandia.gov]  
**Sent:** Tuesday, March 22, 2011 4:22 AM  
**To:** 'Joy L Rempe'; 'Elizabeth A Connell'; 'Douglas E Burns'; Gauntt, Randall O; 'Christine E White'  
**Cc:** Kelly, John E (NE)  
**Subject:** RE: have any good graphics on bwr damage and melt progression... it would help with a briefing for tomorrow (to Chu) i tended to focus on tmi-2 stuff over the years...

All,

I sent our slides to NRC a few minutes ago requesting approval for you to use them. I will forward them to you just as soon as I hear back from NRC. When is the briefing for the Secretary planned?

Best regards,

Shawn

---

**From:** Joy L Rempe [mailto:Joy.Rempe@inl.gov]  
**Sent:** Tuesday, March 22, 2011 2:19 AM  
**To:** Burns, Shawn; Elizabeth A Connell; Douglas E Burns; Gauntt, Randall O; Christine E White  
**Subject:** RE: have any good graphics on bwr damage and melt progression... it would help with a briefing for tomorrow (to Chu) i tended to focus on tmi-2 stuff over the years...

here's some draft slides to address betsy's request. however, it's probably not what you'd imagined... you'll still need to find the quote, betsy... SNL may send up some SOARCA slides to show MELCOR results for a case more serious than

02/197

the Dai-ichi case... Bottom line, the tsunami did more damage to the folks in japan... i don't think that massive graphics are needed for any postulated scenarios, but betsy can decide...

joy



Joy Rempe • Idaho National Laboratory

Phone: (208) 526-2897 • Cell: (b)(6)

Email: Joy.Rempe@inl.gov

Fax: (208) 526-2930 •

Ex 6

**Lee, Richard**

---

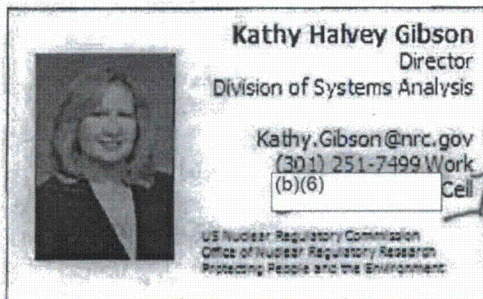
**From:** Burnell, Scott  
**Sent:** Wednesday, March 23, 2011 2:18 PM  
**To:** Gibson, Kathy  
**Cc:** Elkins, Scott; Wagner, Katie; Coyne, Kevin; Lee, Richard  
**Subject:** RE: Station blackout questions  
**Attachments:** image001.jpg

Thanks!

---

**From:** Gibson, Kathy  
**Sent:** Wednesday, March 23, 2011 2:18 PM  
**To:** Burnell, Scott  
**Cc:** Elkins, Scott; Wagner, Katie; Coyne, Kevin; Lee, Richard  
**Subject:** RE: Station blackout questions

I believe George Wilson in NRR is the "expert".



---

**From:** Burnell, Scott  
**Sent:** Wednesday, March 23, 2011 1:56 PM  
**To:** Lee, Richard  
**Cc:** Elkins, Scott; Gibson, Kathy; Wagner, Katie; Coyne, Kevin  
**Subject:** RE: Station blackout questions  
**Importance:** High

All;

Another reporter is interested in CR-6890:

I need someone to go over appendix B from NUREG-1776 with me, and tell me if there is an updated version of that appendix. I don't see it in NUREG/CR-6890

Is it possible to locate someone on very short notice for that sort of discussion? Thanks.

Scott

PP/98

## Scott, Michael

---

**From:** Scott, Michael  
**Sent:** Wednesday, March 23, 2011 8:52 AM  
**To:** Gibson, Kathy  
**Subject:** Re: Staff Adjustments for Japan Response  
**Attachments:** image001.jpg

Hi Kathy. You still on shift? I made it in to hotel okay and my intl bb works, so I will keep up with email as time permits.

Sent from my NRC blackberry

Michael Scott

(b)(6)

Ex2

---


**From:** Gibson, Kathy  
**To:** RES\_DSA  
**Cc:** Sheron, Brian; Uhle, Jennifer; Flory, Shirley; Rini, Brett; Armstrong, Kenneth; Ramirez, Annie; Case, Michael; Richards, Stuart; Coe, Doug; Coyne, Kevin  
**Sent:** Tue Mar 22 19:09:34 2011  
**Subject:** Staff Adjustments for Japan Response

While Mike Scott is in Japan, Scott Elkins will be acting DSA deputy director this week, and Chris Hoxie will be acting deputy director next week (Mar 28-Apr 1).

While Ken Armstrong is supporting SPB with Japan event response and SOARCA, Annie Ramirez will be acting DSA technical assistant.

Richard Lee is our POC for Operations Center support.

Katie Wagner is the POC for information requests related to the Japanese events.



**Kathy Halvey Gibson**  
Director  
Division of Systems Analysis  
  
Kathy.Gibson@nrc.gov  
(301) 251-7499 Work  
(b)(6) Cell

U.S. Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Protecting People and the Environment

Ex2

PP/99

**Lee, Richard**

---

**From:** Wagner, Katie  
**Sent:** Wednesday, March 23, 2011 10:01 AM  
**To:** Lee, Richard  
**Subject:** RE: Station blackout questions  
**Attachments:** image001.jpg

Richard – Item #32 complete (<http://portal.nrc.gov/edo/res/DSA/Shared%20Documents/JPN-Status-Request.aspx>)? - Katie

---

**From:** Lee, Richard  
**Sent:** Wednesday, March 23, 2011 7:57 AM  
**To:** Burnell, Scott  
**Cc:** Elkins, Scott; Gibson, Kathy; Wagner, Katie; Coyne, Kevin  
**Subject:** RE: Station blackout questions

Hi, Scott:

Attached is the NRC response to the question received.

Best regards,  
Richard

---

**From:** Burnell, Scott  
**Sent:** Tuesday, March 22, 2011 12:02 PM  
**To:** Gibson, Kathy; Wagner, Katie  
**Cc:** Elkins, Scott; Lee, Richard  
**Subject:** RE: Station blackout questions

Kathy;

Thanks for that – the reporter's also aware of NUREG/CR-6890

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6890/>

So apparently there's even newer research – might come from a different RES division, I haven't looked at the document yet. Thanks again!

Scott

---

**From:** Gibson, Kathy  
**Sent:** Tuesday, March 22, 2011 11:56 AM  
**To:** Burnell, Scott; Wagner, Katie  
**Cc:** Elkins, Scott; Lee, Richard  
**Subject:** RE: Station blackout questions

Scott,  
Katie Wagner is our POC for information requests. I am cc'ing her on this response.

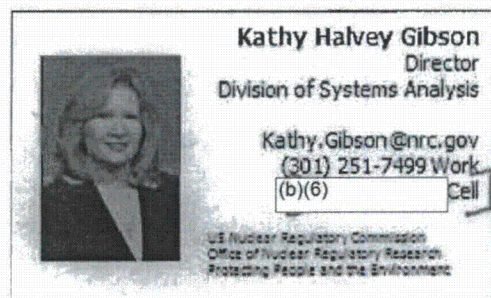
She will follow-up with our staff to get responses back to you. I am not personally aware of this report or our role in it, so this will take some digging. Not sure how quickly we can respond. As you can



imagine we are continuously getting requests for information from domestic as well as international people, so we will add this one to the list.

Katie will keep you informed of our progress.

Thanks,  
Kathy



---

**From:** Burnell, Scott  
**Sent:** Tuesday, March 22, 2011 9:49 AM  
**To:** Gibson, Kathy; Scott, Michael  
**Cc:** Elkins, Scott  
**Subject:** FW: Station blackout questions  
**Importance:** High

Kathy, Mike;

I'm thinking NUREG-1776 (Regulatory Effectiveness of the Station Blackout Rule) was done by the predecessor to your division, probably under Scott's branch. I need help answering the reporter's four questions below. Thanks very much.

Scott

---

**From:** Mike Soraghan [<mailto:msoraghan@eenews.net>]  
**Sent:** Thursday, March 17, 2011 6:06 PM  
**To:** Burnell, Scott  
**Subject:** Station blackout questions

Mr. Burnell,

Thank you for taking my call a moment ago. I am looking at doing a story on station black out, with a little on seismic, that looks at all u.s. plants.

My simplest question is whether there is a list of the design basis each of the 104 reactors must meet in terms of what magnitude earthquake they must be able to withstand. I've been told that's not likely, so I'm pulling the information from news reports.

I have the 2000 report (attached) "Regulatory Effectiveness of the Station Blackout Rule." I've been looking at this, particularly the plant-by-plant chart, and I'm seeking some guidance.

First, has there been any update to these numbers?

"Coping time in hours" – is that the amount of battery power? And is it the amount the plant has, or is required to have?

"Loss of Power events" – if a combined plant with two reactors lists two events, did each shut down for a total of four?

Also, is there updated figures for the "loss of power events?"

Thank you,

Mike Soraghan

Reporter

[msoraghan@eenews.net](mailto:msoraghan@eenews.net)

202-446-0423 (desk)

(b)(6) (cell)

(b)(6) (Google Voice)

---

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**Lee, Richard**

---

**From:** Adams, Ian [Ian.Adams@Hq.Doe.Gov]  
**Sent:** Friday, April 01, 2011 9:45 AM  
**To:** Lee, Richard  
**Subject:** Re: Inquiry on contact

Its (b)(6)

---

**From:** Lee, Richard (NRC)  
**To:** Adams, Ian  
**Sent:** Fri Apr 01 09:42:57 2011  
**Subject:** Inquiry on contact

Hi, Ian:

Please let me know your phone number.

Thx, Richard

pp/101



## Ghosh, Tina

---

**From:** Ghosh, Tina  
**Sent:** Tuesday, April 05, 2011 5:07 PM  
**To:** Gallucci, Ray; Dinsmore, Stephen  
**Subject:** RE: questions from the WSJ

The BWROG is the proper organization to answer these questions (except the last one), but let me know if you still want assistance with this.  
SAGs are NOT publicly available.

---

**From:** Gallucci, Ray  
**Sent:** Tuesday, April 05, 2011 1:50 PM  
**To:** Dinsmore, Stephen; Ghosh, Tina  
**Cc:** Golla, Joe  
**Subject:** RE: questions from the WSJ

These questions are related to Severe Accident MANAGEMENT Guidelines, not Severe Accident MITIGATION Alternatives, so are outside the realm of SAMA.

---

**From:** Dinsmore, Stephen  
**Sent:** Tuesday, April 05, 2011 1:48 PM  
**To:** Gallucci, Ray; Ghosh, Tina  
**Cc:** Golla, Joe  
**Subject:** FW: questions from the WSJ

Can either of you (Ray and Tina) answer any of the following questions on BWROG SAMA guidelines. If you can provide any answer in an hour or so could you distribute them back.

Thanks

Steve

---

**From:** Golla, Joe  
**Sent:** Tuesday, April 05, 2011 12:46 PM  
**To:** Dinsmore, Stephen  
**Subject:** FW: questions from the WSJ

Here's the incoming Steve. Thanks in advance for your help. Joe G, DPR/PLPB

---

**From:** Dvorak, Phred [<mailto:Phred.Dvorak@wsj.com>]  
**Sent:** Tuesday, April 05, 2011 9:51 AM  
**To:** Burnell, Scott  
**Subject:** questions from the WSJ

Scott, hi --

It's Phred Dvorak at the Wall Street Journal in Tokyo, with those questions about BWR accident guidelines.

As I mentioned, I'm looking into the idea that some actions that are required by the "generic" BWR severe accident guidelines in the U.S. don't seem to have been performed by the Fukushima Daiichi operators in Japan. So to follow up,

pp/102

I'm trying to first pin down what those standard protocols are in the U.S. -- specifically with regard to venting the primary containment vessel and injecting water.

- I'm told that the latest version of those protocols is this: "BWR Owners' Group Emergency Procedure and Severe Accident Guidelines - Rev 2, 2001 - 03". Can you confirm that's true? And are they publically available?

- If they're not, could I obtain excerpts from the parts concerning venting the primary containment vessel (when, how and how long to vent, venting philosophy -- how to factor in risk of radiation release etc, who's responsible for the decision) and injecting water (similarly: when it's absolutely necessary to inject, who's responsible for the decision).

- Further to the "venting philosophy" question, I found in your public documents database a Jan. 28, 2000 letter from the BWR Operators' Group to the NRC expressing some concerns about wording in the (then) proposed Revision 2. The wording in question was that vents should be opened "irrespective of the offsite radioactivity release rate." The BWROG asked the wording be softened. Can you tell me how this issue was resolved? (What was the final wording?)

- The same letter also noted the need for guidance that "clearly established responsibilities within the licensee's management organization for authorizing containment venting under accident conditions." Could you please tell me whether that happened, and what the resulting guidance was?

- In the venting and water injection instructions, are there parts of the generic SAG (the BWROG Severe Accident Guidelines referred to above) that are modifiable by the operators and parts that are not? What are the NRC rules concerning how such SAGs can or should be modified with plant-specific information?

Many thanks in advance for your help!  
Phred

-----  
Phred Dvorak  
Wall Street Journal  
(b)(6) (cellphone)  
[phred.dvorak@wsj.com](mailto:phred.dvorak@wsj.com)

**Lee, Richard**

---

From: (b)(6)  
Sent: Thursday, March 24, 2011 3:03 PM  
To: Lee, Richard  
Subject: RE: How are you?

Control rod drives are ok but they are positive displacement pumps because they pump against the full reactor pressure. You can also feedwater pumps.  
S. Levy

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

From: Lee, Richard <Richard.Lee@nrc.gov>  
To: slevy112 (b)(6)  
Sent: Tue, Mar 22, 2011 12:20 pm  
Subject: RE: How are you?

Hi, Sol:

Nice to hear from you. Thanks for the 2 pages summary. We are providing technical support and advice to NRC Op Center and in turn supporting the NRC team in our Embassy in Tokyo.

In your writeup, adding water to reactor via. Different connections, can one add water through the control rod drives cooling system. I understood the control rod drives coolant pumps are the most reliable ones among all the pumps.

Richard

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

From: (b)(6)  
Sent: Tuesday, March 22, 2011 3:40 PM  
To: Lee, Richard  
Subject: Re: How are you?

Trying to age gracefully. Attached is my memo of how my reactors could have been saved. I sent it to Basu because I lost your email. Nice to hear from you.

Sol -----Original Message-----

From: Lee, Richard <Richard.Lee@nrc.gov>  
To: slevy112 (b)(6)  
Sent: Tue, Mar 22, 2011 11:17 am  
Subject: How are you?

Hi, Sal: I see that your reactor designs been destroyed in Fukushi Dai-ichi. How are you and your family? Richard

PP/103

Hogan, Rosemary

---

From:

(b)(6)

Sent:

Thursday, March 24, 2011 11:37 AM

To:

Hogan, Rosemary

Subject:

MS NBC Article

We've got it pretty much straightened out. NRC public affairs (Neil Sheehan) comments on the article were helpful.

Thanks for getting back to me.

Ellis

Sent from my Verizon Wireless BlackBerry

PP/104

## Hogan, Rosemary

---

**From:** Ake, Jon  
**Sent:** Thursday, March 24, 2011 10:30 AM  
**To:** Hogan, Rosemary  
**Subject:** FW: Tsunami/Nuclear Plants

just as you said in you last note: message, message, message.

---

**From:** Burnell, Scott  
**Sent:** Thursday, March 24, 2011 7:47 AM  
**To:** Bagchi, Goutam  
**Cc:** Kammerer, Annie; Ake, Jon; Munson, Clifford; Karas, Rebecca; Chokshi, Nilesh; Harrington, Holly; Brenner, Eliot  
**Subject:** RE: Tsunami/Nuclear Plants

Hello Goutam;

I appreciate your wanting to be as helpful as possible to Robin, but in the future please limit your responses to forwarding requests such as this directly to [OPA.resource@nrc.gov](mailto:OPA.resource@nrc.gov) without additional comment. I am quite concerned that your "Some precautionary measures are being taken by the industry also here in the US." quote is going to be misinterpreted as "official" word from the NRC that plants are taking active measures beyond their current designs, when all INPO did is recommend plants review their current design bases and mitigative measures.

Scott

**From:** Bagchi, Goutam  
**Sent:** Thursday, March 24, 2011 7:36 AM  
**To:** McDowell, Robin  
**Subject:** RE: Tsunami/Nuclear Plants

Hello,

In order to ensure that you get the best comprehensive answers to your questions I have forwarded your request to our Office of Public Affairs. As you know, seismic and tsunami risk to nuclear power facilities is a complex issue, so you will need to do your research. Many lessons are learned when a very large event like the 2004 Indian Ocean earthquake and now the 2011 Magnitude 9 earthquake occur, there is much to learn about the geophysics and the behavior of nuclear power plants. For this we need more time. You may want to contact the Tsunami Research Institute at the Tokyo University. Some precautionary measures are being taken by the industry also here in the US. The Institute of Nuclear Power Operations is the central US repository of operating experience and they have made precautionary recommendations. Best regards and

Thank you,  
Goutam Bagchi  
Senior Advisor  
Division of Site & Environmental Reviews Office of New Reactors  
**From:** McDowell, Robin [<mailto:rmcdowell@ap.org>]  
**Sent:** Thursday, March 24, 2011 5:44 AM  
**To:** Bagchi, Goutam  
**Subject:** Tsunami/Nuclear Plants

Mr. Bagchi,

I'm a reporter from The Associated Press based in Asia and am working on a story about the risk nuclear power plants positioned along coasts face from tsunamis.

Since this was also the topic of the 2005 workshop in Kalpakkam, in which you took part, do you think you might be able to discuss this by telephone or email?

Were specific recommendations made at the workshop, for instance? In the case of Japan (off-the-record is fine) do you think they were followed?

Also:

\_Given historical records on tsunamis, what nuclear power plants across the globe are most vulnerable?

\_Is there a need for more risk analysis and planning for tsunamis by plants in general?

\_What lessons can we learn from Fukushima Dai-ichi disaster?

Thanks in advance for any help you can offer.

Cheers

Robin

Robin McDowell  
AP Bureau Chief  
Jakarta, Indonesia  
+62-8-121-121-555

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[IP\_UK\_DISC]msk dccc60c6d2c3a6438f0cf467d9a4938

## Hogan, Rosemary

---

**From:** Ake, Jon  
**Sent:** Thursday, March 24, 2011 10:26 AM  
**To:** Hogan, Rosemary; Kammerer, Annie; Pires, Jose  
**Subject:** RE: MSNBC Report

The MSNBC story was essentially a poorly done and mis-interpreted abstraction of the GI-199 report. We have pages and pages of info on this issue summarized in the Seismic QAs. Scott and OPA issued at least 1 formal statement regarding the misrepresentation of the GI-199 study results to the media. I would note that the MSNBC story was the headline on the MSNBC website and at least three evening talk shows last week. However, I would also note that I could not find any mention of the OPA-Scott Burnell clarification statement anywhere. MESSAGE- get the message right the first time.

---

**From:** Hogan, Rosemary  
**Sent:** Thursday, March 24, 2011 10:18 AM  
**To:** Ake, Jon; Kammerer, Annie; Pires, Jose  
**Subject:** MSNBC Report

Has anyone been involved in addressing issues identified in a MSNBC report? I had a voice mail regarding an NRC document mentioned in the report. I want to keep to the message. Actually, I am not going to answer directly (yikes!) but I am looking for anything we may have done on this.

Lee, Richard

7c

**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Thursday, March 24, 2011 12:23 PM  
**To:** Lee, Richard  
**Cc:** 'Binder, Jeffrey L.'; Kelly, John E (NE); Tinkler, Charles; Grandy, Christopher;  
'Bill.McCaughey@Nuclear.Energy.gov'  
**Subject:** Contact with Dana..

Hi Richard,

I think you know I've been working with DOE in support of the emergency response activities related to Fukushima. A new concern is possibility of air ingress into the containment and how that might affect containment conditions. I think Dana is teaching a course this week there in Rockville. Would it be possible for Dana to provide some technical input? John Kelly is supposed to 'keep it high level' so could you ask Dana to give Jeff Binder a call to talk over some of the details? Jeff's cell is (b)(6) Dana's the guy in this area and it would be nice to have some of his advise.

Thanks  
Mitch

PP/105



**Lee, Richard**

---

**From:** Wagner, Katie  
**Sent:** Thursday, March 24, 2011 5:53 PM  
**To:** Dehn, Jeff  
**Cc:** Lee, Richard  
**Subject:** FW: BWR-3 and Mark I

Jeff - This looks like it might be international-related. Sorry I am late sending this. - Katie

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

**From:** Hoxie, Chris  
**Sent:** Thursday, March 24, 2011 7:55 AM  
**To:** Gibson, Kathy; Lee, Richard; Wagner, Katie  
**Subject:** RE: BWR-3 and Mark I

The public stuff I would simply coordinate with Tom Kardaras and Shane Rupinta and have it put right on [www.nrc.gov](http://www.nrc.gov) The main limitation there is that no file can be bigger than 7MB. Larger files we either break up, or I send them via [www.yousendit.com](http://www.yousendit.com).

FISMA makes the password protected site rather difficult if it is to go outside our agency to, say, another agency. But within the NRC it would not be hard to do... I would need to know more about the exact nature of the information (i.e., how sensitive is it...) before I could make better recommendations.

It is likely that any BWR-3 Decks we have contain proprietary info. So that will make it more difficult. We have to obtain a release first from the information owner. Because of the FISMA constraints and size constraints on files, we often resort to sending a DVD or CD...(for example, most TRACE code distributions are done that way...).

Chris L. Hoxie, PhD  
Branch Chief, Code Development  
Division of Systems Analysis  
Office of Nuclear Regulatory Research  
United States Nuclear Regulatory Commission  
Room: CH3-D04  
Phone: 301-251-7562  
Cell: (b)(6)

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

**From:** Gibson, Kathy  
**Sent:** Thursday, March 24, 2011 7:30 AM  
**To:** Hoxie, Chris; Lee, Richard; Wagner, Katie  
**Subject:** Re: BWR-3 and Mark I

This may be thinking way outside the box, but can we put up an external website with all the info we can make public there and then reference people to it? We could also have a password protected link to ODO etc that we could give to a smaller set of people. What do you think?

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

**From:** Hoxie, Chris  
**To:** Lee, Richard; Wagner, Katie  
**Cc:** Gibson, Kathy

PP/106

Sent: Thu Mar 24 04:13:58 2011  
Subject: FW: BWR-3 and Mark I

First request from a CAMP member for information...  
Richard, I will be by to discuss.

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

From: Tomasz Kozlowski [mailto:tomasz@safety.sci.kth.se]  
Sent: Wednesday, March 23, 2011 7:26 PM  
To: Hoxie, Chris  
Subject: BWR-3 and Mark I

Hi Chris,

I assume that you and NRC get this a lot these days, but I would like to ask if you have any BWR-3 and/or Mark I documentation that is publicly available that you could send me?

Is there MELCOR input for BWR-3 that could be made available, also?

We would like to do some simulations of Fukushima.

Thank you!

Tomasz

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Thursday, March 24, 2011 9:10 PM  
**To:** RST01 Hoc  
**Subject:** RST tracker for Japan

Hi. Can I please get an e-copy of your latest Japan task tracker?

Thanks

Mike Scott  
Japan team

Sent from my NRC blackberry  
Michael Scott

(b)(6)

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

**From:** Nakanishi, Tony  
**To:** RST01 Hoc  
**Cc:** Blamey, Alan; Scott, Michael  
**Sent:** Thu Mar 24 18:33:47 2011  
**Subject:** Integrated Response Team Procedure for Core cooling

I received this from NISA. It documents the response plan for cooling the reactor. It's written in Japanese. If possible, please have it translated and provide our evaluation. It provides some cautionary measures on preventing H2 explosion, steam explosion, etc.

PP/107

**Lee, Richard**

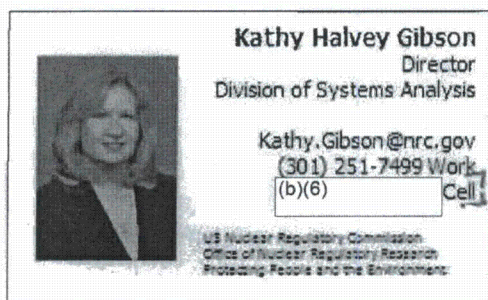
---

**From:** Gibson, Kathy  
**Sent:** Thursday, March 24, 2011 5:27 PM  
**To:** Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Scott, Michael; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Subject:** FW: Nominees for 3rd Team to Japan  
**Attachments:** Background 3rd team to Japan .docx; Kathy Halvey Gibson.vcf; Japaneventstaffing.xlsx; image001.jpg  
  
**Importance:** High

Please let me know before 8 am Monday if you recommend anyone from your staff (or SLs nominate yourself) for any of the expertise areas being sought to go to Japan. Please verify with the person you are nominating that they are willing and able to go during the first two weeks in April.

The information that staff provided on their willingness to go to Japan is attached FYI and use.

Thanks!



---

**From:** Case, Michael  
**Sent:** Thursday, March 24, 2011 1:47 PM  
**To:** Coyne, Kevin; Correia, Richard; Gibson, Kathy; Richards, Stuart; Case, Michael  
**Cc:** Rini, Brett; Sheron, Brian; Uhle, Jennifer  
**Subject:** Nominees for 3rd Team to Japan

The Agency is trying to put together another team to go to Japan leaving on or about April 2<sup>nd</sup> and returning April 16<sup>th</sup>. They are seeking individuals willing to go with skills in the following areas:

Severe Accident Management Knowledge  
B.5.b Knowledge  
Accident Recovery Knowledge  
Political Savvy

Additional background info is on the attached sheet. **Please forward your nominees to Brian/Jennifer/Brett by 0800 Monday** (due at noon to Michele Evans). DSA currently has one nominee that will be forwarded shortly. Background info on nominated candidates should include the person's skills in relation to those identified areas above, any OD endorsement, and passport status.

**Lee, Richard**

---

**From:** Wagner, John C. [wagnerjc@ornl.gov]  
**Sent:** Thursday, March 24, 2011 3:33 PM  
**To:** Aissa, Mourad; Gauld, Ian C.  
**Cc:** Lee, Richard  
**Subject:** RE: Peach bottom pool

Guys, this is good stuff!

**John C. Wagner, PhD**  
Oak Ridge National Laboratory  
Phone: (865) 241-3570  
Mobile: (b)(6)

---

**From:** Aissa, Mourad [mailto:Mourad.Aissa@nrc.gov]  
**Sent:** Thursday, March 24, 2011 3:27 PM  
**To:** Gauld, Ian C.  
**Cc:** Wagner, John C.; Lee, Richard  
**Subject:** FW: Peach bottom pool

Ian,  
The delta after 5 years is really impressive (almost 90 days). Thanks and I appreciate the promptness of your response.  
Mourad

---

**From:** Gauld, Ian C. [mailto:gauldi@ornl.gov]  
**Sent:** Thursday, March 24, 2011 1:23 PM  
**To:** Aissa, Mourad  
**Cc:** Wagner, John C.  
**Subject:** RE: Peach bottom pool

Yes, that makes more sense. Here is the figure with both scenarios. Note that in the case of the full pool inventory the decay heat is about 25% higher than the reduced case, however because it contains older assemblies the net decay heat reduction is slow compared to the reduced 600 assembly case. Also, it may make sense to only display the results out 2 years, since Peach Bottom operates on about a 24 month cycle, so after 2 years a new batch of fuel is added to the pool. The current scenario out to 5 years assumes just decay of the inventory in the pool – no additions. I've included both plots. Note that curves start at 35 days, about the time it takes to refuel.

Thanks

Ian

---

**From:** Aissa, Mourad [mailto:Mourad.Aissa@nrc.gov]  
**Sent:** Thursday, March 24, 2011 10:04 AM  
**To:** Gauld, Ian C.  
**Subject:** RE: Peach bottom pool

Ian,  
The results look good. Could you do one more thing (it's my fault I did not clearly communicate the request to you earlier): Our management wants basically to see a comparison between the two SFP conditions (with and without old "caskable" fuel). Could you plot the "Days to TAF uncovering" vs. "Full SFP" and vs. "Unloaded SFP("600 assemblies")" in the same plot? This way the gain in response time due unloading the pool would be

clearly illustrated. As before, please include the ORNL logo (so you could get credit) and "OFFICAL USE ONLY" footer on the plot.

Thanks.

Mourad

---

**From:** Gauld, Ian C. [mailto:gauldi@ornl.gov]

**Sent:** Thursday, March 24, 2011 9:54 AM

**To:** Aissa, Mourad

**Cc:** Wagner, John C.

**Subject:** RE: Peach bottom pool

Mourad

Hopefully this is what you need. I assumed 2 fuel unloads in the pool (fuel 3 years and less), for about 600 assemblies, and decayed out to 5 years after the last batch of discharged fuel. The heating numbers are consistent with earlier values. I plugged the total pool heat loads into the TAF spreadsheet to estimate the times to uncover fuel. Note the previous PB analysis was performed for 88 days after discharge. These results cover the full range of times.

Let me know if you have questions or need more data.

Ian

---

**From:** Aissa, Mourad [mailto:Mourad.Aissa@nrc.gov]

**Sent:** Wednesday, March 23, 2011 8:18 PM

**To:** Gauld, Ian C.

**Subject:** RE: Peach bottom pool

Ian,

Thank you for the prompt response. Could you do a quick calculation to plot time to boil off (to TAF) for a few times after the off-load of the old fuel as the ~600 assemblies cool off (maybe for 1, 2, 3, 4, 5 years, or even longer). Please call me in the morning wen you have time.

Thanks.

Mourad

---

**From:** Gauld, Ian C. [gauldi@ornl.gov]

**Sent:** Wednesday, March 23, 2011 5:24 PM

**To:** Aissa, Mourad

**Subject:** FW: Peach bottom pool

Mourad

Dean Wang, in our reactor systems group, took a quick look at this using my heating data and fuel offload scenarios and did some simple calculations. Two parts to the calculation – time for the entire pool to reach saturation temperature, and then time to boil off the pool volume and reach the top of the remaining stored fuel. The major factor is the heating load. The additional water volume available by offloading fuel appears to have a relatively minor impact. The calculation is in the spreadsheet. For a full pool, the time is about 12 days. For an aggressive offload leaving only 600 assemblies in the pool (roughly two reloads) reducing heat load from 2.1 MW to 1.6 MW, the time is about 16 days.

This is a rough calculations. I want to ask Dean about corrections due to heat loss from the pool. I would think that would increase time. At some point natural convection cooling would likely take over. These times are also much longer than onset of the Fukushima problems. My guess is that the pools were leaking also, but again I'll check with Dean on that.

Thanks

Ian

**Lee, Richard**

---

**From:** Larzelere, Alex [alex.larzelere@nuclear.energy.gov]  
**Sent:** Saturday, March 26, 2011 8:33 PM  
**To:** Garwin, Dick (IBM)  
**Cc:** DL-NITSolutions; Binkley, Steve  
**Subject:** Re: FW: Water Level Sensors and Deployment Concepts

Dick,

Will do - I will send out a new version tomorrow with yours and any other edit and additions.

Alex

Sent from my BlackBerry, which you can call @

(b)(6)

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**From:** Garwin, Dick (IBM)  
**To:** Larzelere, Alex  
**Cc:** DL-NITSolutions; Binkley, Steve  
**Sent:** Sat Mar 26 20:29:05 2011  
**Subject:** Re: FW: Water Level Sensors and Deployment Concepts

Thanks for this, Alex.

Re these couple of paragraphs:

" • **Bubbler Tube**

If you can insert a bubbler tube to use that method, surely you can fix a pressure gauge to the end of such a tube and use a small cable for data exfiltration. Alternatively, put the pinger of b) at the bottom of the tube and let the pickup float higher up in the tube.

• **Dual Manometer**

Two manometers could be used to measure the pressure differential between the distance between the tank top and the water level. One manometer would be equipped with a hose that would be lowered to the level of the water to capture the airpressure at the level. The second manometer would record the pressure at the top of the tank and the difference between the two (with some minor corrections) would then be used to calculate the height difference."

I'd like to restate my 03/2?? description of a bubbler,

"What is a bubbler?

Put a tube down to the bottom of the spent fuel pool (SFP), and connect with a tiny flexible hose to a site on the ground 100 m away.

A small air flow through the tube will bubble out into the SFP and produce a pressure at the source which is equal to 15 psi for 30 feet of depth in the pool.

Can measure whenever you want. "

PP/110

A control station on the ground might lead to 5 or gten bubbler hoses, each with a 0-15 psi pressure gauge. To start a



pressure measurement, once a hollow lance has been dropped to the bottom of a pool which is open to the atmosphere at its surface, one would connect air pressure to the tube for rapid clearance of fluid within the lance, and then reduce the airflow to a "bubbling" rate. The pressure drop in the 100 meters of tubing is negligible compared with the 15 psi that would be required to bubble air from an open aperture below 30 ft of water. No "dual manometer" is needed, because the density of air is only 1/800 that of water. So even an altitude difference of 90 ft, along the air-filled hose between the pressure gauge on the ground and the pool of which we are measuring the depth, would correspond to a bias in the measured water depth of only  $90 \text{ ft}/800$  or about 1 inch-- negligible compared with the 10-30 ft depths we want to measure.

Dick Garwin

Lee, Richard

**From:** Richard L Garwin [rlg2@us.ibm.com]  
**Sent:** Sunday, March 27, 2011 11:02 PM  
**To:** Binkley, Steve  
**Cc:** Brinkman, Bill; 'Binder, Jeffrey L.'; Hurlbut, Brandon; Sheron, Brian; Poneman, Daniel; 'Elizabeth.Connell@inl.gov'; 'Harold McFarlane'; 'Harold Denton'; Adams, Ian; 'John Holdren'; 'JOE H. PAYER'; Kelly, John E (NE); 'John Grossenbacher'; Owens, Missy; 'Per Peterson'; Lyons, Peter; 'Phil Finck'; 'Dick Garwin'; Lee, Richard; 'Bob Budnitz'; 'Rolando Szilard'; SCHU; Aoki, Steven; Koonin, Steven; 'Steve Fetter'; Binkley, Steve; DAgostino, Thomas  
**Subject:** Near-term availability of cosmic-ray muon tomographic imaging of Fukushima reactor pressure vessels, spent fuel pools, etc..

The attached emails between Roy Schwitters (U of Texas) and his colleagues at KEK lab Japan imply that such imaging might be available within a month or two, given expedited support to enclose the existing U of Texas imagers and to support the couple of people from Texas needed to move them to KEK and to stage them from there to Fukushima.

I think such a U of Texas/KEK collaboration would be great. It would also allow KEK engineers and technicians to help provide hands-on solutions for some of the other problems.

Dick Garwin

\*\*\*\*\*

Fwd: Possible collaboration  
Roy Schwitters  
to:  
Richard L Garwin  
03/27/2011 09:12 PM  
Show Details

FYI Dick:

Begin forwarded message:

**From:** sugawara hirotaka (b)(6)  
**Date:** March 27, 2011 7:37:31 PM CDT  
**To:** <schwitters@physics.utexas.edu>  
**Cc:** <suzuki@post.kek.jp>, Satoru Yamashita <satoru@icepp.s.u-tokyo.ac.jp>, Tao Yoichi <taoyoichi@bridge.ocn.ne.jp>  
**Subject:** RE: Possible collaboration

Dear Roy,  
Thank you for your offer.  
I am in Japan now and talked to Atsuto Suzuki, the current KEK DG, on the matter.  
He welcomes your offer.  
As a matter of fact, KEK is currently building a detector with the same principle as yours.  
The original idea came from Nagamine, a retired KEK personnel who worked in muon science division.  
The project is lead by Nagamine, Takasaki and Haba. You might know Takasaki.  
Kadono, Fujii, Miyake and several other young people are also involved.  
KEK detector is scheduled to be ready by April 20. The timing may be consistent with your detector arrival in Japan depending on the shipment schedule.  
I hope the collaboration works fine.

pp/111

Rough description of the Fukushima reactor is the following:

- (1) The source of the radiation is the reactor cores, not the spent fuel pools. This is clear from the fact that main component of the isotopes is I131 which has the life time of 8 days.
- (2) There seem to be some damages to the primary cooling system of 1,2, and 3 reactors. 4th one is empty. 4th spent fuel pool has new rods but I was told that the radiation is not from this pool.
- (3) Some portion of fuel pipets in 1,2 and 3 reactors are damaged and the fuel solids seem to be exposed to water thus causing the radioactive substance to be exited out of the damaged positions possibly in the cooling pipes in or in the vicinity of the turbin room/
- (4) Currently one cannot get into the turbin room or any other place in the reactor because of high radiation level.
- (5) Cooling is being continued using less powerful ordinary fire extinguishing pumps.

I am optimistic about the situation because of the following reasons:

- (1) Spent fuel pools are under control. They seem to have been no trouble from the beginning.
- (2) The amount of radiocative substance from the active fuel must be smaller than that of spent ones.  
It depends on how long they have been used and it should be easy to estimate.
- (3) We must continue cooling even at the current level to avoid overheating or over pressuring.
- (4) It should be easy to estimate roughly how much rods are broken and how much more time it takes for most of radiocative isotopes to get out of the damaged points.
- (5) If it is within the reach, for example a couple of weeks or months or even years (?), we should continue the current status quo assuming we have enough tank space to store the contaminated water from the leaks.

I believe your and KEK detectors will be very useful since it will be very difficult for humans to get inside the reactor building for some time.

Please contact Atsuto Suzuki

TEL (b)(6)

I will be back in Washington DC on March 30.

I will see you there on April 1 as you suggest.

Our office is

JSPS Wahington office  
2001 L Street NW, Washington DC  
TEL: 202 659 8190

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From: [schwitters@physics.utexas.edu](mailto:schwitters@physics.utexas.edu)

To: [sugawara@jpspsusa.org](mailto:sugawara@jpspsusa.org)

Subject: Possible collaboration

Date: Sun, 27 Mar 2011 11:48:10 -0500

Hello Hirotaka,

Like everyone, I am extremely concerned by the difficult events affecting Japan during the past two weeks. I certainly hope that your family and those of all my old friends at KEK and elsewhere in Japan are well.

It occurs to me that a collaboration with KEK might be able to play a modest role in better understanding the status of the various nuclear reactors and spent fuel rod repositories at the Fukushima facility. For the past several years, I have been working on developing practical detectors for muon tomography with the goal of determining the internal structures of large objects of archeological interest. Luis Alvarez invented muon tomography in the late 1960's, but little has happened since his work. I got interested in seeing what could be done using modern techniques of high energy physics.

At present, I have built several detectors and now have a good, robust design along with data-handling and image processing software. I have three working detectors, each in the form of cylinders 0.6 m in diameter by 1.6 m long, weighing about 130 kg. These have been tested and used in imaging local campus buildings and in blind target studies at Sandia lab. I believe these could be used to help inspect the damaged reactors and associated facilities. For example, the level of the cooling water inside of closed rooms or vessels

could probably be determined to meter accuracy. The disposition of fuel and other dense material inside a reactor vessel could be imaged half-meter accuracy or better.

I have talked to a few people in DOE about this. I am more than willing to send the detectors to Japan immediately, if there is any interest in using them. In doing so, I think it would be important to be able to collaborate with KEK in checking the detectors after shipment, in preparing them for use in the reactor facility, in planning where to locate the detectors to get the most important information and in data analysis. What do you think? I would very much like to hear your views on this possibility. Please call me anytime on my cell phone (512 461-9736) or we can arrange a time by email. I plan to be in Washington next Friday, April 1.

I have attached a brief description of our work; you can download a recent talk I gave on this topic at: [www.physics.utexas.edu/~schwitte/MIT\\_LNS\\_2-2011.pptx](http://www.physics.utexas.edu/~schwitte/MIT_LNS_2-2011.pptx)

With best personal regards,

Roy

**Lee, Richard**

---

**From:** Adams, Ian [Ian.Adams@Hq.Doe.Gov]  
**Sent:** Monday, March 28, 2011 11:15 PM  
**To:** Lee, Richard  
**Subject:** RE: Quick science group call today - 7:00pm EDT

Thanks Richard. I am actually meeting them in Boston but I think the CT trip went well.

Ian

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

**From:** Lee, Richard (NRC)  
**Sent:** Monday, March 28, 2011 8:26 PM  
**To:** Adams, Ian  
**Subject:** RE: Quick science group call today - 7:00pm EDT

Hi, Ian:

No problem. Do not worry. We answered the question Dr. Holdren had. Hope you and your team had a nice trip.

Richard

---

**From:** Adams, Ian [Ian.Adams@Hq.Doe.Gov]  
**Sent:** Monday, March 28, 2011 7:55 PM  
**To:** Lee, Richard  
**Subject:** Re: Quick science group call today - 7:00pm EDT

Hi Richard,

I'm sorry, I was out of contact traveling. I hope your query was answered on the call.

Ian

---

**From:** Lee, Richard (NRC)  
**To:** Adams, Ian  
**Sent:** Mon Mar 28 16:57:55 2011  
**Subject:** RE: Quick science group call today - 7:00pm EDT

Hi, Ian:

Do you know what the question is?

Richard

**From:** Adams, Ian [mailto:Ian.Adams@Hq.Doe.Gov]  
**Sent:** Monday, March 28, 2011 4:32 PM  
**To:** DL-NITsolutions; Owens, Missy  
**Cc:** Smith, Haley; Chambers, Megan (S4); Narendra, Blake; Fitzgerald, Paige  
**Subject:** Quick science group call today - 7:00pm EDT

Good afternoon,

Dr. Holdren would like to pull everyone who is available together today at 7:00pm EDT for a few minutes. This is to discuss a technical question before a recommendation is made.

Apologies for the short notice - don't worry if you aren't able to make it, but for those of you who are able, we will have a brief call today from 7:00-7:15pm EDT.

Tomorrow's call will still take place as scheduled, at 4:45pm EDT. Wednesday's call will take place at 5:00pm EDT

Thanks  
Ian

Nuclear science group conference call schedule:

Monday 3/28: 7:00pm-7:15pm EDT

Tuesday 3/29: 4:45pm-5:45pm EDT

Wednesday 3/30: 5:00pm-6:00pm EDT

Conference call information:

Please dial into (b)(6)

No PIN is needed.

Ian Adams  
Office of the Secretary  
Department of Energy  
(202) 586-9585  
ian.adams@hq.doe.gov

Lee, Richard

---

**From:** Kelly, John E (NE) [JohnE.Kelly@Nuclear.Energy.Gov]  
**Sent:** Monday, April 11, 2011 6:14 PM  
**To:** Lee, Richard  
**Subject:** RE: Tuesday morning conference call (JST)

the number is (b)(6)

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

**From:** Lee, Richard (NRC)  
**Sent:** Monday, April 11, 2011 6:00 PM  
**To:** Kelly, John E (NE)  
**Subject:** RE: Tuesday morning conference call (JST)

O.K. I will call in.

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

**From:** Peltz, James [mailto:James.Peltz@Nuclear.Energy.gov] On Behalf Of Kelly, John E (NE)  
**Sent:** Monday, April 11, 2011 5:54 PM  
**To:** Lee, Richard; Kelly, John E (NE)  
**Cc:** Binkley, Steve  
**Subject:** RE: Tuesday morning conference call (JST)

There is a call scheduled for this evening at 8:00 pm. I will confirm the call in number shortly.

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

**From:** Lee, Richard (NRC)  
**Sent:** Monday, April 11, 2011 5:51 PM  
**To:** Kelly, John E (NE)  
**Cc:** Binkley, Steve  
**Subject:** RE: Tuesday morning conference call (JST)

Hi, John:

Do we have any call to Japan this week?

Richard

**From:** Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]  
**Sent:** Monday, April 11, 2011 4:23 PM  
**To:** DL-NITSolutions  
**Subject:** FW: Tuesday morning conference call (JST)

more info from Drs Omoto and Kondo

PP/113

From: [mailto:akira.omoto@mac.com]  
Sent: Monday, April 11, 2011 11:39 AM  
To: Kelly, John E (NE)  
Subject: Fwd: Tuesday morning conference call (JST)

I am afraid I may have forgotten to send to you, John.

akira

Begin forwarded message:

: <akira.omoto@mac.com>

: 2011 4 11 23:51:32JST

: Steve Binkley <Steve.Binkley@science.doe.gov>, Peter Lyons  
<Peter.Lyons@Nuclear.Energy.gov>, SCHU <SCHU@hq.doe.gov>, Steven Aoki  
<Steven.Aoki@nnsa.doe.gov>, "Kondo Shunsuke." <shunsuke.kondo@cao.go.jp>, Ian Adams  
<Ian.Adams@Hq.Doe.Gov>, "Regalbuto, Monica" <Monica.Regalbuto@Nuclear.Energy.gov>,  
"Schneider, Steve" <Steve.Schneider@em.doe.gov>, Shunsuke KONDO (b)(6)  
moriya-hitachi kumiaki <kumiaki.moriya.xk@hitachi.com>, minematsu.akiyoshi@tepcoco.jp,  
shirakawa.t@tepcoco.jp, Tepco <fukuda.toshihiko@tepcoco.jp>,  
<mizokami.shinya@tepcoco.jp>, <masuda.takahiro@tepcoco.jp>, Tepco  
<kawano.akira@tepcoco.jp>

Bcc: <akira.omoto@cao.go.jp>

: Tuesday morning conference call (JST)

Dear all,

Japanese side members are invited to the conference call with the DoE at 9.00 am in TEPCO's International Department's room at 2F. I am not sure if JAEA experts are joining (Mr. Fukuda or Mizokami or Mr. Moriya: Pls confirm).

Besides the documents received from DoE early Monday morning from John, attached here are Japanese side documents for this meeting. Also expects water chemistry group in TEPCO has some documents for discussion with DoE.

akira



**Raione, Richard**

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**From:** Raione, Richard  
**Sent:** Tuesday, April 12, 2011 6:54 AM  
**To:** 'Eric Geist'  
**Cc:** Jones, Henry  
**Subject:** FW: Request to Re-Open My Earlier Tsunami Assessment Recommendations

fyi

**From:** Chokshi, Niles  
**Sent:** Tuesday, April 12, 2011 4:58 AM  
**To:** Raione, Richard; Jones, Henry; Munson, Clifford; Cook, Christopher; Bagchi, Goutam; Kammerer, Annie; Nicholson, Thomas; Flanders, Scott; Hatchett, Gregory  
**Cc:** Hiland, Patrick; Manoly, Kamal  
**Subject:** Fw: Request to Re-Open My Earlier Tsunami Assessment Recommendations

Richard and Henry,

Let's discuss when I get back. Some good ideas.

Niles

Sent from NRC Blackberry

Niles

(b)(6)

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**From:** (b)(6)  
**To:** Chokshi, Niles  
**Cc:** Flanders, Scott  
**Sent:** Mon Apr 11 16:10:42 2011  
**Subject:** Re: Request to Re-Open My Earlier Tsunami Assessment Recommendations

Dear Niles:

I hope that your schedule is easing somewhat. I just returned from IAEA/Vienna, and heard you might be soon headed out there also.

I have been aware of the PMEL-USGS-NRC joint program on tsunami hazard, which is clearly a step in the right direction.

I have been thinking about some observations, suggestions, and potential research needs, which I hope that you/NRC may find useful:

PP/114

- > Beyond-design margin for tsunamis needs to be better understood. A 10,000 yr design basis may not be sufficient if there exist "cliff edge" effects with the tsunami margin.
  - > Similarly, for probabilistic safety/risk assessments, I don't think we yet sufficiently understand the plant (probabilistic) aspect of the tsunami hazard and tsunami fragility of NPPs.
  - > Consistent with screening criteria for external hazards (e.g., in an external events PSA), probabilistic tsunami hazard studies should cover hazard values down to  $1E-6$ /yr mean and  $1E-7$ /yr median frequency. This could be a significant challenge for many tsunami experts, who have focused in the past on characterizing the hazard for much shorter return periods.
  - > Development and application of procedural methodology similar to a SSHAC approach for tsunami hazard, with tsunami source, wave propagation and run-up being analogous (respectively) to seismic source modeling, ground-motion modeling, and site response analysis.
  - > Capturing the full epistemic variation of the credible informed technical community (ITC). I am familiar with many of the experts participating in the PMEL-USGS-NRC workshops. However, participation of experts such as Grilli, Kirby, Watts, Mader, Day, Kowalik, Ward, Pararas-Carayannis -- whose views are also important in representing the ITC -- appears to be needed.
  - > Development of a robust and rigorous probabilistic tsunami hazard assessment (PTHA) methodology is needed. I developed a PTHA methodology in 2002 for an LNG facility, which adapted the Cornell PSHA methods and expanded the treatment of tsunamigenic sources for all tsunami causes (not just earthquakes). So, I believe from experience that such a methodology can be successfully developed and applied. It will take some efforts to acquaint the tsunami scientists with these methods. (I have worked with Mader and Watts in my LNG plant studies, so I know that some of the experts are becoming familiar with these concepts -- probabilistic approaches, epistemic variations, and long return periods).
  - > Sufficient coverage and undertaking of the needed marine, geophysical, geological, paleo, etc., studies to properly understand and characterize the tsunami threat, bathymetry, etc
  - > Adaption of physical models (finite elements, 3D slip surface having minimum factor of safety, etc.) to define the extent and behavior of submarine landslides, rather than reliance on simple geometric models.
  - > A sufficient description/characterization of the full scope of possible tsunami threats, including characterization for both direct effects and collateral effects and damages.
  - > Consideration of local tsunami warning systems for NPPs. (Although this may seem a severe measure, I was hired by BP-Amoco to develop a local warning system concept / scoping definition to be implemented for protection of an LNG facility. Local tsunami warning systems are also devised to warn communities of "silent tsunamis" -- e.g., from causes unrelated to earthquakes (e.g., Skagway, AK). It can be easily argued that the need to protect NPPs in areas of high tsunami hazard is at least as great as for petroleum facilities and local vacation destinations.)
  - > A reproducible set of policies and procedures (consistent with overall safety management) pertaining to conducting site-specific tsunami hazard studies and reviews of tsunami hazard studies.
  - > Procedures are needed -- including comprehensive walkdown methods -- to suitably understand and assess the deterministic and probabilistic vulnerability, design, and risk evaluation side, to ensure adequate fragility/resistance of NPPs to tsunamis (including impacts on structures, systems, components and operators).
- As I mentioned, I have been working for the past 13 years on raising awareness of the tsunami threat and the need to bring the same level of robustness and rigor being pursued in PSHA studies and seismic margin/risk approaches to the treatment of the tsunami hazard.

I am interested in applying this experience to improving the tsunami safety assessment and safety management of nuclear facilities, including the development of state-of-the-art guidance. My intent is to help avert future situations even vaguely resembling the current Fukushima disaster. Please let me know the programs and research efforts within the NRC where I can offer my assistance in working together toward this end.

Best regards,  
Rob

In a message dated 3/19/2011 7:20:46 A.M. Mountain Daylight Time, Nilesh.Chokshi@nrc.gov writes:

Dear Rob,

Thanks for sending the information to me and sorry for not responding to you right away. As you can imagine, things are very hectic here. I am looking at it now and also will forward and discuss with other appropriate NRC organizations. . It will take sometime for us to digest the information.

Regards,

Nilesh

**From:** (b)(6)  
**Sent:** Wednesday, March 16, 2011 9:44 AM  
**To:** Chokshi, Nilesh  
**Subject:** Request to Re-Open My Earlier Tsunami Assessment Recommendations

Dear Nilesh:

On December 2007, I was part of an IAEA Seismic-EBP team that traveled to the Kashiwazaki-Kariwa NPP to inspect the damage and make recommendations to TEPCO concerning the level of safety diligence they should consider to pursue as they worked toward the prospect of re-starting the damaged reactors following the 2007 Chuetsu earthquake. I recommended to TEPCO to proceed cautiously and to undertake a special seismic program so that they could better understand the seismic hazard and the beyond-design seismic margin at their plants. (I reminded them that such programs were required by the NRC for Diablo Canyon, even though DCPD had not yet been damaged by a seismic event.) I cautioned the Japanese to take a well-reasoned and careful approach, even if this meant re-evaluating all of their plants and taking several years that might be needed before restart at the damaged NPPs. (It seemed clear to me and to participants from HSK [now ENSI] that the Japanese were not taking a SSHAC L4 approach to seismic hazard assessment and to consideration of the possibility for beyond-design-basis [or larger than historical] events.) At that time, consultants from EPRI painted a much more optimistic picture for the Japanese concerning what would be needed in terms of re-evaluation and restart. They certainly did not proceed as cautiously as I would have preferred. I am not saying that single meeting was so vital that its outcome was responsible for (or, in the alternative, could have prevented) the recent nuclear disaster in Japan, but I nonetheless do believe (based on what I have heard to this point regarding the cause of plant failures) that the tragedy was indeed very preventable -- e.g., had there been greater general caution and openness to considering beyond-design-level events and to perform the re-evaluations and regular and periodic diligent walkdowns needed to uncover potential vulnerabilities.

I have already offered my support directly to the Japanese and to the IAEA for assisting the Japanese with the engineering and scientific response efforts, reconnaissance, studies, advice, etc., needed in the aftermath of the disaster. In case the NRC is organizing any similar effort, I ask you to make known to those responsible at the NRC that I similarly offer my assistance.

Now, I want to turn to a related matter affecting the US nuclear industry ...

Please review the attached documents, which I prepared in 2002 and 2003 for the CNWRA as part of my review of the licensing application for the Diablo Canyon ISFSI facility. (Please note that, upon request, animations that I prepared are also available of the wave progression of the tsunami scenarios considered in the attached tsunami hazard study.) These documents provided recommendations -- well in advance of even the 2004 Indian Ocean tsunami -- that pertained to the tsunami licensing bases for Diablo Canyon Power Plant and, more generally, to other coastal US plants. Unfortunately, the recommendations went unheeded at that time, and the NRC was not then willing to open up the prospect of re-evaluating the tsunami design basis for DCPD. Furthermore, I was told at that time that (a) there was disbelief that a tsunami could truly damage a rugged nuclear power facility (something that the recent Japanese event has now proven otherwise), and (b) that there existed uncertainty (professional differences of opinion -- or epistemic scrutiny) as to whether or not the scenarios and frequencies I explored in my tsunami hazard study were credible (although that question of uncertainty was to my knowledge not further pursued, as I believe safety prudence should have dictated).

Again, I developed my research, analyses and recommendations back in 2002 and 2003, so there is perhaps some need to update and refine my assessment. However, my belief is that, for very large part, those analyses and recommendations have been supported by applicable data and methodologies developed since that time. I have been performing tsunami hazard and risk studies now for 13 years. In 2000, I visited with experts at our US West Coast and Alaska Tsunami Warning Center in Alaska (and in 2004, the Pacific Tsunami Warning Center in Hawaii), I developed a rigorous approach for probabilistic tsunami hazard assessment, and I coordinated a team of seismic instrumentation and tsunami warning specialists to design a

local tsunami warning system for a LNG facility in Indonesia. In early 2004, I was part of a reconnaissance team to review tsunami damage and advise the relevant governmental authorities in Thailand, Malaysia, Singapore and Australia regarding tsunami hazard, risk assessment, and warning. I have participated as risk chairman and invited presenter at a number of tsunami conferences since 2000, and I have worked with many tsunami scientists.

I realize that increased efforts at understanding and evaluating the tsunami threat have been undertaken in the nuclear industry since the Indian Ocean tsunami of 2004, but to date I have not seen evidence that the measures being pursued (e.g., in re-evaluating the licensing bases of NPPs) are complete/exhaustive, as they ought to be. A major problem that I believe remains is the limited scope of tsunami generators that are often included in tsunami studies, the lack of a complete treatment of epistemic uncertainty, and the lack of resolve to truly re-evaluate facilities (including the need to conduct concerted walkdowns and review walkdowns) for the tsunami threat. I made a brief visit of the DCPD last year as part of an IAEA Seismic-EBP mission. During that visit, PG&E provided us a presentation on their latest (at that time) tsunami hazard assessment, as well as a walking inspection at DCPD. Following that (admittedly) brief assessment, my concerns with the plant remained and do even more so today (in general, for all coastal NPPs).

Accordingly, in the continued interests of nuclear safety in the US and elsewhere, I am requesting you at this time to reconsider the attached documents, to personally review them, and to provide them to responsible parties within the NRC. (Note: These documents were prepared as account of work previously funded by USNRC. Although, I am under the assumption that they can be reviewed within the NRC without restriction, I trust that you will ensure they are suitably distributed.)

Please contact me in case I can further assist or in case you have any questions on this e-mail and attached documents.

Best regards,

Rob Sewell

Dr. Robert T. Sewell

President

R.T. Sewell Associates

500 Orchard Drive

Louisville, CO 80027

(b)(6)

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(b)(6)

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**Raione, Richard**

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**From:** Ciocco, Jeff  
**Sent:** Tuesday, April 19, 2011 11:03 AM  
**To:** Raione, Richard  
**Subject:** RE: concerning oceanic modeling

Richard,

Thanks. I got the answer I needed from NOAA.

Jeff Ciocco  
US-APWR Projects  
New Nuclear Reactor Licensing  
301.415.6391  
jeff.ciocco@nrc.gov



*Protecting People and the Environment*

**From:** Raione, Richard  
**Sent:** Tuesday, April 19, 2011 11:00 AM  
**To:** Ciocco, Jeff  
**Cc:** Jones, Henry; Nicholson, Thomas; Chokshi, Niles  
**Subject:** FW: concerning oceanic modeling

Hi Jeff, we can bring up this topic at the upcoming ACWI Subcommittee on Hydrology (this Thursday) to see if other agencies here may have some info and input.

Richard Raione, PG, CPG, CGWP  
US NRC, Office of New Reactors  
Chief, Hydrologic Engineering Branch  
301-415-7190  
cell: (b)(6)  
fax: 301-415-5397  
[richard.raione@nrc.gov](mailto:richard.raione@nrc.gov)

PP/MS

**From:** Jones, Henry  
**Sent:** Thursday, April 14, 2011 2:11 PM  
**To:** Ciocco, Jeff  
**Cc:** Cook, Christopher; Raione, Richard; Clayton, Brent; Flanders, Scott; Chokshi, Niles  
**Subject:** RE: concerning oceanic modeling

Jeff,

I concur with Chris Cook. Nothing new seems to be happening in regard to ocean modeling of the radiation plume. As per the first three links provided below, NOAA has been the lead agency in modeling the atmospheric radiation plume. I assume NOAA would also be the lead agency for a similar ocean monitoring program.

The Navy is the only U.S. agency outside of NOAA that would have worldwide ocean forecasting capability. However, based on my experience as a Navy Oceanographer/Meteorologist, the Navy would be a cooperating agency but defer to NOAA on this issue.

In the last link, the Woods Hole Oceanographic Institutions provides a very good Q&A presentation for the public regarding this issue.

Henry

<http://www.wunderground.com/blog/JeffMasters/comment.html?entrynum=1763>

<http://motherjones.com/blue-marble/2011/03/radiation-travel-models>

<http://www.atmos.umd.edu/~tcanty/hysplit/>

<http://www.whoi.edu/page.do?pid=56076&tid=282&cid=94989>

**From:** Cook, Christopher  
**Sent:** Thursday, April 14, 2011 1:21 PM  
**To:** Jones, Henry  
**Subject:** Fw: concerning oceanic modeling

Hi Henry...please cc me on anything you send out on this. Thanks..

Chris

Sent from U.S. NRC BlackBerry

(b)(6)



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**From:** Ciocco, Jeff  
**To:** Cook, Christopher  
**Cc:** Jones, Henry  
**Sent:** Thu Apr 14 13:15:17 2011  
**Subject:** RE: concerning oceanic modeling

Chris,

Thanks, I also contacted Henry Jones in your absence to help answer this.

Jeff Ciocco  
US-APWR Projects  
New Nuclear Reactor Licensing  
301.415.6391  
jeff.ciocco@nrc.gov



**From:** Cook, Christopher  
**Sent:** Thursday, April 14, 2011 1:01 PM  
**To:** Ciocco, Jeff  
**Subject:** Fw: concerning oceanic modeling

Jeff,

The email below is forwarded in response to your recent email on ocean modeling. I have nothing new to report since I wrote that email.

An inter-agency meeting didn't occur and my email back to IRSN went unanswered.

Perhaps related, you may want to contact Michelle Hart about atmospheric rad deposition on the ocean surface's. She was responding to a separate request for that atmospheric deposition data late last week.

Chris

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Sent from U.S. NRC BlackBerry

(b)(6)

**From:** Hoc, PMT12  
**To:** Cook, Christopher  
**Sent:** Thu Apr 07 11:02:43 2011  
**Subject:** RE: Request concerning oceanic modelling

We will let you know if we hear anything. You may not need to contact the guy in France until you have a clear understanding of what you have to do or until after you hear from NOAA. Thanks.

**From:** Cook, Christopher  
**Sent:** Thursday, April 07, 2011 11:00 AM  
**To:** Hoc, PMT12  
**Subject:** RE: Request concerning oceanic modelling

I can contact Mr Champion at IRSN, but I have not received any information from NOAA or other federal parties. Therefore, I have very little to report.

The latest email I received regarding the federal working group was from yesterday... USDA (Stephen Wixom) said that they would be in touch in the next day or two. So far, no other contact. Nothing new from OSTP or NOAA since PMT got me initially involved.

Please advise if you are aware of any calls or meetings that may be taking place today/tomorrow that I should attend.

Chris

**From:** Hoc, PMT12  
**Sent:** Thursday, April 07, 2011 10:52 AM  
**To:** Cook, Christopher  
**Subject:** FW: Request concerning oceanic modelling

Hello. We were on a call with France, Canada, and the UK today. They sent this email with the name of someone you may want to contact (depending on your direction) in France. They seem to have ocean modeling capability. Let us know what you find out. Thanks.

**From:** CRISE Asn [mailto:Asn.CRISE@asn.fr]  
**Sent:** Thursday, April 07, 2011 10:37 AM  
**To:** Hoc, PMT12  
**Cc:** CTC@irsn.fr  
**Subject:** Request concerning oceanic modelling

Following the phone call of this morning (Washington time), please find below the name of the point of contact concerning modelling of radioactive elements dispersion in oceans.

Didier Champion head of Environment division at IRSN.  
[didier.champion@irsn.fr](mailto:didier.champion@irsn.fr)

Do not hesitate to contact us if you need additional information.

Regards