

U.S.NRC

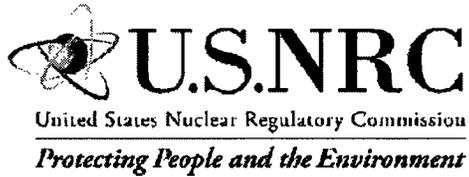
United States Nuclear Regulatory Commission

Protecting People and the Environment

GENERIC ISSUE 199:
***Implications of Updated Probabilistic
Seismic Hazard Estimates in Central and
Eastern United States on Existing Plants***
Safety/Risk Assessment

**Public Meeting
October 6, 2010**

AAA/1



Generic Issue 199

Public Meeting Agenda

- 9:00-9:10 Introductions (NRC) (B. Sheron, NRC)
- 9:10-9:30 Generic Issues Program and GI-199 Background (J. Kauffman, NRC)
- 9:30-10:15 GI-199 Safety/Risk Assessment (J. Ake, M. Stutzke, NRC)
- 10:15-10:45 Planned Regulatory Approach (P. Hiland, NRC)
- 10:45-11:15 Industry Remarks
- 11:15-11:45 Public Question and Answers

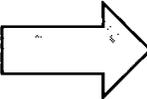


The Generic Issues Program (GIP)

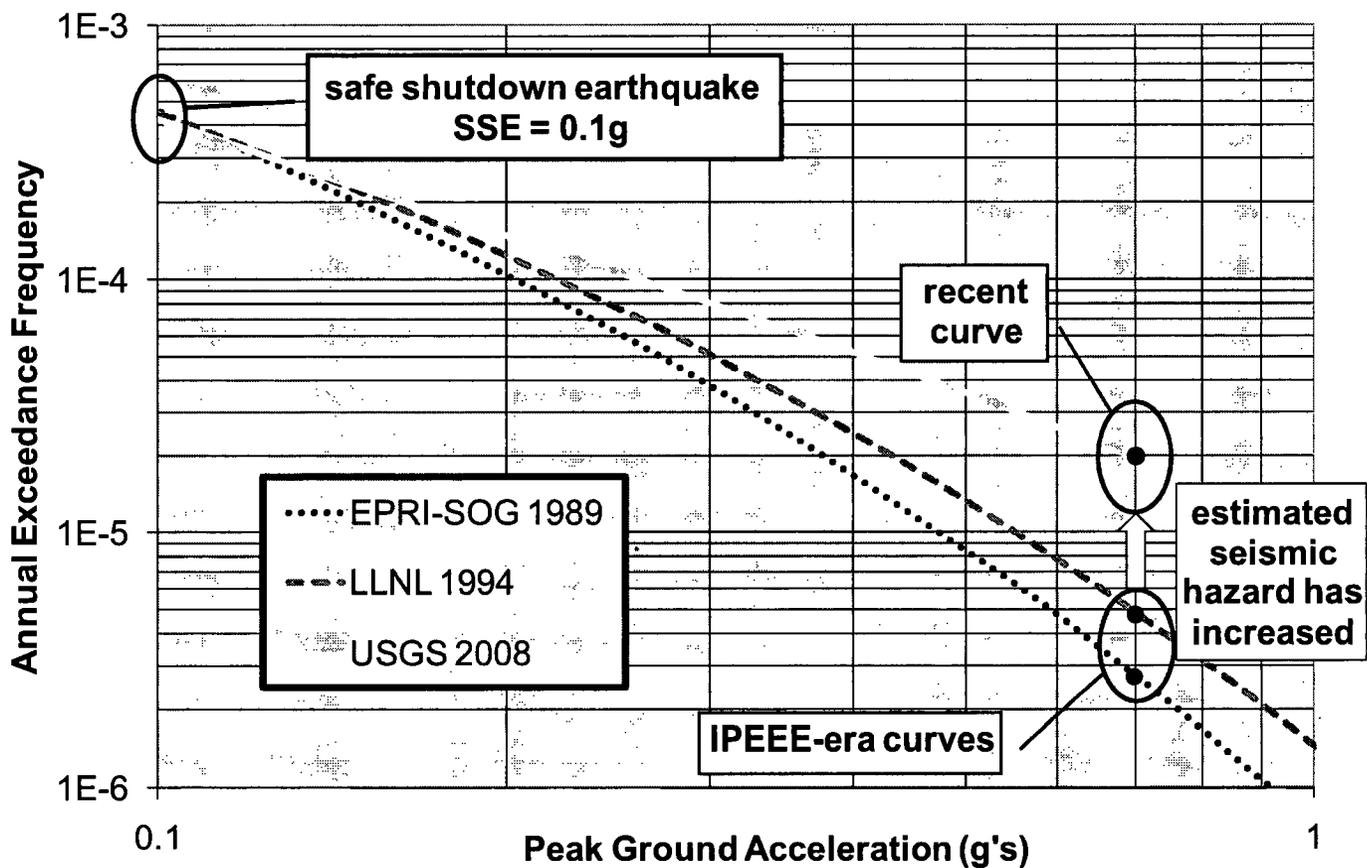
- Agency-wide program administered by Office of Nuclear Regulatory Research (RES), implemented by Management Directive 6.4
- Value Added
 - Advance understanding of the issue
 - Find the best place for the issue to be worked
 - Develop NRC consensus
 - Engage stakeholders

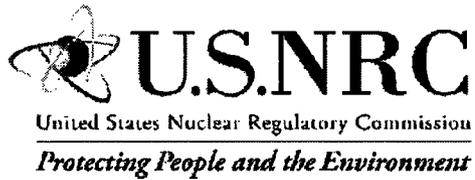
(<http://www.nrc.gov/about-nrc/regulatory/gen-issues.html>)

Generic Issues Program Stages

1. Identification
2. Acceptance
3. Screening
-  **4. Safety/Risk Assessment**
 - Issue Analyzed
 - Paneled, Report Issued
 - Recommendations Endorsed
5. Regulatory Assessment

What is GI-199 About?





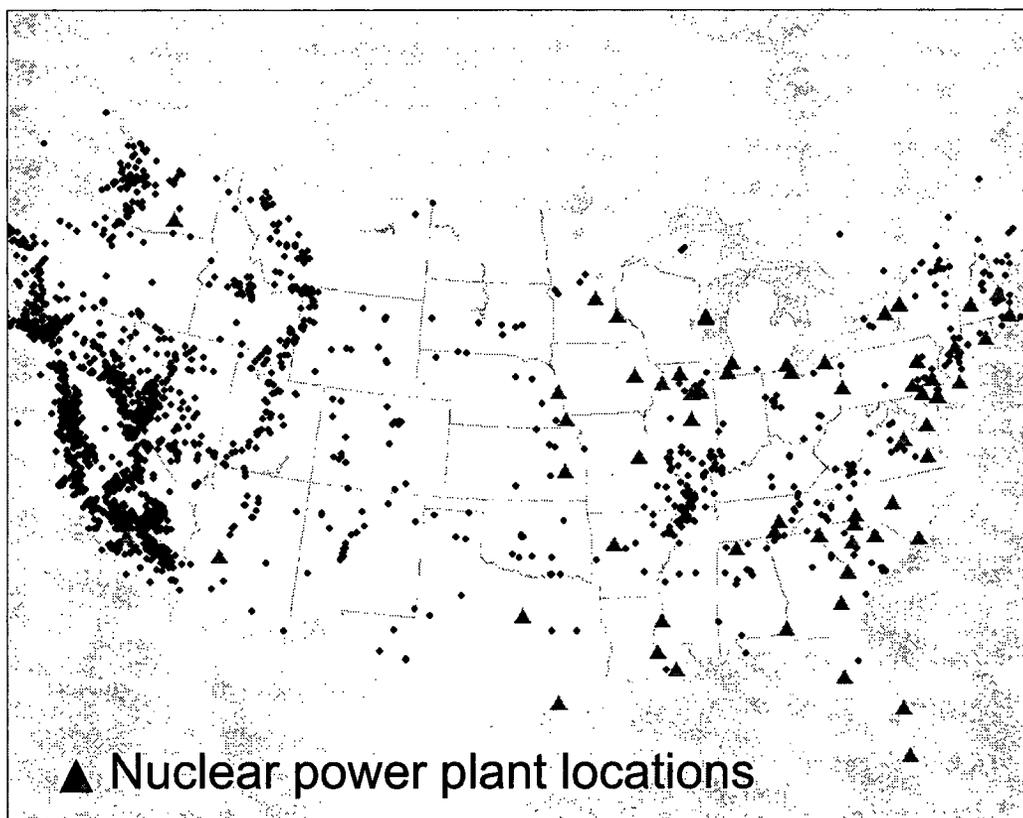
The GI-199 Safety/Risk Assessment

- **Safety/Risk Assessment (S/RA) Stage Goals:**
 - Determine, on a generic basis, if the risk associated with GI-199 warrants further investigation for potential imposition of cost-justified backfits.
 - Provide a recommendation regarding the next step (i.e., continue to the Regulatory Assessment for identification and evaluation of potential generic, cost-justified backfits, be dropped due to low risk, or have other actions taken outside the GIP).

GI-199: Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants

- Felt and Damaging Earthquakes In the U.S.

Source: USGS

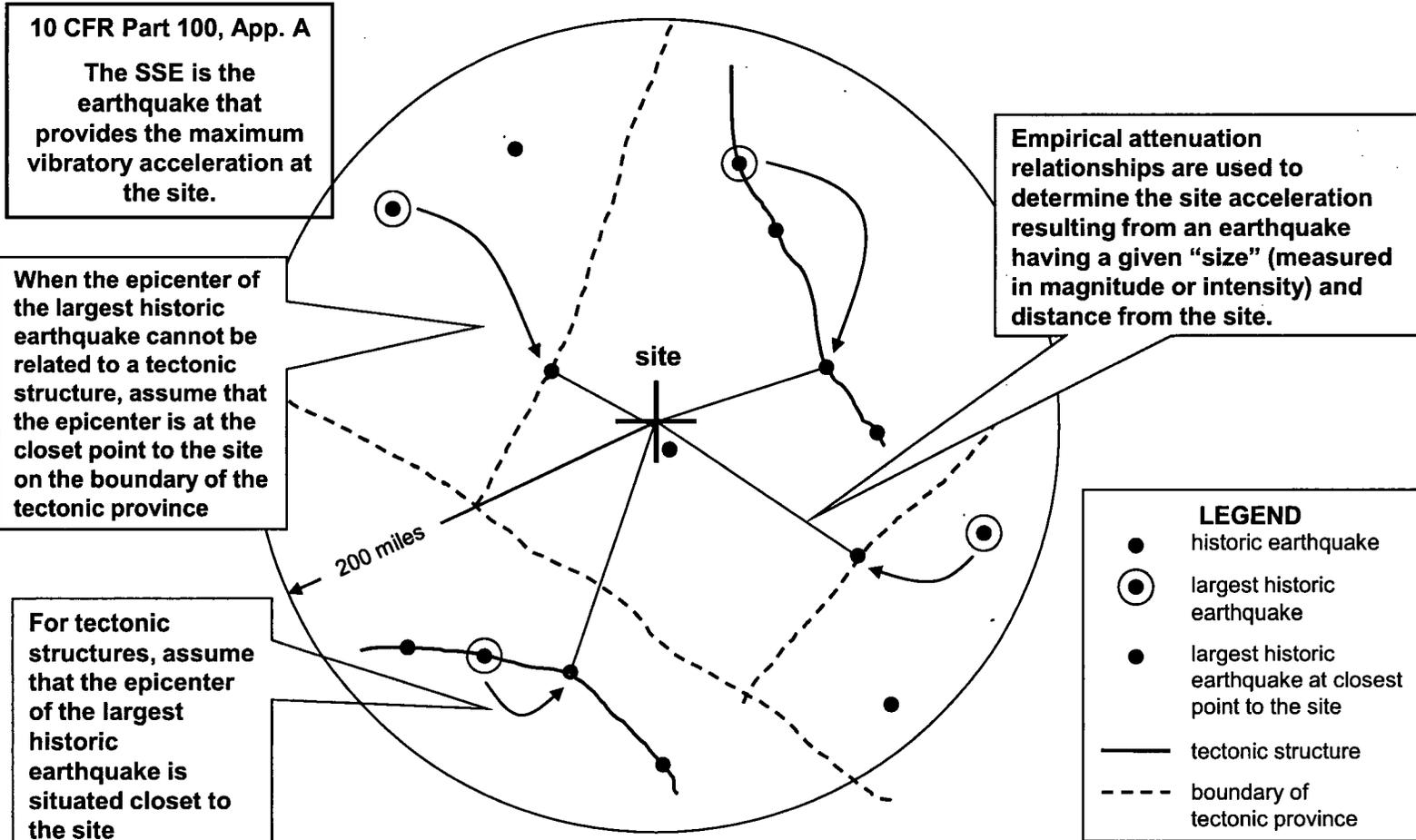




Applicable Regulations (pre-1997)

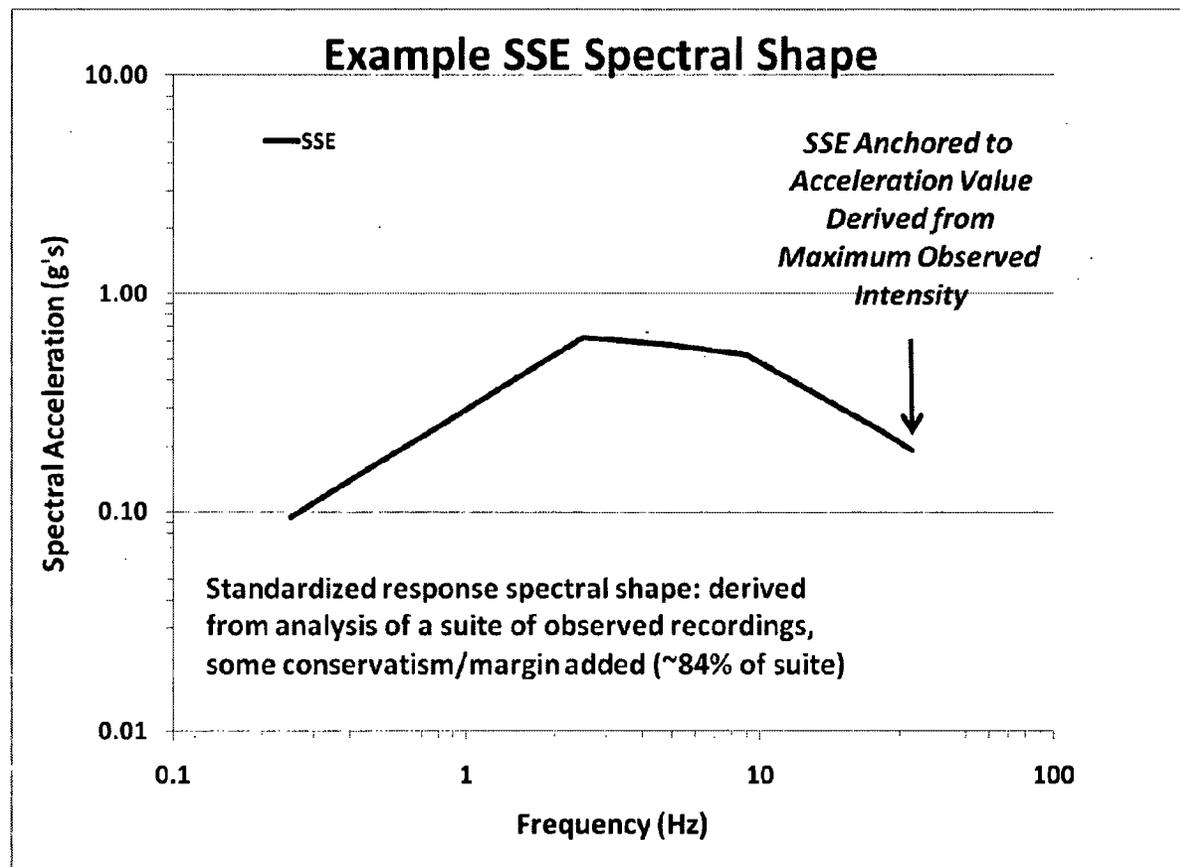
- **10 CFR 100.10(c)(1) and Appendix A establish the seismic design basis for plants licensed before January 10, 1997 (i.e., currently operating plants):**
 - **Based on a review of earthquakes that have occurred nearby the site**
 - **A deterministic approach- no specification of frequency of occurrence**
 - **Different approach than probabilistic seismic hazard assessment (PSHA)**
- **10 CFR Part 50, Appendix A, GDC-2 and similar principle design criteria require that SSCs be designed to withstand the effects of natural phenomena without loss of capability to perform their safety functions:**
 - **Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area**
 - **Include sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated**
- **No requirement for periodic reassessment of the seismic design basis.**

Determination of the Safe Shutdown Earthquake (SSE)



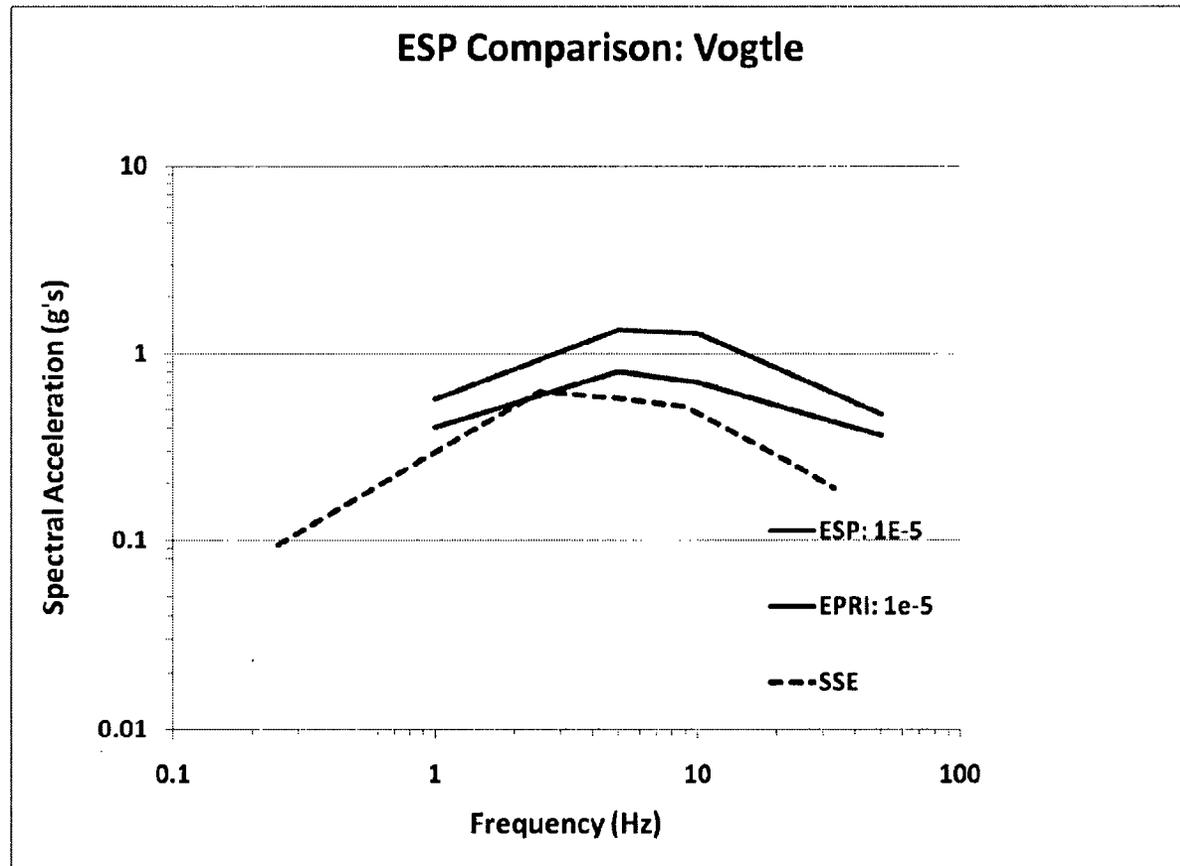
Safe Shutdown Earthquake (Ground motion)

Response Spectrum:
 Peak response
 of a series of SDOF
 oscillators of varying
 frequency



Observations From ESP Reviews

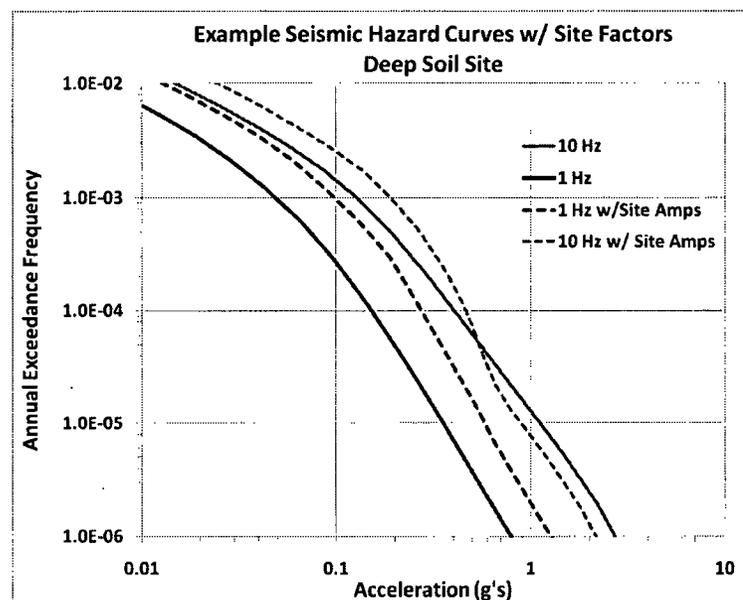
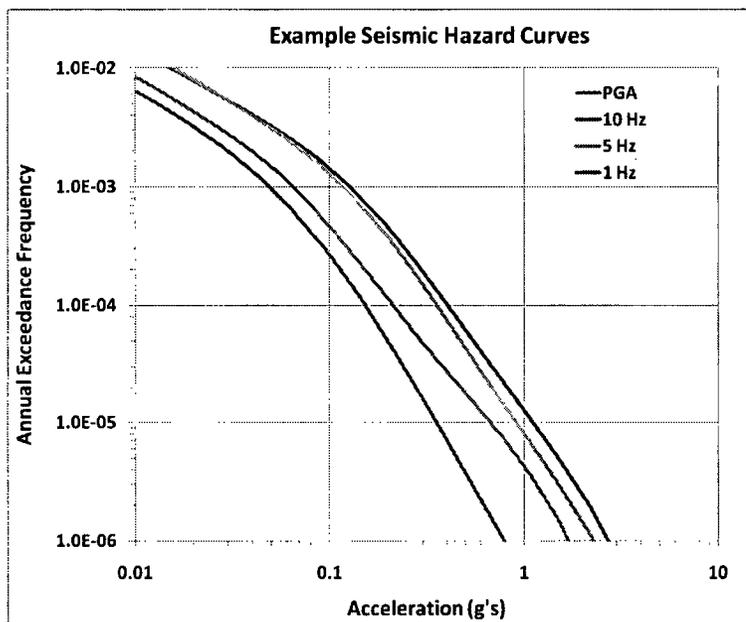
**Uniform Hazard
Response
Spectrum:
 Represents
 Constant
 Annual
 Frequency/
 Probability**



Calculation of Seismic Hazard

- **Requirements:** produce consistent estimates for 68 different sites across the CEUS.
 - Incorporate site-specific geological information.
- **Solution:** utilize the 2008 USGS software used to develop National Seismic Hazard maps. Calculate for rock site conditions, adjust to “site specific” conditions.
- **Output:** seismic hazard curves for four spectral frequencies for each NPP. Following Regulatory Guide 1.208 compute ground motion response spectra (GMRS) for each NPP.

Seismic Hazard Results- For Each Site

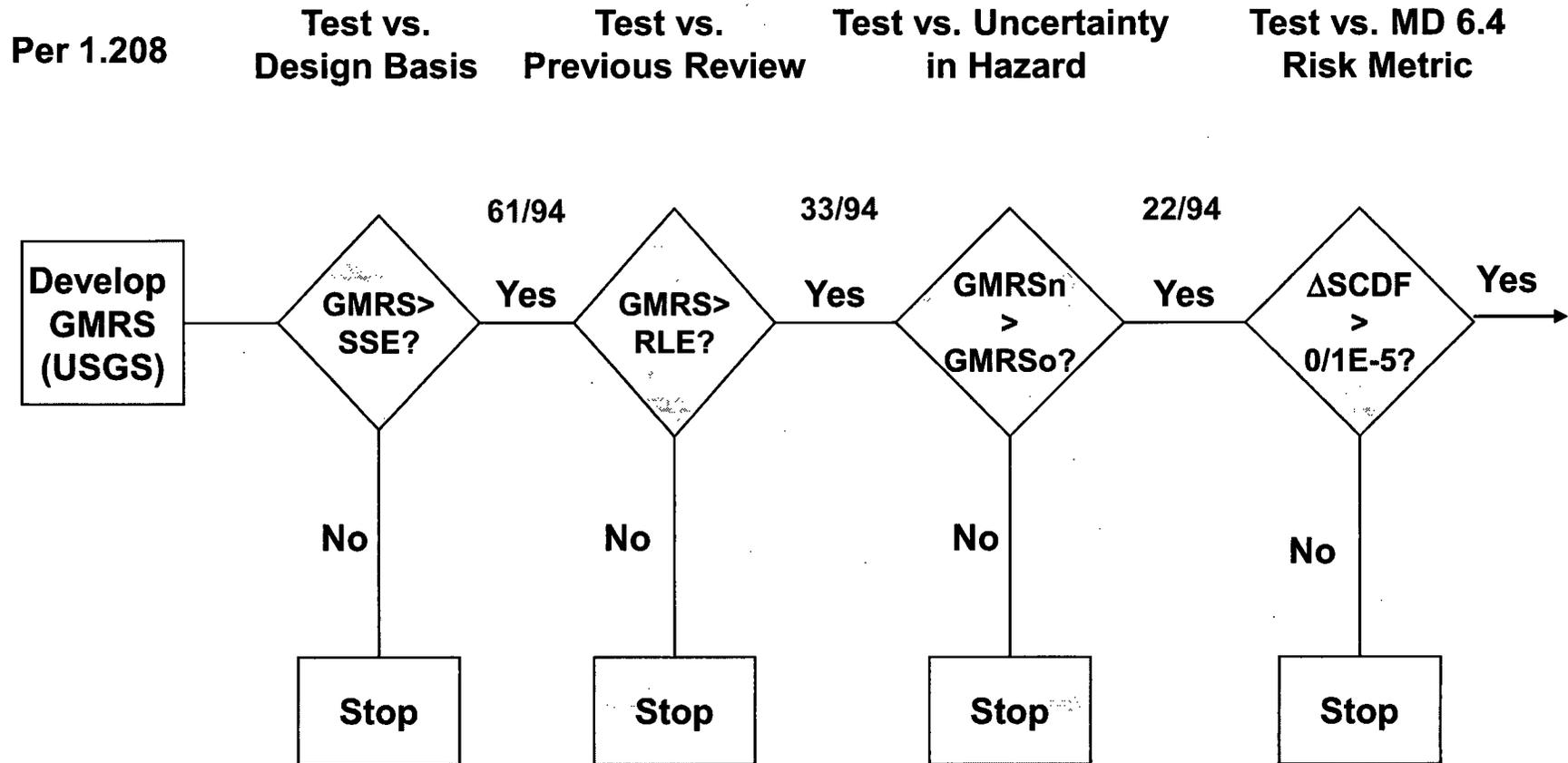


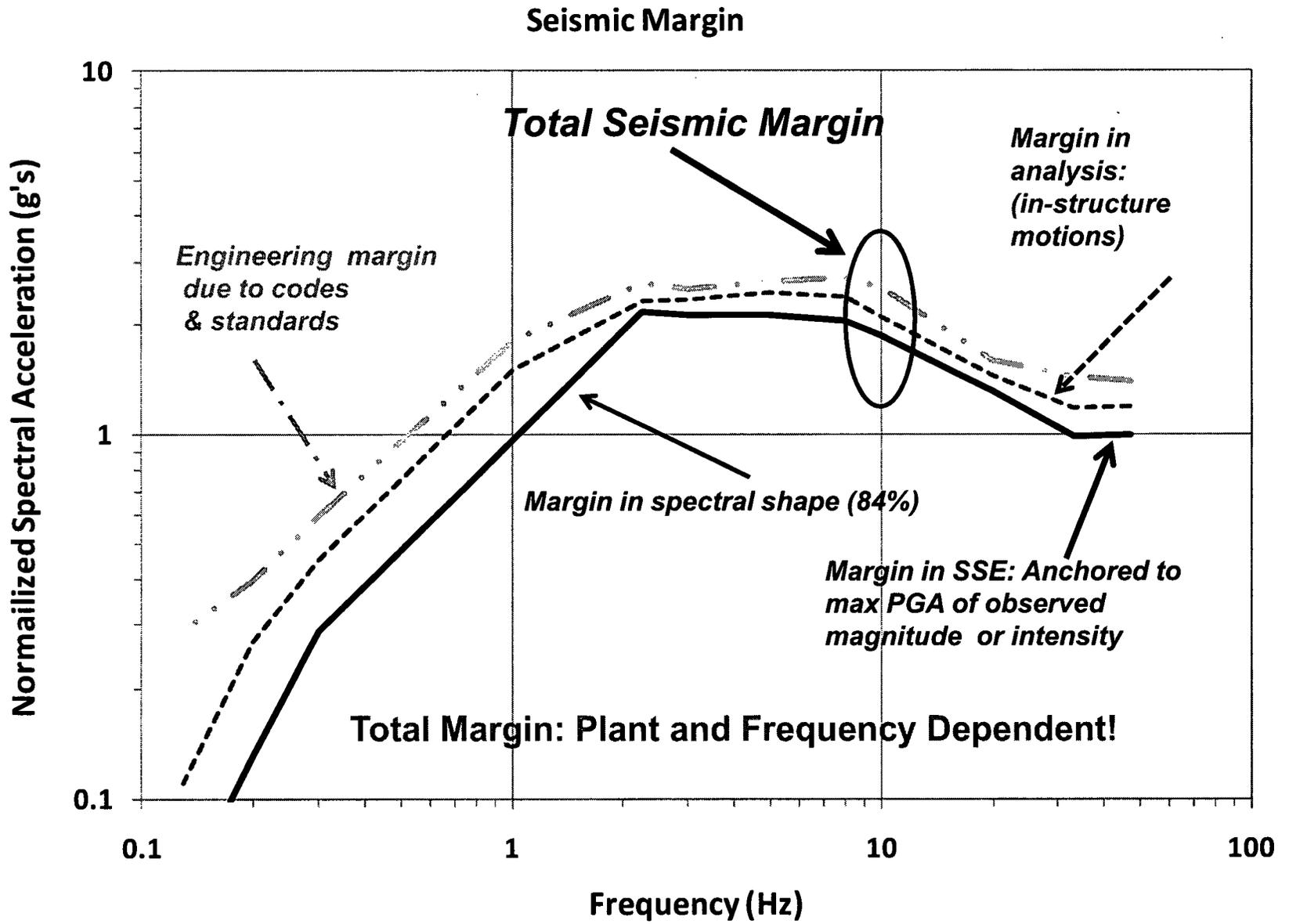


Individual Plant Examination of External Events (IPEEE) Program

- The IPEEE program also considered the implications of Beyond Design Basis Ground Motions.
- IPEEE used a review-level earthquake (RLE) whose spectra exceeded/equaled the SSE and demonstrated plant safety either with low core damage frequency (via SPRA: ~30% CEUS plants) or high seismic margin (via SMA: ~70% CEUS plants).
- The emphasis was on developing risk insights.
- Seismic hazard curves from EPRI and LLNL used.

Hazard/Risk Evaluation Process



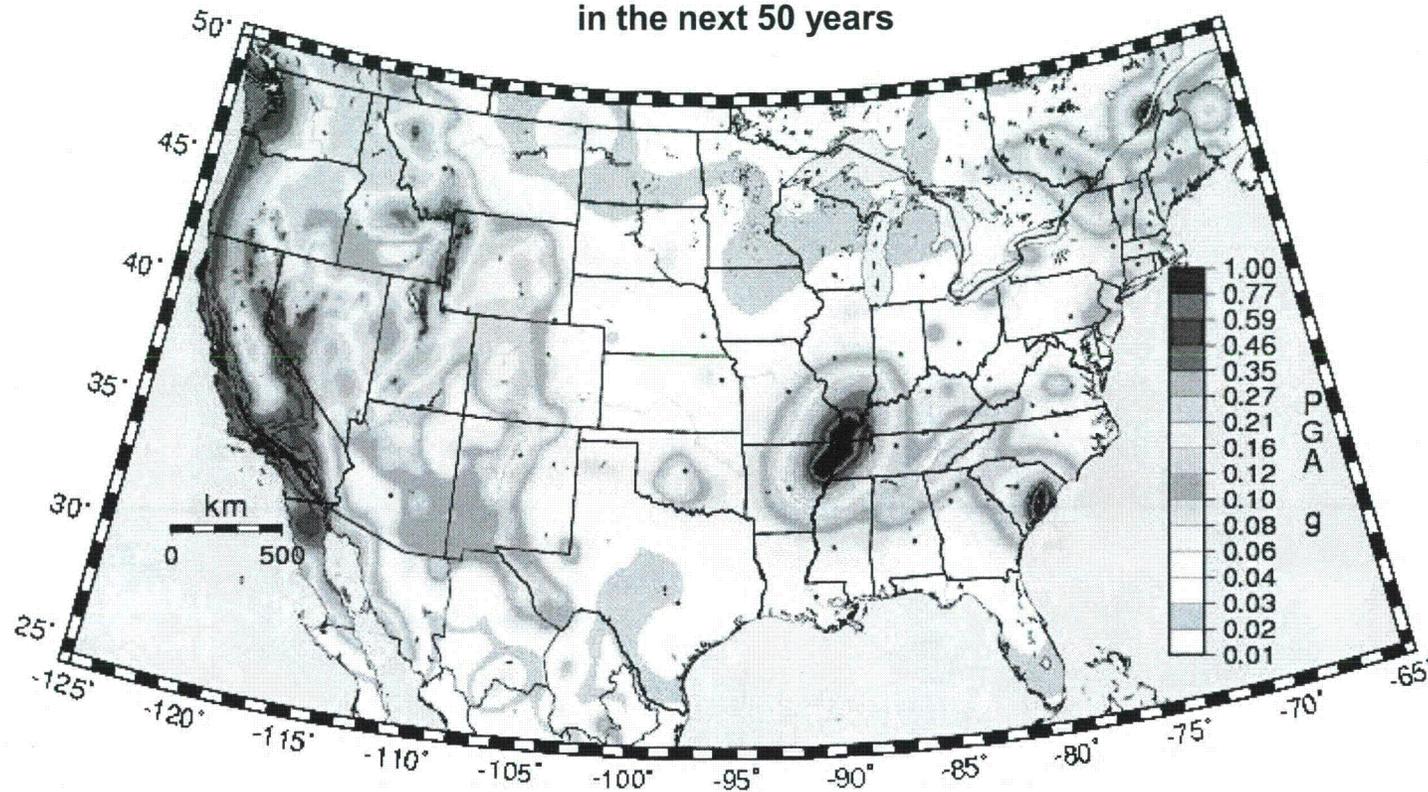


Assessing the Implications of Increased Seismic Hazard

- Compare risk due to different seismic hazard curves:
 - IPEEE-era curves:
 - 1989: EPRI/SOG (EPRI NP-6395) – many plants
 - 1994: LLNL (NUREG-1488) – all plants
 - Recent curves:
 - 2000s: ESP and COL applications for co-located plants – few plants
 - 2000s: EPRI curves – proprietary information for six sites provided under NRC/EPRI Memorandum of Understanding for collaborative seismic research
 - 2008: USGS – all plants
- When performing a Safety/Risk Assessment of a generic issue, usually pick several “representative” plants for analysis. However, for GI-199, need to conduct analyses for each CEUS plant:
 - Nationwide variability of seismic hazards
 - Variability in plant-specific seismic fragilities

Seismic Hazard Variability

Peak ground acceleration (PGA) 2% probability of exceedance
in the next 50 years



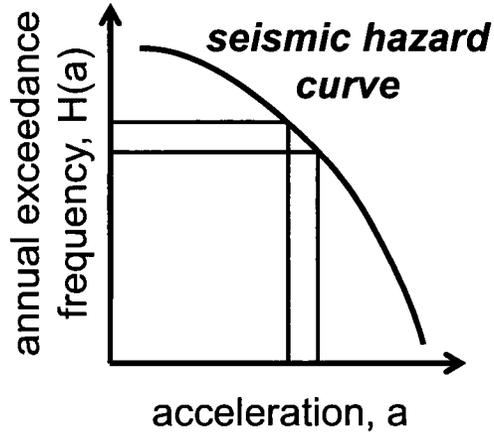
Source: earthquake.usgs.gov



Crafting an Approach

- Available seismic fragility information from IPEEEs:
 - 30% based on Level 1 seismic PRAs (SPRAs)
 - 70% based on seismic margins analysis (SMAs)
 - Limited information on seismic containment performance
 - Plants have been modified since the IPEEEs, but the impact of these modifications on seismic fragility is not well understood
 - IPEEEs completed before consensus standards on PRA quality were developed; no peer review or in-depth staff review.
- Prohibitive effort to develop SPRAs for all plants.
- The approach:
 - For each CEUS plant,
 - Combine mean seismic hazard curves (EPRI/SOG, LLNL, and USGS)
 - With the mean plant-level fragility curve
 - Developed from IPEEE information to
 - Estimate SCDF.

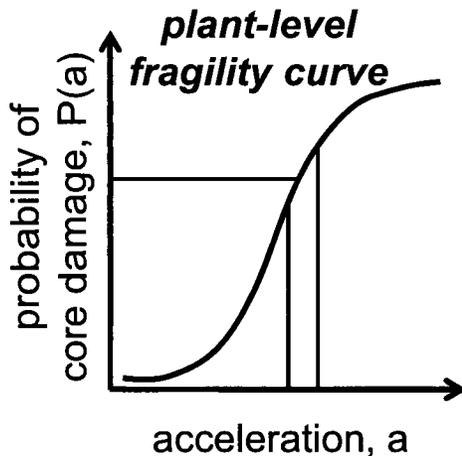
Computing SCDF



Over a small range of accelerations, the SCDF contribution is the product of:

- The frequency of earthquakes with accelerations in the range, and
- The probability of core damage given acceleration within the range

Add up the contributions over all accelerations.

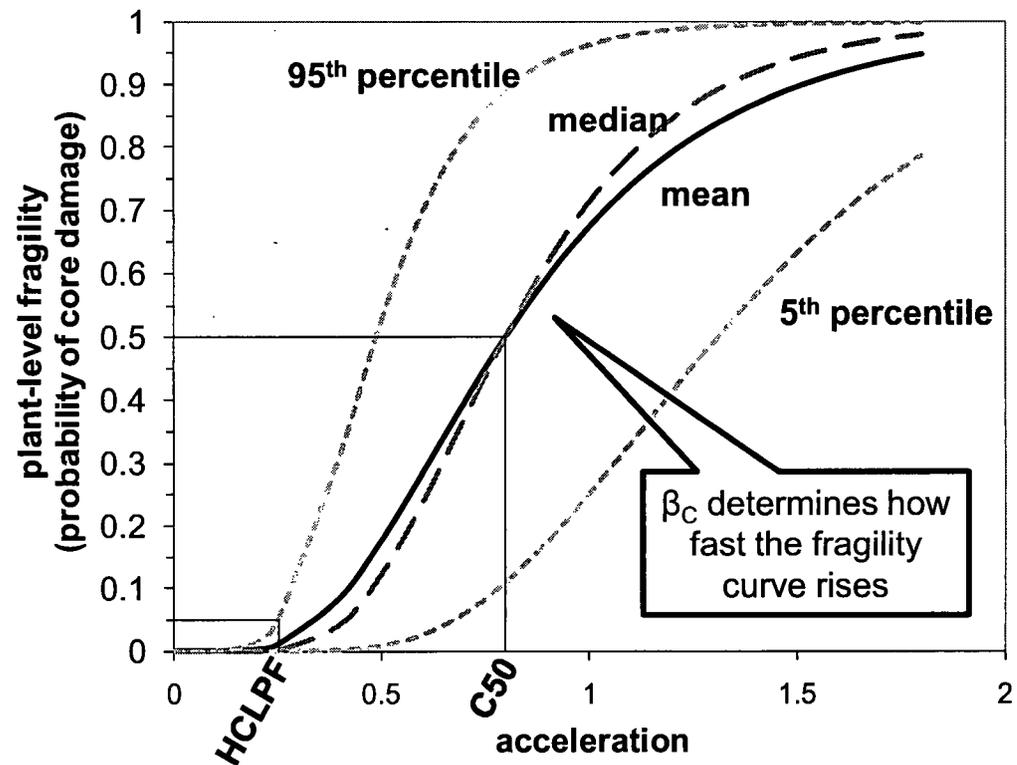


$$SCDF = \int_0^{\infty} P(a) \left(-\frac{dH(a)}{da} \right) da$$

$$= \int_0^{\infty} H(a) \frac{dP(a)}{da} da$$

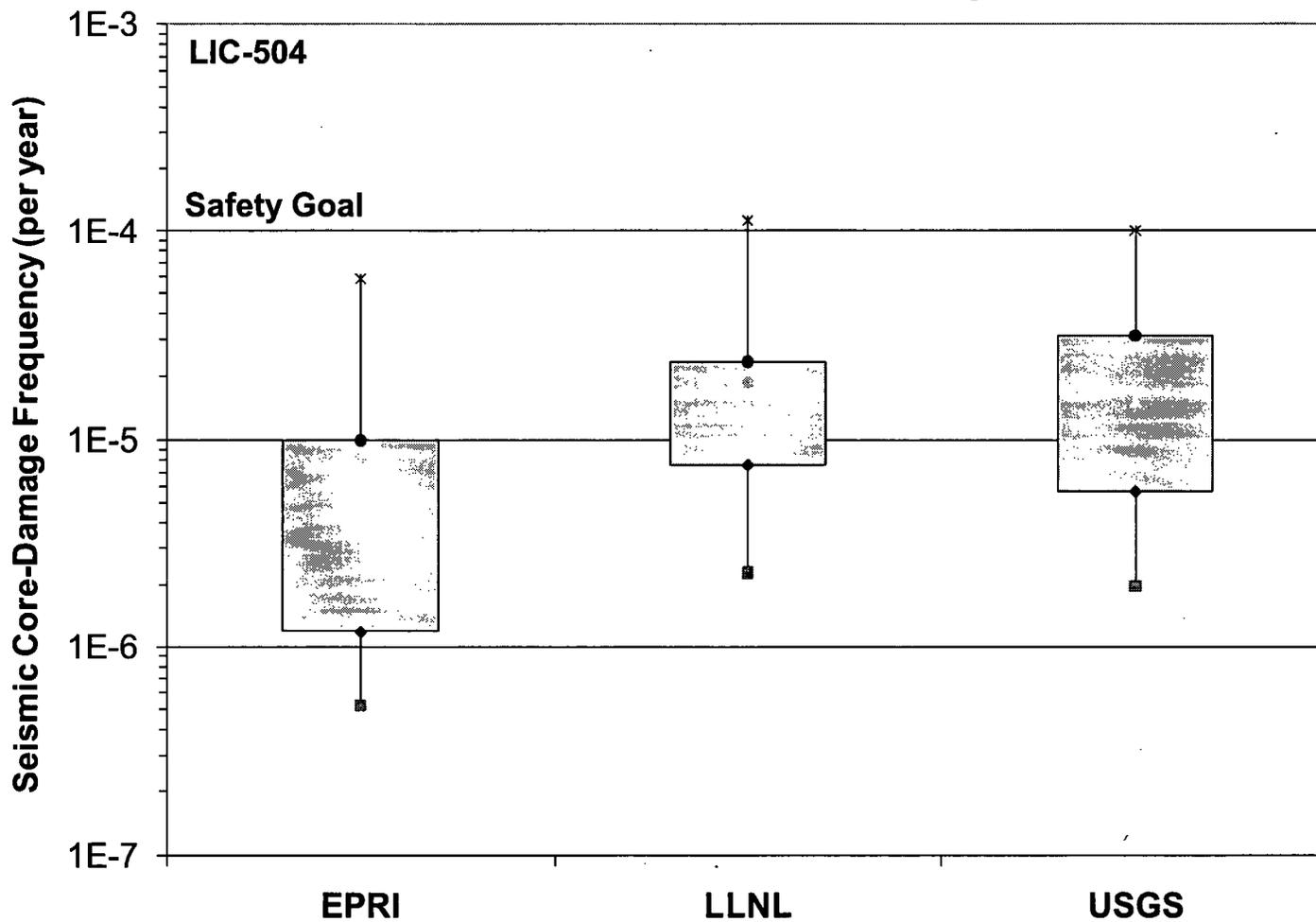
Plant-Level Seismic Fragility Curves

- Determined by SPRA
- Log-normal shape with two parameters:
 - C_{50} is the median seismic capacity
 - β_C is the composite logarithmic standard deviation
- Can be estimated from SMA: The plant-level HCLPF approximately corresponds to a conditional core-damage probability of 0.01

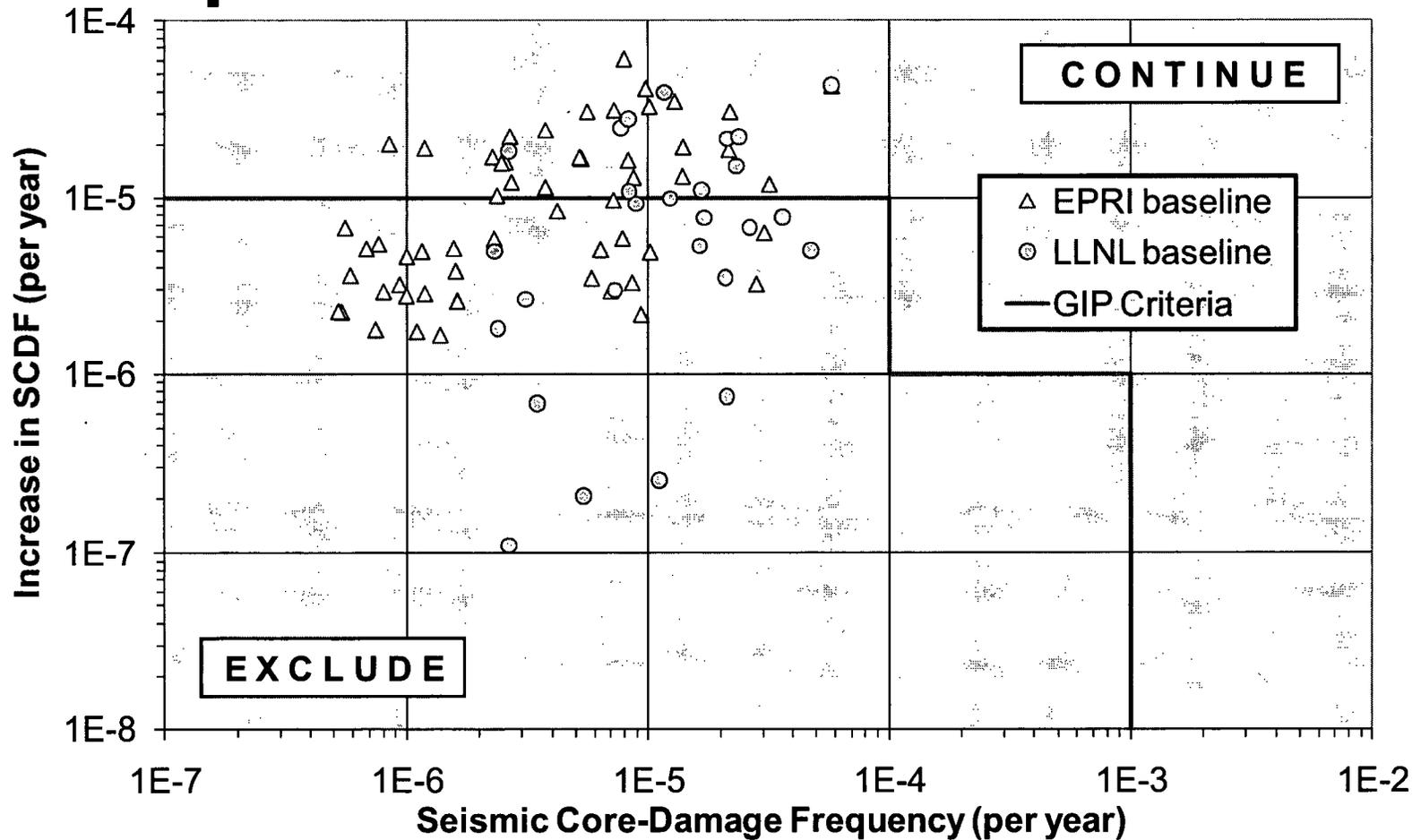


PGA, acceleration for a specific spectral frequency (e.g., 10 Hz), or acceleration over a range of spectral frequencies (e.g., 3-8Hz)

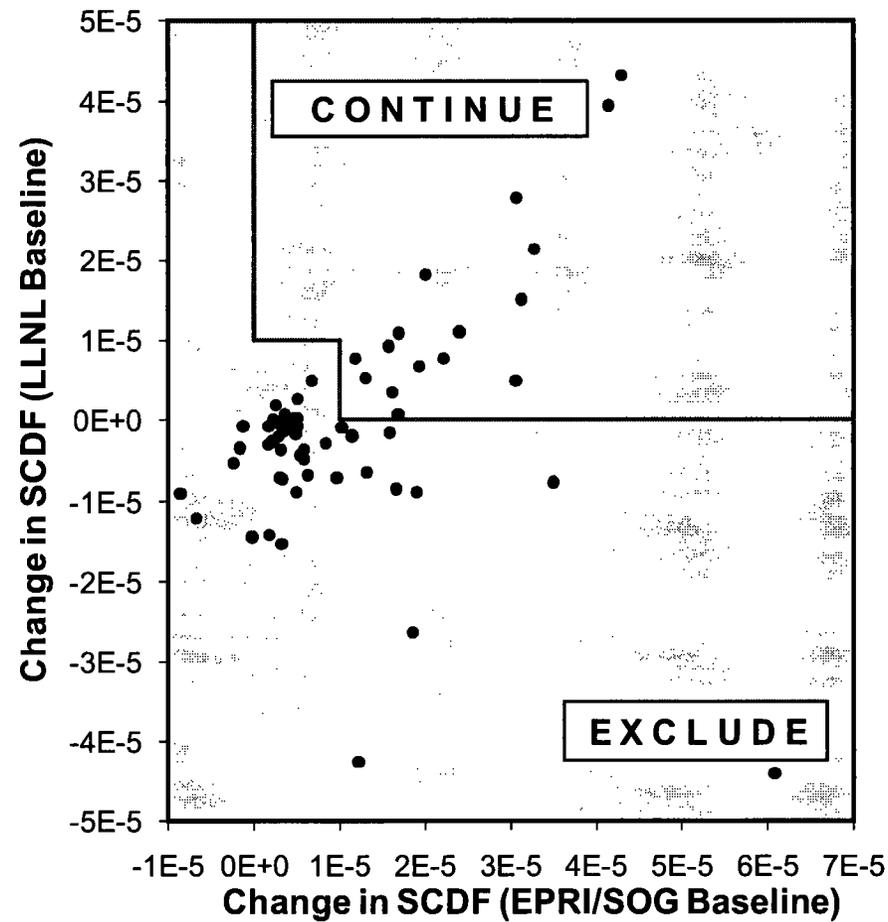
Fleetwide SCDF Variability



Comparison to GIP Criteria



Delta-Delta Plot





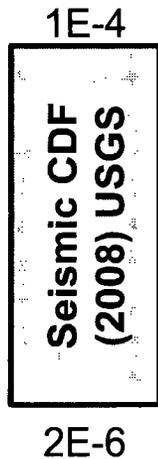
**Plants in the
“Continue” Zone**

Do We Need to Consider Backfits?

Cost-Justified Backfits That Provide Substantial Safety Enhancements

Safety Goal Evaluation Screening Criteria (NUREG/BR-0058)

Distribution of GI-199
 Safety/Risk
 Assessment Results



Change in CDF From Proposed Backfit	1E-3	Proceed to value/impact portion of regulatory analysis	Proceed to value/impact portion of regulatory analysis (priority)
	1E-4	Management decision whether to proceed with value/impact portion of regulatory analysis	Proceed to value/impact portion of regulatory analysis
	1E-5	No action taken	Management decision whether to proceed with value/impact portion of regulatory analysis
	1E-6	1E-2	1E-1
		Conditional Containment Failure Probability	



Needed for GI-199 Regulatory Analysis

- Updated site specific hazard curves
- Frequency dependent, site specific amplification functions
- Plant level fragility information
- Plant specific contributors to seismic risk
 - Can be produced for plants with seismic PRA
 - Will need method developed for plants with SMA
- Need repeatable approach for evaluating new seismic hazard information and future updates



Path Forward

- NRR lead with RES support
 - Issue has transitioned from the GI Program to Regulatory Office Implementation
 - Issued Information Notice 2010-018 to inform plants of the GI-199 Safety/Risk Assessment results
 - Develop a generic communication to request needed data
 - RES works with EPRI on method for plants that used Seismic Margins Analysis (SMA)
 - RES develops inputs for GI-199 regulatory analysis under a user need request



Overview of Generic Issue 199 Safety/Risk Assessment Results

- Operating power plants are safe
- Though still small, some seismic hazard estimates have increased
- Assessment of GI-199 will continue
 - Information is needed to perform regulatory assessments
 - NRC will request the needed information



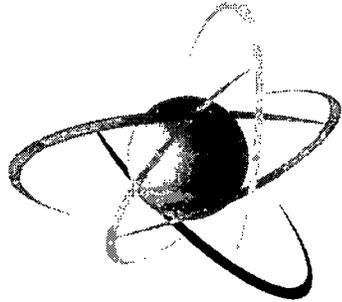
INDUSTRY REMARKS

QUESTIONS?

Acronyms and Initialisms

ANS	American Nuclear Society
ANSI	American National Standards Institute
CAV	cumulative absolute velocity
CDF	core-damage frequency
CEUS	Central and Eastern United States
EPRI	Electric Power Research Institute
ESP	early site permit
GI	Generic Issue
GMRS	ground motion response spectrum
HCLPF	high confidence of low probability of failure
IPEEE	Individual Plant Examination of External Events
LLNL	Lawrence Livermore National laboratory
MD	Management Directive
MOU	memorandum of understanding
NRR	Office of Nuclear Reactor Regulation
PGA	peak ground acceleration
RES	Office of Nuclear Regulatory Research
RG	regulatory guide
SCDF	seismic core-damage frequency
SMA	seismic margins analysis
SPRA	seismic probabilistic risk assessment
SSE	safe shutdown earthquake
USGS	U.S. Geological Survey

Attachment NRC_7.joboptions (13738 Bytes) cannot be converted to PDF format.



U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

*view paper
currently on
website not correct*

RIC 2011

Safety/Risk Assessment Results and Regulatory Approach to GI-199

Team effort:

Pat Hiland - panel chair
NRC/DE Director

Jon Ake - Senior Scientist

John Kentham
and Lane Hillier } GIP

Marty Stutzke, NRC/RES

Kamal Manoly, NRC/NRR

March 8, 2011

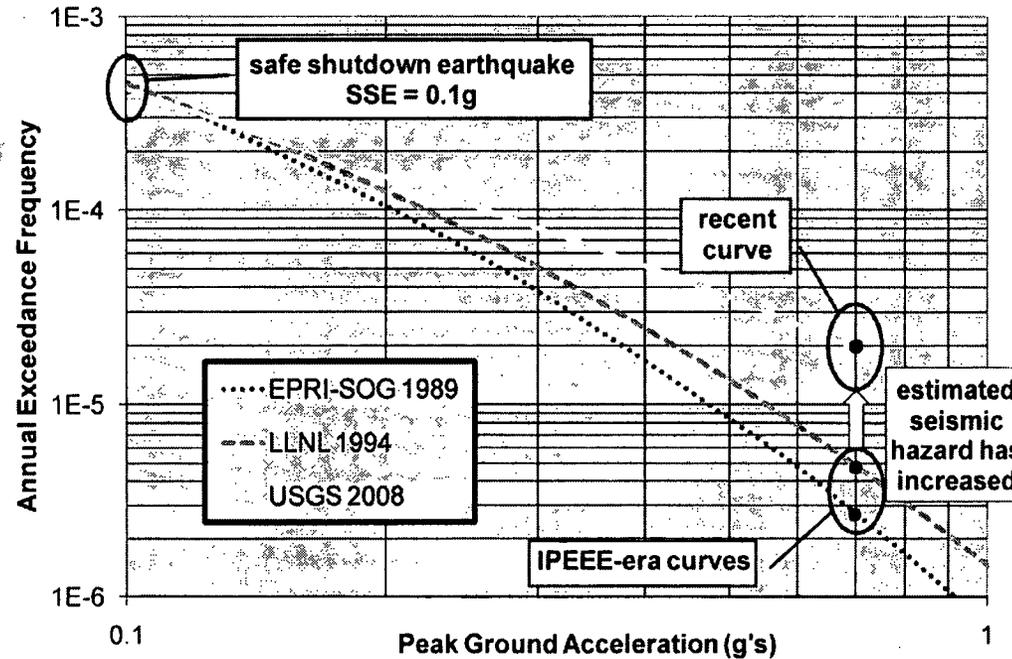
last page (49)

lists references

- All publicly available

What is GI-199 About?

*CEUS
- East of Rockies
- 96*



Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States (CEUS) on Existing Plants

- ① ESP reviews - higher results
- ② Shown above for a real plant
 - Explain AEF
 - Bigger in ZSSE
 - $H(SSE)$ is constant

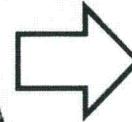
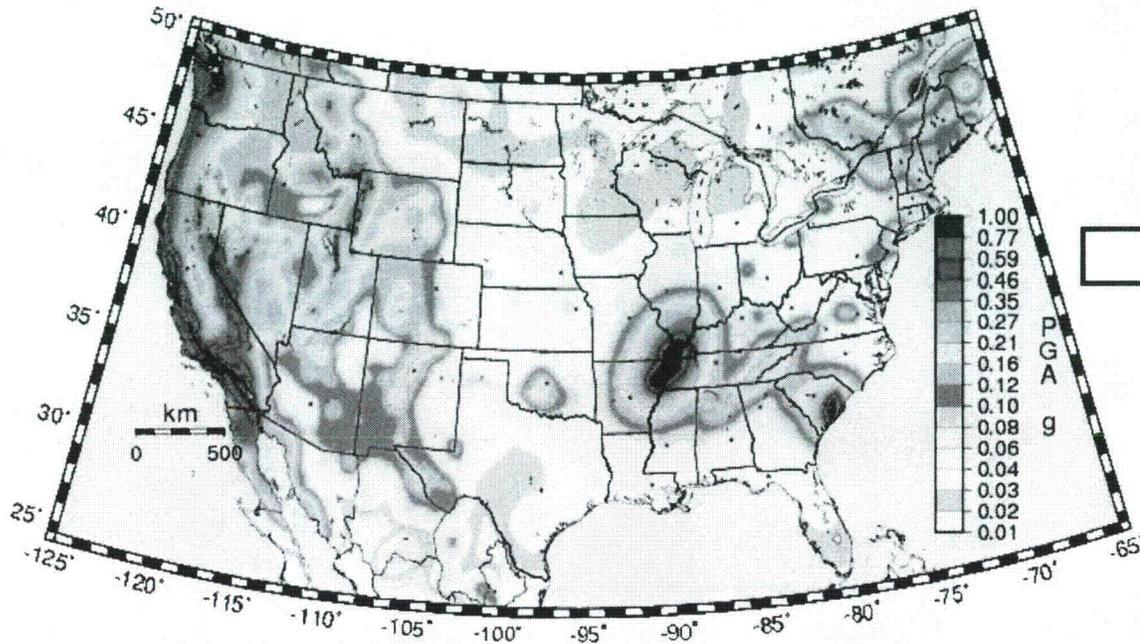


Safety/Risk Assessment Goals

- Determine, on a generic basis, if the risk associated with GI-199 warrants further investigation for potential imposition of cost-justified backfits.
- Provide a recommendation regarding the next step (i.e., continue to the Regulatory Assessment for identification and evaluation of potential generic, cost-justified backfits, be dropped due to low risk, or have other actions taken outside the Generic Issues Program - GIP).

Seismic Hazard Variability

96 plants



Need to estimate seismic risk for each CEUS plant

East of the Rocky Mountains

Peak ground acceleration — 2% in 50 year probability of exceedance. Source: earthquake.usgs.gov



Safety/Risk Assessment Approach

- For each CEUS plant,
- Combine mean seismic hazard curves
 - 1989: EPRI/SOG (EPRI NP-6395) – many plants
 - 1994: LLNL (NUREG-1488) – all plants
 - 2008: USGS – all plants
- With the mean plant-level fragility curve
- Developed from Individual Plant Examination – External Events (IPEEE) information to estimate seismic core-damage frequency (SCDF).

Baseline

{ 30% SPRA
{ 70% SMA

Not SPRA or SMA Rather, an approach to estimate a SCDF

At this stage, used info we have in-house

Need to establish a basis to ask licensees for more info

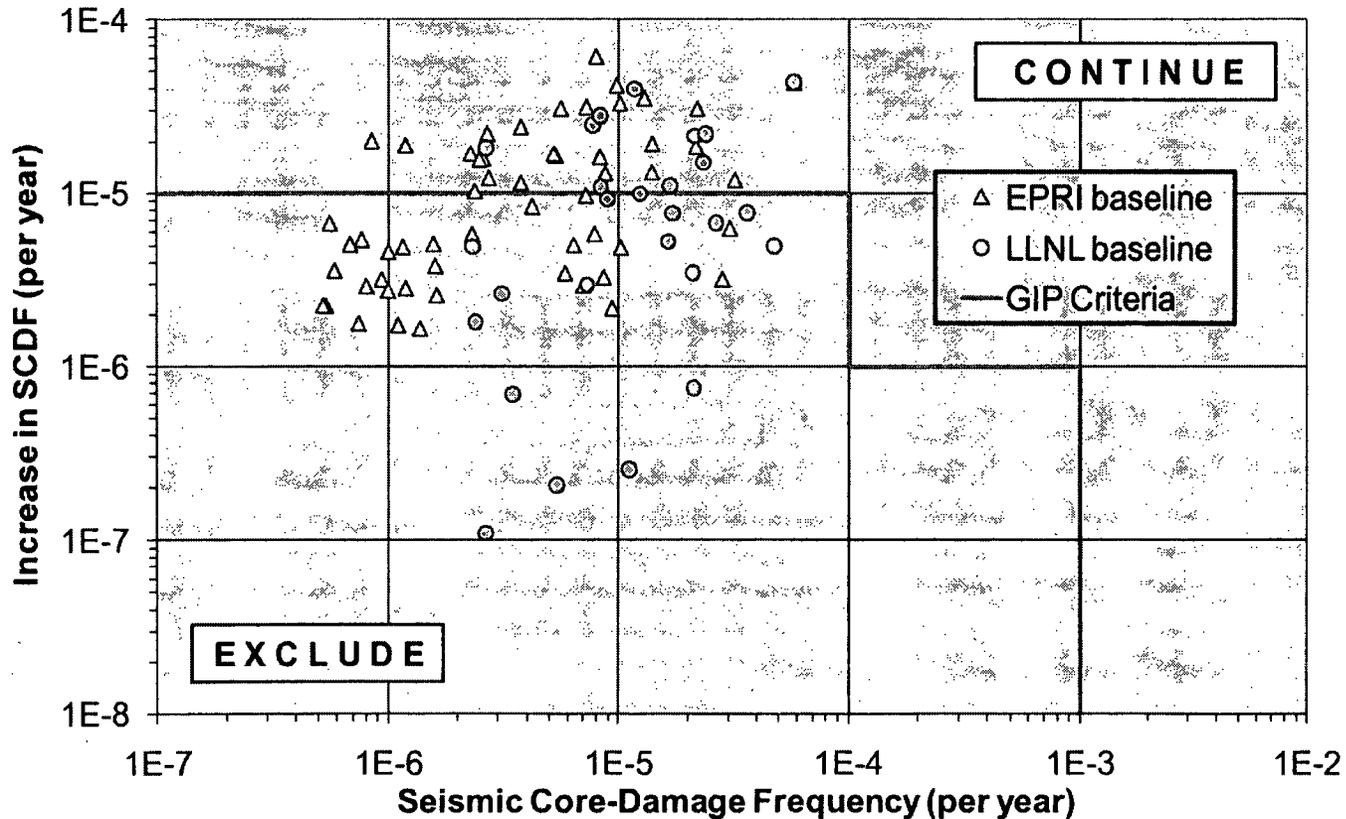


Two baselines: EPRI/SCG at LLNL
(21555)

△ based on USGS

Some Δ's CO

Comparison to GIP Criteria



★ 27 = More than a few plants in "continue" zone

~~All~~ All SCDFs using USGS $1.10 \frac{1}{y}$



Path Forward

- NRR lead with RES support
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Safety/Risk Assessment Summary

- Operating power plants are safe
- Though still small, some seismic hazard estimates have increased
- Assessment of GI-199 will continue
 - Information is needed to perform regulatory assessments
 - NRC will request the needed information



7²⁵

For More Information

Document	ADAMS Accession Number
October 6, 2010 Meeting Information Package	ML102500242
October 6, 2010 Meeting Presentation Slides	ML102770655
GI-199 Safety/Risk Assessment Package	ML100270582
NRC Information Notice 2010-018 <i>Reactors - Part 50 ISFSIs - Part 72</i>	ML101970221
NRC Information Notice 2010-019	ML102160735

- Part 70: fuel info, mixed oxide, enrichment
- Part 76: gaseous diffusion plants
- Part 40: Uranium conversion/LE conversion

From: [Weber, Michael](#)
To: [HOO Hoc](#)
Cc: [McDermott, Brian](#); [Virgilio, Martin](#)
Subject: Response - HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT
Date: Friday, March 11, 2011 5:17:36 AM

Thanks.

From: HOO Hoc
To: Weber, Michael
Sent: Fri Mar 11 05:16:39 2011
Subject: RE: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

0813-0859 is the time range it would be expected in Hawaii. No firm time on the expected arrival at the CA coast so far. We can tell you the latest at the EDO Brief.

From: Weber, Michael
Sent: Friday, March 11, 2011 5:11 AM
To: HOO Hoc
Subject: Response - HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

Thanks, Joe. When was the tsunami expected to hit the coast at Diablo?

From: HOO Hoc
To: HOO Hoc
Sent: Fri Mar 11 05:09:33 2011
Subject: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

Diablo Canyon declared a Notice of Unusual Event at 0123 PST due to a Tsunami Warning for the coastal areas of California as a result of a 8.9 magnitude earthquake off the coast of Japan. The Agency remains in the NORMAL response mode as of 0452 EST.

Joe O'Hara
Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov



AAA/2

From: [HOO Hoc](#)
To: [HOO Hoc](#)
Subject: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT
Date: Friday, March 11, 2011 5:10:59 AM

Diablo Canyon declared a Notice of Unusual Event at 0123 PST due to a Tsunami Warning for the coastal areas of California as a result of a 8.9 magnitude earthquake off the coast of Japan. The Agency remains in the NORMAL response mode as of 0452 EST.

Joe O'Hara
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AAA/3

From: [Collins, Elmo](#)
To: [Virgilio, Martin](#)
Cc: [Howell, Art](#); [Weber, Michael](#); [Borchardt, Bill](#); [Leeds, Eric](#); [Boger, Bruce](#); [Dricks, Victor](#); [Uselding, Lara](#); [Doane, Margaret](#); [Wiggins, Jim](#); [Evans, Michele](#); [Weil, Jenny](#); [Powell, Amy](#); [Kennedy, Kriss](#); [Maier, Bill](#); [Miller, Charles](#); [Dean, Bill](#); [McCree, Victor](#); [Satorius, Mark](#); [Howell, Linda](#)
Subject: Addl info: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT
Date: Friday, March 11, 2011 5:45:41 AM

Marty

We do plan an update phone call at 8 am EST on a HOO bridge to review collected information about progress across Pacific. Region IV plans to lead the brief regarding potential impact on RIV licensees.

For material licensees, we have a couple of portable gage licensees in Guam and American Samoa. A number of licensees in Hawaii.

News reports show earthquake/tsunami impacts in Japan including a nuclear power plant.

Diablo has design features for a tsunami wave. We'll discuss site design features and licensee actions on the call.

Elmo

From: HOO Hoc
To: HOO Hoc
Sent: Fri Mar 11 05:09:33 2011
Subject: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

Diablo Canyon declared a Notice of Unusual Event at 0123 PST due to a Tsunami Warning for the coastal areas of California as a result of a 8.9 magnitude earthquake off the coast of Japan. The Agency remains in the NORMAL response mode as of 0452 EST.

Joe O'Hara
Headquarters Operations Officer
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Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov



AAA/4

From: [Leeds, Eric](#)
To: [Boger, Bruce](#); [Grobe, Jack](#); [Brown, Frederick](#); [McGinty, Tim](#); [Hiland, Patrick](#); [Skeen, David](#); [Ruland, William](#); [Giitter, Joseph](#); [Thorp, John](#); [Virgilio, Martin](#); [Wittick, Brian](#)
Subject: RE: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT
Date: Friday, March 11, 2011 7:42:59 AM

Great idea Bruce – thank you. And thanks for taking the call!!!!

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

From: Boger, Bruce
Sent: Friday, March 11, 2011 5:32 AM
To: Leeds, Eric; Grobe, Jack; Brown, Frederick; McGinty, Tim; Hiland, Patrick; Skeen, David; Ruland, William; Giitter, Joseph; Thorp, John; Virgilio, Martin; Wittick, Brian
Subject: Fw: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

West coast landfall estimated to be around 11:00 am EST. An update call will take place at 8:00 am EST. NRR should call into the Ops Center at that time, perhaps as group from O-13D20?

From: HOO Hoc
To: HOO Hoc
Sent: Fri Mar 11 05:09:33 2011
Subject: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

Diablo Canyon declared a Notice of Unusual Event at 0123 PST due to a Tsunami Warning for the coastal areas of California as a result of a 8.9 magnitude earthquake off the coast of Japan. The Agency remains in the NORMAL response mode as of 0452 EST.

Joe O'Hara
Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
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email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov



AAA/S

From: [HOO Hoc](#)
To: [HOO Hoc](#)
Subject: HOO HIGHLIGHT - NRC IN MONITORING MODE AT 0946
Date: Friday, March 11, 2011 10:08:44 AM

The NRC is in the Monitoring Response Mode as of 0946 on 3/11/11. Region IV will take the lead for U.S. sites and HQ for international sites to provide assistance in response to the earthquake in Japan and any adverse affects from a tsunami. This response mode change is NOT associated with event number 46668.

Joe O'Hara
Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov



AMA/6

From: [Leeds, Eric](#)
To: [Quichocho, Jessie](#); [McGinty, Tim](#)
Cc: [Blount, Tom](#); [Boger, Bruce](#); [Weber, Michael](#); [Virgilio, Martin](#); [Borchardt, Bill](#); [McDermott, Brian](#); [Evans, Michele](#); [Mamish, Nader](#); [Wittick, Brian](#)
Subject: Status: Naval Assets
Date: Friday, March 11, 2011 10:15:45 AM

All –

Please see below email from Jesse on status of Naval assets. I've requested that Jesse stay in touch with events through the Op Center and continue to coordinate and supply info to our counterparts at Naval reactors.

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

From: Quichocho, Jessie
Sent: Friday, March 11, 2011 9:52 AM
To: McGinty, Tim
Cc: Blount, Tom; Leeds, Eric; Boger, Bruce
Subject: Status: Naval Assets
Importance: High

I received a call from the Matthew Napoli, Technical Director for Foreign Affairs NAVSEA 08.

Report as follows:

In Japan, all assets are under control. No issues.

In Guam, ships were unmoored no issues on equipment.

They would like open communications with NRC on the status of the plants in Japan. They heard evacuations are occurring and that some facilities do not have cooling. They would like to be aware of any events that occur that may affect their assets.

Would it be possible to include NR in our communications or at a minimum provide them information as part of updates?

Thanks,
Jessie

AAA/7

From: [Leeds, Eric](#)
To: [Weber, Michael](#)
Cc: [Virgilio, Martin](#); [McDermott, Brian](#); [Boger, Bruce](#); [Grobe, Jack](#); [Hiland, Patrick](#); [McGinty, Tim](#); [Ruland, William](#)
Subject: FW: UPDATE: RTR Facilities- no immediate impact from Tsunami Warning
Date: Friday, March 11, 2011 12:41:22 PM
Importance: High

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

From: Quichocho, Jessie
Sent: Friday, March 11, 2011 11:40 AM
To: McGinty, Tim; Blount, Tom; Leeds, Eric; Boger, Bruce
Cc: Reed, Elizabeth; Sloan, Scott; Eads, Johnny; Adams, John; Ross-Lee, MaryJane; Tran, Linh; Isaac, Patrick
Subject: UPDATE: RTR Facilities- no immediate impact from Tsunami Warning
Importance: High

The facility that comes close to the coast line is UC- Irvine at about 4 miles or so at an elevation of 100 feet. All other facilities are much further inland and will not be impacted by a Tsunami.

At 11:15am the NRC contacted the Facility Director, UC- Irvine and was informed that he was aware of the Tsunami warning, that the predictions in the area of the facility were small waves, and that he does not feel that the effects of a Tsunami would impact his facility. We discussed other indirect impacts such as loss of power and possible flooding. The licensee will contact the NRC if there should be any other developments resulting from the Tsunami Warning.

Questions, please feel free to contact Linh Tran or myself.

Jessie

AAA/8

From: [Leeds, Eric](#)
To: [Borchardt, Bill](#)
Cc: [Weber, Michael](#); [Virgilio, Martin](#)
Subject: Update
Date: Friday, March 11, 2011 2:28:12 PM

We held a cmr TA brief at 1 pm. Not much more than what I told you on the phone. They asked a lot of questions about the japanese nukes that we don't have answers to. Fukushima daiichi units 1 and 2 seem to be having issues with insufficient cooling and loss of emergency pwr but we have no other info. They brought in a temp diesel to the site. We have provided a sit rep to dhs and opa has talking points

AAA/9

From: [Operations Center Bulletin](#)
To: [Operations Center Bulletin](#)
Subject: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**
Date: Friday, March 11, 2011 3:05:17 PM
Importance: High

THIS IS NOT A DRILL.

The NRC and other Federal agencies are closely following an emergency occurring outside of the United States. Press releases about NRC actions are posted on www.nrc.gov. Information is also available on the NRC External Blog at: <http://public-blog.nrc-gateway.gov>. Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200

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.

No response to this message is required.

THIS IS NOT A DRILL

AAA/10

From: Garmon, David
Subject: New OpE COMM: International - Tohoku-Taiheiyou-Oki Earthquake and Tsunami (Honshu, Japan)
Date: Monday, March 28, 2011 3:34:25 PM

This email is being sent to notify recipients of a new posting on the @Operating Experience Community Forum.

Recipients are expected to review the posting for applicability to their areas of regulatory responsibility and consider appropriate actions. However, information contained in the posting is not tasking; therefore, no specific action or written response is required.

Information Security Reminder: OpE COMMs contain preliminary information in the interest of timely internal communication of operating experience. OpE COMMs may be pre-decisional and may contain sensitive/proprietary information. They are not intended for distribution outside the agency

The posting may be reviewed at: **Tohoku-Taiheiyou-Oki Earthquake and Tsunami (Honshu, Japan)**

This COMM is being posted to the following groups: ***All Communications, Chemistry/Chemical Engineering, Containment (leakage, degradation, cooling system performance), Control Room Habitability, Dose Assessment, ECCS, Electrical Power Systems, Emergency Diesel Generators, Emergency Preparedness, Fire Protection, Flood Protection & Missiles, Fuels, Health Physics, Human Performance, HVAC, Inspection Programs, Instrumentation and Controls, Main Steam & Condensate/Feed Systems, Materials/Aging, Natural Phenomena, New Reactors, Piping, Pump and Valve Performance, RCPB Leakage, Reactor Vessel/Pressurizer, Safety Culture, Shutdown Risk, Spent Fuel Storage & Load Handling, Station Service Water Systems & Ultimate Heat Sink, Steam Generators, Structural, Welding/Non-Destructive Examination, Worker Fatigue***

To unsubscribe from this distribution list or to subscribe to a different list on the OpE Community, please visit: <http://nrr10.nrc.gov/rps/dyn/subscription1.cfm>

For more information on the Reactor OpE Program, please visit our Reactor OpE Gateway.

Thank you for reviewing and using Operating Experience.

Regards,
David Garmon
NRR/DIRS/IOEB
(301) 415-3512
Office: O-7C20
Mail Stop OWFN-7C02A

AAA/11

From: [HOO Hoc](#)
To: [HOO Hoc](#)
Subject: HOO Highlight - NOUE Termination at Diablo Canyon
Date: Friday, March 11, 2011 7:49:54 PM

1528 PST - Diablo Canyon has terminated their Unusual Event because the tsunami warning has been reduced to a tsunami advisory. No damage occurred during this event.

Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov



AAA/12

From: Virgilio, Martin
To: McDermott, Brian; Weber, Michael; Harrington, Holly; Morris, Scott; Leeds, Eric
Cc: McCree, Victor
Subject: Fw: News Reports of Japanese NPP Status
Date: Friday, March 11, 2011 7:50:14 PM

All

Please keep these in mind as you develop the key messages/ Q+A's for our communications plan

Marty

From: McCree, Victor
To: Virgilio, Martin
Cc: Dean, Bill; Satorius, Mark; Collins, Elmo
Sent: Fri Mar 11 19:40:15 2011
Subject: News Reports of Japanese NPP Status

I just listened to the NBC and ABC news "experts" accounts of the status of the Fukushima Daiichi Nuclear Power Plant (FDNPP) Units 1 (and 2) and their forecast of what could happen if electrical power was not soon restored. Their accounts included several mis-statements that we ought to be aware of, and perhaps provide clarity in any NRC public response and/or statements that we make on this subject.

- i. One expert implied that the BWR core is normally not covered, and that the ECCS systems only inject after core damage has begun.
- ii. The expert also indicated that although the release of pressure from the containment at FDNPP would be filtered, that the filtration was highly unlikely to be successful.
- iii. Another expert implied that nuclear power plants have a limited ability to withstand an "expected" earthquake, and that they are not designed to handle an "extraordinary" earthquake. [Note: Although the 8.9 Richter scale magnitude earthquake at FDNPP may have been beyond its design basis (or Safe Shutdown Earthquake) the SSE is, by definition, is an extraordinary earthquake.]

Vic

AAA/13

From: [McCree, Victor](#)
To: [Virgilio, Martin](#)
Cc: [Weber, Michael](#)
Subject: NRC Communications on Japanese Earthquake
Date: Friday, March 11, 2011 9:36:47 PM

As I watch the ongoing media reports on the Fukushima reactors, the absence of NRC commentary among the din of speculation and inaccuracies being proffered by "nuclear experts" is noteworthy. Do we plan any proactive media outreach to offer our perspective?
Vic

This email is being sent from an NRC Blackberry device.

AAA/14

From: [Borchardt, Bill](#)
To: [Virgilio, Martin](#)
Subject: FW:
Date: Saturday, March 12, 2011 8:10:59 AM

I confirmed receipt

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

From: Jaczko, Gregory
Sent: Saturday, March 12, 2011 7:50 AM
To: Borchardt, Bill
Subject: FW:

please confirm that you received.

From: Jaczko, Gregory
Sent: Saturday, March 12, 2011 7:21 AM
To: Borchardt, Bill
Cc: Dorman, Dan
Subject: FW:

updated information

From: Lyons, Peter [Peter.Lyons@Nuclear.Energy.gov]
Sent: Saturday, March 12, 2011 7:18 AM
To: Poneman, Daniel; Jaczko, Gregory
Cc: Connery, Joyce; DAgostino, Thomas; Aoki, Steven
Subject: FW:

Kondo-san refers to this as updated version of message to Dan. Thought you all should see it. I haven't compared to see exactly what is different from earlier version. This says the explosion was in reactor building.

I still do not understand why the debate re using sea water for cooling - seems to me it should be used.
pete

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

From: shunsuke.kondo@cao.go.jp [<mailto:shunsuke.kondo@cao.go.jp>]
Sent: Saturday, March 12, 2011 7:01 AM
To: Lyons, Peter
Subject: RE:

Dear Dr. Lyons,

Thank you for your kind email. We are in the midst of the fight for cooling down the core without EDGs, experiencing after shocks almost every hour. Enclosed please find updated version of my note on the situation sent to Dr. Poneman this morning. Just a kind of unofficial personal information.

Yours,
Shunsuke Kondo

=====

Current (15:30 of 2011/03/12) Situation of Fukushima Daiichi (1F, six units) and Fukushima Daini (2F, four units) Nuclear Power Plants Hit by Tohoku-chiho Taiheiyu-oki Earthquake (TT-EQ) on March 11, 2011

The TT-EQ caused automatic shutdown of all operating units of 1F, i.e. unit 1, 2, 3 and 2F, i.e. unit1, 2, 3, 4. Simultaneously, the off-site powers to these units were lost due to the damage of many fossil and some of hydro power generating stations in the network with which these units were connected. Furthermore, most of the emergency diesel generators (EDGs) of these units could not continue operation due to lack of cooling caused by extraordinary high Tsunami. In essence these units were put into the situation called "total blackout".

The regulatory authority recommended every operator to prepare so-called (severe) accident management procedure and features that should be followed in such situation ten years ago and currently all operators have this procedure as a part of operation manual. Therefore TEPCO team has started the operation to cool the core based on this procedure.

The team was faced with difficulty in the execution, however, as the vital power source was not available also due to the flooding of the building: this power source is important as it is to supply power to sustain I&C system that is used to monitor plant status and operate motor-operated valve (MOV) necessary in this operation.

Therefore TEPCO gathered power supply trucks, DC batteries and fire-fighting engines from available sources near-by and the team started their fight to minimize the probability of occurrence of large-scale release, utilizing them.

1F Unit 1: Although RCIC is available to remove heat from the core, the reactor water level has decreased gradually to the level below the top of active core possibly due to some leakage from RPV boundary (containment pressure is now almost equal to RPV pressure) and the radiation level around the unit started to rise gradually at around 4:00 AM today.

The team has started the water injection using fire-fighting car or fire engines to stabilize core condition and challenged to open the valves in the fscrubbing venting line under high radiation condition. As Iodine and Cesium are recognized in the environment in parallel, though quite minor, the government asked evacuation to the people within 10 km from the plant as a precaution. We were very lucky that the wind direction was from land to sea at this time.

The team has succeeded to open the valves in the venting line at around 14:00 and then the containment pressure started to decrease significantly. As for the water level in RPV, though it was decreasing at first irrespective of the injection of the water but then has been stabilized though it is significantly below the top of the core.

AAAI/IS

It is under discussion to use sea water as makeup water after the exhaustion of water in fire-fighting water tank.

It was reported at 15: 35 that the Reactor Building of 1F1 was ruptured after a rather strong earthquake with the sound of explosion and that the level of radiation at the site boundary was suddenly doubled from 500 micro Sv/hr of that after venting operation to 1mSv/hr. The explosion is considered due to explosion of hydrogen leaked from the primary coolant boundary caused by the impact of the earthquake.

The team decided to complete the preparation to perform this type of feed and bleed (F&B) operation in parallel with making their best to recover sea-water line, as key operation in these situation is the F&B operation utilizing venting line until we can recover the operation of sea water system as a heat sink and can use ECCS system.

Accordingly, in the cases of 1F Unit 2 & 3, though reactor water level is above the top of the core and core makeup system (either by RIC1 or HPC1) is in operation, containment venting is in preparation in case the channel to the ultimate heat sink (seawater) is not resumed.

Also in the case of every units of 2F, containment venting is in preparation though offsite power is now available as the path to UHS (sea) is not established.

In the case of 1F 4, 5, 6, they were not in operation they were in shutdown state for refueling and maintenance outage.

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

From: Lyons, Peter [mailto:Peter.Lyons@Nuclear.Energy.gov]

Sent: Friday, March 11, 2011 10:40 PM

To: 'atsuyuki.suzuki@cao.go.jp'; 'atsuyuki.suzuki@jaea.go.jp'; 近藤 駿介(子力 員会)

Cc: 'Y.Sagayama'; yutaka26211@docomo.blackberry.com

Subject:

Dr. Suzuki and Dr. Kondo

We are watching with alarm the situation in Japan. If you can identify ANY assistance needed in the nuclear plants in Japan, please advise and I will do my best to secure our government's resources.

Very best wishes

Pete Lyons

Dr. Sagayama - please relay this message to Dr. Suzuki and Dr. Kondo if I have used incorrect emails.

Thanks-Pete

From: [Weber, Michael](#)
To: [Virgilio, Martin](#); [Borchardt, Bill](#)
Subject: FYI - Japan reactors
Date: Saturday, March 12, 2011 9:02:49 AM

Chairman's request to his colleagues to adhere to our role in the response.

From: Jaczko, Gregory
To: Ostendorff, William; Apostolakis, George; Magwood, William; Svinicki, Kristine
Sent: Fri Mar 11 19:43:04 2011
Subject: japan reactors

Hi all – We are continuing to monitor the situation with regard to reactors in japan. At this point, information is extremely spotty and unreliable. I have reinforced with the staff monitoring the situation the importance of only providing reliable information and the importance of not speculating. I have also emphasized with them that Japan has the responsibility for dealing with this tragic situation. I recognize that there may be press accounts that have information different from what we are providing, but please bear with us as we work to confirm information. We will keep you updated as best as possible, but please recognize that there will be limited confirmed information because that is all we – or anyone else – is able to obtain at this point. If you or you staff do obtain any information, please forward it to the HOO so that we have a central clearing house for all the information.

Thanks,
Greg

AAA/16

From: PMT02 Hoc
To: Jaczo, Gregory; Virgilio, Martin; McDermott, Brian; Rosenberg, Stacey; Watson, Bruce
Date: Saturday, March 12, 2011 10:45:32 AM

Sir,

Speculative cases ran using the RASCAL software include using the Oyster Creek site as a surrogate site for the following hypothetical scenarios:

- Reactor coolant release without filtering and ground release through the building, no PAGs are reached,
- Reactor fuel 10% cladding failure without filtering and ground release through the building,
- Reactor fuel 10% cladding failure with filtering and elevated stack release, a fraction of the PAGs are achieved close in distance,
- Reactor fuel 10% fuel failure without filtering and ground release through the building, a fraction of the PAGs are achieved close in distance,
- Reactor fuel 10% fuel failure with filtering and elevated stack release,
- Reactor fuel 40% fuel failure without filtering and ground release through the building, mimics TMI 2

The data has only been released to DOE Nuclear Incident Team at NNSA and NARAC.

PMT Dose Analyst (PMT02)
NRC Operation Center

AAA/17

From: Flory, Shirley
To: Rini, Brett; Ibarra, Jose; Rivera-Lugo, Richard; Ramirez, Annie; Case, Michael; Coe, Doug; Correia, Richard; Gibson, Kathy; Richards, Stuart; Sangimino, Donna-Marie; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Valentin, Andrea
Subject: FW: EDO Alignment/Pre-briefs for Commission Meetings
Date: Friday, April 01, 2011 1:42:45 PM
Attachments: EDO Alignment. Prebriefs for CM Meetings.doc

From: Taylor, Renee
Sent: Friday, April 01, 2011 12:51 PM
To: Andersen, James; Ash, Darren; Blount, Tom; Boger, Bruce; Borchardt, Bill; Bowman, Adriane; Boyce, Thomas (OIS); Boyd, Lena; Buckley, Patricia; Cannady, Ashley; Carpenter, Cynthia; Casby, Marcia; Casto, Chuck; Cianci, Sandra; Cohen, Miriam; Collins, Elmo; Collins, Jay; Cooper, LaToya; Corley, Cherrie; Damiano, Debra; Dapas, Marc; Dean, Bill; Dubose, Sheila; EDO_ETAs; Evans, Michele; Flory, Shirley; Garland, Stephanie; Givvines, Mary; Greene, LaTosha; Grobe, Jack; Haney, Catherine; Hasan, Nasreen; Higginbotham, Tina; Holahan, Gary; Howard, Patrick; Johnson, Michael; Kelley, Corenthis; Landau, Mindy; Lee, Pamela; Leeds, Eric; Lockhart, Denise; Lubinski, John; Mamish, Nader; Matakas, Gina; Mayberry, Theresa; McClain, Nicole; McCrary, Cheryl; McCree, Victor; McGinty, Tim; Miles, Patricia; Miller, Charles; Mitchell, Matthew; Muessle, Mary; ODaniell, Cynthia; Owen, Lucy; Pederson, Cynthia; Penny, Melissa; Plisco, Loren; Quesenberry, Jeannette; Riddick, Nicole; Ronewicz, Lynn; Ross, Brenda; Salus, Amy; Satorius, Mark; Scarbrough, Thomas; Schaeffer, James; Schumann, Stacy; Schwarz, Sherry; Sheron, Brian; Sprogeris, Patricia; Tannenbaum, Anita; Taylor, Renee; Terry, Leslie; Thomas, Loretta; Tomczak, Tammy; Uhle, Jennifer; Veltri, Debra; Virgilio, Martin; Walker, Dwight; Weber, Michael; Wiggins, Jim; Williams, Barbara; Zimmerman, Roy
Subject: EDO Alignment/Pre-briefs for Commission Meetings

Please see the attached updated list. Note the 4/14 CM on Japanese Status – Focus on Health Effects of Radiation and the 4/6 Pre-brief have been cancelled.

Thank you,
Renee

AAA/18

Attachment EDO Alignment. Prebriefs for CM Meetings_1.doc (39424 Bytes) cannot be converted to PDF format.

From: [Operations Center Bulletin](#)
To: [OST02_HOC](#)
Subject: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States
Date: Saturday, March 12, 2011 4:23:41 PM

THIS IS NOT A DRILL.

The NRC and other Federal agencies are continuing to follow an emergency occurring outside of the United States. Press releases about NRC actions are posted on www.nrc.gov. Information is also available on the NRC External Blog at: <http://public-blog.nrc-gateway.gov>. Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200

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.

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No response to this message is required.

THIS IS NOT A DRILL

AAA/19

From: Doane, Margaret
To: Ramsey, Jack; LIA02 Hoc
Cc: Virgilio, Martin
Subject: Fw: Japan
Date: Saturday, March 12, 2011 4:59:11 PM

I sent the following note to Alfredo. It has a slight change from the earlier version, to reflect Bill Bs edit. He noted that to keep it generic, I should not indicate the Op Ctr. is up and running because that status will change. This note has been cleared with the Chairman's office. I plan to use this note as a template for other correspondence.

Thanks,
Mergie

Sent from an NRC Blackberry
Margaret Doane

----- Original Message -----
From: Doane, Margaret
To: 'arc@csn.es' <arc@csn.es>
Sent: Sat Mar 12 16:46:19 2011
Subject: Re: Japan

Alfredo,
Immediately following the event we staffed our Operations Center. We sent offers of assistance to both NISA and JNES. They have replied very kindly that at this time they are adequately staffed with expertise to address the issues. They appreciate the offer and knowing that we are there if they need anything.

At this time we are not further communicating with them to ensure that we do not cause any distraction.

I will let Chairman Jaczko know that we exchanged notes. He too, is in contact with our Government officials.

Our thoughts are with our counterparts in Japan to continue their efforts under such extreme tragedy and difficulty.

With kind regards,
Mergie

Sent from an NRC Blackberry
Margaret Doane

----- Original Message -----
From: DE LOS REYES CASTELO ALFREDO <arc@csn.es>
To: Doane, Margaret
Sent: Sat Mar 12 10:34:53 2011
Subject: Japan

Hi Margie!

How are you dealing all the events in Japan? Is there something we can do? Any important new?

My President is in permanent contact with our Government

Alfredo

AAA/20

From: [Shaffer, Mark R](#)
To: [LIA02 Hoc](#); [Foggie, Kirk](#); [Virgilio, Martin](#)
Subject: Re: Contacted Lyons
Date: Saturday, March 12, 2011 5:02:59 PM

Okay, thanks Kirk. As I mentioned when we spoke, I passed on NRC's "concern" and offer for information to Jim Lyons for him to use, as he (IAEA) sees fit. We can only offer assistance, not demand that they take it. The call this morning didn't exactly help out in that area. NRC pushed IEC for a call, then when the call took place, NRC didn't provide anything, other than asking IEC to provide NRC with information? Everyone at the IEC (including myself) were a bit disappointed in the call. So its not too surprising that they're not rushing to the phone again.

Jim is aware of NRC's (and many other Member State's) thirst for information, and I believe he will take the information into consideration at the appropriate time.

Mark

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

From: LIA02 Hoc <LIA02.Hoc@nrc.gov>
To: Shaffer, Mark R; Foggie, Kirk <Kirk.Foggie@nrc.gov>; Virgilio, Martin <Martin.Virgilio@nrc.gov>
Sent: Sat Mar 12 16:40:56 2011
Subject: RE: Contacted Lyons

Thanks Mark.

I spoke to the RST and as of 4pm (est) they had not heard from the IEC. They are ready to assist with tech specs. when they call.

FYI, Danielle Emche is taking over for me and can be reached at her nrc email and LIA02@nrc.gov.

Kirk

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

From: Shaffer, Mark R [<mailto:ShafferMr@state.gov>]
Sent: Saturday, March 12, 2011 2:43 PM
To: Foggie, Kirk; LIA02 Hoc; Virgilio, Martin
Subject: Contacted Lyons

Kirt;

I passed the info. on to Jim Lyons (who is in the iEC now) and I believe IEC will be calling NRC shortly.

Mark

AAA/21

From: [Salley, MarkHenry](#)
To: [Tinkler, Charles](#); [Stutzke, Martin](#); [Marksberry, Don](#)
Cc: [Correia, Richard](#); [Sheron, Brian](#)
Subject: FW: No really new issues
Date: Tuesday, April 05, 2011 5:23:46 PM
Attachments: [IN 88-92.suppl1.pdf](#)
[IN 88-92..pdf](#)

FYI ~ looks like we (NRC) looked at issues with boot seals around the SFP gate before.

From: Qualls, Phil
Sent: Tuesday, April 05, 2011 4:56 PM
To: Brown, Eva; Salley, MarkHenry
Subject: FW: No really new issues

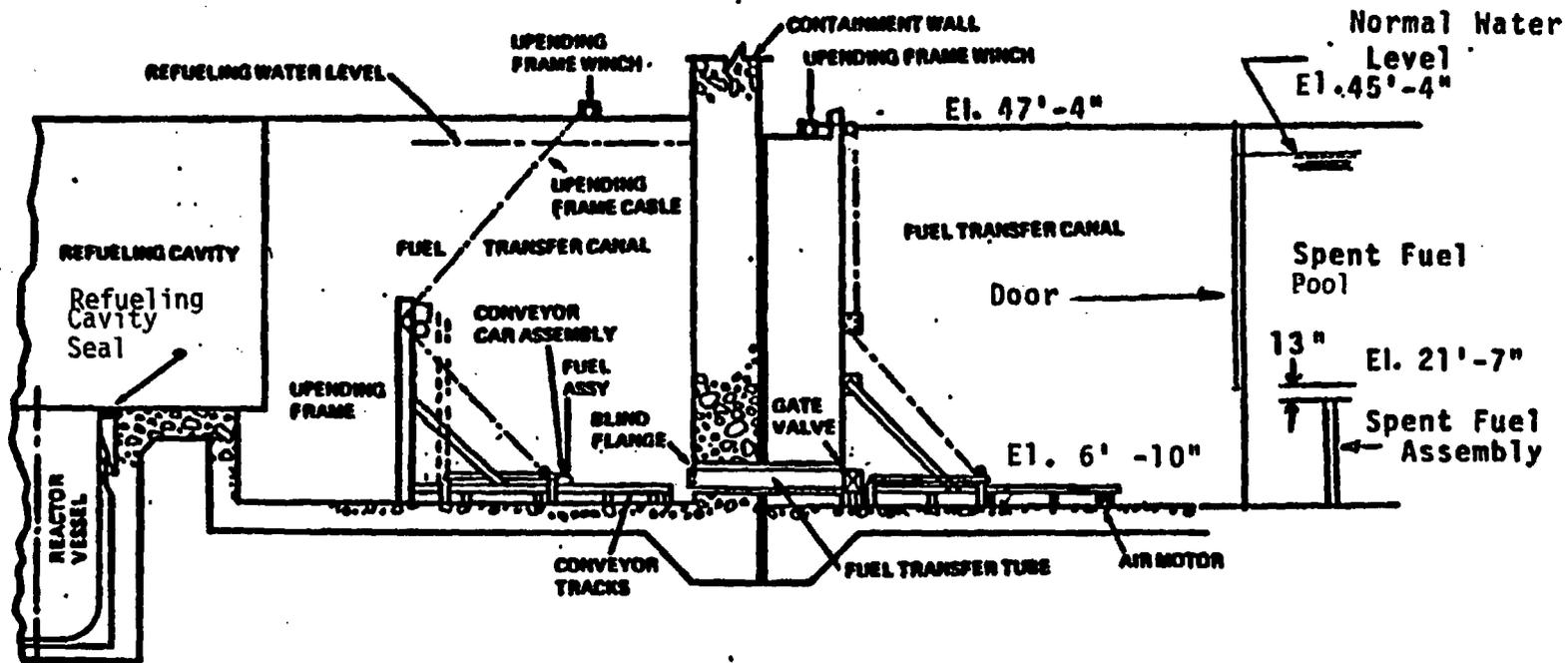
The precursors for the Japanese U4 SFP draindown IMO. All it take is loss of instrument air which will fairly quickly depressurize the air header thus the inflatable boot seal and not all that much time until the pool is drained to about a foot above the fuel. Wait about a day to heat up the remaining water and the U4 event occurs.

Sometimes the simple stuff that we did not pay enough attention to really bites us.

From: Melfi, Jim
Sent: Tuesday, April 05, 2011 3:25 PM
To: Qualls, Phil
Subject: No really new issues

There are no really new issues, just old issues in a different form.

AAA/22



FUEL TRANSFER SYSTEM

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-91	Improper Administration and Control of Psychological Tests	11/22/88	All holders of OLs or CPs for nuclear power reactors and all fuel cycle facility licensees who possess, use, import, export, or transport formula quantities of strategic special nuclear material.
88-90	Unauthorized Removal of Industrial Nuclear Gauges	11/22/88	All NRC licensees authorized to possess, use, manufacture, or distribute industrial nuclear gauges.
88-89	Degradation of Kapton Electrical Insulation	11/21/88	All holders of OLs or CPs for nuclear power reactors.
88-88	Degradation of Westinghouse ARD Relays	11/16/88	All holders of OLs or CPs for nuclear power reactors.
88-87	Pump Wear and Foreign Objects in Plant Piping Systems	11/16/88	All holders of OLs or CPs for nuclear power reactors.
86-106, Supp. 3	Feedwater Line Break	11/10/88	All holders of OLs or CPs for nuclear power reactors.
88-86	Operating with Multiple Grounds in Direct Current Distribution Systems	10/21/88	All holders of OLs or CPs for nuclear power reactors.
88-85	Broken Retaining Block Studs on Anchor Darling Check Valves	10/14/88	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contact: Daniele Oudinot, NRR
(301) 492-1174

Attachments:

1. Figure of Fuel Transfer System
2. List of Recently Issued NRC Information Notices

*SEE PREVIOUS PAGE FOR CONCURRENCE

*Tech Ed
11/7/88

Final draft
EAB:NRR
DOudinot:db
11/17/88

Final Draft
EAB:NRR
RLobel *RC*
11/17/88

*C:EAB:NRR
WLanning
11/10/88

*C:OGCB:NRR
CHBerlinger
11/10/88

D:DOEA:NRR
CERossi *CR*
11/17/88

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contact: Daniele Oudinot, NRR
(301) 492-1174

Attachments:

1. Figure of Fuel Transfer System
2. List of Recently Issued NRC Information Notices

*SEE PREVIOUS PAGE FOR CONCURRENCE

*Tech Ed
11/7/88

RL
EAB:NRR
Dudinot:db
11/9/88

RL
EAB:NRR
RLobel
11/10/88

MB/la
EAB:NRR
Wanning
11/11/88

*With copy
CHB*
C:OGCB:NRR
CHBerlinger
11/10/88

D:DOEA:NRR
CERossi
11/ /88

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contact: Daniele Oudinot
(301) 492-1174

Attachments:
Figure of Fuel Transfer System
List of Recently Issued NRC Information Notices

Tech 2d RS
11/1/88

~~EAB:NRR~~
DOudinot:db
11/17/88

EAB:NRR
RLobel
/ /88

~~NRR:RS2~~
~~COudinot~~
~~11/1/88~~

C:EAB:NRR
WLanning
/ /88

C:OGCB:NRR
CHBerlinger
/ /88

D:DOEA:NRR
CERossi
/ /88

From: [Wiggins, Jim](#)
To: [McDermott, Brian](#); [Virgilio, Martin](#)
Subject: Fw: Update on Japan Situation
Date: Saturday, March 12, 2011 10:17:54 PM
Attachments: [ANS Japan Backgrounder.pdf](#)

Here's a msg from ANS. The day of the event, I saw a comm from Brian Grimes to japanese colleagues.

Might want to get with DHS then decide who'll contact orgs like ANS to bring them under the total USG tent wrt messaging and offers to Japan re support.

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

From: Joe Colvin <president@ans.org>
To: Wiggins, Jim
Sent: Sat Mar 12 21:09:31 2011
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

AAA/23

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.

From: [Grobe, Jack](#)
To: [Brenner, Eliot](#)
Cc: [Jaczko, Gregory](#); [Borchardt, Bill](#); [Virgilio, Martin](#); [Weber, Michael](#); [Leeds, Eric](#)
Subject: Fw: Update on Japan Situation
Date: Saturday, March 12, 2011 10:18:59 PM
Attachments: [ANS Japan Backgrounder.pdf](#)

Eliot,

Not sure if you have seen this. Thought you would be interested in what the ANS is saying.

Jack
Jack Grobe, Deputy Director, NRR

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

From: Joe Colvin <president@ans.org>
To: Grobe, Jack
Sent: Sat Mar 12 19:31:59 2011
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.

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AAA/24

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3/12/2011 5:22 PM EST

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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.

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From: [Doane, Margaret](#)
To: [LIA02 Hoc](#); [Schwartzman, Jennifer](#); [LIA03 Hoc](#); [Smith, Brooke](#); [Virgilio, Martin](#)
Cc: [Owens, Janice](#)
Subject: Re: Shift transition
Date: Sunday, March 13, 2011 11:09:17 AM

Janice. Marty has more up to date info. They have already contacted the Chairman. Marty sd. Tony's plane is grounded for the night.
Thanks.

Sent from an NRC Blackberry
Margaret Doane

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

From: LIA02 Hoc
To: Doane, Margaret; Schwartzman, Jennifer; LIA03 Hoc; Smith, Brooke; Virgilio, Martin
Cc: Owens, Janice
Sent: Sun Mar 13 11:02:20 2011
Subject: RE: Shift transition

He is en route now from northern Japan and should get there in a couple hours. Jim Trapp is in Tokyo. Brooke will get you details.

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

From: Doane, Margaret
Sent: Sunday, March 13, 2011 10:55 AM
To: LIA02 Hoc; Schwartzman, Jennifer; LIA03 Hoc; Smith, Brooke; Virgilio, Martin
Cc: Owens, Janice
Subject: Re: Shift transition

Do we have any time line? When did he e-mail?

Sent from an NRC Blackberry
Margaret Doane

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

From: LIA02 Hoc
To: Doane, Margaret; Schwartzman, Jennifer; LIA03 Hoc; Smith, Brooke; Virgilio, Martin
Cc: Owens, Janice
Sent: Sun Mar 13 10:53:23 2011
Subject: RE: Shift transition

This is what we know now. Ulses emailed that he has a military lift to Yakoto. He will then take a bus to Haneda followed by cab to the embassy. The military asked NRC for either an e-mail (or my travel orders) to ensure that Ulses can get on the plane.

Mike Tschiltz authorized Ulses transport.
LT Coordinator - Charles Murray at 10:39:50 on 3/13/2011

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

From: Doane, Margaret
Sent: Sunday, March 13, 2011 10:50 AM
To: Schwartzman, Jennifer; LIA03 Hoc; Smith, Brooke; Virgilio, Martin
Cc: Owens, Janice; LIA02 Hoc
Subject: Re: Shift transition

AAA/25

Can you please confirm whether Tony has landed in Tokyo and whether he's been picked up. See Jen's note below for how it was supposed to transpire. Chairman is requesting info.
Margie

Sent from an NRC Blackberry
Margaret Doane

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

From: Schwartzman, Jennifer
To: Doane, Margaret
Cc: Owens, Janice; Smith, Brooke; Abrams, Charlotte; LIA02 Hoc
Sent: Sun Mar 13 08:50:08 2011
Subject: Re: Shift transition

Yes we did - but it also appears he is getting lots of Embassy instructions. As soon as he landed and got to customs, he was instructed to call a woman at MOFA. She then instructed him to speak with a guy at the Embassy. He was supposed to be put in touch with NISA contacts (hopefully ours) upon arrival in Tokyo, and he will have other contacts based on this meeting they have set up for him before he meets with the Ambassador. He was supposed to call into the HOO after that meeting, before the Ambassador meeting.

Sent from an NRC Blackberry

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

From: Doane, Margaret
To: Schwartzman, Jennifer
Cc: Owens, Janice; Smith, Brooke; Abrams, Charlotte; LIA02 Hoc
Sent: Sun Mar 13 08:47:01 2011
Subject: Re: Shift transition

Jen,
Thanks. Did we give instructions to Tony?
Margie

Sent from an NRC Blackberry
Margaret Doane

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

From: Schwartzman, Jennifer
To: Doane, Margaret
Cc: Owens, Janice; Smith, Brooke; Abrams, Charlotte; LIA02 Hoc
Sent: Sun Mar 13 07:54:45 2011
Subject: Shift transition

Margie,

Charlotte and I have just handed things over to Janice and Brooke. Here are some salient points from the end of our shift:

- situation at unit 3 does not appear to have gotten worse
- Tony Ulses was being flown to Tokyo to meet with MOFA and NISA officials and then Ambassador Roos. Unclear if he will be asked to remain in Tokyo.
- we may soon get technical contacts at TEPCO courtesy of a push from Amb Davies to his Japanese colleagues
- there is growing concern over radiation contamination picked up on both helicopters and personnel associated with USS Ronald Reagan well outside EPZ (100 km)

Hope this helps,
Jen

Sent from an NRC Blackberry

From: [Operations Center Bulletin](#)
To: [OST02 HOC](#)
Subject: FW: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States
Date: Sunday, March 13, 2011 11:13:17 AM

THIS IS NOT A DRILL

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. Two officials from the NRC 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

AAA/26

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

From: [Virgilio, Martin](#)
To: [Cianci, Sandra](#)
Subject: Fw: TAC # for Japan Earthquake and Tsunami Drill
Date: Sunday, March 13, 2011 11:17:18 AM

Sandy

FYI. 10 hours on both Sat and Sun.

From: OST02 HOC
To: Dorman, Dan; Virgilio, Martin; Borchardt, Bill; Weber, Michael; Ross-Lee, MaryJane; Hurd, Sapna; Pope, Tia; Perin, Vanice; Anderson, James; Chen, Yen-Ju; Kotzalas, Margie; Frazier, Alan; Figueroa, Roberto; Larson, Emily; Crutchley, Mary Glenn; Blount, Tom; Tschiltz, Michael; McGinty, Tim; Franovich, Rani; Turtill, Richard; Smith, Theodore; Chazell, Russell; Reed, Elizabeth; Salter, Susan; Lising, Jason; Shane, Raeann; Dacus, Eugene; Schmidt, Rebecca; Droggitis, Spiros; Powell, Amy; Riley (OCA), Timothy; Foggie, Kirk; Ramsey, Jack; Emche, Danielle; Abrams, Charlotte; Schwartzman, Jennifer; Mamish, Nader; Smith, Brooke; Fragoyannis, Nancy; Chowdhury, Prosanta; Ashkeboussi, Nima; Foster, Jack; Lubinski, John; Brock, Kathryn; Tappert, John; Casto, Greg; Rosenberg, Stacey; Watson, Bruce; Hart, Michelle; Schmidt, Duane; Clement, Richard; Huffert, Anthony; Sun, Casper; Case, Michael; Skeen, David; Ruland, William; Hiland, Patrick; Brown, Frederick; Dudes, Laura; Rini, Brett; Morlang, Gary; Cheok, Michael; Circle, Jeff; Dube, Donald; Brown, Eva; Esmaili, Hossein; Kolb, Timothy; Norton, Charles; Isom, James; Bloom, Steven; Padovan, Mark; Williams, Joseph; Hart, Ken; Williams, Donna
Sent: Sun Mar 13 05:08:51 2011
Subject: TAC # for Japan Earthquake and Tsunami Drill

If you have participated in the "Japan Earthquake and Tsunami Drill" that began today (Friday March 11, 2011), please be sure to apply your time spent on this activity to the TAC Number listed below:

D92374 – Incident Response: Japan Earthquake and Tsunami Drill

AAA/27

From: [Leeds, Eric](#)
To: [Dean, Bill](#); [McCree, Victor](#); [Satorius, Mark](#); [Collins, Elmo](#); [Sheron, Brian](#); [Evans, Michele](#); [Zimmerman, Roy](#); [Johnson, Michael](#)
Cc: [Holahan, Gary](#); [Campbell, Andy](#); [Correia, Richard](#); [Uhle, Jennifer](#); [Howell, Art](#); [Pederson, Cynthia](#); [Wert, Leonard](#); [Lew, David](#); [Weber, Michael](#); [Virgilio, Martin](#); [Grobe, Jack](#); [Boger, Bruce](#); [HOO Hoc](#)
Subject: ACTION: Assistance to Japanese
Date: Monday, March 14, 2011 7:23:48 AM

Folks –

The Japanese requested the US supply six individuals with knowledge of the BWR 3 & 4 design to assist them in their hour of need. I'd like to discuss potential candidates with you on a conference call today at 9:30 am. I will work through the HOOs to set up a conference call and send you the number. We do not have a lot of details with regard to how long, although we do know these folks will assist in their EOCs at two different locations in Japan. I'll keep you informed as we learn more.

Thanks for your help!

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

AAA/28

From: [McCree, Victor](#)
To: [Leeds, Eric](#)
Cc: [Virgilio, Martin](#)
Subject: NRC Support for Japan
Date: Monday, March 14, 2011 9:18:12 AM

Eric,

Here's a brief list of Region II folks that you may want to consider for providing EOC support to the ongoing nuclear events in Japan:

1. **Rudy Bernhard**, Senior Reactor Analyst, Senior Resident Inspector at Grand Gulf; GE SRO Certification at Dresden, Hatch and River Bend; General Electric Construction/Pre-op/Start-up Testing/ and Operations, Browns Ferry Restart support.
2. **Bruno Caballero**, Senior Operator Licensing Examiner, former SRO at Browns Ferry (BWR4/Mark 1)
3. **Len Wert**, SRI Browns Ferry and Hatch (BWR4/Mark 1)
4. **Chuck Casto**, former licensed SRO at Browns Ferry (BWR4/Mark 1)
5. **Joel Munday**, former licensed SRO at Brunswick ((BWR4/Mark 1), SRI at Hatch (BWR4/Mark 1)

Vic

AAA/09

From: Collins, Elmo
To: Leeds, Eric
Cc: Virgilio, Martin
Subject: Info for your consideration as needed
Date: Monday, March 14, 2011 10:17:52 AM

Eric

Wrt to the conference we had this morning, Region IV will be providing some names.

My name will be missing from the list, but I am available, willing, and interested if it fits agency and international needs.

I worked for GE for 5 years:

SRO certified, BWR4/6

ECCS system pre-operational testing experience, wrote and performed tests

System test engineer/system engineer on RCIC

Control Room experience as advisor to STA in BWR-4

With NRC:

Resident inspector, Sr. Resident inspector BWR-2 (isolation condenser facility)

Extensive inspection experience BWR-4 and 6

Elmo

AAA/30

From: Virgilio, Rosetta
To: Turttil, Richard
Subject: RE: TAC # for Japan Earthquake and Tsunami Drill
Date: Monday, March 14, 2011 10:43:08 AM

Thanks – btw, not getting any one in HR or FSME who can give me an answer. Julie Ward is trying to look up guidance

From: Turttil, Richard
Sent: Monday, March 14, 2011 10:17 AM
To: Virgilio, Rosetta; Noonan, Amanda; Rautzen, William
Subject: FW: TAC # for Japan Earthquake and Tsunami Drill

From: OST02 HOC
Sent: Sunday, March 13, 2011 5:09 AM
To: Dorman, Dan; Virgilio, Martin; Borchardt, Bill; Weber, Michael; Ross-Lee, MaryJane; Hurd, Sapna; Pope, Tia; Perin, Vanice; Anderson, James; Chen, Yen-Ju; Kotzalas, Margie; Frazier, Alan; Figueroa, Roberto; Larson, Emily; Crutchley, Mary Glenn; Blount, Tom; Tschiltz, Michael; McGinty, Tim; Franovich, Rani; Turttil, Richard; Smith, Theodore; Chazell, Russell; Reed, Elizabeth; Salter, Susan; Lising, Jason; Shane, Raeann; Dacus, Eugene; Schmidt, Rebecca; Droggitis, Spiros; Powell, Amy; Riley (OCA), Timothy; Foggie, Kirk; Ramsey, Jack; Emche, Danielle; Abrams, Charlotte; Schwartzman, Jennifer; Mamish, Nader; Smith, Brooke; Fragoyannis, Nancy; Chowdhury, Prosanta; Ashkeboussi, Nima; Foster, Jack; Lubinski, John; Brock, Kathryn; Tappert, John; Casto, Greg; Rosenberg, Stacey; Watson, Bruce; Hart, Michelle; Schmidt, Duane; Clement, Richard; Huffert, Anthony; Sun, Casper; Case, Michael; Skeen, David; Ruland, William; Hiland, Patrick; Brown, Frederick; Dudes, Laura; Rini, Brett; Morlang, Gary; Cheok, Michael; Circle, Jeff; Dube, Donald; Brown, Eva; Esmaili, Hossein; Kolb, Timothy; Norton, Charles; Isom, James; Bloom, Steven; Padovan, Mark; Williams, Joseph; Hart, Ken; Williams, Donna
Subject: TAC # for Japan Earthquake and Tsunami Drill

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D92374 – Incident Response: Japan Earthquake and Tsunami Drill

AAA/31

From: [Jaczko, Gregory](#)
To: ["roosj@state.gov"](mailto:roosj@state.gov)
Cc: [HOO Hoc](#); [Virgilio, Martin](#); [Trapp, James](#)
Subject: Fw:
Date: Monday, March 14, 2011 1:00:53 PM

Ambassador, please see these talking points to aid your communication efforts. Please let me know if you have questions.

From: Hoc, PMT12
To: Jaczko, Gregory; Pace, Patti; Batkin, Joshua; McDermott, Brian
Sent: Mon Mar 14 12:23:27 2011
Subject:

RST

Loss of injection to vessel during a station blackout (loss of ac power)

Plain language for bullets below:

Based on current plant status information, some core melt, fuel rods (1st barrier) had occurred. Absent restoration of cooling water additional core melt will occur challenging the reactor vessel integrity (2nd barrier). Current information indicates primary containment (3rd barrier) failure not anticipated.

- Assumptions
 - No cooling to the core.
 - Loss of inventory control to the reactor vessel.
 - DC power and pneumatic control is available to operate safety relief valves.
 - Drywell is flooded with borated seawater.
 - 40% core melt (consistent with Protective Measures Team assessment).
- Postulated sequence of events
 - Steam cooling will start in the vessel on partial uncover of fuel.
 - Decrease of level to bottom of active fuel.
 - Core material will start melting in vessel.
 - Core material will relocate to lower plenum and boil off any remaining water.
 - Core material will fail lower head by creep and pour onto the drywell floor.
 - Molten core will drop into the water in the drywell.
 - Containment failure is not anticipated.

PMT

- Current protective measures are consistent with NRC practices
- Scenario assumptions: 40% core melt, design basis leak rate from a single unit

AAA/32

- Whole body exposure (TEDE) approximately 380 mrem at 0.5 miles and 5.7 mrem at 10 miles
 - Thyroid exposure (CDE) 5.3 rem at 0.5 miles (exceeds US protective guideline of 5 rem) and 84 mrem at 10 miles
- Expect updated models by 4:00 pm 3/14/11.

From: [Leeds, Eric](#)
To: [Collins, Elmo](#); [Satorius, Mark](#); [McCree, Victor](#); [Dean, Bill](#); [Sheron, Brian](#); [Tracy, Glenn](#); [Hudson, Jody](#); [Johnson, Michael](#); [Miller, Charles](#); [Haney, Catherine](#); [Zimmerman, Roy](#); [Stewart, Sharon](#); [Virgilio, Martin](#); [Weber, Michael](#); [Borchardt, Bill](#); [Mamish, Nader](#); [Doane, Margaret](#); [Muessle, Mary](#)
Cc: [Boger, Bruce](#); [Grobe, Jack](#); [Ruland, William](#); [Meighan, Sean](#)
Subject: Confirmation of names for Japan
Date: Monday, March 14, 2011 1:11:17 PM

Folks –

Thanks so much for your help – we have a strong database of names/expertise to support the Japanese. For this first wave, we are sending Chuck Casto, John Monninger, Tony Nakanishi, Tim Kolb, Jack Foster and Richard Devercelly. I believe that Bruce Boger has contacted all those going to join Tony Ulsis and Jim Trapp in Japan.

I imagine that at some point we may need to send a second wave of responders to relieve our first wave. We will let you know as soon as we know if this needs to be done. We are also sensitive not to over-burden any one office.

Thanks again for your support!

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

AAA/33

From: [Casto, Chuck](#)
To: [Mamish, Nader](#)
Cc: [Virgilio, Martin](#); [Brenner, Eliot](#); [Leeds, Eric](#); [Monninger, John](#); [Boger, Bruce](#); [McCree, Victor](#)
Subject: Casto Bio & Pic
Date: Monday, March 14, 2011 11:29:59 AM
Attachments: [castobioJapan.docx](#)
[casto_DBA.jpg](#)

Folks, Victor suggested that I send you a Bio.....attached....

casto

AAA/34

Charles A. Casto, Deputy Regional Administrator, Nuclear Regulatory Commission

Prior to joining the Nuclear Regulatory Commission, Mr. Casto worked in the commercial nuclear power industry at three nuclear sites. He was a licensed Reactor Operator and Reactor Operator Instructor at Browns Ferry, a three-unit General Electric Boiling Water plant in Alabama. He was a NRC certified Senior Reactor Operator instructor at Brunswick Nuclear Plant, a two-unit General Electric Boiling Water Reactor. He completed his initial reactor operator training at Sequoyah a two-unit Pressurized Water Reactor in Tennessee. He also served five years in the U.S. Air Force in the nuclear weapons program.

He has completed two IAEA missions one to Slovenia and another on an expert team that reviewed the destruction of 32 reactor fuel bundles at the PAKS reactor in Hungary.

In 1992-1993, Chuck served on a Congressional Fellowship as a Legislative Assistant to U.S. Senator Harry Reid. He also served on rotations as a Technical Assistant to the Executive Director for Operations, as the Reactor Programs Assistant to NRC Chairman Selin.

Charles started in the NRC as an Operator Licensing Examiner administering examinations to Boiling Water Reactor Operators then moved into supervisory and management positions throughout the NRC. Charles Casto is the Deputy Regional Administrator for the Center of Construction Inspection for the Nuclear Regulatory Commission.

He holds a B.S. degree from the State University of New York, a Masters in Public Administration from the University of Georgia and is a Doctoral candidate in Business at Kennesaw State University in Georgia.



From: [Mamish, Nader](#)
To: [Boger, Bruce](#)
Cc: [Leeds, Eric](#); [Carter, Mary](#); [Virgilio, Martin](#); [Borchardt, Bill](#); [Meighan, Sean](#); [Tracy, Glenn](#); [Casto, Chuck](#); [Monninger, John](#); [Nakanishi, Tony](#); [Kolb, Timothy](#); [Foster, Jack](#); [Devercelly, Richard](#); [LIA03 Hoc](#); [Foggie, Kirk](#); [Smith, Brooke](#)
Subject: RE: Partial List
Date: Monday, March 14, 2011 1:35:26 PM

Thanks to all for your willingness to support. For those of you who may not have provided some needed information, could you please e-mail Mary Carter the following information ASAP?

Your name as it appears on your passport
DOB
Passport number
Passport expiration date

We're looking at a flight tomorrow. Kirk Foggie will brief the team on logistics during the flight (Margie briefed Chuck).

Thanks again!

From: Boger, Bruce
Sent: Monday, March 14, 2011 1:10 PM
To: Mamish, Nader
Cc: Leeds, Eric; Carter, Mary; Virgilio, Martin; Borchardt, Bill; Meighan, Sean; Tracy, Glenn; Casto, Chuck; Monninger, John; Nakanishi, Tony; Kolb, Timothy; Foster, Jack; Devercelly, Richard
Subject: Partial List

Nader, Here's the partial list of folks on the Japanese support team (need to hear back from Region 1 for 1 name):

Chuck Casto
John Monninger
Tony Nakanishi
Tim Kolb
Jack Foster
Richard DeVercelly

I've been advised that all have current passports and are available to travel tonight. We're working with them to contact the NRC doctor to discuss medical information. Sean Meighan will work with the HQ folks to coordinate a visit with the doctor and will advise the non-HQ folks to call him.

Thanks in advance for Mary Carter's support on travel logistics.

AAA/CS

From: [Boger, Bruce](#)
To: [Boger, Bruce](#); [Mamish, Nader](#)
Cc: [Leeds, Eric](#); [Carter, Mary](#); [Virgilio, Martin](#); [Borchardt, Bill](#); [Meighan, Sean](#); [Tracy, Glenn](#); [Casto, Chuck](#); [Monninger, John](#); [Nakanishi, Tony](#); [Kolb, Timothy](#); [Foster, Jack](#); [Devercelly, Richard](#); [Cook, William](#); [Wilson, Peter](#); [Dean, Bill](#)
Subject: RE: Partial List
Date: Monday, March 14, 2011 1:58:04 PM

Nader, To complete the list, Bill Cook, SRA in Region 1, is available to support the team.

From: Boger, Bruce
Sent: Monday, March 14, 2011 1:10 PM
To: Mamish, Nader
Cc: Leeds, Eric; Carter, Mary; Virgilio, Martin; Borchardt, Bill; Meighan, Sean; Tracy, Glenn; Casto, Chuck; Monninger, John; Nakanishi, Tony; Kolb, Timothy; Foster, Jack; Devercelly, Richard
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Thanks in advance for Mary Carter's support on travel logistics.

AAA/36

From: [Buchholz, Jeri](#)
To: [Wiggins, Jim](#)
Cc: [Virgilio, Martin](#); [Evans, Michele](#)
Subject: RE: Update to the Union on NRC Response to Situation to Japan
Date: Monday, March 14, 2011 2:05:54 PM

Will do.

From: Wiggins, Jim
Sent: Monday, March 14, 2011 1:47 PM
To: Buchholz, Jeri
Cc: Virgilio, Martin; Evans, Michele
Subject: Re: Update to the Union on NRC Response to Situation to Japan

I'm not available. Work thgru the ET in the Ops Ctr.

From: Buchholz, Jeri
To: Wiggins, Jim
Cc: Bolduc, Angela; Tracy, Glenn; Cohen, Miriam
Sent: Mon Mar 14 13:44:22 2011
Subject: Update to the Union on NRC Response to Situation to Japan

Jim:

In the spirit of partnership, we were wondering if you would be available to meet with Dale for about 30 minutes to give him a high, high level overview of the NRC response to the situation in Japan. Angela Bolduc and I would join you. We were thinking sometime in the next day or two.

We do not believe there is anything negotiable, this would be for info only and to hear any thoughts or perspectives that Dale might have.

What say you?

Jeri L. Buchholz
Associate Director for Human Resources
Policy and Operations
Office of Human Resources



AAA/37

From: [Sheron, Brian](#)
To: [Johnson, Michael](#); [Holahan, Gary](#)
Cc: [Leeds, Eric](#); [Virgilio, Martin](#); [Borchardt, Bill](#); [Grobe, Jack](#); [Boger, Bruce](#); [Williams, Donna](#); [Wiggins, Jim](#)
Subject: RE: Recommendation for proactive action by NRC in light of Japan events
Date: Monday, March 14, 2011 2:07:33 PM

It would be nice if the industry was even more proactive, by having NEI send us a letter says something to the effect that in the wake of the Japanese disaster here is a list of all the things the commercial U.S. nuclear licensees are doing. Hopefully this would be the kind of stuff Gary mentioned, and maybe other stuff as well.

From: Johnson, Michael
Sent: Monday, March 14, 2011 2:02 PM
To: Holahan, Gary
Cc: Leeds, Eric; Virgilio, Martin; Borchardt, Bill; Grobe, Jack; Boger, Bruce; Sheron, Brian; Williams, Donna; Wiggins, Jim
Subject: RE: Recommendation for proactive action by NRC in light of Japan events

Thanks Gary. NRR's lead of course. I like the idea using this as an opportunity to highlight the importance of previous requirements/actions as a proactive step. We will need to think about the correct vehicle. I also like having industry involved up front in whatever we decide to do.

From: Holahan, Gary
Sent: Monday, March 14, 2011 1:55 PM
To: Johnson, Michael
Cc: Leeds, Eric; Virgilio, Martin; Borchardt, Bill; Grobe, Jack; Boger, Bruce; Sheron, Brian; Williams, Donna; Wiggins, Jim
Subject: Recommendation for proactive action by NRC in light of Japan events

Mike,

The events in Japan reinforce the importance of preparedness for the unexpected. In that light, I suggest that NRC take some form of proactive step to reinforce both the Severe Accident Management Guidelines and the 50.54 (hh) (formerly B.5.b) protection for "Loss of Large Area of the plant from fires and explosions".

50.54 (hh) seems particularly relevant, stating "Each licensee shall develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire..."

The NRC could issue Orders, Bulletins, or letters on an expedited basis (in the next few days) to require or encourage licensees to confirm their readiness to implement the severe accident management guidance and strategies under 50.54 (hh). This would not involve any new requirements, but would simply reinforce the existing requirements.

I recommend that we coordinate this activity with the industry to ensure their full and early cooperation. This would be similar to the level of cooperation we undertook for the security bulletins following 9/11.

AAA/38

Gary

From: [Buchholz, Jeri](#)
To: [Billings, Sally](#); [Tracy, Glenn](#); [Boger, Bruce](#); [Leeds, Eric](#); [McDermott, Brian](#)
Cc: [Cohen, Miriam](#); [Virgilio, Martin](#)
Subject: RE: FOOD FOR THOUGHT As you make the lists MEDICAL SCREEN???
Date: Monday, March 14, 2011 2:18:46 PM

The Health Unit is not stocked with KI. Do we know who administered the KI to the employees who have already departed.

From: Billings, Sally
Sent: Monday, March 14, 2011 2:07 PM
To: Buchholz, Jeri; Tracy, Glenn; Boger, Bruce; Leeds, Eric; McDermott, Brian
Cc: Cohen, Miriam; Virgilio, Martin
Subject: RE: FOOD FOR THOUGHT As you make the lists MEDICAL SCREEN???

The 2 individuals already deployed were administered KI.

From: Buchholz, Jeri
Sent: Monday, March 14, 2011 1:28 PM
To: Tracy, Glenn; Boger, Bruce; Leeds, Eric; Billings, Sally; McDermott, Brian
Cc: Cohen, Miriam; Virgilio, Martin
Subject: RE: FOOD FOR THOUGHT As you make the lists MEDICAL SCREEN???

Dr. Cadoux has developed a plan. I will touch base with him to find out if KI is included in that plan and what his recommendation is on this issue.

From: Tracy, Glenn
Sent: Monday, March 14, 2011 1:26 PM
To: Boger, Bruce; Leeds, Eric; Billings, Sally; McDermott, Brian; Buchholz, Jeri
Cc: Cohen, Miriam; Virgilio, Martin
Subject: RE: FOOD FOR THOUGHT As you make the lists MEDICAL SCREEN???

Off of the top of my head, I would think our medical officer and perhaps the RSO for NRR? I think we should have it available for our folks going over. Would you pursue from the RSO end of things? Thanks.

Jeri, please discuss with health center. (KI is the drug that protects the thyroid from radioactive iodine, as you may know.)

From: Boger, Bruce
Sent: Monday, March 14, 2011 1:11 PM
To: Tracy, Glenn; Leeds, Eric; Billings, Sally; McDermott, Brian
Cc: Cohen, Miriam; Virgilio, Martin
Subject: RE: FOOD FOR THOUGHT As you make the lists MEDICAL SCREEN???

Glenn, Who at the NRC would make the call as to whether these folks should be administered KI?

From: Tracy, Glenn
Sent: Monday, March 14, 2011 11:37 AM
To: Leeds, Eric; Boger, Bruce; Billings, Sally; McDermott, Brian
Cc: Cohen, Miriam
Subject: FOOD FOR THOUGHT As you make the lists MEDICAL SCREEN???

AAA/39

Importance: High

FOOD FOR THOUGHT Do not forget that we need to ensure the folks we are choosing are medically/physically up to the task that is to be assigned to them as they potentially enter areas that will be of hardship wrt food, water, electricity, medicines, etc.

I would think that we should consider adding a medical screen before simply sending someone into the zone. They also NEED ALL of the their shots...cholera, etc, it would seem. I would not assume that someone is just ready to go...

I have already been having staff looking into the aspects of hazardous duty and other HR-related items as we had ginned up since the TTX for NLE. Also, contact with spouses at home, etc. Remember that DoD spends time to ensure someone is actually fit and ready before sending them into such a type of zone, if we are not sure of exactly how long or for what duration.

From: [Evans, Michele](#)
To: [Leeds, Eric](#); [McDermott, Brian](#); [Virgilio, Martin](#)
Cc: [Thaggard, Mark](#)
Subject: Re: Add this name to List of folks going to Japan
Date: Monday, March 14, 2011 2:46:15 PM

Thanks Eric. I sent this to liaison team.

Sent from an NRC Blackberry
Michele Evans

From: Leeds, Eric
To: McDermott, Brian; Virgilio, Martin
Cc: Evans, Michele; Thaggard, Mark
Sent: Mon Mar 14 14:37:06 2011
Subject: Add this name to List of folks going to Japan

William Cook form Rgn 1. That completes the list for this first wave. The names again are Tony Nakanishi, Tim Kolb, Jack Foster, Bill Cook, Chuck Casto and Richard DeVercelly. They will join Jim Trapp and Tony Ulsis, who are already there.

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

AAA/40

From: [Doane, Margaret](#)
To: [Borchardt, Bill](#); [Brenner, Eliot](#)
Cc: [Ramsey, Jack](#); [Henderson, Karen](#); [Mamish, Nader](#); [Virgilio, Martin](#); [Weber, Michael](#)
Subject: OIP Analysis no2.docx
Date: Monday, March 14, 2011 3:34:00 PM
Attachments: [OIP Analysis no2.docx](#)

Attached is an updated OIP Analysis/Guidance Document for Japan. Please let me know if you have concerns or revisions. I'd like to have it final ASAP for the NRC Assistance Team and to guide public and liaison activities.

Thanks,
Margie

AAA/41

OIP Analysis/Guidance No. 2

- 1) This remains a Japanese response and NRC's role will be to support the Japanese Emergency Responders in a manner that is appropriate.
- 2) NRC needs to be the primary contact with NISA and JNES because of our long-standing relationship
- 3) Public statements we make going forward will have enormous credibility, extreme caution will be necessary

We have now been asked by Japan to provide assistance to their Regulatory authorities and other emergency responders. This was undoubtedly an extremely difficult decision for the Japanese who had up to this point had been handling the issues on their own. Culturally, they are a very proud nation. They are among the top nuclear leaders in technical expertise, especially in seismic and tsunami matters.

The Japanese are now in their fourth day of responding to these emergencies and will remain the best informed about the current technical, legal, cultural, and regulatory issues. NRC can be of enormous assistance taking into consideration that we can help augment their already burdened staff. We must be sensitive to their needs and not interfere with their decision-making. Recognizing that if we interfere, rather than assist, the consequences could be enormous.

It will be essential to help the Japanese maintain trust in their leaders to promote ongoing civil order in response to the nuclear crisis. Any inconsistencies or statements that undermine Japanese authority or expertise will have lasting affects as it could hamper current emergency efforts and their future ability to respond to these issues, long after international assistance recedes. Any interactions with the Japanese, other nations or public communication should take this into consideration.

It remains crucial that we build upon our long-standing cooperative relationship with the Japanese regulators. The NRC has a vast amount of expertise working with the Japanese program and personal relationships that should be used as a basis for strengthening, rather than shaking the confidence of the Japanese responders. There should be sensitivity to not question the past actions, as there will be ample time to learn from these experiences. Direct confrontation will also not be helpful. Multiple agency questions and interactions are an unnecessary distraction. The NRC should remain the primary representative to communicate with NISA and JNES. Ultimately, our actions should not interfere or distract them. It also remains the best way culturally to approach the issue.

~~Official Use Only~~

From: [Leeds, Eric](#)
To: [Grobe, Jack](#); [Virgilio, Martin](#); [Weber, Michael](#)
Cc: [Nguyen, Quynh](#); [Ruland, William](#); [Skeen, David](#); [Brown, Frederick](#); [Brenner, Eliot](#); [Collins, Elmo](#); [Dean, Bill](#); [Satorius, Mark](#); [McCree, Victor](#); [Schmidt, Rebecca](#); [Boger, Bruce](#)
Subject: FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link
Date: Monday, March 14, 2011 3:38:45 PM
Attachments: [Natural Phenomena Limitations.wpd](#)

FYI – I've asked Quynh Nguyen to work with the Ops Center to create a share-point site to house our Q&As from the Japanese quake and tsunami. Attached is a list of Q&As we created during the last tsunami, which we should consider. The regions requested Q&As to support their EOC meetings next week with members of the public. I'd like to have something completed by the end of the week for the regions.

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

From: Boger, Bruce
Sent: Monday, March 14, 2011 9:21 AM
To: Leeds, Eric
Subject: FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI—this is a knowledge management challenge. We've collected information in the past, but we have to drag it out and it's not available in the Ops center.

From: King, Mark
Sent: Monday, March 14, 2011 7:23 AM
To: Boger, Bruce; Brown, Frederick; Thorp, John
Cc: Thomas, Eric
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

I think the attached is what Bruce is referring to – a natural phenomena limitations document. See attached.

From: Boger, Bruce
Sent: Monday, March 14, 2011 7:20 AM
To: Brown, Frederick; King, Mark; Thorp, John
Cc: Thomas, Eric
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Great. Thanks. This is a start. I still remember something that was created to provide some plant-specific protection information. (e.g., Diablo Canyon has some tsunami protection). I believe we explored west coast plants for tsunamis and east coast plants for hurricane flooding protection. If you can't find it easily (or if Bruce's gray matter failed again), please reach out to the west coast plant PMs to see what tsunami protection they have. I suspect we'll receive some cards and letters. Thanks again.

From: Brown, Frederick
Sent: Monday, March 14, 2011 7:10 AM

AAA/42

To: King, Mark; Thorp, John
Cc: Thomas, Eric; Boger, Bruce
Subject: RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks Mark

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?

Attachment Natural Phenomena Limitations.wpd (16454 Bytes) cannot be converted to PDF format.

From: [Cianci, Sandra](#)
To: [Virgilio, Martin](#)
Cc: [Taylor, Renee](#)
Subject: FW: UPDATE re: interagency briefing tomorrow at 1pm
Date: Monday, March 14, 2011 4:26:22 PM

Marty,

Bill would like you to cover the First Line Supervisor Meeting tomorrow afternoon.

Sandy Cianci

*Administrative Assistant to Marty Virgilio, DEDR
Office of the Executive Director for Operations
O-17 H13
301-415-1714
sandra.cianci@nrc.gov*

From: Virgilio, Martin
Sent: Monday, March 14, 2011 4:21 PM
To: Cianci, Sandra
Subject: FW: UPDATE re: interagency briefing tomorrow at 1pm

FYI.. I will need to cover for Bill

From: Powell, Amy
Sent: Monday, March 14, 2011 4:15 PM
To: Borchardt, Bill
Cc: Schmidt, Rebecca; Batkin, Joshua; Taylor, Renee; Virgilio, Martin
Subject: UPDATE re: interagency briefing tomorrow at 1pm

Bill –

We just got some additional information about tomorrow's interagency briefing that the White House is arranging with both Senate and House Leadership and Committees. The briefing will be at **1pm on the Senate side (room TBD)**. There will be one briefing that will include staff from both the House and Senate; with both chambers in session, I would not be surprised if a few Members came as well.

Either Becky or I will go down with you – I'll pass along additional information as I get it.

Thanks,

AAA/43

Amy

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

From: [Borchardt, Bill](#)
To: [HOO Hoc](#); [Grobe, Jack](#); [Dorman, Dan](#); [Weber, Michael](#)
Cc: [Powell, Amy](#); [Schmidt, Rebecca](#); [Batkin, Joshua](#); [Virgilio, Martin](#); [Rihm, Roger](#)
Subject: FW: UPDATE re: interagency briefing tomorrow at 1pm
Date: Monday, March 14, 2011 4:58:24 PM

I request the ET in the Ops Center to prepare talking points for my use during this meeting. I would also like an updated status report Tues AM. You might want to start with the briefing sheet Marty used to brief congressional staff this afternoon.

From: Powell, Amy
Sent: Monday, March 14, 2011 4:15 PM
To: Borchardt, Bill
Cc: Schmidt, Rebecca; Batkin, Joshua; Taylor, Renee; Virgilio, Martin
Subject: UPDATE re: interagency briefing tomorrow at 1pm

Bill –

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Either Becky or I will go down with you – I'll pass along additional information as I get it.

Thanks,
Amy

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

AAA/44

From: [Abu-Fid, Boby](#)
To: [Camper, Larry](#)
Subject: DS417 US COMMENTS December 2009.docx
Date: Monday, March 14, 2011 5:59:30 PM
Attachments: [DS417 US COMMENTS December 2009.docx](#)

FYI, see attached USA WASSC/NUSSC comments on IAEA safety standard "DS417, Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations." See Comment # 13 as stated below. I believe our reviews of IAEA standards contribute to Global Safety:

13	3.35 / 3	... <u>"Catalogue specific to the site, which should consider evidence of tsunamis from available stratigraphic records."</u>	Take relatively recent evidence for tsunamis from paleo-stratigraphy.	Yes	New text of Para 3.35: <i>All data relevant for assessing the potential for tsunami hazards and for determining the tsunami hazard parameters should be compiled in a Tsunami Catalogue specific to the site. This catalogue should consider all historical information and paleological evidence of tsunamis from stratigraphy and other geological studies</i>		
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AAA/45

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: NUSC, WASSC		Date: September 21, 2009					
Country/Organization: United States of America / NUSC, WASSC							
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ejection
1	Table of Contents and Section Headings	Insert "Chapter" in the actual chapter headings since text often refers to chapter numbers.	Clarify document navigation.	Yes	Will be considered during editing to be in accordance with IAEA rules		
2	2.18 / 4	“Over such long period <u>For many installation lifetimes,</u> it is possible...”	“long period” is equivocal – need is for consideration of change during installation lifetime.	Yes	Modified text: <i>Over the lifetime of the installation...</i>		
3	2.31 / 8-10	“There may, therefore, be a part of the remaining uncertainty which is irreducible with respect to for site specific investigations. This should be recognized and taken into consideration evaluated stochastically where possible.”	Vague definitions imply no useful guidance.	Yes	Modified as follows: <i>therefore remaining uncertainty for site specific investigations should be evaluated</i>		
4	2.34 / 7-9	“...assessment and consider all important uncertainties explicitly to the extent possible. The selection of the probability level for the design basis parameter should guarantee a sufficient margin of safety to protect the plant against serious radiological consequences.”	all” too encompassing – need to focus on important uncertainties. Vague definitions imply no useful guidance.	Yes. The last sentence was deleted			
5	3.1 / 4-5	“...compiled in specific site catalogues or databases for each of the hazards under consideration. To permit the development of scalable databases over the facility life cycle, the database structure should whenever	Standardized database structures and templates permit consistent and comparable analysis over the data collection period.	Yes			

		possible, be standardized to permit <u>reproducible analyses by a third party.</u> <u>Consider that climate change may require revised analyses in future years that may need to be compared to an initial baseline analyses.</u> The results of the site evaluation should be used for the design of a plant as described in the..."					
6	3.6 / 1	"Data should be presented <u>legibly</u> clearly and using maps of appropriate scale, graphs, and..."	Often maps received are illegible in the applicant's reports and application documents.			X	Clearly is sufficient.
7	3.6 / 5	"...including a Digital Elevation Model (DEM) extended to the complete <u>appropriate</u> region surrounding the..."	"complete" may be misinterpreted to mean an entire ocean basin, for example.	Yes			
8	3.18 / 4	"...available and validated <u>adequately supported</u> , they should be used as part of the meteorological site evaluation..."	A validated (as in NPP engineering codes), local-scale model is unobtainable. Need to have appropriate level of model support.	Yes	Modified as follows: <i>If such models are available, validated, and adequately supported, they should be...</i>		
9	3.27 / 2-3	"-The locations and hydrological characteristics of all relevant bodies of water and groundwater <u>and all relevant bodies of water, and locations of surface water bodies.</u> In addition, <u>information should be obtained on the geological framework within which groundwater occurs.</u> "	For completeness and clarity.	Yes			
10	3.31 / 1-2	"Hydrogeological information in the vicinity of the site. Piezometers should be installed at the site to monitor the ground water levels <u>and vertical gradients</u> in the surficial aquifer <u>system.</u> "	The term "surficial aquifer" is vague. Vertical gradients are important to capture for radiological transport.	Yes	Modified as follows: <i>Piezometers should be installed at the site to monitor the groundwater levels and pressures in the appropriate aquifers.</i>		
11	3.31 / 7	"...regard, see Ref. [3] for further	To obtain information	Yes			

		<p>guidance.</p> <p><u>"- Information should be obtained on anthropogenic influences, such as location and magnitude of groundwater extraction and artificial recharge. Anticipated future trends based on population changes and development should be considered.</u></p> <p><u>"- Long-term records of groundwater levels should be obtained from wells in the same region and in comparable hydrogeological situations to allow estimation of the effects of extreme meteorological conditions on groundwater levels, and to examine long-term trends such as caused by large-scale groundwater extraction."</u></p>	<p>over a longer term than is typically obtained from piezometers at the site.</p>				
12	3.33 / 7	<p>"Hydrogeological characteristics such as permeability and porosity.</p> <p><u>"- Landslide effects to rivers course."</u></p>	<p>Landslides causing diversion of the channel and possible flooding should also be considered in areas that are not necessarily affected by tsunami</p>	Yes			
13	3.35 / 3	<p>...<u>"Catalogue specific to the site, which should consider evidence of tsunamis from available stratigraphic records."</u></p>	<p>Take relatively recent evidence for tsunamis from paleo-stratigraphy.</p>	Yes	<p>New text of Para 3.35: <i>All data relevant for assessing the potential for tsunami hazards and for determining the tsunami hazard parameters should be compiled in a Tsunami Catalogue specific to the site. This catalogue should consider all historical information and paleological</i></p>		

					<i>evidence of tsunamis from stratigraphy and other geological studies</i>		
14	3.36 / 2	<p><u>"The reference vertical and horizontal datum. Special attention should be paid to the possibility that surveys made at different times may have been made using different survey grids or datums. The grid or datum used in each data set should be explicitly stated."</u></p>	<p>This is very easy to overlook, but can cause much difficulty if, for example, elevations measured from different datums are combined.</p>	Yes			
15	4.40 / 1-7	<p>"The pronex pronex of occurrence of this type of meteorological phenomena at the site should be assessed. If the site is subjected to the affects of tropical cyclones, two approaches have been used to develop the design-basis wind speeds from tropical cycles: a statistical approach and a deterministic approach a combination of statistical and deterministic approaches are used to develop the design-basis wind speeds from tropical cycles. In the statistical-deterministic approach, the consideration of high winds resulting from tropical cyclones has been included in the development of extreme wind hazards. Thousands of storm track simulations combined with wind field and gust factor models were used to define wind speed probability distribution for a particular location. The statistical properties of climatic tropical cyclones are combined with deterministic numerical models to generate Thousands of storm track simulations to define wind speed</p>	<p>This is the state-of-the-art method –replaces Probable Maximum Hurricane/Tropical Cyclone methods of the 1970s.</p>	Yes			

		<u>probability distribution for a particular location.</u> "					
16	4.41 / 1-5	"The deterministic approach relies on the determination of a probable maximum tropical cyclone (PMTC) ¹² . For the purposes of the application of the methods discussed in this Safety Guide, a PMTC is a hypothetical steady-state tropical cyclone having a combination of values for meteorological parameters chosen to give the highest sustained wind speed that can reasonably occur at a specified coastal or near-coastal location."	Probable Maximum Hurricane/Tropical Cyclone methods of the 1970s method replaced by statistical-deterministic methods using larger/updated databases, numerical models and latest peer-reviewed research.	Yes			
17	4.42 / 1-2	"The methods for evaluating the PMTC should <u>tropical cyclone parameters depend on the results of theoretical studies on the tropical cyclone structure and combine data from synoptic networks, satellites, and aircraft as well as data obtained from modelling.</u> "	Removes references to PMTC.	Yes			
18	4.49 / 1	"Most of the <u>tropical cyclone data used for the development of the PMTC evaluating tropical cyclone parameters are...</u> "	Removes reference to PMTC.	Yes			
19	4.50 / 2	"...period of a few hours are still little known, so the PMTC is assumed to be in a steady state. "	Removes reference to PMTC.	Yes			
20	5.8 / 4-5	"...surge model which maximizes the flooding potential. All parameters should be conservatively <u>realistically</u> evaluated and justified."	The approach developed in paragraph 2.34 is "unbiased and realistic." Realism, not conservatism, should thus be required.			X	Para 2.34 refers to Probabilistic approach. Para 5.8 is in related to Deterministic approach

							Deterministic evaluation should be performed "conservatively"
21	5.36 / 4	"...generate a tsunami; rare large meteorite strikes may also impact the ocean and generate a tsunami."	Typographical error.			X	<i>...large meteorites¹ may also impact... is clear enough.</i>
22	5.64 / 8	"...analyst should take into consideration at each step of the process. <u>Some Member States conduct formal expert elicitation to evaluate the significance of model and data uncertainty on calculated hazard.</u> "	Concept of elicitation is introduced, but not used as practical solution to problem outlined in paragraph.	Yes	Included in footnote3: <i>Some Member States conduct formal elicitation to evaluate the significance of model and data uncertainties</i>		
23	5.67	Develop new paragraph(s) on guidance regarding volcanic phenomena.	Although numerous volcanic phenomena are discussed in 5.41, no practical guidance is given here for conducting a hazard assessment. Clear guidance is needed for these phenomena.			X	See new text that explain why only one paragraph is provided.
24	5.98	Add discussion of contribution of snow pack	Consideration of snowpack in addition to extreme precipitation events is recommended.	YES			
25	5.100 / 2-5	"...necessary to estimate water velocities and hydrodynamic forces on inundated structures. If increased roughness coefficients have been considered for the conservative estimation of water stage, adjustment of these roughness coefficients to	The approach developed in paragraph 2.34 is "unbiased and realistic." Realism, not conservatism, should thus be required.			X	Para 2.34 refers to Probabilistic approach. Para 5.8 is in related to Deterministic

¹ For meteorite induced tsunamis, assessments conducted to date do not demonstrate that the frequency of occurrence of these events exceeds the usually adopted screening level.

		obtain conservative <u>realistic</u> water velocity....”					approach Deterministic evaluation should be performed “conservatively”.
26	5.117 / 1	“Proper inspection and monitoring should be carried out <u>assured</u> to detect gradual changes in...”	Replace the wording “carried out” - this may occur after operation			X	The proposal seems equivalent to the existing word.
27	6.1 / 3-4	“...considered separately, even if they occur simultaneously, as <u>unless</u> they do not interfere and increase a given hazard (e.g., <u>freezing precipitation and winds, 4.17</u>). <u>However, meteorological events that drive hydrological events such as precipitation and runoff could be addressed in conjunction.</u> Values for design purposes are derived by statistical treatment or by...”	Although precipitation is a meteorological event, it needs to be considered distinctly compared to tornado or other meteorological events. Chapter 2 of the document identifies meteorological hazards, including precipitation. The actual hazard is not from the precipitation as such (unless it is accumulation on structures) but the flooding that is generated from it.	Yes	New text: <i>For the different meteorological hazards considered in Chapter 4, extreme values are defined using the assessment methods described in Chapter 2. In general, each of the meteorological hazards is determined individually, even if they occur simultaneously, unless they interfere and increase a given hazard (e.g., freezing precipitation and winds, 4.17).</i>		
28	6.13 / 8-9	Define “a shorter recurrence interval”.	Needs elaboration			X	This means that we don’t combine maximum of both phenomena. With the maximum of one

							phenomenon, the second one is lower than the maximum or equivalently, is defined with a shorter recurrence interval.
29	7.1 / 9-10	<p>"Study of possible interference between the structures for protection and parts of the plant.</p> <p>- <u>Evaluation of operational procedures and mitigation mechanisms to minimize hydrological hazards.</u>"</p>	It is important to consider operational procedures and mitigation measures as part of the whole Protection Plan.	Yes			
30	7.7(b) / 3	"...conditions (e.g. wind and landslides, but excluding extremely rare highly unlikely combinations)..."	Vague term – need consistency with approach used in text.	Yes			
31	7.24 / 5	"...flooding event. <u>Special provisions should be made for protection and evacuation of the families of plant personnel during floods, in order to help assure the effectiveness of personnel during the emergency.</u> "	To assure that plant personnel are not distracted from critical duties because of concerns about their families.	Yes	New text: <i>Special provisions should be made for protection of the families of plant personnel during floods, in order to help assure the effectiveness of personnel during the emergency.</i> "		
32	8.5	The selection of a particular IPCC AR for analyzing the impacts of climate change should be based on the choice of appropriate forcing scenario that reflects the trends.	IPCC scenarios are based on GHG forcings that in turn are based on a host of assumptions.			X	Trends are already mentioned in this paragraph. It is clear that the scenarios to be used are those

							reflecting these changes.
33	8.5 / 1	“The results of the most recent IPCC AR investigations <u>or other pertinent studies</u> should be used to analyse the...”	Added “other pertinent studies” to allow some flexibility. As is, the paragraph endorses one study that may become outdated, revised or is not appropriate for a given situation.	OK			

From: [Virgilio, Martin](#)
To: [Franovich, Mike](#)
Subject: RE: Suggestion for Personnel to Japan
Date: Monday, March 14, 2011 6:13:00 PM

Thanks, Mike

From: Franovich, Mike
Sent: Monday, March 14, 2011 8:31 AM
To: Virgilio, Martin
Cc: Leeds, Eric; Dudes, Laura; Skeen, David
Subject: Suggestion for Personnel to Japan

Marty,

This morning at 07:30 it was mentioned that a larger response effort from the US is underway and that we may be sending folks to man up an EOC in Japan. You might want to consider using the TTC BWR instructors as a resource. Their knowledge and insights are tremendous and it may ease the burden on the RST resources.

*Mike Franovich
Technical Assistant for Reactors
Office of Commissioner Ostendorff
301-415-1784*

AAA/46

From: [LIA04 Hoc](#)
To: [Virgilio, Rosetta](#); [LIA06 Hoc](#); [Thaggard, Mark](#); [McGinty, Tim](#)
Cc: [Noonan, Amanda](#); [Brenner, Eliot](#); [Mroz \(Sahm\), Sara](#); [Miller, Charles](#); [Leeds, Eric](#); [Virgilio, Martin](#)
Subject: RE: ACTION: Do States Require Additional Information?
Date: Monday, March 14, 2011 6:25:25 PM

I think it is important to make sure that NSIR/EP is looped in on the development and distribution of any answers. This is for a few reasons: 1) to maintain consistency with existing EP messaging; 2) to ensure consistency with FEMA REPP communications; and 3) to allow for consistency with any future messaging.

-Sara (from the LT room)

Sara Mroz
Outreach and Communications
Office of Nuclear Security and Incident Response
Sara.Mroz@nrc.gov

From: Virgilio, Rosetta
Sent: Monday, March 14, 2011 6:13 PM
To: LIA06 Hoc; Thaggard, Mark; McGinty, Tim
Cc: Noonan, Amanda; LIA04 Hoc; Brenner, Eliot; Mroz (Sahm), Sara; Miller, Charles; Leeds, Eric; Virgilio, Martin
Subject: RE: ACTION: Do States Require Additional Information?

Thank you, Tim. In my conversation with OEDO (just prior to receiving your email) I was informed that NRR/Eric Leeds has taken on the responsibility (Quynh Nguyen is the POC) for the collection of questions and development of answers for responding to our stakeholders on the events involving the earthquake in Japan and the implications for NRC licensees. That being the case, shouldn't we provide the State Qs to NRR to address?

From: LIA06 Hoc
Sent: Monday, March 14, 2011 5:56 PM
To: Thaggard, Mark; LIA04 Hoc; Miller, Charles; Virgilio, Rosetta; Brenner, Eliot; Mroz (Sahm), Sara; Noonan, Amanda
Subject: RE: ACTION: Do States Require Additional Information?

This email is primarily for Charlie and Rosetta, to close the loop. We discussed the need for providing consistent information to the States, via the RSLO's, with the Executive Team and the Chairman a few minutes ago. The Chairman directed us to coordinate with FEMA since they have an established relationship with the States. We settled on working with OPA to provide the information tailored to our best extent to the questions and concerns that would be expressed by the States, and provide to FEMA for awareness and commonality, and then the RSLO's for sharing.

A broad conference call with all States is not currently being contemplated, we'd like to see how providing a common set of information works first. Tim McGinty, LT Director

AAA/47

From: Tifft, Doug
Sent: Monday, March 14, 2011 3:44 PM
To: McNamara, Nancy; LIA04 Hoc; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill; LIA06 Hoc
Cc: Turtill, Richard; Virgilio, Rosetta; Rautzen, William; Lukes, Kim; Flannery, Cindy; Trojanowski, Robert
Subject: RE: ACTION: Do States Require Additional Information?

Amanda,

We just got off a conference call with all the Region 1 state liaison officers and emergency directors. Bill Dean opened the meeting. A strong message the states sent Bill was that they need to be informed before information hits the public.

Here are some of the questions we heard. I broke them into the two categories you requested. I think we need answers to the hypothetical questions ASAP as well. (I know we'll be looking for this for our upcoming annual assessment meetings, that start for Region 1 next week.)

Questions related to event in Japan:

Could this happen at [X plant]?

What is the sequence of events at the Japanese reactors?

What is the magnitude of the release at the Japanese facility? (There are conflicting reports in the press.) (ie, offsite dose rates)

Who are the Federal Contacts (for the state) to get information on what DOE & EPA are doing?

When will the plume hit the US?

What are the environmental consequences to the US?

What dose rates do we expect to see in the US?

How do the Japanese reactor designs compare to the US reactor designs of similar vintage?

When the states receive questions from the public / media that the NRC would be better to answer, where should they direct these calls?

What is the NRC doing to correct misinformation in the public / media?

Hypothetical questions related to US plants:

What would the effect be on [plant X] if a 9.0 earthquake hit?

What would the effect be on [plant X] if a subsequent tsunami hit?

Why is Indian Point safe if there is a fault line underneath it?

-Doug

From: McNamara, Nancy
Sent: Monday, March 14, 2011 1:27 PM
To: LIA04 Hoc; Tifft, Doug; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill; LIA06 Hoc
Cc: Turtill, Richard; Virgilio, Rosetta; Rautzen, William; Lukes, Kim; Flannery, Cindy
Subject: RE: ACTION: Do States Require Additional Information?

Absolutely. We are having a conf. call at 1:30 w/all our states to hear their opinions. But the more we can give, the better. We've been getting questions all morning and Bill Dean has a call with a NY congressional arranged through OCA.

From: LIA04 Hoc
Sent: Monday, March 14, 2011 1:24 PM
To: McNamara, Nancy; Tift, Doug; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill; LIA06 Hoc
Cc: Turtill, Richard; Virgilio, Rosetta; Rautzen, William; Lukes, Kim; Flannery, Cindy
Subject: ACTION: Do States Require Additional Information?

Nancy, Doug, Bob, Gena, Alan, Harral, and Bill:

It is our understanding that a few additional questions from SLOs have come in from states following distribution/communication of recent Q&As and Press Releases.

In view of this, we are assessing whether additional information may be needed/if there are additional pressing questions about **the radiological fallout from Japan.**

Currently the Operation Center is responding to an International Emergency and any possible implications from this event that may affect the United States. If States have specific questions about Reactors in the United States they should be answered by the RSLO's if it reasonable. If the questions are regarding hypothetical events at U.S. Reactors these questions can be collected and answered, if possible, at a later date.

BOTTOM LINE: do we sense a need to provide additional Q&As and other information pieces that respond to State needs? We respectfully request that you make this assessment using practical judgment and beg your indulgence in communicating real State needs for additional information.

Amanda Noonan
State Liaison – Liaison Team
Incident Response Center

From: [Kolb, Timothy](#)
To: [Casto, Chuck](#); [Monninger, John](#); [Nakanishi, Tony](#); [Foster, Jack](#); [Cook, William](#); [Devercelly, Richard](#); [Ulises, Anthony](#); [Trapp, James](#); [Smith, Brooke](#); [Foggie, Kirk](#)
Cc: [Virgilio, Martin](#); [Borchardt, Bill](#); [LIA10 Hoc](#)
Subject: RE: Travel and thoughts
Date: Monday, March 14, 2011 9:35:33 PM

Just to let everyone know, I have disinfect for everyone with paperwork to sign. I have a briefing sheet with several items to go over. We cantake care of that as soon as we get together. Also, I have direct contact with the Reactor SafetyTeam and have the latest information they have so we have a place to start from. Will keep in touch.

From: Casto, Chuck
Sent: Monday, March 14, 2011 9:21 PM
To: Monninger, John; Nakanishi, Tony; Kolb, Timothy; Foster, Jack; Cook, William; Devercelly, Richard; Ulises, Anthony; Trapp, James; Smith, Brooke; Foggie, Kirk
Cc: Virgilio, Martin; Borchardt, Bill; LIA10 Hoc
Subject: Travel and thoughts

Folks, i don't know if and when you might get this email, but here's some thoughts for our work.

Let me know if you need anything. The Chairman and EDO are fully supporting our needs and they clearly expressed that to me.

We are to support the Ambassador in all ways possible.

My flight may be the last to arrive. Seemingly the logistics from Atlanta are difficult. I am on a flight to Dallas now.

Let's think about organization of the team. It seems to me that we need a reactor safety team, protective measures, recovery/severe accident, and liaison team.

First we need briefings by Jim and Tony. Then a briefing by the host. Plus we need an operations center or place to work from. I believe that we have some KI but might need more.

Please think about who is on what group, I.e. Team. Then we probably need to reach back to resources in the US. For instance we may want to set up a bridge with general electric, INPO, and other technical groups.

For the protective measures team let's think about reaching back to DOE/FERMAC for advice.

You get my point. While I don't know the organizational situation over there, absent any other arrangement, let's form teams like we would in the US, and reach back to our counterparts, both federal and industry to accomplish our work. I would suggest using the Hoo Liaison team for coordination. We need to leverage all assets for maximum effect.

John I would suggest that you work with Brooke and Kirk.

Those are merely initial thoughts and suggestions. I know it will likely change immediately upon arrival.

I am anxious to get there and work with this break group and our counterparts back home.

See you soon.

Chuck

AAA/48

From: [LIA04 Hoc](#)
To: [Piccone, Josephine](#); [Jackson, Deborah](#)
Cc: [Rivera, Alison](#); [Turtill, Richard](#)
Subject: RE: ROSTER
Date: Tuesday, March 15, 2011 8:55:45 AM

Sounds reasonable to me. So should I expect to come out at 1:00; I am currently scheduled to come off at 3pm?

(note Patricia McGrady rescheduled the 2pm RSLO telecon to 3pm today)

Note that the ET was talking about the need to fill positions for the long term – especially while we have staff in country (think 9/11). Charlie is at the table and suggested that we could call on the Regions for help (Monica Orendi and Aaron McCraw) if necessary and Bill Borchardt agreed that if it came down to it, we could.

Michelle Burgess provided a hard copy of Ops Center Liaison Team Members; I'll have her forward it to you fyi

From: Piccone, Josephine
Sent: Tuesday, March 15, 2011 8:44 AM
To: LIA04 Hoc; Jackson, Deborah
Cc: Rivera, Alison; Turtill, Richard
Subject: RE: ROSTER

Agree Rosetta and Rich. Rich indicated to 5:00 so why don't we split the difference and keep two day shifts: 7-1 and 1-7. Do you think this will work?

Josephine M. Piccone, Ph.D.
Director, Division of Intergovernmental Liaison and Rulemaking
Office of Federal and State Materials and Environmental Management Programs (FSME)
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(301) 415-8429

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 7:52 AM
To: Piccone, Josephine; Jackson, Deborah
Cc: Rivera, Alison; Turtill, Richard
Subject: ROSTER

Josie/Debbie – Rich and I had a conversation with Mark Thaggard, who is one of the Liaison Team Directors in the Ops Center (Mark Lombard is on day shift today), and he and the other LT Directors (including Tom Blount) agree that State Liaison position does **not** need to be filled overnight. Rich plans to talk with you about this. The expectation is that we would fill the position from 7:00 am til 9:00 pm weekdays. Rich and I could be on call, should the need arise for someone to come in.

Given this, we might consider reworking the roster to split the day shift, so we can spread the responsibility (and give others an opportunity to gain experience). I would prefer to finish out this

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week, taking the early shift and be taken off next week, if at all possible. (I am on 2 working groups -Public Confidence and Plain Writing - and have products due, as well as have Management Directive 5.1 to mark up and get out to ODS/States for review.

Rosetta Virgilio - Liaison Team
Incident Response Center
301-816-5100

From: [NRC Announcement](#)
To: [NRC Announcement](#)
Subject: From the Chairman: Events in Japan
Date: Tuesday, March 15, 2011 9:38:27 AM

NRC Daily Announcements



Highlighted Information and Messages



Tuesday March 15, 2011 -- Headquarters Edition

[From the Chairman: Events in Japan](#)

From the Chairman: Events in Japan

By now I am sure that most of you are aware of the tragic earthquake and tsunami that struck Japan last week, killing thousands of people, destroying cities and infrastructure, and knocking out large portions of the electricity grid.

I am so proud of our staff and the dedication and tenacity they have shown during the tragic events of the past several days. NRC employees have been willingly working around the clock, and their energy, experience and expertise have been invaluable to our response. Those of you who have not directly been involved in this effort are playing just as valuable a role in making sure that the facilities we license are safe and secure.

The natural disasters in Japan—and the resulting situations at the Fukushima nuclear power plant—are sobering in their size and scope. It's easy to become distracted by the stories and images of devastation and destruction. The best thing we can do in this situation is to make sure we remain mindful of our responsibilities for the safety and security of our existing nuclear plants and materials, and to keep our focus where it must always be—on our mission. I continue to appreciate your dedication to ensure the safety and security of the American people.



(2011-03-15 00:00:00.0)

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AAA/50

From: [McCree, Victor](#)
To: [Collins, Elmo](#); [Satorius, Mark](#); [Dean, Bill](#)
Subject: FW: Response to Japan Earthquake/Tsunami
Date: Tuesday, March 15, 2011 10:11:26 AM

FYI

From: McCree, Victor
Sent: Tuesday, March 15, 2011 10:08 AM
To: R2MAIL; R2RESIDENTS; R2_RESIDENT SITES
Subject: Response to Japan Earthquake/Tsunami

Good Morning.

I'm sure that all of you are aware of the ongoing events in Japan following last Friday's massive earthquake and tsunami. The loss of life and property due to these catastrophic events is truly devastating, and the U.S., along with a host of other countries are extending support to the Japanese government.

Shortly after the event, the NRC entered the Monitoring Mode and staffed the Headquarters Operations (Ops) Center. Our colleagues in the Ops Center have continued to gather information from media sources and the International Atomic Energy Agency which indicate that the condition of the Unit 1, 2 and 3 reactors at the Fukushima Daiichi nuclear station remains dynamic and represents a continuing safety concern. The Japanese government has implemented protective measures for persons within the emergency planning zone of the Fukushima station, including evacuation, sheltering, and issuance of potassium iodide. The NRC does not expect the U.S. to experience any harmful levels of radioactivity.

On yesterday, the NRC dispatched additional experts to Japan to better understand the status of efforts to safely shut down the damaged reactors at the Fukushima Daiichi site. They will provide technical advice to the U.S. Ambassador in Japan and contribute to the communications among stakeholders (see <http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-048.pdf>). Chuck Casto has been designated to lead the NRC team and will serve as the single point of contact for the U.S. Ambassador on nuclear reactor issues. We wish Chuck and his team the best as they take on this challenging and important assignment. Please note that others in Region II also volunteered to support the response to the events in Japan and they may be asked in the coming weeks and months to supplement and/or replace the current U.S. team members.

The extraordinary events in Japan and their impact on that nation's nuclear infrastructure highlight some of the known risks involved in the technology we regulate. The events have also prompted widespread media and public interest in the safe use of nuclear power in this country. In addition, media commentary on the NRC's role in assuring safety of U.S., plants underscores the vital role that we play in ensuring that nuclear facilities are constructed, maintained, and operated in accordance with the requirements of their design and license. Despite these

AAA/51

potential distractions, I echo the Chairman's message today in encouraging you to remain focused on carrying out the NRC mission, as well as Region II's vision.

Once again, I truly appreciate your professional, safety-focused, and high quality work.

Thank you, Vic

From: [Ramsey, Jack](#)
To: [Holahan, Gary](#); [Evans, Michele](#); [Boger, Bruce](#); [Grobe, Jack](#); [Uhle, Jennifer](#); [Dorman, Dan](#); [Moore, Scott](#)
Cc: [Johnson, Michael](#); [Rosales-Cooper, Cindy](#); [Wiggins, Jim](#); [Diec, David](#); [Leeds, Eric](#); [Cullingford, Michael](#); [Astwood, Heather](#); [Sheron, Brian](#); [Sangimino, Donna-Marie](#); [Dehn, Jeff](#); [Haney, Catherine](#); [Smith, Shawn](#); [Miller, Charles](#); [Cool, Donald](#); [Tracy, Glenn](#); [Doane, Margaret](#); [Mamish, Nader](#); [Dembek, Stephen](#); [Abrams, Charlotte](#); [Owens, Janice](#); [McDevitt, Joan](#); [Virgilio, Martin](#); [Williams, Shawn](#); [Weber, Michael](#)
Subject: Action Request - Potential Temporary Assignees to OIP
Date: Tuesday, March 15, 2011 11:25:52 AM
Importance: High

All,

Activities involving the evolving situation in Japan are having, and are projected to continue to have, a significant impact upon OIP resources. With this, OIP would like to ask if each of the program offices could identify whether they have staff (preferably staff with international experience) that could be detailed to OIP for a period of, at least initially, 3 to 6 months. Any staff considered for possible rotation to OIP should be aware that they could potentially travel to Japan and be exposed to ionizing radiation. Please note that such identified staff may, or may not, actually be needed. Instead, OIP is hoping to have a list of individuals, with program office blessing, that could be utilized (including with very little or no notice).

If possible, feedback by late this week (Friday morning) would be extremely helpful. Within OIP, Joan McDevitt will be the principal point of contact for this.

Thanks in advance to everyone for their understanding during this challenging time.

Jack

AAA/52

From: [Taylor, Renee](#)
To: [Belmore, Nancy](#); [Hudson, Sharon](#); [Pulley, Deborah](#); [Burns, Stephen](#); [Borchardt, Bill](#); [Brenner, Eliot](#); [Akstulewicz, Brenda](#); [Dyer, Jim](#); [Virgilio, Martin](#); [Cianci, Sandra](#); [Weber, Michael](#)
Cc: [Schmidt, Rebecca](#); [Powell, Amy](#)
Subject: RE: Murderboard TODAY 5:00/Hearing tomorrow
Date: Tuesday, March 15, 2011 12:07:47 PM

That would be helpful, thanks.

From: Belmore, Nancy
Sent: Tuesday, March 15, 2011 11:41 AM
To: Taylor, Renee; Hudson, Sharon; Pulley, Deborah; Burns, Stephen; Borchardt, Bill; Brenner, Eliot; Akstulewicz, Brenda; Dyer, Jim; Virgilio, Martin; Cianci, Sandra; Weber, Michael
Cc: Schmidt, Rebecca; Powell, Amy
Subject: FW: Murderboard TODAY 5:00/Hearing tomorrow

Should I arrange a van for tomorrow morning?

Nancy Belmore
Office of Congressional Affairs
U.S. Nuclear Regulatory Commission
nancy.belmore@nrc.gov
301-415-1776

From: Schmidt, Rebecca
Sent: Tuesday, March 15, 2011 11:29 AM
To: Belmore, Nancy
Cc: Pace, Patti
Subject: Murderboard TODAY 5:00/Hearing tomorrow

Nancy -- Can you figure out if they need transportation too? Can you send this to the invitees and their secretaries:

The Chairman is having his murderboard at the Hill office today at 5:00. The office is located on the 7th floor at 10 G St. Invitees include: Eliot Brenner, Jim Dyer, Trip Rothschild, Josh, EDO reactor person—either Marty or Mike Weber according to Bill.

The Energy and Commerce hearing is tomorrow at 9:30. The Chr would like Eliot, Bill, JIM, Steve Burns and a severe accident reactor guy (According to Bill) at the morning hearing. The hearing is in 2123 Rayburn

Tomorrow afternoon there will be a second hearing/round table for EPW. That will be at 3:30 in Dirksen. Room TBD. The Chairman would like the same lineup except Jim doesn't have to come.

AAA/53

From: [Grobe, Jack](#)
To: [McCree, Victor](#); [Leeds, Eric](#)
Cc: [Boger, Bruce](#); [Virgilio, Martin](#); [Wert, Leonard](#); [Hiland, Patrick](#)
Subject: Re: CR has stopped re-tensioning
Date: Tuesday, March 15, 2011 12:12:11 PM

Let us know how we can help.
Jack Grobe, Deputy Director, NRR

From: McCree, Victor
To: Leeds, Eric
Cc: Grobe, Jack; Boger, Bruce; Virgilio, Martin; Wert, Leonard
Sent: Mon Mar 14 17:35:36 2011
Subject: FW: CR has stopped re-tensioning

Eric,

This may fit in the category of "when it rains, it pours...." But, as noted below, Crystal River heard an audible noise as they were tensioning containment today, so they stopped the tensioning process to investigate. In addition, acoustic monitors detected this noise and strain gage indications were lost on Bay 5-6.

Depending on what the licensee finds from its investigation, we may need to advance and expand the additional inspections that we had scheduled for next week. We'll also take a hard look at this to see if it merits a postponement of next week's public meeting.

More to come....

Vic

From: Rich, Daniel
Sent: Monday, March 14, 2011 3:50 PM
To: Croteau, Rick; Jones, William
Subject: CR has stopped re-tensioning

Rick/Bill

CR personnel detected an externally audible noise during the first sequence of the final pass, Pass 11. The containment acoustic monitors identified an unusual noise signature in Bay 5-6. The indications from embedded strain gages in Bay 5-6 were lost.

The licensee has stopped tensioning to analyze the indications.

Dan

AAA/54

From: [Leeds, Eric](#)
To: [Borchardt, Bill](#)
Cc: [Virgilio, Martin](#); [Weber, Michael](#)
Subject: Heads up!!!!: Daily Note
Date: Tuesday, March 15, 2011 5:19:52 PM

Below is an email I received from Cmr Svinicki. Rather than respond via email, I went up to discuss with her. She is VERY concerned that we are delaying the issuance. I assured her we are not doing any additional technical reviews or analysis and we are simply ensuring that our communications plans are prepared for the stakeholder responses which are sure to come. I reminded her that VY was a BWR 4, similar in design to the Japanese plants. She asked what other licensing actions I was delaying because of the Japanese event and I told her none. She was also concerned that the daily note was open ended as to when the renewed license would be issued. I told her we plan to issue it next Tuesday or Wednesday and if it would be any longer than that I would personally let her know.

FYI.

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

From: Svinicki, Kristine
Sent: Tuesday, March 15, 2011 4:19 PM
To: Leeds, Eric
Cc: Sharkey, Jeffrey
Subject: Daily Note

Eric, I am very confused on what the regulatory nexus is here. Will the talking points on VY address some nexus between the event in Japan and your issuance of this license? If so, what is the connection? Are you withholding the issuance to perform some additional analysis? If so, what is the regulatory basis?

NRR

~~(OUO-SII)~~

On March 11, the staff informed the Commission that it intended to issue a renewed license to the Vermont Yankee Nuclear Power Station (VYNPS) on March 16. In light of recent international events, the staff has decided to delay the issuance of the VYNPS renewed license so that it can better prepare needed communication messages for internal and external stakeholders. The staff will provide advanced notice to the Commission of a rescheduled license issuance date.

AAA/55

From: [Virgilio, Martin](#)
To: [Grobe, Jack](#); [Dorman, Dan](#)
Subject: Fw: FYI: Industry Efforts
Date: Tuesday, March 15, 2011 8:18:34 PM

FYI

From: Leeds, Eric
To: Borchartdt, Bill; Virgilio, Martin
Cc: Weber, Michael
Sent: Tue Mar 15 17:26:31 2011
Subject: FYI: Industry Efforts

FYI – Please see Bruce’s email below. NRR is considering short term and longer term actions in response to the Japanese event. We’re considering a measured regulatory response to put an initial footprint on the issue. Its positive to see the industry get out ahead of it – whatever planning they did based on the BP experience seems to be in play. We will keep you in the loop.

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

From: Boger, Bruce
Sent: Tuesday, March 15, 2011 5:04 PM
To: Leeds, Eric; Grobe, Jack; Ruland, William
Cc: Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Virgilio, Martin; Thomas, Eric; Brown, Frederick
Subject: Industry Efforts

I spoke with Randy Edington (CNO Palo Verde) and later with Steve Nichols (INPO) regarding industry actions as a result of the situation in Japan. The CNOs teleconferenced over the weekend and agreed to a series of near-term actions. INPO issued a Level 1 Event Report (highest level) to its members this afternoon. It identifies 4 actions, with due dates, and requires a written response. In general, the actions include walkdowns and verifications of aspects of facility capabilities to address B.5.b equipment and procedures, SAMGs, mitigation of SBO conditions, mitigation of internal and external flooding, and fire and flooding events that could be impacted by a concurrent seismic event. This should help shape the generic communication we've been discussing. INPO is figuring out how quickly they will be able to share the report with us. The report won't be available to the public, but we can share it internally.

AAA/SB

From: [Weber, Michael](#)
To: [Sheron, Brian](#)
Cc: [Muessle, Mary](#); [Bowman, Gregory](#); [Wiggins, Jim](#); [Evans, Michele](#); [McDermott, Brian](#); [Virgilio, Martin](#); [Burns, Stephen](#); [Rothschild, Trip](#)
Subject: FYI - Commission Action During the Chernobyl Accident
Date: Tuesday, March 15, 2011 8:52:08 PM

Thought you might be interested in this. too.

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

From: Vietti-Cook, Annette
To: Jaczko, Gregory; Borchardt, Bill
Cc: Burns, Stephen; Batkin, Joshua; Coggins, Angela; Virgilio, Martin; Weber, Michael
Sent: Tue Mar 15 20:07:22 2011
Subject: FW: Commission Action During the Chernobyl Accident

Commissioner Ostendorffs staff asked Tom Wellock what information may be available about what we did following the Chernobyl Accident. Tom quickly pulled together the information below, scroll down to beginning of the email, and had a brief exchange that may be useful to you in considering future actions. I hope this is helpful.

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

From: Wellock, Thomas
Sent: Tuesday, March 15, 2011 3:50 PM
To: Vietti-Cook, Annette
Subject: FW: Commission Action During the Chernobyl Accident

Annette,

Here is the exchange.

Tom

From: Zorn, Jason
Sent: Tuesday, March 15, 2011 4:48 PM
To: Wellock, Thomas
Subject: RE: Commission Action During the Chernobyl Accident

Tom

Thanks again. I provided this to the Commissioner, and he wanted me to pass on his personal thanks for this information. He has found it extremely helpful.

Jason

From: Wellock, Thomas
Sent: Tuesday, March 15, 2011 4:24 PM
To: Zorn, Jason
Subject: RE: Commission Action During the Chernobyl Accident

I'm sure that is correct. By the time the world knew of Chernobyl, the accident was almost three days old. On this one, people can watch all three units explode over and over. But I'd add a couple other elements besides information technology:

1) The design connection to US reactors seems obvious. It isn't hard to imagine Daiichi 1 as Oyster Creek sitting on the ocean. In 1986, I think the public accepted quickly that our reactors were different from the Russians.

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- 2) The regulatory connection seems obvious, too. Japan is an advanced economy with a mature regulatory system, and it still didn't work.
- 3) This accident goes right to the core of our DBA.
- 4) If the claims are correct that the Japanese regulators have not handled information sharing well, it reminds me all too much of the NRC's poor handling of TMI. Right now CNN's webpage headline says the accident is "nearing the severity of Chernobyl." Hysteria fills the void of uncertainty.

Tom

From: Zorn, Jason
Sent: Tuesday, March 15, 2011 3:54 PM
To: Wellock, Thomas
Subject: RE: Commission Action During the Chernobyl Accident

Tom

This is extremely helpful, and I can't thank you enough for doing the research and putting this together for me. Seems like the response to that incident was significantly different than our current response. I can't help but wonder if the instantaneous availability of information had something to do with a more measured response in 1986. I'll let you know if I have any follow up questions from the Commissioner.

Jason

From: Wellock, Thomas
Sent: Tuesday, March 15, 2011 3:49 PM
To: Zorn, Jason
Subject: Commission Action During the Chernobyl Accident

Hi Jason,

I've scouted around and there is no narrative about what the Commission did right after the Chernobyl accident. But I have pieced it together from a number of documents. I chose to look at Chernobyl over 9/11 because of the similarity of the NRC having to respond to a nuclear event outside its borders, as we are doing in Japan. To summarize my findings, the NRC played a limited, supporting role in the federal response to the accident. Here is a timeline of agency actions over the first couple weeks following the accident on April 26, 1986.

April 26: Accident occurs.

April 28: First indications of airborne contamination outside the USSR found in Sweden.

April 29: Agency requests data from Swedish Nuclear Power Inspectorate. Congressman Edward Markey writes to NRC requesting the agency establish a task force to obtain information on the accident and evaluate implications for U.S. program. Markey also wrote a letter to Secretary of State George Schultz requesting that the U.S. provide technical and medical assistance when requested by the Soviets. He also called for an international scientific panel to assess the accident.

May 1: The White House announced the formation of an interagency task force to assess the accident's impact on the environment, including the DOE, EPA, NRC, and others. Harold Denton, Director of NRR, represented the NRC. Lee Thomas, Administrator of the EPA, headed the task force. On the same day, the NRC established an Incident Tracking Team to collect information and support the Interagency Task Force. The Soviets refused offers of aid.

May 2: The NRC contacts all licensees requesting that they report anomalous readings in their radiation monitoring to the NRC. Results were to be shared with the task force and INPO.

May 5: Chairman Nunzio Paladino requested the EDO establish another team to perform a longer range study of the accident to determine what reforms might be needed in the U.S. Regulatory program.

May 13: Staff held a briefing of the Commission on the accident. While this is the first mention that I see of Commissioner involvement, there may have been earlier discussion among the Commissioners on this topic. I have requested the transcripts of earlier meetings from the Federal Records Center. They will likely arrive on Thursday.

The NRC issued three reports on the accident over the next six years, NUREGs 1250, 1251, and 1422. From these reports and the earlier actions, I think there are a couple things that are noteworthy given Commissioner Ostendorff's interest in what the Commission did during the accident.

- 1) Because of the delay in notification of the accident by the Soviets, the Soviet refusal of aid, Cold War relations, and the very different technology involved, the NRC played a supporting role to the EPA in the accident and even the State Department for a time. The accident was seen as an environmental threat to the United States, and so the EPA took a greater role. The early focus was on environmental monitoring. As a result, the NRC did not mobilize an emergency response as it is doing now.
- 2) NRC response was low key and largely reactive to requests by Markey and the White House.
- 3) What I find striking in the thrust of all of the reports and early responses is that they were mostly technical, focusing on differences in design, accident initiation, and implications for U.S. vendors, etc. No one seems to have asked the larger question the event raised of how the NRC should organize itself to respond to nuclear accidents outside US borders. This may have been discussed much later, but I think that the comparatively low-key non-controversial response of the federal government and the agency meant no flags were raised on this issue.

If you need me to look at 9/11 or have additional questions, let me know. I will also let you know what the Commission transcripts reveal when they arrive.

Tom

Thomas Wellock
Historian
U.S. Nuclear Regulatory Commission
O16G4
11555 Rockville Pike
Rockville, MD 20852
301-415-1965

From: [LIA07 Hoc](#)
To: [Batkin, Joshua](#); [Borchardt, Bill](#); [Virgilio, Martin](#); [Leeds, Eric](#); [Weber, Michael](#)
Subject: New Briefing Resource for Japan Response!
Date: Tuesday, March 15, 2011 10:19:46 PM

We have decided to add a new briefing resource, a "Go Book", to support your information needs related to the Japan response.

These "Go Books" will be substantially smaller than the current unwieldy briefing book, with tabs for status updates, two-pager, talking points, NRC press releases, and a few other ET identified reference materials. There will also be a tab for you to add whatever miscellaneous information you would like to include.

Status updates and the two-pager will be updated for distribution at 6am and 6pm each day. At those times, other information that is in the Go Books will also be updated.

The plan is for this information to be emailed to someone in your office who can update the book for you. **Please provide the name(s) of who you would like to receive the information for updating the books.** Books will be delivered to your offices tomorrow morning.

Thank you,
Sara

Sara Mroz
Office of Nuclear Security and Incident Response
US Nuclear Regulatory Commission
Sara.mroz@nrc.gov
LIA07.HOC@nrc.gov (Operations Center)

AAA/58

From: [Virgilio, Martin](#)
To: [Cianci, Sandra](#)
Subject: Fw: Capturing time for supporting Japan
Date: Tuesday, March 15, 2011 10:35:54 PM

Sandy

Please see if we should be charging my time to this TAC or continue as we have.

Marty

From: Muesle, Mary
To: Givvines, Mary; Virgilio, Martin
Cc: Dyer, Jim; Grobe, Jack; Leeds, Eric; Boger, Bruce
Sent: Tue Mar 15 10:26:38 2011
Subject: RE: Capturing time for supporting Japan

Here is the TAC

ZG0061 PA code of 9A1A - Japan Earthquake and Tsunami Drill

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

From: Givvines, Mary
Sent: Tuesday, March 15, 2011 10:08 AM
To: Virgilio, Martin
Cc: Dyer, Jim; Muesle, Mary; Grobe, Jack; Leeds, Eric; Boger, Bruce
Subject: Capturing time for supporting Japan

Good morning Marty,

I know many of us are busy supporting the Japan situation; however, do you think it would be a good idea for staff across the agency to start capturing the time spent supporting this effort since it will be significant? As you know, most international activities fall under the 10% appropriation.

We were going to take action to make this happen in NRR but we believe it should be captured agency-wide. If you agree, I can work with Mary Muesle to establish a TAC and issue an announcement from the EDO office?

Thoughts?

AAA/59

Mary Givvines

Director, Program Management, Policy Development and Analysis Staff

Office of the Nuclear Reactor Regulation

U.S. Nuclear Regulatory Commission

(301) 415-1275; Mary.Givvines@nrc.gov

From: [QST02 HOC](#)
To: [Virgilio, Martin](#)
Subject: commission meeting outline.docx
Date: Wednesday, March 16, 2011 2:57:31 AM
Attachments: [commission meeting outline.docx](#)

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Commission Meeting Outline

NRC Response to Core Damage Accident in Japan

Current Status of Fukushima Daiichi

- Reactors
- Spent Fuel Pools

Consequence Projections

NRC Response Objectives

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

NRC Response Actions

- In Japan
- At HQ

US Government Response

- NRC Partners and Stakeholders

Challenges to Success in the Response

- Information
- Coordination

Situation Assessment For US Reactors and Applicants (JCO)

- External Events
- Severe Accidents

Path Forward and Priorities

- Near Term Actions
 - In Support of Response
- Longer Term Actions
 - Lessons Learned From this Event
 - Resolution of GSI 19

From: Mamish, Nader
To: OIP Distribution
Subject: FW: Correction: FOIA information request
Date: Saturday, March 19, 2011 9:12:47 PM

In light of the fact that the OPS center watchbill is constantly changing, I just wanted to give those of you who may not have been on the distribution below a heads-up ...

Thanks

From: OST01 HOC

Sent: Saturday, March 19, 2011 3:25 PM

To: Abrams, Charlotte; Adams, John; Afshar-Tous, Mugeh; Alemu, Bezakulu; Alter, Peter; Anderson, James; Ashkeboussi, Nima; Baker, Stephen; Bergman, Thomas; Berry, Rollie; Bloom, Steven; Blount, Tom; Boger, Bruce; Bower, Anthony; Brandon, Lou; Brandt, Philip; Brock, Kathryn; Brown, Cris; Brown, David; Brown, Eva; Brown, Frederick; Bukharin, Oleg; Camper, Larry; Carpenter, Cynthia; Case, Michael; Casto, Greg; Cervera, Margaret; Chazell, Russell; Chen, Yen-Ju; Chokshi, Nilesh; Chowdhury, Prosanta; Circle, Jeff; Clement, Richard; Clinton, Rebecca; Collins, Frank; Cool, Donald; Costa, Arlon; Crutchley, Mary Glenn; Cruz, Zahira; Dacus, Eugene; DeCicco, Joseph; Decker, David; Dembek, Stephen; Devlin, Stephanie; Doane, Margaret; Dorman, Dan; Dozier, Jerry; Droggitis, Spiros; Dudek, Michael; Dudes, Laura; Emche, Danielle; English, Lance; Erlanger, Craig; Esmaili, Hossein; Figueroa, Roberto; Fiske, Jonathan; Franovich, Rani; Fuller, Edward; Galletta, Thomas; Gambone, Kimberly; Gitter, Joseph; Gordon, Dennis; Gott, William; Grant, Jeffery; Grobe, Jack; Hale, Jerry; Hardesty, Duane; Hart, Ken; Hart, Michelle; Hasselberg, Rick; Henderson, Karen; Hiland, Patrick; Holahan, Patricia; Holahan, Vincent; Holian, Brian; Huyck, Doug; Howard, Tabitha; Huffert, Anthony; Hurd, Sapna; Isom, James; Jackson, Karen; Jessie, Janelle; Johnson, Michael; Jolicoeur, John; Jones, Andrea; Jones, Cynthia; Kahler, Carolyn; Kammerer, Annie; Karas, Rebecca; Khan, Omar; Kowalczyk, Jeffrey; Kozal, Jason; Kratchman, Jessica; Kugler, Andrew; Lamb, Christopher; Larson, Emily; LaVie, Steve; Lewis, Robert; Li, Yong; Lombard, Mark; Lubinski, John; Lynch, Jeffery; Mamish, Nader; Manahan, Michelle; Marksberry, Don; Marshall, Jane; Mayros, Lauren; Mazaika, Michael; McConnell, Keith; McCoppin, Michael; McDermott, Brian; McGinty, Tim; McMurtray, Anthony; Merritt, Christina; Meyer, Karen; Miller, Charles; Miller, Chris; Milligan, Patricia; Mohseni, Aby; Moore, Scott; Morlang, Gary; Morris, Scott; Mroz (Sahm), Sara; Munson, Clifford; Murray, Charles; Nerret, Amanda; Norris, Michael; Norton, Charles; Ordaz, Vonna; Padovan, Mark; Patel, Jay; Parillo, John; Pope, Tia; Purdy, Gary; Quinlan, Kevin; Ragland, Robert; Ralph, Melissa; Reed, Elizabeth; Reed, Wendy; Reis, Terrence; Riley (OCA), Timothy; Rini, Brett; Rodriguez-Luccioni, Hector; Rosenberg, Stacey; Ross-Lee, MaryJane; Roundtree, Amy; Ruland, William; Salay, Michael; Salus, Amy; Sanfilippo, Nathan; Scarbrough, Thomas; Schaperow, Jason; Schmidt, Duane; Schoenebeck, Greg; Schrader, Eric; Schwartzman, Jennifer; Seber, Dogan; Shane, Raeann; Shea, James; Shepherd, Jill; Sheron, Brian; Skeen, David; Sloan, Scott; Smirolodo, Elizabeth; Smith, Theodore; Stahl, Eric; Stang, Annette; Steger (Tucci), Christine; Stieve, Alice; Stone, Rebecca; Stransky, Robert; Sturz, Fritz; Sullivan, Randy; Sun, Casper; Tappert, John; Temple, Jeffrey; Thaggard, Mark; Thomas, Eric; Thorp, John; Tobin, Jennifer; Trefethen, Jean; Tschiltz, Michael; Turtill, Richard; Uhle, Jennifer; Valencia, Sandra; Vaughn, James; Vick, Lawrence; Wastler, Sandra; Watson, Bruce; Weber, Michael; Webber, Robert; White, Bernard; Wiggins, Jim; Williams, Donna; Williams, Joseph; Williamson, Linda; Willis, Dori; Wimbush, Andrea; Wittick, Brian; Wray, John; Wright, Lisa (Gibney); Wright, Ned; Wunder, George; Young, Francis; Zimmerman, Roy

Subject: Correction: FOIA information request

Good Afternoon All,

The staff of the NRC HOC has received a broad scope FOIA request from the Associated Press requiring the release of all communications pertaining to the Japanese nuclear incidents caused by the March 11, 2011, earthquake and tsunami.

In response to this request, an email account is being created as a FOIA drop box. In the near

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future, you will be required to forward all emails that you have received (either to your personal email or HOC computer email) relating to these events to the established drop box. This includes emails that you have deleted but have the ability to restore. In addition, all future emails pertaining to the Japanese nuclear incidents MUST be copied to this drop box. The address is [FOIA Response.hoc.Resource@nrc.gov](mailto:FOIAResponse.hoc.Resource@nrc.gov) or FoiaResponse.hoc@nrc.gov.

A team is currently being assembled to ensure that all forwarded communications will be reviewed, and any information that qualifies for exemption (including P.I.I.) will be redacted. Therefore, you do not need to filter or redact any communication that is to be forwarded for compliance with this FOIA request.

This request has been granted expedited processing. It requires timely action from each of us to comply within the time constraints.

If you have any questions or concerns, please contact Rebecca Stone, Melissa Ralph, or Jonathan Fiske.

Anderson, Brian

From: Anderson, Brian
Sent: Thursday, March 24, 2011 6:08 PM
To: Hayden, Elizabeth; Burnell, Scott; Harrington, Holly
Subject: GI-199 talking points, Q&A

Importance: High

Please let me know if anything else is needed,
Brian

GI-199:

Talking Points

- The NRC's GI-199 safety risk assessment was completed in August 2010. It is publically available.
- The purpose of the GI-199 safety risk assessment was to perform a conservative, screening-level assessment to determine whether additional seismic safety review was needed for nuclear plants in the Central and Eastern United States (CEUS).
- Updates to seismic data and models indicate increased seismic hazard estimates for some operating nuclear power plant sites in CEUS.
- The results of this assessment are not final estimates of plant-specific seismic risk.
- The NRC does not rank plants by seismic risk.
- The NRC continues to conclude that all plants have adequate seismic safety margin and continue to operate safely.

Q&A

1. What is GI-199?

Generic Issue 199 investigates the safety implications of updated earthquake-related data and models. These updated data and models suggest that the probability for earthquake ground shaking above the seismic design basis for some nuclear power plants in the Central and Eastern United States (CEUS) is still low, but larger than previous estimates.

2. Are the NRC reviews/analyses based on 2004 seismic data from USGS? Is there other updated earthquake information and modeling?

In 2004, preliminary results from United States Geological Survey (USGS) work indicated an increase in the probability of exceeding the Safe Shutdown Earthquake (SSE) for 29 nuclear power sites in the CEUS. The probability increases identified by USGS were primarily due to recent developments in the modeling of earthquake ground motion in the CEUS. USGS published updated data in 2008, which is what was used in the NRC's GI-199 safety risk assessment.

3. The NRC report talks about "screening reviews." What does that mean?

In December 2007, NRC completed a limited scope screening analysis, which is used by the NRC staff to decide whether an issue requires additional review. The screening compared the new seismic data with earlier

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seismic evaluations conducted by the NRC staff. The limited scope screening analysis concluded that seismic designs of plants in the CEUS continue to provide adequate safety margins. However, because the NRC recognized that this new seismic data could reduce available safety margins, the NRC staff conducted further analysis by performing NRC's GI-199 safety risk assessment.

4. Does the GI-199 study examine all nuclear power plants?

The GI-199 safety risk assessment is limited to all plants in the CEUS. Although plants at the Columbia, Diablo Canyon, Palo Verde, and San Onofre sites are not included in the GI-199 safety risk assessment, the NRC Information Notice on GI-199 is addressed to all operating power plants in the U.S. (as well as all independent spent fuel storage installation licensees). The NRC will also consider inclusion of operating reactors in the Western U.S. in its future generic communication information requests.

5. Does the GI-199 study consider spent fuel pools?

Spent fuel pools (SFPs) were not specifically evaluated as part of GI-199 safety risk assessment. However, based on their design characteristics, the NRC concludes that SFPs remain safe. SFPs are constructed of reinforced concrete, several feet thick, with a stainless steel liner to prevent leakage and maintain water quality. SFPs are inherently structurally-rugged and are designed to the same seismic requirements as the nuclear plant.

6. What happens next with GI-199?

The NRC is developing a Generic Letter (GL) to request information from all nuclear plants in the CEUS, which is a total of 96 operating reactors. The GL is scheduled to be issued for public comment in the late spring 2011. In addition its internal review processes, the NRC will also present the GL to the Advisory Committee on Reactor Safeguards (ACRS) both before and after the public comment period. The GL should be issued by end of 2011, near the time when new seismic models become available. These new seismic models are being developed by NRC, DOE, and EPRI. In addition the USGS will review the model. Information requested in the GL will likely require 3 to 6 months for nuclear plant licensees to prepare. NRC's review will be on-going as information is collected. Based on NRC's review of that information, a determination will be made regarding required changes at nuclear plants.

7. What if the GI-199 is wrong and an unexpected earthquake happens?

Following the events of September 11, 2001, NRC required all nuclear plant licensees to take additional steps to protect public health and safety in the event of a large fire or explosion. If needed, these additional steps could also be used during natural phenomena such as earthquakes, tornadoes, floods, and tsunamis. In general, these additional steps are plans, procedures, and pre-staged equipment whose intent is to minimize the effects of adverse events. In accordance with NRC regulations, all nuclear power plants are required to maintain or restore cooling for the reactor core, containment building, and spent fuel pool under the circumstances associated with a large fire or explosion. These requirements include using existing or readily available equipment and personnel, having strategies for firefighting, operations to minimize fuel damage, and actions to minimize radiological release to the environment.

Anderson, Brian

From: Anderson, Brian
Sent: Friday, March 25, 2011 9:08 AM
To: Harrington, Holly; Hayden, Elizabeth; Burnell, Scott
Subject: RE: UPDATED GI-199 talking points, Q&A

It's in ADAMS and available through the public website search portal.

<http://pbadupws.nrc.gov/docs/ML1002/ML100270582.html>

Results of Safety/Risk Assessment of Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants"

Accession Number: ML100270582

Date Released: Tuesday, September 7, 2010

From: Harrington, Holly
Sent: Friday, March 25, 2011 8:56 AM
To: Anderson, Brian; Hayden, Elizabeth; Burnell, Scott
Subject: RE: UPDATED GI-199 talking points, Q&A

Thank you so much, Brian. I'm putting these into WebEOC and distributing them in OPA. I do have one question:

- The NRC's GI-199 safety risk assessment was completed in August 2010. It is publically available. **Where?**

From: Anderson, Brian
Sent: Friday, March 25, 2011 8:38 AM
To: Hayden, Elizabeth; Burnell, Scott; Harrington, Holly
Subject: UPDATED GI-199 talking points, Q&A

I added a new question (#6) to discuss the Temporary Instruction that was issued on Wednesday.

Please let me know if anything else is needed,
Brian

GI-199:

Talking Points

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6. Is the NRC performing any inspections for GI-199?

The NRC is not currently performing inspections that are directly related to GI-199. However, on March 23, 2011, the NRC directed its inspectors to assess the actions taken by nuclear plant licensees in response to events at the Fukushima Daiichi nuclear station in Japan. NRC inspectors were given direction in the form of a Temporary Instruction (TI), which is one of the processes that NRC inspectors use to perform inspections following specific events. Using TI 2515/183, NRC inspectors will verify that important equipment and materials are adequate and properly staged, tested, and maintained in order to respond to a severe earthquake, flooding event, or loss of all electrical power. This inspection is an additional NRC activity. It does not replace any of the routine reviews that NRC inspectors perform daily at every nuclear power plant. Inspection activities for TI 2515/183 are expected to be completed by April 29, 2011. The results will be issued in a publically available inspection report by May 13, 2011

7. What happens next with GI-199?

The NRC is developing a Generic Letter (GL) to request information from all nuclear plants in the CEUS, which is a total of 96 operating reactors. The GL is scheduled to be issued for public comment in the late spring 2011. In addition its internal review processes, the NRC will also present the GL to the Advisory Committee on Reactor Safeguards (ACRS) both before and after the public comment period. The GL should be issued by end of 2011, near the time when new seismic models become available. These new seismic models are being developed by NRC, DOE, and EPRI. In addition the USGS will review the model. Information requested in the GL will likely require 3 to 6 months for nuclear plant licensees to prepare. NRC's review will be on-going as information is collected. Based on NRC's review of that information, a determination will be made regarding required changes at nuclear plants.

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Anderson, Brian

From: Anderson, Brian
Sent: Friday, March 25, 2011 8:26 AM
To: Khanna, Meena
Subject: RE: TALKING POINTS FOR GI-199

Thanks, Meena. Right now, we're only trying to develop OPA talking points for media inquiries...just a high-level sentence about what the GL will request.

Sorry for the no-notice here...

From: Khanna, Meena
Sent: Friday, March 25, 2011 8:21 AM
To: Anderson, Brian
Subject: Re: TALKING POINTS FOR GI-199

Hi Brian, can this wait until this afternoon? Pls let me know if you need a response rt away. Thx

From: Anderson, Brian
To: Khanna, Meena
Cc: Burnell, Scott; Harrington, Holly
Sent: Fri Mar 25 06:49:06 2011
Subject: RE: TALKING POINTS FOR GI-199

Meena -

I'm helping OPA to develop GI-199 talking points. What will the GL ask of licensees? What actions will they take and what types of information will we ask them to provide?

Thanks for your help,
Brian

From: Hiland, Patrick
Sent: Wednesday, March 23, 2011 4:40 PM
To: Burnell, Scott
Subject: TALKING POINTS FOR GI-199

Scott the below is offered as talking points for GI-199. Any questions, please contact Meena Khanna.

GENERIC ISSUE 199, "IMPLICATIONS OF UPDATED PROBABILISTIC SEISMIC HAZARD ESTIMATES IN CENTRAL AND EASTERN UNITED STATES ON EXISTING PLANTS"

Objective of GI-199

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 U.S. (CEUS) was warranted consistent with NRC directives.

- Results of the GI-199 safety risk assessment are not final estimates of plant-specific seismic risk.

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- The seismic hazard data and plant-level fragility assumptions were conservative estimates useful as a screening tool.
- The NRC does not rank plants by seismic risk.

Key Messages:

- Safety/Risk Assessment for GI-199 was completed in August 2010. It is publically available in ADAMS at ML100270582.
- Plants have adequate safety margin for seismic issues and are within their licensing basis.
- Overall seismic risk estimates remain small and adequate protection is maintained.
- Updates to seismic data and models indicate increased seismic hazard estimates for some operating nuclear power plant sites in the Central and Eastern United States.
- NRC has separate criteria for immediate action and for evaluating whether plant improvements may be imposed through a back-fit.
- The Safety/Risk Assessment used readily available information and found that for about one-quarter of the currently operating plants, the change in seismic hazard is enough to warrant further review.
- Action may include obtaining additional, updated information and developing methods to determine if plant improvements to reduce seismic risk are warranted.

Status of Operating Plants and Need for Actions due to Japanese Event:

- Existing plants were designed with considerable margin to be able to withstand ground motions from the largest earthquake expected in the area around the plant.
- During the mid-to late-1990s, the NRC staff reassessed the margin beyond the design basis as part of the Individual Plant Examination of External Events [IPEEE] program.
- The NRC's GI-199 safety/risk assessment concluded that the probability of exceeding the design basis ground motion may have increased by a small amount at some plants. Those results also indicate that the increased risks are lower than NRC's guidelines for taking immediate action.
- US plants are designed for appropriate earthquake levels and are safe.

Timeline for Preparation and Issuance of Generic Letter:

The NRC is conducting a regulatory assessment, which includes reviewing the seismic capacity for plants located in central and eastern United States based on the latest data and analysis techniques.

- NRC is working on developing a Generic Letter (GL) to request information from all affected plants (96 plants east of the Rockies).
- The GL is scheduled to be issued for public comment in the late spring 2011.
- Processes for review of the GL include a review by the NRC's Committee to Review Generic Requirements, and a review by the Advisory Committee on Reactor Safeguards (ACRS) both before and after the public comment period.
- GL should be issued by end of 2011, near the time the new consensus seismic hazard models become available.
- Consensus hazard models are being developed by NRC, DOE, and EPRI. In addition the USGS will review the model.
- Information requested from licensees will likely require 3 to 6 months to prepare. NRC's review will be on-going as information is collected.
- Based on NRC's review, a determination will be made regarding beneficial back-fits.

Anderson, Brian

From: Anderson, Brian
Sent: Monday, March 28, 2011 4:32 PM
To: Burnell, Scott
Subject: Brian's edits - RE: FS_SeismicIssuesExistingPlnts_March2011.doc
Attachments: BA review of FS_SeismicIssuesExistingPlnts_March2011.doc

Importance: High

From: Hayden, Elizabeth
Sent: Monday, March 28, 2011 3:20 PM
To: Burnell, Scott; Anderson, Brian
Subject: FS_SeismicIssuesExistingPlnts_March2011.doc
Importance: High

Scott, Brian,

Please review this updated Fact Sheet on Seismic Issues (using the information Brian generated on GI 199) and let me know of any changes needed. I would then ask Brian to run this through the appropriate technical staff before getting it signed off by OEDO and posting it.

Please note one date discrepancy (of one month) in red and let me know which one is correct.

Thanks,
Beth

AAA/65



FACT SHEET

Office of Public Affairs

Phone: 301-415-8200

Email: opa.resource@nrc.gov

Seismic Issues for Nuclear Power Plants

Nuclear power plants are built to withstand environmental hazards, including earthquakes. 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 Nuclear Regulatory Commission (NRC) requires all of its licensees to take seismic activity into account when **planning, designing** and maintaining its nuclear power plants. The NRC regularly evaluates new earthquake-related data and models and determines if any changes are needed at plants. The newest seismic data suggests that although the likelihood of earthquakes occurring at some nuclear power plants in central and eastern states is slightly higher than previous estimates, all operating nuclear plants remain safe with no need for immediate action.

Comment [b1]: Designing instead of planning?

Background

The agency requires plant designs to withstand the effects of natural phenomena including earthquakes (i.e., seismic events). The agency's requirements, including General Design Criteria for licensing a plant, are described in Title 10 of the *Code of Federal Regulations* (10 CFR). These license requirements include traditional engineering practices such as "safety margins." Practices such as these add an extra element of safety into design, construction, and operations.

The NRC has always required licensees to design, operate, and maintain safety-significant structures, systems, and components to withstand the effects of earthquakes and to maintain the capability to perform their intended safety functions. The agency ensures these requirements are satisfied through the licensing, reactor oversight, and enforcement processes.

Earthquake (or Seismic) Hazard

The NRC requires that safety-significant structures, systems, and components be designed to take into account:

- The most severe natural phenomena historically reported for the site and surrounding area. The NRC then adds a margin for error to account for the historical data's limited accuracy;
- Appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena; and
- The importance of the safety functions to be performed.

The U.S. Geological Survey (USGS) Web site provides general information about earthquakes (<http://earthquake.usgs.gov/learning/index.php>). An earthquake releases energy that radiates from the fault and causes ground movement. As the ground moves, objects such as nuclear power plant structures on or in the ground also move. The nature of the movement depends on how the earthquake releases energy and

on how the soil conditions absorb (or dissipate) the energy as it moves away from the fault to a plant location. The intensity of an earthquake can be characterized by both the frequency of the shaking and by the acceleration of the ground at the plant. These characteristics describe how the energy released from the earthquake impacts the plant's buildings as well as the systems and components that are contained inside those buildings.

Earthquake characteristics provide information used in designing existing nuclear plants. The frequency of the shaking is measured in cycles per second (or Hz), and the acceleration is typically expressed as some fraction of the acceleration of gravity, which is about 32.2 feet per second per second (ft/s^2). For example, an acceleration of 0.15 g (15 percent of the acceleration of gravity) is about equal to an acceleration of 5 ft/s^2 .

Seismic Safety Assessment

The licensing bases for existing nuclear power plants are based on historical data at each site. This data is used to determine design basis loads from the area's maximum credible earthquake, with an additional margin included. The NRC also requires existing plants to assess their potential vulnerability to earthquake events, including those that might exceed the design basis, as part of the Individual Plant Examination of External Events Program. This process examines the available safety margins of existing plants for various earthquakes and ensures these margins, together with the plant's accident management programs, continue to protect public health and safety.

Today, the NRC utilizes a risk-informed regulatory approach, including insights from probabilistic assessments and traditional deterministic engineering methods to make regulatory decisions about existing plants (e.g., licensing amendment decisions). Any new nuclear plant the NRC licenses will use a probabilistic, performance-based approach to establish the plant's seismic hazard and the seismic loads for the plant's design basis.

Additional Measures Following Sept. 11, 2001

Following the events of September 11, 2001, NRC required all nuclear plant licensees to take additional steps to protect public health and safety in the event of a large fire or explosion. If needed, these additional steps could also be used during natural phenomena such as earthquakes, tornadoes, floods, and tsunamis. In general, these additional steps are plans, procedures, and pre-staged equipment whose intent is to minimize the effects of adverse events. In accordance with NRC regulations, all nuclear power plants are required to maintain or restore cooling for the reactor core, containment building, and spent fuel pool under the circumstances associated with a large fire or explosion. These requirements include using existing or readily available equipment and personnel, having strategies for firefighting, operations to minimize fuel damage, and actions to minimize radiological release to the environment.

Evolving Knowledge about Earthquakes

The central and eastern United States (CEUS) is generally an area of low to moderate earthquake hazard with few active faults in contrast to the western United States. Even so, in 1811–1812, three major earthquakes (Magnitude 7 to 7.7 on the commonly used Richter Scale) shook much of the CEUS. These earthquakes occurred near the town of New Madrid, M.O. In 1886, a large earthquake (Richter Scale magnitude of about 7) occurred near Charleston, S.C. This earthquake caused extensive damage and was felt in most of the eastern United States. Geologists are aware of these historic occurrences, and knowledge of such earthquakes was taken into account in plant design and analysis.

The NRC regularly reviews new information on earthquake source and ground motion models. For example, the NRC reviewed updated earthquake information provided by applicants in support of Early Site Permits for new reactors. This additional information included new models to estimate earthquake ground motion and updated models for earthquake sources in seismic regions such as eastern Tennessee and around both Charleston and New Madrid.

The NRC examined 2008 earthquake-related information to assess potential safety implications for nuclear power plants in central and western states. Analysis of these updates indicated slight increases to earthquake hazard estimates for some plants in the CEUS. The NRC also reviewed and evaluated recent USGS earthquake hazard estimates for the CEUS that are used for building code applications outside of plant licensing. These reviews showed that the estimated likelihood of earthquakes occurring at some current CEUS operating sites might be slightly higher than what was expected during design and previous evaluations although adequate protection is maintained at all plants.

NRC Response to Increased Estimated CEUS Earthquake Hazards

The NRC began assessing the safety implications of increased plant earthquake hazards in 2005 when the staff recommended examining the new CEUS earthquake hazard information under the Generic Issues Program (GIP). The NRC staff identified the issue as GI-199 and completed a limited scope screening analysis for the seismic issue in **December 2007-January 2008**, to decide whether additional review is needed. The screening compared the new seismic data with earlier seismic evaluations conducted by the NRC staff. **This analysis confirmed that operating nuclear power plants remain safe with no need for immediate action.** The assessment also found that, although overall seismic risk remains low, some seismic hazard estimates have increased and warrant further attention. In September 2010, NRC issued a Safety/Risk Assessment report and an Information Notice (<http://www.nrc.gov/reading-rm/doc-collections/generic-issues/gis-in-implementation/>) to inform stakeholders of the assessment results.

Comment [b2]: December 2007 is correct

The NRC is developing a Generic Letter (GL) to request information from **all U.S. nuclear plants, in the CEUS**. The GL will be issued **in draft form to support a public meeting in late spring 2011. A draft version of the GL will be issued for public comment in late spring-summer 2011 and will be presented the GL** to the Advisory Committee on Reactor Safeguards (ACRS) both before and after the public comment period. NRC expects to issue the GL by the end of 2011, near the time when new seismic models will become available. These new seismic models are being developed by NRC, the U.S. Department of Energy, and the Electric Power Research Institute and will be reviewed by the USGS. The NRC expects to receive information from the GL in late spring 2012 and will review it to determine whether any plant improvements are needed.

Comment [b3]: NRR update – GL to request info from ALL plants

Comment [b4]: NRR update – draft GL to support a spring 2011 public meeting AND a draft GL to be issued for public comment in summer 2011

Information regarding this generic issue and the GIP in general is available at <http://www.nrc.gov/about-nrc/regulatory/gen-issues.html>.

Inspections Following Japan Event

The NRC is not currently performing inspections that are directly related to GI-199. However, on March 23, 2011, the NRC directed its inspectors to assess the actions taken by nuclear plant licensees in response to events at the Fukushima Daiichi nuclear station in Japan. NRC inspectors will perform inspections to verify that important equipment and materials are adequate and properly staged, tested, and maintained in order to respond to a severe earthquake, flooding event, or loss of all electrical power. Inspections are expected to be completed by the end of April 2011. The results will be issued in an inspection report by May 13 that will be made publicly available.

To read more about risk-related NRC policy, see the Probabilistic Risk Assessment Fact Sheet (<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/probabilistic-risk-asses.html>) and Nuclear Reactor Risk (<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/reactor-risk.html>). Each provides more information on the use of probability in evaluating hazards (including earthquakes) and their potential impact on plant safety margins. Questions and answers on the March 2011 earthquake and tsunami are available at <http://www.nrc.gov/japan/faqs-related-to-japan.pdf>.

March 2011

From: [LIA06 Hoc](#)
To: [OPA Resource](#); [OPA1 RESOURCE](#); [OPA2 Resource](#); [OPA4 Resource](#); [RST01 Hoc](#)
Cc: [LIA01 Hoc](#); [LIA02 Hoc](#); [LIA03 Hoc](#); [LIA04 Hoc](#); [LIA05 Hoc](#); [LIA06 Hoc](#); [LIA07 Hoc](#); [LIA08 Hoc](#); [LIA09 Hoc](#); [LIA10 Hoc](#); [LIA11 Hoc](#); [LIA12 Hoc](#); [OST05 Hoc](#)
Subject: FW: Article from Japanese newspaper
Date: Thursday, March 31, 2011 6:23:45 PM

FYI and potential action. The article below may get circulation in the US and elsewhere and cause questions to be posed to us regarding studies conducted in the early 80s by ORNL under NRC direction for a BWR scenario that some may link to the Fukushima event. It has been forwarded to RES for their review and action by the ET.

Mark Lombard
Liaison Team Director
U.S. Nuclear Regulatory Commission
Operations Center

From: ET02 Hoc
Sent: Thursday, March 31, 2011 5:54 PM
To: LIA06 Hoc
Subject: FW: Article from Japanese newspaper

This is the article that Brian wanted sent to OPA for their awareness in case it hits US media. This Japanese paper posts their articles via Facebook. They are named Asahi Japan Watch.

From: ET02 Hoc
Sent: Thursday, March 31, 2011 3:56 PM
To: Sheron, Brian
Subject: Article from Japanese newspaper

AJW by the Asahi Shimbun
AJW 3/11 quake update:

U.S. simulation predicted similar problems at Fukushima nuclear plant

A U.S. simulation exercise conducted about 30 years ago of what would happen at a boiling-water reactor if all power sources were lost eerily matches what has unfolded at the Fukushima No. 1 nuclear power plant.

...While the simulation demonstrated the dangers of losing all power sources, Japan's nuclear authorities took the optimistic position that power transmission lines and other power sources would be restored quickly.

The simulation was conducted by the Oak Ridge National Laboratory in 1981 and 1982. A report was later submitted to the U.S. Nuclear Regulatory Commission, which used the report's findings to establish safety regulations.

The simulation was based on the No. 1 reactor at the Browns Ferry Nuclear Plant in Alabama. The reactor had an output of 1.1 gigawatts and was the same Mark I boiling-water reactor manufactured by General Electric Co. that is used at the No. 1 to No. 5 reactors at the Fukushima No. 1 nuclear plant.

AAA/66

One part of the simulation assumes that an external AC power source as well as emergency diesel generators have been lost, which is what actually happened at the Fukushima No. 1 plant after the Great East Japan Earthquake and subsequent tsunami hit on March 11.

The simulation goes on to predict what would likely occur depending on how long the emergency batteries were operable as well as on how the emergency cooling mechanism was working.

If the batteries could be used for four hours, the simulation predicts that after five hours without external power, the fuel rods in the core would become exposed. Thirty minutes later, the fuel rods would reach 485 degrees and start producing hydrogen. Another 30 minutes later, the fuel rods would begin to melt, according to the simulation.

It goes on to predict that seven hours after the loss of an external power source, the lower part of the pressure container would be damaged. Ninety minutes later, the containment vessel would be damaged.

Another simulation exercise assuming the use of batteries for six hours has fuel rods being exposed after eight hours and starting to melt after 10 hours. Damage to the containment vessel would occur after 13-and-a-half hours.

At the Fukushima No. 1 plant, the external power source was lost when the earthquake struck. It switched to an emergency diesel generator, but that was flooded and irreparably damaged by the tsunami about an hour later.

The only remaining power source was a DC battery.

At that point, the conditions at the Fukushima plant were nearly identical to those used in the simulation exercise.

Despite the fact that the batteries at the Fukushima plant could be used for eight hours, rather than six, the ensuing events at the Fukushima plant closely mimicked those in the simulation.

Moreover, if the predictions are extrapolated, it would mean that the containment vessels may no longer be sound, despite contrary comments by officials of Tokyo Electric Power Co., the operator of the Fukushima plant.

Satoshi Sato is a nuclear consultant who worked for many years at a GE-affiliated company, managing boiling-water reactors.

"The simulation is still sufficiently valid today," he said. "But I do not know if such knowledge has been passed down within electric power companies."

In Japan, the possibility that all external power sources could be lost at nuclear plants has not been seriously considered.

In 1990, when the Nuclear Safety Commission of Japan decided on guidelines for approving safety design at nuclear plants, it stated, "There is no need to consider the loss of all AC power sources for a long period of time because we can expect a restoration of power transmission lines or the recovery of emergency AC power source facilities."

Shojiro Matsuura, president of the Nuclear Safety Research Association, once served as NSC chairman.

"There was the unspoken understanding that we did not have to think about a situation in which everything failed," Matsuura said. "It was not possible to foresee every possibility, such as a direct hit by a meteor."

(This article was written by Ichiro Matsuo and Ryoma Komiyama.)

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Greenwood, Carol

From: Gibson, Kathy
Sent: Friday, April 01, 2011 1:36 PM
To: Chang, Richard
Cc: Tinkler, Charles; Santiago, Patricia
Subject: Re: Question

Very good thanks!

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

From: Chang, Richard
To: Gibson, Kathy
Cc: Tinkler, Charles; Santiago, Patricia
Sent: Fri Apr 01 13:33:18 2011
Subject: RE: Question

Kathy,

I can get one together by early next week. From our conversation yesterday, I was thinking that I could use a lot of the information Charlie wrote on Tuesday for the DEDO. I will try and get something in front of Charlie by Monday.

Thanks,
Richard

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

From: Gibson, Kathy
Sent: Friday, April 01, 2011 12:36 PM
To: Chang, Richard
Cc: Tinkler, Charles; Santiago, Patricia
Subject: Question

How soon can you get a one pager comparing SOARCA PB analysis and Japan events?

If we could get it out soon like early next week it might head off briefings and questions that we are getting.

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From: [Janbergs, Holly](#) on behalf of [OPA Resource](#)
To: [Harrington, Holly](#)
Subject: FW: Article from Japanese newspaper
Date: Friday, April 01, 2011 7:46:00 AM

From: LIA06 Hoc
Sent: Thursday, March 31, 2011 6:24 PM
To: OPA Resource; OPA1 RESOURCE; OPA2 Resource; OPA4 Resource; RST01 Hoc
Cc: LIA01 Hoc; LIA02 Hoc; LIA03 Hoc; LIA04 Hoc; LIA05 Hoc; LIA06 Hoc; LIA07 Hoc; LIA08 Hoc; LIA09 Hoc; LIA10 Hoc; LIA11 Hoc; LIA12 Hoc; OST05 Hoc
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was later submitted to the U.S. Nuclear Regulatory Commission, which used the report's findings to establish safety regulations.

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(This article was written by Ichiro Matsuo and Ryoma Komiyama.)

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From: [Cohen, Miriam](#)
To: [Virgilio, Martin](#)
Subject: Re: Intel from Ops Center - HR message needed
Date: Friday, March 18, 2011 7:00:17 AM

Ok thx

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

From: Virgilio, Martin
To: Cohen, Miriam
Sent: Thu Mar 17 23:38:26 2011
Subject: RE: Intel from Ops Center - HR message needed

Miriam

I had not see his input. Let me read it over and get back to you

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

From: Cohen, Miriam
Sent: Thursday, March 17, 2011 4:08 PM
To: Virgilio, Martin
Cc: Ash, Darren
Subject: RE: Intel from Ops Center - HR message needed

Marty: Did you see Larry's email from 2:07 pm? I was not sure if you had seen that email before you sent yours. Please advise.

Miriam

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

From: Virgilio, Martin
Sent: Thursday, March 17, 2011 2:08 PM
To: Ash, Darren; Cohen, Miriam; Borchardt, Bill; Weber, Michael; Wiggins, Jim; Evans, Michele
Subject: Fw: Intel from Ops Center - HR message needed
Importance: High

Darren

For what it worth the most recent e mail for supervisors and managers was not very helpful. I read it and was left wondering how I should charge my time. I would classify the night shift in the ops center as out of the ordinary.

Last week I met with one of the Hr specialist (Larry) and he offered to provide us a summary of the rules and flexibility we have for non routine hours and overtime with an eye toward providing the best we can to our staff supporting this effort in Japan and here in the ops center. I have not seen his response.

Marty

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

From: Sanfilippo, Nathan
To: Ash, Darren
Cc: Davis, Kristin; Borchardt, Bill; Virgilio, Martin; Weber, Michael
Sent: Thu Mar 17 09:50:49 2011
Subject: Intel from Ops Center - HR message needed

Darren,

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Just wanted to pass along a bit of intel I've gathered as I've been involved in the Ops Center response. While there have been a few emails about the TAC codes to use, there hasn't been any guidance about how to charge time and any universal guidance to supervisors on the use of OT (night differential, etc.). I think it would ease the concerns of a lot of responders if we could put out a message. I've heard that different supervisors are approaching it differently, some approving and some disapproving their staff's support of the Ops Center, and many don't know of the OT rules/regs. Some folks are concerned (who have worked close to 80 hours in a week since their positions have practically no back-ups) of how they will be compensated for their time. That said - the dedication of these folks is truly impressive.

Just what I'm hearing from the streets and hoping you could help get some words out,
Nathan

Huffert, Anthony

From: ??? [sato.h.takashi@tepc.co.jp]
Sent: Wednesday, April 20, 2011 6:56 AM
To: Gepford, Heather; Huffert, Anthony
Subject: Re: contact for radiation dose map
Attachments: 20110420_1330 1FSurveyMap.pdf

Dear Mr. Gepford and Mr. Huffert,

Please find the attached file for radiation dose map.

Best regards,

Takashi Sato
TEPCO
[TEL:03-6373-4721](tel:03-6373-4721)
FAX:03-3596-8538
E-Mail:sato.h.takashi@tepc.co.jp

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

From: "Call, Michel" <Michel.Call@nrc.gov>
To: "???" <sato.h.takashi@tepc.co.jp>
Cc: "Gepford, Heather" <Heather.Gepford@nrc.gov>; "Huffert, Anthony" <Anthony.Huffert@nrc.gov>
Sent: Friday, April 15, 2011 6:20 PM
Subject: RE: contact for radiation dose map

Mr. Sato,

I apologize for sending this again. I have now copied the other two people on the email.

Thank you.
Mike Call

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

From: Call, Michel
Sent: Friday, April 15, 2011 5:19 AM
To: '???'
Subject: RE: contact for radiation dose map

Dear Mr. Sato,

Thank you for continuing to send this information to us. Unfortunately, I am leaving tomorrow to go back to the United States. In my place, though, there are two new people to whom you can send this information. They are Ms. Heather Gepford and Mr. Tony Huffert. I have copied them on this email. Their email addresses are heather.gepford@nrc.gov and Anthony.huffert@nrc.gov

Thank you.

AAA/70

Mike Call

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

From: ??? ? [mailto:satoh.takashi@tepcoco.jp]

Sent: Tuesday, April 12, 2011 6:48 PM

To: Call, Michel

Subject: Re: contact for radiation dose map

Dear Mr. Call,

Please find attached radiation dose map at Fukushima-Daiichi NPS.

Best regards,

Takashi Sato

TEPCO

[TEL:03-6373-4721](tel:03-6373-4721)

[FAX:03-3596-8538](tel:03-3596-8538)

[E-Mail:satoh.takashi@tepcoco.jp](mailto:satoh.takashi@tepcoco.jp)

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

From: "Call, Michel" <Michel.Call@nrc.gov>

To: <satoh.takashi@tepcoco.jp>

Sent: Thursday, April 07, 2011 5:51 PM

Subject: contact for radiation dose map

Dear Mr. Sato,

I was informed that you had been sending radiation dose maps to Tony Nakanishi who was working in our NRC group for a while. I also saw your email to Tony asking to whom you could send these maps after Tony left. I would like to offer myself as a contact person to whom you could send these maps. I am unaware of what dose maps you previously sent to Tony, since I just recently joined the NRC group. So, I was wondering if you could send, in addition to the most recent revised dose map, any dose maps you have for March 14 through March 20. That would be very helpful to our understanding of how radiological conditions were at the site during the early days of the events at the site.

Thank you for sharing this information with me. I look forward to interacting with you.

Michel (Mike) Call

Huffert, Anthony

From: Huffert, Anthony
Sent: Saturday, April 23, 2011 12:55 AM
To: Gepford, Heather; Meighan, Sean
Subject: FW: re: Fukushima Return Police Data and Information

Heather,

Going through my emails today and saw this request from PMT-HQ from Thursday (Tokyo time). It appears that PMT-HQ is asking the PMT here to look into the GOJ re-entry and return policies for the evacuation zone.

Forwarding this request for your insights / action.

I'd be pleased to discuss this email with you at your convenience.

Tony

From: Hoc, PMT12
Sent: Wednesday, April 20, 2011 10:39 PM
To: Huffert, Anthony
Cc: OST01 HOC
Subject: re: Fukushima Return Police Data and Information

Dear Tony,

we (NRC) are looking information and the associated technical basis that made by UK and Germany for Japan. Some of Fukushima residents for a better reason have allowed to "return" home for good, of course outside of 20 km zoning. We hope you can look into anything on the Fukushima re-entry and return policies.

Thank you.

Best wishes,
Casper

AAA/71

Huffert, Anthony

From: Huffert, Anthony
Sent: Wednesday, April 27, 2011 6:22 AM
To: Gepford, Heather
Cc: Reynolds, Steven; Meighan, Sean; PMT_japan Resource; Huffert, Anthony
Subject: Action: draft "Food Meeting" summary.docx
Attachments: 110426Countermeasure for Radionuclide contamination.pptx; Food Meeting Summary.docx

Heather,

Attached for your review is a draft summary of our meeting with MHLW today, along with the presentation for reference. You should have the other attachments via email already.

Please let me know what changes are necessary and I'll make them tomorrow.

v/r

Tony

AAA/72

Countermeasure for Radionuclide contamination caused by the accident of Fukushima Dai-ichi NPP

Ministry of Health, Labour and Welfare

1

Summery

1. Provisional regulation values
2. The inspection planning of the local government
3. establishing items and areas to which restriction of distribution
4. cancelling items and areas to which restriction of distribution
5. radionuclide test results

2

Provisional regulation values 1

- March 17:
Adoption of "Indices relating to limits on food and drink ingestion"(the Nuclear Safety Commission, March 1998)
- April 4:
Emergency report of the Food Safety Commission
- April 5:
Establishment of provisional regulation value of radioactive iodine for fishery products in the light of the Nuclear Safety Commission

3

Provisional regulation values 2

	Index values relating to ingestion limits in guidelines for coping with disasters at nuclear facilities etc. (Bq/kg)	
Radioactive iodine (¹³¹ I)	Drinking water Milk, dairy products*	300
	Vegetables (Except root vegetables and tubers)	2,000
Radioactive cesium(sum of ¹³⁴ Cs and ¹³⁷ Cs)	Drinking water , Milk, dairy products	300
	Vegetables, Grains Meat, eggs, fish, etc.	500

*) Provide guidance so that materials exceeding 100 Bq/kg are not used in milk supplied for use in powdered baby formula or for direct drinking to baby.

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Provisional regulation values 3

Index values relating to ingestion limits in guidelines for coping with disasters at nuclear facilities etc. (Bq/kg)		
Uranium	Infant foods, Drinking water, Milk and dairy products*	20
	Vegetables, Grains Meat, eggs, fish, etc.	100
Alpha-emitting nuclides of plutonium and transuranic elements (Total radioactive concentration of ²³⁸ Pu, ²³⁹ Pu, ²⁴⁰ Pu, ²⁴² Pu, ²⁴¹ Am, ²⁴² Cm, ²⁴³ Cm, ²⁴⁴ Cm)	Infant foods, Drinking water, Milk, dairy products	1
	Vegetables, Grains Meat, eggs, fish, etc.	10

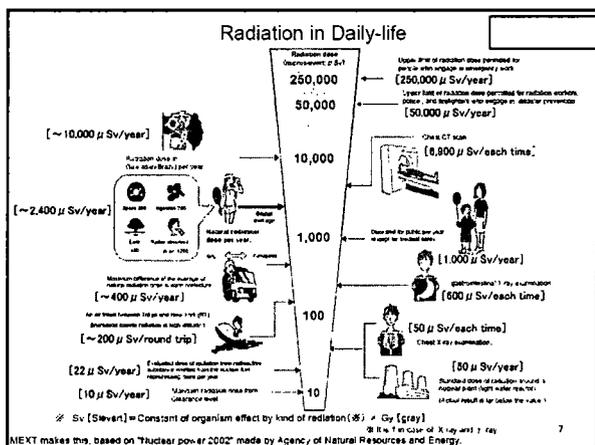
5

Provisional regulation values 4

(Bq/kg)				
	Categories	Japan	USA Compliance Policy Guide Sec. 560.750	CODEX
Radioactive iodine (¹³¹ I)	Milk, dairy products*	300	170	100
	Vegetables (Except root vegetables and tubers)	2,000		1000
Radioactive cesium(sum of ¹³⁴ Cs and ¹³⁷ Cs)	Drinking water, Milk, dairy products	300	1200	1000
	Vegetables, Grains Meat, eggs, fish, etc.	500		

*) Provide guidance so that materials exceeding 100 Bq/kg are not used in milk supplied for use in powdered baby formula or for direct drinking to baby.

6



7

Concepts of inspection planning and the establishment and cancellation of items and areas to which restriction of distribution and/or consumption of foods concerned applies

The Nuclear Emergency Response Headquarters
4 April 2011

8

The inspection planning of the local government

1 Basic concepts

Additional requirements have been set out in the "Manual on radiation measurement of food in emergency situations." (March 2002)

2 Local governments covered in the planning

Local governments instructed by the prime minister (Fukushima prefecture, Ibaraki prefecture, Tochigi prefecture, and Gunma prefecture) and the adjacent local governments (Miyagi prefecture, Yamagata prefecture, Niigata prefecture, Nagano prefecture, Saitama prefecture, and Chiba prefecture) and the local government producing food exceeding the provisional regulation values (Tokyo)

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3 Items used as indexes (food items checked with a priority)

- Spinach, Garland chrysanthemum, Kakina, Mizuna, Komatsuna (those grown in garden farming are selected with a priority)
- Milk
- Other items separately instructed by the government

4 Items to be inspected other than the above

- Main agricultural products for which the situation of production is taken into account
- Food items distributed in the marketplace (whose information on producers are known)
- Items separately instructed by the government based on the situation of environmental monitoring (e.g. fishery product in certain sea areas)

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5 Frequency of inspection

About once per week (days of the week to be planned in advance). However, in case radioactive substances exceeding or close to the provisional regulation values are detected, the government may instruct on the number of inspections to be conducted.

6 Areas of inspection

For agricultural products, the local governments divide prefectural areas into appropriate districts. In order to understand the situation of the spread over the area, samples are taken in a number of municipalities per relevant area which is appropriately divided by the local governments

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The requirements for establishing items and areas to which restriction of distribution and/or consumption of foods concerned applies by the government

- 1 As for the items exceeding the provisional regulation values, if it is considered that production areas spread, areas and items are covered.
- 2 As for the areas, the policy will be on the prefectural basis, taking into consideration of the duty to label production areas in the JAS regulation. However, if the management by prefectures and municipalities are possible, the prefecture will be divided into multiple blocks
- 3 As for the items, they will be considered on an individual food item basis in the light of the data obtained so far.
- 4 Regarding the review of establishing restriction, inspection results are summed up every week, and the applicability of the requirements is judged in a comprehensive manner. As necessary, an instruction will be given for additional inspections.
- 5 As for items exceeding the provisional regulation values, if the regional spread is unclear, the surrounding areas will be inspected and the judgment will be made on the necessity of restriction of distribution.
- 6 As for items for which a significantly high concentration value is detected, restriction of consumption is promptly set irrespective of the number of samples of relevant items.

The requirements for cancelling items and areas to which restriction of distribution and/or consumption of foods concerned applies by the government

The cancellation will be based on the application of the relevant local government.

1. Areas in which cancellation applies

The prefectures are divided into multiple districts in the light of the actual conditions of the collection of shipments.

2. Judgment criteria of inspection results

As a general rule, inspections will be conducted every week by multiple municipalities per relevant districts, and the 3 values consecutively obtained fall below the provisional regulation values (Foods produced in municipalities which have shown values exceeding the provisional regulation values are definitely inspected. For the other municipalities, inspections will not be performed in the same municipalities in principle).

As for the decision on cancellation, the situation of an accident at the Fukushima No. 1 Nuclear Power Plant will be considered.

Note) With the cooperation of the Ministry of Agriculture, Forestry, and Fisheries, the inspections regularly implemented by establishing inspection points will continue.

3. Inspections after cancellation

While the emission of radioactive materials at the Fukushima No. 1 Nuclear Power Plant, the same inspection as in the above 2 will be performed. In case when the provisional regulation values exceeds, necessary measures will be taken.

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**Sum up of radionuclide test results carried out since 19 March 2011
(Up-to-date Report as of 20:30, 25 April 2011)**

Food origin (Prefecture)	Food group	Number of food samples tested	Number of foods positive at levels exceeding provisional regulation limits (action levels)
Fukushima	milk	165	18
	vegetable	557	117
	meat	40	-
	egg	17	-
	fishery products	16	3
	subtotal	795	138
Ibaraki	milk	36	5
	vegetable	247	37
	meat	5	-
	egg	2	-
	fishery products	85	2
	others	2	-
	subtotal	377	44

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**Sum up of radionuclide test results carried out since 19 March 2011
(Up-to-date Report as of 20:30, 25 April 2011)**

Food origin (Prefecture)	Food group	Number of food samples tested	Number of foods positive at levels exceeding provisional regulation limits (action levels)
Tochigi	milk	8	-
	vegetable	102	11
	subtotal	110	11
Gunma	milk	9	-
	vegetable	157	3
	meat	3	-
	egg	1	-
	fishery products	5	-
	subtotal	175	3
Saitama	milk	8	-
	vegetable	92	-
	subtotal	100	-

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**Sum up of radionuclide test results carried out since 19 March 2011
(Up-to-date Report as of 20:30, 25 April 2011)**

Food origin (Prefecture)	Food group	Number of food samples tested	Number of foods positive at levels exceeding provisional regulation limits (action levels)
Chiba	milk	10	-
	vegetable	100	11
	fishery products	39	-
	subtotal	146	11
Tokyo	milk	2	-
	vegetable	20	1
	fishery products	2	-
	subtotal	24	1
Kanagawa	milk	15	-
	vegetable	28	-
	meat	3	-
	fishery products	8	-
	subtotal	54	-

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Sum up of radionuclide test results carried out since 19 March 2011
(Up-to-date Report as of 20:30, 25 April 2011)

Food origin (Prefecture)	Food group	Number of food samples tested	Number of foods positive at levels exceeding provisional regulation limits (action levels)
Yamagata	milk	2	-
	meat	1	-
	Vegetable	18	-
	subtotal	20	-
Miyagi	milk	5	-
	vegetable	16	-
	subtotal	21	-
Niigata	milk	5	-
	vegetable	181	-
	subtotal	186	-
Nagano	milk	2	-
	vegetable	16	-
	subtotal	18	-

17

Sum up of radionuclide test results carried out since 19 March 2011
(Up-to-date Report as of 20:30, 25 April 2011)

Food origin (Prefecture)	Food group	Number of food samples tested	Number of foods positive at levels exceeding provisional regulation limits (action levels)
Shizuoka	vegetable	2	-
	subtotal	2	-
Ehime	vegetable	2	-
	subtotal	2	-
Kyoto	vegetable	2	-
	subtotal	2	-
Hyogo	vegetable	8	-
	subtotal	8	-

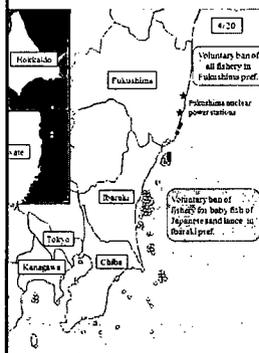
18

Sum up of radionuclide test results carried out since 19 March 2011
(Up-to-date Report as of 20:30, 25 April 2011)

Food origin (Prefecture)	Food group	Number of food samples tested	Number of foods positive at levels exceeding provisional regulation limits (action levels)
Hokkaido	fishery products	1	-
	subtotal	1	-
Gifu	Vegetable	1	-
	subtotal	1	-
total		2047	208

19

Safety of Marine Food



- Over provisional regulation values: 6 samples
- Below provisional regulation values: 119 samples

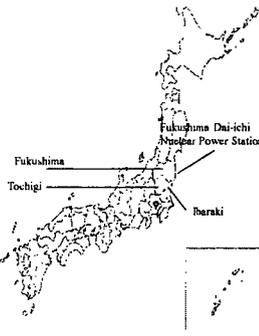
All 6 samples over provisional regulation values: Juvenile (baby) fish of "Japanese sand lance", which inhabits in very surface water influenced by radionuclides

Fisheries of this fish species : not conducted in Fukushima prefecture and Ibaraki prefecture

All fisheries not conducted in Fukushima prefecture

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restriction of distribution and/or consumption of foods concerned applies by the government



Instructions (as of 25 April 2011)

... Not to Distribute

- **Fukushima Prefecture**
 - Raw milk
 - Non-head type leafy vegetables (e.g. spinach)
 - Head type leafy vegetables (e.g. cabbage)
 - Flowerhead brassicas (e.g. broccoli, cauliflower)
 - Turnip
 - Log grown shiitake (grown outdoor)
 - Juvenile (baby) fish of Japanese sand lance
- **Ibaraki Prefecture**
 - Spinach
- **Tochigi Prefecture**
 - Spinach

Please refer to the next slide for the details of the instructions

Source: Ministry of Health, Labour & Welfare

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Meeting Summary

USNRC PMT Japan Team and GOJ Ministry of Health, Labour and Welfare

27 April 2011

Attendees

- Suzanne Basalla, Ambassador's Senior Advisor, U.S. Embassy Tokyo
- Dr. Heather Gepford, Protective Measures Team, Nuclear Regulatory Commission, TDY U.S. Embassy Tokyo
- LTC Margery M. Hanfelt, Japan District Veterinary Command, based at Camp Zama
- Tony Huffert, Protective Measures Team, Nuclear Regulatory Commission, TDY U.S. Embassy Tokyo
- Capt. Mark Michaud, Submarine Force-Atlantic surgeon, TDY Yakota Air Base
- Dr. Hideshi Michino D. V. M. Ph. D, Director of Food Safety Division / GOJ Ministry of Health, Labour and Welfare
- Capt. Michael Noska, Senior Advisor for Health Physics, FDA (in Washington)
- Ron Petrie, Medical Officer, U.S. Embassy Tokyo
- Dr. Nick Riesland, Regional Medical Manager, based at U.S. Embassy (in Bangkok)
- Dr. Suguru Sato, Agricultural Specialist, Foreign Agriculture Service, U.S. Embassy Tokyo
- Capt. Reid Tanaka, US Navy, PACOM Special Assistant on Nuclear Matters
- Dr. Masaru Umeda MD, Director General of Food Safety Department / GOJ Ministry of Health, Labour and Welfare
- Geoff Wiggin, Minister-Counselor for Agricultural Affairs, Foreign Agriculture Service, U.S. Embassy Tokyo

Meeting Purpose

The main purpose of this meeting was to discuss with GOJ technical experts the protective measures that the GOJ has put in place to monitor radioactive contamination in food resulting from airborne and waterborne releases from the Fukushima site. The two representatives of the Ministry of Health, Labor and Welfare (MHLW) were Dr. Masaru Umeda MD, Director General of the Food Safety Department, and Dr. Hideshi Michino D. V. M. Ph. D, Director of the Food Safety Division. Dr. Michino is one of the key persons in Japan's food safety system and led the discussions for the MHLW. A copy of his presentation, "Countermeasure for Radionuclide Contamination Caused by the Accident of Fukushima Dai-ichi NPP," is provided as Attachment 1 to this summary.

Summary

According to the GOJ food safety laws, MHLW is in charge of food safety. The March 1998 GOJ Nuclear Safety Commission document, "Indices Relating to Limits on Food and Drink Ingestion," provides the rationale (technical basis) for applicable "index values" that serve as radiological criteria for nuclear incidents, which are similar in concept to derived intervention levels. On March 17, 2011, the GOJ adopted this document as provisional regulations, per the

Food Sanitation Act, to ensure that foods with radioactive contamination would not be supplied for human consumption. Additional radiological criteria were issued by the GOJ Nuclear Safety Commission in April 2011. Currently, index values have been established for I-131, Cs-134 and Cs-137, U, and alpha emitting nuclides of plutonium and transuranic elements for drinking water, milk products, vegetables, grains, meat, eggs, and fish. According to Dr. Michino, index values translate to a dose of 5 mSv (500 mrem). By request from the PMT Japan team, the NRC staff is currently comparing the GOJ index values to other reference criteria, including DILs established by the USFDA. A first draft of this comparison is provided in Attachment 2 for reference.

From the NRC PMT-Japan's perspective, a focus of this meeting was *how* the GOJ is currently monitoring foods for radioactive contamination to protect public health of persons residing in Japan, including American citizens. The March 2002, "Manual on Radiation Measurements of Food in Emergency Situations," contains requirements for monitoring foods at the prefecture and local government level. It is applied at the prefecture level or for local populations greater than one million people. A partial translation of this document is provided in Attachment 3 (LTC Hanfelt shared a partial translation before the meeting).

To date, the GOJ has selected specific food types and locations for priority monitoring at the prefecture level and local level. As of April 26th, 2,086 food samples were collected and analyzed from "index crops." The baseline inspection frequency of once per week can be adjusted when radioactive contamination in food exceeds index values. If three consecutive weekly measurements are below the applicable index value, food monitoring requirements are not relaxed but the shipping and consumption bans can be lifted in specific locations. Of particular note is that while there are emissions of radioactive contamination from the Fukushima site, the baseline inspection frequency is not relaxed, regardless of measurement results, including when values are below the applicable index value.

According to Dr. Michino, the average level of Cs-134 and Cs-137 have been increasing in certain foods (i.e., mushroom and fishery products) during the past two weeks, and there is currently no sampling for alpha-emitting radionuclides. Apparently, the Ministry of Education, Sports, Science, and Technology (MEXT) is responsible for environmental monitoring and reports results (data) to MHLW. Also, the radioanalytical labs that are used for measuring radioactivity in food are accredited by the GOJ and are located and managed at the prefecture level, as is the monitoring of agricultural production. Of interest to residents of Tokyo, there are 23 wards within the city and much of the food analyses are reported as coming from another prefecture.

Regarding food sampling in ocean waters, several GOJ agencies (MEXT, MHLW, Ministry of Agriculture, Forestry and Fisheries (Fisheries Agency)) and TEPCO plan to develop a joint water sampling plan that will be applicable to seafood. Also, there has been some interest in collaborating with the U.S. National Oceanic and Atmospheric Administration on this matter. During the discussion on seafood sampling, Dr. Michino mentioned that elevated levels of radioactivity were measured 30 kilometers off the Japan coast last week, and that "sentinel" species have not yet been identified for seafood.

During this meeting, Dr. Mike Noska (FDA) inquired (via telephone) about the GOJ's plan to re-evaluate its three-month food sampling plan. Dr. Michino stated that the GoJ has not considered revisiting the existing thresholds (index values), but if the GOJ Nuclear Safety Commission develops new criteria, then MHLW will reconsider the thresholds. Dr. Noska also inquired about the "screening" type of sampling conducted to date by the GOJ. Dr. Michino indicated that the GOJ is considering strengthening its food monitoring program and are now in consultation on its budget.

According to Dr. Michino, a map showing the food monitoring locations should be published this week.

No action items for MHLW were identified at this meeting.

Attachments: As stated

ATTACHMENT 1

“Countermeasure for Radionuclide Contamination Caused by
the Accident of Fukushima Dai-ichi NPP”

Presentation by Dr. Hideshi Michino D. V. M. Ph. D,
Director of Food Safety Division / GOJ Ministry of Health, Labour and Welfare

27 April 2011

ATTACHMENT 2

Draft "Comparison of Intervention Levels for Different Countries"

NRC Task #4701

18 April 2011

ATTACHMENT 3

"Manual on Radiation Measurements of Food in Emergency Situations"

March 2002



U.S. DEPARTMENT OF
ENERGY



APR 17/11

Radiological Assessment

- of effects from -

Fukushima Daiichi Nuclear Power Plant

May 13, 2011

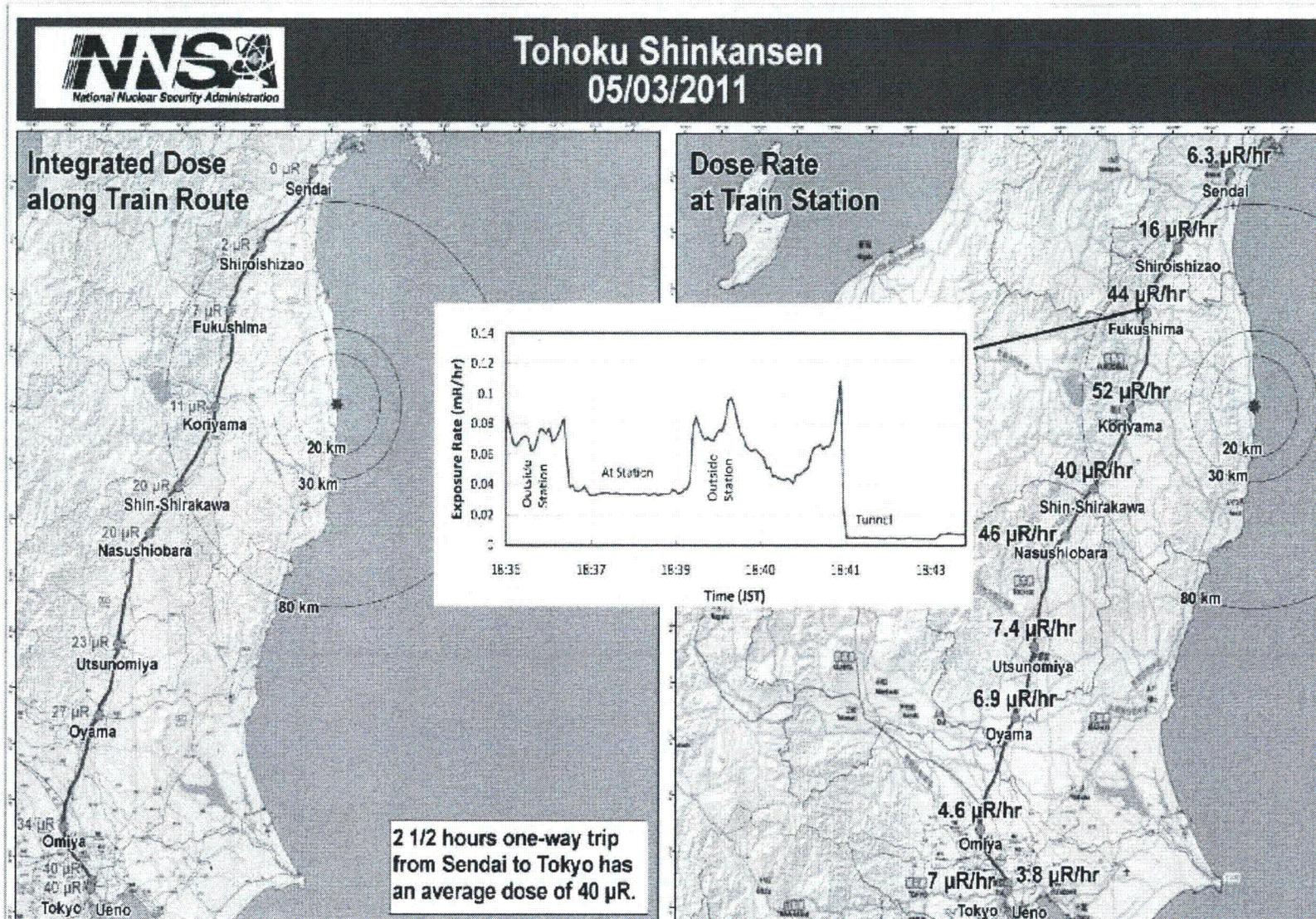


Monitoring Results: Sendai to Tokyo

- Results show radiation levels along Tohoku Shinkansen Bullet Train
- The integrated dose was measured with a calibrated electronic dosimeter by a field team member riding the train as a passenger, and includes external exposure but not inhalation.
- The dose rate was recorded every 3 seconds with a calibrated scintillator.
- All measurements were made inside the train.
- The dose rate in some stations is significantly lower than along the tracks outside the station; possible evidence of decontamination.
- The dose rate measured in the train is expected to be different from that measured by AMS because the train is often elevated (further from deposited activity) or in tunnels (unaffected by released activity).
- The contamination on track beds may weather differently than on other surrounding ground material.



Monitoring Results: Sendai to Tokyo



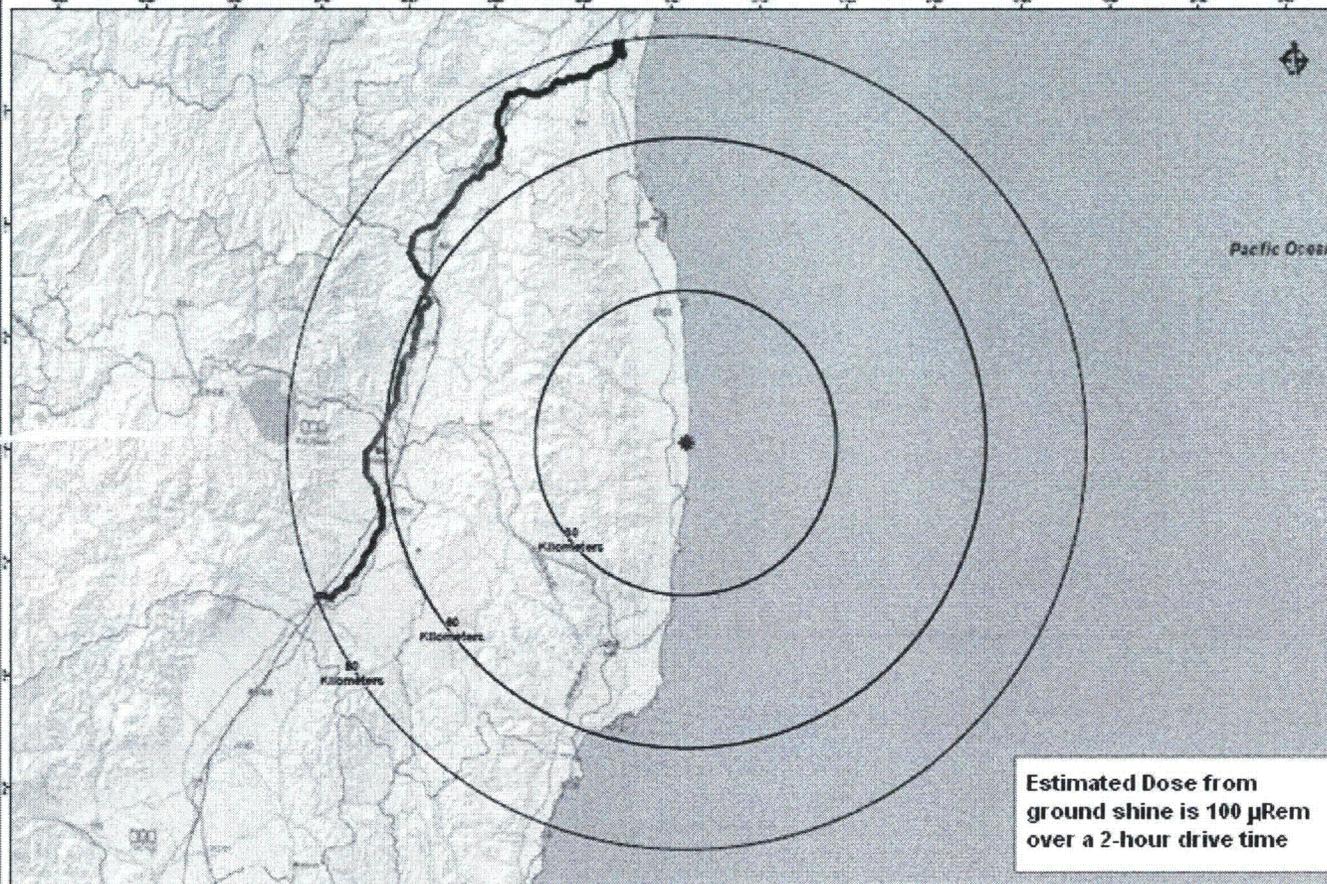
Note: 1 milliRem (mRem) = 10 μ(micro)Sieverts;
 1 milliRem (mRem) = 1000 μ(micro)rem



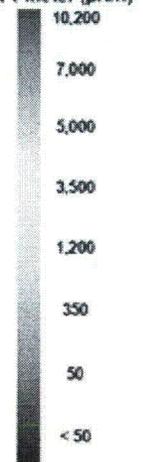
Mobile Monitoring Results

Tohoku Expressway Survey

FUKUSHIMA DAIICHI
JAPAN



Exposure Rate at 1 meter (μR/h)



Data Information:
This data represents the data collected from the mobile monitoring survey conducted on 4/25/2011.

This map was produced by the Geographic Information Systems Department of NNSA's National Security Laboratory (NSL) at the NNSA's Center for Nuclear Security (CNS) using data from the mobile monitoring survey and other data provided by the NNSA and other agencies.

All map identification numbers in this map are for reference only.

1:400,000



Map created on 4/25/2011 6:30:00 PM JST

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U.S. DEPARTMENT OF

ENERGY

AMS Operations Summary



- DOE/NNSA Aerial Measuring Systems have totaled more than 507 flight hours in support of aerial monitoring operations
- NNSA's Consequence Management Response Teams have collected over 269,500 total field measurements taken by DOE, DoD, and Japanese monitoring assets
- More than 514 air samples taken at U.S. facilities throughout Japan undergoing lab analysis in the United States
- 148 total *in situ* ground spectra taken throughout Japan for lab analysis in US
- 115 Japan soil samples received, in-processed, and undergoing analysis



U.S. DEPARTMENT OF
ENERGY

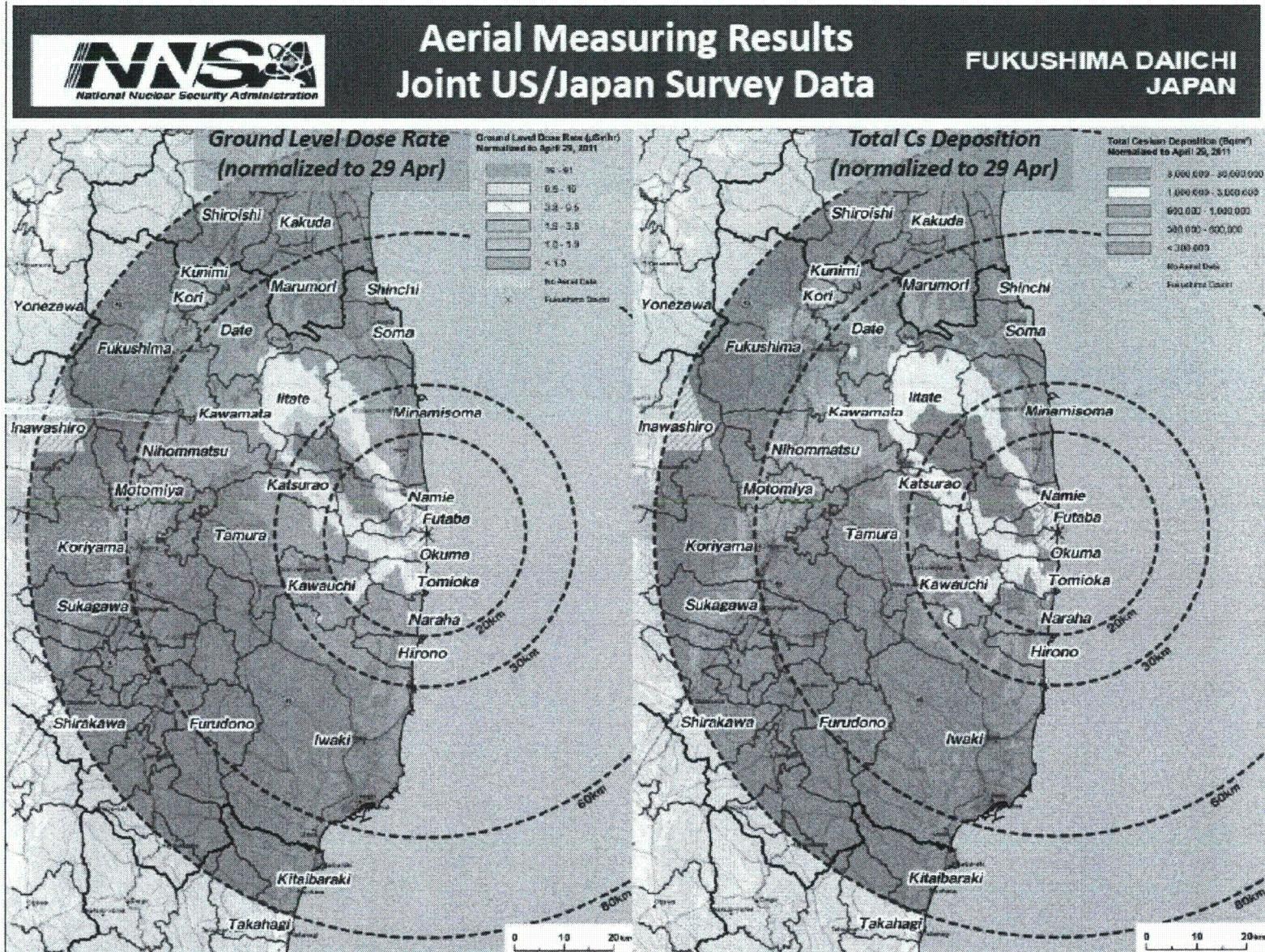
Joint US-Japan AMS Data



- These results are from a joint MEXT, DOE/NNSA and USFJ survey
- Data based on 42 fixed wing and helicopter survey flights at altitudes ranging from 150 to 700 meters between April 6 and April 29
- Exposure rates are averaged over areas 300 m to 1500 m in diameter
- There is no data near the Town of Inawashiro because it is mountainous and not easily accessible by low-flying aircraft
- The cesium deposition was determined from aerial and ground-based measurements
- The ratio of the amount of Cs-137 to Cs-134 is uniform across the survey region
- There is no aerial survey data directly over the nuclear power plant itself
- The survey boundary was chosen based on many preliminary measurement that showed the extent of the deposition

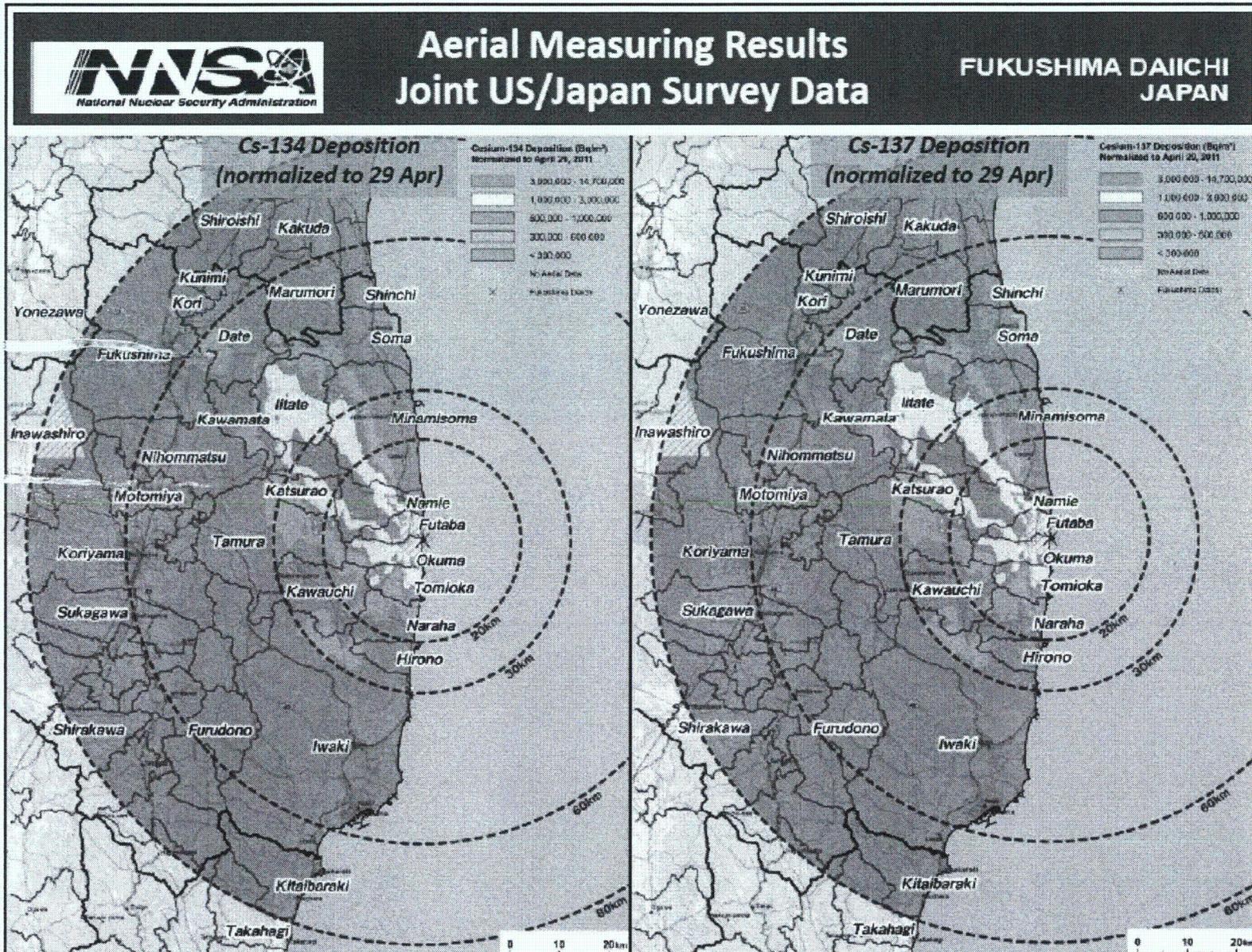


Joint US-Japan AMS Data





Joint US-Japan AMS Data





Assessment

An assessment of measurements gathered through May 13 continues to show:

- Radiation levels continue to decrease
- No measurable deposit of radiological material since March 19
- US bases and facilities all measure dose rates below 32 microrem/hr (32 millionths of a REM)** – a level with no known health risks
- Agricultural monitoring and possible intervention will be required for several hundred square kilometers surrounding the site:
 - Soil and water samples are the only definitive method to determine agricultural countermeasures
 - Ground monitoring can give better fidelity to identify areas that require agricultural sampling

** Note: 1 milliRem (mRem) = 10 μ (micro)Sieverts;
1 milliRem (mRem) = 1000 μ (micro)rem



Context

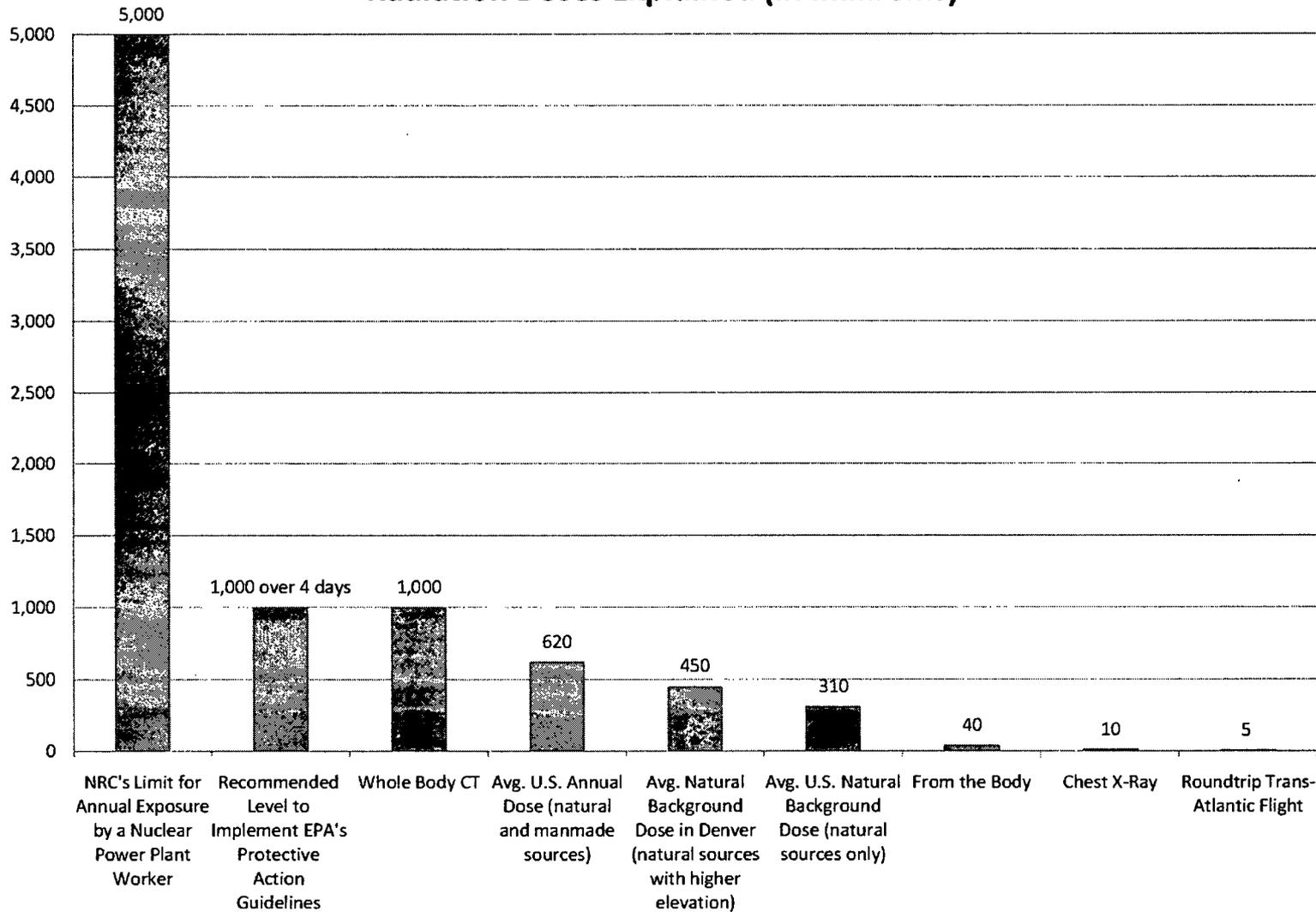
- The Nuclear Regulatory Commission estimates that the average American absorbs 620 mRem a year* (or 0.071 mRem/hour)**
- An average transatlantic flight produces an exposure of 2.5 mRem*
- A typical chest x-ray produces 10 mRem per image
- EPA guidelines call for public health actions if exposure exceeds 1000 mRem over 4 days

* Source: NRC: <http://nrc.gov/images/about-nrc/radiation/factoid2-lrg.gif>

** Note: 1 milliRem (mRem) = 10 μ (micro)Sieverts;
1 milliRem (mRem) = 1000 μ (micro)rem



Radiation Doses Explained (in millirems)



** Note: 1 milliRem (mRem) = 10 μ (micro)Sieverts;
1 milliRem (mRem) = 1000 μ (micro)rem