

**From:** [Burnell, Scott](#)  
**To:** [Brenner, Eliot](#); [Harrington, Holly](#)  
**Cc:** [McIntyre, David](#)  
**Subject:** RE: MSNBC blog post -- ok to go  
**Date:** Friday, March 18, 2011 2:05:29 PM

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Tweak in RED

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**From:** Brenner, Eliot  
**Sent:** Friday, March 18, 2011 1:56 PM  
**To:** Harrington, Holly  
**Cc:** McIntyre, David; Burnell, Scott  
**Subject:** MSNBC blog post -- ok to go

Check the last sentence in the next to last paragraph with Scott. Otherwise ready to go

Many news reports during this chaotic week have questioned the safety of U.S. nuclear power plants in the wake of the terrible events in Japan. These reports raise questions about the design of reactor containments and spent fuel pools, and of course whether our plants would be able to withstand an earthquake and tsunami like the ones that devastated Japan.

Nuclear power is a complicated, technical subject, and we naturally try to simplify it to make it understandable to the general public. Sometimes, however, simplification leads to misunderstanding, and misunderstanding causes fear.

One example was a so-called "investigative report" on MSNBC.com that ranked nuclear power plants according to their "vulnerability" to major earthquakes. The reporter concluded that the Indian Point plant, 24 miles north of New York City, was "the most vulnerable" in the nation. Instant headlines. You may have heard a local news report that your neighborhood nuclear plant ranked "on the NRC's Top Ten List" of the plants most likely to tumble in a temblor.

Let's be clear: The NRC does not rank nuclear power plants according to their vulnerability to earthquakes. This "ranking" was developed by the MSNBC.com reporter using partial information and we believe an even more partial understanding of how we evaluate plants for seismic risk. Each plant is evaluated individually according to the geology of its site, not by a "one-size-fits-all" model – therefore such rankings or comparisons are highly misleading.

We are also frequently asked whether Plant A can withstand a quake of magnitude X. The reporters always want a yes-or-no answer, but again, it's not that simple. Nuclear plants are designed to withstand a certain level of "ground shaking," to use a technical term. But the way the ground shakes in an earthquake is a factor of the magnitude and the distance from the epicenter, among other things. So we can't give a simple answer to such a simple question.

Each plant is built to the circumstances that exist at its location – including earthquakes, floods and

R R R R - 120

tsunamis. For example, at nuclear plants along the Atlantic and Gulf Coasts, the greatest water threat is hurricane storm surge, not a tsunami. Moreover, there is only one fault, near the northwest U.S. coast, that is similar to the fault in Japan, and there are no nuclear plants nearby. The closest coastal plant to that fault is well-protected against tsunami.

Over the last few years, the NRC has reassessed nuclear plants in the central and eastern United States for their vulnerability to earthquakes, using new seismic data developed by geologists. The study's preliminary work has shown that a few plants might have stronger ground motions than originally thought, although still within the plants' safety margins. These plants will do more research once more detailed analytical models are available later this year.

This is a complex issue that does not always lend itself to simple yes and no answers. Bottom line: the NRC does not rank plants on seismic risk. Plants in this country continue to operate safely and securely.

**From:** [Goldberg, Francine](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: Nuclear Reactor Seawater failsafe idea  
**Date:** Friday, March 18, 2011 3:03:32 PM

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The suggestion was about US Reactors. I'm not suggesting that this is something we need to accept as a suggestion, but it might be an opportunity to inform this person and other about the kinds of things that Bill B. just said at the all hands meeting, i.e., that US reactors many layers of defense in depth, like a nitrogen atmosphere in the containment to suppress fires and prevent explosions, the station blackout rule, and requirements for other defenses in the event of a severe accident.

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**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 2:50 PM  
**To:** Goldberg, Francine  
**Subject:** RE: Nuclear Reactor Seawater failsafe idea

It does not look like it needs a response. We are not taking people's suggestions as we are not responsible for Jpaanese reactors

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**From:** Goldberg, Francine  
**Sent:** Friday, March 18, 2011 2:06 PM  
**To:** Harrington, Holly  
**Subject:** RE: Nuclear Reactor Seawater failsafe idea

Do you have any idea how many people are getting these e-mails? Should I reply with any kind of a standard response? Forward the one of a kind ones to OPA@nrc.gov?

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**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 1:49 PM  
**To:** Goldberg, Francine  
**Subject:** RE: Nuclear Reactor Seawater failsafe idea

No, not putting on blog. thanks

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**From:** Goldberg, Francine  
**Sent:** Friday, March 18, 2011 1:20 PM  
**To:** Harrington, Holly  
**Subject:** FW: Nuclear Reactor Seawater failsafe idea

Holly –

I've been inundated with e-mails urging the NRC to shut down or inspect the plants, but this one is different. Not sure what to do with it. Worth posting on the blog?

Fran

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**From:** Gary Nuell [mailto:[gnuell@nuell.net](mailto:gnuell@nuell.net)]

R R R R -121

**Sent:** Friday, March 18, 2011 11:58 AM  
**To:** Goldberg, Francine  
**Subject:** Nuclear Reactor Seawater failsafe idea

In light of what is happening in Japan I thought of this and wanted to send to someone at NRC. Just an idea I came up with that might be easily accomplished for plants with water nearby...

-  
-  
**NUCLEAR REACTOR SEA WATER FAILSAFE**

March 17, 2011  
Created by Gary Nuell

The following is only in the event of a possible Nuclear Reactor melt down when all measures have been exhausted and it is determined that the plant will no longer be sustainable. This system will operate without the need for electricity and can be operated by a small crew of workers. Pipes will be connected to the tubes in the ground that can be erected as well as pipes that go directly into the reactor. If the pipes allow, water pressure generated by the earth's gravity from the opening of the tube to the ocean floor (Could be a river bed or lake as well) will be used to pump water directly into the reactor. In the event of a Hydrogen blast where the reactor is exposed, external tubing will be housed in the ground so as to be erected yet not be damaged in the event of an earthquake and Tsunami. There can also be one on each side to insure operation from at least one tower. The inlet water tunnel on the ocean floor should be less vulnerable to tsunami problems as the wave will be many feet above it and should be built to be flexible and withstand an earthquake.

1. Tunnels must be dug next to each reactor with flexible tubing that can move during an earthquake that will reach an outlet on the ocean floor nearest the plant.
2. External underwater crews will place a lid that can be moved through an electrical motor or in the event of an electrical shut down, a manual crank will be installed that can be accessed by divers after an accident and possibly one internally
3. Erectable towers will be placed inside a secure structure so that in the event of an earthquake or tsunami they will withstand the impact.
4. Upon requirement, the towers can be accessed and raised through a crane and pulley system by a crew of a few men.
5. The tower will be erected and then locked into place with rotating hoses connected to the tubes below.
6. Valves are released so that the natural gravity of the ocean's pressure and the sliding of the cover on the ocean floor allow for water to continually be poured over reactors until fuel rods can be safely removed.

Gary Nuell

Off: (310) 451-0021

**From:** [Tobin, Jennifer](#)  
**To:** [Harrington, Holly](#)  
**Cc:** [Bonaccorso, Amy](#); [Deavers, Ron](#); [Janbergs, Holly](#)  
**Subject:** FW: Summary of IAEA press briefing 3-18-11  
**Date:** Friday, March 18, 2011 2:38:34 PM

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Thought this might be helpful. You can check out [www.iaea.org](http://www.iaea.org) for the full text

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

From: LIA02 Hoc  
Sent: Friday, March 18, 2011 2:30 PM  
To: LIA03 Hoc; Emche, Danielle; Fragoyannis, Nancy; Stahl, Eric; Mayros, Lauren; Tobin, Jennifer; Afshar-Tous, Mugeh; Wittick, Brian; Abrams, Charlotte; Jones, Andrea; Smiroldo, Elizabeth; English, Lance  
Subject: FW: Summary of IAEA press briefing 3-18-11

FYI - pls pass to anyone I missed.

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

From: Shaffer, Mark R [<mailto:ShafferMr@state.gov>]  
Sent: Friday, March 18, 2011 2:29 PM  
To: LIA02 Hoc  
Subject: Fw: Summary of IAEA press briefing 3-18-11

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

From: Cooper, Nathan J  
To: Davies, Glyn T; Wood, Robert A; Hall-Godfrey, Jennifer J; IAEA Vienna; JapanEmbassy, TaskForce; TaskForce-1  
Sent: Fri Mar 18 14:18:43 2011  
Subject: Summary of IAEA press briefing 3-18-11

The two key topics at Friday's press briefing at the IAEA on the events in Japan were GOJ's upgrading of the accident's classification on the INES scale to a 5 and the CTBTO's detection of nucleotides in Sacramento. Special Advisor Graham Andrew filled in for DG Amano again and continued his approach of sharing large quantities of information upfront. His main line was that the situation "remains serious, but there has been no significant worsening." The informational segment of the briefing contained new satellite imagery and copious charts about changes in the reactor vessel water and pressure levels. Much of this data, as well as a recap of dose level readings near Fukushima and around Japan, was presented without real-world context and veered into science lecture territory.

Further announcements:

- Special BOG meeting to be held Monday 3/21
- Diesel power has been reestablished to cool units 5 and 6, a positive development
- No problems at the common spent fuel pond building
- DG Amano met with high level GOJ officials
- Further technical and press briefing to be held Saturday 3/20
- Tokyo has no indication of cesium or iodine in atmosphere
- Int'l Civil Aviation Agency says no concern for commercial air travel

Key exchanges with the press:

Q: For a physics drop-out like me, what does this all mean? (AP Jahn)

A: The situation is non-changing and relatively stable. This is positive, because what you don't want is a rapidly changing situation. This is particularly true of units 1, 2 and 3.

R R R R - 1 2 2

Q: What does the change in INES rating from 4 to 5 mean in real terms? (CNN Matthew Chance)

A: First it is important to remember that the ratings are not made by the IAEA, but by Japan. Whether they are exactly right is not the important matter of the day--the important thing is getting water back into these reactors.

Q: Regarding the Unit 4 spent fuel pool, how close are the workers getting? And given the presence of MOX fuel, what is the risk for criticality? (Bloomberg Tyrell)

A: Criticality is not an issue in this case, providing the geometry of the fuel rods has not changed. The way the pods are set up keeps the rods from touching and prevents criticality.

Q: CTBTO reported nucleotides from this eruption of radioactivity being discovered in Sacramento, California. What is your position on this report?

A: First, we would not use the term "eruption of radioactivity." Even without an accident, you find particles in the environment. It's about when, what kind of particles and in what concentration. As of now, we have no concerns in Japan, and certainly not more remotely, for human health. The mere detection of particles is not something people should be concerned with.

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**From:** [Harrington, Holly](#)  
**To:** [Deavers, Ron](#)  
**Subject:** RE: My availability going forward ..  
**Date:** Friday, March 18, 2011 2:52:00 PM

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You are doing a fantastic job and I appreciate any help you are able to give us. I'm hoping we can begin scaling back operations, but I guess we'll have to wait to see how that goes. We do not need to staff to 8 p.m. in any event. 6 p.m. would be great as an end time . . . Please let Amy know. I'm asking her to pull together a schedule for the weekend and next week.

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**From:** Deavers, Ron  
**Sent:** Friday, March 18, 2011 2:24 PM  
**To:** Harrington, Holly  
**Subject:** My availability going forward ..

Hi Holly,

I have some pressing matters to attend to concerning my regular work. After brief discussion with my management,

I feel comfortable committing to the following schedule for manning the internal call center:

From next week through the first week of May 2011, Tuesday-Friday 3:00 PM to 8:00 PM

Also, should we record our time on the call center to the new activity code: **ZG0061 - Japan Earthquake and Tsunami?**

Thanks,

Ron Deavers

RRRR-123

**From:** [Harrington, Holly](#)  
**To:** [Brenner, Eliot](#)  
**Subject:** If you hve OK"d Dave"s blog post for you, please let me know  
**Date:** Friday, March 18, 2011 12:35:00 PM

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RRRR-124

**From:** Shannon, Valerie  
**To:** Akstulewicz, Brenda; Brenner, Eliot; Burnell, Scott; Harrington, Holly; Hayden, Elizabeth; Couret, Ivonne; Janbergs, Holly; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mittyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Subject:** Conference Call  
**Date:** Friday, March 18, 2011 12:32:49 PM

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There will be a conference call today at 1:15. The phone number and passcode will follow shortly.  
Val

RRRR-125

**From:** [Harrington, Holly](#)  
**To:** [Tobin, Jennifer](#)  
**Subject:** for guy wanting PMT info  
**Date:** Friday, March 18, 2011 12:33:00 PM

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Just say you don't know at this time. I'm not sure we ever make the info public, but we certainly don't have time right now.

RRRR-126

**From:** Gerke, Laura  
**To:** Harrington, Holly  
**Subject:** Out of Office: Can you call me? 301-415-8203  
**Date:** Friday, March 18, 2011 12:31:17 PM

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I am out of the office, returning mid-morning on Monday, March 21; i'll be checking emails periodically. If you need assistance, please call 301-415-1275.

RRR-127

**David Decker**

**From:** CQ.com Alert [CQCustomAlerts@cq.com]  
**Sent:** Monday, March 14, 2011 9:21 AM  
**To:** Decker, David  
**Subject:** Nuclear Energy Topic

CQ.com E-MAIL ALERTS

# SHAPE OPINIONS

## SAVED SEARCH: Nuclear Energy Topic

Description: Wide ranging issues associated with nuclear energy

**1 document found**

[Japanese Nuclear Crisis Rekindles Debate Over Safety of U.S. Plants](#)

*CQ Today Online News (3/13/2011, 5:57 p.m.; 704 words)*

### About this alert

Sent March 14, 2011

9:15 a.m. ET

created by dld@nrc.gov

[Manage my "Nuclear Energy Topic" alert](#) to edit, delete, change delivery schedule, or to combine this e-mail with others.

CQ Delivery ID: 68283187 (avsvc06.cq.com)

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# SHAPE OPINIONS

RRR-128

**From:** [Harrington, Holly](#)  
**To:** [Wood, Chad](#)  
**Subject:** RE: Press # and email  
**Date:** Friday, March 18, 2011 3:22:00 PM

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You're always welcome to come in and work the weekend with us!!

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**From:** Wood, Chad [mailto:Chad.R.Wood@dhs.gov]  
**Sent:** Friday, March 18, 2011 3:19 PM  
**To:** Harrington, Holly  
**Subject:** RE: Press # and email

Thanks. I think I'm just going to send around the niccl roster to the key folks.

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**From:** prvs=05168de55=Holly.Harrington@nrc.gov [mailto:prvs=05168de55=Holly.Harrington@nrc.gov]  
**On Behalf Of** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:07 PM  
**To:** Wood, Chad  
**Subject:** RE: Press # and email

We'll be staffing both 301-415-8200 and 301-816-5107 from about 8 a.m. to 7 p.m. both days . . . If you need someone urgently outside those hours call 301-816-5100

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**From:** Wood, Chad [mailto:Chad.R.Wood@dhs.gov]  
**Sent:** Friday, March 18, 2011 2:55 PM  
**To:** Harrington, Holly  
**Subject:** Press # and email

What contacts do you want me to use particularly for the weekend. Will update for everyone.

RRRR-129

**From:** [Harrington, Holly](#)  
**To:** [Taylor, Robert](#); [Brenner, Eliot](#); [Burnell, Scott](#); [Couret, Ivonne](#); [Hayden, Elizabeth](#); [McIntyre, David](#); [Chandraithil, Prema](#); [Dricks, Victor](#); [Hannah, Roger](#); [Ledford, Joey](#); [Mitlyng, Viktoria](#); [Screnci, Diane](#); [Sheehan, Neil](#); [Uselding, Lara](#)  
**Subject:** Text of Blog Post Just Posted -- Verbiage about MSNBC report  
**Date:** Friday, March 18, 2011 3:22:00 PM

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## Don't Believe Everything You Read

Many news reports during this chaotic week have questioned the safety of U.S. nuclear power plants in the wake of the terrible events in Japan. These reports raise questions about the design of reactor containments and spent fuel pools, and of course whether our plants would be able to withstand an earthquake and tsunami like the ones that devastated Japan.

Nuclear power is a complicated, technical subject, and we naturally try to simplify it to make it understandable to the general public. Sometimes, however, simplification leads to misunderstanding, and misunderstanding causes fear.

One example was a so-called "investigative report" on MSNBC.com that ranked nuclear power plants according to their "vulnerability" to major earthquakes. The reporter concluded that the Indian Point plant, 24 miles north of New York City, was "the most vulnerable" in the nation. Instant headlines. You may have heard a local news report that your neighborhood nuclear plant ranked "on the NRC's Top Ten List" of the plants most likely to tumble in a temblor.

Let's be clear: The NRC does not rank nuclear power plants according to their vulnerability to earthquakes. This "ranking" was developed by the MSNBC.com reporter using partial information and we believe an even more partial understanding of how we evaluate plants for seismic risk. Each plant is evaluated individually according to the geology of its site, not by a "one-size-fits-all" model – therefore such rankings or comparisons are highly misleading.

We are also frequently asked whether Plant A can withstand a quake of magnitude X. The reporters always want a yes-or-no answer, but again, it's not that simple. Nuclear plants are designed to withstand a certain level of "ground shaking," to use a technical term. But the way the ground shakes in an earthquake is a factor of the magnitude and the distance from the epicenter, among other things. So we can't give a simple answer to such a simple question.

Each plant is built to the circumstances that exist at its location – including earthquakes, floods and tsunamis. For example, at nuclear plants along the Atlantic and Gulf Coasts, the greatest water threat is hurricane storm surge, not a tsunami. Moreover, there is only one fault, near the northwest U.S. coast, that is similar to the fault in Japan, and there are no nuclear plants nearby. The closest coastal plant to that fault is well-protected against tsunami.

Over the last few years, the NRC has reassessed nuclear plants in the central and eastern United States for their vulnerability to earthquakes, using new seismic data developed by geologists. The study's preliminary work has shown that a few plants might have stronger ground motions than originally thought, although still within the plants' safety margins. These plants will do more research once more detailed analytical models are available later this year.

RRRR-130

This is a complex issue that does not always lend itself to simple yes and no answers.  
Bottom line: the NRC does not rank plants on seismic risk. Plants in this country continue to operate safely and securely.

Eliot Brenner  
Public Affairs Director

**From:** Royer, Deanna  
**To:** Harrington, Holly  
**Subject:** Call from DOE  
**Date:** Friday, March 18, 2011 3:20:03 PM

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Rick Kendell  
Department of Energy – Nuclear Energy  
301-903-9247

Re: A team is being put together under Pete Lyons. Mr. Kendell is looking for information on electrical systems in Japan

Deanna Royer

RR RR-131

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**From:** RST06 Hoc  
**Sent:** Tuesday, April 05, 2011 4:59 PM  
**To:** Sheron, Brian  
**Subject:** RE: Slides for Experts Meeting  
**Attachments:** image001.jpg

ok

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**From:** Sheron, Brian  
**Sent:** Tuesday, April 05, 2011 4:58 PM  
**To:** RST06 Hoc  
**Subject:** RE: Slides for Experts Meeting

If it come up in the call, I'll just say it is still under evaluation.

---

**From:** RST06 Hoc  
**Sent:** Tuesday, April 05, 2011 4:58 PM  
**To:** Sheron, Brian  
**Subject:** RE: Slides for Experts Meeting

Call the ops center and they will tie me in.

---

**From:** Sheron, Brian  
**Sent:** Tuesday, April 05, 2011 4:57 PM  
**To:** RST06 Hoc  
**Subject:** RE: Slides for Experts Meeting

When I dial 301-816-5502, <sup>rl</sup> I get a message that says it isn't in service.

---

**From:** RST06 Hoc  
**Sent:** Tuesday, April 05, 2011 4:54 PM  
**To:** Sheron, Brian  
**Subject:** RE: Slides for Experts Meeting

Of course we recognize those concerns. We have no final position in this regard. As I understand it, these are responses—or comments—from DOE on our draft document. This is a good thing. There are also concerns to adding water to dried out cladding, possibly causing cladding failure and increasing the transport or radionuclides.

Please call me at 301-816-5502. <sup>rl</sup>

Bill Ruland

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**From:** RST01 Hoc  
**Sent:** Tuesday, April 05, 2011 4:45 PM  
**To:** RST06 Hoc  
**Subject:** FW: Slides for Experts Meeting

RLR/132

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**From:** Sheron, Brian  
**Sent:** Tuesday, April 05, 2011 4:29 PM  
**To:** RST01 Hoc; ET01 Hoc; Weber, Michael  
**Subject:** FW: Slides for Experts Meeting

See slide 4 (attached). Can I get a quick brief on our logic before the 5 pm call today? What is our response to the concern that sand will insulate the fuel, allowing it to heat up to melting and then potentially burn through the bottom of the pool concrete?

---

**From:** Larzelere, Alex [mailto:[alex.larzelere@nuclear.energy.gov](mailto:alex.larzelere@nuclear.energy.gov)]  
**Sent:** Tuesday, April 05, 2011 4:20 PM  
**To:** DL-NITSolutions; Lee, Richard  
**Subject:** Slides for Experts Meeting

Everyone,

Attached are the slide for today's meeting. It will occur at 5pm EDT. The conference call in number is 202-586-2535.

Regards,

Alex

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**Alex R. Larzelere**  
*Director, Advanced Modeling and Simulation Office*  
*Office of Nuclear Energy (NE-71)*  
*U.S. Department of Energy*  
*202-586-1906*  
*[Alex.Larzelere@nuclear.energy.gov](mailto:Alex.Larzelere@nuclear.energy.gov)*



**From:** [Deavers, Ron](#)  
**To:** [Bonaccorso, Amy](#)  
**Cc:** [Akstulewicz, Brenda](#); [Harrington, Holly](#)  
**Subject:** RE: I'm leaving for the day....  
**Date:** Friday, March 18, 2011 4:35:35 PM

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Thanks, Amy.

Brenda, I have not been getting the calls and emails directly, I may need to be put back on the list with Amy.

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**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:34 PM  
**To:** Deavers, Ron  
**Cc:** Akstulewicz, Brenda; Harrington, Holly  
**Subject:** I'm leaving for the day....

Thanks for your support!

RRRR-133

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Cc:** [Ridge, Christianne](#); [Deavers, Ron](#)  
**Subject:** RE: Clarification for use of the Tac ZG0061  
**Date:** Friday, March 18, 2011 4:38:00 PM

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I've not been tracking that. Check with your timekeeper . . .

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:32 PM  
**To:** Harrington, Holly  
**Cc:** Ridge, Christianne; Deavers, Ron  
**Subject:** FW: Clarification for use of the Tac ZG0061

Holly – it looks like we need to use this TAC. Let us know if you learn otherwise or if we missed an update somewhere.

Thanks,

Amy

**From:** HRMSBulletin Resource  
**Sent:** Thursday, March 17, 2011 9:25 AM  
**To:** HRMSBulletin Resource  
**Cc:** HRMSBulletin Resource  
**Subject:** Clarification for use of the Tac ZG0061

**Clarification for use of the TAC (ZG0061) that was established for the events in JAPAN**

This TAC (ZG0061) was established to track activity related to staff that are supporting the recent events in Japan. Managers that are performing managerial functions relating to the events in Japan should continue to use the TAC (ZM0000). In the situation where a manager is required to perform duties which would be considered different than managerial responsibilities should record their time under the new TAC ZG0061. Support staff that are performing Japan events should use TAC's that relate to their normal responsibilities. In the situation where administrative support staff is required to perform duties that would be considered different than routine administrative support responsibilities should record their time under the new TAC ZG0061.

If you have any additional questions please e-mail Jackie Jones [Jackie.Jones@NRC.GOV](mailto:Jackie.Jones@NRC.GOV) or Mary Matheson at [Mary.Matheson@NRC.GOV](mailto:Mary.Matheson@NRC.GOV).

RRRR-134

**From:** [Harrington, Holly](#)  
**To:** [RST08 Hoc](#)  
**Subject:** RE: boardfile.docx  
**Date:** Friday, March 18, 2011 4:31:00 PM

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We developed this and it's posted on WebEOC. Is there a reason why you're sending it to me?

---

**From:** RST08 Hoc  
**Sent:** Friday, March 18, 2011 4:17 PM  
**To:** Harrington, Holly  
**Subject:** boardfile.docx

RRRR-135

**From:** OPA Resource  
**To:** Ash, Darren; Barkley, Richard; Batkin, Joshua; Bell, Hubert; Belmore, Nancy; Beroman, Thomas; Bollwerk, Paul; Bonaccorso, Amy; Borchardt, Bill; Bozin, Sunny; Brenner, Eliot; Brock, Terry; Brown, Boris; Bubar, Patrice; Burnell, Scott; Burns, Stephen; Carpenter, Cynthia; Chandrabhil, Prema; Clark, Theresa; Collins, Elmo; Couret, Ivonne; Crawford, Carrie; Cutler, Iris; Dacus, Eugene; Dapas, Marc; Davis, Roger; Dean, Bill; Decker, David; Dricks, Victor; Droggitis, Spiros; Flory, Shirley; Franovich, Mike; Gibbs, Catina; Haney, Catherine; Hannah, Roger; Harbuck, Craig; Harrington, Holly; Hasan, Nasreen; Hayden, Elizabeth; Holahan, Gary; Holahan, Patricia; Holian, Brian; Jacobssen, Patricia; Jaczko, Gregory; Jasinski, Robert; Jenkins, Verlyn; Johnson, Michael; Jones, Andrea; Kock, Andrea; Kotzalas, Margie; Ledford, Joey; Lee, Samson; Leeds, Eric; Lepre, Janet; Lew, David; Lewis, Antoinette; Loyd, Susan; Magwood, William; McCrary, Cheryl; McGrady-Finneran, Patricia; McIntyre, David; Mensah, Tanya; Mitlyng, Viktoria; Monninger, John; Montes, David; Nieh, Ho; Ordaz, Vonna; Ostendorff, William; Owen, Lucy; Powell, Amy; Quesenberr, Jeannette; Reddick, Darani; Regan, Christopher; Reves, Luis; Riddick, Nicole; RidsSecyMailCenter Resource; Riley (OCA), Timothy; Rohrer, Shirley; Samuel, Olive; Satorius, Mark; Schaaf, Robert; Schmidt, Rebecca; Scott, Catherine; Screnci, Diane; Shaffer, Vered; Shane, Raeann; Sharkey, Jeffry; Sheehan, Neil; Sheron, Brian; Siurano-Perez, Osiris; Steger (Tucci), Christine; Svinicki, Kristine; Tabatabai, Omid; Tannenbaum, Anita; Taylor, Renee; Temp, WDM; Thomas, Ann; Uhle, Jennifer; Uselding, Lara; Vietti-Cook, Annette; Virgilio, Martin; Virgilio, Rosetta; Walker-Smith, Antoinette; Weaver, Doug; Weber, Michael; Weil, Jenny; Werner, Greg; Wiggins, Jim; Williams, Evelyn; Zimmerman, Roy; Zorn, Jason  
**Subject:** \*Once Again!\* Media Advisory: Nuclear Regulatory Commission to Hold Public Meeting on NRC Response to Recent Japan Event  
**Date:** Friday, March 18, 2011 4:26:36 PM  
**Attachments:** MA\_03-18-2011\_JapanBriefing.docx

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I apologize, this time with the attachment!

Greetings,

This was issued at approximately 3pm today via Listserve. It was not posted to the live web.

**Office of Public Affairs**  
US Nuclear Regulatory Commission  
301-415-8200  
opa.resource@nrc.gov

R R R R -136



# NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200  
Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

March 18, 2011

**\*\*\*MEDIA ADVISORY\*\*\***

## **NUCLEAR REGULATORY COMMISSION TO HOLD PUBLIC MEETING ON NRC RESPONSE TO RECENT JAPAN EVENT**

The U.S. Nuclear Regulatory Commission will be briefed by its staff on the NRC's response to the ongoing nuclear event in Japan in a public meeting on March 21 at 9 a.m. at NRC Headquarters, 11555 Rockville Pike, Rockville, Md. The commission meeting will be open to public observation and will be webcast at: <http://www.nrc.gov/public-involve/public-meetings/webcast-live.html>.

Due to limited space availability, the meeting will be set up for a CBS broadcast network pool camera crew. Broadcast media outlets interested in receiving the feed should contact the network pool at 202-457-4444. For still photographers, this meeting will be pooled with AP, Reuters, AFP and Getty only.

In order for us to try to ensure sufficient seating for reporters, please notify the Office of Public Affairs at the contact information above if you plan to attend. There will be additional space available in our auditorium on a first-come, first-serve basis.

Pool photographers will have limited space at the meeting in which to take photos. Movement must be kept to a minimum so as not to be distracting and entry into the inner well closest to the Commission briefing table is prohibited. Plan to arrive in advance of the meeting at the Marinelli Road entrance of the NRC with proper media credentials. The NRC offices are located across the street from the White Flint Metro station. Parking is available at the White Flint metro parking garage on Marinelli Road.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.

**From:** [Helton, Shana](#)  
**To:** [Borchardt, Bill](#)  
**Cc:** [Harrington, Holly](#)  
**Subject:** Suggestion re: NRC Press Release on Fukushima  
**Date:** Friday, March 18, 2011 4:25:51 PM

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Bill,

You gave an incredibly good presentation today at the NRC All-Hands meeting. I can't imagine the stress nor the lack of sleep you are enduring, and in case not many others are saying it to you right now: thank you, sincerely, for what you are doing for the NRC and the country. Your speech regarding various points of why you feel very comfortable with the U.S. fleet of operating nuclear reactors (e.g., inerting, design upgrades, B5B enhancements, a nationwide INPO inventory of spare parts) was especially outstanding. **This type of information would make for a great press release.**

Given the extraordinary amount of misinformation and sensationalism that is all over the internet and TV, as you're painfully aware, the NRC has a huge challenge right now of communicating why the NRC is assured that we are continuing to be successful in fulfilling our mission of ensuring adequate protection of public health and safety, promoting the common defense and security, and protecting the environment.

As an aside, in case you're not already aware of it the NRC developed, in 2003, [NUREG/BR-0308, "Effective Risk Communication – The Nuclear Regulatory Commission's Guidelines for External Risk Communication."](#) Understanding we're in crisis management mode here, but I'm bringing it to your attention in case it can be of use (and hopefully make your life a little easier right now). Here's a link to the associated Quick Reference Guide: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0308/quick-ref-guide.pdf>.

Thank you for considering these things, especially a well-placed press release, and once again, thank you for everything you are doing. (And sorry for contributing to your surmounting email management challenge.)

-Shana

Shana Helton, Chief  
Rulemaking Branch (PRMB)  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-7198; shana.helton@nrc.gov

RRRR-137

**From:** [RST08 Hoc](#)  
**To:** [Harrington, Holly](#)  
**Subject:** [boardfile.docx](#)  
**Date:** Friday, March 18, 2011 4:16:36 PM  
**Attachments:** [boardfile.docx](#)

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RRR-138

Questions and Answers for Chairman Jaczko  
March 11, 2011 Japan Earthquake/Tsunami Aftermath  
As of 1900, 3/12/2011

**1. What is the NRC doing about the emergencies at the nuclear power plants in Japan? Are you sending staff over there?**

Public Answer: We are closely following events in Japan, working with other agencies of the federal government, and have been in direct contact with our counterparts in that country. In addition, we are ready to provide assistance if there is a specific request. An NRC staffer is participating in the USAID team headed to Japan.

Additional technical, non-public information:

We are taking the knowledge that the staff has about the design of the US nuclear plants and we are applying this knowledge to the Japan situation. For example, this includes calculations of severe accident mitigation that have been performed.

Tony Ulsen has been dispatched to Japan and should arrive Early Sunday.  
David Jim Trapp left 1600 Saturday should arrive in 20 hours

Assigned to Liaison Team

**2. What's going to happen following the steam explosion everyone's seen from the video footage?**

Public Answer: If a similar event occurred at a U.S. nuclear power plant, the NRC would be seeking information to answer several questions, including: What's the status of the reactor core, the reactor vessel and the containment building? What radiation measurement equipment is available and what measurements are being reported? What efforts are being taken to keep the public safe? How did the explosion affect efforts to keep the nearby reactors in a safe condition? And most importantly – What can the NRC do to help?

Additional technical, non-public information:

The explosion affected the secondary containment of the reactor plant. The primary containment was not affected by the explosion. The Japanese are taking actions to preserve the primary containment, cool the reactor core, maintain the reactor shut down and limit the spread of radioactive contamination.

The NRC required a back fit to US reactors of the type similar to Fukushima Unit 1 to install a hardened vent line. A hardened vent provides a release path which would prevent an explosion as experienced at Fukushima Unit One.

**3. What should done to protect people in Alaska, Hawaii and the West Coast do from radioactive fallout?**

Public Answer: The available evidence shows the United States can be expected to avoid any impacts from radioactive material, so no public action is necessary. We believe there is very low risk to the US considering the long distance from the US and the type of event. The NRC continues to analyze the available information, and existing monitoring equipment can detect any materials before they could present a hazard.

Additional technical, non-public information: NRC is working with DHS, EPA and other federal partners to ensure monitoring equipment is properly positioned, based on meteorological and other relevant information.

**4. Can this happen here i.e. an earthquake that significantly damages a nuclear power plant? Are the Japanese plants similar to U.S. plants?**

Public Answer: All 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 low and moderate seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account even very rare and extreme seismic and tsunami events.

The Japanese facilities are similar in design to several US facilities.

Additional technical, non-public information:

Currently operating reactors were designed using a “deterministic” or “maximum credible earthquake” approach. Seismic hazard for the new plants is determined using a much more robust probabilistic seismic hazard assessment approach that explicitly addresses uncertainty, as described in RG1.208. The NRC requires that adequate margin beyond the design basis ground shaking levels is assured. The NRC further enhances seismic safety for beyond-design-basis events through the use of a defense-in-depth approach.

In addition, the NRC periodically reviews the seismic risk at operating reactors when information may have changed. Over the last few years the NRC has undertaken a program called Generic Issue 199, which is focused on assessing hazard for plants in the central and eastern US using the latest techniques and determining the possible risk implications of any increase in the anticipated ground shaking levels. This program will help us assure that the plants are safe under exceptionally rare and extreme ground motions that represent beyond-design-basis events.

**5. What would U.S. plants do in this situation?**

Public Answer: The NRC requires plant designs to include multiple and diverse safety systems, and plants must test their emergency preparedness capabilities on a regular basis. Plant operators are very capable of responding to significant events. In addition, NRC regulations require plants to have plans in place that would allow them to mitigate even “worst case scenarios”.

Since 9/11, we have implemented requirements for licensees to have additional response capabilities for extreme situations.

Additional technical, non-public information:

Our nuclear plants have procedures in place to address a variety of accident scenarios, including abnormal operating procedures, emergency operating procedures, severe accident guidelines and emergency plans.

## **6. Are U.S. power plants designed to withstand tsunamis?**

Public Answer: Yes. Plants are built to withstand a variety of environmental hazards and those plants that might face a threat from tsunami are required to withstand large waves and the maximum wave height at the intake structure (which varies by plant.)

Additional, technical, non-public information:

Tsunami have been considered in the design of US nuclear plants since the publication of Regulatory Guide 1.59 in 1977, although the approaches that were used for design of the existing plants varied significantly. Nuclear plants are designed to withstand flooding from not only tsunami, but also hurricane and storm surge; therefore there is often significant margin against tsunami flooding. However, it should be noted that Japanese experience has shown that drawdown can be a significant problem. Drawdown was not generally analyzed in the past. The particular

Currently the US NRC has a tsunami research program that is focused on developing modern hazard assessment techniques and additional guidance through cooperation with the National Oceanic and Atmospheric Administration and the United States Geological Survey. This has already lead to several technical reports and an update to NUREG 0-800. The NOAA and USGS contractors are also assisting with NRO reviews of tsunami hazard. A new regulatory guide on tsunami hazard assessment is currently planned in the office of research, although it is not expected to be available in draft form until 2012.

## **7. What happens when/if a plant “melts down”?**

Public Answer: In short, nuclear power plants in the United States are designed to be safe. To prevent the release of radioactive material, there are multiple barriers between the radioactive material and the environment, including the fuel cladding, the heavy steel reactor vessel itself and the containment building, usually a heavily reinforced structure of concrete and steel several feet thick.

Additional, technical, non-public information:

The melted core may melt through the bottom of the vessel and flow onto the concrete containment floor. The core may melt through the containment liner and release radioactive material to the environment.

## **8. Why is KI administered during nuclear emergencies?**

Public Answer: KI – potassium iodide – is one of the protective measures that might be taken in a radiological emergency in this country. We do not know if this measure is necessary or appropriate in the Japanese situation.

Additional, technical non-public information.

There are a range of protective measures that we use ... the most effective is evacuation. Local government officials are responsible for determining the best means to protect their public. KI is another means for protection but evacuation and sheltering are the primary means that is used.

A KI tablet will saturate the thyroid with non radioactive iodine and prevent the absorption of radioactive iodine during a nuclear emergency.

Assigned to Dose Assessment team and RST (Chuck)

**9. Was there any damage to U.S. reactors from either the earthquake or the resulting tsunami?**

Public Answer: No

Additional, technical non-public information:

Diablo Canyon Units 1 and 2 declared an “unusual event” based on tsunami warning following the Japanese earthquake. They have since exited the “unusual event” declaration, based on a downgrade to a tsunami advisory.

**10. Has this incident changed the NRC perception about earthquake risk?**

Public Answer: There has not changed the NRC’s perception of earthquake hazard (i.e. ground shaking levels) for US nuclear plants. As is prudent, the NRC will certainly be looking closely at this incident and the effects on the Japanese nuclear power plant in the future to see if any changes are necessary to NRC regulations.

Additional, technical, non-public information.

We expect that there would be lessons learned, etc.

**11. Will this incident affect new reactor licensing?**

Public Answer: It is not appropriate to hypothesize on such a future scenario at this point.

Additional, technical non-public information:

This event could potentially call into question the NRC’s seismic requirements which could require the staff to re-evaluate the staff’s approval of the AP1000 and ESBWR design and certifications.

**12. What magnitude earthquake are US plants designed to?**

Public Answer: Each plant is designed to a ground shaking level that is appropriate for its location, given the possible earthquake sources that may affect the site and its tectonic environment. Ground shaking is a function of both the magnitude of and earthquake and the distance from the fault plane to the site. The probabilistic approaches account for a large number of different magnitudes.

Additional, technical non-public information:

In the past, “deterministic” or “scenario based” analyses were used to determine ground shaking (seismic hazard) levels. Now a probabilistic method is used that accounts for all possible earthquakes coming from all possible sources (including background seismicity) and the likelihood that each particular hypothetical earthquake occurs.

**13. How many US reactors are located in active earthquake zones (and which reactors)?**

Public Answer: Although we often think of the US as having “active” and “non-active” earthquake zones, earthquakes can actually happen almost anywhere. Seismologists typically separate the US into low, moderate, and high seismicity zones. The NRC requires that every plant is designed for site-specific ground motions that are appropriate for their location. In addition, the NRC has specified a minimum ground shaking level to which the plants must be designed.

Additional, technical non-public information:

**14. How many reactors are along coastal areas that could be affected by a tsunami (and which ones)?**

Public Answer: Many plants are located in coastal areas that could theoretically be affected by tsunami. Two plants, Diablo Canyon and San Onofre are on the Pacific coast, which is known to have tsunami hazard. There are also two plants on the Gulf Coast, South Texas and Crystal River. There are many plants on the Atlantic Coast or on rivers that may be affected by a tidal bore. These include St. Lucia, Brunswick, Oyster Creek, Millstone, Pilgrim, Seabrook, Calvert Cliffs, Salem, and Surry. Tsunami on the Gulf and Atlantic Coasts occur, but are very rare. Generally the flooding anticipated from Hurricane storm surge exceeds the flooding expected from a tsunami for plants on the Atlantic and Gulf Coast.

Additional, technical non-public information:

**15. How many US plants have designs similar to the affected Japanese reactors (and which ones)**

Public Answer: Six of the 104 US reactors General Electric BWR 3 with Mark 1 containments similar to the design used at Fukushima Unit One.

Additional Information:

Dresden Units 2 and 3, Monticello unit 1, Pilgrim unit 1, Quad Cities Units 1 and 2.

**From:** [Harrington, Holly](#)  
**To:** [Couret, Ivonne](#)  
**Subject:** RE: Lena Sun -Washington Post- DEADLINE 3PM  
**Date:** Friday, March 18, 2011 3:41:00 PM

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sure

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**From:** Couret, Ivonne  
**Sent:** Friday, March 18, 2011 3:25 PM  
**To:** Harrington, Holly  
**Subject:** FW: Lena Sun -Washington Post- DEADLINE 3PM

Do you want to take this? Ivonne

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

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

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**From:** Ghneim, Munira  
**Sent:** Friday, March 18, 2011 1:23 PM  
**To:** Couret, Ivonne  
**Subject:** Lena Sun -Washington Post- DEADLINE 3PM

Organization -Washington Post  
Contact - Lena Sun  
Phone -443-340-7611  
Email – [sunl@washpost.com](mailto:sunl@washpost.com)

Request – She has a question and it is not technical “Given the amount of publicity regarding the crisis in Japan has the NRC received ideas/suggestions. What is the nature of these suggestions?”

R R R R -139

**From:** [Hayden, Elizabeth](#)  
**To:** [Harrington, Holly](#)  
**Subject:** Blog problem  
**Date:** Friday, March 18, 2011 3:45:17 PM

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We may have to take down the transcript and replace it w/the cfhairman's opening remarks —Eliot is doing battle with OCA. Also you can't pull up the video on the hearing link we identified.

*Beth Hayden*  
*Senior Advisor*  
*Office of Public Affairs*  
*U.S. Nuclear Regulatory Commission*  
*--- Protecting People and the Environment*  
*301-415-8202*  
*elizabeth.hayden@nrc.gov*

RR RIR-140

**From:** [NRC Announcement](#)  
**To:** [NRC Announcement](#)  
**Subject:** Event: NRC Viewing of the Commission Meeting on the Japan Event  
**Date:** Friday, March 18, 2011 3:50:57 PM

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NRC Daily Announcements

Highlighted Information and Messages



**Friday March 18, 2011 -- Headquarters Edition**

**Event: NRC Viewing of the Commission Meeting on the Japan Event**

**Event: NRC Viewing of the Commission Meeting on the Japan Event**

On Monday, March 21, 2011, the NRC will hold a Commission Meeting to address the ongoing nuclear events at the Fukushima Nuclear Reactor site in Japan. The meeting is scheduled to convene at 9 a.m. in the One White Flint North (OWFN) Commission Hearing Room. Interested staff is encouraged to view the proceedings at one of the following locations:

- Two White Flint North (TWFN) auditorium
- TWFN exhibit area
- Cable Channel 46 and 47 throughout the White Flint North Complex
- TWFN Building O-2 B5
- OWFN Building - O-3 B4
- Executive Boulevard Building - 1B15
- Twinbrook Building - 5E01
- Church Street Building - 2C19
- Gateway Building - 04B2
- Region I\*
- Region II\*
- Region III\*
- Region IV\*
- Technical Training Center\*

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

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



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

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RRRR-141

**From:** [Harrington, Holly](#)  
**To:** [Taylor, Robert](#)  
**Subject:** RE: Text of Blog Post Just Posted -- Verbiage about MSNBC report  
**Date:** Friday, March 18, 2011 4:26:00 PM

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'tis our very own Dave McIntyre

---

**From:** Taylor, Robert  
**Sent:** Friday, March 18, 2011 4:12 PM  
**To:** Harrington, Holly  
**Subject:** RE: Text of Blog Post Just Posted -- Verbiage about MSNBC report

Who is the great poet? Mr. Brenner?

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 4:09 PM  
**To:** Taylor, Robert  
**Subject:** RE: Text of Blog Post Just Posted -- Verbiage about MSNBC report

Alas, I can take no credit for writing this!

---

**From:** Taylor, Robert  
**Sent:** Friday, March 18, 2011 3:30 PM  
**To:** Harrington, Holly  
**Subject:** RE: Text of Blog Post Just Posted -- Verbiage about MSNBC report

You are AMAZING!

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**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:22 PM  
**To:** Taylor, Robert; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Subject:** Text of Blog Post Just Posted -- Verbiage about MSNBC report

Don't Believe Everything You Read

Many news reports during this chaotic week have questioned the safety of U.S. nuclear power plants in the wake of the terrible events in Japan. These reports raise questions about the design of reactor containments and spent fuel pools, and of course whether our plants would be able to withstand an earthquake and tsunami like the ones that devastated Japan.

Nuclear power is a complicated, technical subject, and we naturally try to simplify it to make it understandable to the general public. Sometimes, however, simplification leads to misunderstanding, and misunderstanding causes fear.

One example was a so-called "investigative report" on MSNBC.com that ranked nuclear power plants according to their "vulnerability" to major earthquakes. The reporter concluded that the Indian Point plant, 24 miles north of New York City, was "the most vulnerable" in the nation. Instant headlines. You may have heard a local news report that your neighborhood nuclear plant ranked "on the NRC's Top Ten List" of the plants most likely to tumble in a temblor.

RRR-142

Let's be clear: The NRC does not rank nuclear power plants according to their vulnerability to earthquakes. This "ranking" was developed by the MSNBC.com reporter using partial information and we believe an even more partial understanding of how we evaluate plants for seismic risk. Each plant is evaluated individually according to the geology of its site, not by a "one-size-fits-all" model – therefore such rankings or comparisons are highly misleading.

We are also frequently asked whether Plant A can withstand a quake of magnitude X. The reporters always want a yes-or-no answer, but again, it's not that simple. Nuclear plants are designed to withstand a certain level of "ground shaking," to use a technical term. But the way the ground shakes in an earthquake is a factor of the magnitude and the distance from the epicenter, among other things. So we can't give a simple answer to such a simple question.

Each plant is built to the circumstances that exist at its location – including earthquakes, floods and tsunamis. For example, at nuclear plants along the Atlantic and Gulf Coasts, the greatest water threat is hurricane storm surge, not a tsunami. Moreover, there is only one fault, near the northwest U.S. coast, that is similar to the fault in Japan, and there are no nuclear plants nearby. The closest coastal plant to that fault is well-protected against tsunami.

Over the last few years, the NRC has reassessed nuclear plants in the central and eastern United States for their vulnerability to earthquakes, using new seismic data developed by geologists. The study's preliminary work has shown that a few plants might have stronger ground motions than originally thought, although still within the plants' safety margins. These plants will do more research once more detailed analytical models are available later this year.

This is a complex issue that does not always lend itself to simple yes and no answers. Bottom line: the NRC does not rank plants on seismic risk. Plants in this country continue to operate safely and securely.

Eliot Brenner  
Public Affairs Director

**From:** [McIntyre, David](#)  
**To:** [Harrington, Holly](#); [Brenner, Eliot](#); [Burnell, Scott](#)  
**Subject:** RE: Text of Blog Post Just Posted -- Verbiage about MSNBC report  
**Date:** Friday, March 18, 2011 3:53:30 PM

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Holly – Annie Kammerer, the seismic expert, LOVES this blog post. She would like us to tweak two words: in the sentence about the 1 US fault similar to Japan, she asks if we can insert the one techie word .” ... that is similar to the ‘subduction’ fault in Japan, ...”

And in Scott’s tweak, she warns that “a few plants might have stronger ground motions” will leave us open to trouble, because nearly all of them fit this description. She suggests “some” or “several” instead of “a few”.

Dave

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**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:22 PM  
**To:** Taylor, Robert; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Subject:** Text of Blog Post Just Posted -- Verbiage about MSNBC report

Don’t Believe Everything You Read

Many news reports during this chaotic week have questioned the safety of U.S. nuclear power plants in the wake of the terrible events in Japan. These reports raise questions about the design of reactor containments and spent fuel pools, and of course whether our plants would be able to withstand an earthquake and tsunami like the ones that devastated Japan.

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We are also frequently asked whether Plant A can withstand a quake of magnitude X. The reporters always want a yes-or-no answer, but again, it’s not that simple. Nuclear plants are designed to withstand a certain level of “ground shaking,” to use a technical term. But the way the ground shakes in an earthquake is a factor of the magnitude and the distance from the epicenter, among other things. So we can’t give a simple answer to such a simple

RRR-143

question.

Each plant is built to the circumstances that exist at its location – including earthquakes, floods and tsunamis. For example, at nuclear plants along the Atlantic and Gulf Coasts, the greatest water threat is hurricane storm surge, not a tsunami. Moreover, there is only one fault, near the northwest U.S. coast, that is similar to the fault in Japan, and there are no nuclear plants nearby. The closest coastal plant to that fault is well-protected against tsunami.

Over the last few years, the NRC has reassessed nuclear plants in the central and eastern United States for their vulnerability to earthquakes, using new seismic data developed by geologists. The study's preliminary work has shown that a few plants might have stronger ground motions than originally thought, although still within the plants' safety margins. These plants will do more research once more detailed analytical models are available later this year.

This is a complex issue that does not always lend itself to simple yes and no answers. Bottom line: the NRC does not rank plants on seismic risk. Plants in this country continue to operate safely and securely.

Eliot Brenner  
Public Affairs Director

**From:** [Wood, Chad](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: Press # and email  
**Date:** Friday, March 18, 2011 3:26:24 PM

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You know I would love to, but I have a fork to stick in my eye.

Not real happy about how all this has gone.

---

**From:** prvs=05168de55=Holly.Harrington@nrc.gov [mailto:prvs=05168de55=Holly.Harrington@nrc.gov]  
**On Behalf Of** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:23 PM  
**To:** Wood, Chad  
**Subject:** RE: Press # and email

You're always welcome to come in and work the weekend with us!!

---

**From:** Wood, Chad [mailto:Chad.R.Wood@dhs.gov]  
**Sent:** Friday, March 18, 2011 3:19 PM  
**To:** Harrington, Holly  
**Subject:** RE: Press # and email

Thanks. I think I'm just going to send around the niccl roster to the key folks.

---

**From:** prvs=05168de55=Holly.Harrington@nrc.gov [mailto:prvs=05168de55=Holly.Harrington@nrc.gov]  
**On Behalf Of** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:07 PM  
**To:** Wood, Chad  
**Subject:** RE: Press # and email

We'll be staffing both 301-415-8200 and 301-816-5107 from about 8 a.m. to 7 p.m. both days . . . If you need someone urgently outside those hours call 301-816-5100

---

**From:** Wood, Chad [mailto:Chad.R.Wood@dhs.gov]  
**Sent:** Friday, March 18, 2011 2:55 PM  
**To:** Harrington, Holly  
**Subject:** Press # and email

What contacts do you want me to use particularly for the weekend. Will update for everyone.

RRRR-144

**From:** [Harrington, Holly](#)  
**To:** [Wittick, Susan](#); [Akstulewicz, Brenda](#)  
**Subject:** RE: Talking Points for 8200 phone staff  
**Date:** Friday, March 18, 2011 10:47:00 AM

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I moved bullets and made a few changes. Brenda, can you finalize?

---

**From:** Wittick, Susan  
**Sent:** Friday, March 18, 2011 10:39 AM  
**To:** Akstulewicz, Brenda; Harrington, Holly  
**Cc:** Harrington, Holly  
**Subject:** RE: Talking Points for 8200 phone staff

Brenda, a few notes and updates are attached.  
Susan

---

**From:** Akstulewicz, Brenda  
**Sent:** Friday, March 18, 2011 10:29 AM  
**To:** Harrington, Holly; Wittick, Susan  
**Subject:** Talking Points for 8200 phone staff  
**Importance:** High

Ladies,

Attached for your review.

B

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209  
[brenda.akstulewicz@nrc.gov](mailto:brenda.akstulewicz@nrc.gov)



RRR R-145

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** RE: Half retraction for Salt encrustacion. REPLY: Aren't those rods going to be so salt encrusted that they can't cool  
**Date:** Friday, March 18, 2011 10:49:00 AM

---

ignore

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 10:34 AM  
**To:** Harrington, Holly  
**Subject:** FW: Half retraction for Salt encrustacion. REPLY: Aren't those rods going to be so salt encrusted that they can't cool

Holly:

How do you deal with pen pals? It's one danger of email responses.

**From:** phil [mailto:[phillipmarx@sbcglobal.net](mailto:phillipmarx@sbcglobal.net)]  
**Sent:** Friday, March 18, 2011 8:17 AM  
**To:** Bonaccorso, Amy  
**Subject:** Re: Half retraction for Salt encrustacion. REPLY: Aren't those rods going to be so salt encrusted that they can't cool

Notice that NONE of those reactors would have blown their tops if they had dumped enough common lead and NiCad batteries or better into those in time. NONE.

I heard that there are at least 42 Mark I reactors in America, I think all of them should be checked to see if their containment pressure release valves are safe for high oxygen atmospheres, with no grease or oil in their mechanism or even valve stem, that can incinerate. See Below. Hydrogen is harmless enough to fly Zeppelins for the millions of hours that they did. The only reasons these are exploding is because of the high oxygen levels. Match lighting hydrogen filled balloons is a common classroom physics demonstration of a weak explosion. Note that the exclusively hydrogen filled Zeppelin didn't explode, it just burned.

All of the world's reactors (yours too, and you should raise your tsunami fence and place surge diffusers underwater to divert the direct shocks, if not the surge, a 45' angle is the same as making that wall 1.4 times thicker) should have supplemental reaction quenchers added, with quenching agents that won't evaporate, like the high rise buildings have water tanks on their roofs for fire fighting, so that it can be gravity fed when all power fails. Else, shut them down. My home-built Geiger counter is already ticking maybe 50% faster. Once every 3-4 seconds average. Some early reactors used liquid fluoride salts for coolants, "The ARE went critical for the first time on November 3, 1954 using a mixture of sodium **fluoride**, zirconium **fluoride**, and uranium tetrafluoride. It operated for a total of 100 hours at a maximum temperature of 1600°F " and the zirconium salt probably implies compatibility with the zirconium reactor rods' ceramics, maybe it will plate out on the rods making them stronger, unless it is a solvent for them, but even then, it will still precipitate if it surpasses saturation, and precipitate where concentration would be highest, such as on the hottest surfaces of the rods.... But if it is, maybe it is a solvent for the uranium, meaning the uranium tetrafluoride could be pumped out, anyway, probably not profitable to make reactors that can be made that inexpensively,  
<http://energyfromthorium.com/2006/04/22/a-brief-history-of-the-liquid-fluoride-reactor/>

Half retraction for Salt encrustacion.

R R R R - 146

That particular salt that dominates sea water is sodium chloride which will break down into sodium and chlorine, both exothermically incendiary, sodium especially in contact with water. However, if the salt is a cadmium salt, it might precipitate metallically on the zirconium or salt crust overlay, and prevent it's burning, and be structural enough if eventually thick enough to hold up the pellets in the stack.

Maybe a clay can be included in the water, that will also precipitate on the hottest surfaces first, unless it's coefficients of expansion are so different that it slakes off, but the cadmium will cut down the reaction chain efficiency better than anything else, but a clay that will increase standup strength, without decreasing cooling, not an asbestos. You are going to have to use robots with chisels anyway, to relocate all that material someday, might as well make it as safe as possible to work around. I did radiation total dose testing for Strategic Defense Initiative CMOS circuits, proof testing the Rad Hard designs at a local research reactor, back in the early 90s, and even was shown that I could handle reactor rods with mere gloved hands safely (new ones) and the rad badge didn't budge. Circuits are available now that can enable robots to function in higher radioactivity to prevent the need to Chernobly encrypt it there. If we can move the London Bridge, we can move all that stuff and re-refine it or, re-dilute it safely.

I think a robot should place a lot of perforated cadmium tubing over those plutonium mox rods, many tubes, coaxially concentric, perforated to allow steam cooling, with the holes oriented so that there are no straight lines of sight for radioactivity. Once those are covered, the rest should also be done, most unspent rods first.

Or, better, those rods should be pulled, and relocated on some unsinkable barge(s) until best dispositions resolve. New reactors should be designed for robot access, and old reactors should be retrofitted for robot management. Put some aquariums on wheels in there, and put maybe 4 rods in each and then pull them out of the building, starting with rods that are spaced closest to each other. Japan has a lot of man-like robots, but I doubt they've been built with the rad-hard circuits my company invented.

Silicon clays from sand risk breakdown into Silane, which is extremely flammable. However, silicon carbide isn't, and silicon nitride probably isn't, but any nitrogen it releases might be.

2) Also, you are forming a supersonic hydrogen combustor at the same time you open the pressure release valves, you can probably find a better, more relevant reference, but I found this one in just a few seconds. When you release pressures that high, you can probably burn air into Nox.

<http://deepblue.lib.umich.edu/bitstream/2027.42/76611/1/AIAA-24093-582.pdf>

3) Thus, trying to bleed that Brown's gas mix through non-ignition damping hardware is going to result in drastic, unplanned and hard to explain explosions.

<http://www.google.com/search?hl=en&q=Brown%27s+Gas>

The Insanity of Zirconium in a Nuclear Power Plant

Submitted by BuzzFlash on Wed, 03/16/2011 - 10:21pm.

· Guest Commentary

KARL GROSSMAN FOR BUZZFLASH AT TRUTHOUT

The explosion at the Fukushima nuclear power plant is being described as caused by a "hydrogen build-up" The situation harks back to the "hydrogen bubble" that was feared would explode when the Three Mile Island plant in 1979 underwent a partial meltdown. The hydrogen explosion problem at nuclear power plants involves a story as crazy as can be. As nuts as using nuclear fission to boil water to generate electricity is, the hydrogen problem and its cause cap the lunacy. Eruption of hydrogen gas as a first reaction in a loss-of-coolant accident has been discussed with great worry in U.S. government and nuclear industry literature for decades.

That is because **a highly volatile substance called zirconium** was chosen back in the 1940's and 50's, when plans were first developed to build nuclear power plants, as the material to be used to make the rods into which radioactive fuel would be loaded. There are 30,000 to 40,000 rods-composed of twenty tons of zirconium in an average nuclear power plant. Many other substances were tried, particularly stainless steel, but only zirconium worked well. That's because zirconium, it was found, allows neutrons from the fuel pellets in the rods to pass freely between the rods and thus a nuclear chain reaction to be sustained.

But there's **a huge problem with zirconium - it is highly volatile and when hot will explode spontaneously upon contact with air, water or steam. The only other major commercial use of zirconium through the years has been in flashbulbs used in photography. A speck of it, on a flashbulb, ignites to provide a flash of light.**

But in a nuclear plant, we're not talking about specks, but tons and tons of zirconium, put together as a compound called "zircaloy" that clads tens of thousands of fuel rods. Heat - a great deal of heat - builds up in a very short time with any interruption of coolant flow in a nuclear power plant. This was the problem at Fukushima after the earthquake that struck Japan. Zirconium, with the explosive power, pound for pound, of nitroglycerine, will catch fire and explode at a temperature of 2,000 degrees Fahrenheit, well below the 5,000 degree temperature of a meltdown. Before then, however, zirconium reacts to the heat by drawing oxygen from water and steam and letting off hydrogen, which itself can explode and is said to have done so at Fukushima. As a result of such a hydrogen explosion, there is additional heat, bringing the zirconium itself closer and closer to its explosive level. Whether in addition to being a hydrogen explosion, zirconium also exploded at Fukushima remains to be known. But what has happened regarding hydrogen at Fukushima, like the "hydrogen bubble" when the Three Mile Island plant in Pennsylvania underwent its near partial meltdown, is no mystery, but precisely what is expected in a loss-of-coolant accident.

It is described in U.S. government and nuclear industry accident studies as a "metal-water" reaction. It's a reaction, the research has long stated, that can easily trigger a meltdown. Using tons of a material otherwise used as the speck that explodes in a flashbulb in nuclear power plants is absolutely crazy.

Moreover, in the spent fuel pools usually situated next to nuclear power plants, there are large numbers of additional fuel rods, used ones, disposed of as waste. There must be constant water circulation in the spent fuel pools. In what is labeled a "loss-of-water" accident in a spent fuel pool, the zirconium cladding of the fuel rods is projected as exploding, sending into the environment the lethal nuclear poisons in a spent fuel pool.

\*\*\*

Karl Grossman, professor of journalism at the State University of New York/College at Old Westbury, has long specialized in doing investigative reporting on nuclear technology. He is the author of Cover Up: What You Are Not Supposed to Know About Nuclear Power. He is the host of the nationally aired TV program, Enviro Close-Up (envirovideo.com).

#### NUCLEAR POWER ISN'T THE PROBLEM

Submitted by Skinny Dog on Wed, 03/16/2011 - 11:57pm.

Nuclear power isn't the problem. The problem is the reactors we've been using to make it.

Karl is absolutely right - using zirconium in a reactor is insane. So is using water. And so is using Uranium.

LFTRs (Liquid Fluoride Thorium Reactors) have none of the problems Uranium reactors have. If the reactors in Japan were LFTRs, none of this would be happening. NONE of it. At all. See this article: [http://www.wired.com/magazine/2009/12/ff\\_new\\_nukes/](http://www.wired.com/magazine/2009/12/ff_new_nukes/)

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

**From:** [Bonaccorso, Amy](#)

**To:** [phillipmarx@sbcglobal.net](mailto:phillipmarx@sbcglobal.net)

**Cc:** [Deavers, Ron](#)

**Sent:** Wednesday, March 16, 2011 9:54 AM

**Subject:** REPLY: Aren't those rods going to be so salt encrusted that they can't cool, won't the gas&steam pressure be too high for the cooling pumps ?

Dear Mr. Marx:

We appreciate the suggestions of folks with ideas to resolve the situation in Japan. Please understand that the NRC has some of the most expert people in the world available to assist the Japanese authorities in whatever way they request. We are fully staffed in all our response teams at this time and working 24-hours a day.

Thank you,

Amy

**From:** Brenner, Eliot  
**To:** McIntyre, David; Harrington, Holly  
**Subject:** RE: MSNBC blog post.docx  
**Date:** Friday, March 18, 2011 10:51:40 AM  
**Attachments:** MSNBC blog post-2.docx

---

David ... this may be longer than a standard blog post, but see if you are OK technically and if perhaps you can fill in a paragraph about GS 199.

Eliot

---

**From:** McIntyre, David  
**Sent:** Friday, March 18, 2011 10:24 AM  
**To:** Harrington, Holly; Brenner, Eliot  
**Subject:** MSNBC blog post.docx

Attached is my proposed blog post on the MSNBC.com earthquake rankings. It uses my talking point from yesterday, which was OK'd by Annie Kemmerer, and some points from her Qs&As.

RRRR-147

Many news reports during this chaotic week have questioned the safety of U.S. nuclear power plants in the wake of the terrible events in Japan. These reports raise issues such as reactor designs flaws in reactor containments and spent fuel pools, and of course whether our plants would be able to withstand an earthquake and tsunami like the ones that devastated Japan.

Nuclear power is a complicated, technical subject, and we naturally try to simplify it to make it understandable to the general public. Sometimes, however, simplification leads to misunderstanding, and misunderstanding causes fear.

An ~~egregious~~ example was a so-called "investigative report" on MSNBC.com that ranked nuclear power plants according to their "vulnerability" to major earthquakes. The reporter concluded that the Indian Point plant, 24 miles north of New York City, was "the most vulnerable" in the nation. Instant headlines. You may have heard a local news report that your neighborhood nuclear plant ranked "on the NRC's Top Ten List" of the plants most likely to tumble in a temblor.

Let's be clear: The NRC does not rank nuclear power plants according to their vulnerability to earthquakes. This "ranking" was developed by the MSNBC.com reporter using partial information and we believe an even more partial understanding of how we evaluate plants for seismic risk. Each plant is evaluated individually according to the geology of its site, not by a "one-size-fits-all" model - therefore such rankings or comparisons are highly misleading.

We are also frequently asked whether Plant A can withstand a quake of magnitude X. The reporters always want a yes-or-no answer, but again, it's not that simple. Nuclear plants are designed to withstand a certain level of "ground shaking," to use a technical term. But the way the ground shakes in an earthquake is a factor of the magnitude and the distance from the epicenter. So we can't give a simple answer to such a simple question.

Each plant is built to the circumstances that exist at its location. Similarly, when it comes to flooding or tsunamis, each plant is designed to meet the conditions that could exist at that location. For example, at many plants the greatest water threat is hurricane storm surge, not a tsunami. Moreover, there is only one fault near the northwest u.S. coast that is similar e fault in Japan, and there are no nuclearr plants nearby. The closest coastal plant to that fault is well-protected against tsunami.

This is a complex issue that does not always lend itself to simple yes and no answers. Bottom line: the NRC does not rank plants on seismic risk.

One paragraph about G-191.....summarising what it looked at.

**From:** [Brenner, Eliot](#)  
**To:** [Skolnik, Aaron](#); [Widomski, Michael](#); [Harrington, Holly](#); [Luke, Paul](#)  
**Subject:** RE: broadcast operations conversation  
**Date:** Friday, March 18, 2011 10:52:59 AM

---

How about 1230pm today. My direct number is 301-415-8201

---

**From:** [Skolnik, Aaron](#) [<mailto:aaron.skolnik@dhs.gov>]  
**Sent:** Friday, March 18, 2011 10:26 AM  
**To:** [Widomski, Michael](#); [Harrington, Holly](#); [Luke, Paul](#)  
**Cc:** [Brenner, Eliot](#)  
**Subject:** RE: broadcast operations conversation

Oh, I know... You caught me in the middle of my commute and I was thinking of how much I'd actually like to be working in Rockville. ;)

Eliot: Is there a particular time that's better for you to have this discussion?

---

**From:** [Widomski, Michael](#) [<mailto:michael.widomski@dhs.gov>]  
**Sent:** Friday, March 18, 2011 10:16 AM  
**To:** [Harrington, Holly](#); [Skolnik, Aaron](#); [Widomski, Michael](#); [Luke, Paul](#)  
**Cc:** [Brenner, Eliot](#)  
**Subject:** RE: broadcast operations conversation

Aaron.

Just to be clear I think Eliot just needs to first have a conversation about overall pitfalls he needs to be aware of. If anything, he may just ask that you attend a meeting with him in order to provide guidance. I don't expect a detail...just guidance.

Thanks,  
Michael

---

**From:** prvs=05168de55=Holly.Harrington@nrc.gov on behalf of [Harrington, Holly](#)  
**Sent:** Fri 3/18/2011 10:15 AM  
**To:** [Skolnik, Aaron](#); [Widomski, Michael](#); [Luke, Paul](#)  
**Cc:** [Brenner, Eliot](#)  
**Subject:** RE: broadcast operations conversation

This is Eliot's deal. If he needs help, I assume he'll respond directly or ask Michael to do so . . . would be great to see either of your smiling faces!

---

**From:** [Skolnik, Aaron](#) [<mailto:aaron.skolnik@dhs.gov>]  
**Sent:** Friday, March 18, 2011 7:12 AM  
**To:** [Widomski, Michael](#); [Luke, Paul](#)  
**Cc:** [Harrington, Holly](#); [Brenner, Eliot](#)  
**Subject:** Re: broadcast operations conversation

Will call this morning. Would certainly love a short detail to Rockville. Nice short commute. And an excuse to hang out with Holly again. :)

RRRR-148

-----  
Aaron Skolnik (Wireless E-mail)

---

**From:** Widomski, Michael  
**To:** Luke, Paul; Skolnik, Aaron  
**Cc:** 'Holly.Harrington@nrc.gov' <Holly.Harrington@nrc.gov>; 'eliot.brenner@nrc.gov' <eliot.brenner@nrc.gov>  
**Sent:** Thu Mar 17 19:17:21 2011  
**Subject:** Re: broadcast operations conversation

Resending with Eliot's correct email.

-----  
Sent from my BlackBerry Wireless Handheld

---

**From:** Widomski, Michael  
**To:** Luke, Paul; Skolnik, Aaron  
**Cc:** eliot.brenner@nrc.gov <eliot.brenner@nrc.gov>; Holly.Harrington@nrc.gov <Holly.Harrington@nrc.gov>  
**Sent:** Thu Mar 17 18:35:34 2011  
**Subject:** broadcast operations conversation

Aaron and/or Paul,

Could one of you please reach out to NRC's Director of Public Affairs Elliot Brenner in the next day or so? I told him that I thought one of you could offer him some of your expert knowledge about specifications that need to be considered when building out a press briefing center. NRC is looking into taking the steps in this direction and he could use some advice in providing information on some of the pitfalls to avoid. He may even ask you to attend a meeting up in Rockville next Tuesday, but I thought it made sense if you had a conversation first.

You can reach him by calling the main Public Affairs number (301-415-8200) and tell who ever answers that you are calling from FEMA's Broadcast Operations section. Elliot knows that you will be calling...but of course please understand that he is a very busy man these days.

I greatly appreciate your assistance.

Michael

Michael Widomski  
Deputy Director of Public Affairs  
FEMA  
202-744-1052

**From:** [Harrington, Holly](#)  
**To:** [Akstulewicz, Brenda](#)  
**Subject:** RE: Talking Points for 8200 phone staff  
**Date:** Friday, March 18, 2011 10:53:00 AM  
**Attachments:** 03-21-2011 EDOBriefingtoCommisisonSVWedit.docx

---

That would help

---

**From:** Akstulewicz, Brenda  
**Sent:** Friday, March 18, 2011 10:51 AM  
**To:** Harrington, Holly  
**Subject:** RE: Talking Points for 8200 phone staff

Hey Holly – I need the document to finalize, please!! ☺

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 10:47 AM  
**To:** Wittick, Susan; Akstulewicz, Brenda  
**Subject:** RE: Talking Points for 8200 phone staff

I moved bullets and made a few changes. Brenda, can you finalize?

---

**From:** Wittick, Susan  
**Sent:** Friday, March 18, 2011 10:39 AM  
**To:** Akstulewicz, Brenda; Harrington, Holly  
**Cc:** Harrington, Holly  
**Subject:** RE: Talking Points for 8200 phone staff

Brenda, a few notes and updates are attached.  
Susan

---

**From:** Akstulewicz, Brenda  
**Sent:** Friday, March 18, 2011 10:29 AM  
**To:** Harrington, Holly; Wittick, Susan  
**Subject:** Talking Points for 8200 phone staff  
**Importance:** High

Ladies,

Attached for your review.

B

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209

RRRR-149

*brenda.akstulewicz@nrc.gov*



**INFORMATION  
ON COMMISSION MEETING  
MONDAY, MARCH 21, 2011  
COMMISSION BRIEFING ROOM  
OWFN**

The EDO will be briefing the Commission on the events in Japan at a PUBLIC meeting. Calls on this meeting are being directed to 301-415-8200. You may respond to inquiries with the following:

- Monday, March 21, 2011
  - 9am –11am with the possibility of it ending earlier, but it will go no later than 11 am. ~~end promptly at 11am~~
  - Commission ~~hearing~~ Conference room (to be consistent with public notice)
    - One White Flint North
    - 11555 Rockville Pike
    - Rockville, MD
  - Overflow will be directed to the TWFN auditorium
- This is NOT a question/answer session, it is an invitation to be present when the EDO briefs the Commission
- There is a Closed Commission Meeting directly following Open Meeting, so Chairman and Commissioners will not be available for questions or interviews.
- Public is welcome
  - Must have photo ID to gain entrance
- Print Media is welcome
  - Must have photo ID to gain entrance
  - ~~NO Cameras~~
- Cameras
  - There is going to be a video camera pool
    - CBS has video
    - No pool for stills (will get more info on this at 11:30 mtg) cameras are allowed
- Parking
  - Encourage people to take Metro
  - There is NO on-site parking
  - Parking is available at the Metro garage on Marinelli Rd.
- This meeting will be webcast direct them to:
  - [www.nrc.gov](http://www.nrc.gov)
  - Public Involvement and Meetings Tab (far right at top of page)
  - Click on Public Meeting Schedule
  - Locate meeting by

- Date/time
- Purpose
  - Click on [webcast]

**From:** Skolnik, Aaron  
**To:** Brenner, Eliot; Widomski, Michael; Harrington, Holly; Luke, Paul  
**Subject:** RE: broadcast operations conversation  
**Date:** Friday, March 18, 2011 10:53:29 AM

---

No problem. Will call then.

---

**From:** prvs=0513691ca=Eliot.Brenner@nrc.gov [mailto:prvs=0513691ca=Eliot.Brenner@nrc.gov] **On Behalf Of** Brenner, Eliot  
**Sent:** Friday, March 18, 2011 10:53 AM  
**To:** Skolnik, Aaron; Widomski, Michael; Harrington, Holly; Luke, Paul  
**Subject:** RE: broadcast operations conversation

How about 1230pm today. My direct number is 301-415-8201

---

**From:** Skolnik, Aaron [mailto:aaron.skolnik@dhs.gov]  
**Sent:** Friday, March 18, 2011 10:26 AM  
**To:** Widomski, Michael; Harrington, Holly; Luke, Paul  
**Cc:** Brenner, Eliot  
**Subject:** RE: broadcast operations conversation

Oh, I know... You caught me in the middle of my commute and I was thinking of how much I'd actually like to be working in Rockville. ;)

Eliot: Is there a particular time that's better for you to have this discussion?

---

**From:** Widomski, Michael [mailto:michael.widomski@dhs.gov]  
**Sent:** Friday, March 18, 2011 10:16 AM  
**To:** Harrington, Holly; Skolnik, Aaron; Widomski, Michael; Luke, Paul  
**Cc:** Brenner, Eliot  
**Subject:** RE: broadcast operations conversation

Aaron.

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Thanks,  
Michael

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**From:** prvs=05168de55=Holly.Harrington@nrc.gov on behalf of Harrington, Holly  
**Sent:** Fri 3/18/2011 10:15 AM  
**To:** Skolnik, Aaron; Widomski, Michael; Luke, Paul  
**Cc:** Brenner, Eliot  
**Subject:** RE: broadcast operations conversation

This is Eliot's deal. If he needs help, I assume he'll respond directly or ask Michael to do so . . . would be great to see either of your smiling faces!

R R R R - 150

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**From:** Skolnik, Aaron [mailto:aaron.skolnik@dhs.gov]  
**Sent:** Friday, March 18, 2011 7:12 AM  
**To:** Widomski, Michael; Luke, Paul  
**Cc:** Harrington, Holly; Brenner, Eliot  
**Subject:** Re: broadcast operations conversation

Will call this morning. Would certainly love a short detail to Rockville. Nice short commute. And an excuse to hang out with Holly again. :)

-----  
Aaron Skolnik (Wireless E-mail)

---

**From:** Widomski, Michael  
**To:** Luke, Paul; Skolnik, Aaron  
**Cc:** 'Holly.Harrington@nrc.gov' <Holly.Harrington@nrc.gov>; 'eliot.brenner@nrc.gov' <eliot.brenner@nrc.gov>  
**Sent:** Thu Mar 17 19:17:21 2011  
**Subject:** Re: broadcast operations conversation

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-----  
Sent from my BlackBerry Wireless Handheld

---

**From:** Widomski, Michael  
**To:** Luke, Paul; Skolnik, Aaron  
**Cc:** eliot.brenner@nrc.gov <eliot.brenner@nrc.gov>; Holly.Harrington@nrc.gov <Holly.Harrington@nrc.gov>  
**Sent:** Thu Mar 17 18:35:34 2011  
**Subject:** broadcast operations conversation

Aaron and/or Paul,

Could one of you please reach out to NRC's Director of Public Affairs Elliot Brenner in the next day or so? I told him that I thought one of you could offer him some of your expert knowledge about specifications that need to be considered when building out a press briefing center. NRC is looking into taking the steps in this direction and he could use some advice in providing information on some of the pitfalls to avoid. He may even ask you to attend a meeting up in Rockville next Tuesday, but I thought it made sense if you had a conversation first.

You can reach him by calling the main Public Affairs number (301-415-8200) and tell who ever answers that you are calling from FEMA's Broadcast Operations section. Elliot knows that you will be calling...but of course please understand that he is a very busy man these days.

I greatly appreciate your assistance.

Michael

Michael Widomski  
Deputy Director of Public Affairs  
FEMA  
202-744-1052

**From:** [Harrington, Holly](#)  
**To:** [Widomski, Michael](#)  
**Subject:** RE: i will be on the HHS Call at 11:00  
**Date:** Friday, March 18, 2011 10:54:00 AM

---

ok

---

**From:** Widomski, Michael [<mailto:michael.widomski@dhs.gov>]  
**Sent:** Friday, March 18, 2011 10:54 AM  
**To:** Harrington, Holly  
**Subject:** i will be on the HHS Call at 11:00

RRRR-151

**From:** [Janbergs, Holly](#)  
**To:** [Harrington, Holly](#)  
**Subject:** FW: Fukushima Calculations  
**Date:** Friday, March 18, 2011 10:58:38 AM  
**Importance:** High

---

Is there any information I can give him behind the calculations we attached to the latest press release? Attachments say it was determined by the Protective Measures Team in the Ops Cr, but I don't want to bother them if unnecessary.

---

**From:** Shawn Googins [mailto:[sgoogins@googins.org](mailto:sgoogins@googins.org)]  
**Sent:** Friday, March 18, 2011 10:02 AM  
**To:** Janbergs, Holly  
**Subject:** RE: Fukushima Calculations  
**Importance:** High

Holly,

Thank you I already have these documents. I want to know the model/modeling software used (what is the program they used for the dispersion modeling) and the SOURCE TERM that was used in the calculations. The two documents that I already have DO NOT have the assumptions and the source terms (how many curies, which radionuclides, etc.)

Please pass this along to technical staff at the NRC thanks.

Shawn

----- Original Message -----  
Subject: Re: Fukushima Calculations  
From: "Janbergs, Holly" <[Holly.Janbergs@nrc.gov](mailto:Holly.Janbergs@nrc.gov)>  
Date: Fri, March 18, 2011 9:29 am  
To: "[sgoogins@googins.org](mailto:sgoogins@googins.org)" <[sgoogins@googins.org](mailto:sgoogins@googins.org)>

Mr. Googins,

You can find calculations for the NRC's recommendations regarding the evacuation zone around Fukushima attached to this press release here, available on our public website:

<http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-050.pdf>

The direct link to the calculations is here:

[http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-050\\_Attchmt.pdf](http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-050_Attchmt.pdf)

I hope this answers your questions.

Thank you,  
Bethany

Beth Janbergs  
Public Affairs Assistant  
301-415-8211

RRRR-152

**From:** [Harrington, Holly](#)  
**To:** [WebContractor Resource](#)  
**Subject:** RE: Transcript - NRC - Jaczko  
**Date:** Friday, March 18, 2011 10:55:00 AM

---

## Chairman Gregory Jaczko March 16 Congressional Testimony

---

**From:** WebContractor Resource  
**Sent:** Friday, March 18, 2011 10:52 AM  
**To:** Harrington, Holly  
**Subject:** RE: Transcript - NRC - Jaczko

Hi,

Can you provide the text for the Highlight?.....

Thank You,  
*David*  
Web Team

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 10:41 AM  
**To:** WebContractor Resource; WebWork Resource; Hardy, Sally  
**Cc:** Janbergs, Holly  
**Subject:** FW: Transcript - NRC - Jaczko

Please post asap as a highlight. Let me know when it's up.

Bethany – then we'll add the link to the photo

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 6:31 PM  
**To:** Harrington, Holly  
**Subject:** FW: Transcript - NRC - Jaczko

Please post tomorrow, and do a short blog post from me...perhaps pegged off the POTUS comment.

Thanks.

eliot

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 5:38 PM  
**To:** Batkin, Joshua; Schmidt, Rebecca; Powell, Amy; Loyd, Susan  
**Subject:** FW: Transcript - NRC - Jaczko

Transcript from yesterday on the house side.

---

RRRR-153

**From:** Jordan White [mailto:Jordan.White@fednews.com]  
**Sent:** Thursday, March 17, 2011 3:03 PM  
**To:** Shannon, Valerie; Brenner, Eliot  
**Subject:** Transcript - NRC - Jaczko

Hi Valerie,

Please find attached the transcript of the Jaczko panel. If you have any difficulties with the attachment or any further questions, do not hesitate to contact us. We look forward to hearing from you.

With no objections, this will also appear on our newswire.

Thanks!

*Jordan D. White,  
Director, Transcription Services,  
Federal News Service  
202-216-2707  
1000 Vermont Ave., NW, Ste. 500  
Washington, D.C., 20005  
<http://www.fednews.com>*

**From:** [WebContractor Resource](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: Transcript - NRC - Jaczko  
**Date:** Friday, March 18, 2011 11:01:15 AM

---

Hi Holly,

Highlight is posted:  
<http://148.184.174.31/>

Can we do the photo caption now? Also, should this transcript go on one of Chairman Jaczko's pages?.....Speeches and Testimony or Meetings and Events?

Thank You,  
*David*  
Web Team

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 10:41 AM  
**To:** WebContractor Resource; WebWork Resource; Hardy, Sally  
**Cc:** Janbergs, Holly  
**Subject:** FW: Transcript - NRC - Jaczko

Please post asap as a highlight. Let me know when it's up.

Bethany – then we'll add the link to the photo

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 6:31 PM  
**To:** Harrington, Holly  
**Subject:** FW: Transcript - NRC - Jaczko

Please post tomorrow, and do a short blog post from me...perhaps pegged off the POTUS comment.

Thanks.

eliot

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 5:38 PM  
**To:** Batkin, Joshua; Schmidt, Rebecca; Powell, Amy; Loyd, Susan  
**Subject:** FW: Transcript - NRC - Jaczko

Transcript from yesterday on the house side.

---

**From:** Jordan White [mailto:Jordan.White@fednews.com]  
**Sent:** Thursday, March 17, 2011 3:03 PM  
**To:** Shannon, Valerie; Brenner, Eliot  
**Subject:** Transcript - NRC - Jaczko

RRRR-154

Hi Valerie,

Please find attached the transcript of the Jaczko panel. If you have any difficulties with the attachment or any further questions, do not hesitate to contact us. We look forward to hearing from you.

With no objections, this will also appear on our newswire.

Thanks!

*Jordan D. White,  
Director, Transcription Services,  
Federal News Service  
202-216-2707  
1000 Vermont Ave., NW, Ste. 500  
Washington, D.C., 20005  
<http://www.fednews.com>*

**From:** [Harrington, Holly](#)  
**To:** [McIntyre, David](#)  
**Subject:** RE: FEMA EPZ Fact Sheet  
**Date:** Friday, March 18, 2011 11:03:00 AM

---

I'll distribute

---

**From:** McIntyre, David  
**Sent:** Friday, March 18, 2011 10:57 AM  
**To:** Harrington, Holly  
**Subject:** RE: FEMA EPZ Fact Sheet

NSIR apparently vetted it, according to the FEMA liaison, and is ok to distribute or post.

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 10:23 AM  
**To:** McIntyre, David  
**Subject:** RE: FEMA EPZ Fact Sheet

If NSIR people like it, should we post? Or use as talking points?

---

**From:** McIntyre, David  
**Sent:** Friday, March 18, 2011 10:22 AM  
**To:** Harrington, Holly; Widomski, Michael; Brenner, Eliot; Burnell, Scott; Sheehan, Neil; Screnci, Diane; Couret, Ivonne; Hayden, Elizabeth  
**Subject:** FW: FEMA EPZ Fact Sheet

Those nice Public Affairs folks over at FEMA (I've heard good things about them!) have prepared the attached fact sheet on EPZs.

---

**From:** OST05 Hoc  
**Sent:** Friday, March 18, 2011 10:20 AM  
**To:** McIntyre, David; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tift, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Pederson, Cynthia; Satorius, Mark; Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Subject:** FEMA EPZ Fact Sheet

FYI –

Attached is a FEMA-generated fact sheet on EPZs that can be used for immediate use.

Kim Lukes  
State Liaison – Liaison Team  
Incident Response Center

RRRR-155

**From:** [Harrington, Holly](#)  
**To:** [Brenner, Eliot](#); [Burnell, Scott](#); [Couret, Ivonne](#); [Hayden, Elizabeth](#); [McIntyre, David](#); [Chandrathil, Prema](#); [Dricks, Victor](#); [Hannah, Roger](#); [Ledford, Joey](#); [Mitlyng, Viktoria](#); [Screnci, Diane](#); [Sheehan, Neil](#); [Uselding, Lara](#)  
**Subject:** FW: FEMA EPZ Fact Sheet  
**Date:** Friday, March 18, 2011 11:04:00 AM  
**Attachments:** [Emergency Planning Zones.pdf](#)

---

This are blessed by NSIR to use . . .

---

**From:** McIntyre, David  
**Sent:** Friday, March 18, 2011 10:22 AM  
**To:** Harrington, Holly; Widomski, Michael; Brenner, Eliot; Burnell, Scott; Sheehan, Neil; Screnci, Diane; Couret, Ivonne; Hayden, Elizabeth  
**Subject:** FW: FEMA EPZ Fact Sheet

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**To:** McIntyre, David; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Herral; Maier, Bill; McNamara, Nancy; Tiff, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Pederson, Cynthia; Satorius, Mark; Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Subject:** FEMA EPZ Fact Sheet

FYI –

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Kim Lukes  
State Liaison – Liaison Team  
Incident Response Center

## **EMERGENCY PLANNING ZONES**

### **EPZs in Brief**

Federal Emergency Management Agency (FEMA) and Nuclear Regulatory Commission (NRC) emergency preparedness planning guidance provides for two emergency planning zones (EPZs) for U.S. commercial nuclear power plants (NPPs):

- **Plume** Exposure Pathway (apx. 10 Miles in radius)
  - Designed to safeguard the population most at risk from **direct exposure** to radiation levels in excess of Environmental Protection Agency Protective Action Guidelines (PAGs)
- **Ingestion** Exposure Pathway (apx. 50 Miles in radius)
  - **Designed to protect** the public from **secondary exposure** to radiation through the food chain or public water supplies

The planning zones are intended to be scalable over time to account for changing conditions that could possibly extend outside the initial EPZ.

Specifically, NUREG-0654/FEMA-REP-1 states: "In a particular emergency, protective actions might well be restricted to a small part of the planning zone. On the other hand, for the worst possible accidents, protective actions would need to be taken outside the planning zones" (I.D., p.11) **i.e., the EPZs are the base areas requiring emergency planning – they are designed to be expanded (beyond the base of 10, 50 miles), as necessary, during emergencies.**

**Note:** The 10 & 50 mile EPZs are the Federally required minimum. FEMA and NRC regulations state that the exact size and shape of the EPZs shall be determined by the State and local governments – in consultation with FEMA and the NRC, taking into account such local conditions as demography, topography, land characteristics, access routes and local jurisdiction boundaries.(44 CFR § 350.7).

### **EPZ Evacuations**

FEMA affirms that evacuation of the public is the preferred initial protective action in the event of a severe (core damage) emergency occurring (or likely to occur) at NPPs. Federal requirements for NPPs include the establishment of EPZs at 10 and 50-mile distances surrounding the site that detail evacuation routes. Evacuation planning includes the development and incorporation of periodic evacuation time estimate studies to inform evacuation strategies such that prompt and effective actions can be taken by offsite response organizations to protect the public in the event of a radiological emergency. This includes accounting for both permanent and transient populations, persons with disabilities and access/functional needs, those whose mobility may be impaired because of institutional or other confinement as well as provisions for the monitoring, decontamination and congregate care of evacuees, as necessary.

Where immediate evacuation of an affected population within the EPZ is not practical due to impediments (e.g., debris blocking evacuation routes, severe weather, etc.) or where evacuation could pose a greater potential health risk, temporary sheltering-in-place of the public is the preferred protective action. State, Tribal and local evacuation plans and

procedures for NPP communities are reviewed and approved by FEMA. While actual evacuations of the public are not required in biennial FEMA evaluations, appropriate demonstrations by State, Tribal and local response agencies to direct and control a public evacuation is assessed.

**EPZs in Detail**

The Emergency Planning Zone (EPZ) is the area surrounding an commercial nuclear power plant (NPP) for which plans/procedures have been made to ensure that prompt and effective actions are taken to protect the health and safety of the public in case of an incident at the NPP. The Federal Emergency Management Agency (FEMA) recognizes two types of EPZs for planning purposes: the plume exposure pathway EPZ and the ingestion exposure pathway EPZ. The characteristics of these two types of EPZs are summarized in Exhibit I. Each EPZ is a roughly circular area, with the NPP at the center.

The EPZs sizes represent a technical judgment based on the type and quantity of hazardous materials present (source term) and the potential risks where detailed planning is needed to ensure adequate response to an emergency. An EPZ may include more than one State. "Split" jurisdictions (i.e., part of the jurisdiction is included in the EPZ and part is not) also exist. In these cases, EPZ boundaries are determined based on consultation with all parties involved, including OROs, FEMA, and the NRC. In some cases, a conservative option is taken and the entire jurisdiction is included in the EPZ.

**Exhibit I: Plume and Ingestion EPZ Characteristics**

Type of EPZ	Exposure Sources	Size
<b>Plume Exposure Pathway</b>	<ul style="list-style-type: none"> <li>• Whole-body external exposure to gamma radiation from the passing plume and from deposited material</li> <li>• Thyroid exposure through inhalation from the passing plume</li> <li>• Committed effective dose equivalent exposure to other critical organs through inhalation</li> </ul>	Approximately 10-mile radius
<b>Ingestion Exposure Pathway</b>	<ul style="list-style-type: none"> <li>• Ingestion of contaminated water or foods, such as milk, fresh vegetables, and aquatic foodstuffs, may result in increased risk of radiation-induced cancer to the thyroid, bone marrow, and other organs</li> </ul>	Approximately 50-mile radius

The size of the **plume exposure pathway** EPZ, about 10 miles in radius, is based on the following considerations from NUREG-0654/FEMA-REP-1:

- Projected doses from traditional design-basis accidents/incidents would not exceed the Environmental Protection Agency Protective Action Guideline (PAG) levels outside the zone;
- Projected doses from most core damage sequences would not exceed PAG levels outside the zone;
- For the worst-case core damage sequences, immediate life-threatening doses would generally not occur outside the zone; and

- **Detailed planning within approximately 10 miles would provide a substantial base for expansion of response efforts to a larger area, if necessary.**

The size of the **ingestion exposure pathway** EPZ, about 50 miles in radius, including the 10-mile radius plume exposure pathway EPZ, is based on the following considerations:

- The downwind range within which contamination may potentially exceed the PAGs is limited to about 50 miles from an NPP because of wind shifts during the release and travel periods;
- Atmospheric iodine (i.e., iodine suspended in the atmosphere for long periods) may be converted to chemical forms that do not readily enter the ingestion pathway; and
- Much of the particulate material in a radioactive plume would have been deposited on the ground within about 50 miles from the NPP.

The likelihood of exceeding ingestion exposure pathway PAG levels at 50 miles is comparable to the likelihood of exceeding plume exposure pathway PAG levels at 10 miles.

## David Decker

---

**From:** LIA07 Hoc  
**Sent:** Monday, March 14, 2011 6:16 AM  
**To:** LIA07 Hoc; Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffrey; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tiff, Doug; Timothy Greten; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena; Schmidt, Rebecca; Powell, Amy; Loyd, Susan; Coggins, Angela; Batkin, Joshua; taskforce-1@state.gov; NOC; Charles Donnell  
**Cc:** LIA09 Hoc; LIA11 Hoc  
**Subject:** RE: 0600 EDT (March 14, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031411.0600EDT.docx

Attached, please find a 0600 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 14, 2011. This Update includes information on the Japanese request for US Assistance in cooling Fukushima Daiichi Units 1, 2, and 3.

~~Please note that this information is "Official Use Only" and is only being shared within the federal family.~~

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Jim

Jim Anderson  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[james.anderson@nrc.gov](mailto:james.anderson@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

KRR-156

## David Decker

---

**From:** Dacus, Eugene  
**Sent:** Monday, March 14, 2011 6:10 AM  
**To:** Dacus, Eugene; Schmidt, Rebecca; Riley (OCA), Timothy; Powell, Amy; Decker, David; Droggitis, Spiros; Weil, Jenny; Shane, Raeann  
**Subject:** Japan Asked U.S. for help

Jim Trapp is on the phone now with the ET and stated that Japan has formally asked for U.S. help (technical help in cooling the core). He said Japan also requested help from DoD (probably US Forces Japan) for airlift and disaster help. He said he expects there will be a call from the Japanese ambassador in a couple of hours to the NRC. The bad news is the reactors have been jacked up now for about 18-hours and it may be too late. Nonetheless, we're marshalling our efforts.

---

**From:** Dacus, Eugene  
**Sent:** Monday, March 14, 2011 2:58 AM  
**To:** Dacus, Eugene; Schmidt, Rebecca; Riley (OCA), Timothy; Powell, Amy; Decker, David; Droggitis, Spiros; Weil, Jenny; Shane, Raeann  
**Subject:** RE: Situation Very Grave

More clarity. The NRC's other man on the ground in Japan reported that the ability to cool the units has been degraded/lost for the last 12-hours. Currently, all cores remain covered, but all levels are trending downward. Unless the ability is restored soon, the situation could turn into "real bad" really fast.

---

**From:** Dacus, Eugene  
**Sent:** Monday, March 14, 2011 2:12 AM  
**To:** Schmidt, Rebecca; Riley (OCA), Timothy; Powell, Amy; Decker, David; Droggitis, Spiros; Weil, Jenny; Shane, Raeann  
**Subject:** Situation Very Grave

Jim Trapp, one of the NRC staff sent to Japan, just sent an e-mail stating "all three units have lost coolant and that the situation is very grave". I will keep you posted.

*REAR-157*

## David Decker

---

**From:** LIA07 Hoc  
**Sent:** Monday, March 14, 2011 4:48 AM  
**To:** LIA07 Hoc; Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffrey; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tiff, Doug; Timothy Greten; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena; Schmidt, Rebecca; Powell, Amy; Loyd, Susan; Coggins, Angela; Batkin, Joshua; taskforce-1@state.gov; NOC; Charles Donnell  
**Cc:** LIA09 Hoc; LIA11 Hoc  
**Subject:** RE: 0430 EDT (March 14, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031411.0430EDT.docx

Attached, please find a 0430 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 13, 2011. This Update includes information on the status of Fukushima Daiichi, Fukushima Daini, Onagawa, and the US Navy.

~~Please note that this information is "Official Use Only" and is only being shared within the federal family.~~

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Jim

Jim Anderson  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[james.anderson@nrc.gov](mailto:james.anderson@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

RRRR-158

**From:** [Harrington, Holly](#)  
**To:** [Wittick, Susan](#)  
**Subject:** RE: Q&A for MONDAY'S COMM BRIEF  
**Date:** Friday, March 18, 2011 11:08:00 AM

---

This is fine, as far as it goes. It does not talk about the challenge of other agencies not being forthcoming with information and forcing states to look for us for information that is not in our mission or area of responsibility, such as plume mapping, ocean currents and health questions. This appears to be changing, however, with DOE, HHS and EPA working together to provide such information.

---

**From:** Wittick, Susan  
**Sent:** Friday, March 18, 2011 10:26 AM  
**To:** Harrington, Holly  
**Subject:** FW: Q&A for MONDAY'S COMM BRIEF

Holly, can you review and approve for OPA?  
Thanks,  
Susan

---

**From:** Deegan, George  
**Sent:** Friday, March 18, 2011 9:28 AM  
**To:** Wittick, Susan  
**Cc:** Piccone, Josephine; Jackson, Deborah; Rivera, Alison; Virgilio, Rosetta; Turtill, Richard; Noonan, Amanda; Miller, Charles; Moore, Scott; Camper, Larry  
**Subject:** Q&A for MONDAY'S COMM BRIEF

Susan-

Our staff has provided me the attached information that we thought could be provided as a question/answer in support of Monday's Commission briefing. Since it relates to communications with the States, I wanted to make sure OPA was comfortable with it before I provide it to Allen Howe and his team. I added an item in the third paragraph --- emergency planning zones---but otherwise this is the same as what I sent you at 8:42 a.m.. If you'd like to make changes, please send them to me and I'll coordinate within FSME. Thanks.

RRR 759

**From:** [Harrington, Holly](#)  
**To:** [McIntyre, David](#)  
**Subject:** RE: FEMA EPZ Fact Sheet  
**Date:** Friday, March 18, 2011 11:09:00 AM

---

I sent around for us to talk from. A bit nervous about posting since we already have something up . . . I'm not sure we should at this point . . . Am willing to be talking into it, though.

---

**From:** McIntyre, David  
**Sent:** Friday, March 18, 2011 10:26 AM  
**To:** Harrington, Holly  
**Subject:** RE: FEMA EPZ Fact Sheet

Are we OK posting another agency's piece? I don't see why not, though of course we should credit it. Gives added legitimacy in my eyes. And they back up what we were saying yesterday about expanding the EPZ if circumstances warrant.

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 10:23 AM  
**To:** McIntyre, David  
**Subject:** RE: FEMA EPZ Fact Sheet

If NsIR people like it, should we post? Or use as talking points?

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**Sent:** Friday, March 18, 2011 10:22 AM  
**To:** Harrington, Holly; Widomski, Michael; Brenner, Eliot; Burnell, Scott; Sheehan, Neil; Screnci, Diane; Couret, Ivonne; Hayden, Elizabeth  
**Subject:** FW: FEMA EPZ Fact Sheet

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**Subject:** FEMA EPZ Fact Sheet

FYI –

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Kim Lukes  
State Liaison – Liaison Team  
Incident Response Center

RRRR-160

**From:** [Harrington, Holly](#)  
**To:** [WebContractor Resource](#)  
**Subject:** RE: Transcript - NRC - Jaczko  
**Date:** Friday, March 18, 2011 11:11:00 AM

---

Yes, please add to Speeches and Testimony, and yes, add link to existing caption.

**From:** WebContractor Resource  
**Sent:** Friday, March 18, 2011 11:01 AM  
**To:** Harrington, Holly  
**Subject:** RE: Transcript - NRC - Jaczko

Hi Holly,

Highlight is posted:  
<http://148.184.174.31/>

Can we do the photo caption now? Also, should this transcript go on one of Chairman Jaczko's pages?.....Speeches and Testimony or Meetings and Events?

Thank You,  
*David*  
Web Team

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 10:41 AM  
**To:** WebContractor Resource; WebWork Resource; Hardy, Sally  
**Cc:** Janbergs, Holly  
**Subject:** FW: Transcript - NRC - Jaczko

Please post asap as a highlight. Let me know when it's up.

Bethany – then we'll add the link to the photo

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 6:31 PM  
**To:** Harrington, Holly  
**Subject:** FW: Transcript - NRC - Jaczko

Please post tomorrow, and do a short blog post from me...perhaps pegged off the POTUS comment.

Thanks.

eliot

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 5:38 PM  
**To:** Batkin, Joshua; Schmidt, Rebecca; Powell, Amy; Loyd, Susan  
**Subject:** FW: Transcript - NRC - Jaczko

RRRR-161

Transcript from yesterday on the house side.

**From:** Jordan White [mailto:Jordan.White@fednews.com]  
**Sent:** Thursday, March 17, 2011 3:03 PM  
**To:** Shannon, Valerie; Brenner, Eliot  
**Subject:** Transcript - NRC - Jaczko

Hi Valerie,

Please find attached the transcript of the Jaczko panel. If you have any difficulties with the attachment or any further questions, do not hesitate to contact us. We look forward to hearing from you.

With no objections, this will also appear on our newswire.

Thanks!

*Jordan D. White,  
Director, Transcription Services,  
Federal News Service  
202-216-2707  
1000 Vermont Ave., NW, Ste. 500  
Washington, D.C., 20005  
<http://www.fednews.com>*

**From:** [Widomski, Michael](#)  
**To:** [Taylor, Robert](#); [McIntyre, David](#); [Harrington, Holly](#)  
**Subject:** Fw: NICCL update: Fact Sheets and TPs  
**Date:** Friday, March 18, 2011 11:11:22 AM  
**Attachments:** [FDA.doc](#)  
[DHS FEMA family preparedness and the natl response framework.docx](#)  
[CBP USPS.docx](#)  
[EPA monitoring.docx](#)  
[HHS KI.docx](#)  
[Domestic Response to Japan TPs v2.docx](#)  
[NICCL call summary 3-18-11 10 am.docx](#)  
[USCG Fact Sheet.doc](#)

---

Good stuff.

-----  
Sent from my BlackBerry Wireless Handheld

---

**From:** NATIONAL JIC <[NationalJIC@dhs.gov](mailto:NationalJIC@dhs.gov)>  
**To:** NATIONAL JIC  
**Sent:** Fri Mar 18 11:06:13 2011  
**Subject:** NICCL update: Fact Sheets and TPs

Per today's NICCL call attached are approved fact sheets, Domestic Talking Points, and NICCL call summary. Below is a link to a helpful radiation chart developed by EPA.

<http://www.epa.gov/radiation/understand/perspective.html>

RRRR-162

**Hyperlink: Questions about food safety**

**Hyperlink: Questions about medical products**

### **What is FDA doing to assess the situation in Japan?**

Based on current information, there is no risk to the U.S. food supply. FDA is closely monitoring the situation in Japan and is working with the Japanese government and other U.S. agencies to continue to ensure that imported food remains safe. FDA already has a very robust screening process for imports and has staff in place at the ports to monitor incoming products. We do not have concerns with the safety of imported food products that have already reached the U.S. and that are in distribution. As part of our investigation, we are collecting information on all FDA regulated food products exported to the U.S. from Japan, including where they are grown, harvested, or manufactured, so we can further evaluate whether, in the future, they may pose a risk to consumers in the U.S. As FDA assesses whether there is a potential health risk associated with FDA-regulated food products imported from Japan, we will develop a monitoring strategy that may include increased and targeted product sampling at the border.

### **What systems does FDA have in place to protect the US food supply?**

The U.S. enjoys one of the world's safest food supplies. FDA has systems in place to help assure that our food supply is wholesome, safe to eat, and produced under sanitary conditions.

FDA has a team of more than 900 investigators and 450 analysts in the Foods program who conduct inspections and collect and analyze product samples. FDA oversees the importation of the full range of regulated products, including food and animal feed, among other responsibilities.

Altogether, FDA electronically screens all import entries and performs multiple analyses on about 31,000 import product samples annually. During Fiscal Year (FY) 2010, the Agency performed more than 175,000 food and feed field exams and conducted more than 350 foreign food and feed inspections.

FDA works to inspect the right imports—those that may pose a significant public health threat – by carrying out targeted risk-based analyses of imports at the points of entry.

If unsafe products reach our ports, FDA's imports entry reviews, inspections, and sampling at the border help prevent these products from entering our food supply.

Although FDA doesn't physically inspect every product, the Agency electronically screens 100 percent of imported foods products before they reach our borders. Based on Agency risk criteria, an automated system alerts FDA to any concerns. Then inspectors investigate further and, if warranted, do a physical examination of the product.

FDA also works cooperatively with U.S. Customs and Border Protection and other agencies to help identify shipments that may pose a threat.

### **What products come to the US from Japan?**

Imports from Japan include human and animal foods, medical devices and radiation emitting products, cosmetics, animal and human drugs and biologics, and dietary supplements. Foods imported from Japan make up less than 4 percent of foods imported from all sources. (Food products from Canada and Mexico each make up about 29 percent of all imported foods.) Almost 60 percent of all products imported from Japan are foods. The most common food products imported include seafood, snack foods and processed fruits and vegetables.

### **Are there dairy products that come from Japan?**

Foods imported from Japan constitute less than 4 percent of foods imported from all sources. Dairy products make up only one-tenth of one percent of all FDA-regulated products imported from Japan. Most dairy products in the US market are produced domestically. FDA is consulting with USDA's Animal Plant Health Inspection Service (APHIS) to ensure the continued safety of dairy products.

### **Are there food harvesting (fields, fisheries) or processing facilities in the area of the Fukushima nuclear reactor?**

While FDA does not track fields or fishery areas in foreign countries, it's important to note that the damage caused by the earthquake and ensuing tsunami has reportedly halted production prior to the explosion at the reactor.

### **Is there any reason for concern about radiation from these products when they are imported into the US?**

Right now, due to the damage to the infrastructure in Japan, FDA believes that export activity is severely limited. FDA is monitoring all import records for Japan to determine when importation will resume and will conduct surveillance to assure safety. FDA does not have any concerns for products that were already in transit when the explosion occurred at the reactor.

### **What are the current procedures for measuring radiation contamination in food? How will these change? How will FDA ensure consumers' safety?**

FDA has procedures and laboratory techniques for measuring radionuclide levels in food, and can also utilize the Food Emergency Response Network (FERN) (<http://www.fernlab.org/>). FERN integrates the nation's food-testing laboratories at the local, state, and federal levels into a network that is able to respond to emergencies involving biological, chemical, or radiological contamination of food. FDA is working with Customs and Border Protection (CPB) to share resources and techniques for measuring contamination. FDA has the ability to measure contamination in products and issued guidance in 1998 regarding safe levels.

### **Will FDA issue an import bulletin? What sort of techniques will FDA use to measure radiation in food?**

FDA will issue an import bulletin or an assignment to the field once an assessment is completed on products and appropriate testing that can be completed. Products travel by vessel, the typical transit time for products to reach the US is about 8 days. FDA and other domestic regulatory labs have validated analytical methods to detect radiological contamination in food.

**Is FDA looking at products that might have traveled *through* Japan at the time of the explosion?**

FDA will be examining both food products labeled as having originated in Japan or having passed through Japan in transit. The same is true for raw ingredients.

**How will the radiation affect fish and seafood that have not yet been fished or harvested?**

The great quantity of water in the Pacific Ocean rapidly and effectively dilutes radioactive material, so fish and seafood are likely to be unaffected. However, FDA is taking all steps to evaluate and measure any contamination in fish presented for import into the US.

**What are the chances of radiation affecting growing areas in the US? What action will FDA take to ensure the safety of consumers of those products?**

At this time, there is no public health threat in the US related to radiation exposure. FDA, together with other agencies, is carefully monitoring any possibility for distribution of radiation to the United States. At this time, theoretical models do not indicate that significant amounts of radiation will reach the US coast or affect US fishing waters. Please see [www.epa.gov](http://www.epa.gov) for more information about monitoring efforts.

**Hypothetically, if they were needed, what are the FDA-approved products for radiation exposure?**

There are three FDA-approved potassium iodide (KI) products for use as an adjunct to other public health protective measures in the event that radioactive iodine is released into the environment. The three over-the-counter products are:

- Iosat Tablets (130 mg), Anbex, Inc., Williamsburg, Va., <http://www.anbex.com>
- ThyroSafe Tablets (65 mg), Recipharm AB, Jordbro, Sweden, <http://www.thyrosafe.com>
- ThyroShield Solution (65 mg/mL), Fleming & Company Pharmaceuticals, Fenton, Mo. <http://www.thyroshield.com>

When administered in the recommended dose, KI is effective in reducing the risk of thyroid cancer in individuals or populations at risk for inhalation or ingestion of radioactive iodine. KI floods the thyroid with non-radioactive iodine and prevents the uptake of the radioactive molecules, which are subsequently excreted in the urine. Potassium iodide works only to prevent the thyroid from uptaking radioactive iodine. It is not a general radioprotective agent.

### **Is potassium iodide the only medication available for radiation exposure?**

Potassium iodide is the only FDA-approved medication available for exposure to radioactive iodine. There are FDA-approved products available that increase the rate of elimination of other radioactive elements. They include:

- Calcium-DTPA and Zinc DTPA, Hameln Pharmaceuticals
  - Approved to treat known or suspected internal contamination with plutonium, americium, or curium to increase the rates of elimination.
- Radiogardase (Prussian blue insoluble capsules), HEYL Chemisch-Pharmazeutische Fabrik GmbH & Co. KG
  - Approved to treat known or suspected internal contamination with radioactive cesium and/or radioactive or non-radioactive thallium to increase their rates of elimination.

### **We have heard that potassium iodide is in short supply? Is that correct?**

FDA is aware of an increased demand for KI products. FDA is working with these companies to facilitate increased production. We can't provide an exact date on when that might happen, but it will occur as quickly as possible.

Several components of the federal government maintain stockpiles of medical supplies for emergency situations. For instance, the CDC maintains the Strategic National Stockpile for civilian use, while the Department of Defense maintains their own supplies for support of military operations. The respective federal organizations should be contacted with any additional requests about the specific items and quantities in those stockpiles. Deployment of these stockpiles is governed by policies and procedures developed by the individual organizations based on available information and potential benefits and risks to public health.

### **Does FDA recommend that consumers purchase potassium iodide as a protective step?**

No. There is no public health event requiring anyone in the US to take KI because of the ongoing situation in Japan.

### **With exports from Japan disrupted, is there any possibility that some medical products could be in short supply?**

FDA has been contacted by a few companies who receive product from Japan and we are working with them on their supply issues.

### **If I see web sites advertising potassium iodide or alternative cures, should I buy the products?**

Due to the public concern related the nuclear incident in Japan, there has been an increased demand for drugs, such as Potassium iodide (KI), used to prevent and treat the harmful effects of radiation.

According to the Nuclear Regulatory Commission, all the available information continues to indicate that Hawaii, Alaska, the U.S. Territories, and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

The FDA is alerting consumers to be wary of internet sites and other retail outlets promoting products making false claims to prevent or treat effects of radiation or products that are not FDA-approved. These fraudulent products come in all varieties and could include dietary supplements, food items, or products purporting to be drugs, devices or vaccines.

Consumers should be wary of the following:

- claims that a product not approved by FDA can prevent or treat the harmful effects of radiation exposure;
- suggestions that a potassium iodide product will treat conditions other than those for which it is approved, i.e., KI floods the thyroid with non-radioactive iodine and prevents the uptake of the radioactive molecules, which are subsequently excreted in the urine;
- promotions using words such as “scientific breakthrough,” “new products,” “miraculous cure,” “secret ingredient,” and “ancient remedy”;
- testimonials by consumers or doctors claiming amazing results;
- limited availability and advance payment requirements;
- promises of no-risk, money-back guarantees;
- promises of an “easy” fix; and,
- claims that the product is “natural” or has fewer side effects than approved drugs.

Don't be fooled by professional-looking Web sites. Avoid Web sites that fail to list the company's name, physical address, phone number, or other contact information. For more tips for online buying, visit [Buying Medicines and Medical Products Online](#). To determine if a particular drug is FDA approved, check The Orange Book (<http://www.accessdata.fda.gov/scripts/cder/ob/default.cfm>) or Drugs@FDA (<http://www.accessdata.fda.gov/scripts/cder/drugsatfda/index.cfm>).

Consumers and health care professionals are encouraged to report adverse side effects or medication errors from the use of both approved and unapproved radiation exposure products to the FDA's MedWatch Adverse Event Reporting program at [www.fda.gov/MedWatch](http://www.fda.gov/MedWatch) or by [calling 800-332-1088](tel:800-332-1088).

**Personal & Family Preparedness:**

As the recent tragic events in Japan have reminded all of us, emergencies can strike at any time – and often when you least expect them. The best way to make sure that your family is taken care of when disaster does strike is to make sure you are prepared. The Ready Campaign encourages all Americans to have an emergency supply kit, an emergency plan, and to be informed about the different emergencies that can happen in your area and the appropriate responses. To make sure your family is ready before disaster strikes, visit Ready.gov today to start building your family's emergency plan today:

<http://ready.adcouncil.org/beprepared/fep/index.jsp>

**National Response Framework:**

The Department of Homeland Security, working through the Federal Emergency Management Agency, has developed and maintains the National Response Framework (NRF), a guide that details how the Nation conducts all-hazards responses – from the smallest incident to the largest catastrophe. The NRF makes clear the roles and responsibilities of federal agencies for all domestic incidents, so that every member of the nation's emergency management team understands how the federal response will be coordinated. For more information on the NRF, visit <http://www.fema.gov/emergency/nrf/index.htm>.

- U.S. Customs and Border Protection (CBP) is monitoring developments in Japan carefully and is specifically assessing the potential for radiological contamination associated with the ongoing impact of the earthquake and tsunami to Japan's nuclear facilities.
- Out of an abundance of caution, CBP has issued field guidance reiterating its operational protocols and providing specific field personnel direction with regard to monitoring of maritime and air traffic from Japan.
- In general, travelers that have been exposed to radiation are not a risk to other persons. When a radiation alarm occurs, CBP has protocols in place to isolate the affected traveler, baggage, or cargo, and resolve the concern. Travelers who manifest signs of radiation sickness will be referred to health authorities and provided appropriate treatment.
- CBP employs several types of radiation detection equipment in its operations at both air and sea ports. CBP frontline personnel are equipped with Personal Radiation Detectors (PRDs) that can detect the presence of radiological materials. All airports and seaports have sensitive Radiation Isotope Identification Devices (RIIDs) to determine both the presence and type of radiation encountered. Upon radiation detection, CBP exercises specific protocols to resolve any security or safety concerns for inbound travelers, baggage, and cargo.
- CBP resolves over half a million radiation alarms per year in the course of their normal duties.
- In addition to airplanes and ports, CBP utilizes radiation portal monitors at international mail facilities as well. The monitors provide a non-intrusive method to screen mail items for the presence of nuclear and radiological materials. The U.S. Postal Service assists Customs and Border Protection officers with response and mitigation of items when radiation is detected to ensure the safety of our employees and the American public.

As the Nuclear Regulatory Commission has said, we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. As part of the federal government's continuing effort to make our activities and science transparent and available to the public, the Environmental Protection Agency (EPA) will continue to keep all RadNet data available in the current online database. EPA is working with its federal partners and has deployed additional monitors to Hawaii, Alaska, Guam and the Northern Mariana Islands.

As always, EPA is utilizing this existing nationwide radiation monitoring system, RadNet, which continuously monitors the nation's air and regularly monitors drinking water, milk and precipitation for environmental radiation. The RadNet online searchable database contains historical data of environmental radiation monitoring data from all fifty states and U.S. territories.

EPA monitors are not picking up any harmful levels of radiation on our RadNet monitors across the US.

# Radiation and Potassium Iodide (KI)

## Purpose

This fact sheet from the Centers for Disease Control and Prevention (CDC) gives you some basic information about Radiation and Potassium Iodide (KI). It explains what you should think about before you or a family member takes KI.

## What Is Radiation?

Radiation is a form of energy that is present all around us. Different types of radiation exist, some of which have more energy than others.

## What Is Radioactive Contamination?

Radioactive contamination occurs when radioactive material is deposited on or in an object or a person. Radioactive materials released into the environment can cause air, water, surfaces, soil, plants, buildings, people, or animals to become contaminated. A contaminated person has radioactive materials on or inside their body.

## Key Facts

- At this time, CDC does not recommend that people in the United States take KI or iodine supplements in response to the nuclear power plant explosions in Japan.
- You should only take KI on the advice of emergency management officials, public health officials, or your doctor.
- There are health risks associated with taking KI.

## What is KI?

Potassium iodide (also called KI) is a salt of stable (not radioactive) iodine. Stable iodine is an important chemical needed by the body to make thyroid hormones. Most of the stable iodine in our bodies comes from the food we eat. KI is stable iodine in a medicine form.

## What does KI do?

If radioactive iodine is released into the air after a radiological or nuclear event it can be breathed into the lungs. In most cases, once radioactive iodine has entered the body, the thyroid gland quickly absorbs it. After it has been absorbed into the thyroid gland, radioactive iodine can then cause thyroid gland injury. Because KI acts to block radioactive iodine from being taken into the thyroid gland, it can help protect this gland from injury.

It is also important to know what KI cannot do. *KI cannot* protect parts of the body other than the thyroid from radioactive iodine. *KI cannot* protect the body from any radioactive elements other than iodine. If radioactive iodine is not present, then taking KI is not protective. To date, no radioactive iodine has been detected in the United States or U.S. territories.

## How does KI work?

The thyroid gland cannot tell the difference between stable and radioactive iodine and will absorb both. KI works by blocking radioactive iodine from entering the thyroid. When a person takes KI, the stable iodine in the medicine gets absorbed by the thyroid. There is so much stable iodine in the KI that the thyroid gland becomes "full" and cannot absorb any more iodine—either stable or radioactive—for the next 24 hours.



U.S. Department of Health and Human Services

Centers for Disease Control and Prevention

## How well does KI work?

It is important to know that KI may not give a person 100% protection against radioactive iodine. How well KI blocks radioactive iodine depends on:

- How much time passes between contamination with radioactive iodine and taking KI (the sooner a person takes KI after being exposed to radioactive iodine, the better),
- How fast KI is absorbed into the blood, and
- The total amount of radioactive iodine to which a person is exposed.

A single dose of KI protects the thyroid gland for 24 hours. **Taking a higher dose of KI, or taking KI more often than recommended, does not offer more protection and can cause severe illness or death.**

## Medical conditions that may make it harmful to take KI

It may be harmful for some people to take KI because of the high levels of iodine in this medicine. You should not take KI if:

- You know you are allergic to iodine (If you are unsure about this, consult your doctor. A seafood or shellfish allergy does not necessarily mean that you are allergic to iodine.) OR
- You have certain skin disorders (such as dermatitis herpetiformis or urticaria vasculitis).

## When should I take KI?

After a radiological or nuclear event in the United States, local public health or emergency management officials will tell the public if there is a need to take KI or other protective actions. **After an event in the US, you should follow the instructions given to you by these local authorities.**

**At this time, CDC does not recommend that people in the United States take Potassium Iodide (KI) or iodine supplements in response to the nuclear power plant explosions in Japan.**

The use of non-FDA approved iodine supplements cannot be guaranteed for safety or efficacy. These products do not have an FDA-approved dosing schedule. The supplements are not necessarily manufactured using FDA-approved quality control methods. Saturated Solution of Potassium Iodide (SSKI or Lugol's Solution) is not an FDA-approved drug.

Scientists are tracking the location of radioactive iodine released from the power plant in Japan. No radioactive iodine has been detected in the U.S. The EPA monitors for radioactivity through a national network of monitoring stations called RADNET.

## Other Sources of Information

- General information about the use of Potassium Iodide, including information about use by pregnant women and children (<http://www.bt.cdc.gov/radiation/ki.asp>).
- CDC Emergency Response Site for Radiation Emergencies (<http://www.bt.cdc.gov/radiation/index.asp>).
- Guidance for People Living in Japan from the U.S. Embassy in Japan (<http://japan.usembassy.gov/>)

## Domestic Response to Japan TPs

- Over the last several days, the American people have been both heartbroken and deeply concerned about the developments in Japan.
- We've seen an earthquake and tsunami render unimaginable -- an unimaginable toll of death and destruction on one of our closest friends and allies in the world. And we've seen this powerful natural disaster cause even more catastrophe through its impact on nuclear reactors that bring peaceful energy to the people of Japan.
- First, we are bringing all available resources to bear to closely monitor the situation, and to protect American citizens who may be in harm's way. Even as Japanese responders continue to do heroic work, we know that the damage to the nuclear reactors in Fukushima Daiichi plant poses a substantial risk to people who are nearby. That is why, we have called for an evacuation of American citizens who are within 50 miles of the plant. This decision was based upon a careful scientific evaluation and the guidelines that we would use to keep our citizens safe here in the United States, or anywhere in the world.
- Beyond this 50-mile radius, the risks do not currently call for an evacuation. But we do have a responsibility to take prudent and precautionary measures to educate those Americans who may be endangered by exposure to radiation if the situation deteriorates. That's why the President authorized the voluntary departures of family members and dependents of U.S. officials working in northeastern Japan.
- All U.S. citizens in Japan should continue to carefully monitor the situation and follow the guidance of the U.S. and Japanese governments. And those who are seeking assistance should contact our embassy and consulates, which continue to be open and operational.

*Here at a home, the government is doing a number of things as well:*

- The US Government will be studying every aspect of the Japanese disaster and the Japanese government's response, with the goal of learning as much as possible from that review.
- As the Nuclear Regulatory Commission has said as well as other nuclear and public health experts, we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. You just aren't going to have any radiological material that, by the time it traveled those large distances, could present any risk to the American public.
- Accordingly, public health experts and the CDC do not recommend that people in the United States take precautionary measures in response to the nuclear power plant explosions in Japan beyond staying informed. And going forward, we will continue to keep the American people fully updated.
- As part of the federal government's continuing effort to make our activities and science transparent and available to the public, the Environmental Protection Agency (EPA) will continue to keep all RadNet data available in the current online database. RadNet is an existing nationwide radiation monitoring system that continuously monitors the nation's air and regularly monitors drinking water, milk and precipitation for environmental radiation. In addition, EPA is working with its federal partners to deploy additional monitoring capabilities to parts of the western U.S. and U.S. territories.
- The FDA, USPS and CBP are of course closely monitoring the situation in Japan and all are working with other U.S agencies and or the Japanese government to continue to ensure that imported food, mail and airplanes remains safe.
- And finally, given the range of potential manmade and natural disasters we can see here in America, the United States Government has in place preparedness and response plans that provide the flexibility and agility we need to respond aggressively and effectively to any hazard, including nuclear accidents. FEMA and the Department of Homeland Security thoroughly and regularly exercise these plans with their federal, state and local partners, and will be working to apply the lessons learned from the current situation in Japan to their planning efforts.

NICCL call summary, 03/18/2011 10:00 a.m

Nick from WH thanked everyone for quick turnaround on all fact sheets. Facts sheets and talking points submitted yesterday on keeping United States safe.

CBP had a great day with the media yesterday. Media assuring citizens we are protected and we are working to protect our citizens.

Secretary of State met with Ireland Deputy Prime Minister/Foreign Minister and gave brief remarks on situation in Japan.

If there is a detection of radiation on the monitors deployed to the West Coast, EPA has the lead for addressing the issue.

Fact sheets and talking points can be made public.

Embassy in Tokyo extended hours and will work over the weekend. Buses are scheduled to evacuate citizens to safety.

Banner included on EPA site to monitor air. Nothing out of the ordinary and site will be updated during the day.

MEDIA: [press@epa.gov](mailto:press@epa.gov) PUBLIC: [radiation.questions@epa.gov](mailto:radiation.questions@epa.gov)

FDA posted questions and answers on food safety and consumer fraud on KI on their site 03/17. Today revising TP on import monitoring. They are increasing monitoring and taking steps to inform public.

HHS is continuing to monitor crisis.

CBP put out information on ports of entry and clarified protocols. Reiterated same monitoring is done daily. Nothing harmful has been detected.

Postal service is assisting CBP on monitoring mail from Japan for radiation.

DOD had previous radiological exercise scheduled. They are working with ABC to show capabilities.

No scheduled calls this weekend. Only if needed. No state call this afternoon. Will push out approved fact sheets to state and local. Approved fact sheets attached

## **Talking points regarding radiation exposure and seagoing vessels**

### **Q.1. - What is the Coast Guard doing now to assist or prevent [radiation] from getting to U.S. and its territories?**

- As the Nuclear Regulatory Commission has said as well as other experts, we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. As we do every day, the Coast Guard is monitoring and assessing current reports on any possible impacts on the U.S. marine transportation system (U.S. merchant vessels, mariners, and U.S. ports and facilities).
- The Coast Guard is providing a Notice to Mariners recommending, as a precaution, that vessels avoid transiting within 50 miles of the Fukushima Nuclear Power Plant.

In the event a vessel bound for a U.S. port transits within the 50-mile cautionary area, the U.S. Coast Guard will require the vessel's master to submit this information in their routine 96-hour Advanced Notice of Arrival.

If vessels are suspected of being contaminated, the Coast Guard will ensure advanced screening of vessels and exercise control measures as appropriate prior to port entry to assess and mitigate any threat to U.S. ports or population.

### **Q.2. - Do you have any impacts to your current operations or readiness as a result of this incident?**

- The nuclear situation in Japan is not significantly impacting current Coast Guard operations or readiness. All domestic port operations are continuing normally. No Coast Guard assets are operating near the damaged zone or in Japan.

### **Q.3. – What else is the Coast Guard doing regarding this incident?**

- The U.S. Coast Guard will continue to track and monitor commercial shipping operating in the vicinity of Japan, providing precautionary notices to prevent possible nuclear contamination of vessels and cargo.
- The Coast Guard will ensure advanced screening of any vessels suspected of contamination prior to entry in U.S. ports.

### **Q.4. - What steps will be taken in the event contamination is discovered during your operations as a result of this incident?**

- The Coast Guard's Radiation Detection Program is an integral part of our nation's everyday radiation detection architecture. Together with U.S. Customs and Border Protection (CBP) and local port partners, Coast Guard Captains of the Port routinely follow established protocols for responding to a report or detection of radioactive contamination when it is discovered aboard a vessel, on or in a shipping container or within a port facility itself.

- Coast Guard radiation detection resources can be deployed during arriving vessel at-sea boardings, and Coast Guard procedures exist for addressing radiation detected on vessels. These include identification, "zeroing-in" on and isolating potential sources of radiation. Additional radiological detection equipment, including radiation detection portals, is located within US port facilities.
- The Coast Guard has the authority to direct contaminated vessels to a safe location, e.g., keep at sea, or direct to a safe anchorage away from population centers and/or infrastructure, in U.S. waters, until vessels, cargo and personnel are decontaminated. Vessels deemed a possible risk due to known last ports of call or transit routes may be targeted for an at-sea boarding and screening before being allowed to enter port.
- Coast Guard Captains of the Port work with CBP Laboratories and Scientific Services and the Department of Energy Radiological Assistance Program for local assistance in cases of radiation detection.
- The Coast Guard will also be working with the U.S. Department of Homeland Security and other federal government agencies to develop strategies and policies to mitigate any potential risk posed to the U.S. homeland by radiation threats conveyed by commercial shipping.

**From:** [Piccone, Josephine](#)  
**To:** [Harrington, Holly](#); [Deegan, George](#); [Wittick, Susan](#)  
**Cc:** [Virgilio, Rosetta](#); [Jackson, Deborah](#); [Turtill, Richard](#)  
**Subject:** Re: Q&A for MONDAY'S COMM BRIEF  
**Date:** Friday, March 18, 2011 12:10:12 PM

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Thanks. We all share this frustration.

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**From:** Harrington, Holly  
**To:** Deegan, George; Wittick, Susan  
**Cc:** Virgilio, Rosetta; Piccone, Josephine; Jackson, Deborah  
**Sent:** Fri Mar 18 12:06:18 2011  
**Subject:** RE: Q&A for MONDAY'S COMM BRIEF

For whatever it's worth:

White House's stance has been that each agency should stick to what it's area of responsibility is, but that, frankly, had not been occurring, which has caused us issues when the NWS is sending us weather questions and NOAA is sending me ship captains who want to know where to sail.

There has never been an attempt to "speak with one voice" in this event except for the statement that "The NRC does not expect harmful levels of radiation to affect the U.S." Other than that everyone is supposed to talk about what they're doing i.e. epa monitoring, doe plume models, hhs questions about public health, etc.

I've lost track of what you need from me. If it's approval, consider it approved

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**From:** Deegan, George  
**Sent:** Friday, March 18, 2011 11:29 AM  
**To:** Wittick, Susan; Harrington, Holly  
**Cc:** Virgilio, Rosetta; Piccone, Josephine; Jackson, Deborah  
**Subject:** RE: Q&A for MONDAY'S COMM BRIEF

Holly-

I've been outside this process, so I have no direct knowledge, but I suspect you are right and that the communication challenges are multi-layered. However, it appears that the opposite may also be true (that other agencies are feeling the need to fill a void and communicate in areas where NRC should be weighing in. I base this on what Rosetta Virgilio sent me last night. In her email she indicated that "*States also noted that other Feds (DHS, FEMA, CDC) were holding calls with States without NRC participation. States felt the calls would have benefited from NRC participation*". She got this from an email from Julia Schmitt (Nebraska) to Charlie Miller. Based on this, and based on your observations below, which seems 180 degrees different, I'd suggest we not include either of these additional pieces, but I will defer to you all as the liaison and communication experts for the final word. That's what we were intending with our last key message "a desire for one voice in the Federal message on these topics"

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**From:** Wittick, Susan

RRRR-163

**Sent:** Friday, March 18, 2011 11:17 AM  
**To:** Deegan, George  
**Cc:** Harrington, Holly  
**Subject:** FW: Q&A for MONDAY'S COMM BRIEF

George,  
Please see comments below.  
Susan

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**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 11:08 AM  
**To:** Wittick, Susan  
**Subject:** RE: Q&A for MONDAY'S COMM BRIEF

This is fine, as far as it goes. It does not talk about the challenge of other agencies not being forthcoming with information and forcing states to look for us for information that is not in our mission or area of responsibility, such as plume mapping, ocean currents and health questions. This appears to be changing, however, with DOE, HHS and EPA working together to provide such information.

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**From:** Wittick, Susan  
**Sent:** Friday, March 18, 2011 10:26 AM  
**To:** Harrington, Holly  
**Subject:** FW: Q&A for MONDAY'S COMM BRIEF

Holly, can you review and approve for OPA?  
Thanks,  
Susan

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**From:** Deegan, George  
**Sent:** Friday, March 18, 2011 9:28 AM  
**To:** Wittick, Susan  
**Cc:** Piccone, Josephine; Jackson, Deborah; Rivera, Alison; Virgilio, Rosetta; Turtill, Richard; Noonan, Amanda; Miller, Charles; Moore, Scott; Camper, Larry  
**Subject:** Q&A for MONDAY'S COMM BRIEF

Susan-

Our staff has provided me the attached information that we thought could be provided as a question/answer in support of Monday's Commission briefing. Since it relates to communications with the States, I wanted to make sure OPA was comfortable with it before I provide it to Allen Howe and his team. I added an item in the third paragraph --- emergency planning zones---but otherwise this is the same as what I sent you at 8:42 a.m.. If you'd like to make changes, please send them to me and I'll coordinate within FSME. Thanks.

**From:** [Harrington, Holly](#)  
**To:** [WebContractor Resource](#); [WebWork Resource](#); [Hardy, Sally](#)  
**Subject:** Change  
**Date:** Friday, March 18, 2011 4:37:00 PM  
**Attachments:** [0317nrc-iaczkorev.docx](#)

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WE had to make an addition to the testimony, please replce the version on the Web with this.

RRRR-164

The following is an unofficial transcript prepared by a commercial transcription service at the request of the Nuclear Regulatory Commission. It is not the official transcript of the House Energy and Commerce Committee.

## **NUCLEAR REGULATORY COMMISSION**

### **THE FISCAL YEAR 2012 DEPARTMENT OF ENERGY AND NUCLEAR REGULATORY COMMISSION BUDGET**

**SPEAKER:  
GREGORY B. JACZKO,  
CHAIRMAN,  
U.S. NUCLEAR REGULATORY COMMISSION**

**THURSDAY, MARCH 17, 2011**

*Transcript by  
Federal News Service  
Washington, D.C.*

REPRESENTATIVE ED WHITFIELD (R-KY): OK. I'll call the hearing back into order. We took a recess because Commissioner, you had a – you were called away to the White House, I believe, for a meeting. And we completed with Secretary Chu. So everyone's already given their opening statement. So at this time, that we would recognize you for five minutes for your opening statement.

GREGORY B. JACZKO: Well, thank you, Mr. Chairman, and to you and the other chairmen of the two subcommittees and the ranking members Rush and Green, and members of the – other members of the subcommittee.

I'm honored to appear before you today on behalf of the U.S. Nuclear Regulatory Commission. And given the events that are unfolding overseas, my opening remarks will focus on the crisis in Japan. And I have additional information on the fiscal year 2012 budget that I have submitted for the record.

Of course, I'd be happy to answer questions on those matters. But I'll focus my testimony on the situation in Japan.

I would first like to offer my condolences to all those affected by the earthquake and tsunami in Japan over the last few days. My heart goes out to those who have been dealing with the aftermath of these natural disasters.

I want to publicly acknowledge the tireless efforts, professionalism and dedication of the NRC staff and other members of the federal family in reacting to the events in Japan. This is just another example from my six-and-a-half years on the commission of the dedication of the NRC staff to the mission of protecting public health and safety.

The American people can be proud of the commitment and dedication within the federal workforce exemplified by our staff every day. While the NRC regulates the safe and secure commercial use of radioactive materials in the United States, we also interact with nuclear regulators from around the world.

Since Friday, the NRC's headquarters' operations center has been operating on a 24-hour basis to monitor events unfolding in nuclear power plants in Japan. Since the earthquake hit northeastern Japan last Friday, some reactors at the Fukushima No. 1 plant have lost their cooling functions, leading to hydrogen explosion and rises in radiation levels.

Eleven NRC experts on boiling-water reactors have already been deployed to Japan as part of a U.S. International Agency for – International Development (ph) team. And they are currently in Tokyo.

Within the U.S., the NRC has been coordinating its efforts with other federal agencies as part of the government response to the situation. This includes monitoring radioactive releases and predicting their path. Given the thousands of miles between Japan and the United States,

Hawaii, Alaska, the U.S. territories and the West Coast, we are not expected to experience any harmful levels of radioactivity.

Examining all available information is part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC has been working with several agencies to assist – to assess recent seismic research for the central and eastern part of the country. That work continues to indicate that the U.S. nuclear facilities remain safe. And we will continue to work to maintain that level of protection.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster.

And the NRC requires that safety-significant structures, systems and components be designed to take into account the most severe natural phenomenon historically reported for the site and surrounding area. The NRC then adds a margin for error to account for the historical data's accuracy.

This basically means that U.S. nuclear power plants are designed to be safe based on historical data from the area's maximum credible earthquake. And the NRC remains attentive to any information that can be applied to U.S. reactors. Our focus is always on keeping plants in this country safe and secure.

As this immediate crisis in Japan comes to an end, we will look at whatever information we can gain from the event and see if there are changes we need to make to our own systems. Within the next few days, I intend to meet with my colleagues on the commission on the current status, and to begin a discussion of how we will systematically and methodically review information from the events in Japan.

In the meantime, we continue to oversee and monitor plants to ensure that the U.S. reactors remain safe. The NRC will continue to monitor the situation and provide updates via press releases and our public blog. The NRC also stands ready to offer further technical assistance as needed. We hope that this situation will be resolved soon so that Japan can begin to recover from this terrible tragedy.

I would like, if possible, to give you a brief update on what we believe the current status of the reactors in Japan is. There are essentially four reactors that we are currently monitoring as best we can. They are all at the Fukushima No. 1 site. Three of those reactors were operating at the time of the earthquake and were shut down following their normal procedures.

We believe that in general for these three reactors, they have suffered some degree of core damage from insufficient cooling caused ultimately by the loss of off-site power and the inability of the on-site diesel generators to operate successfully following the tsunami.

We also believe that for these three reactors, that sea water is being injected with reported stable cooling. The primary containment is described as functional.

Now, I would note that for unit No. 2 at this site, we are – we believe that core cooling is not stable. But also for that site, we believe at this time that primary containment is continuing to function. I would also note that for unit No. 2, we believe that the spent-fuel pool level is decreasing.

For unit No. 3, we believe that the spent-fuel pool integrity has been compromised, and that there has perhaps been a zirc-water interaction.

Now, in addition to the three reactors that were operating at the time of the incident, a fourth reactor is also right now under concern. This reactor was shut down at the time of the earthquake. What we believe at this time is that there has been a hydrogen explosion in this unit due to an uncovering of the fuel in the fuel pool.

We believe that secondary containment has been destroyed and there is no water in the spent-fuel pool. And we believe that radiation levels are extremely high, which could possibly impact the ability to take corrective measures.

For the two remaining units at this site, we have an IAEA report that the water level was down a little bit in this spent-fuel pool as well. And for the final reactor, we don't have any significant information at this time.

Recently, the NRC made a recommendation that based on the available information that we have, that for a comparable situation in the United States, we would recommend an evacuation to a much larger radius than has currently been provided in Japan. As a result of this recommendation, the ambassador in Japan has issued a statement to American citizens that we believe it is appropriate to evacuate to a larger distance up to approximately 50 miles.

The NRC is part of a larger effort that continues to provide assistance to Japan as requested. And we will continue our efforts to monitor the situation with the limited data that we have available. So that provides a general summary of where – of where the incident stands.

And with that, I would end my testimony and be happy to answer questions you may have. Thank you.

REP. WHITFIELD: Well, Commissioner, thank you. We appreciate your being with us this afternoon. In the earlier question-and-answer period with Secretary Chu, the gentleman from Massachusetts, Mr. Markey, had referred to a finding by Mr. John Ma – I believe is his last name – in a – relating to the AP1000 design.

And he had indicated that Mr. Ma had some serious reservations about the design. And I was just curious: Have you all had the opportunity to review his concerns? And have you come to any conclusions about that?

MR. JACZKO: We have done a very thorough review of the AP1000 design relative to a large number of safety issues. As part of that review process, we have had a vibrant discussion

among the members of the NRC staff. We have thoroughly reviewed as part of that discussion the concerns by one of our staff members that you indicated. And we believe based on a thorough analysis that that design going forward can be – can be acceptable.

It is right now in a process of additional review. It is right now out for public comment, essentially. We do our designs almost like a regulation. So we allow them to be commented on by the public. And so we're at that stage in the process of that review.

But the concerns, while we believe, would certainly enhance the safety of the design, we don't believe at this time that they're necessary to meet our strict regulations.

REP. WHITFIELD: Right. Well, thank you for that comment. I just wanted to follow up on that. Of course, as a result of what's happened in Japan, the focus is on safety as it relates to nuclear. And I believe this is a safe industry over – historically, it's been a safe industry.

And I know that in France, in Japan and many other countries, a large percentage of their electricity comes from generation by nuclear. In the U.S., it takes – and you can correct me if I'm wrong, because I may be – but it takes roughly 10 years or so to obtain permitting for a nuclear plant. Is that – am I in the ballpark when I say 10 years, or not?

MR. JACZKO: Well, I think right now the process has taken, I would say, closer to about five years right now to go through the permitting. Now of course, we're not finished. But we are getting nearer to the end of our reviews. And I like to think about this in a way like when I went to college. You know, everybody goes to college with – people go to college with the intent to graduate in four years. But as you go through that process, you take your classes. If you do well, you have a chance to get done in four, sometimes a little bit – a little bit sooner. Some people take a little bit longer time, depending on how things go.

So as we continue to work with the – with the licensees, or the applicants, we've, I think, improved our understanding of how to make the process work effectively and efficiently. So right now, this has been the first-of-a-kind effort in something we haven't done in a long time. And it involves a new process.

So I would say at this time, I think we're moving at a relatively effective pace, but again, keeping our focus first and foremost on safety.

REP. WHITFIELD: And in your testimony, you did say that you evaluated these permit applications for seismic as well as tsunami-type activities. Correct?

MR. JACZKO: That's correct. We review all designs against a wide range of natural disasters: tsunamis, earthquakes, tornados, hurricanes. It just depends on the geographic location.

REP. WHITFIELD: Right. Well, with all the publicity surrounding Japan right now, everyone, as I said, is certainly focused on safety – and we do certainly think about the Japanese people, but with more focus on safety.

I'm not a nuclear engineer, but I know that there is some technology based around sodium-cooled reactors. And I've been told that sodium-cooled reactors, that there is not a possibility of a meltdown, and that these are smaller-type plants – maybe 50 (megawatt) to 100 megawatt plants. And I was wondering if you wouldn't mind commenting on that technology of sodium-cooled technology.

MR. JACZKO: Well, we don't currently have any specific applications in front of us for a sodium-cooled design. I would say it's a – it's a different type of technology than what we currently have operating in this country. And it – as a result, it presents its own challenges when it comes to safe operation.

But I wouldn't want to speculate too much on what those kinds of challenges are because we really haven't gone through the specific review of one of these. But in general, with a smaller reactor, a large – a smaller energy output, usually the risks are lower because you just have a smaller amount of radioactive material.

But as I said, the sodium reactors do present slightly different technical challenges because of the way that they operate: The sodium has to be maintained in a liquid form. And there are – there are different types of risks and hazards that you would have on that type of design.

REP. WHITFIELD: But that technology, I guess, was developed in United States at one point. And there are some countries that evidently have at least some of these plants in operation. Is that your understanding?

MR. JACZKO: Yeah, that's my understanding. But we don't currently have any licenses operating in the U.S.

REP. WHITFIELD: OK. Well, thank you very much. My time has expired. I'd like to recognize the gentleman from Illinois, Mr. Rush, the ranking member.

REPRESENTATIVE BOBBY L. RUSH (D-IL): I want to thank you, Mr. Chairman. And Chairman Jaczko, it's good to see you. And welcome to the committee.

I'm going to get my Japan question in first. And the crisis in Japan is first and foremost on the mind of many of my constituents in Illinois for a real specific reason: We've got more reactors in Illinois than any other state.

And my constituents are asking a simple question. And that question was summed up in a Fox – (inaudible) – news headline published on Sunday: Should Illinois be worried about its nuclear plants? And before you answer the question, I want to also note that Illinois lies within the New Madrid earthquake zone. How do we know – we do not have to worry about tsunamis. But what assurances can we give to the people in my state, who has the highest concentration of nuclear reactors that also sits on an earthquake zone?

And in your answer, would you please speak to the possibilities and to the effect that a tornado – we are in a tornado zone – that tornados could have on nuclear reactors?

MR. JACZKO: Well Congressman, at the NRC we focus every day – the dedicated women and men at the NRC work every day to make sure that nuclear power plants in this country continue to operate safely.

All the nuclear power plants that are in the United States are reviewed against a very significant standard for seismic activity. We take what is – what we can find out from the historical record, from looking at the rocks and the geology and the seismology. We try and determine what we think is the largest earthquake that can happen in an area.

And from that, we do an analysis of what kind of effect we think that will have on the power reactor – namely, how much will the building shake or what kind of forces will it – will it feel. And we require that the nuclear power plants can withstand that kind of event. And we actually go a little bit larger than that just to make sure there's any uncertainties in our analysis (ph).

So that's a part of what we do for every reactor in the country, whether it's in the Midwest – of course, the seismic activity may be different in that part of the country versus another part of the country.

REP. RUSH: Yeah. It seemed to me, though, in Japan, it wasn't just the earthquake that caused the problem, it was the tsunami that really caused the problem. And my question in that – my question is in terms of a tornado.

MR. JACZKO: We look at tornados as well. We actually look at all natural phenomenon: hurricanes, tornados, earthquakes, tsunamis. Although as you indicated, some sites in the country don't experience all of those phenomenon. But we look historically to make sure we've captured all the natural phenomenon that occur.

So in Illinois, we certainly would examine the impacts of tornados and other extreme weather events in Illinois.

REP. RUSH: OK. And it seems to me – I asked this question of the secretary this morning – that the number one threat to nuclear facilities in this nation is terrorist actions and activities and acts. So can you speak to the – how are the – is the NRC handling the threat of terrorists?

MR. JACZKO: Well, we have a very robust program that requires nuclear utilities to ensure that they can protect their plants against terrorist-type attacks. That includes a very strong program to do exercises once every three years to actually participate in a – in a mock terrorist attack on the facility. And we observe that and oversee that and ultimately use that as a way to – (inaudible, cross talk).

REP. RUSH: Once every three years?

MR. JACZKO: Once every three years. In addition to that, we do conduct our normal inspections at the facilities to make sure that all the security systems are in place and operating effectively.

And I would add that in addition, following September 11<sup>th</sup>, we required all of the nuclear power plants in this country to look at some of the more severe kinds of impacts and effects you could get at a nuclear power plant from a terrorist attack or other types of severe natural phenomenon.

And as a result, we require –

REP. RUSH: My time is almost over. And I just want to – I'm headed to – on Friday, I'm headed to Dresden to tour the generator station there in a rural county – Grundy, Illinois, and Northern Illinois. And I'm going to be there with some of your resident inspectors on location there. So I'll give them your regards.

MR. JACZKO: Well, good. Well, I appreciate that. And we're very fortunate to have some very fine people at our power reactors overseeing them.

REP. WHITFIELD: At this time, I'll recognize the gentleman from Illinois, Mr. Shimkus, for five minutes.

REPRESENTATIVE JOHN SHIMKUS (R-IL): Thank you, Mr. Chairman and welcome, Mr. Jaczko. When the licensing board return its decision denying the Department of Energy motion to withdraw its Yucca Mountain application?

MR. JACZKO: I believe that was earlier in the – end of June, end of June – thank you.

REP. SHIMKUS: Isn't true that all commissioners participating in the decision-making relating to the license board decision have already filed votes on that matter, including you?

MR. JACZKO: We have filed what I would consider to be preliminary views that we exchange among our colleagues on the commission. Those are views that we use, then, to inform our final decision-making.

REP. SHIMKUS: So you're saying you have not filed votes?

MR. JACZKO: We have not come to a final decision at this point.

REP. SHIMKUS: When – so it's your position – you have not filed final votes.

MR. JACZKO: That is correct. We have not reached a final decision on our – unlike perhaps here, you're familiarity with voting, I would consider votes to be more akin almost to prepared statements and remarks of members of the commission. The practice of the

commission is to circulate those prepared remarks on any of the things that we do and then based on those circulated views, we work to see if there's a majority position.

REP. SHIMKUS: So you're saying, then, on October 29<sup>th</sup>, 2010, there wasn't final votes cast by all commissioners?

MR. JACZKO: On October 29<sup>th</sup>, believe we had all prepared our final – we had prepared our written statements that we circulated amongst us.

REP. SHIMKUS: So those written statements are considered votes?

MR. JACZKO: They are considered votes, but they are not the final decision of the commission.

REP. SHIMKUS: Okay, so since you have written statements that are considered votes, when do you plan to schedule a commission meeting?

MR. JACZKO: We will have a meeting an issue an order when we have, per statute, a majority position.

REP. SHIMKUS: And so you have these statements. They're considered votes, but you don't have a majority position?

MR. JACZKO: Correct. As I indicated, the terminology here, I think, is unfortunate. These votes are not, as I said, the final statement of the commission. In an adjudicatory matter, which is what this is, a formal hearing that we issue, the final statement of –

REP. SHIMKUS: Is there a minority decision already rendered by commissioners?

MR. JACZKO: There is no decision by the commission at this point.

REP. SHIMKUS: By the chairman?

MR. JACZKO: There is no decision by the commission.

REP. SHIMKUS: Was the NRC decision to close out Yucca review and hearing activities yours alone or one made by the full commission?

MR. JACZKO: That was a decision that I made as chairman of the agency, consistent with the budget that was prepared by the commission – (inaudible, cross talk).

REP. SHIMKUS: Okay, but let me ask you this question: What was your legal authority to do so?

MR. JACZKO: My legal authority was as chairman of the commission. And it was – the decision was fully consistent with appropriate law.

REP. SHIMKUS: No, I think your position is the budget zeroed it out, but I – I would beg to differ that you had the legal authority to do that.

MR. JACZKO: I would respectfully disagree with you on that.

REP. SHIMKUS: Well, I think we will review that and follow up.

MR. JACZKO: And I would add, if I could, that following that decision –

REP. SHIMKUS: I mean you wouldn't do anything that would be illegal, would you?

MR. JACZKO: Of course I wouldn't. Following – following the decision to begin the closedown activities of the Yucca Mountain project –

REP. SHIMKUS: Begging to differ, I think it's a stated federal position by law that Yucca Mountain should be open. That's the legal authority. There's no legal authority to close Yucca Mountain. The only authority that's been rendered is the administration, in compliance with Majority Leader Reid to pull funding. But there's no legal authority to close Yucca Mountain, by law.

MR. JACZKO: As I indicated, our action is consistent with all appropriate – appropriations law and any other statutes that we have.

REP. SHIMKUS: I would – you better – you better be double-checking your facts because we're not through with this debate on legal authority and I hope you're well-prepared. We had been told that the courts may not rule on whether or not the commission's position is legally defensible until the full commission takes a position. But you seem to be preventing that vote from occurring. If the court runs out of patience and does rule, will you abide by the court's decision and act promptly to carry it out?

MR. JACZKO: The agency will act according to any legal decision by the courts or any act of Congress.

REP. SHIMKUS: Thank you, Mr. Chairman, I yield back.

REP. WHITFIELD: This time, I'll recognize the gentleman from California for – Mr. Green – for five minutes.

REPRESENTATIVE GENE GREEN (D-TX): Thank you, Mr. Chairman. Welcome, Mr. Jaczko and I know you're busy and I appreciate you coming back to our committee. And I know last week, you and I talked about the president's budget and the proposals that go back to FY '08 for your funding and we both expressed concerns about the layoff of hundreds of workers and particularly what happened in Japan. Obviously, this is not the time to go after our Nuclear Regulatory Commission. So I share that and hopefully, that message will get to the folks.

Let me talk about a local issue because I think all politics is local and what's happening in Japan. Texas has one proposed nuclear plant that's pending at the OMB. And they're receiving their funding from CPS Energy, NRG and Tokyo Electric Power Company, which presents part of the problem. One of the sites experienced problems – they own one of the sites that's experiencing the problems in Japan.

And so knowing what may happen with their potential investment, CPS Energy and NRG have announced they have trouble finding new investors. Again, part of it's the market. We have low natural-gas prices and for someone to buy into a long-term investment of nuclear power, which our country needs, but we may not be able to get the investors.

Can you talk about the review process for new plants like Texas and how long NRC and OMB process is taking? It seems like I've worked on the congressional side, now, for a number of years to get the expansion at the South Texas plant that's just southwest of Houston and just some information on how long it took, for example, for that expansion that goes through both your process and the OMB.

MR. JACZKO: Well, right now, the South Texas Project was one of the first applications that we received for new licensing. That project – the review that we do for that project will be focused, for sure, on safety and security. That's always our primary focus. We're continuing to do that review. We're nearing some significant milestones as we work to complete the actual design reviews for that type of reactor.

That design review, right now, is out for public comment as part of our process and we anticipate having that back in and working to resolve the comments over the summer. If we resolve those comments in a successful way, then we would move forward with completing the final reviews that are necessary, possibly, perhaps by – within – within 12 months or so. But we – as I said – I want to reiterate. Our focus, fundamentally, is first and foremost, is on the safety and security of these designs.

REP. GREEN: When you said it was one of the first applications, can you tell me the time frame when that was filed?

MR. JACZKO: It was approximately, I believe, 2007. However, we immediately or within several months, had to suspend our review because the applicant in that case made a change in the vendor that they were using to support the design. So that took about a year, a year-and-a-half to work through that particular issue on the part of the applicant.

REP. GREEN: I know the concern, literally for the whole world and particularly for our own country, if what we're doing – making sure we're learning from what's happened to Japan. And I understand the south – the Texas plant southwest of Houston has actually three safety backup systems instead of two.

And it's my understanding that Texas emergency power sources are separate and watertight. We don't have a problem on the Gulf Coast with you know, tsunamis or earthquakes. We do have a hurricane every once in a while and tornados. But I understand that they have

watertight concrete buildings that would withstand a hurricane or storm surges and even earthquakes.

But like I said, I don't think in geological time we've had an earthquake along the Gulf Coast. Our soil's too soft. But the – the agency actually looked at that plant and all the applications, like you said, for safety.

MR. JACZKO: That's correct. We look at all the plants for a variety of natural phenomena and on the Gulf Coast, that can include seismic activity, hurricanes and other types of events. And we do have some analyses to look at tsunamis along the Gulf Coast and portions of the Atlantic Coast. Those wouldn't be expected to be tsunamis that are the same magnitude as ones we could see in –

REP. GREEN: Those have particular plants about 11 miles inland. It's not right on the coast. I know there've been technological advances and I'm almost out of time, but sometime, I'd like if your staff could present – provide to the committee separately some of the technological advances in the current and proposed plants in the United States as compared to, for example, what's happened in Japan with the tsunami and also the earthquakes.

MR. JACZKO: We can certainly provide that.

REP. GREEN: Thank you. Thank you, Mr. Chair.

REP. WHITFIELD: The gentleman from Michigan, Mr. Upton, is recognized for five minutes.

REPRESENTATIVE FRED UPTON (R-MI): Thank you, Mr. Chairman. And again, Mr. Chairman, we welcome you here today. And I just want to say a couple things at the beginning. First of all, I certainly did appreciate our meeting that we had several weeks ago. I know we both discussed Yucca. We may have a different view, but we're going to have ample time in Mr. Shimkus' subcommittee with all the commissioners sometime this spring to fully talk about that and ask a good number of questions.

As you know I'm – as you do – we both support safe nuclear power. We both support appropriate and rigorous oversight of all of our 104 sites around the country. I'm – and I, too, appreciated the visit that I paid to the NRC several years ago and viewed, firsthand, the NRC operations center and looked in, in terms of your day-to-day activities to make sure that things are safe.

Could you tell us what, specifically, the functions are of the 11 folks that you've sent to Japan and what they're doing? And they're reporting back to you and some of the information you might have received?

MR. JACZKO: The 11 individuals that we have in Japan are providing a variety of services. They are helping to organize the look at the reactors, the nuclear look at the reactors and helping to provide a good, coordinated team to provide assistance to the embassy in Japan.

REP. UPTON: So does Japan have a similar operation like we have in terms of the operations center that I visited in Maryland there?

MR. JACZKO: It's my understanding they do, but I'm not terribly familiar –

REP. UPTON: But they're in Tokyo, right? They're not at the Fukushima site?

MR. JACZKO: Our staff is in Tokyo, working to interface with their counterparts in the Japanese nuclear regulatory authority.

REP. UPTON: And as you announced that you had urged – our ambassador now has urged all Americans to move at least 50 miles away. What reaction have you – did you receive from your counterparts in Japan and the government there?

MR. JACZKO: I'm not familiar of any reactor –

REP. UPTON: But that's a recent – I mean that announcement was made very shortly, right?

MR. JACZKO: It was made like an hour ago – about 45 minutes ago.

REP. UPTON: You talked about the four different reactor vessels and the status of the four. Do you know where the hydrogen explosion was in the fourth reactor?

MR. JACZKO: At this point, we don't know that kind of specific information, but we believe that there was a hydrogen explosion at some point, likely because the spent fuel in that reactor has lost its cooling and at some point, then, was producing some degree of hydrogen. And that ultimately accumulated and led to an explosion.

REP. UPTON: And was that explosion today? U.S. time? Today?

MR. JACZKO: No, it occurred several days earlier. We can get you the exact date and time as we – as we know it.

REP. UPTON: Okay. As it relates to your budget – remember, that was the original ask for you to be here today – what is your budget for safety oversight as part of the NRC?

MR. JACZKO: The number we have – the bulk of our budget, probably about three-quarters of our budget goes to the reactor safety work, about 77 percent. So it's slightly over – approximately \$800 million.

REP. UPTON: So does that include the personnel because I've visited my two sites in my district and I'd welcome you and although you indicated a willingness to come out, but on all of my visits, I've always stopped to say and welcome the oversight of your staff that's been there.

MR. JACZKO: Yeah, most of our budget does go to our staff. We have – mostly salaries and benefits. We have a small portion of our budget that's contracting dollars, but the bulk of it, about 80 percent, is the – I'm sorry, it's about 60 percent is the salaries and benefits of the staff.

REP. UPTON: And do you have any reason to believe that your proposed budget is not adequate to assess and monitor the nuclear power plant safety systems? I mean do you feel that it fits the bill?

MR. JACZKO: At this time, we believe it is – it's a sufficient request that will allow us to do the work we need to make sure the plant stays safe. The only caveat I would add is if as we continue to review the situation in Japan, it becomes apparent that we would need additional resources to address issues related to the situation in Japan, then we would perhaps have to come back and ask for additional resources for that.

REP. UPTON: Well, I was going to ask you if you thought you were going to need – will you be able to determine that within the next couple of weeks?

MR. JACZKO: I intend to meet with the commission within the next several days and begin looking at the kinds of questions we have to answer and I think that will be one of the first. But first, we want to kind of systematically figure out what it is that we need to look at and what are the important sources of information.

REP. UPTON: But you don't really have a reserve cushion today to do that, is that right – for fiscal year 2011.

MR. JACZKO: At this time, I would say we don't necessarily have that. But again, I'd like to take a look at that first before I make any conclusions.

REP. UPTON: Okay, well, again, I appreciate your willingness to be up here on a day – as tough as it is today to – and we appreciate your answers and look forward to working with you on a host of issues. Thank you. I yield back.

REP. WHITFIELD: I recognize the gentleman from California for five minutes, Mr. Waxman.

REPRESENTATIVE HENRY WAXMAN (D-CA): Thank you, Mr. Chairman. Mr. Jaczko, you've described a pretty dire situation in Japan. I want to ask you about this. An official from the European Union today used the word "apocalypse" to describe the potential damage that could occur in Japan. What is your reaction to this comment? Could Japan be facing widespread devastation from a nuclear meltdown or a radiation release?

MR. JACZKO: Well, I don't really want to speculate too much at this point on what could happen. I think people are working really, very diligently to try and address the situation. It is a very serious situation, without a doubt and that's part of the reason why I thought it was

important for the agency to make the statement it did that we thought in a comparable situation in the United States, we would have issued evacuation instructions to a larger distance away from the plant. So it is a very serious situation and efforts are ongoing to try and resolve it. But it will be some time, I think, before it's finally resolved.

REP. WAXMAN: Well, you said that you're recommending an evacuation of U.S. citizens within 50 miles. What are the risks that are causing you to make this recommendation?

MR. JACZKO: Well, it's based on an assessment of the current conditions of the site. Because of the damage to the spent fuel pool, we believe that there's very significant radiation levels likely around the site.

And given that the reactors, the three reactors that were operating – given that they are operating with a – more of a backup to a backup, if you will, safety cooling system, if anything goes wrong with that, it would be very difficult for emergency workers to get into the site and perform emergency actions to help maintain that cooling.

So there is the likelihood that the cooling functions could be lost and if they are lost, it may be difficult to replace them and that could lead to a more significant damage to the fuel and potentially some type of release. So as a prudent measure with a comparable system situation here in the United States, we would likely be looking at an evacuation to a larger distance.

REP. WAXMAN: So it is the – is it the spent fuel problem in this Unit 4 where there's water covering the fuel rods – is that the greatest concern you have at the moment?

MR. JACZKO: Well, I think it's all of the factors together, really. It's the combination. And so you know, there's the possibility of this progressing further. And so as I said, in this country, we would probably take the prudent step of issuing evacuation to a larger distance.

REP. WAXMAN: High levels of radiation are being released from the pool – is that right?

MR. JACZKO: We believe that around the reactor's site, that there are high levels of radiation. Again, we have very limited data so I don't want to speculate –

REP. WAXMAN: And what would be the significance of that?

MR. JACZKO: The significance would – well, first and foremost, it would mean that it would be very difficult for emergency workers to get near to the reactors. The doses that they could experience would potentially be lethal doses in a very short period of time. So that is a very significant development and largely, is what prompted the agency to make the statement that it did.

REP. WAXMAN: And if they can't – if the emergency workers cannot get in there because of the danger to themselves, what would be the possibility, then, to deal with this problem of the spent fuels?

MR. JACZKO: Well, again, I don't want to speculate too much because again, we don't have direct information about the conditions on the ground. But it's certainly a difficult situation and one that needs to be addressed.

REP. WAXMAN: Well, you describe serious risks at these facilities. Can you describe what you think are the highest risks and why?

MR. JACZKO: At the sites in Japan?

REP. WAXMAN: Yeah. I think right now, as I think has been the situation from the beginning, the efforts are to continue to keep the reactors cool – the three reactors that were operating at the time of the earthquake. And that is, right now, being done with a variety of different systems. And again, in more a nontraditional way because they have lost a lot of their electrical power and their off-site power capabilities.

In addition, the other risk is really to the spent fuel that may be in the spent fuel pools for possibly up to six of the reactors at the site. So keeping those pools filled with water and keeping that fuel cool is also, then, the primary concerns.

REP. WAXMAN: And what's the significance of the report of a crack in the unit itself, in the containing – the containment unit?

MR. JACZKO: I want to be clear. Certainly, the indication that I was referring to was a crack, possibly, in the spent fuel pool on one of the other units. And the significance of that would be if there is a crack, then there's the possibility of water draining from that pool and perhaps an inability to maintain the appropriate level of water in the pool, which could lead to a damage of the fuel in that pool.

REP. WAXMAN: What would you say is the best case now for Japan and what do you think might be the worst case?

MR. JACZKO: Well, I think – certainly, the efforts are to continue to provide cooling of the reactors and to do everything possible to provide cooling to the spent fuel pools. Again, I don't want to speculate on what could happen because you know, it is a very dynamic situation and there are – you know, certainly a lot of efforts that are being undertaken with efforts of the U.S. government, in particular.

I want to emphasize that this is really a U.S. government response. The NRC is playing one small part, but other assets have been located from other parts of the U.S. government and are being provided to help provide this cooling and do what we can.

REP. WAXMAN: Thank you very much.

REP. WHITFIELD: The gentleman from Texas, Mr. Barton is recognized for five minutes.

REPRESENTATIVE JOSEPH BARTON (R-TX): Thank you, Mr. Chairman and thank you, Chairman, for being here on what's obviously a very difficult day for you. You may have answered some of these questions before or you may have even commented on them in your opening statements so I apologize if I ask something that has already been addressed.

My understanding is that the systems at – the safety systems at the power plants or the reactors in Japan are an older technology that requires an active backup and that the licenses that you're reviewing now have a different system that is a passive backup, i.e. if something happens catastrophic, the system automatically shuts itself down and the cooling system can perpetuate itself without outside power. Is that correct?

MR. JACZKO: Well, I wouldn't necessarily want to comment too much on the Japanese sites because I'm not – their designs are a little bit different from the designs we have that are similar in this country. But we are reviewing new reactors that do operate on what they call a passive cooling system.

It is not all of the designs that we're reviewing, however. It's only two of the designs that we're looking at, but –

REP. BARTON: Well, my understanding is that there's – and correct me if I'm wrong, that there's one new nuclear power plant under construction and that's the Southern Company facility in Georgia and that their safety system is a passive safety system that if you were to – of course, you won't have a tsunami in Central Georgia, but you could have an earthquake.

And if there were to be an earthquake, that it would automatically shut itself down without outside intervention and the coolant is a gravity-flow cooling system that perpetuates itself, again, without any outside power. Is that correct?

MR. JACZKO: That is correct. The system that is used for that particular design, which is the AP1000 does essentially rely on gravity to initiate circulation of water through the reactor and then naturally circulate based on the heat flow. It will circulate without the use of off-site power. However, there are other safety systems that do rely on the off-site power.

REP. BARTON: But we could say, in the instance of the one new plant that's currently under construction, what happened in Japan, assuming the construction of the plant is robust enough that the containment is not destroyed by the earthquake, that in terms of cooling the reactors and shutting down the reactors, they would be shut down and they would stay cool.

MR. JACZKO: Well, again, I wouldn't necessarily want to speculate on everything. We don't really know what happened in Japan. We obviously know there was an earthquake. We know that there was a tsunami. We know a lot of safety systems haven't functioned as would be needed. So you know, at this point, I don't really want to speculate on how that applies to any U.S. facilities until we have a chance to really do a methodical and systematic –

REP. BARTON: I'm not asking you to speculate on what happened in Japan. I'm asking, specifically, if an earthquake hit the power plant in Georgia, based on your agency's review of their safety design, would it withstand that earthquake?

MR. JACZKO: All of the plants that we've licensed and all of the plants that we are currently reviewing will meet strict safety standards for earthquakes and other natural phenomena. So certainly, for the existing plants, we believe absolutely that they can withstand an earthquake and they can meet the high standards that we've put in place. In the new plants, we're still continuing our review. We haven't completed our review, so I don't want to – I don't want to prejudge the outcome of that by making any final determinations.

REP. BARTON: Okay. But you are allowing this plant in Georgia to be constructed. So you've approved something.

MR. JACZKO: It's a preliminary approval for a limited amount of construction activity that's not related to the most safety-significant systems at this time.

REP. BARTON: Now, in general, for each plant in the United States, regardless of where it's located, does it have a minimum safety requirement to withstand an earthquake?

MR. JACZKO: That's true. All the plants have a requirement to be designed to deal with the kinds of earthquakes we would expect in about a 200-mile radius from that nuclear power plant.

REP. BARTON: Now, obviously, if a plant is in an area that's more prone to earthquakes, it might have a higher requirement than a plant that's in a location that's never had an earthquake in 500 years, but they all have to withstand some base-case earthquake design criteria.

MR. JACZKO: That's correct. They all have to withstand what we think is the maximum expected earthquake from the historical record within about 200 miles of that site.

REP. BARTON: Now, I'm told that the earthquake that hit Japan is order of magnitude, the fifth most powerful, ever-recorded anywhere in the world. So that's obviously a very powerful earthquake. In the United States, is the design criteria currently for that level of an earthquake that would be – say the standard the earthquake that hit San Francisco in 1906?

MR. JACZKO: Would like me to answer?

REP. BARTON: I would like you to answer. (Laughter.)

MR. JACZKO: I think it's important – I want to try and give a demonstration. I think we – we talk a lot about the magnitude of the earthquake and that's not really what the NRC looks at. If I – if you look at the cup of water that I have over here and you think of that as the nuclear reactor, the earthquake would be – I probably shouldn't fill up the water glass.

REP. BARTON: This is going to make TV, so do it right. (Laughter.)

MR. JACZKO: I practiced it before I started, so – so if you think of this as the nuclear power plant, the earthquake and when you talk about the magnitude of the earthquake, it would be like me hitting the table with my first. So something like that. And you'll see that it makes the glass over here vibrate.

That's what we actually measure and we design our nuclear power plants around is that shaking of the power plant. So the actual impact depends upon where I hit in relation to the glass. So you have a large earthquake like this that's very far away, may not have the same impact on a site as an earthquake that's maybe a little bit less but much closer, so something like that.

So we actually worry more about – we look at all of the different earthquakes that could happen in this region and we look at what that shaking is and we make sure that that shaking can handle what we think are the maximum historical earthquakes in that region. Now –

REP. BARTON: No, go ahead. Summarize.

MR. JACZKO: (Chuckles.) In addition to that, we know that we don't always know everything. So we've done a lot of studies over the years to look at earthquakes and phenomena beyond that kind of design earthquake and we've had the plants go back and look and see if there are things that they could do to ensure that they would be able to better withstand some possible earthquake that nobody's thought of or seen at this point.

And so we have what we call severe accident programs that all of the utilities have where they have procedures and they have ability to mitigate that kind of more severe event that may not ever have occurred in a particular region. So it's a multilayered system of defense. And if I could just briefly summarize one other point.

In addition to that, following, September 11<sup>th</sup>, we required all of the nuclear reactors in this country to pre-stage equipment that can perform this emergency last – kind of – ditch effort cooling to the reactor and the spent fuel. And that's a – that's a variety of procedures and different types of equipment that are required to be at the reactor sites. And we've inspected the reactors to make sure that they have that. So you know, that gives you another level of defense beyond really just what the design of the reactor is.

REP. BARTON: Thank you and thank you for the chair's courtesy in letting him answer that question.

REP. WHITFIELD: The gentlelady from California is recognized for five minutes.

REPRESENTATIVE LOIS CAPPAS (D-CA): And Mr. Chairman, if you wouldn't mind granting me a little consideration – I represent Diablo Canyon nuclear facility and I have three packed questions, but something was stated earlier that I believe needs to be clarified just for the record. If I could ask the chairman, in addition to thanking him for his testimony, did you say

that Unit 4 in Japan, in the incident there, that there was no water in Unit 4 surrounding the spent fuel and that Unit 3 was in danger of losing the water source?

MR. JACZKO: We believe, at this point, that Unit 4 may have lost a significant inventory, if not lost all of its water.

REP. CAPPS: And that Unit 3 is in danger?

MR. JACZKO: Well, I would say what we know at Unit 3 is that there's possibly – again, our information is limited, so we do – well, we believe that there's a crack in the spent fuel pool for Unit 3 as well, which could lead to a loss of water in that pool.

REP. CAPPS: Thank you. Diablo Canyon nuclear facility in my congressional district sits on the Hosgri fault zone. Then in 2008, the U.S. Geological Survey informed the utility that a new fault had been found near Diablo Canyon. It's called the Shoreline fault. You're well-aware about the California law requiring the energy commission to perform reviews of the seismic issues associated with our state's nuclear plants, I'm sure.

The energy commission recommended – and our state PUC directed that independent, peer-reviewed advanced seismic studies be performed prior to applying for re-licensure. So you think the NRC should take advantage of the talent, expertise and resources available in California so that all information on seismic issues could be analyzed with the goal of avoiding costly duplication?

MR. JACZKO: Well, we – ultimately, we have to make decisions, as an agency, based on the technical review that we, as an agency, do. And again, I can't get too far into some of these issues because we do have an ongoing hearing related to some of the very points that you've raised. So in our hearing process, we are prohibited from discussing those things outside the context of the commission.

REP. CAPPS: All right, I'll tell you what it seems to me and my constituents, that having the best eyes and minds in our country working together, looking at the seismic issues, makes the most sense. First and foremost, for my constituents, this is about safety. But seismic concerns also impact affordability and regional – reliable generation as well. So I hope that this issue can be revisited, not to take away from the responsibility and authority of the federal agency, but to work with other agencies. And I look forward to working with you as we go along in this area.

MR. JACZKO: Well, Congresswoman, if I could just briefly say.

REP. CAPPS: Sure.

MR. JACZKO: We actually did host a workshop within the last year, actually, that brought together a lot of these technical experts to have a discussion for the point that you said. We certainly are always open to hearing information from any technical expert that can provide information to us. So I just want to make the point that in the end, the decision-making has to come from our expert staff.

REP. CAPPS: Great. All right. Here's another question: My constituents have become increasingly concerned about the preparation for a station blackout event. If power is lost, they want to be assured that backup power will be available throughout the duration of an accident in order to prevent fuel melting.

In the last half-decade, both California reactors have been cited by you, by the NRC, for instances in which both backup diesel generators were down or there were problems involving battery power availability. In such instances, merely citations were given to the utilities. Should the NRC reevaluate its regulations and perhaps increase the penalties for such infractions in light of the accident in Japan as an incentive to force better compliance from the nuclear operators?

MR. JACZKO: Well, as I said, we intend to do a very systematic and methodical look at any lessons we can learn from this Japanese incident. And I certainly will keep your suggestion in mind as something for us to take a look at.

REP. CAPPS: Finally, I'd like you to address some safety issues in the event of an earthquake and a simultaneous accident at a nuclear plant. Diablo Canyon has a workable evacuation plan. They wouldn't be able to operate without one.

But as you may know, there's basically only one way in and out of San Luis Obispo, narrow Highway 1 along the coast. The NRC has ruled that it was non-credible that there could ever be multiple catastrophes such as an earthquake and a meltdown at the plant.

This is the quote from the NRC: "The commission has determined that the chance of such a bizarre concentration of events occurring is extremely small. Not only is this conclusion well-supported by the record evidence, it accords most eminently with commonsense notions of statistical probability." That's the end of their quote.

Now, we have just witnessed an earthquake, a tsunami and a nuclear meltdown all occurring in sequence. I want to ask the commission, if you would on my behalf, do they still believe the chance of this bizarre concentration of events is merely hypothetical? Do you think this decision should be revisited in light of the events in Japan?

MR. JACZKO: Well, I certainly will take your suggestion back to the commission. I would want to review that entire document in its entirety because certainly, we do – we do examine the possibility of earthquakes as an initiating event for a possible reactor problem. Of course, we believe we have systems in place that would, one, really prevent any kind of core damage from that, but two, if there is subsequent problems, we have mitigating strategies in other ways to cope with those. So I would just be happy to take a look at that document in its entirety.

REP. CAPPS: Thank you and just in conclusion, Mr. Chairman, you know, that's what they said two weeks ago, no doubt, in Japan as well. Enormous anxiety and sadness over the events that happened there. And here, we have seen in the past year, our three major sources of energy that this country uses, coal, oil and nuclear, all experiencing tragic accidents. And I do

look forward to working with you – your committee – your commission on the number-one goal of keeping our energy sources safe. Thank you.

MR. JACZKO: Thank you. And Congressman, if I could just add, of course, you understand we have not had any nuclear incidents in the last year in this country. The incidences were in other countries.

REP. WHITFIELD: The gentleman from West Virginia, Mr. McKinley, is recognized for five minutes.

REPRESENTATIVE DAVID MCKINLEY (R-WV): Thank you, Mr. Chairman. Does the NRC still have the authority, given – in light of what’s happened in Japan, I assume you still have the authority to grant the permits for continuing the design implementation of nuclear facilities?

MR. JACZKO: Certainly, the agency is an independent regulatory –

REP. MCKINLEY: Given – is there any delay or are you hearing anything that would set up – I would expect some extension might be necessary, but what would you suggest is a reasonable time frame for someone making an application?

MR. JACZKO: Well, as I said, I think the process of reviewing an application for a nuclear power plant’s a very complicated process and this is the first time we’re doing this, the first time we’ve done it in a long time. So I think there’s going to be some lessons that we learn, but the applicant and the agency. I’m sorry, I don’t want to get into kind of speculating how long or surmising how long I think it should happen. I would just say that, you know, we will do the thorough job we have to do to ensure safety of – (inaudible, cross talk).

REP. MCKINLEY: Do you have, given that this also is for budgeting, I haven’t seen – do you have some R&D money allocated for researching alternate uses for spent fuel rods?

MR. JACZKO: We currently, in our budget right now, have a significant amount of resources that we are using to look at spent fuel, the safety and security of spent fuel and transportation. We have a small piece of our budget that’s looking at reprocessing and developing a framework for reprocessing, which would be, perhaps, what you’re referring to as alternate uses.

REP. MCKINLEY: If you could send more to me, I’d like to know a little bit more about – and let’s go to the Yucca Mountain just for a moment. I don’t know whether it’s anecdotal or fact, but I know, of course, that the application has been withdrawn. But it was my understanding that consumers are still paying on their utility bills funds for that project. Is that accurate?

MR. JACZKO: I believe it is, although I would add that that’s not an area that the NRC has authority over.

REP. MCKINLEY: But is that accurate?

MR. JACZKO: I believe it is, but again, I don't follow that very closely other than generally what I read in the press.

REP. MCKINLEY: Okay, I'm just curious because if – from what I understand, we're collecting money for something that's never going to happen. You don't understand that. What about Shippingport? I think that was the first facility we had in this country, isn't it? Given – I think it was maybe – was that '65 – '63? When was Shippingport opened?

MR. JACZKO: I don't have the exact date of the initial license, but it was very early on in the U.S. nuclear program.

REP. MCKINLEY: In light of the circumstances and maybe you don't want to do a kneejerk reaction at all to this, but will you be looking at some of the older facilities to see what new technology – has Shippingport been upgraded all along?

MR. JACZKO: Shippingport is no longer an operating reactor.

REP. MCKINLEY: Is no longer in operation at all. So what happens when Shippingport goes out of operation – it goes out?

MR. JACZKO: Any of the reactors, when they go on a service are eventually decommissioned. We've decommissioned a large number of reactors in this country.

REP. MCKINLEY: Okay. There was also a story in the media that one of our naval vessels sailed through a cloud off Japan's – were you aware of that?

MR. JACZKO: Yes. We did have indications that in the early days of this incident, the reactor was going through a process that involves venting steam that accumulates in the reactor containment structure. And that steam needs to be released in order to reduce the pressures in that – in that containment vessel, which is one of the important – (inaudible, cross talk).

REP. MCKINLEY: Could that have been avoided – the ship going through that? Could that have been avoided?

MR. JACZKO: Well, my understanding was, they were performing activities to support search-and-rescue efforts in Japan, and that the doses that they were experiencing were from that particular plume, were not doses that would have a significant impact to health and safety.

REP. MCKINLEY: That's all I – and I yield back my time. Thank you very much.

REP. WHITFIELD: Thank you. This time, I recognize the gentleman from Massachusetts, Mr. Markey, for five minutes.

REPRESENTATIVE ED MARKEY (D-MA): Thank you, Mr. Chairman. Welcome. What interim safety measures are you going to require while you study the issue? In Germany, they're taking interim steps right now, as well as Switzerland, China, Venezuela. Are there any steps you would like to announce that you are going to take in order to ensure that the plants in our country are safe?

MR. JACZKO: Well, we – Congressman, we continue every day to make sure that the plants are safe. And at this time, we don't have any specific actions that we think are necessary to add to the safety of the facilities beyond what we do.

REP. MARKEY: Are there any interim advisories that you are going to send out? After 9/11, the NRC sent out some interim advisories. After Fukushima, are you – are you planning on doing that?

MR. JACZKO: We do intend to send out what we refer to as a regulatory information summary that will – that will generally characterize the event at the – in Japan. Again, at this point we don't have detailed information. But that will remind licensees of, of course, their obligations under their existing license – but as well as these additional measures that I talked about to these severe-accident-types of strategies, as well as the efforts that we implemented after 9/11 – to put in place these systems and procedures to ensure that they could provide emergency cooling to the reactor if necessary.

REP. MARKEY: Going back to the question which Chairman Whitfield asked you about Dr. Ma and his concern about the AP1000 design, you said in your – with your vote that “while it is clear that the use of ductile material in all areas of the shield building would provide an additional enhancement to safety, that I am not convinced that such a design requirement exists.”

After what's going on in Japan right now, would you reconsider that in order to, perhaps, consider adding that ductile material as part of the process – the construction of AP1000 plants?

MR. JACZKO: As I said, I think we'll do a very thorough review of the information from Japan. But we don't anticipate getting to a final decision on that design for at least until the end of the summer. So I think there'll be plenty of information from our review at that time to inform that decision.

REP. MARKEY: Yeah. As you know, I authored legislation in 2002 that required the distribution of potassium iodide to residents living within a 20-mile radius of nuclear power plants, based upon a Sandia study. Because we learned after Chernobyl that this cheap medication can prevent cancers caused by radioactive iodine.

The Bush White House ignored my language and blocked an effort by HHS to implement it. In fact, they even took away HHS' power to complete – to complete its KI distribution guidelines. The Obama administration has not implemented it even though the surgeon general has just said yesterday that she thought it was worthwhile precaution for West Coast residents.

Don't you think that this distribution of potassium iodide to residents within 20 miles of nuclear power plants is a common-sense measure that should be implemented?

MR. JACZKO: Well, the particular protective actions that would be issued for any nuclear power plant incident are ultimately the responsibilities of the state and local governments. They have that primary on-the-ground responsibility to decide how to deal with an accident. So –

REP. MARKEY: But the plants are licensed by the Nuclear Regulatory Commission, not by the states. You're the agency of expertise in terms of the spread of nuclear materials, not state officials. Do you believe that it is advisable to look at a 20-mile radius for distribution of potassium iodide?

MR. JACZKO: The current policy of the commission is that potassium iodide would be one of the protective action that could be considered within what we call our emergency –

REP. MARKEY: The Bush guideline was that for 10 (miles) to 20 miles, people should just stop running or ducking under their bed. Do you think that's – there is no other medicine. So is there – is there a recommendation from you that they should look at potassium iodide for the 10- to 20-mile radius?

MR. JACZKO: Again, I would, really in many ways, defer to state and local governments as they believe that that's appropriate. I think that there certainly are many protective actions that could be taken – (inaudible, cross talk).

REP. MARKEY: I just don't think that they have the expertise looking at the probabilistic risk assessment of the likelihood of an accident in terms of having KI there.

Now, the San Onofre reactor is also rated to withstand a 7.0 earthquake. Should we – should we be retrofitting those reactors to ensure that they can withstand much stronger earthquakes? The IAEA warned Japan two years ago that their nuclear power plants were not designed well-enough to withstand a strong earthquake, and they were only able to withstand a 7.0 earthquake. That's what San Onofre is designed to. Should we be looking at retrofitting of the San Onofre plant and plants like that?

MR. JACZKO: Well, as I said, the plants are actually designed to the ground motion and the shaking that you would get at any facility. And that's based on what we think are the most, or, well, what are really the – what's the maximum earthquake that's occurred in any particular area.

So it doesn't directly necessarily mean a 7.0 earthquake. It's what we think is the maximum credible earthquake. And I continue to believe that that's the appropriate standard for the agency. But again, we will – we will take a look at all of the information we have from Japan as that comes in. And if we have to make modifications to our requirements, we will.

REP. MARKEY: I would just hope that maximum credible earthquake would be re-examined after what's happened in Chile, New Zealand and Japan, that we'd be in the other part of that earthquake zone – that as you have to have an earthquake, and so that we do have the proper protections.

REP. WHITFIELD: The gentleman from Louisiana, Mr. Cassidy, is recognized for five minutes.

REPRESENTATIVE BILL CASSIDY (R-LA): Thank you, sir. Are you all – just from a – I'm a physician, so I'm going to speak about it and sound like a physician. In effect, there's going to be a post-mortem done on that accident. And folks are going to go in there and see what went wrong, and learn from it to ideally keep it from occurring again.

Now, are there going to be people from industry invited to that party, if you will, or to that post-mortem? Or it only will be academia and government? It seems all three need to be there. And so I don't think I've heard you mention having industry there to kind of – yeah, what do we do? Thoughts?

MR. JACZKO: Well, we haven't – we haven't yet decided how we'll go about our review. But I want it to be systematic and methodical. Those are the two words that I think are most important right now. And in our normal practice as an agency, we always reach out to stakeholders – not just industry, but public-interest groups and other members of the public. So I would expect that whatever we do as part of this process will have a significant public involvement.

REP. CASSIDY: Now, let me ask. Because when I toured the nuclear power plant near my home – I live in – I'm from Louisiana, so it's the River Bend nuclear power plant. As I recall, they were coming up with a fail-safe mechanism to keep the generators running even if there was something dire that happened to the plant.

I gather what has happened here is that the tsunami – because the diesel was on the ground – washed away the diesel, so they were unable to run the generators. So just for the reassurance of folks here – and frankly, my city, if you will – it seems that we've been proactive on that particular issue so that there is a backup to the backup to the backup to keep the generators running, to pump the water in case – you see where I'm going with that.

MR. JACZKO: Well, we do – and again, I don't want to speculate on exactly what happened in Japan because we really just don't know – (inaudible, cross talk).

REP. CASSIDY: I think I'm channeling CNN right now. (Laughter.)

MR. JACZKO: All the diesel generators at nuclear power plants in this country are considered vital equipment. The emergency diesel generators are vital pieces of equipment. So they are designed as with the other safety-significant structures and components to be able to withstand the natural phenomenon.

So if – depending on the plant, that could be hurricanes, tornados, tsunamis, earthquakes – whatever the natural phenomena are that are relevant to a particular site.

REP. CASSIDY: So I – but is – not knowing that you – that we’re not speculating on what happened in Japan, but just to go to the point. The backup generators to keep those cooling units running, we do have – we have proactively addressed this in this country. And there is a way if a Hurricane Katrina comes through and hits my state and one system goes out, there’s another system to keep it running. Is that my understanding?

MR. JACZKO: That’s correct. Each reactor has at least two diesel generators. In the event that one of them can’t perform its function, that will be an additional – in addition to that, many states have – I’m sorry, many sites have what we call a station-blackout diesel or some other type of electrical power supply that can function in the event that those primary emergency diesel generators are not operating.

And then of course in addition to that, as I’ve referred to, all of the plants in this country have been required to look at pre-staging other additional emergency equipment that could deal with this kind of situation.

REP. CASSIDY: You mentioned that –

MR. JACZKO: In some cases, that would be electrical power supplies or portable generators, and things like that.

REP. CASSIDY: Got you. You may have answered this next question. I’m sorry, I was out of the room for a bit. Clearly, we’re talking not just natural disasters, but man-made. Do I understand that new nuclear power plants – or do I not understand correctly – that they have to be built so that if there is a terrorist attack and a plane is driven into them, that somehow it is still protected?

MR. JACZKO: For the existing fleet of reactors, we have required them to be able to deal with the – with large fires and explosions that could occur at that – at the plant. And some of that was related to the possibilities of terrorist attacks involving aircraft.

For new plants, what we’ve required them – the new designs that are required to be able to withstand an aircraft-type impact at the site.

REP. CASSIDY: Now, the containment structure – again, you may have said this; I apologize – the containment structure, though – even if there is a meltdown, how effectively can that containment structure keep it contained?

MR. JACZKO: Well, that’s the purpose of the containment structure – is again – in the event that – the very unlikely event that all of the safety systems fail and we’re not able to keep cooling to the core, and were it to eventually have significant fuel damage or some kind of melting, that any radiological material would be contained within that structure.

REP. CASSIDY: Given that there's some that would be vented off – but nonetheless, if there's a disaster, it's a disaster within the containment?

MR. JACZKO: That would be – that's the design goal and the expectation. And of course, if that were to fail, we have very robust programs in place to do emergency evacuations – (inaudible, cross talk).

REP. CASSIDY: So this is a 1970s-circa plant. So I presume since it dates from the '70s since, we have even more robust protections?

MR. JACZKO: We've looked at all of these plants over the years. And in some cases – well actually, in the late '80s and early '90s we did systematic evaluations of the plants to see how they would deal with these kind of very severe accidents. In some cases, plants took the step of low-cost modifications that would deal with these more severe kinds of events.

So we have a lot of – a lot of things that have been done. The plants are certainly not the same plants that they were when they were originally built and designed.

REP. CASSIDY: Thank you very much.

REP. WHITFIELD: The gentleman from Michigan, Mr. Dingell, is recognized for five minutes.

REPRESENTATIVE JOHN D. DINGELL (D-MI): Mr. Chairman, I thank you for your courtesy. Mr. Chairman, I'm sure you are making a careful review of the events that are going forward in Japan with regard to the nuclear facility over there and the attendant circumstances. Will you make such a review?

MR. JACZKO: We certainly do intend to.

REP. DINGELL: All right.

MR. JACZKO: Once we have good, credible information, we'll do a thorough and systematic review.

REP. DINGELL: Good. Now, I would assume that when you have – well first of all, one, would you submit to this committee your plans with regard to that, as to how you intend to go into that to ascertain what happened?

MR. JACZKO: We certainly will. We'll make – (inaudible, cross talk).

REP. DINGELL: And then, would you see that we're informed as events go forward so we know what's taking place over there?

MR. JACZKO: We'll certainly do that.

REP. DINGELL: And would you also submit to us for the record how NRC is going to go about defining the lessons that you have learned about events in Japan, and how you will incorporate them into your regulatory requirements? You'd do that for us – (inaudible, cross talk).

MR. JACZKO: We'll certainly do that.

REP. DINGELL: Now, does the NRC regularly use new information about the different types of risk as these different types of risks and information become available? Yes, or no?

MR. JACZKO: Yes.

REP. DINGELL: Would you provide for the record the process by which NRC does this risk assessment?

MR. JACZKO: Well, there's a variety of –

REP. DINGELL: No, just for the record.

MR. JACZKO: Oh, of course.

REP. DINGELL: Our time, Mr. Chairman, is very limited.

MR. JACZKO: Please. Of course.

REP. DINGELL: And I have a lot of questions here. Mr. Chairman, do the NRC's licensing standard for nuclear plants take into account the risk of earthquake or tsunami?

MR. JACZKO: They incorporate all natural hazards, including earthquakes and tsunamis.

REP. DINGELL: I would – I would note with distress. I think you probably remember Diablo Canyon some years ago where they were going to build right on a fault. Are you more careful about that than your predecessors were in that particular –

MR. JACZKO: Right now – well, we look at all the nuclear power plants in the country. We look at seismic activity from all of them because while not all plants are in high-seismic areas, almost all plants could experience some seismic activity from lower-level earthquake activity. So we consider that for all plants.

REP. DINGELL: Now Mr. Chairman, would you provide a list of the kinds of disasters for which NRC takes account of in terms of its licensing standards? Just submit that for the record please.

MR. JACZKO: We'll provide that.

REP. DINGELL: Now Mr. Chairman, it's my understanding that one of the main problems in Japan has been inadequate access to emergency power to keep the reactors cool. And that poses some substantial ongoing risk. Do NRC's licensing standards include adequate access to emergency power? And are you satisfied that they do so?

MR. JACZKO: We believe that our requirements are very strong in this area. And we continue actively in our inspection program to ensure that licensees have the appropriate equipment such as diesel generator, and that it operates successfully.

REP. DINGELL: Now Mr. Chairman, you have an unholy mess on your hands – you and the Department of Energy – with regard to Yucca Mountain. You've spent, as near as I can gather, something like 17 billion (dollars) on this that's been collected from rate payers for long-term storage of nuclear waste. The administration opposes going forward. You've got this nuclear waste that's piling up all over the country. Some of it is going into cooling ponds. They're talking about putting the rest in dry cask storage.

Do you have any kind of long-term plan to address what you're going to do with this infernal mess, and how you're going to deal with the problem?

MR. JACZKO: Well right now, we're looking at a longer time frame for storage of spent fuel than we have in the past. But right now, we believe that spent fuel certainly can be – can be stored safely and securely with the existing systems over several decades –

REP. DINGELL: But you don't have – but you don't have a plan for how you're going to deal with it. You're being sued by the electrical utilities because they're collecting monies from their rate payers that are not being spent on the purposes for which they're being collected. The stuff keeps piling up. And you've doubled the amount that you can store in a single pool, but that's running out. You're running out of pools in which to store it.

And as these plants close, you're going to – you're going to perhaps lose the responsibility of the persons who are storing this thing. And the stuff just keeps piling up. Is there a long-term plan anywhere in government, in your agency, in the Department of Energy, in the Office of Management or Budget, or in any other agency of the federal government as to what we're going to do about this infernal mess?

MR. JACZKO: Well, although it's not an area that we are directly working, the Secretary of Energy has convened a blue-ribbon commission to look at some of those longer-term options and see what an optimal approach should be –

REP. DINGELL: The answer – the answer, Mr. Chairman, is no. Is it not?

MR. JACZKO: I –

REP. DINGELL: Go ahead.

MR. JACZKO: I believe there are plans through this blue-ribbon commission to look long-term. And we believe, certainly from the agency, that the existing systems are –

REP. DINGELL: But the answer – the answer, my beloved friend, is no. And I say this with respect and affection. But the simple fact of the matter is, you're sitting on a – you're sitting on a mighty fine mess that nobody knows what to do with. And each and every one of those situations offers unique opportunity for terrifying mischief to the – to the private-public interest and to the people in the – in the area. And the cost of this whole sorry-ass mess keeps growing up – and going up.

REP. WHITFIELD: : And we agree with you, Mr. Dingell. At this point, I'd like to recognize the gentleman from Texas, Mr. Burgess, for five minutes.

REPRESENTATIVE MICHAEL BURGESS (R-TX): Thank you, Mr. Chairman. And Mr. Chairman, thank you for being here and spending so long with us today. Thank you for speaking with me yesterday at the end of what obviously was a very long day for you. And I appreciate your willingness to make yourself to members of both sides of the dais during this crisis in Japan.

Recently, an e-mail has been circulating – and I think it came to the committee staff – that suggested a much higher level of radioactivity at one of the plants than has previously been reported. Do you know anything about that?

MR. JACZKO: Well, we are continuing to monitor the situation as best we can. Again, I'm not familiar with the e-mail that you're talking about. But we do believe that certainly with one of the spent-fuel pools, that there have been certainly elevated radiation readings. And over the last several days, there have been times based on certain incidents in the site where radiation levels have gone up and come back down.

REP. BURGESS: But when you say elevated, ballpark – are you talking about chest X-ray, CAT scan, multiple CAT scans? What sort of numbers are you talking about?

MR. JACZKO: Right now, we have indications at the site of radiation levels that would be levels that would be lethal within a fairly short period of time. So they're very significant radiation levels.

REP. BURGESS: Very significant. OK. And that's different from kind of what we've been hearing before. Is that correct?

MR. JACZKO: Again, I'm not – I would say it's certainly a more recent development that we've seen these very, very high readings.

REP. BURGESS: OK. Now, you were very good to provide us with written testimony. You were very good to provide us with some updates on the situation. It's obviously a very fluid situation in Japan. Would you be good enough to give us in written form what you described to us as you are finishing up your prepared testimony this afternoon, so that there's no confusion

over what we – when we quote you? The press is here, and we'll all be asked questions as you finish up.

Could you provide us the written information that you would like us to have?

MR. JACZKO: We'll provide that for you.

REP. BURGESS: Because some of it – and I think Ms. Capps on the other side talked about it a little bit. I mean, you talked about the spent-fuel pool being dry and the radiation being high, and again, things that were different from what I had been gathering from the – just of the press reports just prior to coming in here.

And it – and it would be good to see that – again, what is factual and what is not.

MR. JACZKO: We'll be happy to provide that. And I would just say that our information is limited. So we've been very careful to only provide information that we believe is very reliable.

REP. BURGESS: Well now, we're here to talk – (chuckles) – about the budget. And the budget you prepared, obviously, was before all this happened. Do you anticipate submitting an addendum to the request in light of things that have happened this past week?

MR. JACZKO: That's something we'll review at this point. I don't – I don't have an answer for you. But I will certainly come back to the committee if we do.

REP. BURGESS: Can you give us just kind of a back-of-the-envelope estimate: In a perfect world, what would be the percentage of electricity in this country – in this country produced by nuclear power?

MR. JACZKO: It's approximately 20 percent.

REP. BURGESS: What is being produced now?

MR. JACZKO: Currently? I would have to look. But I would take an estimate of about probably – about that number. I'm not aware of any significant plant outages right now.

REP. BURGESS: So it would be your position as chairman of the Nuclear Regulatory Commission that the percentage of electricity produced in America would not increase over what it is today? Do I understand that correctly?

MR. JACZKO: I'm sorry.

REP. BURGESS: In an ideal world, this country maximizing all of the different energy production possibilities that we have, how much – what percentage – would be nuclear?

MR. JACZKO: Well, it's really not up to us to decide that. I think the agency's responsibility is to make sure that if there are nuclear power plants in this country, that they continue to operate safely and securely.

REP. BURGESS: Do you have a concept of what would be the ideal number of nuclear plants in this country in the next 10, 20, 30 years?

MR. JACZKO: That's really not – certainly, as an agency, we don't have a concept of an ideal number. Our job is to make sure it's safe and secure.

REP. BURGESS: How many would be too many for you to keep up with to ensure that they were safety (ph)?

MR. JACZKO: Right now, we think – certainly, we're planning for the possibility of new plants to be under construction in the next several years. So we believe with the budgets that we've developed, we would have the resources we need to handle those additional units if they're licensed.

REP. BURGESS: All right. Chairman Dingell described in very colorful terms “an infernal mess” at Yucca Mountain. If you were the king of the nuclear – (chuckles) – regulatory world, the sole decision-maker on nuclear waste, what would be the ideal solution, the sine qua non? What would you do?

MR. JACZKO: Well, I – as I said, I really – I can't get too much into that because we do have an ongoing proceeding with regard to Yucca Mountain. And you know, the job of keeping plants and the materials and all the things that we regulate safe is pretty much a job that – in particular, these days – keeps me awake almost 24 hours a day.

So I'll worry about – let somebody else worry about some of those other broader policy questions.

REP. BURGESS: We thank you for your activities during this crisis. Thank you.

REP. WHITFIELD: This time, I'll recognize the gentleman from Pennsylvania, Mr. Doyle, for five minutes.

REPRESENTATIVE MICHAEL F. DOYLE (D-PA): Thank you, Mr. Chairman. Chairman, thanks for your patience and endurance today. Given what's happened in Japan, I'm sure this has been a reminder to all of us that everyone agrees that certifying new nuclear designs is a crucial and important task to make sure these reactors are durable and can be safely operated.

And I understand that the new reactor design certification process involves not only professional and accredited NRC staff, but there's also an outside expert advisory committee that oversees the review and recommendations of the NRC staff. Is that correct?

MR. JACZKO: We do have an – it's an outside – or it's a agency-independent advisory committee.

REP. DOYLE: Yeah. That's right. The ACRS. And then ultimately, you and your colleagues also evaluate and make your own independent judgments. Correct?

MR. JACZKO: Correct.

REP. DOYLE: So I want to address this situation to get more clarification and more on the record about concerns raised by my good friend, Ed Markey, regarding Westinghouse's AP1000. I want you to helpfully provide some more clarification to the process that was involved certifying this reactor.

Now, is it true that Dr. Ma's nonconcurrence issues during the deliberation for the Westinghouse AP1000 advanced final safety evaluation report were, in fact, given due consideration by his NRC staff colleagues?

MR. JACZKO: I believe that they were.

REP. DOYLE: And also, the members of the independent Advisory Committee for Reactor Safeguards?

MR. JACZKO: They did. As part of their review, they did specifically receive a presentation from Mr. Ma about this – (inaudible, cross talk).

REP. DOYLE: And you and your commission colleagues?

MR. JACZKO: I don't want to speak for the actions of all of my colleagues. But I personally met with him and talked to him about his concerns. And –

REP. DOYLE: And can you tell us what happened after Dr. Ma made his presentation and raised his concerns? So he raised these concerns. And tell us what happened after that.

MR. JACZKO: Well, they were – I think they were looked at by certainly all of – or the staff at the agency that were reviewing the design. This advisory committee also did look at his perspectives. And they came to their own conclusions that, I think, ultimately, no one disputes that the recommendations that he has would make the design safer. But we think that the design, as it is right now, would appear to meet our standards. But I would add that it was also Mr. Ma who originally raised concerns with a previous iteration of the design.

And as a result of those concerns, the agency did indicate to Westinghouse that significant changes would need to be made. They in fact did make significant changes and I think in some sense, Mr. Ma believes that – and I don't want to speak for him directly – but my understanding of his position is that he thinks that those changes are not necessarily enough to satisfy his initial concerns.

REP. DOYLE: But it's true that his concerns were put forward and that the NRC team of reviewers that throughout the drafting of the AFSER, they evaluated it and they basically overruled his concerns, basically, as did the subcommittee, as did – I mean this went through a process. I just want to make clear for the record that we don't have a person at the department who's raised concerns and they were swept under the rug or ignored. I mean these concerns were addressed. Is that not correct?

MR. JACZKO: Yeah, I feel very strongly that we create an environment at the agency where people can raise concerns and those concerns can be thoroughly reviewed and vetted. And I believe, in this case, that that's what happened.

REP. DOYLE: Thank you very much. That's all I have, Mr. Chairman.

REP. WHITFIELD: The gentleman from Nebraska, Mr. Terry, is recognized for five minutes.

REPRESENTATIVE LEE TERRY (R-NE): Thank you for being here. I'm just as curious – there's two power plants – Mr. Barton talked about one in Georgia, but there's one in Georgia, one in South Carolina that sometime this year or early next year should be issued their combined construction and operating license. My question, first, is: Are there any discussions occurring to delay that COL now because of the Japanese disaster?

MR. JACZKO: Well, right now, all of the – those two plants – potential plants that you've referenced are all based around the AP1000 design. That design is currently undergoing a public review process. I expect we'll get comments as a result of that public process related to the situation in Japan. So we'll evaluate those as we get them.

REP. TERRY: So it's yes and maybe no.

MR. JACZKO: At this point, we haven't done – we're following our normal path with the reviews at this point.

REP. TERRY: All right. It sounds like there may be some uncertainty in that process of whether they'll get their combined construction, operating license in '11 or early '12.

MR. JACZKO: Well, we – we're proceeding down a path to continue the reviews. As I said earlier –

REP. TERRY: There's no reason to repeat the answer. I'm curious to how many other applications have been made for the early site permits. Do you know how many are sitting with you all?

MR. JACZKO: We currently have, I believe, one or two new early site permits in front of the agency are expected to come.

REP. TERRY: All right. Are there any that have been – have been provided their early site permit and now on course to go to the next level of permitting? I'm just trying to figure out how many are in the pipeline?

MR. JACZKO: Right now, we have 12 applications in front of us for approximately 20 reactors. Those are actual combined license applications and then we have, I believe, it's two early site permits that are not yet tied specifically to an actual license for a plant.

REP. TERRY: All right. I've studied a lot over the last couple years the small modular reactors. I just want to know what your personal opinion is, where the process is in reviewing the technology, how close we are to perhaps even rolling out a pilot project?

MR. JACZKO: Well, we – I like to think of the small modular reactors in three groupings. We have the small modular reactors which are very much based on the existing type of reactors that we have now, but smaller. For that type of design, which we call (integral ?) light water reactors – we would anticipate, in the next year or so, an application for the construction of a small modular reactor type.

We also anticipate one or more applications for designs related to those smaller modular reactors. The second category we have are what are basically called high-temperature gas reactors. So it's a slightly different technology. That is mostly work that's tied to the Next Generation Nuclear Plant project and that is an activity that's a little bit farther away, probably more like 2013, where we might see an application.

The area in which probably there's the least certainty is with more of the nontraditional reactor types – (inaudible, cross talk).

REP. TERRY: The one that the chairman may have raised earlier with you.

MR. JACZKO: Exactly. Those are much more, right now, in what I would call the conceptual stage. So they haven't progressed to the point where we really have detailed discussions about possible reviews of applications.

REP. TERRY: All right. I appreciate that. I'll yield my 59 seconds back to the chairman.

REP. WHITFIELD: Thank you. At this time, I recognize the gentleman from Louisiana, Mr. Scalise, for five minutes.

REPRESENTATIVE STEVE SCALISE (R-LA): Thank you, Mr. Chairman and Mr. Jaczko. I appreciate you being before our committee. I know we have some votes on the House floor, so I'll try to be brief and ask direct questions. I think the secretary had indicated that the United States was helping Japan, doing some testing on contamination on the ground. Are you familiar – what types of testing's currently being done that we're involved in and have you all found anything right now of concern?

MR. JACZKO: Well, right now, my understanding is we have – are working to provide the ability to do air sampling of radiation. We have some readings of – as I said, of very high levels of contamination around some of the reactor sites and at this point, I'm not sure of the origin of that, whether that's coming from U.S. assistance to Japan or whether that's coming directly from the Japanese.

REP. SCALISE: Okay, thanks. I would imagine, right now, there are a number of applications that are pending before your agency at various levels, awaiting decisions. Do you anticipate that those decisions will still go forward at the current pace or do you see anything changing there?

MR. JACZKO: Right now, we don't – we don't have any intention to change the approach we're taking. But as I've said, we're – we're going to do a very systematic and methodical review of the information coming from Japan. And if there's some information that would require us to revise our approach, then we'll certainly do that.

REP. SCALISE: Thank you. And I would imagine – you know, as with any crisis. I mean we've experienced more than our fair share in South Louisiana, but there will be an evaluation in general just to see what lessons can be learned and I imagine we'll – you know, we'll make sure that if we learn some things from how they did things right, maybe how they did things wrong if they did that we can incorporate that. But in the end, to still move forward and not retreat from energy production in this country.

MR. JACZKO: Well, we'll certainly do that type of review. And again, I don't want to prejudge what comes out of it. If we get information that tells us we need to make a change, we will if we get information that tells us that things are good, then we'll continue to proceed as we are.

REP. SCALISE: Thank you for your time. I appreciate it. Thank you. Mr. Chairman, I yield back.

REP. WHITFIELD: Mr. Jaczko, I just want to ask for clarification. In response to Mr. Terry's question, you talked about on the small modulars, there are three or four different categories, the existing type, the third type was NGNP 2013 conceptual. What determines what category a design would be in? Is that based on actual applications or is that just on general knowledge or –

MR. JACZKO: It's really the – I would say the state of readiness of the designers and the vendors themselves. So –

REP. WHITFIELD: The state of readiness of the vendors and the designers?

MR. JACZKO: Yes.

REP. WHITFIELD: Okay. Thank you. Mr. Rush, do you have anything else?

REP. RUSH: Mr. Chairman, Administrator – I would like to know if, in fact, over the last five years, can you furnish this committee with the infractions or violations or emergency conditions where the NRC had to send an emergency crew to any of the facilities that operates within the continental United States?

MR. JACZKO: We can certainly send you that information.

REP. RUSH: Yeah, I'd like to just know what level of responses and what level of issues that you've dealt with over the last five years.

MR. JACZKO: We will send you that information.

REP. WHITFIELD: Thank you very much. Mr. Rush, you and I have three minutes to go vote. Mr. Commissioner, thank you for your time today. We appreciate it very much. We look forward to working with you as we move forward on nuclear energy and safety and look forward to future opportunities.

MR. JACZKO: Thank you.

REP. WHITFIELD: With that, the hearing is ended.

(END)

**From:** [McIntyre, David](#)  
**To:** [Anderson, Joseph](#); [Burnell, Scott](#); [Harrington, Holly](#)  
**Cc:** [Kozal, Jason](#); [Dudek, Michael](#); [Kahler, Robert](#); [Trocine, Leigh](#); [RMTPACTSU\\_ELNRC](#)  
**Subject:** RE: ACTION: Discovery Channel: Power of Nature  
**Date:** Friday, March 18, 2011 5:29:16 PM

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He's been advised to contact the US Embassy in Tokyo.

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**From:** Anderson, Joseph  
**Sent:** Friday, March 18, 2011 5:26 PM  
**To:** Burnell, Scott; McIntyre, David; Harrington, Holly  
**Cc:** Kozal, Jason; Dudek, Michael; Kahler, Robert; Trocine, Leigh; RMTPACTSU\_ELNRC  
**Subject:** ACTION: Discovery Channel: Power of Nature

For OPA review and action, as deemed appropriate. I referred Mr. Goodley to the HOO to get in contact with OPA on his request (as outlined in e-mail below).

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**From:** Goodley, Tristan [[Tristan.Goodley@darlowsmithson.com](mailto:Tristan.Goodley@darlowsmithson.com)]  
**Sent:** Friday, March 18, 2011 4:23 PM  
**To:** Anderson, Joseph  
**Subject:** Discovery Channel: Power of Nature

Dear Joe,

Great to talk to you a moment ago, this email is a slight adjustment on the one I sent to NRC public affairs earlier today. I'm an assistant producer with Darlow Smithson Productions in the UK and we're working on a documentary about the ongoing disaster in Japan. The Discovery Channel have commissioned the film for US and UK audiences exploring the science & engineering aspects of such a massive seismic event in one of the world's most developed nations. Particular attention will be paid to the mechanisms of the disaster and the international effort involved with controlling the damaged Fukushima reactors. The expert assistance offered by the NRC team that has travelled to Japan, and the back-up infrastructure in the US is a really strong human story amongst the factual elements in the film. We will have a team in Tokyo by Sunday for a week of shooting and would be extremely interested in visiting the NRC operation centre there, and perhaps to record a brief interview with one of your colleagues.

Some questions I'd really like to explore further include:

- The specifics of the assistance that the NRC experts in Japan will be able to offer?
- What physical measures might be deployed over the coming weeks?
- The projected length of time that the NRC assistance team will be stationed in Japan?

If there is a possibility of making contact with Charles Castro in Japan I'd also be extremely keen to briefly discuss the operation with him, though I fully understand that this is an ongoing crisis and that opportunity is particularly unlikely.

Kindest Regards  
Tristan

TRISTAN GOODLEY  
**DARLOW SMITHSON PRODUCTIONS**  
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RRRR-165

Please note that from 13<sup>th</sup> December 2010, Darlow Smithson Productions will be based at Shepherds Building  
Central, Charecroft Way; London W14 0EE, England, UK  
Tel: +44 (0)20 7482 7027 [www.darlowsmithson.com](http://www.darlowsmithson.com)

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**From:** LIA07 Hoc  
**Sent:** Friday, April 08, 2011 9:05 PM  
**To:** Hoc, RST16  
**Cc:** RST01 Hoc; RST06 Hoc  
**Subject:** RE: OOU - Inquiry on Data from USNRC Earthquake-Tsunami Report

Thank you Rosemary!

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**From:** Hoc, RST16  
**Sent:** Friday, April 08, 2011 9:04 PM  
**To:** LIA07 Hoc  
**Cc:** RST01 Hoc; RST06 Hoc  
**Subject:** OOU - Inquiry on Data from USNRC Earthquake-Tsunami Report

Sara,

I have made a chart to address the questions from T. Zerr.

If you have any further questions, please let us know.

These trends are not a concern to the RST, because the operable condition of the instrumentation is in question, and the validity of the readings is questionable.

Rosemary Reeves  
RST Chronologist on 4/8/11: 3-11 shift

*RRR/166*

Nuclear News Flashes

Friday, Mar 18, 2011

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- \*\* French prime minister promises stricter criteria for nuclear plant exports
- \*\* Tepco says tsunami, not earthquake, led to Fukushima accident
- \*\* US military equipment enlisted to help at Fukushima I
- \*\* Fukushima recovery will take 'years': ASN commissioner
- \*\* US nuclear industry to seek answers in Fukushima I events
- \*\* Senators introduce international nuclear safety bill
- \*\* Correction

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\*\*\* Tepco works to restore offsite power to Fukushima I

Tokyo Electric Power Co. said it was taking steps to restore offsite power at its Fukushima I nuclear power plant, starting March 19 with unit 2.

Tepco said in a statement at 4 pm Tokyo time March 18 that it has connected the plant to an external transmission line and "confirmed that electricity can be supplied."

Tepco said it plans to restore power first to unit 2, which it said "is expected to be less damaged." The utility has scheduled the work to connect cables and electrical transmission gear to provide back-up power to units 1 and 2 on March 19, Japan's Nuclear and Industrial Safety Agency said March 18.

Units 3 through 6 are scheduled to be connected March 20, NISA said.

"After checking pumps and other equipments are functional, we will restore the damaged items, putting priority on the equipments for sending cooling water to the reactor," Tepco said.

About 160 workers, including 13 Tepco employees, are working to restore power supply to the reactors, the utility said.

A diesel generator located in unit 6 was operable and providing power to that unit and unit 5, NISA said in an update late March 18. Water is being provided to the reactor vessel and spent fuel pools of

the two units, NISA said.

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**\*\*\* NISA's Level 5 rating of Fukushima events excluded worker exposure**

The new rating of the Fukushima I accident at Level 5 on the seven-level International Nuclear Event Scale excluded worker exposure, according to reports Japan's Nuclear and Industrial Safety Agency filed with the IAEA March 18.

The initial Fukushima INES rating on March 12 was Level 4. Both ratings are provisional.

NISA said in the reports on units 1, 2 and 3 that at least one worker had received a radiation dose in excess of the annual limit of 100 milliSievert. But it said radiological impact was not taken into account in the rating "because the correspond(ing) work still continues."

Dose information has not been released. Radiation levels on the site remain very high, and the allowed intervention dose was raised March 17 to 250 milliSievert, 2.5 times the statutory annual occupational limit.

NISA said the Level 5 rating was chosen on the assumption that no more than a few percent of the Fukushima core inventories was released.

French regulator Philippe Jamet told journalists March 18 that Level 5 was "not necessarily reasonable" given the scope of the accident at the Japanese plant. The 1979 accident at the Three Mile Island-2 nuclear unit in the US was rated at Level 5. That accident involved fuel melt but no containment failure, and affected a single reactor unit. The 1986 Chernobyl-4 accident was rated Level 7.

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**\*\*\* French prime minister promises stricter criteria for nuclear plant exports**

France will export nuclear power plants only to countries with the technical and organizational capacity to manage a major accident like the one at Fukushima I in Japan, French Prime Minister Francois Fillon said late March 17.

In an interview on state-owned France 2 television, Fillon said the events at the Japanese nuclear power plant will lead France to "set stricter requirements" for nuclear exports.

A French nuclear safety official said March 18 the government would apply both technical and political criteria to determine whether a given country qualifies to receive French nuclear technology.

The official said exports would be denied to countries with unstable political and organizational structures and countries that don't have the technical resources to manage a major nuclear accident.

State-owned Areva is the world's largest integrated nuclear technologies and services vendor. Before power and cooling to the Fukushima plant were knocked out by an earthquake and tsunami March 11, Areva was in discussion with numerous countries to sell nuclear reactors and had expected to sign contracts for supply of its EPR with several countries, notably India, in the near future. Several countries have postponed nuclear construction plans in the past days.

Fillon also said French authorities would not hesitate to close any French reactor if it failed to

pass "stress tests" planned in cooperation with other EU countries, but said a reactor's age was not a determining factor. He said the decision will be up to nuclear regulator ASN.

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Global Hawk unmanned surveillance and reconnaissance aircraft are making flights over the site in an effort to help Japanese authorities learn more about the situation on the ground, Master Sgt. Donald Preston said in a March 18 phone interview from Japan. Two fire engines from US military bases near Tokyo were provided to the Japanese government to help cool spent fuel pools at Fukushima I (also called Fukushima Daiichi), Pentagon spokesman Cmdr. Leslie Hull-Ryde said in a March 18 email.

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Three reactor cores at Fukushima I were damaged following a massive earthquake and tsunami a week ago.

The US has been using equipment mounted on helicopters and planes to help measure radiation levels in the region of the plant, Adm. Robert Willard, head of the US Pacific command, said at a Pentagon briefing March 18. The US is sharing "sensing data" with the Japanese, he said, according to a transcript provided by the US Department of Defense.

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\*\*\* Fukushima recovery will take 'years': ASN commissioner

Permanent means must be found for cooling the damaged units at Tokyo Electric Power Co.'s Fukushima I nuclear power plant, French regulator Philippe Jamet said March 18, saying stable electricity supply and heat removal must be established to last for "years."

Jamet, a commissioner of the Nuclear Safety Authority, ASN, told a press briefing in Paris that even if the efforts under way to connect the station to outside power supply are successful, the situation will remain makeshift until a permanent and stable power supply is restored.

He also said that while the emergency water dumping and hosing operations under way to maintain water in spent fuel pools are justified, permanent means must also be established to keep the reactors and pools cool over the long term.

Jamet was asked about the conflicts between information on the spent fuel pool of unit 4 given this week by French safety officials and by NRC Chairman Gregory Jaczko.

Jaczko told a congressional committee March 16 that the unit 4 pool was without water, but the next day French expert organization IRSN said there appeared to be water in the pool.

"The information [from Japan] is difficult to understand and leaves room for interpretation," Jamet said. "It's possible that NRC has a different judgment on certain issues."

He said ASN has been conferring "every day with our US, British and Canadian" counterparts on the Fukushima accident.

---

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The spent fuel pools at two of the units at Fukushima I may be boiling, and some of the pools may have been damaged, French nuclear authorities said this week. The water level of the spent fuel pools at units 3 and 4 are low, with possible damage to fuel, the Japan Atomic Industrial Forum said March 17. Helwig said the "substantial challenges" at the spent fuel pools were "highly unlikely" scenarios.

Helwig is president of Helwig Consulting Services, which specializes in nuclear design and engineering. He said the US industry will also study the plant design at Fukushima I. "There's a whole litany of questions about design features" related to the failure of the emergency diesel generators and the possible hydrogen explosions on site, he said.

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US Representative Jeff Fortenberry, a Nebraska Republican, plans to introduce a companion bill later this month in the House of Representatives, the statement said.

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**From:** [Library Resource](#)  
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**Subject:** FW: Platts Nuclear News Flashes  
**Date:** Friday, March 18, 2011 7:38:32 PM  
**Attachments:** [NNF\\_20110318.bxt](#)

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**From:** Platts[SMTP:SUPPORT@PLATTS.COM]  
**Sent:** Friday, March 18, 2011 7:38:02 PM  
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Friday, Mar 18, 2011  
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  - \*\* Fukushima recovery will take 'years': ASN commissioner
  - \*\* US nuclear industry to seek answers in Fukushima I events
  - \*\* Senators introduce international nuclear safety bill
  - \*\* Correction
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\*\*\* Tepco works to restore offsite power to Fukushima I

Tokyo Electric Power Co. said it was taking steps to restore offsite power at its Fukushima I nuclear power plant, starting March 19 with unit 2.

Tepco said in a statement at 4 pm Tokyo time March 18 that it has connected the plant to an external transmission line and "confirmed that electricity can be supplied."

Tepco said it plans to restore power first to unit 2, which it said "is expected to be less damaged."  
The utility has scheduled the work to connect cables and electrical transmission gear to provide back-up power to units 1 and 2 on March 19, Japan's Nuclear and Industrial Safety Agency said March 18.

Units 3 through 6 are scheduled to be connected March 20, NISA said.

"After checking pumps and other equipments are functional, we will restore the damaged items, putting priority on the equipments for sending cooling water to the reactor," Tepco said.

About 160 workers, including 13 Tepco employees, are working to restore power supply to the reactors, the utility said.

A diesel generator located in unit 6 was operable and providing power to that unit and unit 5, NISA said in an update late March 18. Water is being provided to the reactor vessel and spent fuel pools of the two units, NISA said.

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\*\*\* NISA's Level 5 rating of Fukushima events excluded worker exposure

The new rating of the Fukushima I accident at Level 5 on the seven-level International Nuclear Event Scale excluded worker exposure, according to reports Japan's Nuclear and Industrial Safety Agency filed with the IAEA March 18.

The initial Fukushima INES rating on March 12 was Level 4. Both ratings are provisional.

NISA said in the reports on units 1, 2 and 3 that at least one worker had received a radiation dose in excess of the annual limit of 100 milliSievert. But it said radiological impact was not taken into account in the rating "because the correspond(ing) work still continues."

Dose information has not been released. Radiation levels on the site remain very high, and the allowed intervention dose was raised March 17 to 250 milliSievert, 2.5 times the statutory annual occupational limit.

NISA said the Level 5 rating was chosen on the assumption that no more than a few percent of the Fukushima core inventories was released.

French regulator Philippe Jamet told journalists March 18 that Level 5 was "not necessarily reasonable" given the scope of the accident at the Japanese plant. The 1979 accident at the Three Mile Island-2 nuclear unit in the US was rated at Level 5. That accident involved fuel melt but no containment failure, and affected a single reactor unit. The 1986 Chernobyl-4 accident was rated

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## David Decker

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**From:** Powell, Amy  
**Sent:** Sunday, March 13, 2011 12:52 PM  
**To:** Schmidt, Rebecca; Droggitis, Spiros; Decker, David; Dacus, Eugene; Shane, Raeann; Weil, Jenny; Riley (OCA), Timothy  
**Subject:** Congressional comments re: reactor construction in US  
**Attachments:** image001.gif

FYI from OPA – apparently Sen. Lieberman suggested on Face The Nation something to the effect of halting new reactor build in the US until we understand what happened in Japan. Mr. Markey started carrying the same message Friday.

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**From:** McIntyre, David  
**Sent:** Sunday, March 13, 2011 12:47 PM  
**To:** Couret, Ivonne; Brenner, Eliot  
**Cc:** Janbergs, Holly; Powell, Amy  
**Subject:** RE: Market Watch NY

OK good – we definitely don't want to get into this debate today. Apparently Markey issued a Howler suggesting the same thing.

---

**From:** Couret, Ivonne  
**Sent:** Sunday, March 13, 2011 12:45 PM  
**To:** Brenner, Eliot; McIntyre, David  
**Cc:** Janbergs, Holly  
**Subject:** Market Watch NY

Comments Reaction on Senator Joe Lieberman's comments on Face the Nation on Halting Nuclear Plant Construction in the United States until we understand what went wrong in Japan.

Steve Gelsi  
Market Watch- NY  
973-744-6517  
[sgelsi@marketwatch.com](mailto:sgelsi@marketwatch.com)

I provided him some #'s of reactors and website links including the Information Digest and Appendix A. Ivonne

**Ivonne L. Couret**  
Public Affairs Officer  
Office of Public Affairs



(301) 415-8205

[ivonne.couret@nrc.gov](mailto:ivonne.couret@nrc.gov)

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

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

NRC Employees can read interesting insight on the OPA Blog  
<http://portal.nrc.gov/OCM/opa/blog/default.aspx>

 Please consider the environmental impact before printing this email.

RRR-169

## David Decker

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**From:** Powell, Amy  
**Sent:** Sunday, March 13, 2011 12:28 PM  
**To:** Riley (OCA), Timothy; Droggitis, Spiros; Decker, David; Schmidt, Rebecca; Dacus, Eugene; Weil, Jenny; Shane, Raeann  
**Subject:** Request from Sen. Webb's staff

Please add Ali Nouri from Sen. Webb's staff to the list - I'll send him the last press release from Saturday. Nothing yet out today.

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

**From:** Nouri, Ali (Webb) [[mailto:Ali\\_Nouri@webb.senate.gov](mailto:Ali_Nouri@webb.senate.gov)]  
**Sent:** Sunday, March 13, 2011 12:20 PM  
**To:** Powell, Amy  
**Subject:** Japan nuclear issues

Hi Amy,

Hope this finds you well, considering all that is happening.

Just wanted to let you know that my boss is following the situation very closely (given his nuclear energy interests and chairmanship of the east asia subcommittee on SFRC).

I don't know what the extent of NRC involvement will be, but please let us know if we can help out. And if you're sending updates or anything like the sort please add me to those.

Thanks and hope to see you soon,

Ali

RRR-170

**From:** Brenner, Eliot  
**To:** SIMON LOMAX, BLOOMBERG/ NEWSROOM:  
**Cc:** Burnell, Scott; McIntyre, David; Taylor, Robert; Harrington, Holly; Brenner, Eliot  
**Subject:** RE: (BN) 'Miniscule' Amounts of Radiation From Japan Plants  
**Date:** Friday, March 18, 2011 6:50:39 PM

---

Go ahead and take door #1

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

From: SIMON LOMAX, BLOOMBERG/ NEWSROOM: [mailto:slomax@bloomberg.net]  
Sent: Friday, March 18, 2011 6:48 PM  
To: Brenner, Eliot  
Subject: (BN) 'Miniscule' Amounts of Radiation From Japan Plants

Hi Eliot -- please find at the bottom of this message the story that i'd like to update with your info about the height of the radioactive material. i can attribute it one of two ways (#1 is my preference):

1. "Quote," the U.S. Nuclear Regulatory Commission said in an e-mailed statement. (this would be my preferred option)
2. Paraphrase, said a U.S. Nuclear Regulatory Commission official who declined to be identified because the agency hasn't made a public statement on the matter.

If you can let me know which one to go with I'll update ASAP.  
Cheers,  
Simon.

+-----+  
'Miniscule' Amounts of Radiation From Japan Plants Found in U.S.  
2011-03-18 22:42:28.443 GMT

By Simon Lomax and John Hughes

March 19 (Bloomberg) -- A "miniscule" amount of radiation that probably came from damaged nuclear reactors in Japan was picked up at a California monitoring station yesterday, the U.S. government said.

The level of radiation registered in Sacramento was about "one-millionth of the dose" a person gets from rocks, bricks, the sun and natural background sources and "poses no concern," the U.S. Environmental Protection Agency and Energy Department said in a joint statement.

A similar level of the radioactive isotope, xenon-133, was detected in Washington state on March 16 and 17, according to the agencies. It was "consistent with a release from the Fukushima reactors in Northern Japan," according to the statement. The EPA and Energy Department have monitoring systems and neither found "radiation levels of concern."

Japan is seeking to avert a meltdown at the Fukushima Dai-ichi plant, which was damaged by a March 11 earthquake and tsunami. Helicopters and fire trucks used water buckets and cannons to help cool the plant, which has been crippled by explosions, fires and radiation leaks.

Tokyo Electric Power Co., the plant's owner, said it's also

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trying to connect a power line to the site to restart water pumps used to keep fuel rods from overheating.

President Barack Obama said yesterday his nuclear advisers don't expect "harmful levels" of radiation will reach the U.S.

Airlines and ships can operate into Japan's airports and sea ports, excluding those damaged by the tsunami, the International Civil Aviation Organization said, citing information from the World Health Organization and other international agencies.

#### Passenger Screening

Screening for radiation of international passengers from Japan isn't considered necessary at this time, the organization said in an e-mailed statement yesterday.

The earthquake and tsunami crippled the company's Dai-Ichi plant, triggering fires, explosions and radiation leaks. Doctors and scientists have said the plant is unlikely to pose a health risk for people living more than 36 miles (50 kilometers) from the site.

The containment devices in Japan, even if compromised, offer more protection than reactors at the world's worst nuclear disaster at Chernobyl, Ukraine, in 1986, said Donald Bucklin, former medical director of Palo Verde Nuclear Generating Station in Arizona, the largest U.S. nuclear plant.

Radiation can damage DNA, the building blocks of human life, said Bucklin, now medical review officer for U.S. HealthWorks, the nation's largest private provider of occupational health care. While the body repairs most damage, some radiation-caused mutations can make cells malignant, he said.

#### Radiation, Tokyo

Radiation spewed from the reactor in a meltdown might rise to as high as 500 meters (1,640 feet), and is unlikely to reach Tokyo, 135 miles away, John Beddington, U.K.'s chief science officer, said on a conference call March 16 with the British Embassy in Tokyo. The Chernobyl explosion sent radioactive dust 30,000 feet high and continued for months.

The public-health risk would be equal to little more than two additional chest x-rays, said John Lee, a professor of nuclear engineering and radiological sciences, at the University of Michigan in Ann Arbor. A Chernobyl type of explosion is impossible, he said.

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BMAP of Disasters: [BMAP 80438 <GO>](#)

U.S. reactor status: [NRCR <GO>](#)

--With assistance from Michelle Cortez in Chicago and John Lauerman in Boston. Editors: Steve Geimann, Larry Liebert

To contact the reporters on this story:

Simon Lomax in Washington at +1-202-654-4305 or [slomax@bloomberg.net](mailto:slomax@bloomberg.net);

John Hughes in Washington at +1-202-624-1819 or [jhughes5@bloomberg.net](mailto:jhughes5@bloomberg.net)

To contact the editor responsible for this story:  
Larry Liebert at +1-202-624-1936 or  
lliebert@bloomberg.net

**From:** [Platts Energy Week TV](#)  
**To:** [Harrington, Holly](#)  
**Subject:** Japan's Tragedy Prompts New Look at Nuclear Energy  
**Date:** Friday, March 18, 2011 6:06:55 PM

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[Click here](#) to see pictures from the Platts Energy Week Launch Reception at the Petroleum Club of Houston.

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**What's Happening on March 20th**  
**[Streaming video](#) available at 9 a.m Eastern Time.**

**Japan's Tragedy Prompts New Look at Nuclear Energy**



With the disaster in Japan, nuclear energy is coming under close scrutiny again as a safe and reliable power source for the U.S. Even pro-nuclear lawmakers are raising questions with the Nuclear Regulatory Commission and the

Department of Energy. Among them is **Representative Ed Whitfield, chairman of the House Energy and Power Subcommittee**, who tells Bill what Washington should do — and not do — when it comes to nuclear energy.

**Could Another Nuclear Disaster Hit the U.S.?**

How does nuclear technology and regulation in Japan and the U.S. compare? And is the U.S., 32 years after the Three Mile

iphone\_button2



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RRRR-172

Island accident, any different when it comes to the potential for another nuclear meltdown? The **director of Idaho National Laboratory and former nuclear submarine commander, John Grossenbacher**, gives Bill his insight.

### Whither the Nuclear Renaissance?



With applications pending for 20 new reactors in the U.S., and more on the drawing board, the nuclear power industry has been anticipating a renewal. But will financing become more difficult in light of the nuclear catastrophe in Japan? **Dmitri**

**Nikas, with Standard & Poor's utilities and infrastructure unit, and Benjamin Salisbury, with FBR Capital Markets**, offer Bill some answers.

### Fallout for Other Energy Commodities

**Vandana Hari, Platts senior editorial director for Asia**, discusses with Bill how Japan is making up for losses in nuclear power, and what it means for markets in liquefied natural gas, coal and oil.

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Wednesday, March 23, 2011 • 3:30 - 4:30 pm ET

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### Unrest in Libya — Is Risk of Oil Supply Disruption Enough to Get Uncle Sam Tapping?



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### Macondo Oil Spill One Year Later—Could We Contain Another Spill?

Despite lessons learned last year, there are only a couple of remedies for containing another offshore deep-water oil rig



[bill@plattsenergyweektv.com](mailto:bill@plattsenergyweektv.com)

### About Platts Energy Week

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Hawaii is one of the few U.S. states that "lives" its dependence on oil, with crude providing nine-tenths of the state's energy consumption and three-quarters of its electricity generation.

**CEO of Hawaiian Electric Connie Lau** shares the secrets of success and her company's scorecard since reaching an agreement in 2008 to provide 70% of the state's energy needs from clean energy sources by 2030. [Watch Now](#)



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**From:** OPA Resource  
**To:** Ash, Darren; Barkley, Richard; Batkin, Joshua; Bell, Hubert; Belmore, Nancy; Bergman, Thomas; Bollwerk, Paul; Bonaccorso, Amy; Borchardt, Bill; Bozin, Sunny; Brenner, Eliot; Brock, Terry; Brown, Boris; Bubar, Patrice; Burnell, Scott; Burns, Stephen; Carpenter, Cynthia; Chandrathil, Prema; Clark, Theresa; Collins, Elmo; Couret, Ivonne; Crawford, Carrie; Cutler, Iris; Dacus, Eugene; Dapas, Marc; Davis, Roger; Dean, Bill; Decker, David; Dricks, Victor; Droggitis, Spiros; Flory, Shirley; Franovich, Mike; Gibbs, Catina; Haney, Catherine; Hannah, Roger; Harbuck, Craig; Harrington, Holly; Hasan, Nasreen; Hayden, Elizabeth; Holahan, Gary; Holahan, Patricia; Holian, Brian; Jacobssen, Patricia; Jaczko, Gregory; Jasinski, Robert; Jenkins, Verlyn; Johnson, Michael; Jones, Andrea; Kock, Andrea; Kotzalas, Margie; Ledford, Joey; Lee, Samson; Leeds, Eric; Lepre, Janet; Lew, David; Lewis, Antoinette; Loyd, Susan; Magwood, William; McCrary, Cheryl; McGrady-Finneran, Patricia; McIntyre, David; Mensah, Tanya; Mitlyng, Viktoria; Monninger, John; Montes, David; Nieh, Ho; Ordaz, Vonna; Ostendorff, William; Owen, Lucy; Powell, Amy; Quesenberry, Jeannette; Reddick, Darani; Regan, Christopher; Reves, Luis; Riddick, Nicole; RidsSecyMailCenter Resource; Riley (OCA), Timothy; Rohrer, Shirley; Samuel, Olive; Satorius, Mark; Schaaf, Robert; Schmidt, Rebecca; Scott, Catherine; Screnci, Diane; Shaffer, Vered; Shane, Raeann; Sharkey, Jeffry; Sheehan, Neil; Sheron, Brian; Siurano-Perez, Osiris; Steger (Tucci), Christine; Svinicki, Kristine; Tabatabai, Omid; Tannenbaum, Anita; Taylor, Renee; Temp, WDM; Thomas, Ann; Uhle, Jennifer; Uselding, Lara; Vietti-Cook, Annette; Virgilio, Martin; Virgilio, Rosetta; Walker-Smith, Antoinette; Weaver, Doug; Weber, Michael; Weil, Jenny; Werner, Greg; Wiggins, Jim; Williams, Evelyn; Zimmerman, Roy; Zorn, Jason  
**Subject:** Press Release: NRC Informs U.S. Nuclear Power Plants on Japan Earthquake's Effects  
**Date:** Friday, March 18, 2011 5:13:23 PM  
**Attachments:** 11-052.pdf

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Attached for immediate release.

**Office of Public Affairs**  
US Nuclear Regulatory Commission  
301-415-8200  
opa.resource@nrc.gov

RRR-173



# NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200  
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No. 11-051

March 18, 2011

## NRC INFORMS U.S. NUCLEAR POWER PLANTS ON JAPAN EARTHQUAKE'S EFFECTS

The Nuclear Regulatory Commission has issued an Information Notice to all currently operating U.S. nuclear power plants, describing the effects of the March 11 earthquake and tsunami on Japanese nuclear power plants.

The notice provides a brief overview of how the earthquake and tsunami are understood to have disabled several key cooling systems at the Fukushima Daiichi nuclear power station, and also hampered efforts to return those systems to service. The notice is based on the NRC's current understanding of the damage to the reactors and associated spent fuel pools as of Friday, March 18.

The notice reflects the current belief that the combined effects of the March 11 earthquake and tsunami exceeded the Fukushima Daiichi plant's design limits. The notice also recounts the NRC's efforts, post-9/11, to enhance U.S. plants' abilities to cope with severe events, such as the loss of large areas of a site, including safety systems and power supplies.

The NRC expects U.S. nuclear power plants will review the entire notice to determine how it applies to their facilities and consider actions, as appropriate.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.

**From:** [Harrington, Holly](#)  
**To:** [Couret, Ivonne](#)  
**Subject:** RE: Albany Times Union  
**Date:** Friday, March 18, 2011 5:07:00 PM

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Did not speak to him and have no interest. Diane or ignore

**From:** Couret, Ivonne  
**Sent:** Friday, March 18, 2011 5:01 PM  
**To:** Harrington, Holly  
**Subject:** FW: Albany Times Union

Can you help out with this...

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)  
301-415-8200

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

**From:** Janbergs, Holly  
**Sent:** Friday, March 18, 2011 4:52 PM  
**To:** Couret, Ivonne  
**Subject:** Albany Times Union

Jim Odatto from Albany Times Union (may have spoken with you earlier today?) would like to speak to someone about evacuation distances and the Weds testimony.

518-454-5083  
[jodato@timesunion.com](mailto:jodato@timesunion.com)

RRRR-174

地震被害情報（第46報）  
（3月23日19時00分現在）

原子力安全・保安院が現時点で把握している東京電力(株)福島第一原子力発電所、福島第二原子力発電所、東北電力(株)女川原子力発電所、日本原子力発電(株)東海第二、電気、ガス、熱供給、コンビナート被害の状況は、以下のとおりです。

前回からの変更点は以下のとおり。

1. 原子力発電所関係

○福島第一原子力発電所

【注水・放水関係】

- ・ 4号機について、コンクリートポンプ車（50 t / h）が約 130 t 放水（23日 10:00～13:02）
- ・ 3号機について、使用済燃料プールに冷却浄化系から海水 35t 注入（23日 11:03～13:20）
- ・ 3号機原子炉建屋からやや黒色がかった煙が発生（23日 16:20 頃）

2. 産業保安関係

別紙参照

<消防機関の活動状況>

- ・ 3月23日、8:30～9:30、13:30～14:30：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による運用を指導。

(別紙)

1 発電所の運転状況【自動停止号機数：10基】

○東京電力(株)福島第一原子力発電所（福島県双葉郡大熊町及び双葉町）

(1) 運転状況

1号機（46万kW）（自動停止）

2号機（78万4千kW）（自動停止）

3号機（78万4千kW）（自動停止）

4号機（78万4千kW）（定検により停止中）

5号機（78万4千kW）（定検により停止中、20日14:30冷温停止）

6号機（110万kW）（定検により停止中、20日19:27冷温停止）

(2) モニタリングの状況

別添参照

(3) 主なプラントパラメーター（23日18:00現在）

	1号機	2号機	3号機	4号機	5号機	6号機
原子炉圧力*1 [MPa]	0.481(A) 0.459(B)	0.065(A) 0.065(B)	-0.003(C) 0.135(A)	—	0.108	0.109
原子炉格納容器圧力 (D/W) [kPa]	360	110	100	—	—	—
原子炉水位*2 [mm]	-1750(A) -1700(B)	-1250(A) 不明(B)	-1800(A) -2300(B)	—	1723	2758
原子炉格納容器内 S/C水温 [°C]	—	—	—	—	—	—
原子炉格納容器内 S/C圧力 [kPa]	330	D/S	D/S	—	—	—
使用済燃料プール 水温度 [°C]	—	51*4	—	不明*3	41.1	19.0
備考	3/23 16:00 現在の値	3/23 14:00 現在の値	3/23 09:10 現在の値		3/23 18:00 現在の値	3/23 18:00 現在の値

\* 1 : 絶対圧に換算

\* 2 : 燃料頂部からの数値

\* 3 : 3月14日4:08現在、84°C

\* 4 : 3月23日4:20現在

#### (4) 各プラントの状況

##### < 1号機関係 >

- ・原子力災害対策特別措置法第15条（非常用炉心冷却装置注水不能）通報（11日16:36）
- ・1号機の原子炉圧力容器内に消火系ラインを用いて海水注入開始(12日20:20)→14日01:10一時中断
- ・1号機で爆発音。(12日15:36)
- ・消火系に加え、給水系を使うことにより炉心への注水量を増量 ( $2\text{m}^3/\text{h}$ → $18\text{m}^3/\text{h}$ ) (23日02:33)。その後、微調整(約 $11\text{m}^3/\text{h}$ ) (23日11:00頃)
- ・原子炉圧力容器へ海水注入中。(23日19:00現在)

##### < 2号機関係 >

- ・原子力災害対策特別措置法第15条（非常用炉心冷却装置注水不能）通報（11日16:36）
- ・3号機の建屋の爆発に伴い、原子炉建屋ブローアウトパネル開放（14日11時過ぎ）
- ・原子炉圧力容器の水位が低下傾向（14日13:18）。原子力災害対策特別措置法第15条事象（原子炉冷却機能喪失）である旨、受信（14日13:49）
- ・原子炉圧力容器内に消火系ラインを用いて海水注入準備(14日19:20)
- ・原子炉圧力容器の水位が低下傾向（14日22:50）
- ・2号機で爆発音するとともに、サプレッションプール（圧力抑制室）の圧力低下（15日6:10）。同室に異常が発生したおそれ（15日6:20頃）
- ・外部送電線から予備電源変電設備までの受電を完了し、そこから負荷側へのケーブル敷設を実施（19日13:30現在）
- ・使用済燃料プールに海水を40t注入（冷却系配管に消防車のポンプを接続）（20日15:05～17:20）
- ・2号機のパワーセンター受電（20日15:46）
- ・白煙が発生（21日18:22）
- ・白煙はほとんど見えない程度に減少（22日7:11現在）
- ・使用済燃料プールに海水を18t注入（22日16:07～17:01）
- ・原子炉圧力容器へ海水注入中（23日19:00現在）

##### < 3号機関係 >

- ・3号機の原子炉圧力容器内に消火系ラインから真水注入開始(13日11:55)
- ・3号機の原子炉圧力容器内に消火系ラインから海水注入開始(13日13:12)
- ・3号機及び1号機の注入をくみ上げ箇所の海水が少なくなったため停止

(14日 1:10)

- ・ 3号機の海水注入を再開(14日 3:20)
- ・ 3号機の格納容器圧力が異常上昇(14日 7:44)。原子力災害対策特別措置法第15条事象である旨、受信(14日 7:52)
- ・ 3号機で1号機と同様に原子炉建屋付近で爆発(14日 11:01)
- ・ 3号機から白い湯気のような煙が発生(16日 8:30頃)
- ・ 3号機の格納容器が破損しているおそれがあるため、中央制御室(共用)から作業員退避(16日 10:45)。その後、作業員は中央制御室に復帰し、注水作業再開(16日 11:30)
- ・ 自衛隊ヘリにより3号機への海水の投下を4回実施(17日 9:48、9:52、9:58、10:01)
- ・ 警察庁機動隊が放水のため現場到着(17日 16:10)
- ・ 自衛隊消防車により放水(17日 19:35)。
- ・ 警察庁機動隊による放水(17日 19:05～19:13)
- ・ 自衛隊消防車5台が放水(17日 19:35、19:45、19:53、20:00、20:07)
- ・ 自衛隊消防車6台(6t放水/台)が放水(18日 14時前～14:38)
- ・ 米軍消防車1台が放水(18日 14:45終了)
- ・ 東京消防庁ハイパーレスキュー14台が正門前に到着し(18日 23:10)、うち、6台が地上放水のため発電所に入構(18日 23:30)
- ・ 東京消防庁ハイパーレスキュー隊が放水(20日 3:40終了)
- ・ 3号機の格納容器内圧力が上昇(20日 11:00 現在 320kPa)。圧力下げするための準備を進めていたが、直ちに放出を必要とする状況ではないと判断し、圧力監視を継続(21日 12:15 120 kPa)
- ・ ケーブル引き込みの現地調査(20日 11:00～16:00)
- ・ 東京消防庁ハイパーレスキュー隊が3号機の使用済燃料プールに放水(20日 21:39～21日 03:58)
- ・ 灰色がかった煙が発生(21日 15:55頃)
- ・ 煙が収まっていることを確認(21日 17:55)
- ・ 灰色がかった煙は白みがかった煙に変化し終息に向かっていると思われる(22日 7:11 現在)
- ・ 東京消防庁及び大阪市消防局が放水(約180t)(22日 15:10～15:59)
- ・ 中央操作室の照明が復帰(22日 22:43)
- ・ 使用済燃料プールに冷却浄化系から海水35t注入(23日 11:03～13:20)
- ・ 原子炉建屋からやや黒色がかった煙が発生(23日 16:20頃)
- ・ 原子炉圧力容器へ海水注入中(23日 19:00 現在)

#### < 4号機関係 >

- ・原子炉圧力容器のシュラウド工事中のため、原子炉圧力容器内に燃料はなし。
- ・4号機の使用済燃料プール水温度が上昇（3月14日4:08時点84℃）
- ・4号機のオペレーションエリアの壁が一部破損していることを確認（15日6:14）。
- ・4号機で火災発生。（15日9:38）事業者によると、自然に火が消えていることを確認（15日11:00頃）
- ・4号機で火災が発生（16日5:45頃）。事業者は現場での火災は確認できず（16日6:15頃）。
- ・自衛隊が4号機の使用済燃料プールへ放水（20日9:43）
- ・ケーブル引き込みの現地調査（20日11:00～16:00）
- ・自衛隊が4号機の使用済燃料プールへ放水（20日18:30頃～19:46）
- ・自衛隊消防車13台が使用済燃料プールに放水（21日06:37～08:41）
- ・パワーセンターまでのケーブル敷設工事完了（21日15:00頃）
- ・パワーセンター受電（22日10:35）
- ・コンクリートポンプ車（50t/h）が約150t放水（22日17:17～20:32）
- ・コンクリートポンプ車（50t/h）が約130t放水（23日10:00～13:02）

#### < 5号機、6号機関係 >

- ・6号機の非常用ディーゼル発電機（D/G）1台目（B）は運転により電力供給。復水補給水系（MUWC）を用いて原子炉圧力容器及び使用済燃料プールへ注水。
- ・6号機の非常用ディーゼル発電機（D/G）2台目（A）起動。（19日4:22）
- ・5号機の残留熱除去系（RHR）ポンプ（C）（19日5:00）及び6号機の残留熱除去系（RHR）ポンプ（B）（19日22:14）が起動し、除熱機能回復。使用済燃料プールを優先的に冷却（電源：6号の非常用ディーゼル発電機）（19日5:00）
- ・5号機、冷温停止（20日14:30）
- ・6号機、冷温停止（20日19:27）
- ・5号機及び6号機、起動用変圧器まで受電（20日19:52）
- ・5号機、電源を非常用ディーゼル発電機から外部電源に切り替え（21日11:36）
- ・6号機、電源を非常用ディーゼル発電機から外部電源に切り替え（22日19:17）

#### < 使用済燃料共用プール >

- ・18日6:00過ぎ、プールはほぼ満水であることを確認

- ・ 19日9:00時点でのプール水温度は5.7℃程度
- ・ 共用プールに注水 (21日 10:37~15:30)
- ・ 21日16:30時点でのプール水温度は6.1℃程度

○東京電力(株)福島第二原子力発電所 (福島県双葉郡楢葉町及び富岡町)

(1) 運転状況

- 1号機 (110万 kW) (自動停止、14日 17:00 冷温停止)
- 2号機 (110万 kW) (自動停止) 14日 18:00 冷温停止)
- 3号機 (110万 kW) (自動停止、12日 12:15 冷温停止)
- 4号機 (110万 kW) (自動停止、15日 7:15 冷温停止)

(2) モニタリングポスト等の指示値

別添参照

(3) 主なプラントパラメーター (23日 18:00 現在)

	単位	1号機	2号機	3号機	4号機
原子炉圧力* <sup>1</sup>	MPa	0.15	0.13	0.11	0.15
原子炉水温	℃	30.8	28.0	34.0	30.1
原子炉水位* <sup>2</sup>	mm	9146	10296	8409	8785
原子炉格納容器内 サブプレッションプール水温	℃	25	24	26	25
原子炉格納容器内 サブプレッションプール圧力	kPa (abs)	108	106	104	104
備考		冷温停止中	冷温停止中	冷温停止中	冷温停止中

\* 1 : 絶対圧に換算

\* 2 : 燃料頂部からの数値

(4) その他異常等に関する報告

- ・ 1号機にて原子力災害対策特別措置法第10条通報 (11日 18:08)
- ・ 1、2、4号機にて同法第10条通報 (11日 18:33)
- ・ 1号機にて原子力災害対策特別措置法第15条事象 (圧力抑制機能喪失) 発生 (12日 5:22)
- ・ 2号機にて原子力災害対策特別措置法第15条事象 (圧力抑制機能喪失) 発生 (12日 5:32)
- ・ 4号機にて原子力災害対策特別措置法第15条事象 (圧力抑制機能喪失) 発生 (12日 6:07)

○東北電力(株)女川原子力発電所（宮城県牡鹿郡女川町、石巻市）

（１）運転状況

1号機（52万4千kW）（自動停止、12日0:58冷温停止）

2号機（82万5千kW）（自動停止、地震時点で冷温停止）

3号機（82万5千kW）（自動停止、12日1:17冷温停止）

（２）モニタリングポスト等の指示値

MP2付近（敷地最北敷地境界）：

約1.4 $\mu$ Sv/h（22日16:00）→約1.2 $\mu$ Sv/h（23日16:00）

（３）その他異常に関する報告

・タービン建屋地下1階の発煙は消火確認（11日22:55）

・原子力災害対策特別措置法第10条通報（13日13:09）

## 2 産業保安

○電気（3月23日19:00現在）

・東北電力（3月23日18:00現在）

停電戸数：約21万戸（延べ停電戸数 約486万戸）

停電地域：青森県 三八の一部地域（約5百戸）

岩手県 一部地域（約3万8千戸）

宮城県 一部地域（約13万3千戸）

福島県 一部地域（約3万8千戸）

・東京電力

停電は3月19日01:00までに復旧済（延べ停電戸数 約405万戸）

・北海道電力

停電は3月12日14:00までに復旧済（延べ停電戸数 約3千戸）

・中部電力

停電は3月12日17:11に復旧済（延べ停電戸数 約4百戸）

○一般ガス（3月23日19:00現在）

死亡事故：地震との関係も含め原因詳細調査中。

・盛岡ガス（盛岡市）死者1名、負傷者10名

14日08:00 デパートの地下での爆発

・東部ガス（いわき市）死者1名

12日11:30 一般住宅での漏えいガスに着火

北海道、山形県、秋田県においては、供給停止の報告はない。

各社の供給停止状況は以下の通り。

・仙台市営ガス 358,781戸供給停止

- ・塩釜ガス（塩釜市）12,382 戸供給停止
- ・福島ガス（福島市）60 戸供給停止
- ・東部ガス（土浦市）2,796 戸供給停止  
（水戸市）40 戸供給停止
- ・釜石ガス（釜石市）7,000 戸供給停止
- ・常磐共同ガス（いわき市）12,018 戸供給停止
- ・京葉ガス（浦安市）4,634 戸供給停止
- ・東北ガス（白河市）125 戸供給停止
- ・常磐都市ガス（いわき市）362 戸供給停止
- ・気仙沼市営ガス（気仙沼市）2,800 戸供給停止
- ・石巻ガス（石巻市）14,771 戸供給停止

○簡易ガス（3月23日 19:00 現在）

各社の供給停止状況は以下の通り。

- ・宮城ガス（塩竈市）651 戸供給停止  
（仙台市）2,058 戸供給停止  
（黒川郡富谷町）2,318 戸供給停止
- ・岩沼市農業協同組合（岩沼市）753 戸供給停止
- ・橋本産業（東松島市）80 戸供給停止
- ・富岡ガス協業組合（双葉郡富岡町）428 戸供給停止
- ・福陽ガス（須賀川市）81 戸供給停止
- ・釜石瓦斯（釜石市）1,357 戸供給停止
- ・仙台市ガス局（名取市）1,225 戸供給停止  
（仙台市）559 戸供給停止  
（岩沼市）342 戸供給停止  
（黒川郡富谷町）1,855 戸供給停止
- ・仙台プロパン（登米市）93 戸供給停止  
（亶理郡山元町）360 戸供給停止  
（東松島市）150 戸供給停止
- ・仙南ガス（白石市）409 戸供給停止  
（岩沼市）252 戸供給停止  
（柴田郡柴田町）1,806 戸供給停止
- ・カメイ（亶理郡山元町）189 戸供給停止  
（白河市）596 戸供給停止  
（須賀川市）783 戸供給停止  
（いわき市）126 戸供給停止  
（宮古市）197 戸供給停止

(東松島市矢本町) 243 戸供給停止

- ・岩手中部ガス(北上市) 779 戸供給停止
- ・共同ガス(須賀川市) 163 戸供給停止
- ・東北ガス(白河市) 360 戸供給停止
- ・いわきガス(いわき市) 594 戸供給停止
- ・相馬ガス(相馬市) 143 戸供給停止
- ・相馬市ガス(相馬市) 100 戸供給停止
- ・勝田ガス事業協同組合(ひたちなか市) 647 戸供給停止
- ・倉島商事(福島市) 248 戸供給停止
- ・若松ガス(福島市) 1,061 戸供給停止
- ・アイソン(安達郡本宮町) 489 戸供給停止
- ・トーホクガス(多賀城市) 130 戸供給停止
- ・三重商会(大船渡市) 81 戸供給停止
- ・名取岩沼農業協同組合(岩沼市) 586 戸供給停止
- ・ガス&ライフ(東松島市) 859 戸供給停止
- ・仙台エルピーガス(仙台市) 3,594 戸供給停止

○熱供給(3月23日 19:00 現在)

- ・小名浜配湯(いわき市小名浜) 供給停止

○LPGガス(3月23日 19:00 現在)

死亡事故:地震との関係も含め原因詳細調査中

- ・福島県いわき市 死者1名  
13日午前中 共同住宅でガス爆発

○コンビナート(3月23日 19:00 現在)

- ・コスモ石油千葉製油所(千葉県市原市)  
LPG貯槽の支柱が折れ、破損。ガス漏れ火災。  
重傷者1名、軽傷5名。3月21日午前鎮火。
- ・JX日鉱日石エネルギー(株)仙台製油所(宮城県仙台市)  
出荷設備エリアで爆発、火災が発生。3月15日午後鎮火。

3 原子力安全・保安院等の対応

【3月11日】

- 14:46 地震発生と同時に原子力安全・保安院に災害対策本部設置
- 15:42 福島第一原子力発電所にて原子力災害対策特別措置法第10条通報

- 16:36 福島第一原子力発電所1、2号機にて事業者が同法第15条事象（非常用炉心冷却装置注水不能）発生判断（16:45 通報）
- 18:08 福島第二原子力発電所1号機にて原子力災害対策特別措置法第10条通報
- 18:33 福島第二原子力発電所1、2、4号機にて原子力災害対策特別措置法第10条通報
- 19:03 緊急事態宣言（政府原子力災害対策本部及び同現地対策本部設置）
- 20:50 福島県対策本部は、福島第一原子力発電所1号機の半径2kmの住人に避難指示を出した。（2km以内の住人は1,864人）
- 21:23 内閣総理大臣より、福島県知事、大熊町長及び双葉町長に対し、東京電力(株)福島第一原子力発電所で発生した事故に関し、原子力災害対策特別措置法第15条第3項の規定に基づく指示を出した。
- ・福島第一原子力発電所から半径3km圏内の住民に対する避難指示。
  - ・福島第一原子力発電所から半径10km圏内の住民に対する屋内退避指示。
- 24:00 池田経済産業副大臣現地対策本部到着
- 【3月12日】
- 5:22 福島第二原子力発電所1号機にて事業者が原子力災害対策特別措置法第15条事象（圧力抑制機能喪失）発生判断（6:27 通報）
- 5:32 福島第二原子力発電所2号機にて事業者が原子力災害対策特別措置法第15条事象（圧力抑制機能喪失）発生判断（6:27 通報）
- 5:44 総理指示により福島第一原子力発電所の10km圏内に避難指示
- 6:07 福島第二原子力発電所4号機にて原子力災害対策特別措置法第15条事象（圧力抑制機能喪失）発生
- 6:50 原子炉等規制法第64条第3項の規定に基づき、福島第一原子力発電所第1号機及び第2号機に設置された原子炉格納容器内の圧力を抑制することを命じた。
- 7:45 内閣総理大臣より、福島県知事、広野町長、楢葉町長、富岡町長及び大熊町長に対し、東京電力(株)福島第二原子力発電所で発生した事故に関し、原子力災害対策特別措置法第15条第3項の規定に基づく指示を出した。
- ・福島第二原子力発電所から半径3km圏内の住民に対する避難指示。
  - ・福島第二原子力発電所から半径10km圏内の住民に対する屋内退避指示。
- 17:00 福島第一原子力発電所にて原子力災害対策特別措置法第15条事

象（敷地境界放射線量異常上昇）である旨、受信

- 17:39 内閣総理大臣が福島第二原子力発電所の避難区域  
・福島第二原子力発電所から半径10km圏内の住民に対する避難  
を指示。
- 18:25 内閣総理大臣が福島第一原子力発電所の避難区域  
・福島第一原子力発電所から半径20km圏内の住民に対する避  
難を指示。
- 19:55 福島第一原子力発電所1号機の海水注入について総理指示
- 20:05 総理指示を踏まえ、原子炉等規制法第64条第3項の規定に基づ  
き、福島第一原子力発電所第1号機の海水注入等を命じた。
- 20:20 福島第一原子力発電所1号機の海水注入を開始

【3月13日】

- 5:38 福島第一原子力発電所3号機にて原子力災害対策特別措置法第1  
5条事象（全注水機能喪失）である旨、受信。  
当該サイトについて、東京電力において現在、電源及び注水機能の  
回復と、ベントのための作業を実施中。
- 9:01 福島第一原子力発電所にて原子力災害対策特別措置法第15条事  
象（敷地境界放射線量異常上昇）である旨、受信
- 9:08 福島第一原子力発電所3号機の圧力抑制及び真水注入を開始
- 9:20 福島第一原子力発電所3号機の耐圧ベント弁開放
- 9:30 福島県知事、大熊町長、双葉町長、富岡町長、浪江町長に対し、  
原子力災害対策特別措置法に基づき、放射能除染スクリーニング  
の内容について指示
- 9:38 福島第一原子力発電所1号機にて原子力災害対策特別措置法第1  
5条通報
- 13:09 女川原子力発電所にて原子力災害対策特別措置法第10条通報
- 13:12 福島第一原子力発電所3号機の注入を真水から海水に切り替え
- 14:36 福島第一原子力発電所にて原子力災害対策特別措置法第15条事  
象（敷地境界放射線量異常上昇）である旨、受信

【3月14日】

- 1:10 福島第一原子力発電所1号機及び3号機の注入をくみ上げ箇所の  
海水が少なくなったため停止。
- 3:20 福島第一原子力発電所3号機の海水注入を再開
- 4:40 福島第一原子力発電所にて原子力災害対策特別措置法第15条事  
象（敷地境界放射線量異常上昇）である旨、受信
- 5:38 福島第一原子力発電所にて原子力災害対策特別措置法第15条事  
象（敷地境界放射線量異常上昇）である旨、受信

- 7 : 5 2 福島第一原子力発電所3号機にて原子力災害対策特別措置法第15条事象（格納容器圧力異常上昇）である旨、受信。
- 13 : 2 5 福島第一原子力発電所2号機にて原子力災害対策特別措置法第15条事象（原子炉冷却機能喪失）である旨、受信。
- 22 : 1 3 福島第二原子力発電所にて原子力災害対策特別措置法第10条通報
- 22 : 3 5 福島第一原子力発電所にて原子力災害対策特別措置法第15条事象（敷地境界放射線量異常上昇）である旨、受信

【3月15日】

- 0 : 0 0 国際原子力（IAEA）専門家派遣の受け入れを決定  
IAEA天野事務局長による原子力発電所の被害に関する専門家派遣の意向を受け、原子力安全・保安院はIAEAによる知見ある専門家の派遣を受け入れることとした。なお、実際の受け入れ日程等については、今後調整を行う。
- 0 : 0 0 米国原子力規制委員会（NRC）専門家派遣の受け入れを決定
- 7 : 2 1 福島第一原子力発電所にて原子力災害対策特別措置法第15条事象（敷地境界放射線量異常上昇）である旨、受信
- 7 : 2 4 （独）日本原子力研究開発機構東海研究開発センター核燃料サイクル工学研究所にて原子力災害対策特別措置法第10条通報
- 7 : 4 4 （独）日本原子力研究開発機構原子力科学研究所にて原子力災害対策特別措置法第10条通報
- 8 : 5 4 福島第一原子力発電所にて原子力災害対策特別措置法第15条事象（敷地境界放射線量異常上昇）である旨、受信
- 10 : 3 0 経済産業大臣が原子炉等規制法に基づき、4号機の消火及び再臨界の防止、2号機の原子炉内への早期注水及びドライウエルのベントの実施について指示
- 10 : 5 9 今後の事態の長期化を考慮し、現地対策本部の機能を福島県庁内へ移転することを決定。
- 11 : 0 0 内閣総理大臣が福島第一原子力発電所の避難区域・炉内の状況を考慮して、新たに福島第一原子力発電所から半径20km圏～30km圏内の住民に対する屋内退避を指示
- 16 : 3 0 福島第一原子力発電所にて原子力災害対策特別措置法第15条事象（敷地境界放射線量異常上昇）である旨、受信
- 22 : 0 0 経済産業大臣が原子炉等規制法に基づき、4号機の使用済燃料プールへの注水の実施を指示
- 23 : 4 6 福島第一原子力発電所にて原子力災害対策特別措置法第15条事象（敷地境界放射線量異常上昇）である旨、受信

【3月18日】

- 13:00 文部科学省にて、福島第一、第二原子力発電所の緊急時における全国的モニタリング調査の強化を決定
- 15:55 原子炉等規制法第62条の3に基づき、東京電力(株)福島第一原子力発電所第1・2・3・4号機における事故故障等(原子炉建屋内の放射性物質の非管理区域への漏えい)の報告を受理
- 16:48 原子炉等規制法第62条の3に基づき、日本原子力発電(株)東海第二発電所における事故故障等(非常用ディーゼル発電機2C海水ポンプ用電動機の故障)の報告を受理

【3月19日】

- 7:44 6号機の非常用ディーゼル発電機2台目(A)起動  
5号機の残留熱除去系(RHR)ポンプ(C)が起動し、使用済燃料プールの冷却を開始(電源:6号機の非常用ディーゼル発電機)の旨を受信
- 8:58 福島第一原子力発電所にて原子力災害対策特別措置法第15条事象(敷地境界放射線量異常上昇)である旨、受信

【3月20日】

- 23:30 原子力災害対策現地本部から、放射能除染スクリーニングレベルの基準を以下のとおり変更する旨、県知事及び関係市町村長(富岡町、双葉町、大熊町、浪江町、川内村、楡葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯館村)宛に指示

【3月21日】

- 7:45 原子力災害対策現地本部から「安定ヨウ素剤の服用について」として、安定ヨウ素剤の服用は、本部の指示を受け、医療関係者の立ち会いのもとで服用するものであり、個人の判断で服用しない旨の指示を、県知事及び関係市町村長(富岡町、双葉町、大熊町、浪江町、川内村、楡葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯館村)宛に発出
- 16:45 原子力災害対策現地本部長から「屋内退避圏内での暖房器具の使用に係る換気について」として、一酸化炭素中毒等の防止の観点及び被ばく低減の観点から、屋内において換気を必要とする暖房器具を使用する場合の対応について屋内退避圏内の住民に周知する旨の指示を福島県知事及び市町村長(いわき市、田村市、南相馬市、広野町、川内村、浪江町、葛尾村、飯館村)宛に発出。
- 17:50 原子力災害対策本部長から、ハウレンソウ及びカキナ、原乳について当分の間、出荷を控えるよう、関係事業者等に要請することの指示を福島県、茨城県、栃木県及び群馬県の各知事宛に発出。

【3月22日】

16:00 原子力安全委員会緊急技術助言組織から、3月22日付け東京電力の「海水分析結果について」に関する原子力安全・保安院からの助言依頼について、回答（助言）を受理。

<被ばくの可能性（3月23日 19:00 現在）>

1. 住民の被ばく

- (1) 二本松市福島県男女共生センターにおいて、双葉厚生病院からの避難者約60名を含む133名の測定を行い、13,000cpm以上の23名に除染を実施した。
- (2) この他、福島県が用意した民間バスで、双葉厚生病院から川俣町済生会川俣病院へ移動した35名については、県対策本部は被ばくしていないと判断。
- (3) バスにより避難した双葉町の住民約100名について、100名のうち、9名について測定した結果、以下の通りだった。県外(宮城県)に分かれて避難したが、その後合流して二本松市福島男女共生センターへ移動。

カウント数	人数
18,000cpm	1名
30,000~36,000cpm	1名
40,000cpm	1名
40,000cpm 弱*	1名
ごく小さい値	5名

※（1回目の測定では100,000cpmを超え、その後靴を脱いで測定した結果計測されたもの）

- (4) 3月12日から3月15日にかけて、大熊町のオフサイトセンターにおいて、スクリーニングを開始。現在までに162名が検査済み。初め除染の基準値を6,000cpmとし、110名が6,000cpm未満、41名が6,000cpm異常の値を示した。後に基準値を13,000cpmと引き上げた際には、8名が13,000cpm未満、3名が13,000cpm以上の値を示した。  
検査を受けた162名のうち、5名が除染処置を施した後、病院へ搬送された。
- (5) 福島県において、避難した10km圏内の入院患者と病院関係者の避難を実施。関係者のスクリーニングを行った結果、3名について除染後も高い数値が検出されたため、第2次被ばく医療機関へ搬送。この搬送に関係した消防職員60名のスクリーニングで3名について、バックグラウンドの2倍以上程度の放射線が検出されたため、60名に対し除染を行った。

## 2. 従業員等の被ばく

- (1) 福島第一原発で作業していた従業員 18 名。測定の結果、1 名は 106.3mSv、その他の方は健康に影響ないレベルであるが具体的な数値は不明。106.3mSv の 1 名は、内部被ばくの恐れはなく医療的処置は不要とのこと。
- (2) 福島第一原発 3 号機の爆発の際に近くで作業していて負傷した従業員 7 名（意識あり）負傷。そのうち 6 名については福島第二の産業医で除染処置を施し、問題ないことを確認。1 名については病院で除染し、治療を終了。

## 3. その他

- (1) 福島県は 3 月 13 日からスクリーニングを開始。避難所を巡回、保健所等 12ヶ所（常設）で実施中。実施結果は集計中。
- (2) 福島第一原発で給水作業に従事していた自衛隊員 5 名が被ばく。作業終了後（12日）、OFCへ移動後の測定では 30,000cpm。除染後の測定では、5,000～10,000cpm。1 名は放医研に搬送。防衛省において、その他自衛官の被ばくは確認されず。
- (3) 警察官について、警察庁において 2 名の除染の実施を確認。異常の報告はなし。

### <放射能除染スクリーニングレベルに関する指示>

- (1) 3 月 20 日、原子力災害対策現地本部から、放射能除染スクリーニングレベルの基準を以下のとおり変更する旨、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に指示。

旧： $\gamma$ 線サーベイメーターにより 40 ベクレル/c m<sup>2</sup>または 6,000cpm

新：1 マイクロシーベルト/時（10cm 離れた場所での線量率）またはこれに相当する 100,000cpm

### <避難時における安定ヨウ素剤投与の指示>

- (1) 3 月 16 日、原子力災害対策現地本部から、「避難区域（半径 20 km）からの避難時における安定ヨウ素剤投与の指示」を県知事及び市町村（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出。
- (2) 3 月 21 日、原子力災害対策現地本部から「安定ヨウ素剤の服用について」として、安定ヨウ素剤の服用は、本部の指示を受け、医療関係者

の立ち会いのもとで服用するものであり、個人の判断で服用しない旨の指示を、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楡葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯館村）宛に発出。

<負傷者の状況（3月23日 19:00 現在）>

1. 地震による被害
  - ・社員2名（軽傷）
  - ・協力会社2名（うち1名両足骨折）
  - ・行方不明2名（社員。4号タービン建屋内）
  - ・急病人1名発生（脳梗塞、救急車搬送、県情報）
  - ・管理区域外にて社員1名が左胸の痛みを訴えて救急車を要請（意識あり）
  - ・社員2名が中央制御室での全面マスク着用中に不調を訴え、福島第二の産業医の受診を受けるべく搬送
2. 福島第一原子力発電所1号機の爆発による負傷
  - ・1号機付近で爆発と発煙が発生した際に4名が1号タービン建屋付近（管理区域外）で負傷。川内診療所で診療。
3. 福島第一原子力発電所3号機の爆発による負傷
  - ・社員4名
  - ・協力会社3名
  - ・自衛隊4名（うち1名は内部被ばくの可能性を考慮し、「(独)放射線医学総合研究所」へ搬送。診察の結果内部被ばくはなし。3月16日退院）
4. その他の被害
  - ・福島第二原子力発電所内の診療所に変電所から腹痛を訴える人が来たが、被ばくをしていないことからいわき市の診療所へ搬送。

<住民避難の状況（3月23日 19:00 現在）>

3月15日11:00、内閣総理大臣の指示により、福島第一原子力発電所半径20kmから30km圏内の住民に対して、屋内退避を指示。その旨を福島県及び関係自治体へ連絡。

福島第一原子力発電所20km圏外及び福島第二原子力発電所10km圏外への避難は、措置済。

- ・福島第一原子力発電所20kmから30km圏内の屋内退避について、徹

底中。

- ・福島県と連携して、屋内退避圏内の住民の生活支援等を実施。

<飲食物への指示>

3月21日、原子力災害対策本部長から、下記の①、②について当分の間、出荷を控えるよう、関係事業者等に要請することの指示を福島県、茨城県、栃木県及び群馬県の各知事宛に発出。

- ①福島県、茨城県、栃木県及び群馬県において産出されたハウレンソウ及びカキナ
- ②福島県において産出された原乳

<屋内退避圏内での暖房器具の使用に係る換気についての指示>

3月21日、原子力災害対策現地本部長から「屋内退避圏内での暖房器具の使用に係る換気について」として、一酸化炭素中毒等の防止の観点及び被ばく低減の観点から、屋内において換気を必要とする暖房器具を使用する場合の対応について屋内退避圏内の住民に周知する旨の指示を福島県知事及び市町村長（いわき市、田村市、南相馬市、広野町、川内村、浪江町、葛尾村、飯館村）宛に発出。

<消防機関の活動状況>

- ・ 3月22日、11:00～14:00頃：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による設営を指導。
- ・ 3月23日、8:30～9:30、13:30～14:30：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による運用を指導。

(本発表資料のお問い合わせ)

原子力安全・保安院

原子力安全広報課：吉澤、金城

電話：03-3501-1505

03-3501-5890

(参考)

【東北地方太平洋沖地震】

1. 災害概要

(1) 発生日時：平成 23 年 3 月 11 日（金） 14：46 発生

(2) 発生場所：震源三陸沖（北緯 38 度、東経 142.9 度）  
深さ 10km、マグニチュード 9.0

(3) 各地の震度

○震度 4 以上の地域

震度 7 宮城県北部

震度 6 強 茨城県北部、茨城県南部

震度 5 強 青森県三八上北

震度 5 弱 新潟県中越

震度 4

○震度 4 以上の市町村

震度 6 強 福島県楢葉町、富岡町、大熊町、双葉町

震度 6 弱 宮城県石巻市、女川町（発電所の震度計による）、東海村

震度 5 弱 新潟県刈羽村

震度 4 青森県六ヶ所村、東通村、新潟県柏崎市、神奈川県横須賀市

震度 1 北海道泊村



3月22日

福島第一(1F)

測定場所

- ①事務本館北(2号機より北西約0.5キロ)
- ②体育館付近(MP-5東側)(2号機より西北西約0.9キロ)
- ③西門付近(MP-5付近)(2号機より西約1.1キロ)
- ④正門付近前(MP-6付近)(2号機より西南西約1.0キロ)

測定場所	④																							
モニタリングカー	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
測定値( $\mu$ Sv/h)	331.8	329.3	327.5	325.8	323.9	320.8	314.8	313.0	311.3	308.9	308.4	305.9	304.5	303.2	301.3	299.7	298.0	298.2	294.9	293.8	293.6	291.6	291.1	290.0
中性子	N.D																							
風向	南東	南西	西南西	西南西	西	西南西	西北西	西	西	西	西北西	西北西	西	西	西	西北西	西北西	北北西	北西	西北西	北西	西北西	西北西	西北西
風速(m/s)	0.4	0.4	0.4	0.4	0.3	0.4	0.6	0.5	0.4	0.7	0.8	1.0	1.1	1.3	1.1	0.8	1.0	1.0	0.9	1.0	0.9	0.9	0.8	0.8

測定場所	④																							
モニタリングカー	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
測定値( $\mu$ Sv/h)	288.9	288.1	287.0	286.0	283.6	280.1	273.9	271.0	268.0	267.4	265.8	265.3	264.6	264.3	265.5	263.7	262.6	262.1	261.9	261.8	261.7	261.6	261.2	261.0
中性子	N.D																							
風向	西北西	西	北西	北北西	北	北西	北西	北西	西	北西	西	西	北	北西	西	西北西	西北西	北西	西北西	北西	西北西	北西	西北西	西北西
風速(m/s)	0.8	0.6	0.5	0.4	2.1	1.1	2.0	1.8	1.6	1.9	1.7	1.6	1.3	1.3	1.5	1.8	2.3	2.3	1.8	2.0	1.9	1.8	2.2	2.4

測定場所	④																							
モニタリングカー	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
測定値( $\mu$ Sv/h)	260.9	260.8	260.5	260.3	260.4	260.2	260.2	260.1	260.0	259.9	259.4	259.5	260.2	259.4	258.9	258.7	258.4	257.3	257.5	257.1	256.9	256.5	256.5	256.4
中性子	N.D																							
風向	西北西	西	西	西	北西	西	西	北西	西北西	北西	西	西北西	西北西	北西	西北西	北西	北	北北西	北北西	北	北北西	西	北北西	北北西
風速(m/s)	1.8	1.4	1.5	1.4	1.2	1.1	1.5	1.3	1.1	1.5	1.7	1.8	1.8	1.3	1.4	1.5	1.5	1.6	1.7	2.2	1.3	1.7	1.5	2.3

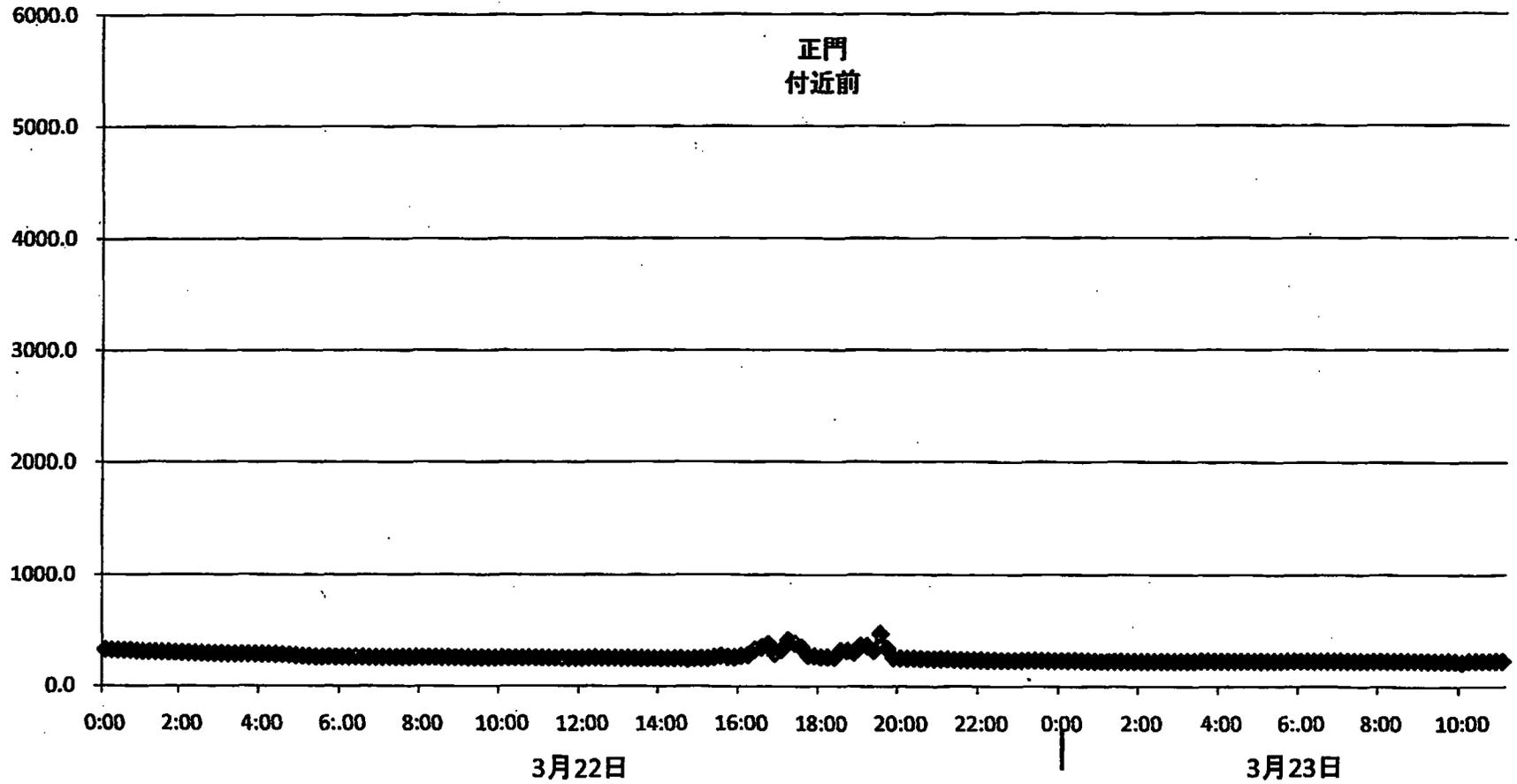
測定場所	④																							
モニタリングカー	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
測定値( $\mu$ Sv/h)	256.3	256.0	258.1	256.3	255.6	255.8	255.6	255.7	255.2	254.8	254.8	254.5	254.6	254.3	254.4	254.3	244.3	254.4	254.1	255.3	265.7	277.5	265.2	258.8
中性子	N.D																							
風向	北	北	北	北西	北	北北西	北	北	北東	北北西	北	北	北西	北西	北	北	西北西	北	北東	北西	北	東南東	東	東
風速(m/s)	1.5	1.4	1.3	1.3	1.7	1.4	1.8	1.8	1.4	1.5	2.3	2.1	1.6	1.7	1.8	1.6	1.6	1.2	1.2	0.8	1.0	1.0	1.2	0.7

測定場所	④																							
モニタリングカー	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
測定値( $\mu$ Sv/h)	274.0	280.6	330.6	352.3	384.2	294.0	330.8	420.4	388.7	351.6	278.9	275.2	265.5	264.1	261.5	324.6	322.8	303.8	367.9	363.1	320.9	472.7	340.7	258.0
中性子	N.D																							
風向	東	南西	南西	西	北北東	北	南東	南東	北	北東	北北西	西北西	西	西北西	北西	西	西	北北西	南西	南西	西南西	南西	西	西北西
風速(m/s)	0.7	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.2	0.4	0.5	0.6	0.9	0.6	0.4	0.6	0.3	0.5	0.3	0.5	0.4	0.5	0.6	0.9

測定場所	④																							
モニタリングカー	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
測定値( $\mu$ Sv/h)	254.1	253.4	252.5	251.5	250.5	249.1	246.1	244.4	242.8	241.0	240.6	239.5	239.3	237.0	237.4	236.2	235.7	235.8	235.9	235.9	235.5	234.8	234.1	233.8
中性子	N.D																							
風向	西北西	西	西北西	北西	北西	西	西	南西	西	西	北西	西北西	西北西	西	西	西南西	西北西	西	西	西北西	西北西	西北西	西北西	北西
風速(m/s)	1.0	1.0	0.8	0.6	0.9	0.8	0.6	0.4	0.5	0.6	0.7	1.0	1.2	1.3	1.1	0.8	1.0	0.9	1.2	1.4	1.4	1.5	1.5	1.9

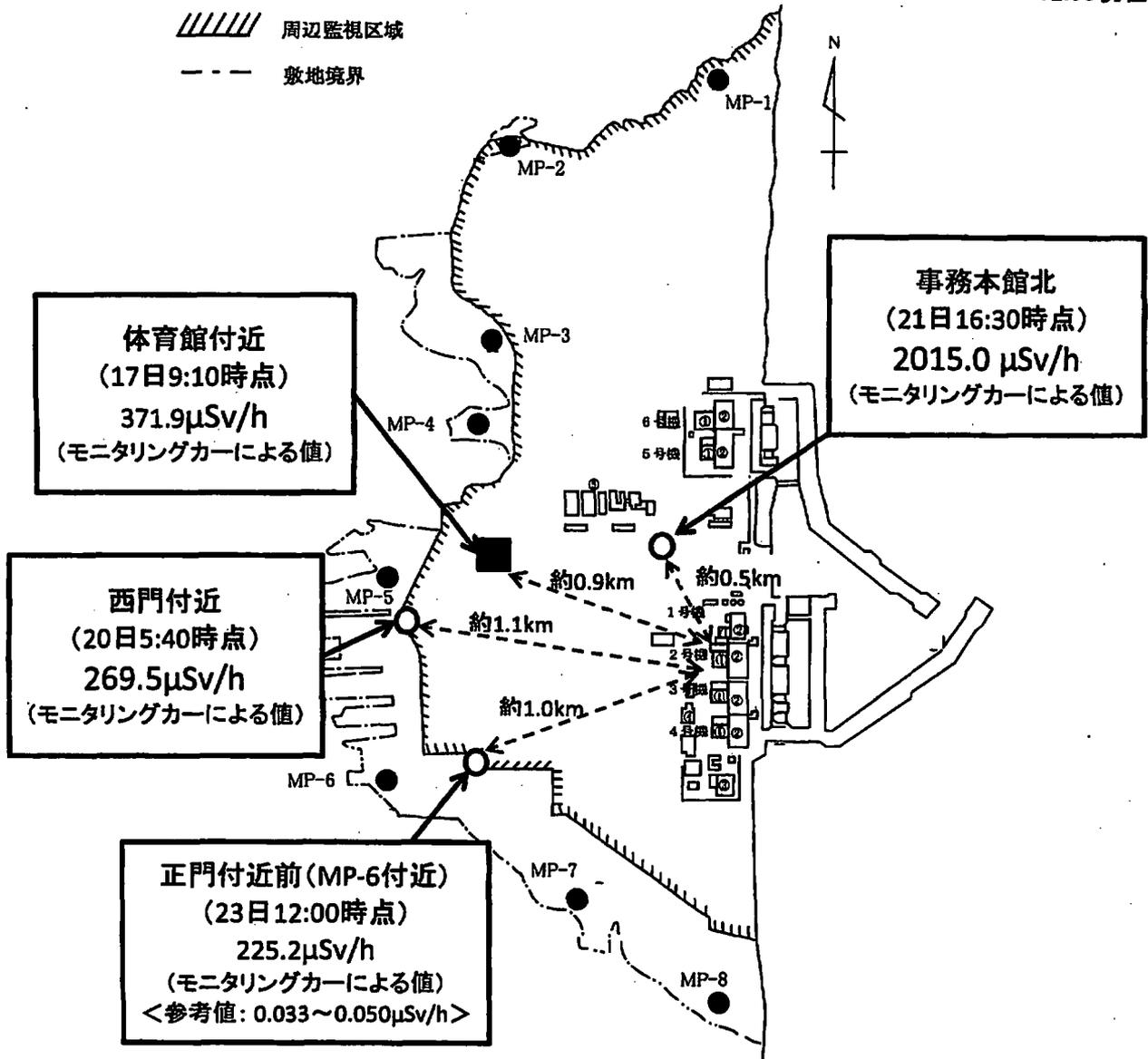
# 福島第一原子力発電所敷地内の線量率

μSv/h



# 福島第一原子力発電所

2011/3/23  
12:00現在





福島第二(2F) (事業者のモニタリングポスト)

3月23日																								
モニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MP1(μSv/h)	16.337	16.260	16.067	16.060	15.887	15.700	15.660	15.570	15.537	15.470	15.393	15.410	15.290	15.243	15.180	15.190	15.103	15.083	15.000	14.953	14.953	14.953	14.907	14.873
MP2(μSv/h)	9.703	9.827	9.560	9.447	9.333	9.233	9.193	9.177	9.113	9.080	9.043	8.973	8.960	8.960	8.960	8.907	8.897	8.877	8.867	8.837	8.837	8.837	8.797	8.803
MP3(μSv/h)	15.347	15.200	15.130	15.047	14.967	14.833	14.790	14.803	14.737	14.650	14.603	14.570	14.540	14.500	14.490	14.517	14.477	14.433	14.383	14.350	14.350	14.350	14.310	14.360
MP4(μSv/h)	12.243	12.123	12.060	11.937	11.847	11.797	11.750	11.723	11.667	11.650	11.557	11.547	11.527	11.453	11.487	11.460	11.417	11.413	11.403	11.367	11.367	11.367	11.307	11.340
MP5(μSv/h)	11.467	11.367	11.267	11.167	11.040	10.973	10.880	10.873	10.873	10.780	10.760	10.680	10.680	10.680	10.680	10.680	10.673	10.627	10.593	10.580	10.580	10.580	10.580	10.587
MP6(μSv/h)	12.620	12.503	12.407	12.297	12.187	12.103	12.053	12.007	11.930	11.900	11.810	11.820	11.793	11.823	11.770	11.763	11.713	11.743	11.703	11.697	11.697	11.697	11.687	11.667
MP7(μSv/h)	欠測																							
風向	北北西	北西	北北西	北西	北西	北北西	北北西	北	北	北	北	北	北	北	北	北北西	北	北	北	北	北	北	北	北北西
風速(m/s)	2.7	3.9	5.0	4.8	4.4	4.3	4.5	5.7	6.6	8.2	8.2	7.4	9.1	8.6	9.9	8.4	9.7	9.0	9.9	7.7	7.7	7.7	8.6	8.3

3月23日																								
モニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MP1(μSv/h)	14.860	14.797	14.773	14.723	14.740	14.713	14.630	14.670	14.593	14.577	14.553	14.423	14.520	14.507	14.460	14.450	14.467	14.400	14.403	14.380	14.347	14.390	14.343	14.337
MP2(μSv/h)	8.813	8.787	8.790	8.803	8.773	8.737	8.740	8.713	8.723	8.700	8.683	8.680	8.640	8.657	8.653	8.643	8.620	8.603	8.593	8.570	8.603	8.570	8.570	8.563
MP3(μSv/h)	14.293	14.317	14.250	14.260	14.260	14.213	14.227	14.223	14.170	14.117	14.173	14.167	14.123	14.133	14.093	14.080	14.060	14.027	14.057	14.053	13.987	14.007	14.017	13.983
MP4(μSv/h)	11.313	11.313	11.273	11.253	11.260	11.263	11.237	11.220	11.193	11.193	11.197	11.153	11.173	11.170	11.133	11.153	11.127	11.130	11.113	11.080	11.097	11.117	11.050	11.053
MP5(μSv/h)	10.587	10.587	10.587	10.587	10.480	10.520	10.480	10.480	10.480	10.480	10.487	10.480	10.433	10.480	10.480	10.427	10.387	10.407	10.380	10.387	10.387	10.387	10.380	10.387
MP6(μSv/h)	11.630	11.643	11.620	11.600	11.623	11.597	11.580	11.550	11.607	11.580	11.533	11.577	11.567	11.510	11.487	11.497	11.480	11.487	11.480	11.480	11.450	11.423	11.417	11.467
MP7(μSv/h)	欠測																							
風向	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北	北
風速(m/s)	8.6	8.5	8.0	7.8	8.3	7.7	7.5	7.1	7.6	7.5	8.7	8.6	8.2	8.7	9.1	8.5	9.9	8.9	9.6	8.6	8.6	8.0	9.4	8.9

3月23日																								
モニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MP1(μSv/h)	14.307	15.697	16.200	19.693	17.380	17.463	16.780	16.483	16.347	16.143	16.010	15.917	15.783	15.657	15.590	15.533	15.453	15.407	15.323	15.187	15.380	15.260	15.133	15.073
MP2(μSv/h)	8.573	8.923	9.273	11.147	10.563	10.817	9.570	9.350	9.277	9.197	9.190	9.097	9.057	9.067	9.067	9.027	8.983	8.943	8.903	8.917	9.307	9.120	9.077	8.967
MP3(μSv/h)	13.953	13.980	14.407	15.590	17.423	18.627	17.130	16.520	16.220	16.110	15.933	15.813	15.693	15.613	15.510	15.453	15.397	15.447	15.227	15.357	15.853	15.540	15.277	15.163
MP4(μSv/h)	11.080	11.077	11.377	13.130	13.253	13.147	12.330	12.273	12.070	12.013	11.920	11.873	11.780	11.750	11.770	11.667	11.737	11.787	11.657	11.693	11.933	12.607	11.713	11.700
MP5(μSv/h)	10.380	10.380	10.613	13.813	12.420	12.147	11.567	11.620	11.367	11.367	11.213	11.167	11.153	11.113	11.073	11.073	11.053	11.173	10.920	11.220	11.287	11.713	11.153	11.067
MP6(μSv/h)	11.443	11.463	12.017	14.217	13.800	12.843	12.550	12.540	12.447	12.383	12.273	12.233	12.183	12.117	12.127	12.083	12.073	11.997	11.940	11.970	12.023	12.107	11.987	11.973
MP7(μSv/h)	欠測																							
風向	北	北	北	北	北	北北東	北	北北東	北北東															
風速(m/s)	7.7	8.1	7.9	7.4	7.2	7.7	9.0	8.9	10.2	10.3	8.2	8.2	9.2	10.1	7.5	7.0	7.7	8.0	7.4	7.1	8.6	6.0	5.4	6.5

福島第二(2F) (事業者のモニタリングポスト)

3月22日	※																							
モニタリングポスト	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
MP1(μSv/h)	15.103	15.147	15.120	15.067	15.027	15.040	14.980	14.947	14.977	14.970	15.043	17.023	27.080	37.954	50.240	49.404	42.264	43.274	49.137	35.667	34.847	33.027	32.030	31.004
MP2(μSv/h)	9.217	9.213	9.197	9.227	9.197	9.213	9.183	9.227	9.173	9.157	9.197	10.097	11.110	35.497	42.387	39.347	30.564	30.410	27.444	20.557	18.973	17.087	16.583	16.110
MP3(μSv/h)	14.963	14.973	15.007	14.977	14.987	14.977	14.900	14.933	14.960	14.917	14.880	14.883	15.180	15.433	33.410	37.620	35.400	35.664	30.900	33.897	26.187	24.477	23.590	23.050
MP4(μSv/h)	12.027	11.980	11.987	11.970	11.970	11.987	11.920	11.937	11.963	11.907	11.910	11.887	12.113	15.360	33.177	35.780	35.740	29.424	26.357	28.927	21.004	19.737	19.027	18.623
MP5(μSv/h)	11.373	11.413	11.407	11.373	11.373	11.367	11.360	11.367	11.373	11.300	11.307	11.307	11.467	17.893	33.207	37.767	38.960	28.980	26.987	28.667	20.473	19.000	18.293	17.887
MP6(μSv/h)	12.657	12.613	12.610	12.617	12.547	12.567	12.520	12.470	12.460	12.473	12.450	12.460	12.770	18.403	28.297	30.274	33.717	27.834	26.014	28.264	21.794	19.733	19.287	18.947
MP7(μSv/h)	欠測	22.200	欠測	欠測	欠測	欠測	欠測																	
風向	北北西	北	北	北	北	北北西	北	北	北	北	北北東	北	北	北北東	北北東	北北東	北北東	北東	北東	北東	北東	北北東	北東	北北東
風速(m/s)	3.0	2.5	2.9	2.9	3.3	2.5	2.7	3.4	4.3	3.9	3.5	2.8	2.5	1.9	2.6	3.1	2.9	3.5	2.9	3.0	2.8	2.5	3.7	3.5

※:MP-7については、東電社員が測定結果(1日1回)

3月22日																								
モニタリングポスト	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MP1(μSv/h)	30.194	29.330	28.520	27.770	27.084	26.500	25.877	25.320	24.860	24.367	23.884	23.410	23.047	22.627	22.197	21.837	21.500	21.197	20.874	20.630	20.287	20.010	19.783	19.620
MP2(μSv/h)	15.743	15.413	15.080	14.743	14.447	14.173	13.870	13.667	13.443	13.183	13.010	12.800	12.597	12.487	12.297	12.100	11.967	11.820	11.683	11.543	11.457	11.283	11.190	11.113
MP3(μSv/h)	22.657	22.204	21.840	21.460	21.134	20.777	20.493	20.263	19.883	19.713	19.417	19.180	18.933	18.823	18.627	18.357	18.187	18.027	17.870	17.700	17.607	17.433	17.290	17.140
MP4(μSv/h)	18.280	17.893	17.583	17.303	17.030	16.783	16.483	16.317	16.057	15.803	15.623	15.420	15.250	15.040	14.913	14.727	14.607	14.487	14.340	14.173	14.023	13.947	13.830	13.717
MP5(μSv/h)	17.500	17.200	16.820	16.520	16.227	15.927	15.680	15.487	15.307	15.053	14.860	14.667	14.467	14.267	14.173	13.980	13.880	13.680	13.587	13.433	13.293	13.193	13.113	13.000
MP6(μSv/h)	18.600	18.307	17.973	17.660	17.433	17.183	16.973	16.667	16.460	16.240	16.057	15.850	15.667	15.480	15.310	15.230	15.023	14.897	14.793	14.640	14.507	14.393	14.287	14.143
MP7(μSv/h)	欠測																							
風向	北東	北北東	北東	北東	北東	東北東	北東	北東	北北西	西北西	西	北北西	西	西	北	北	北	北	北	北西	北	北北西	北	北北西
風速(m/s)	3.3	3.3	2.7	2.7	2.2	1.9	1.8	0.4	0.5	0.5	4.6	1.0	4.8	0.4	0.7	1.1	0.8	1.1	1.2	1.1	0.9	1.1	0.8	1.5

3月22日																								
モニタリングポスト	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MP1(μSv/h)	19.557	19.463	19.583	19.733	19.363	19.537	19.217	19.027	18.700	18.907	18.427	18.640	18.320	18.220	17.957	17.563	17.307	17.107	16.927	16.773	16.727	16.667	16.560	16.440
MP2(μSv/h)	11.127	11.187	11.370	11.503	11.463	11.833	11.477	11.300	11.140	11.340	10.900	11.167	11.003	10.987	10.757	10.447	10.250	10.150	10.013	9.917	9.903	9.840	9.820	9.727
MP3(μSv/h)	17.057	17.000	17.090	17.240	17.183	16.990	17.300	16.850	16.700	16.787	16.760	16.457	16.520	16.523	16.363	16.127	16.037	15.893	15.777	15.667	15.603	15.523	15.537	15.397
MP4(μSv/h)	13.637	13.550	13.650	13.823	13.770	13.820	13.877	13.723	13.543	13.483	13.500	13.163	13.297	13.167	13.100	13.003	12.863	12.727	12.590	12.517	12.427	12.420	12.373	12.347
MP5(μSv/h)	12.900	12.900	12.900	13.100	13.100	13.253	13.327	13.387	12.967	12.853	12.800	12.507	12.527	12.347	12.413	12.347	12.147	11.953	11.907	11.753	11.660	11.620	11.573	11.620
MP6(μSv/h)	14.057	13.970	13.943	14.077	14.117	14.160	14.080	14.197	13.910	13.867	13.717	13.680	13.523	13.470	13.437	13.400	13.247	13.113	13.003	12.917	12.827	12.760	12.730	12.720
MP7(μSv/h)	欠測																							
風向	西北西	北西	北	北	西北西	西北西	北北西	北北西	北北西	北	北北西	北西	北北西	北西	北西	北西	北西	北西	北西	西北西	北西	西南西	西北西	西
風速(m/s)	4.0	1.9	2.0	1.4	5.2	3.2	2.0	2.2	2.6	2.4	2.1	1.9	2.4	2.7	2.8	3.3	2.7	3.0	3.2	3.2	1.8	1.8	1.3	2.2

## 福島第二(2F) (事業者のモニタリングポスト)

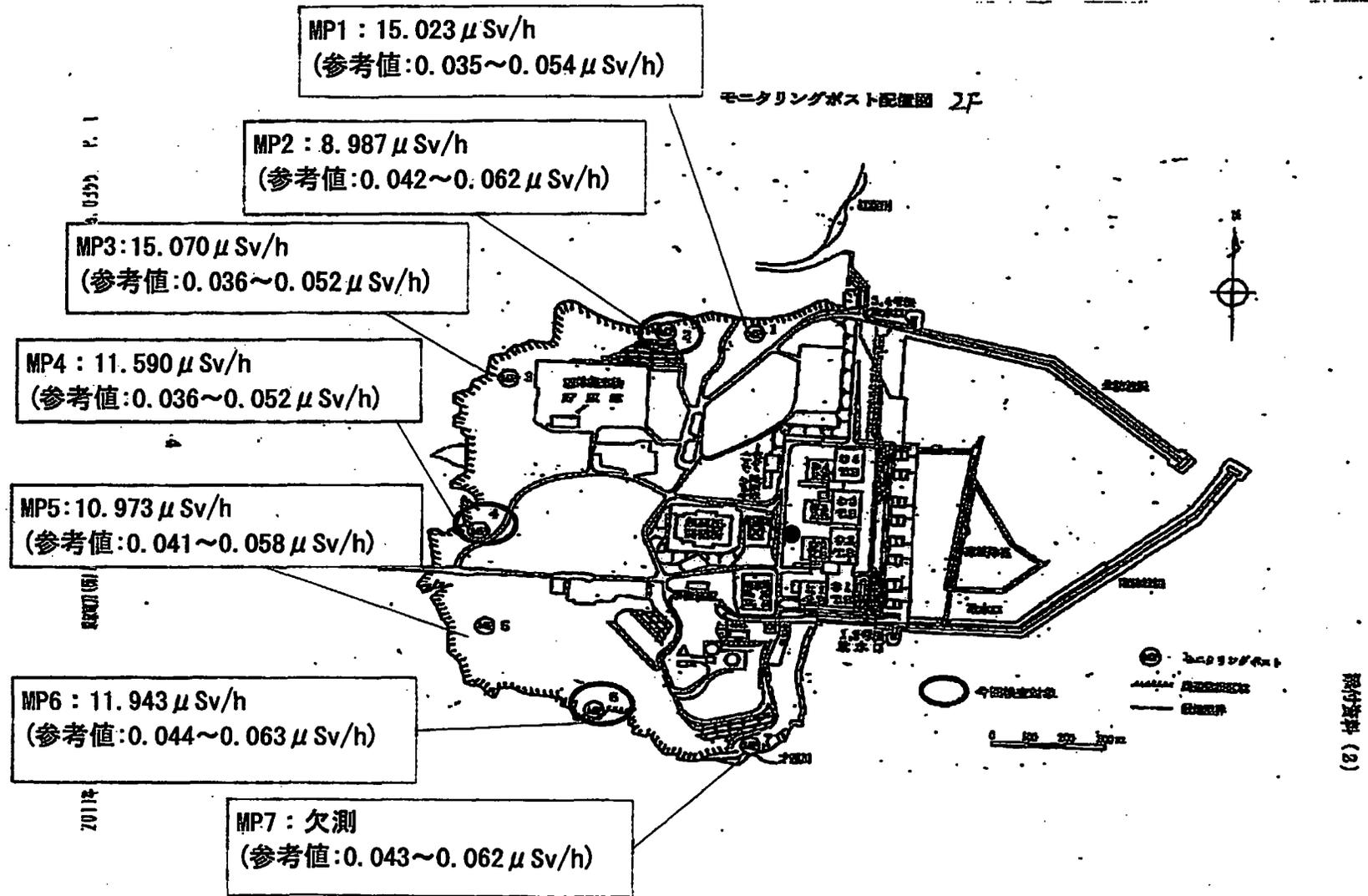
3月22日																								
モニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MP1( $\mu$ Sv/h)	18.187	17.870	17.880	17.917	17.953	18.153	18.277	18.007	17.667	17.497	17.463	17.847	17.840	17.403	17.263	16.903	16.943	16.653	16.497	16.440	16.373	16.323	16.243	16.187
MP2( $\mu$ Sv/h)	11.920	11.683	11.673	11.567	11.743	11.840	12.010	11.733	11.423	11.327	11.247	11.480	11.767	11.397	11.183	10.850	10.817	10.643	10.500	10.420	10.357	10.340	10.233	10.263
MP3( $\mu$ Sv/h)	17.570	17.423	17.453	17.397	17.437	17.643	17.567	17.437	17.240	17.110	17.057	17.077	17.330	17.393	17.010	16.920	16.670	16.637	16.450	16.380	16.340	16.313	16.247	16.197
MP4( $\mu$ Sv/h)	14.283	14.283	14.587	14.500	14.577	14.530	14.503	14.527	14.400	14.090	13.870	13.793	13.983	14.387	13.973	13.903	13.507	13.600	13.300	13.250	13.143	13.110	13.090	13.013
MP5( $\mu$ Sv/h)	14.573	14.367	14.860	14.567	14.667	14.653	14.513	14.473	14.567	14.207	13.920	13.713	13.833	14.367	13.880	13.820	13.293	13.467	13.000	12.900	12.800	12.753	12.700	12.607
MP6( $\mu$ Sv/h)	14.930	14.730	14.793	14.837	14.793	14.723	14.670	14.740	14.607	14.467	14.173	14.033	14.193	14.560	14.147	14.113	13.717	13.893	13.570	13.460	13.413	13.387	13.333	13.317
MP7( $\mu$ Sv/h)	欠測																							
風向	西	西北西	西	西	西	西	西北西	西	西	西南西	西	西南西	北北西	北	北北西	西	北北西	北北西	北北西	西	北北西	北	北	北
風速(m/s)	6.3	1.6	2.9	1.5	8.8	8.2	1.8	4.4	4.6	1.1	4.1	2.0	0.9	2.3	0.8	2.6	1.7	2.7	1.1	4.4	1.1	1.9	2.2	2.0

3月22日																								
モニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MP1( $\mu$ Sv/h)	16.160	16.140	16.100	16.213	17.327	19.673	18.193	18.820	18.310	17.980	17.803	17.690	17.463	17.250	17.173	17.103	16.910	16.763	16.683	16.490	16.463	16.440	16.380	16.263
MP2( $\mu$ Sv/h)	10.180	10.147	10.083	10.187	11.027	13.457	11.027	11.367	11.100	10.963	10.833	10.730	10.620	10.477	10.447	10.327	10.263	10.147	10.093	9.977	9.937	9.923	9.913	9.843
MP3( $\mu$ Sv/h)	16.153	16.177	16.073	16.160	17.037	16.577	16.457	16.650	16.673	16.573	16.483	16.380	16.237	16.157	16.093	15.983	16.017	15.880	15.800	15.710	15.777	15.673	15.667	15.597
MP4( $\mu$ Sv/h)	12.987	12.930	12.937	12.930	14.000	13.177	13.283	14.240	14.133	13.963	13.860	13.773	13.853	13.507	13.357	13.357	13.180	13.057	13.033	12.907	12.847	12.820	12.780	12.753
MP5( $\mu$ Sv/h)	12.607	12.527	12.507	12.507	13.433	13.040	12.940	14.160	13.993	13.687	13.580	13.413	13.200	13.087	13.000	12.860	12.700	12.607	12.507	12.373	12.347	12.293	12.247	12.213
MP6( $\mu$ Sv/h)	13.270	13.193	13.193	13.217	13.743	13.897	14.467	17.233	16.990	16.603	16.287	16.023	15.823	15.470	15.340	15.130	14.967	14.783	14.673	14.397	14.300	14.220	14.150	14.017
MP7( $\mu$ Sv/h)	欠測																							
風向	北	北	北北東	北北東	北	北	北	北北西																
風速(m/s)	1.5	0.8	2.2	3.7	4.3	4.6	4.9	6.1	7.1	7.3	6.8	8.0	5.8	5.7	5.5	6.6	7.2	5.9	6.6	7.8	6.8	6.9	6.9	6.2

3月22日																								
モニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MP1( $\mu$ Sv/h)	16.220	16.107	16.087	16.007	15.910	15.913	15.847	15.787	15.760	15.737	15.663	15.593	15.550	15.510	15.387	15.413	15.330	15.340	15.300	15.247	15.220	15.183	15.130	15.157
MP2( $\mu$ Sv/h)	9.823	9.770	9.743	9.730	9.667	9.697	9.633	9.637	9.580	9.580	9.547	9.533	9.520	9.470	9.423	9.403	9.323	9.323	9.317	9.300	9.283	9.283	9.263	9.263
MP3( $\mu$ Sv/h)	15.567	15.550	15.563	15.440	15.477	15.450	15.447	15.377	15.333	15.350	15.313	15.333	15.323	15.243	15.193	15.117	15.103	15.127	15.107	15.020	15.033	15.080	15.067	15.017
MP4( $\mu$ Sv/h)	12.700	12.643	12.583	12.587	12.560	12.523	12.497	12.447	12.467	12.423	12.387	12.370	12.370	12.280	12.213	12.160	12.170	12.100	12.137	12.113	12.043	12.053	12.037	12.007
MP5( $\mu$ Sv/h)	12.153	12.127	12.060	12.047	11.960	11.953	11.953	11.947	11.893	11.907	11.853	11.807	11.760	11.753	11.660	11.660	11.560	11.467	11.467	11.467	11.467	11.433	11.407	11.360
MP6( $\mu$ Sv/h)	13.970	13.843	13.780	13.707	13.660	13.600	13.537	13.467	13.443	13.350	13.360	13.300	13.230	13.180	13.093	13.003	12.923	12.883	12.813	12.767	12.790	12.737	12.720	12.673
MP7( $\mu$ Sv/h)	欠測																							
風向	北北西	北西	北西	北西	北西	北西	北西	北北西	北北西	北北西	北北西	北	北北西	北北西	北北西	北北西	南西	北	北北西	北	北	北	北北西	北北西
風速(m/s)	6.5	6.5	6.8	6.6	5.4	4.9	3.8	4.7	4.2	3.6	3.9	4.0	2.8	2.1	3.3	3.8	1.4	3.0	3.3	2.9	3.0	3.5	2.5	3.0

# 福島第二原子力発電所

2011/3/23  
12:00現在



東京電力福島第一原子力発電所敷地内の核種分析結果

採取方法:モニタリングカーにてダスト採取

測定方法:試料を2Fに持ち込みGe半導体型核種分析装置にて分析(1日1回測定)

測定時間:500秒

核種	3月19日 事務本館北側			3月20日 事務本館北側			3月21日 事務本館北側			③放射線業務 従事者の呼吸 する空気中の 濃度限度 (Bq/cm <sup>3</sup> )※	
	採取時間(11:53~12:13)*放水前			採取時間(1:41~2:01)			採取時間(10:19~10:39)				
	測定時間(14:12~)			測定時間(13:28~)			測定時間(13:28~)				
	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	空气中濃度 限度に対す る割合 (①/③)	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	空气中濃度 限度に対す る割合 (①/③)	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	空气中濃度 限度に対す る割合 (①/③)		
揮発性	I-131	5.940E-03	3.374E-05	5.94	2.303E-03	1.256E-05	2.30	1.516E-03	1.134E-05	1.52	1.0E-03
	I-132	2.203E-03	8.816E-05	0.03	N.D			2.539E-04	2.702E-05	0.00	7.0E-02
	I-133	3.773E-05	2.861E-05	0.01	N.D			N.D			5.0E-03
粒子状	Cs-134	2.165E-05	1.692E-05	0.01	2.840E-05	4.755E-06	0.01	3.383E-05	5.364E-06	0.02	2.0E-03
	Cs-136	N.D			5.629E-06	5.447E-06	0.001	4.529E-06	3.321E-06	0.0005	1.0E-02
	Cs-137	2.437E-05	1.771E-05	0.01	2.892E-05	5.003E-06	0.01	3.801E-05	4.671E-06	0.01	3.0E-03

核種	3月22日 正門									③放射線業務 従事者の呼吸 する空気中の 濃度限度 (Bq/cm <sup>3</sup> )※
	採取時間(1:10~1:30)									
	測定時間(14:50~)									
	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	空气中濃度 限度に対す る割合 (①/③)	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	空气中濃度 限度に対す る割合 (①/③)	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	空气中濃度 限度に対す る割合 (①/③)	
揮発性	I-131	2.239E-03	1.569E-05	2.24						1.0E-03
	I-132	N.D								7.0E-02
	I-133	N.D								5.0E-03
粒子状	Co-58	N.D								1.0E-02
	Cs-134	1.591E-05	5.853E-06	0.01						2.0E-03
	Cs-136	N.D								1.0E-02
	Cs-137	1.889E-05	5.295E-06	0.01						3.0E-03
その他	Te-129	N.D								4.0E-01
	Te-132	6.680E-05	1.116E-05	0.01						7.0E-03

※人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度

採取方法:海水を汲みあげ採取

測定方法:試料500mlを福島第二に運搬し、Ge半導体検出器で測定

測定時間:1,000秒

核種	3月21日 14:30			3月22日 6:30						③周辺監視区 域外の水中の 濃度限度 (Bq/cm <sup>3</sup> )
	1F南放水口付近(1~4号放水口から南側約330m地点)			1F南放水口付近(1~4号放水口から南側約330m地点)						
	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	水中濃度限 度に対する 割合 (①/③)	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	水中濃度限 度に対する 割合 (①/③)	①放射能濃度 (Bq/cm <sup>3</sup> )	②検出限界濃度 (Bq/cm <sup>3</sup> )	水中濃度限 度に対する 割合 (①/③)	
Co-58	5.955E-02	3.349E-02	0.1	1.668E-02	2.138E-02	0.0				1.0E+00
I-131	5.066E+00	4.245E-02	126.7	1.190E+00	2.293E-02	29.8				4.0E-02
I-132	2.136E+00	1.925E-01	0.7	1.362E+00	7.721E-02	0.5				3.0E+00
Cs-134	1.486E+00	4.030E-02	24.8	1.504E-01	1.769E-02	2.5				6.0E-02
Cs-136	2.132E-01	2.358E-02	0.7	2.350E-02	1.056E-02	0.1				3.0E-01
Cs-137	1.484E+00	4.204E-02	16.5	1.535E-01	1.626E-02	1.7				9.0E-02

各発電所等の環境モニタリング結果

単位:  $\mu\text{Sv/h}$

通常の平常値の範囲	会社名	発電所名	3月22日											
			12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0.023~0.027	北海道電力㈱	泊発電所	0.025	0.026	0.026	0.025	0.025	0.025	0.027	0.026	0.027	0.026	0.027	0.026
0.024~0.060	東北電力㈱	女川原子力発電所	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.30	1.30	1.30	
0.012~0.060		東通原子力発電所	0.018	0.017	0.017	0.017	0.018	0.017	0.018	0.017	0.018	0.018	0.018	
0.033~0.050	東京電力㈱	福島第一原子力発電所 <sup>※</sup>	256.3	255.6	254.6	254.1	274	330.8	265.5	367.9	254.1	246.1	239.3	235.9
0.036~0.052		福島第二原子力発電所	14.963	14.900	15.180	30.900	22.657	20.493	18.933	17.870	17.057	17.300	16.52	15.777
0.011~0.159		柏崎刈羽原子力発電所	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.087	0.087	0.089	0.089	0.072
0.036~0.053	日本原子力発電㈱	東海第二発電所	1.245	1.215	1.220	1.261	1.231	1.193	1.168	1.428	1.218	1.170	1.142	1.112
0.039~0.110		敦賀発電所	0.073	0.074	0.073	0.075	0.073	0.073	0.074	0.073	0.074	0.073	0.073	0.073
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.094	0.095	0.092	0.091	0.088	0.086	0.086	0.086	0.086	0.087	0.086	
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.033	0.032	0.032	0.032	0.042	0.037	0.045	0.037	0.037	0.035	0.036	0.035
0.028~0.130	中国電力㈱	島根原子力発電所	0.029	0.028	0.030	0.030	0.037	0.031	0.031	0.030	0.030	0.029	0.03	0.03
0.070~0.077	関西電力㈱	美浜発電所	0.071	0.072	0.072	0.073	0.073	0.072	0.072	0.072	0.072	0.071	0.076	0.075
0.045~0.047		高浜発電所	0.042	0.043	0.042	0.042	0.043	0.042	0.042	0.042	0.043	0.045	0.046	0.043
0.036~0.040		大飯発電所	0.034	0.034	0.035	0.034	0.034	0.034	0.035	0.034	0.035	0.036	0.038	0.036
0.011~0.080	四国電力㈱	伊方発電所	0.015	0.015	0.014	0.014	0.014	0.014	0.014	0.014	0.015	0.014	0.014	0.014
0.023~0.087	九州電力㈱	玄海原子力発電所	0.027	0.028	0.027	0.028	0.028	0.027	0.027	0.026	0.027	0.027	0.026	0.026
0.034~0.120		川内原子力発電所	0.038	0.037	0.039	0.036	0.038	0.036	0.036	0.039	0.038	0.038	0.036	0.039
0.009~0.069	日本原燃(株)	六ヶ所 再処理事業所	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
0.009~0.071		六ヶ所 埋設事業所	0.018	0.019	0.020	0.019	0.020	0.020	0.020	0.020	0.020	0.020	0.019	

※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

通常の平常値の範囲	会社名	発電所名	3月23日											
			0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
0.023~0.027	北海道電力㈱	泊発電所	0.029	0.027	0.025	0.026	0.025	0.034	0.029	0.027	0.027	0.029		
0.024~0.060	東北電力㈱	女川原子力発電所	1.30	1.30	1.30	1.30	1.30	1.20	1.20	1.20	1.20	1.20		
0.012~0.060		東通原子力発電所	0.017	0.017	0.018	0.018	0.018	0.018	0.018	0.019	0.019	0.018		
0.033~0.050	東京電力㈱	福島第一原子力発電所 <sup>※</sup>	233.4	227.5	226.7	227.6	229.1	229.5	229.8	229.3	229.4	229.1		
0.036~0.052		福島第二原子力発電所	15.347	14.790	14.540	14.383	14.293	14.227	14.123	14.057	13.953	17.130		
0.011~0.159		柏崎刈羽原子力発電所	0.077	0.077	0.077	0.083	0.073	0.067	0.067	0.065	0.064	0.066		
0.036~0.053	日本原子力発電㈱	東海第二発電所	1.093	1.081	1.072	1.063	1.058	1.050	1.047	1.047	1.044	1.039		
0.039~0.110		敦賀発電所	0.073	0.073	0.075	0.074	0.073	0.073	0.075	0.072	0.073	0.073		
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.086	0.086			
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.034	0.033	0.033	0.032	0.032	0.032	0.032	0.032	0.032	0.031		
0.028~0.130	中国電力㈱	島根原子力発電所	0.030	0.030	0.030	0.031	0.031	0.030	0.031	0.030	0.030	0.032		
0.070~0.077	関西電力㈱	美浜発電所	0.073	0.072	0.072	0.072	0.073	0.072	0.072	0.072	0.073	0.071		
0.045~0.047		高浜発電所	0.043	0.043	0.042	0.042	0.042	0.042	0.042	0.042	0.043	0.043		
0.036~0.040		大飯発電所	0.036	0.035	0.034	0.035	0.034	0.034	0.034	0.035	0.033	0.035		
0.011~0.080	四国電力㈱	伊方発電所	0.014	0.015	0.014	0.014	0.014	0.014	0.014	0.014	0.015	0.015		
0.023~0.087	九州電力㈱	玄海原子力発電所	0.027	0.027	0.025	0.026	0.027	0.026	0.026	0.026	0.026	0.027		
0.034~0.120		川内原子力発電所	0.038	0.035	0.038	0.036	0.038	0.037	0.037	0.036	0.037	0.037		
0.009~0.069	日本原燃(株)	六ヶ所 再処理事業所	0.016	0.016	0.016	0.017	0.016	0.016	0.016	0.017	0.017	0.017		
0.009~0.071		六ヶ所 埋設事業所	0.020	0.019	0.019	0.020	0.020	0.020	0.019	0.020	0.022	0.021		

※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

Nuclear News Flashes

Saturday, Mar 19, 2011

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[Inside This Issue:]

\*\* Some success cooling reactors, spent fuel at Fukushima: Cabinet Secretary Edano

\*\* Fukushima I 'cloud' reaches North America, heads toward Europe

\*\* French industry group sends equipment to Fukushima

\*\* Japanese government considering ban on food sales near Fukushima I

\*\* CORRECTION

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\*\*\* Some success cooling reactors, spent fuel at Fukushima: Cabinet Secretary Edano

Efforts to spray water into the disabled reactors and spent fuel pools at the Fukushima I nuclear power plant March 19 have been "successful," but work continues to install piping to provide consistent water supply to responders, Chief Cabinet Secretary Yukio Edano said in a briefing.

Yasuo Sato of the Tokyo Fire Department said during a briefing March 19 that Tokyo firefighters used unmanned vehicles to spray water into the spent fuel pool and reactor at Fukushima I-3.

Edano said these efforts have achieved "a certain degree of stability," but workers will continue to "try to ensure stable water spray [at] the number three and four reactors so there will be [a] much improved situation."

Sato said the firefighters' initial efforts to approach units 3 and 4 that morning were complicated by debris from the earthquake and tsunami that hit March 11. Eventually, the spraying equipment was put in place using an 800-meter hose, Japan television network NHK reported.

Radiation levels near the operation "fell to almost zero" shortly after firefighters began to spray water into the Unit 3 reactor and spent fuel pool, Sato said.

The initial plan was to spray more than 1,200 mt of water over seven hours, but the operation has been extended until 12:30 am March 20 (1530 GMT March 19) local time, Sato said. As much as 3,800 liters of water per minute has been sprayed during the operation, he said.

Tepco said March 19 that it had succeeded in restoring electric power to Fukushima I-1 and -2. This power is needed to operate cooling equipment at the disabled plant.

Tepco said that as of midnight March 19 local time, it is working to restore electric power to units 3 and 4. The utility said it aims to restore power at units 3-6 on March 20. Workers will attempt to reactivate instrumentation at units 1 and 2, assess the state of cooling equipment damaged in the disaster, and try to restore function of the cooling systems, Tepco said.

The Japan Atomic Industrial Forum, the nation's nuclear industry group, said in an update that as of 10 pm March 19 local time, fuel elements were "exposed partially or fully" in the reactors at units 1, 2 and 3. The fuel must be kept submerged to prevent risk of a core melt. Core and fuel integrity are "damaged" at those three units, JAIF said.

"Damage [is] suspected" to containment vessel integrity, which seals the reactor vessel as an additional layer of defense in depth, at unit 2. It is "not damaged" at units 1, 4, 5 and 6, JAIF said, and "might be not damaged" at unit 3.

Water levels remain "low" at the spent fuel pools of units 3 and 4, JAIF said. Used fuel elements in the pools must be kept underwater to prevent overheating that can damage fuel and generate explosive hydrogen gas. Water injection is being "considered" for the pool at unit 1, it said.

Spent fuel pool temperature is "increasing" at unit 6, JAIF said without providing details. Pool temperature is "high but decreasing" at unit 5, a favorable update from six hours previous when the temperature was listed as "increasing." No information is available on the unit 2 spent fuel pool, it said.

David Lochbaum, a nuclear engineer with the Union of Concerned Scientists, said in a telephone briefing the morning of March 19 in the US that emergency diesel generators have restored cooling of the pools at units 5 and 6. It appears "cooling was restored before those pools got into distress," Lochbaum said.

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\*\*\* Fukushima I 'cloud' reaches North America, heads toward Europe

The radioactive "cloud" from Japan's Fukushima I nuclear power plant north of Tokyo covered most of North America and northeastern Siberia March 18, and was passing over the northern Atlantic and the Caribbean March 19, France's Institute of Radiological Protection and Nuclear Safety, IRSN, said in an information bulletin late March 19.

IRSN is modeling the movement of the radioactive cloud in collaboration with Meteo France, the state meteorological service.

IRSN said the Fukushima plume, which carries Iodine-131 and cesium-137 among other isotopes, would reach metropolitan France on March 23 or 24.

The plume has been moving since March 12 in accordance with atmospheric currents in the northern hemisphere. There is almost no exchange between the atmospheres of the northern and southern hemispheres, French experts have said.

IRSN said that concentrations of Cs-137 in the cloud were "extremely low," too low to be detected by IRSN's Teleray radioactivity monitoring network. IRSN is also publishing measurements from that network, which has 163 stations in metropolitan France and seven in French overseas territories, as well as one recently installed at the French Embassy in Tokyo. Teleray continually measures gamma radiation expressed in nanoSieverts per hour.

IRSN said that it agreed with the US Environmental Protection Agency that the level of concentrations of cesium in the Fukushima fallout would not have health or environmental consequences and would be so low that only specialized laboratories such as its own could detect them. It said it would publish the results of environmental measurements "as soon as possible, that is, several days after the passage of the plume."

The models of the fallout movements and all ambient radioactivity measurements are posted on IRSN's website, [www.irsn.fr](http://www.irsn.fr).

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**\*\*\* French industry group sends equipment to Fukushima**

Intra, a joint venture of EDF, Areva and the CEA, is sending 130 tons of robots and specialized equipment to help Japan cope with the aftermath of the Fukushima I nuclear power plant accident, EDF said late March 18.

An Antonov 225, the world's largest plane, was scheduled to leave France this weekend for Tokyo's Narita airport, carrying remote-controlled machines designed by Intra to operate instead of human beings in and around buildings in radiologically hostile environments.

The cargo comprises equipment for taking measurements of environmental radioactivity and remotely controlled robotic machines, EDF said in a statement. The equipment is capable of working inside or outside buildings, to conduct clearing work and "complex technical movements" such as clearing debris, setting up measurement posts or taking samples. It can measure radioactivity and take and transmit films, EDF said.

EDF said it already sent 100 mt of boric acid to Japan to be used in cooling the Fukushima reactors.

Intra is majority owned by EDF and headquartered near EDF's Chinon nuclear power plant.

EDF said France was the only country that used the experience of the 1986 Chernobyl accident to design and build a fleet of machines to cope with extreme situations and train personnel capable of using them.

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**\*\*\* Japanese government considering ban on food sales near Fukushima I**

Japan is considering whether to ban the sale and shipment of food products originating in the Fukushima Prefecture, the area around the damaged Fukushima I nuclear power plant, after elevated levels of radiation were found in milk, Yukio Edano, the Japanese government's chief cabinet secretary, said during a March 19 briefing.

Edano said tests of milk collected 30 kilometers (nearly 19 miles) from the Fukushima station and spinach collected in the Ibaraki Prefecture, 65 km south of the station, detected radiation levels "exceeding the government-set limit," according to the Japan Atomic Industrial Authority's March 19 summary of the briefing. Edano said the government might set limits on food consumption instead. Edano did not say when the government would decide whether to ban or restrict food sales, according to JAIF.

The test found elevated levels of radioactive iodine in the foods sampled March 16 through March 18, the IAEA said March 19.

Edano did not say what levels of radiation were detected in the sampled food products, but that the radiation poses "no immediate threat to health," JAIF reported. "For reference, the radiation detected in milk, even if taken in all through a year, is just equivalent to [the] radiation dose" from a single CT (Computerized tomography) scan and the radiation detected in the spinach samples equal one-fifth of a CT scan, he said.

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\*\*\* CORRECTION

Dose limits to workers at Japan's Fukushima nuclear power plant were misstated in a March 18 Nuclear News Flash. The story should have indicated that "at least one worker received a dose above the authorized intervention limit of 100 mSv," and that "the allowed intervention dose was raised March 17 from 100 mSv to 250 mSv. The statutory occupational limit is 100 mSv over five years.

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| Tel: +65-6530-6430 |

**From:** [LIA07 Hoc](#)  
**Subject:** 1800 EDT (March 19, 2011) USNRC Earthquake/Tsunami Status Update  
**Date:** Saturday, March 19, 2011 5:51:09 PM  
**Attachments:** [USNRC Earthquake-Tsunami Update.031911.1800EDT.pdf](#)

---

Attached, please find a 1800 EDT, March 19, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

**Please note that this information is "~~Official Use Only~~" and is only being shared within the federal family.**

Please call the ~~Headquarters Operations Office~~ at 301-816-5100 with questions.

-Sara

Sara K. Mroz  
Communications and Outreach  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[Sara.Mroz@nrc.gov](mailto:Sara.Mroz@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

RRRR-177

**From:** [LIA07 Hoc](#)  
**Subject:** USNRC Earthquake-Tsunami Update - 0600 EDT (March 19, 2011)  
**Date:** Saturday, March 19, 2011 6:16:01 AM  
**Attachments:** [USNRC Earthquake-Tsunami Update.031911.0600EDT.pdf](#)

---

Attached, please find an 0600 EDT March 19, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

**Please note that this information is "~~Official Use Only~~" and is only being shared within the federal family.**

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

Thanks,  
Christine

Christine A. Steger  
US Nuclear Regulatory Commission  
[Christine.Steger@nrc.gov](mailto:Christine.Steger@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

RRRR-178

## David Decker

---

**From:** Operations Center Bulletin  
**Sent:** Sunday, March 13, 2011 11:12 AM  
**To:** OST02 HOC  
**Subject:** FW: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States

### **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](http://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](http://www.usaid.gov)  
U.S. Department of State – [www.state.gov](http://www.state.gov)  
FEMA – [www.fema.gov](http://www.fema.gov)  
White House – [www.whitehouse.gov](http://www.whitehouse.gov)  
Nuclear Energy Institute – [www.nei.org](http://www.nei.org)  
International Atomic Energy Agency – [www.iaea.org/press](http://www.iaea.org/press)

No response to this message is required.

*RRR-179*

**From:** RMTPACTSU\_ELNRC  
**To:** [LIA11 Hoc](#); [LIA01 Hoc](#); [LIA07 Hoc](#); [LIA02 Hoc](#); [LIA08 Hoc](#); [LIA12 Hoc](#); [Harrington, Holly](#); [McIntyre, David](#); [Burnell, Scott](#); [ET07 Hoc](#)  
**Subject:** FYI: ECHO Japan EQ/Tsunami Update  
**Date:** Saturday, March 19, 2011 4:25:57 PM  
**Attachments:** [MIC message 10 Earthquake Japan.pdf](#)  
[Offer template 19032011 11.00.xls](#)

---

**Subject:** ECHO Japan EQ/Tsunami Update

All,

Please find attached latest ECHO Japan update and commodity offers.

---

**From:** Brown, Patterson W  
**To:** Bartolini, Mark (DCHA/OFDA); Chan, Carol(DCHA/OFDA); OD\_Expanded; 'RMT\_PACTSU@ofda.gov' <RMT\_PACTSU@ofda.gov>; 'RMTPACTSU\_DMP@ofda.gov' <RMTPACTSU\_DMP@ofda.gov>; 'RMTPACTSU\_INC@ofda.gov' <RMTPACTSU\_INC@ofda.gov>; 'RMTPACTSU\_PC@ofda.gov' <RMTPACTSU\_PC@ofda.gov>; 'RMTPACTSU\_RM@ofda.gov' <RMTPACTSU\_RM@ofda.gov>; Siasoco, George(DCHA/OFDA)  
**Sent:** Fri Mar 18 16:26:58 2011  
**Subject:** ECHO Japan EQ/Tsunami Update

All,

Please find attached ECHO's latest Japan update.

Best,  
Patterson

**Patterson W. Brown**  
USAID Humanitarian Assistance and Food Security Advisor  
U.S. Mission to the European Union  
+32 (0)2 811-5512

This email is UNCLASSIFIED.

RRRR-180

**From:** Hayden, Elizabeth  
**To:** AV-PHOTO Resource  
**Cc:** Taylor, Robert; Harrington, Holly  
**Subject:** request loan of a camera  
**Date:** Saturday, March 19, 2011 4:21:15 PM

---

The next NRC team to go over to Japan will include Rob Taylor who we would like to ask to take a camera so that he can send us back some photos for the web. If Rob agrees, would there be a small digital camera from AV that he could use in Japan?

RRRR-181

**From:** [HOO Hoc](#)  
**To:** [HOO Hoc](#)  
**Cc:** [Grant, Jeffery](#)  
**Subject:** ACTION: PAO Coordinator Monthly Review of IR Call List(s) 590 and 591 on 03/19/11  
**Date:** Saturday, March 19, 2011 3:36:44 PM  
**Attachments:** [PAO 20110319.pdf](#)

---

Please review attached Call Lists. We will only issue requests for review on a monthly basis. The attached Call Lists should be retained by you as a working copy to markup your changes during the monthly review period.

Submit changes as they occur, i.e., do **NOT** wait until the end of the monthly review period. This will ensure that, in the event of an actual staff recall, the correct responders will be contacted. In all cases, submit changes by replying to the current monthly review request. This enables us to retain your responses in an easily retrievable format.

You have been identified as an Incident Response Program Manager in support of your respective Headquarters Operations Center (HOC) team as shown on the attached Call List(s). These Call Lists include positions designated as necessary staffing of the HOC by the Incident Response Program Team Leader in the event that the Agency enters the Activation Mode. It is critical that you maintain these Call Lists accurate and up-to-date. Any changes, i.e., additions and deletions, should be brought to the attention of the on-shift HOO or HERO. They will ensure that both the HOO database and Automatic Notification System (ANS) are updated.

If you have any questions or believe that the attached Call Lists are not your responsibility, please contact the Incident Response Program Team Leader Jeff Grant.

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



RRRR-182



Last change:

---

**PAO COORDINATOR**

	<b>Office</b>
HOLLY HARRINGTON	(301) 415-8203

---

**PAO PUBLIC AFFAIRS**

## CALL 2 - WEEKEND DUTY SCHEDULE

	<b>Office</b>
ELIOT BRENNER	(301) 415-8200
BETH HAYDEN	(301) 415-8200
SCOTT BURNELL	(301) 415-8204
DAVID McINTYRE	(301) 415-8206
HOLLY HARRINGTON	(301) 415-8203
IVONNE COURET	(301) 415-8205

---

**PAO PUBLIC AFFAIRS (1) - RED**

	<b>Office</b>
BETH HAYDEN	(301) 415-8200

---

**PAO PUBLIC AFFAIRS (1) - WHITE**

	<b>Office</b>
DAVID McINTYRE	(301) 415-8206

---

**PAO PUBLIC AFFAIRS (1) - BLUE**

	<b>Office</b>
HOLLY HARRINGTON	(301) 415-8203

---

**PAO PUBLIC AFFAIRS (1) - GOLD**

	<b>Office</b>
ELIOT BRENNER	(301) 415-8200

---

**PAO PUBLIC AFFAIRS (2) - RED**

	<b>Office</b>
HOLLY HARRINGTON	(301) 415-8203

---

**PAO PUBLIC AFFAIRS (2) - WHITE**

	<b>Office</b>
SCOTT BURNELL	(301) 415-8204

---

**PAO PUBLIC AFFAIRS (2) - BLUE**

	<b>Office</b>
DAVID McINTYRE	(301) 415-8206

---

**PAO PUBLIC AFFAIRS (2) - GOLD**

	<b>Office</b>
IVONNE COURET	(301) 415-8205

---

Last change:

**PAO TECHNICAL BRIEFER**

CALL 1

**Office**

ROBERT TAYLOR	(301) 415-3172
MICHAEL JUNGE	(301) 415-7745
THOMAS KOSHY	(301) 251-7663
UNDINE SHOOP	(301) 415-2063
BRIAN ANDERSON	(301) 415-9967
HAROLD CHERNOFF	(301) 415-2330
DEIRDRE SPAULDING	(301) 415-3912

**PAO TECHNICAL BRIEFER - RED****Office**

ROBERT TAYLOR	(301) 415-3172
---------------	----------------

**PAO TECHNICAL BRIEFER - WHITE****Office**

MICHAEL JUNGE	(301) 415-7745
DEIRDRE SPAULDING	(301) 415-3912

**PAO TECHNICAL BRIEFER - BLUE****Office**

THOMAS KOSHY	(301) 251-7663
HAROLD CHERNOFF	(301) 415-2330

**PAO TECHNICAL BRIEFER - GOLD****Office**

UNDINE SHOOP	(301) 415-2063
BRIAN ANDERSON	(301) 415-9967

**PAO PUBLIC AFFAIRS REGION 1****Office**

DIANE SCRENCI	(610) 337-5330
NEIL SHEEHAN	(610) 337-5331

**PAO PUBLIC AFFAIRS REGION 2****Office**

ROGER HANNAH	(404) 997-4417
JOEY LEDFORD	(404) 997-4416

**PAO PUBLIC AFFAIRS REGION 3****Office**

PREMA CHANDRATHIL	(630) 829-9663
VIKTORIA MITLYNG	(630) 829-9662

Last change:

---

**PAO PUBLIC AFFAIRS REGION 4**

**Office**

VICTOR DRICKS

(817) 860-8128

LARA USELDING

(817) 276-6519

---

## David Decker

---

**From:** LIA07 Hoc  
**Sent:** Sunday, March 13, 2011 10:26 PM  
**To:** LIA07 Hoc; Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tift, Doug; Timothy Greten; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena; Schmidt, Rebecca; Powell, Amy; Loyd, Susan; Coggins, Angela; Batkin, Joshua; taskforce-1@state.gov  
**Subject:** RE: 2200 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031311.2200EDT.docx

Attached, please find a 2200 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 13, 2011. This Update includes information related to NRC's evaluation of radiation measurements from the USS Ronald Reagan.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Jim

Jim Anderson  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[james.anderson@nrc.gov](mailto:james.anderson@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

RRR-183

**From:** [Burnell, Scott](#)  
**To:** [Dolley, Steven](#); [Harrison, Tom](#); [Ostroff, James](#)  
**Cc:** [Brenner, Eliot](#)  
**Subject:** RE: MEDIA - DOLLEY - FW: Japan -- exposure of a US worker  
**Date:** Saturday, March 19, 2011 12:10:47 PM

---

You'd have to check with the U.S. Embassy in Tokyo for any info on non-NRC people at the site. That statement does not apply to NRC staff in Japan.

Just for comparison's sake – NRC annual occupational dose is 5 rem, and that's even acceptable for a single procedure as the only exposure for the year. And again, EPA PAGES are much higher, striking a balance between protecting workers and protecting the public.

---

**From:** Dolley, Steven [[mailto:Steven\\_Dolley@platts.com](mailto:Steven_Dolley@platts.com)]  
**Sent:** Saturday, March 19, 2011 12:04 PM  
**To:** Burnell, Scott; Harrison, Tom; Ostroff, James  
**Subject:** RE: MEDIA - DOLLEY - FW: Japan -- exposure of a US worker

Scott, I'm sure I got the quote right. Dave was talking about a US worker helping with emergency response at Fukushima. No other details provided.

From my notes

Lochbaum: there is a report that "a US nuclear worker received permissible annual dose in less than an hour"

Thanks,  
Steve

---

**From:** Burnell, Scott [<mailto:Scott.Burnell@nrc.gov>]  
**Sent:** Saturday, March 19, 2011 11:52 AM  
**To:** Dolley, Steven; Harrison, Tom; Ostroff, James  
**Cc:** OPA Resource; Brenner, Eliot  
**Subject:** RE: MEDIA - DOLLEY - FW: Japan -- exposure of a US worker

Hi Steve et al;

We're talking about an emergency, so annual occupational doses are irrelevant. EPA protective action guidelines ( <http://www.epa.gov/rpdweb00/rert/pags.html> ) come into play, and those consider multiple-rem doses (still below what would be thought to have acute effects) acceptable for actions necessary to protect public health, with voluntary actions having even higher doses. I can't recall the exact dose numbers, but the Web page should have that somewhere.

OFF THE RECORD -- I'm surprised Lochbaum thinks NRC occupational doses apply at this point, are you certain that's an accurate quote?

Scott

---

**From:** Dolley, Steven [[mailto:Steven\\_Dolley@platts.com](mailto:Steven_Dolley@platts.com)]  
**Sent:** Saturday, March 19, 2011 11:26 AM

R R R R-184

**To:** Hayden, Elizabeth; OPA Resource  
**Cc:** Ostroff, James; Harrison, Tom  
**Subject:** RE: Japan -- exposure of a US worker

David Lochbaum of the Union of Concerned Scientists just said at an 11 am EDT telephone news briefing that "a US nuclear worker" helping with the emergency response at Fukushima had been exposed to "the permissible annual dose in less than an hour."

Can you confirm or deny this, and provide as much detail as possible? Please REPLY all so my fellow editor gets this too, he's picking up coverage at noon.

Thanks,  
Steve

Steven Dolley  
Managing Editor, Inside NRC  
Platts Nuclear  
202-383-2166 Office  
202-383-2187 Fax

---

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**Weber, Michael**

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**From:** Weber, Michael  
**Sent:** Saturday, March 19, 2011 12:29 AM  
**To:** Powell, Amy; Schmidt, Rebecca  
**Subject:** FYI - boron

---

**From:** OST02 HOC  
**To:** [Annie\\_Caputo@epw.senate.gov](mailto:Annie_Caputo@epw.senate.gov) <[Annie\\_Caputo@epw.senate.gov](mailto:Annie_Caputo@epw.senate.gov)>  
**Cc:** Weber, Michael  
**Sent:** Fri Mar 18 22:08:04 2011  
**Subject:** boron

We discussed the need for boron with our team on the ground in Japan, and right now they do not need any more boron. Thank you.

RR22/185

---

**From:** PMT02 Hoc  
**Sent:** Sunday, March 27, 2011 9:00 PM  
**To:** Sheron, Brian  
**Cc:** PMT11 Hoc; Hoc, PMT12; PMT09 Hoc; PMT07 Hoc  
**Subject:** FW: Spent Fuel Pool Level Measurement  
**Attachments:** image001.jpg

Mr. Sheron,

Based on a review of the documents identified below, the PMT staff estimates the following dose rates for irradiated fuel assemblies.

**Question 1: What is the dose rate in the pool below water level is likely to be?**

In Air: (Based on UCRL-ID-1151199, Dose Rate Estimates from Irradiated Light Water Reactor Fuel Assemblies in Air, January 31, 1994)

1 meter from fuel edge – 7820 to 10460 Rem/h for BWR depending on burnup.

5 meters from fuel edge-627 to 839 Rem/h for BWR depending on burnup

At ground Level : (RTM-96 NUREG/BR-0150 Vol. 1, Rev. 4, Section D, Figure D-1 , Whole Body Gamma Ground Level Dose Rate From Drained Spent Fuel Pool.)

(NUREG/CR-0649) These documents assume that the dose rates are measured at ground level and that the Spent Fuel Pool structure and shielding (liner and concrete) are intact.

1 meter from Pool Edge – 300 Rem/h (SFP is drained)

10 meters from Pool Edge- 250 Rem/h (SFP is drained)

In Water: USNRC Information Notice 97-68: Loss of Control of Diver in Spent Fuel Pool , 9/3/1997)

2 feet from irradiated fuel assemblies- 12,000 to 20,000 Rad/h (120 to 200 Gy/h) (PWR)

**Question 2: And in the pool space above the water level?**

It can approximated that based on the Half-value layer of the water, for every 3 feet (1 meter ) of water depth the dose rate will be reduced by about one half (1/2).

In US Plants, typical water depth is between 23 - 27 feet above the spent fuel rack

It should be noted that the values provided are based on intact fuel assemblies without major clad failure.

PMT Dose Analyst (PMT02)  
NRC Operation Center

**THIS IS A MONITORING OPERATION FOR THE JAPANESE EVENT RESPONSE**

---

**From:** Sheron, Brian  
**Sent:** Sunday, March 27, 2011 4:51 PM  
**To:** PMT02 Hoc  
**Subject:** FW: Spent Fuel Pool Level Measurement

---

**From:** Sheron, Brian  
**Sent:** Sunday, March 27, 2011 4:36 PM  
**To:** Lui, Christiana  
**Subject:** FW: Spent Fuel Pool Level Measurement

Any insights?

---

**From:** Koonin, Steven [mailto:Steven.Koonin@science.doe.gov]  
**Sent:** Sunday, March 27, 2011 4:35 PM  
**To:** Sheron, Brian; Larzelere, Alex; DL-NITsolutions  
**Subject:** Re: Spent Fuel Pool Level Measurement

What is the dose rate in the pool below water level is likely to be? And in the pool space above the water level?

SEK

---

**From:** Sheron, Brian <Brian.Sheron@nrc.gov>  
**To:** Larzelere, Alex; DL-NITsolutions  
**Sent:** Sun Mar 27 16:29:12 2011  
**Subject:** RE: Spent Fuel Pool Level Measurement

The most likely scenario is that the bottom of the pool is filled with debris, so whatever is stuck into the pool can only be submerged to the level of the debris bed.

The water in the pool is highly radioactive. Won't it siphon back in the tube and contaminate the gauge?

---

**From:** Larzelere, Alex [mailto:alex.larzelere@nuclear.energy.gov]  
**Sent:** Sunday, March 27, 2011 3:42 PM  
**To:** DL-NITsolutions  
**Subject:** Spent Fuel Pool Level Measurement

Everybody,

After some conversation with the Secretary today, it was decided that DOE would suggest two methods for measuring the water level in the SFP (dual hose and bubbler) to the Japanese. Attached is a write up of those two methods.

Please look this over in anticipation of the 5pm call and be ready with any comments, questions or edits.

Thanks,

Alex

---

**Alex R. Larzelere**  
Director, Advanced Modeling and Simulation Office  
Office of Nuclear Energy (NE-71)  
U.S. Department of Energy  
202-586-1906

[Alex.Larzelere@nuclear.energy.gov](mailto:Alex.Larzelere@nuclear.energy.gov)



**From:** [OPA Resource](#)  
**To:** [Harrington, Holly](#)  
**Subject:** FW: Safety Backup  
**Date:** Saturday, March 19, 2011 9:51:53 AM

---

Blog Q???

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

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

---

**From:** L Read [<mailto:4lread@msn.com>]  
**Sent:** Friday, March 18, 2011 11:13 PM  
**To:** OPA Resource  
**Subject:** Safety Backup

Could you tell me why this blog below was removed from forum under "operating reactors" category under earthquake hazards. It was not moved to another category:

L Read March 18, 2011 at 6:41 pm Your comment is awaiting moderation.

I understand that there are 23 reactors like the Japan plant that have same design that failed. These have the reactor pools unprotected above ground level, not to mention some in earthquake prone areas.

Due to the failure of the Japan Fukushima Daiichi plant nuclear reactors because of power & pumping failure backup systems, I propose the following for all of America's existing reactors:

A mobile generating power supply with accompanying fuel trucks & mobile pump system each on large flatbed trucks ready to deploy at any nuclear site within 24 hours for all existing plants in the U.S. This could provide emergency short term cooling and prevent the catastrophic release of radiation as we have seen in Japan.

Watching the slow motion, on the fly, last ditch effort to control a meltdown is unbelievable. We have the technical ability and know how now to prevent this here (or anywhere in the world). This should never have happened. The NRC and federal, state and local officials should demand full backup protection of all our nations reactors which would include an emergency mobile backup power and pumping system.

RRRR-187

---

**From:** Holonich, Joseph  
**Sent:** Monday, April 11, 2011 12:38 AM  
**To:** RST06 Hoc  
**Subject:** Fred, here is the report for your correction. Thanks, Joe (EOM)  
**Attachments:** boardfile-RST-4-10-11-2030 PMT comments.docx

RRR/148

**All Teams Major Document Status**  
**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
<b>Priority 1: Compilation of the 3 Documents into 1 Composite Document</b>							
Comprehensive (Global) Assessment	Intended use is "Highest Level" document to subsume all others eventually being the NUREG describing agency activities for this event.	NRC Japan Site Team	Draft received 4/9 @2115 hrs. Provided comments to Site team by Mid shift (4/10)		4/10 @ 2100	<del>Comments to Site Team</del> Mike Hay is working. Chuck envisions taking high level bullets to use as briefing material, some for Sec. Clinton visit. This document could be the "source" document for the slide(s).	This document will be used to help support Sec. State Clinton visit on 4/17.
Composite Analysis for Daiichi regarding EPZ and Stability	Gain agreement internally on the "3-primary (see Action note)" areas. This document to eventually be subsumed by the "Comprehensive (Global) Assessment."	Lead team on Document: PMT  Work with RST on document  Trish Milligan has the lead to compile the rollup of the talking points for the comprehensive document	PMT and RST are working on creating and refining the composite document.	Site Team EPA Naval Reactors  DOE OSTP <b>Consideration to having a "face-to-face"</b>	Next deputi es call or IPC call  <b>Need to know if Dep. Mtg needed by 4/13.</b>	Take the following 3 documents and create a composite document with a rollup of talking points. <ul style="list-style-type: none"> <li>- Criteria for Relaxing of 50 mile EPZ (PMT)</li> <li>- Grab &amp; Go criteria in 50-mile EPZ (PMT)</li> <li>- Reactor Stable Conditions (Stability Doc) (RST)</li> </ul> Comments provided to NR on policy issue of "dose criteria for return"	Substantive input provided by Trish Milligan, EPA, Naval Reactors, PMT, and RST.

**All Teams Major Document Status**  
**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
Simplified Plant Condition Stability determination (supports RST Reactor Safety Assessment – Rev. 2- and PMT Composite documents)	To provide a simplified description of the conditions for the Containments, reactors, and spent fuel pools that are required for the Fukushima Daiichi units to be considered "stable." This is an alignment document to gain agreement with various partners. This document will be incorporated in The Revision 2 of the RST Reactor Safety Assessment document and the PMT Composite document.	RST	NR concur (4/10/11)			Needs to go to Site team by 0600 4/11/11. Goes to PMT to incorp into composite and "talking Pts" Provided to the Site team on 4/10, 1830 EDT.	NRC Japan team to use this for interface with Japanese government officials.

**All Teams Major Document Status**

**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
Re-entry into Tokyo	This document is not an NRC product. It is intended to provide guidance to the Embassy for allowing US citizens return to Tokyo and surrounding vicinity from a radiological concern perspective.	State Department Document  PMT	PMT provided comments on document	PMT comments, Japan Team Comments, State Dept. comments	N/A	Continue to talk to State Department and review any other drafts of this document. A copy of the document was reviewed on 4/8.	The document will be sent to the State Department from U.S. Embassy as part of an email.
NOTE: Send the final products of Priority 1 to Vince Holahan when completed at PACOM							
<b>Priority 2: Review/Completion of Documents Below</b>							

**All Teams Major Document Status**

**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
Reactor Safety Assessment, Rev 2	To provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi reactors to the USNRC team in Japan. This document will incorporate the "action" guides for the SFPs also. This document will be incorporated into the Comprehensive (Global) Assessment	RST	Under revision	All comments are due on Monday, April 11 <sup>th</sup> ; INPO/GE-H comments have been received by RST	No driving deadline		Putting off until this weekend

**All Teams Major Document Status**  
**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
Overall SFP Assessment Document <i>(General Discussion of the Desired End State of all Spent Fuel Pools)</i>	This document is prepared to gain alignment/agreement among the reviewers/contributors on what actions should be taken to stabilize and maintain the SFP in long-term. This document will be incorporated in the Rx Safety Assessment (Rev.2), which will be incorporated in the Comprehensive (Global) Assessment Document.	RST	<del>Draft</del> Currently RST is incorporating NR comments(4/10 Swings)	Need site team comments and NR has comments		To be eventually incorporated into the Rx Safety Assessment (document above).	comments from site team are expected 4/8 - 4/9

**All Teams Major Document Status**

**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
SFP - Slurry	This document was initiated at the request of the NRC Japan Team to support a briefing by Chuck Casto of the American Ambassador. It is intended to outline the technical issues associated with addition of a "slurry" to the spent fuel pool for Fukushima Daiichi Unit 4 and provide views based on available information.	RST	Issued	Site Team has it for comment, NR does not have for comment			
Option B Paper	The purpose of this paper is to present measures which may be taken by TEPCO in order to maximize the success of their current strategy.	RST	Issued, on 4-10-2011.	Site Team		Provided to the Site Team On 4/10/2011.	

**All Teams Major Document Status**  
**Last Updated: April 10, 2011 @ 1645EST**

Document Title	Purpose	Team	Current Status	Stakeholders Input to Request	Due Date	Action	Other
DOE's Slurry - Presentation	Provides quantitative numerical heat conduction analysis of SFP to support entombment assessment.	DOE	Issued, Sent to the site team, DOE and NRC papers are aligned that this method should be a last resort				Supports NRC document on SFP-Slurry paper.
Plume Modeling with NOAA	Provide source term information to model the dispersion of radioactive materials in the ocean.	PMT	Plausible realistic V3 source term being provided to NOAA with suggested approach to uniformly distribute release in the ocean over 7 days.	NOAA	TBD	Sent to NOAA, awaiting next steps.	
SFP Structural Assessment #4	This document provides comments on TEPCO's assessment of the structural stability of SFP#4. It was prepared by GE and INPO .	RST	GEH input received 4/9			Send to Site Team	
Development of information for Secretary of State (Clinton) Visit		LT	Working with RST and PMT to answer information that Chuck sent in	PMT RST LT NRC Japan Site Team	Friday April 15, 2011	Work with RST and PMT to answer information that Chuck sent in, LT will coordinate this action. This input will be incorporated into the "Comprehensive (Global) Assessment" document.	

**From:** LIA03 Hoc  
**To:** Harrington, Holly  
**Subject:** RE: emergency in Japan  
**Date:** Sunday, March 20, 2011 9:54:18 AM

---

Thanks, Holly. As this information was directed at IAEA, I think we can let them answer it, should they choose.

Cheers,

Karen

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

From: Harrington, Holly  
Sent: Sunday, March 20, 2011 9:18 AM  
To: LIA03 Hoc  
Subject: FW: emergency in Japan

I am dutifully forwarding this because it is from another country, but OPA is not doing anything with unsolicited advice for Japan.

Holly

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

From: OPA Resource  
Sent: Saturday, March 19, 2011 9:55 AM  
To: Harrington, Holly; Burnell, Scott  
Subject: FW: emergency in Japan

Don't know if this is contact or not?

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

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

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

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

From: Abas Sultan [<mailto:ubukhy@mail.ru>]  
Sent: Friday, March 18, 2011 6:39 PM  
To: OPA Resource  
Subject: emergency in Japan

Below is the result of your feedback form. It was submitted by

Abas Sultan (ubukhy@mail.ru) on Friday, March 18, 2011 at 18:38:44  
-----

comments: Dear US NRC,

RRR-189

Thank you for your email. I am passing on your email to our technical team for their consideration. Thank you again for taking the time to contact us. We appreciate your concern for the emergency in Japan. Best regards, Greg Gre IAEA Press and Public Information Officer Ph: 43-1-2600-22047 www.iaea.org Press@IAEA.org

From: ubukhy@mail.ru [mailto:ubukhy@mail.ru]

Sent: Thursday, 17 March 2011 13:05

To: iaeany@un.org; Official Mail - IAEA Mail address; VIDRICAIRE, Marc; IAEA - Press Office; VERLINI, Giovanni; UNOG - IAEA Contact Geneva; Marine Environment Laboratory; japan-info@mw.mofa.go.jp; kurokawa-s@nifty.com; shinichiro.kanoya@mofa.go.jp

Subject: Dear Yukiya Amano, Director General, Japanese Ambassador Masaharu Kono, John SCOTT!

Dear

Yukiya Amano, Director General,  
Japanese Ambassador Masaharu Kono,

John Scott,

Today Tokhtsbiev Sergei PhD Chief Ubykh Circassian Tribe gave his drawings relating to cessation of radiation contamination on the ruined nuclear power plants in Japan to SAKNOUE YOKO from Japan Foundation Moscow office.

Tohtabiev Sergei suggested the use of Airships for Cooling destroyed nuclear reactor.

Water through the pipes should be supplied to the nuclear station, then pump fed up to the airship.

The second method proposed Tohtabiev- if from the destroyed reactor released the radioactive clouds-then to the airship will be attached the sprinkler 100 meters. They are widely used in reclamation in Russia. Water is supplied to the airship, then through the sprinklers in creating the songs rain, which destroys the radioactive cloud. Will be saved from infection Tokyo, the Japanese people and people of other countries

We ask you urgently to discuss Tohtabiev's proposals with specialists. And apply for the salvation of nations.

And the most important. Sergeyy Tokhtabiev on behalf of the Indigenous Peoples of Russia offered to save the children, women, old teenagers-

placing them in Resorts  
in the Caucasus and Siberia.

Reference

: Tohtabiev graduated in 1971 professional- technical school.

He has several inventions-

Chief Indigenous Circassian Ubykh Tribe Tokhtabiev Sergey PhD , Imir , with Zalina 20 YEARS created a new technology of food corn, which is cheaper world analogues five times. They can feed the starving population of Africa, Bangladesh, Ethiopia. EU documents attached.

Also they created a new technology soil remediation in the desert for save forests.

Tokhtabiev Sergey was in Washington DC at CSCE Commission of the USA Congress and at United States Institute of Peace with his project " Hayma of Peace"- for Environment protection.

Indigenous Tokhtabiev together with Zalina Tokhtabieva 20 years Ubykh girl engineer and Imir suggested how to eliminate BP oil Spill

accident and to save million Birds, they offer a secure oil and gas exploration at great depths in the ocean. They suggested how eliminate traffic jam in Moscow and London.

They was able to decrypt the purpose of the Pyramids.

They were built to optimize the coordinates of the Earth's rotation around its axis. Also they created a new technology soil remediation in the desert.

Sergey and Zalina are ready to publish their offer in your newspaper or magazine ..

Tokhtabiev's new

Project Peace Rally Tokyo- Moscow- London-Washington. For protecting Indigenous , Global Climate and Wild Nature,

organization: International Fund for Indigenous

address1: Mechnikova 130/8

address2:

city: Nalchik, Russia

state: WA

zip: 360022

country: Russia

phone: 79654314733

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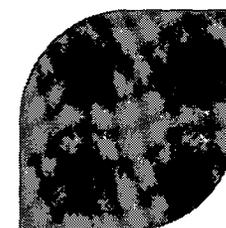
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**To:** eric.thomas@nrc.gov  
**Subject:** Emailing: boardfile.pdf  
**Attachments:** boardfile.pdf

RRRR/190



**AREVA**



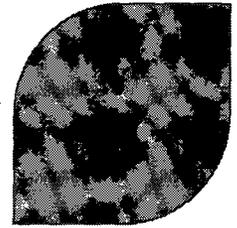
# The Fukushima Daiichi Incident

1. Plant Design
2. Accident Progression
3. Radiological releases
4. Spent fuel pools
5. Sources of Information

Matthias Braun  
PEPA4-G, AREVA-NP GmbH  
Matthias.Braun@AREVA.com

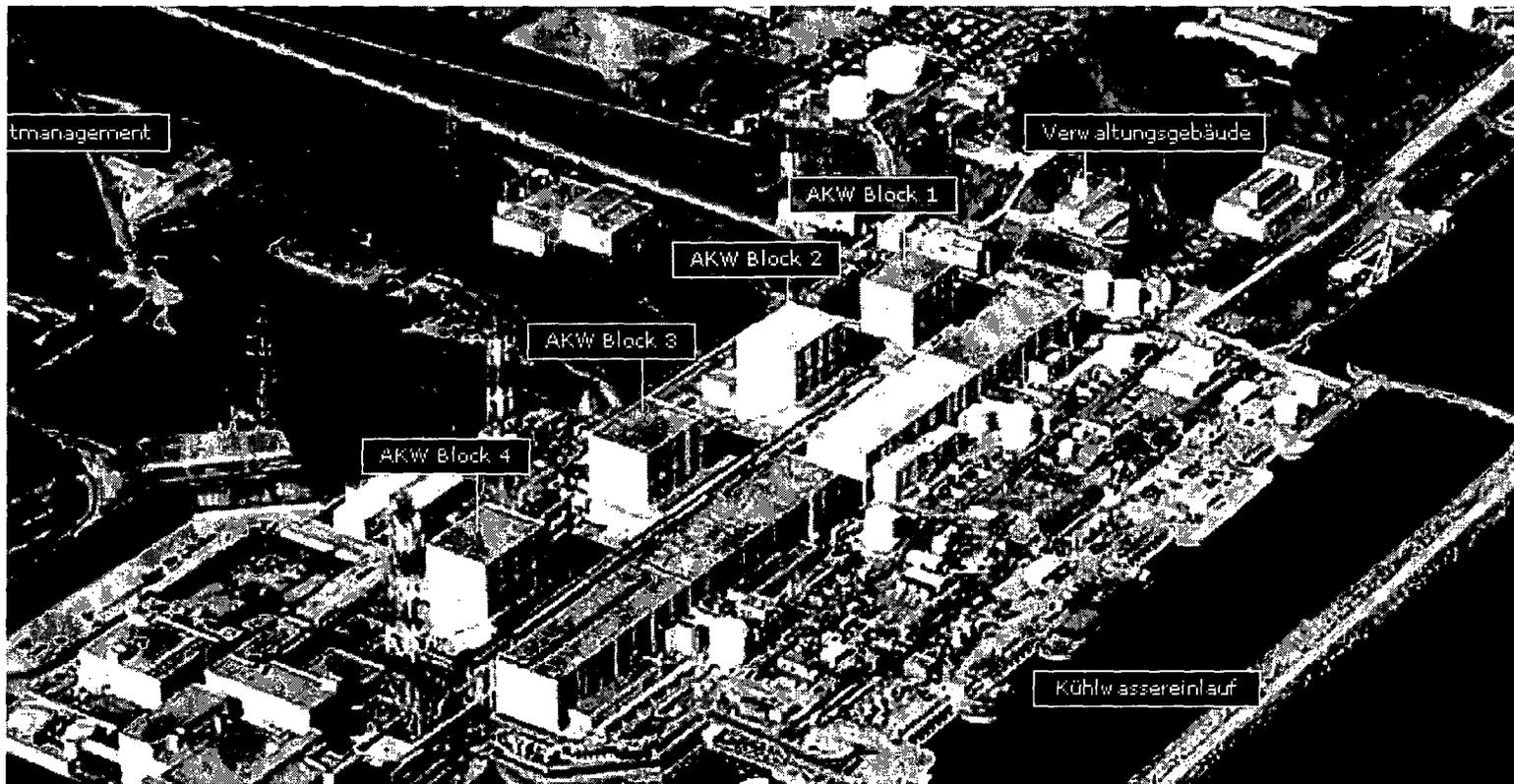
# The Fukushima Daiichi Incident

## 1. Plant Design



### ► Fukushima Daiichi (Plant I)

- ◆ Unit I - GE Mark I BWR (439 MW), Operating since 1971
- ◆ Unit II-IV - GE Mark I BWR (760 MW), Operating since 1974

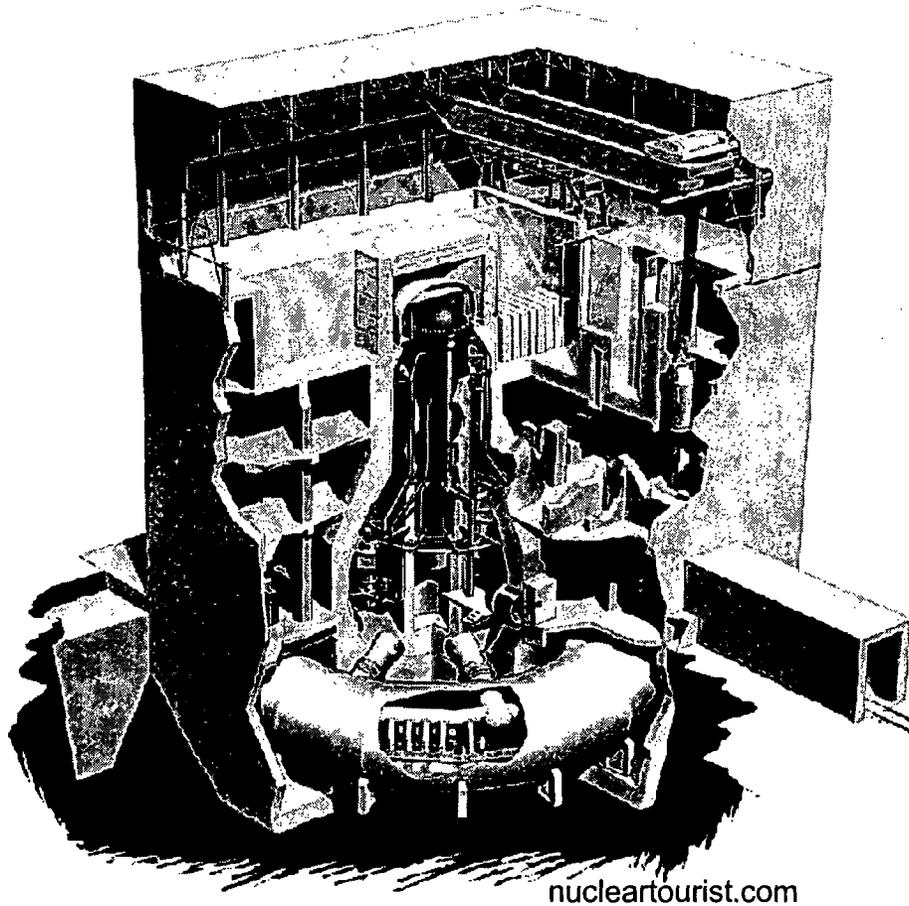


# The Fukushima Daiichi Incident

## 1. Plant Design

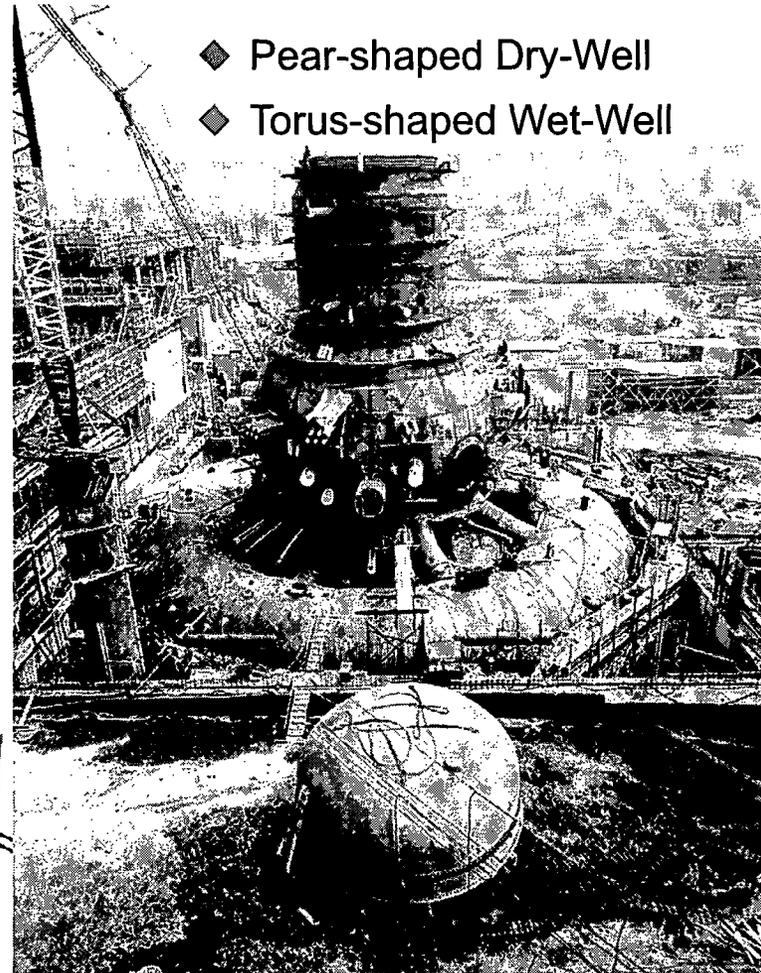
### ► Building structure

- ◆ Concrete Building
- ◆ Steel-framed Service Floor



### ► Containment

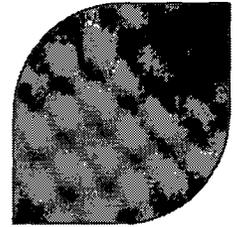
- ◆ Pear-shaped Dry-Well
- ◆ Torus-shaped Wet-Well



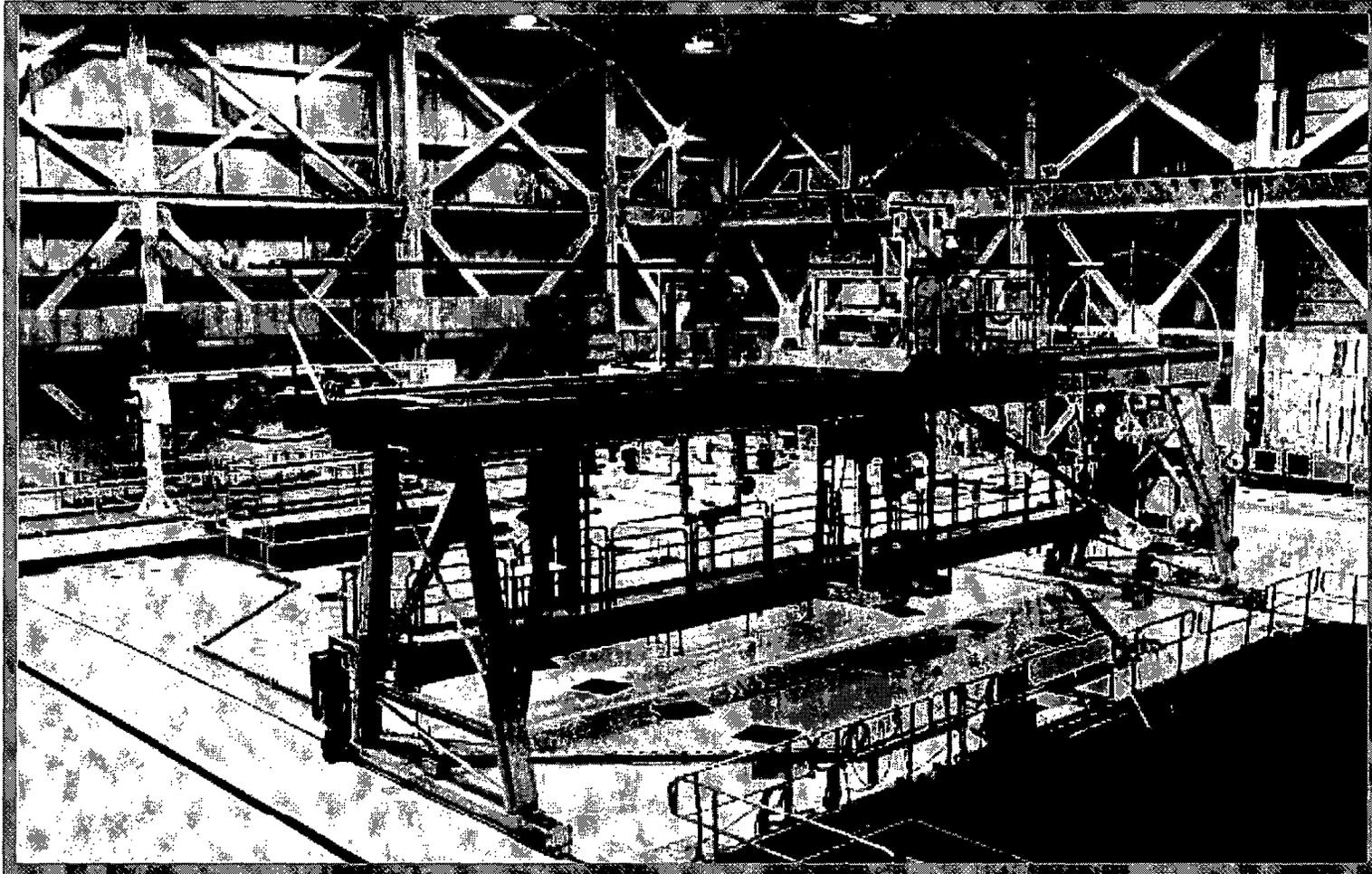
en.wikipedia.org/wiki/Browns\_Ferry\_Nuclear\_Power\_Plant

# The Fukushima Daiichi Incident

## 1. Plant Design

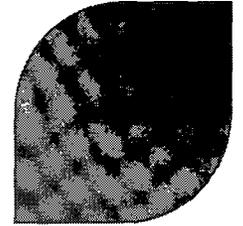


### ► Service Floor

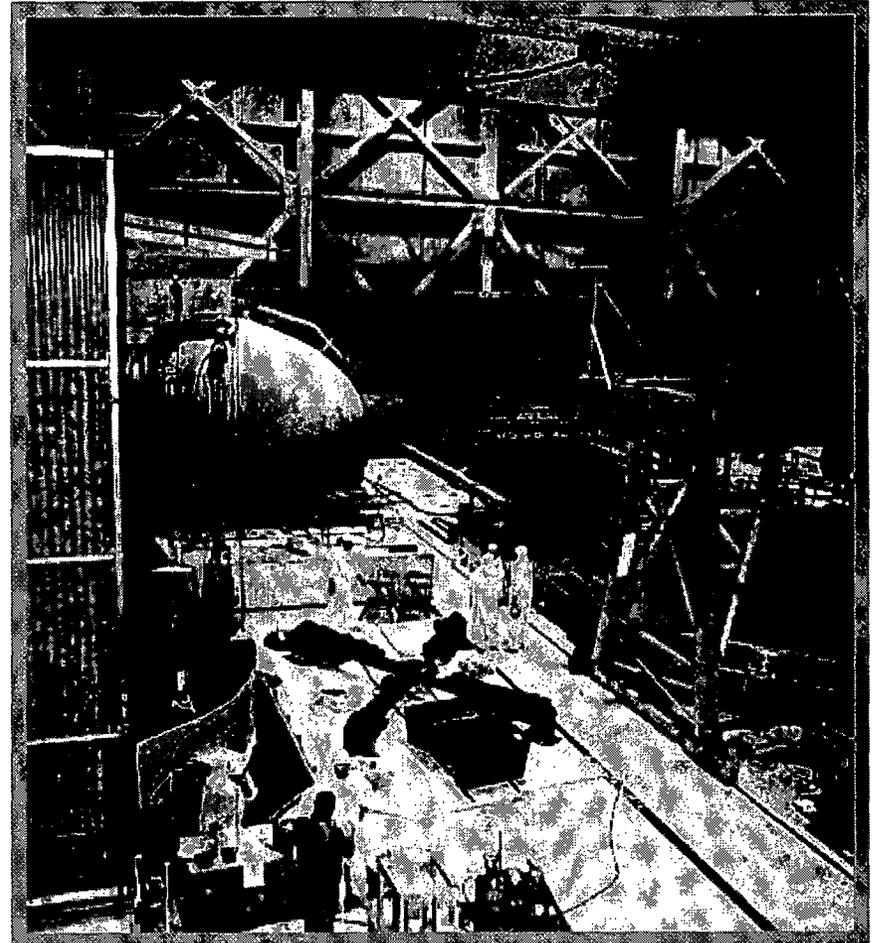
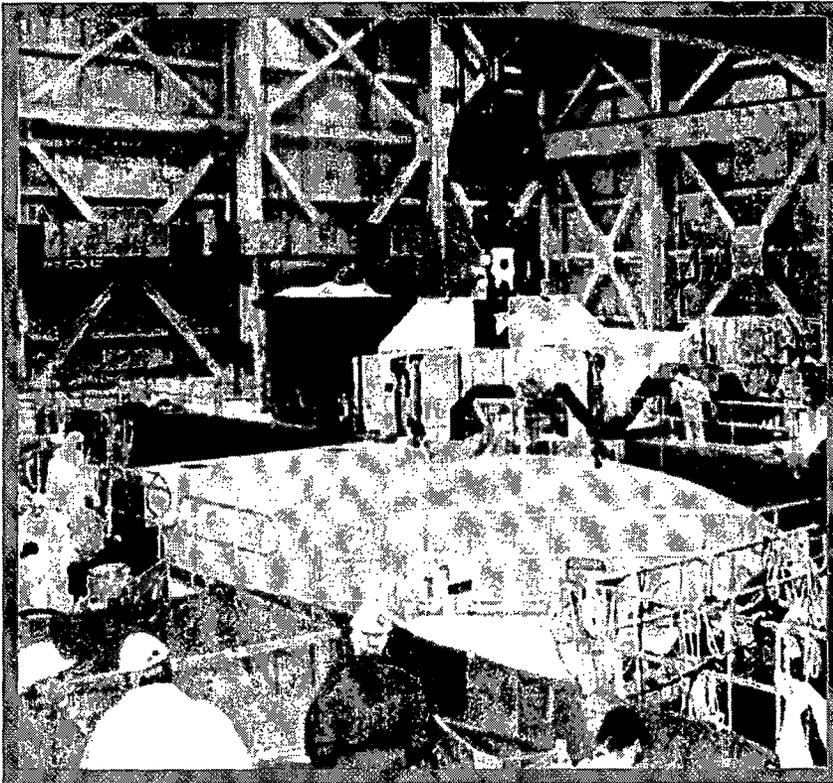


# The Fukushima Daiichi Incident

## 1. Plant Design

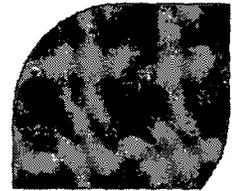


- ▶ Lifting the Containment closure head



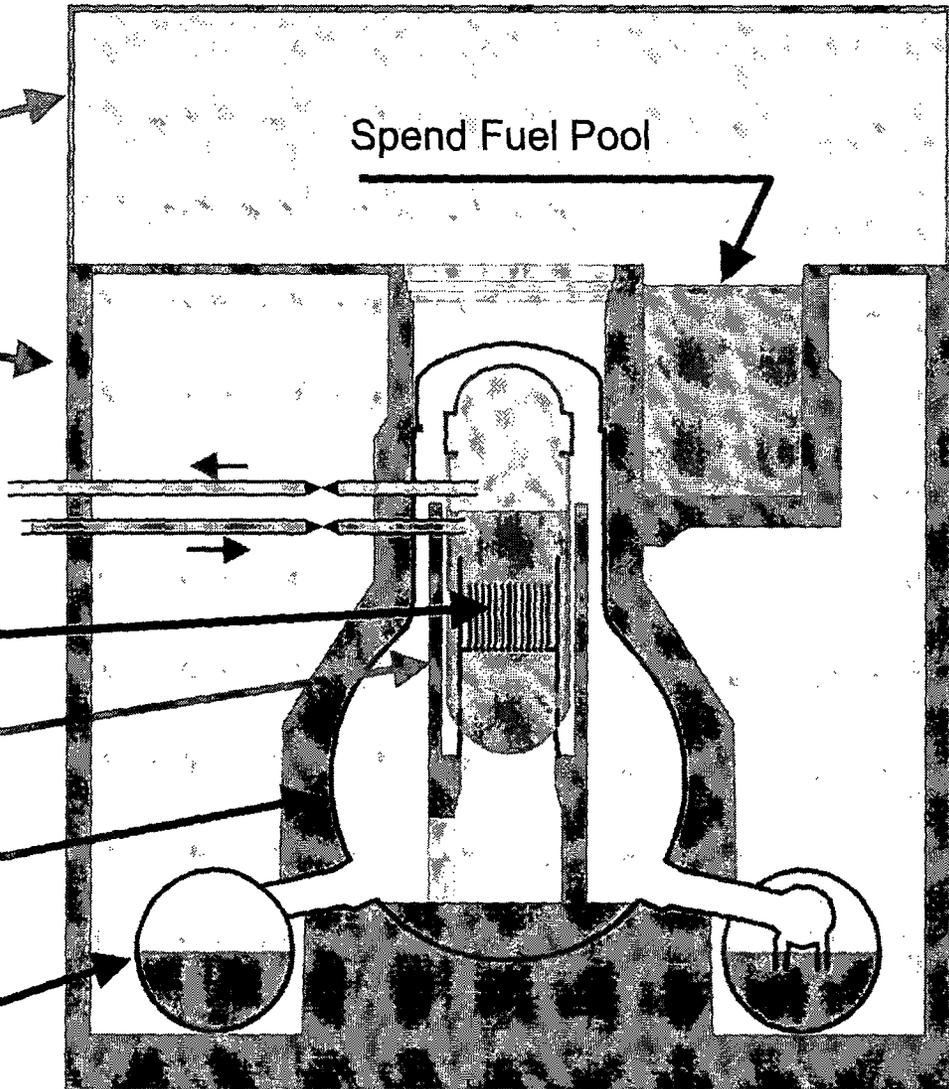
# The Fukushima Daiichi Incident

## 1. Plant Design



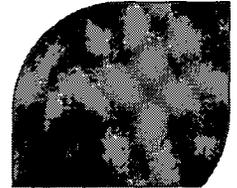
- ▶ Reactor Service Floor (Steel Construction)
- ▶ Concrete Reactor Building (secondary Containment)
- ▶ Reactor Core
- ▶ Reactor Pressure Vessel
- ▶ Containment (Dry well)
- ▶ Containment (Wet Well) / Condensation Chamber

Fresh Steam line  
Main Feedwater



# The Fukushima Daiichi Incident

## 2. Accident progression

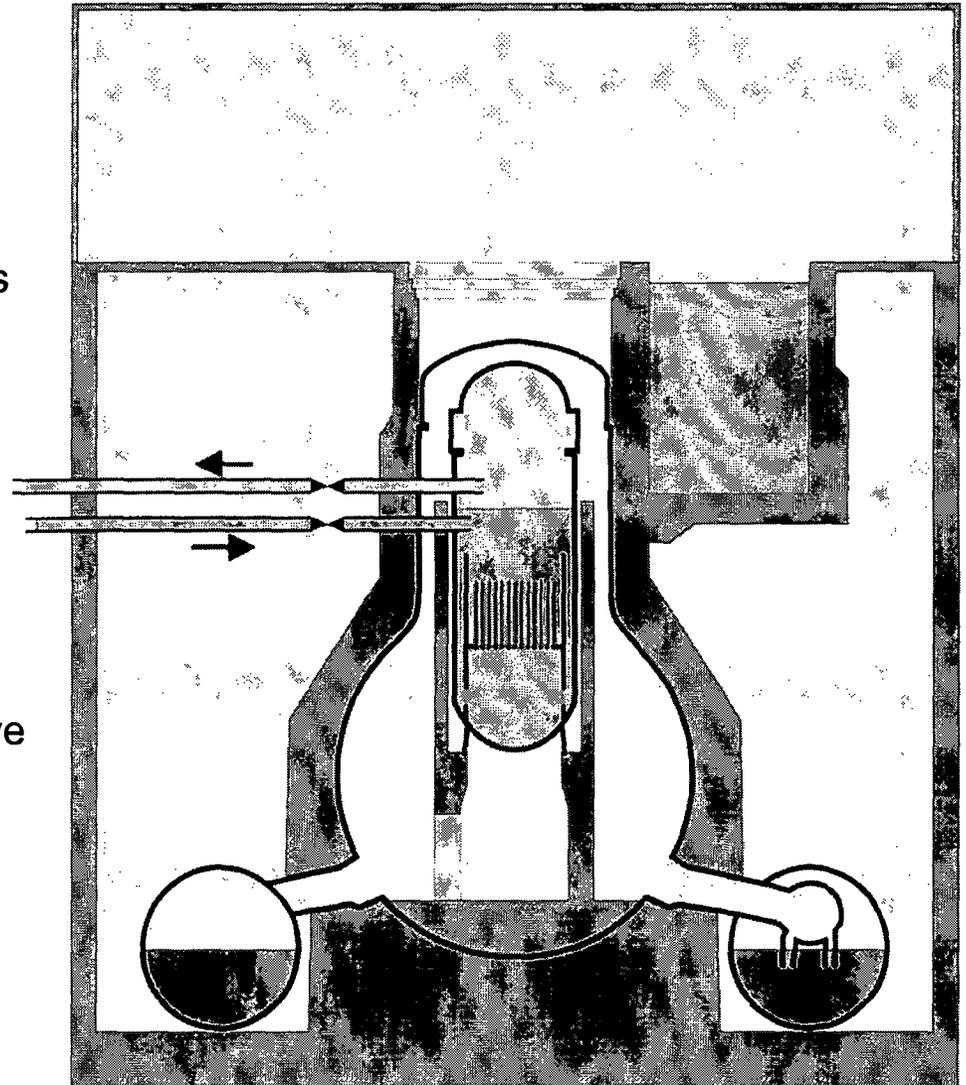


### ► 11.3.2011 14:46 - Earthquake

- ◆ Magnitude 9
- ◆ Power grid in northern Japan fails
- ◆ Reactors itself are mainly undamaged

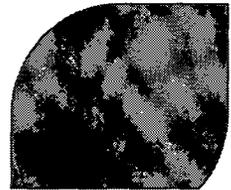
### ► SCRAM

- ◆ Power generation due to Fission of Uranium stops
- ◆ Heat generation due to radioactive Decay of Fission Products
  - After Scram ~6%
  - After 1 Day ~1%
  - After 5 Days ~0.5%

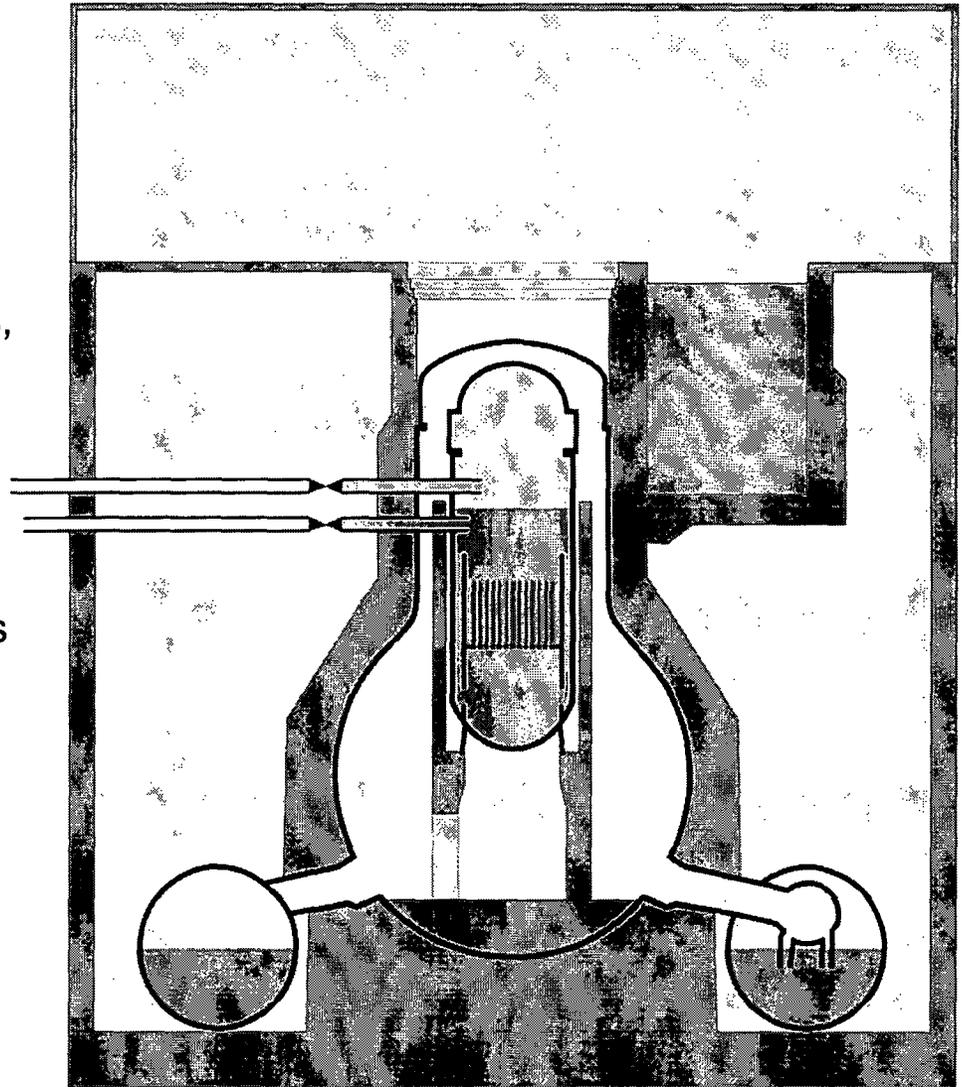


# The Fukushima Daiichi Incident

## 2. Accident progression



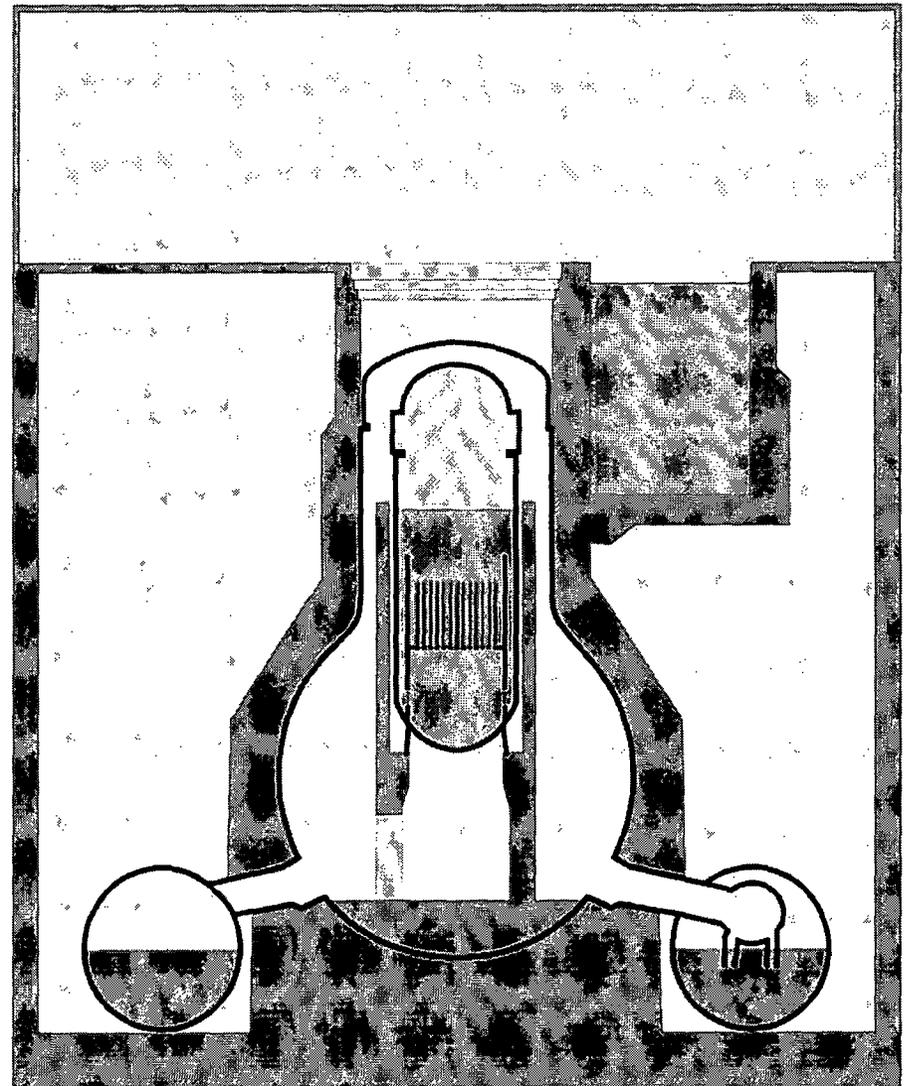
- ▶ Containment Isolation
  - ◆ Closing of all non-safety related Penetrations of the containment
  - ◆ Cuts off Machine hall
  - ◆ If containment isolation succeeds, a large early release of fission products is highly unlikely
  
- ▶ Diesel generators start
  - ◆ Emergency Core cooling systems are supplied
  
- ▶ Plant is in a stable save state



# The Fukushima Daiichi Incident

## 2. Accident progression

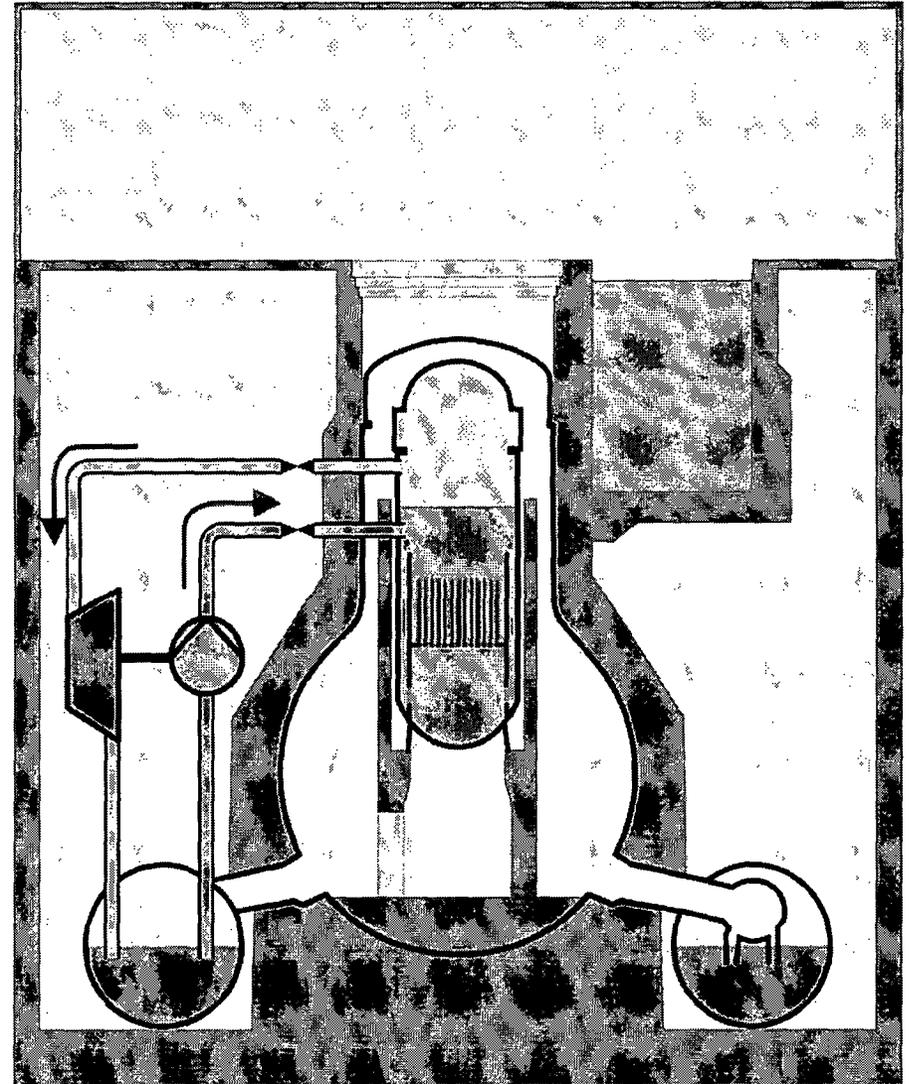
- ▶ 11.3. 15:41 Tsunami hits the plant
  - ◆ Plant Design for Tsunami height of up to 6.5m
  - ◆ Actual Tsunami height >7m
  - ◆ Flooding of
    - Diesel Generators and/or
    - Essential service water building cooling the generators
  
- ▶ Station Blackout
  - ◆ Common cause failure of the power supply
  - ◆ Only Batteries are still available
  - ◆ Failure of all but one Emergency core cooling systems



# The Fukushima Daiichi Incident

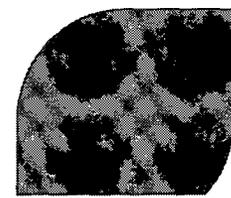
## 2. Accident progression

- ▶ Reactor Core Isolation Pump still available
  - ◆ Steam from the Reactor drives a Turbine
  - ◆ Steam gets condensed in the Wet-Well
  - ◆ Turbine drives a Pump
  - ◆ Water from the Wet-Well gets pumped in Reactor
  - ◆ Necessary:
    - Battery power
    - Temperature in the wet-well must be below 100°C
  
- ▶ As there is no heat removal from the building, the Core isolation pump cant work infinitely

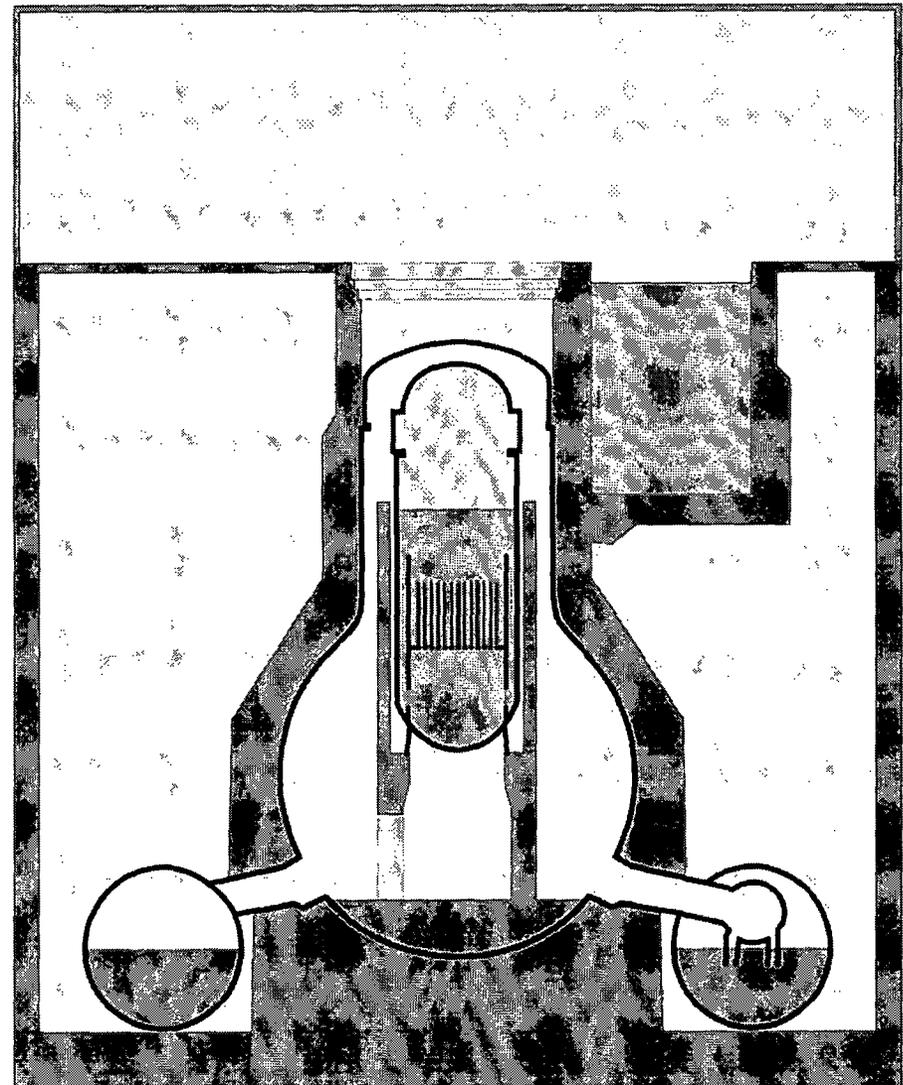


# The Fukushima Daiichi Incident

## 2. Accident progression



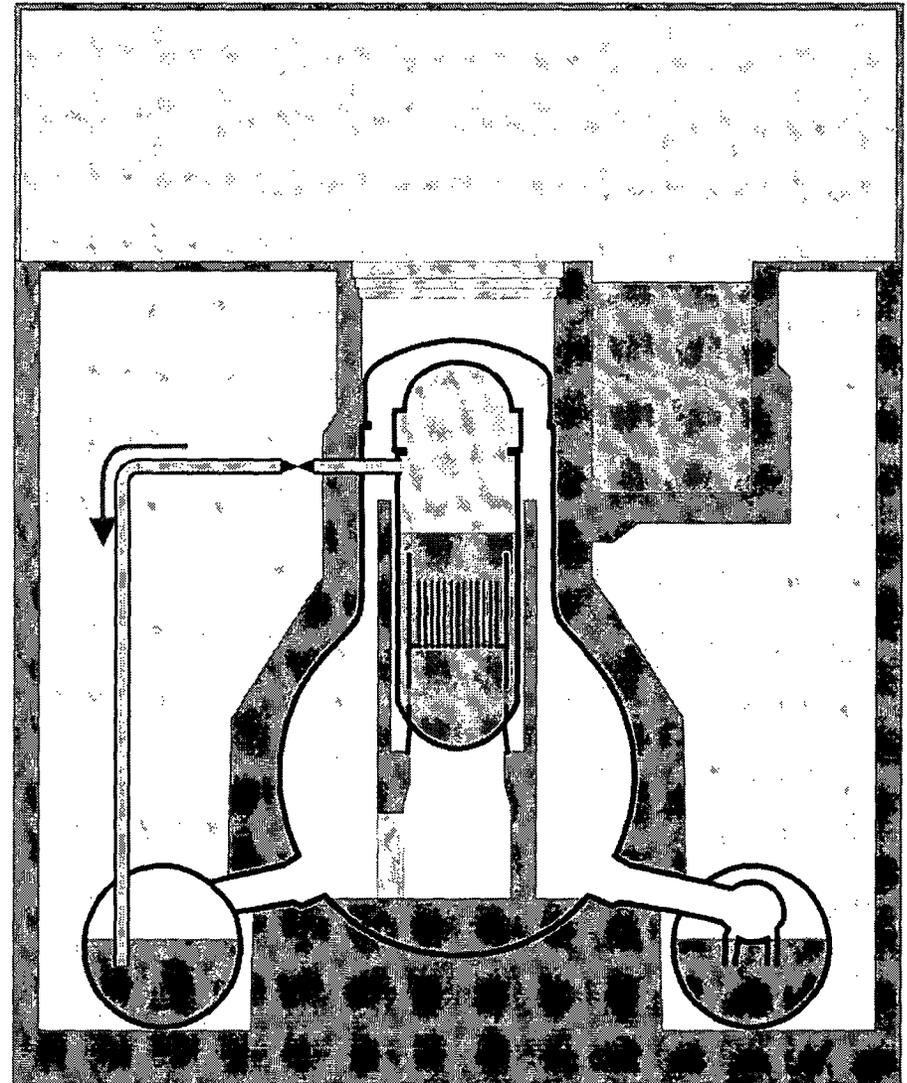
- ▶ Reactor Isolation pump stops
  - ◆ 11.3. 16:36 in Unit 1 (Batteries empty)
  - ◆ 14.3. 13:25 in Unit 2 (Pump failure)
  - ◆ 13.3. 2:44 in Unit 3 (Batteries empty)
  
- ▶ Decay Heat produces still steam in Reactor pressure Vessel
  - ◆ Pressure rising
  
- ▶ Opening the steam relieve valves
  - ◆ Discharge Steam into the Wet-Well
  
- ▶ Descending of the Liquid Level in the Reactor pressure vessel



# The Fukushima Daiichi Incident

## 2. Accident progression

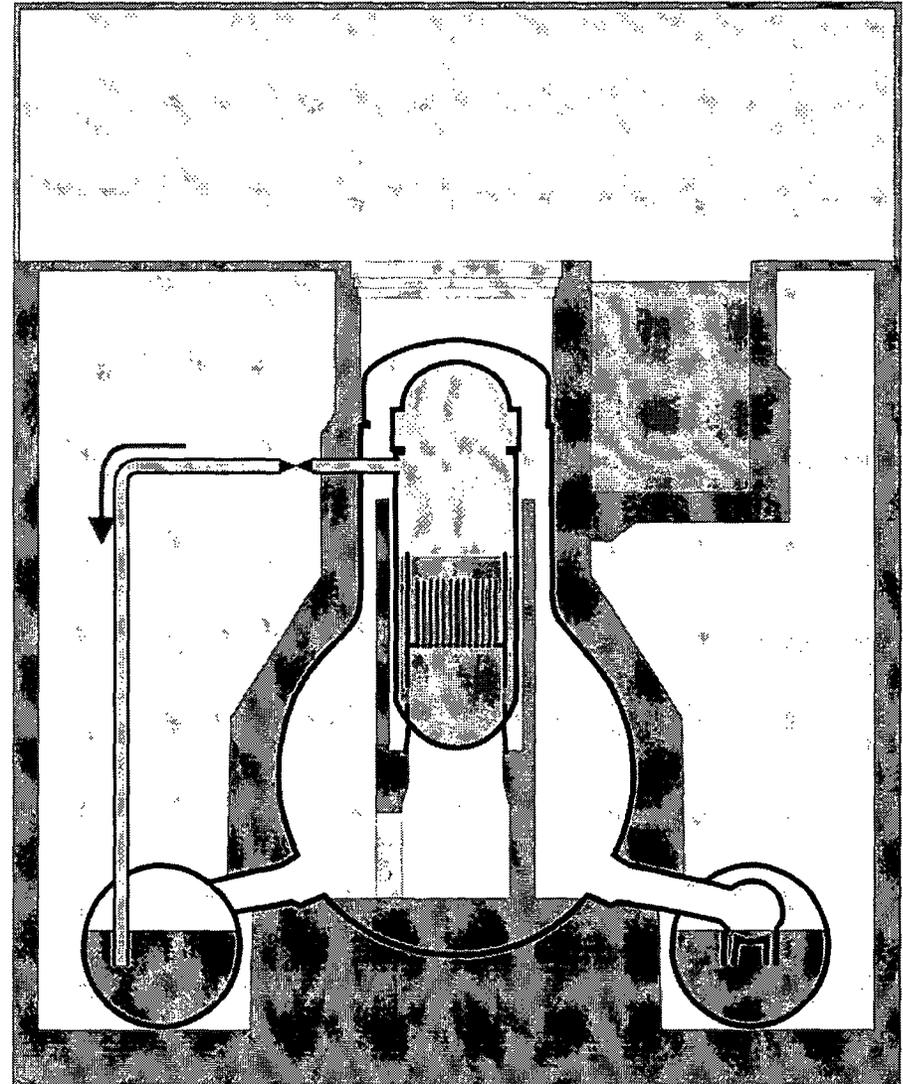
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# The Fukushima Daiichi Incident

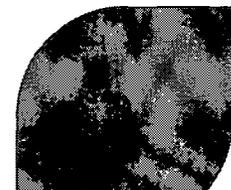
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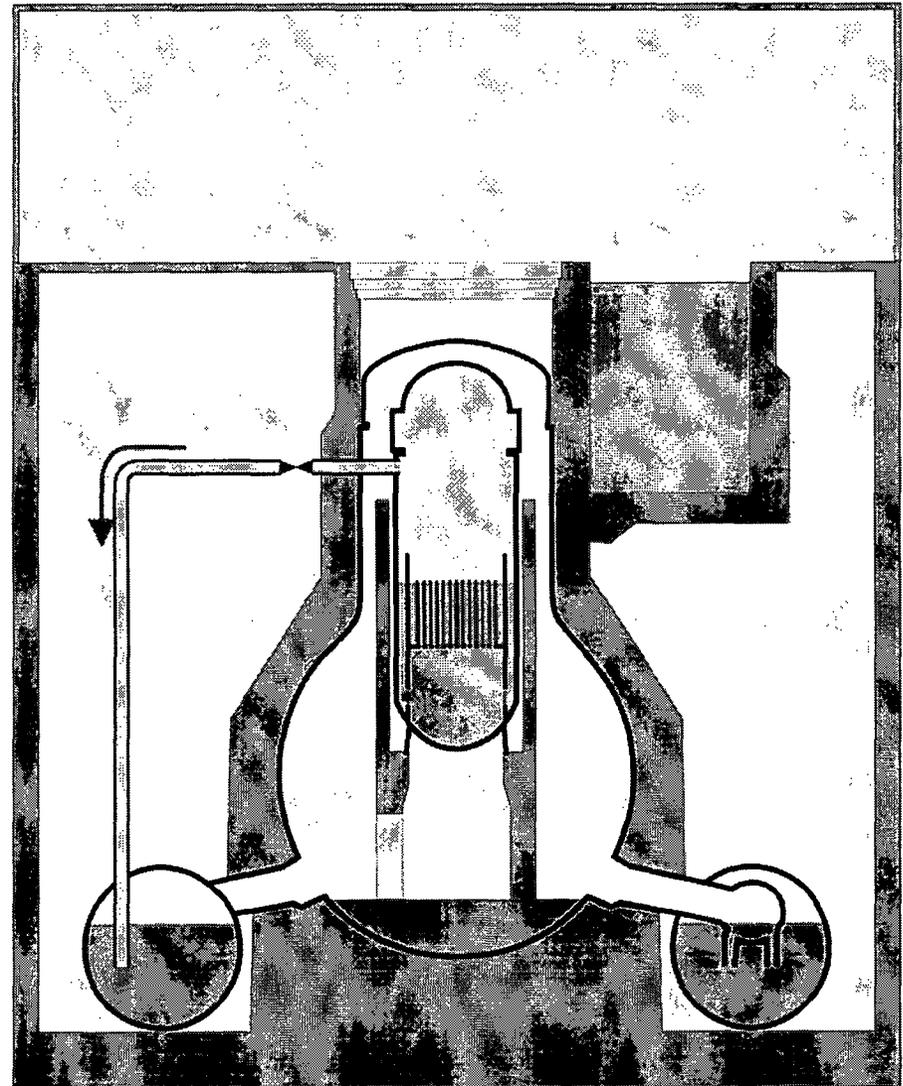


# The Fukushima Daiichi Incident

## 2. Accident progression

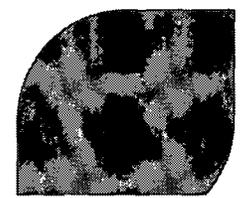


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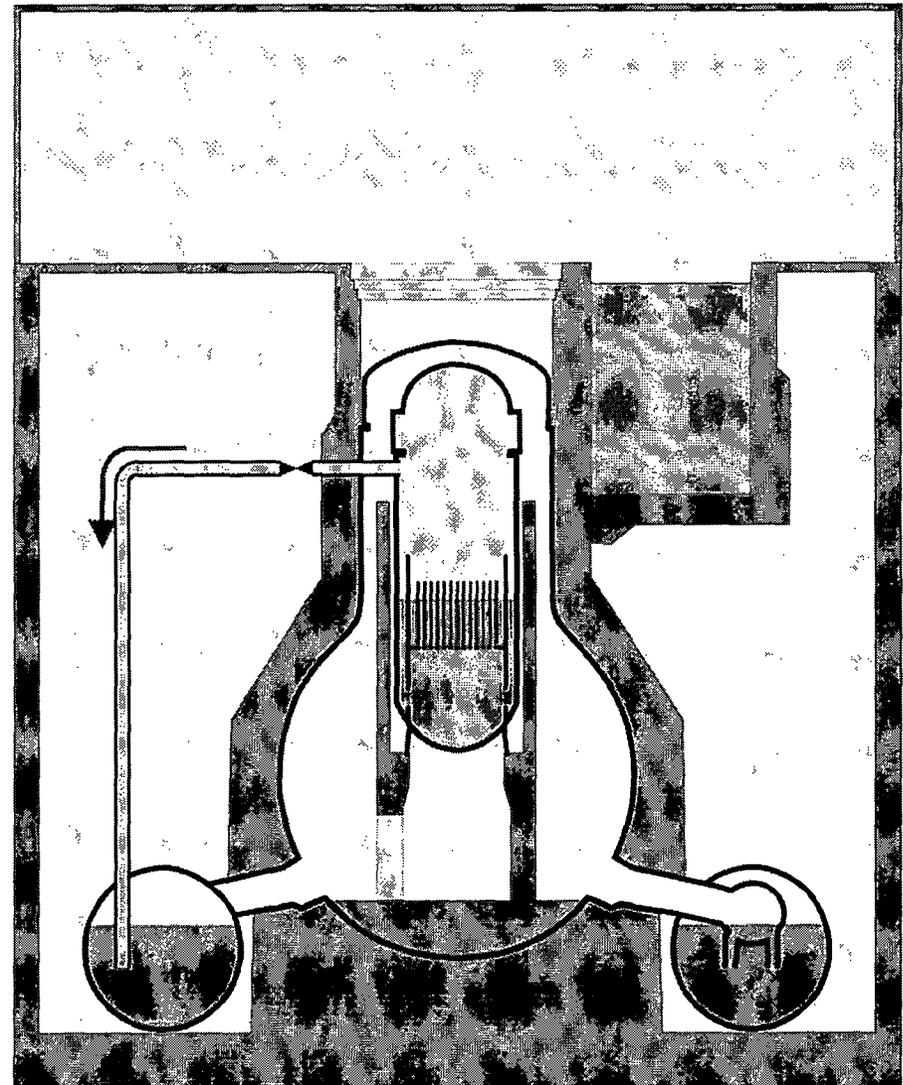


# The Fukushima Daiichi Incident

## 2. Accident progression



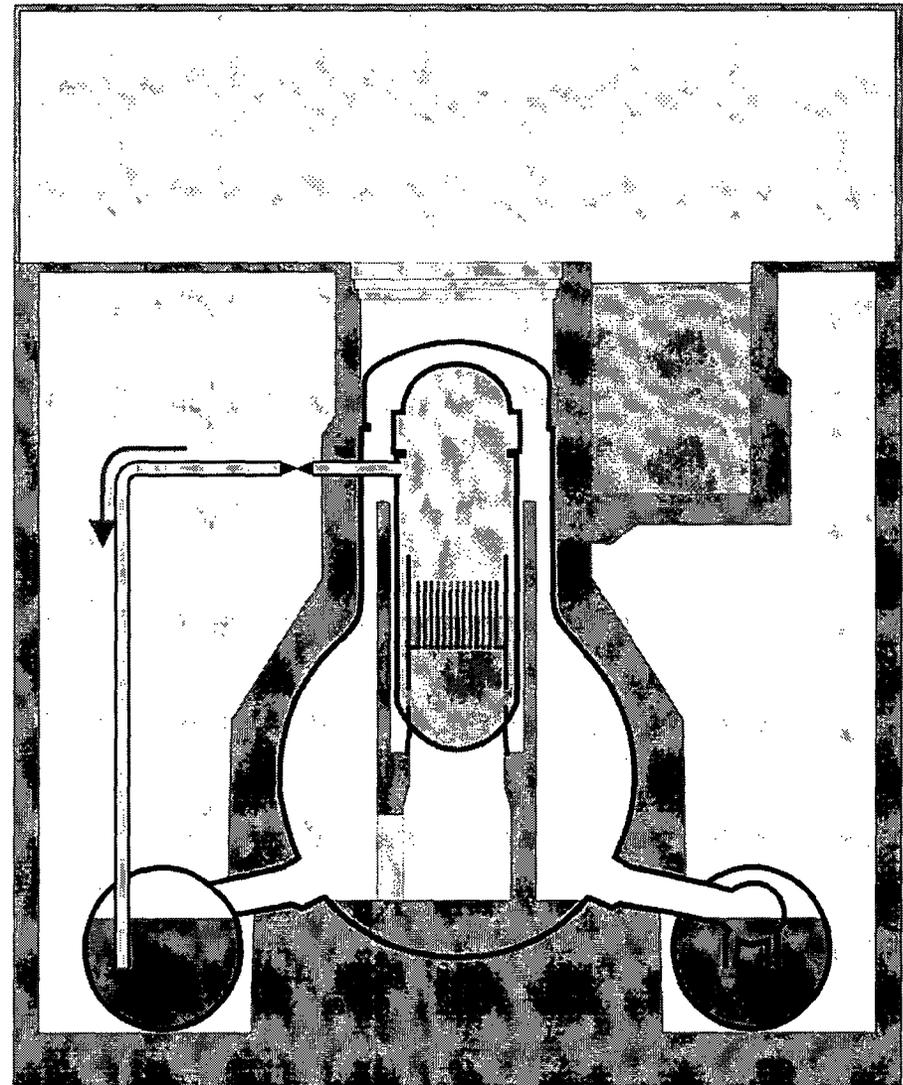
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# The Fukushima Daiichi Incident

## 2. Accident progression

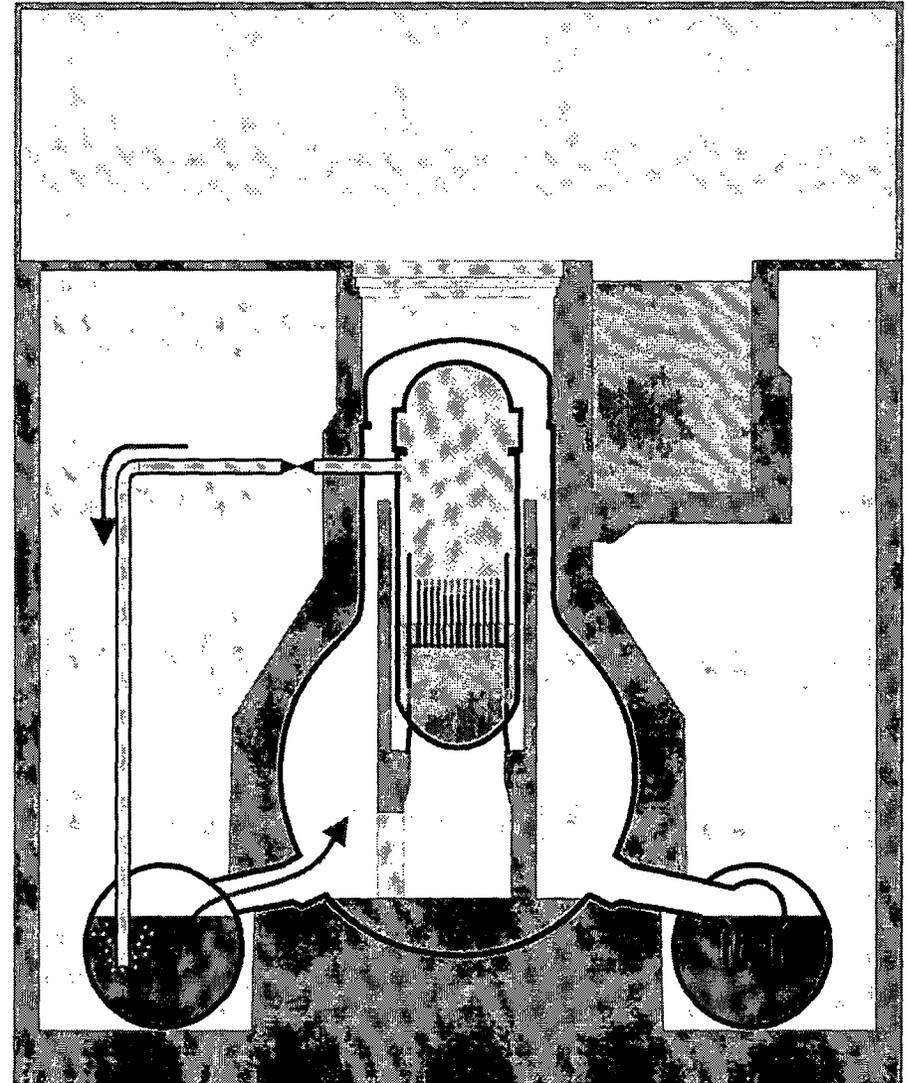
- ▶ Measured, and here referenced Liquid level is the collapsed level. The actual liquid level lies higher due to the steam bubbles in the liquid
- ▶ ~50% of the core exposed
  - ◆ Cladding temperatures rise, but still no significant core damage
- ▶ ~2/3 of the core exposed
  - ◆ Cladding temperature exceeds  $\sim 900^{\circ}\text{C}$
  - ◆ Ballooning / Breaking of the cladding
  - ◆ Release of fission products from the fuel rod gaps



# The Fukushima Daiichi Incident

## 2. Accident progression

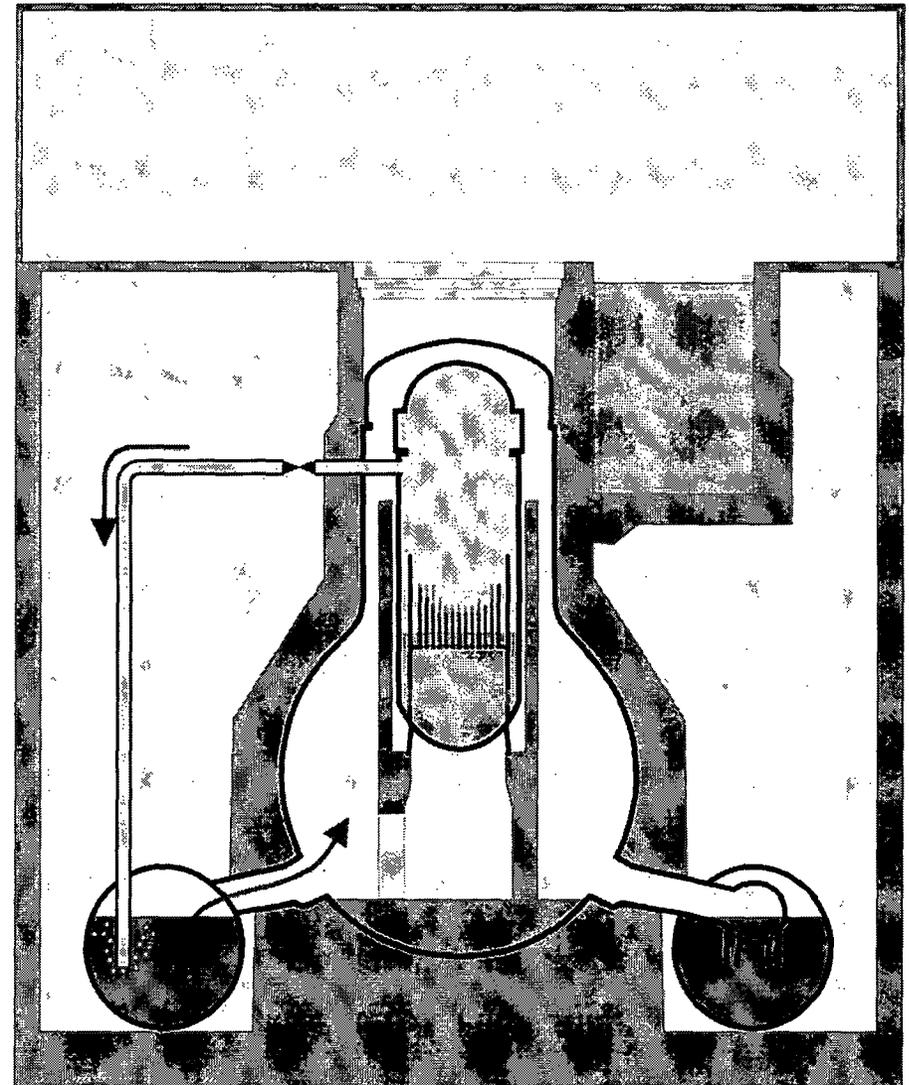
- ▶ ~3/4 of the core exposed
  - ◆ Cladding exceeds ~1200°C
  - ◆ Zirconium in the cladding starts to burn under Steam atmosphere
  - ◆  $\text{Zr} + 2\text{H}_2\text{O} \rightarrow \text{ZrO}_2 + 2\text{H}_2$
  - ◆ Exothermal reaction further heats the core
  - ◆ Generation of hydrogen
    - Unit 1: 300-600kg
    - Unit 2/3: 300-1000kg
  - ◆ Hydrogen gets pushed via the wet-well, the wet-well vacuum breakers into the dry-well



# The Fukushima Daiichi Incident

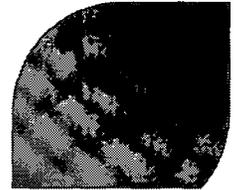
## 2. Accident progression

- ▶ at ~1800°C [Unit 1,2,3]
  - ◆ Melting of the Cladding
  - ◆ Melting of the steel structures
  
- ▶ at ~2500°C [Block 1,2]
  - ◆ Breaking of the fuel rods
  - ◆ debris bed inside the core
  
- ▶ at ~2700°C [Block 1]
  - ◆ Melting of Uranium-Zirconium eutectics
  
- ▶ Restoration of the water supply stops accident in all 3 Units
  - ◆ Unit 1: 12.3. 20:20 (27h w.o. water)
  - ◆ Unit 2: 14.3. 20:33 (7h w.o. water)
  - ◆ Unit 3: 13.3. 9:38 (7h w.o. water)

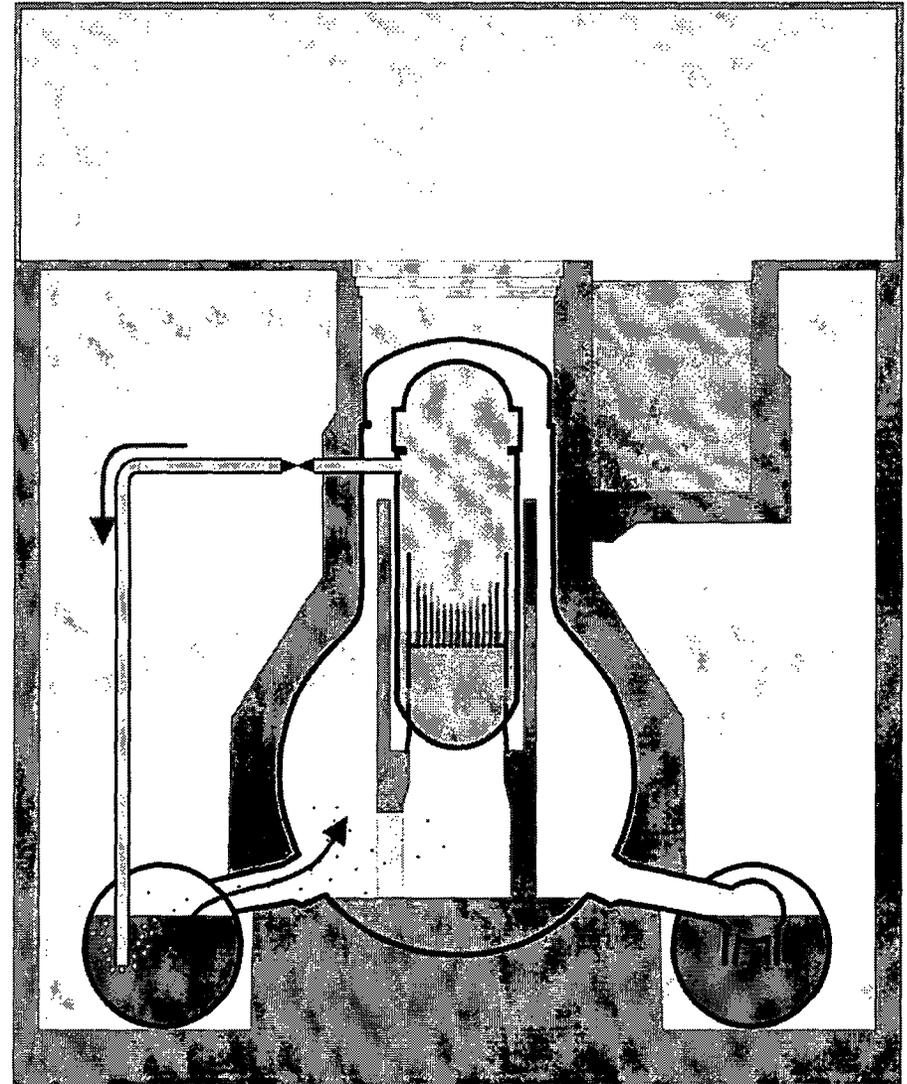


# The Fukushima Daiichi Incident

## 2. Accident progression

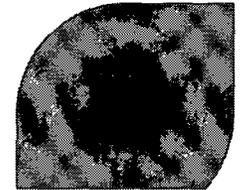


- ▶ Release of fission products during melt down
  - ◆ Xenon, Cesium, Iodine,...
  - ◆ Uranium/Plutonium remain in core
  - ◆ Fission products condensate to airborne Aerosols
  
- ▶ Discharge through valves into water of the condensation chamber
  - ◆ Pool scrubbing binds a fraction of Aerosols in the water
  
- ▶ Xenon and remaining aerosols enter the Dry-Well
  - ◆ Deposition of aerosols on surfaces further decontaminates air

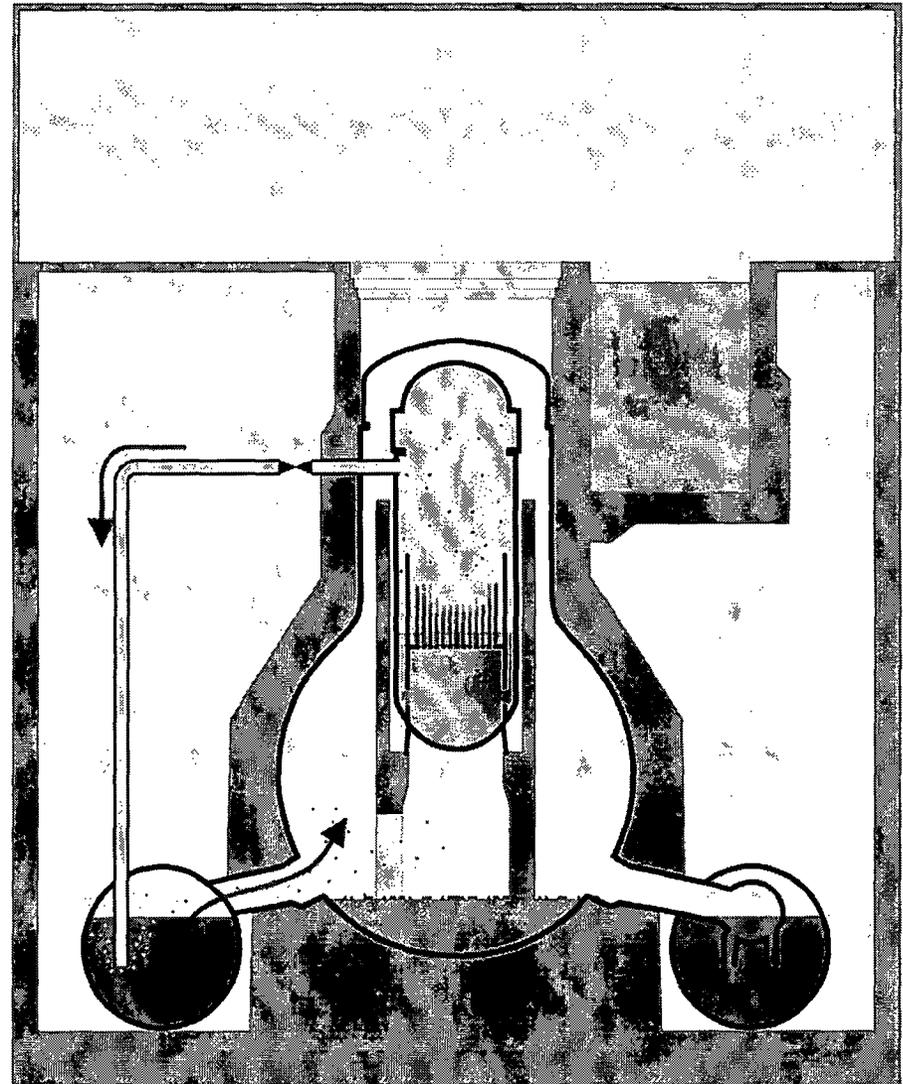


# The Fukushima Daiichi Incident

## 2. Accident progression

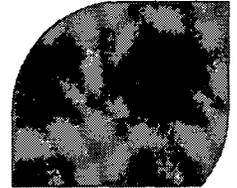


- ▶ Containment
  - ◆ Last barrier between Fission Products and Environment
  - ◆ Wall thickness ~3cm
  - ◆ Design Pressure 4-5bar
  
- ▶ Actual pressure up to 8 bars
  - ◆ Normal inert gas filling (Nitrogen)
  - ◆ Hydrogen from core oxidation
  - ◆ Boiling condensation chamber (like a pressure cooker)
  
- ▶ Depressurization of the containment
  - ◆ Unit 1: 12.3. 4:00
  - ◆ Unit 2: 13.3 00:00
  - ◆ Unit 3: 13.3. 8.41

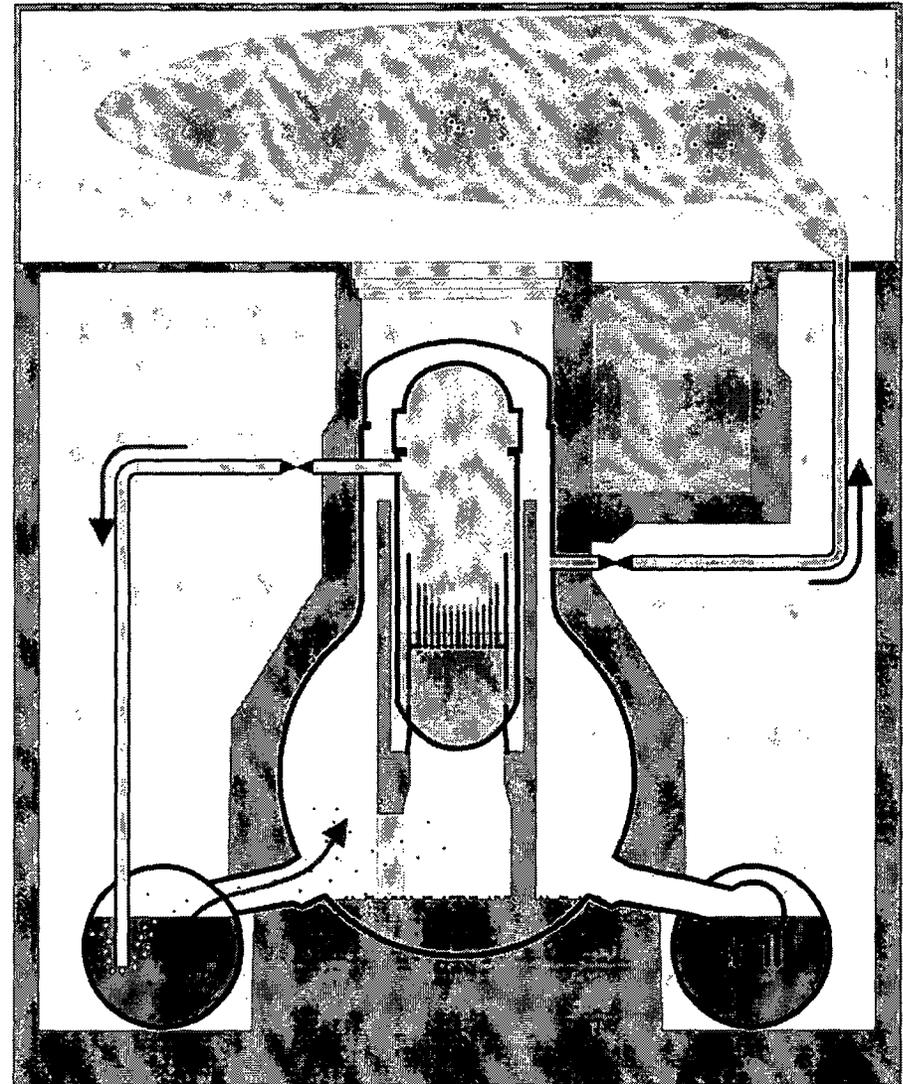


# The Fukushima Daiichi Incident

## 2. Accident progression



- ▶ Positive and negative Aspects of depressurizing the containment
  - ◆ Removes Energy from the Reactor building (only way left)
  - ◆ Reducing the pressure to ~4 bar
  - ◆ Release of small amounts of Aerosols (Iodine, Cesium ~0.1%)
  - ◆ Release of all noble gases
  - ◆ Release of Hydrogen
  
- ▶ Gas is released into the reactor service floor
  - ◆ Hydrogen is flammable

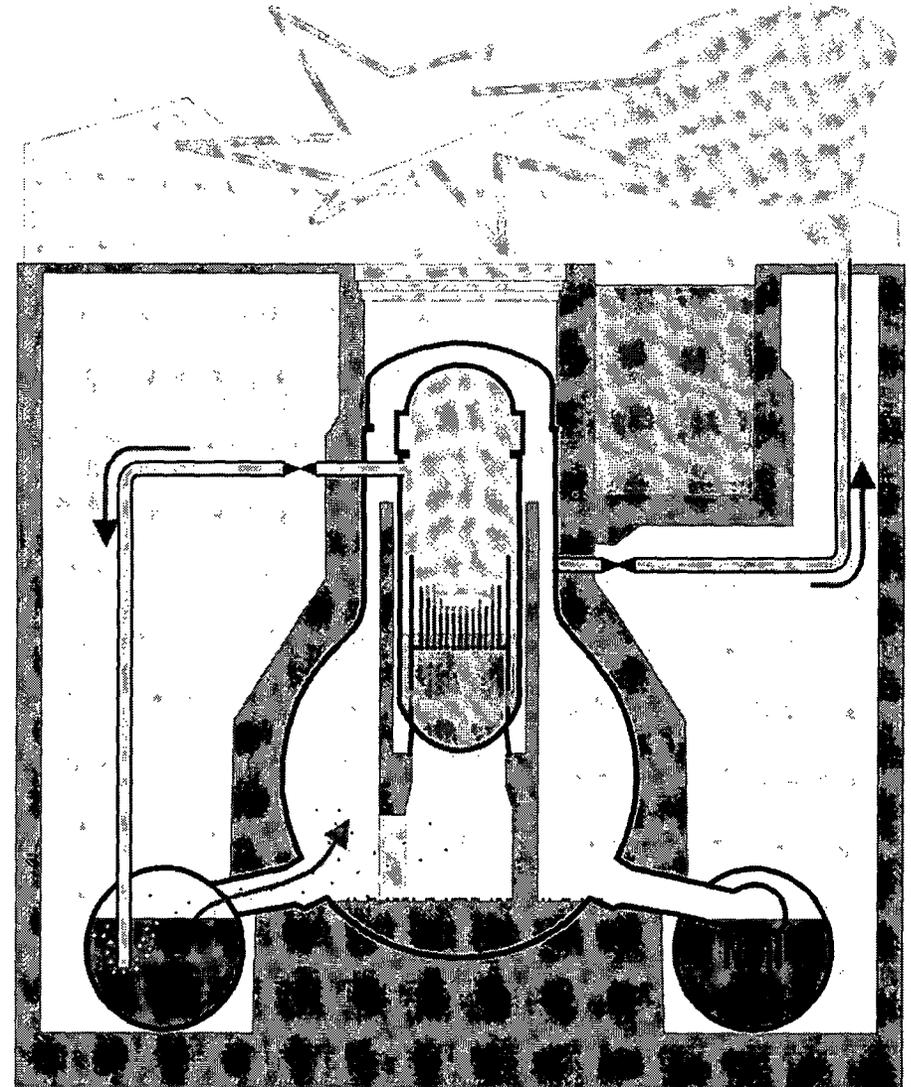
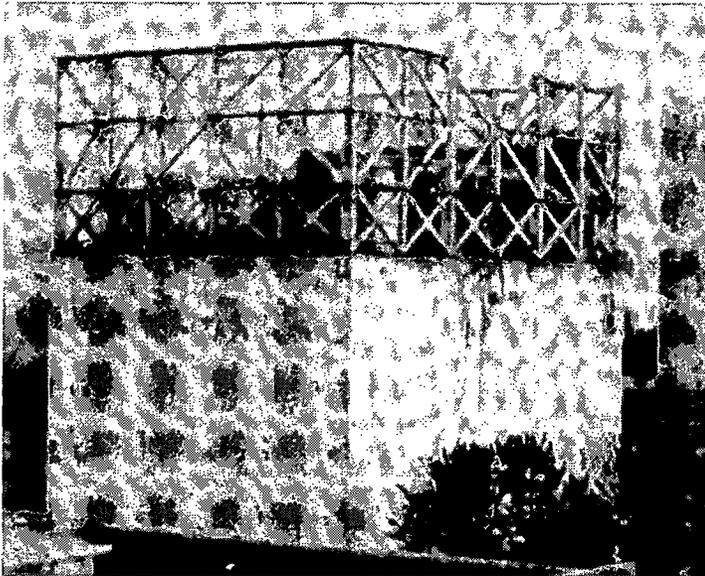


# The Fukushima Daiichi Incident

## 2. Accident progression

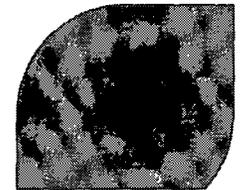
### ► Unit 1 und 3

- ◆ Hydrogen burn inside the reactor service floor
- ◆ Destruction of the steel-frame roof
- ◆ Reinforced concrete reactor building seems undamaged
- ◆ Spectacular but minor safety relevant



# The Fukushima Daiichi Incident

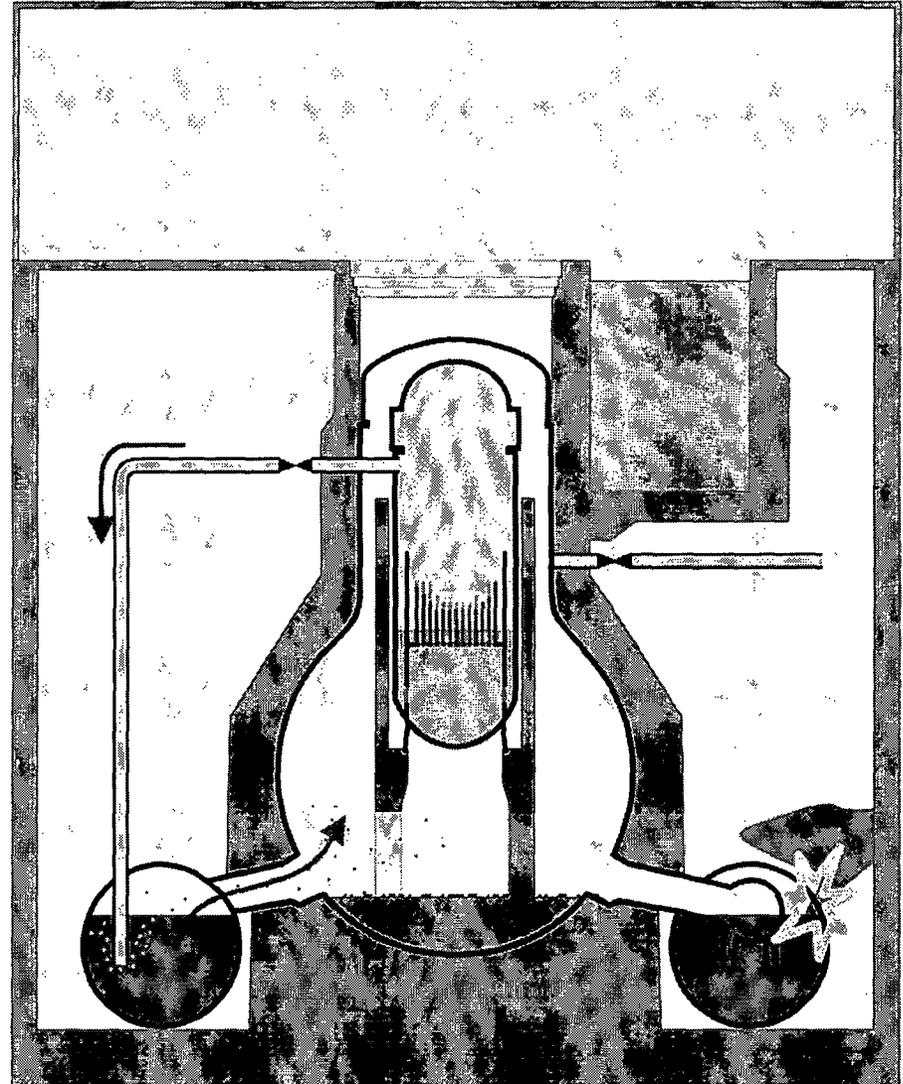
## 2. Accident progression



### ► Unit 2

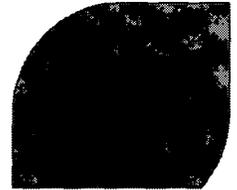
- ◆ Hydrogen burn inside the reactor building
- ◆ Probably damage to the condensation chamber (highly contaminated water)
- ◆ Uncontrolled release of gas from the containment
- ◆ **Release of fission products**
- ◆ Temporal evacuation of the plant
- ◆ High local dose rates on the plant site due to wreckage hinder further recovery work

- No clear information's why Unit 2 behaved differently

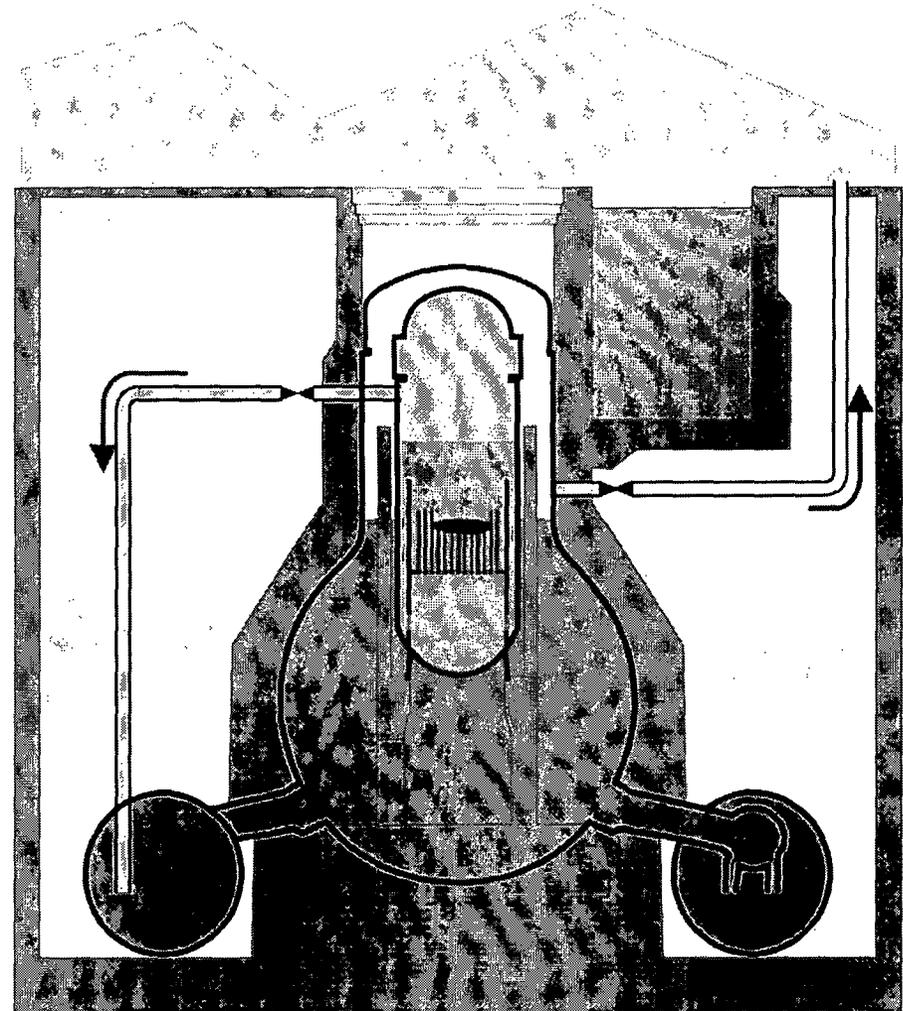


# The Fukushima Daiichi Incident

## 2. Accident progression

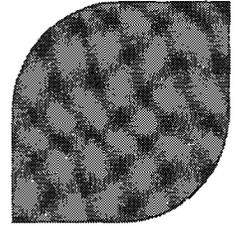


- ▶ Current status of the Reactors
  - ◆ Core Damage in Unit 1,2, 3
  - ◆ Building damage due to various burns Unit 1-4
  - ◆ Reactor pressure vessels flooded in all Units with mobile pumps
  - ◆ At least containment in Unit 1 flooded
  
- ▶ Further cooling of the Reactors by releasing steam to the atmosphere
  
- ▶ Only small further releases of fission products can be expected



# The Fukushima Daiichi Incident

## 3. Radiological releases



### ► Directly on the plant site

#### ◆ Before Explosion in Unit Block 2

- Below 2mSv / h
- Mainly due to released radioactive noble gases
- Measuring posts on west side. Maybe too small values measured due to wind

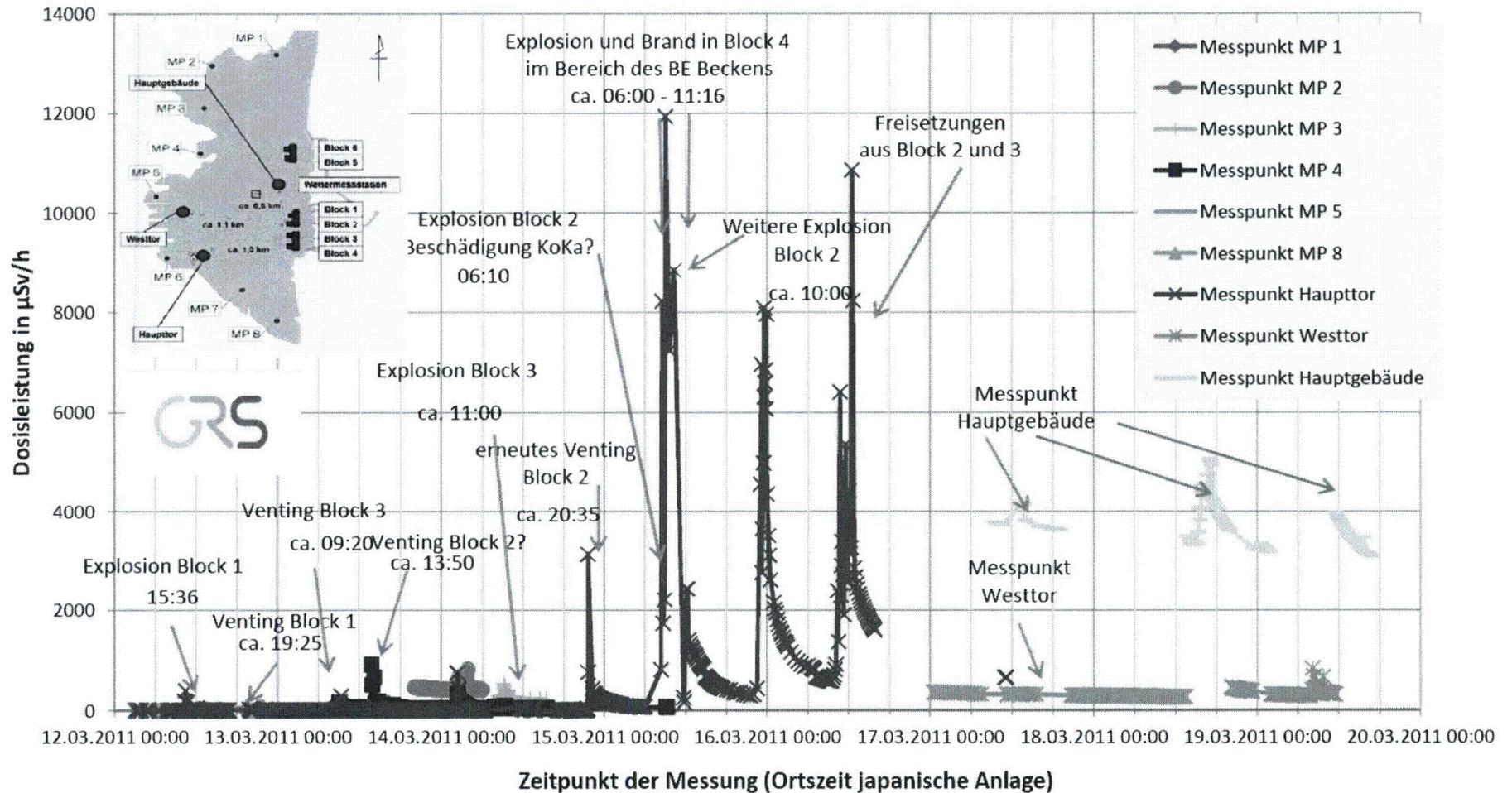
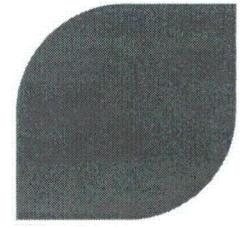
#### ◆ After Explosion in Unit 2 (Damage of the Containment)

- Temporal peak values 12mSv / h
- (Origin not entirely clear)
- Local peak values on site up to 400mSv /h (wreckage / fragments?)
- Currently stable dose on site at 5mSv /h
- Inside the buildings a lot more

#### ◆ Limiting time of exposure of the workers necessary

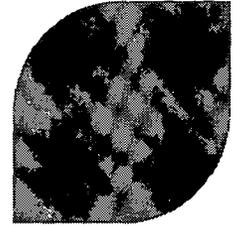
# The Fukushima Daiichi Incident

## 3. Radiological releases



# The Fukushima Daiichi Incident

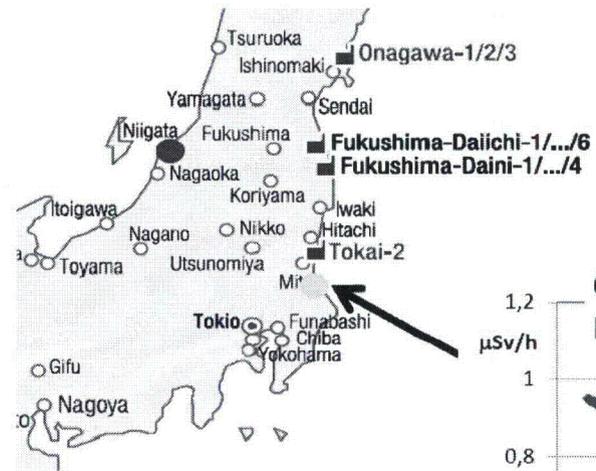
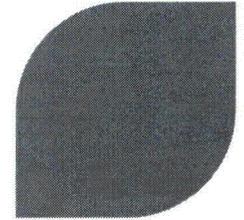
## 3. Radiological releases



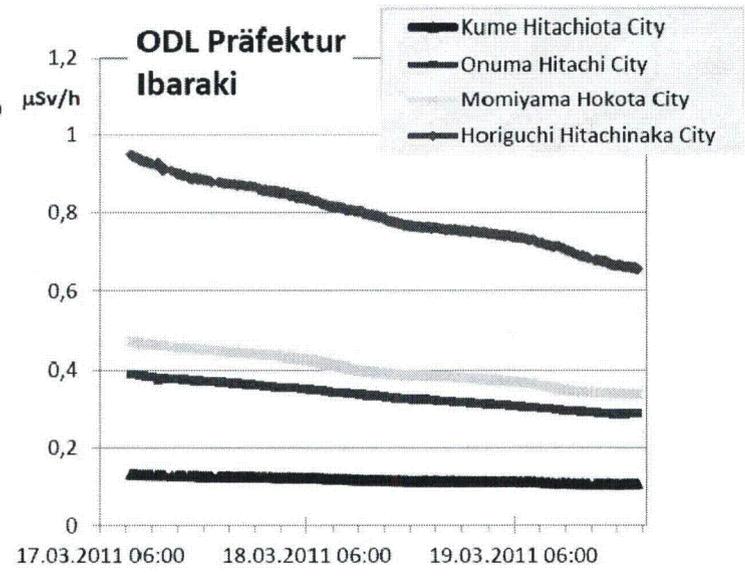
- ▶ Outside the Plant site
  - ◆ As reactor building mostly intact
    - => reduced release of Aerosols (not Chernobyl-like)
  - ◆ Fission product release in steam
    - => fast Aerosol grows, large fraction falls down in the proximity of the plant
  - ◆ Main contribution to the radioactive dose outside plant are the radioactive noble gases
  - ◆ Carried / distributed by the wind, decreasing dose with time
  - ◆ No „Fall-out“ of the noble gases, so no local high contamination of soil
  
- ▶ ~20km around the plant
  - ◆ Evacuations were adequate
  - ◆ Measured dose up to 0.3mSv/h for short times
  - ◆ Maybe destruction of crops / dairy products this year
  - ◆ Probably no permanent evacuation of land necessary

# The Fukushima Daiichi Incident

## 3. Radiological releases



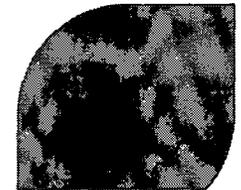
GRS.de



- ▶ ~50km around the plant
  - ◆ Control of Crop / Dairy products
  - ◆ Usage of Iodine pills  
(Caution, pills can interfere with heart medicine)

# The Fukushima Daiichi Incident

## 4. Spent fuel pools

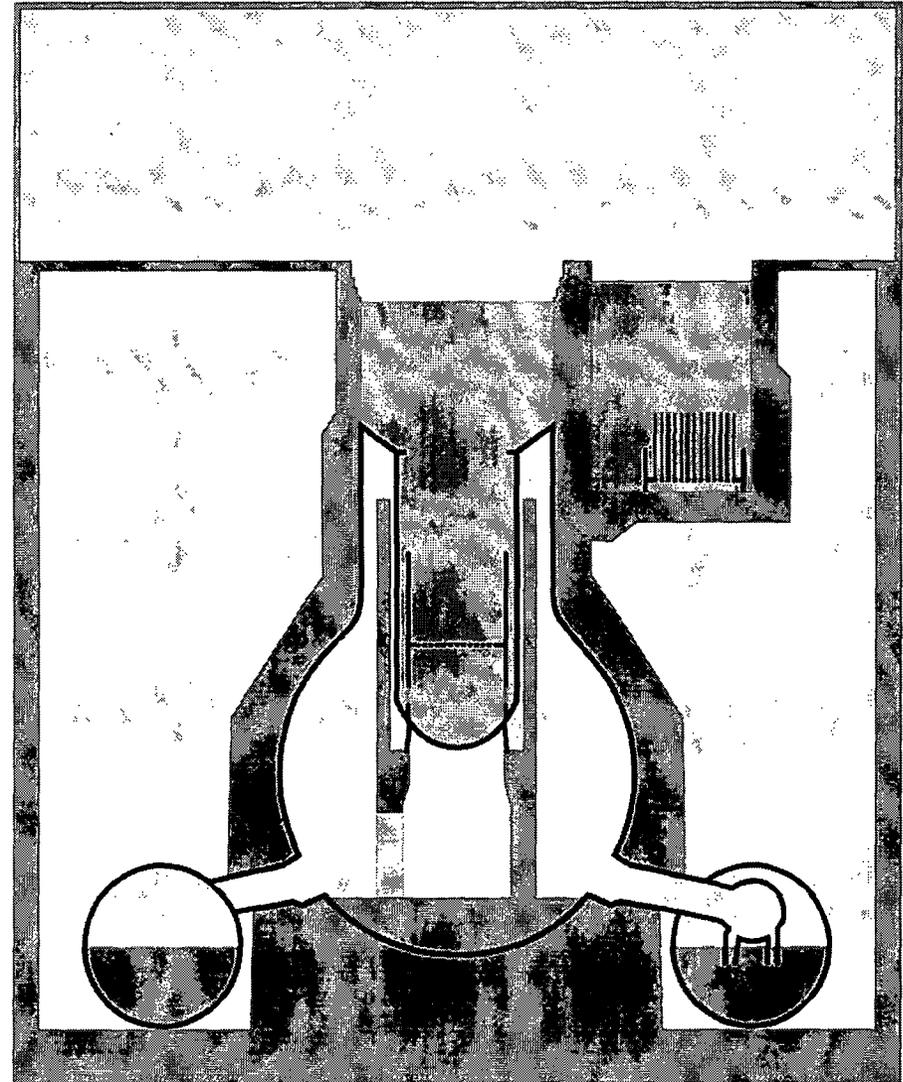


► Spent fuel stored in Pool on Reactor service floor

- ◆ Due to maintenance in Unit 4 entire core stored in Fuel pool
- ◆ Dry-out of the pools
  - Unit 4: in 10 days
  - Unit 1-3,5,6 in few weeks
- ◆ **Leakage of the pools due to Earthquake?**

► Consequences

- ◆ Core melt „on fresh air “
- ◆ Nearly no retention of fission products
- ◆ Large release



# The Fukushima Daiichi Incident

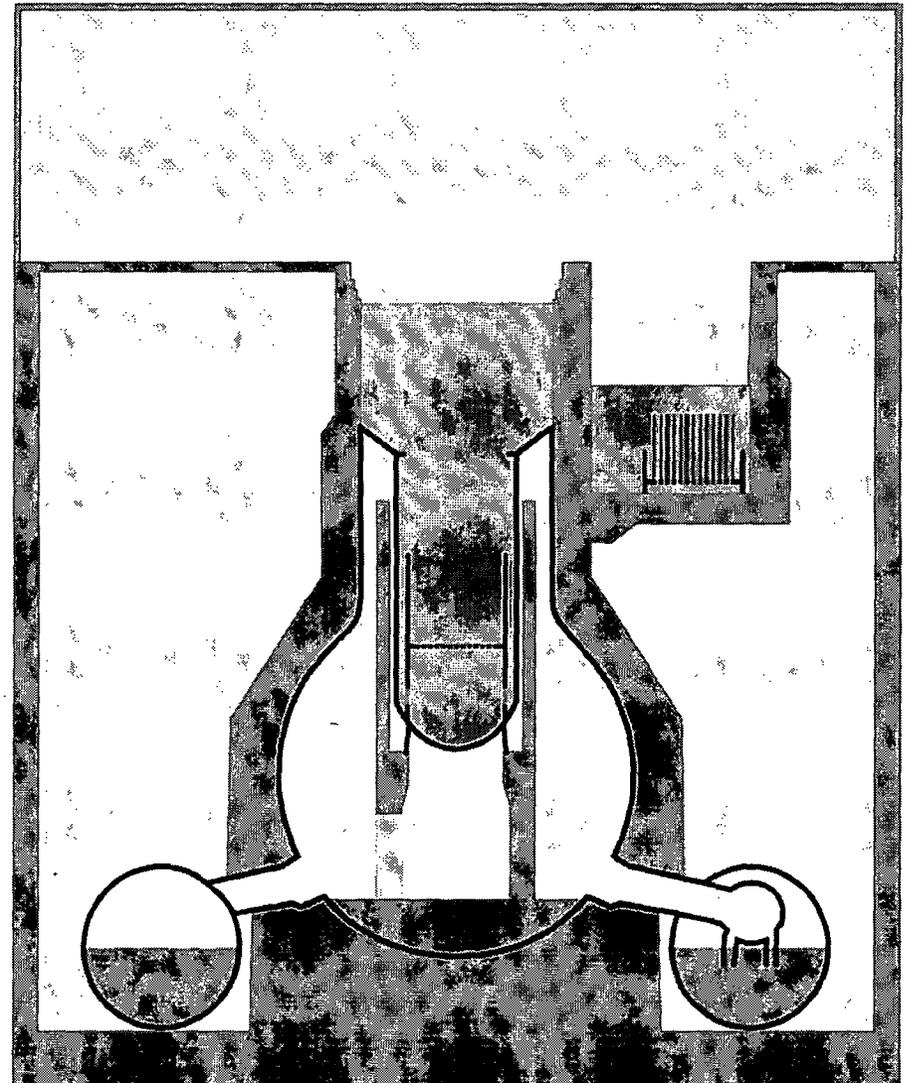
## 4. Spent fuel pools

### ► Spent fuel stored in Pool on Reactor service floor

- ◆ Due to maintenance in Unit 4 entire core stored in Fuel pool
- ◆ Dry-out of the pools
  - Unit 4: in 10 days
  - Unit 1-3,5,6 in few weeks
- ◆ **Leakage of the pools due to Earthquake?**

### ► Consequences

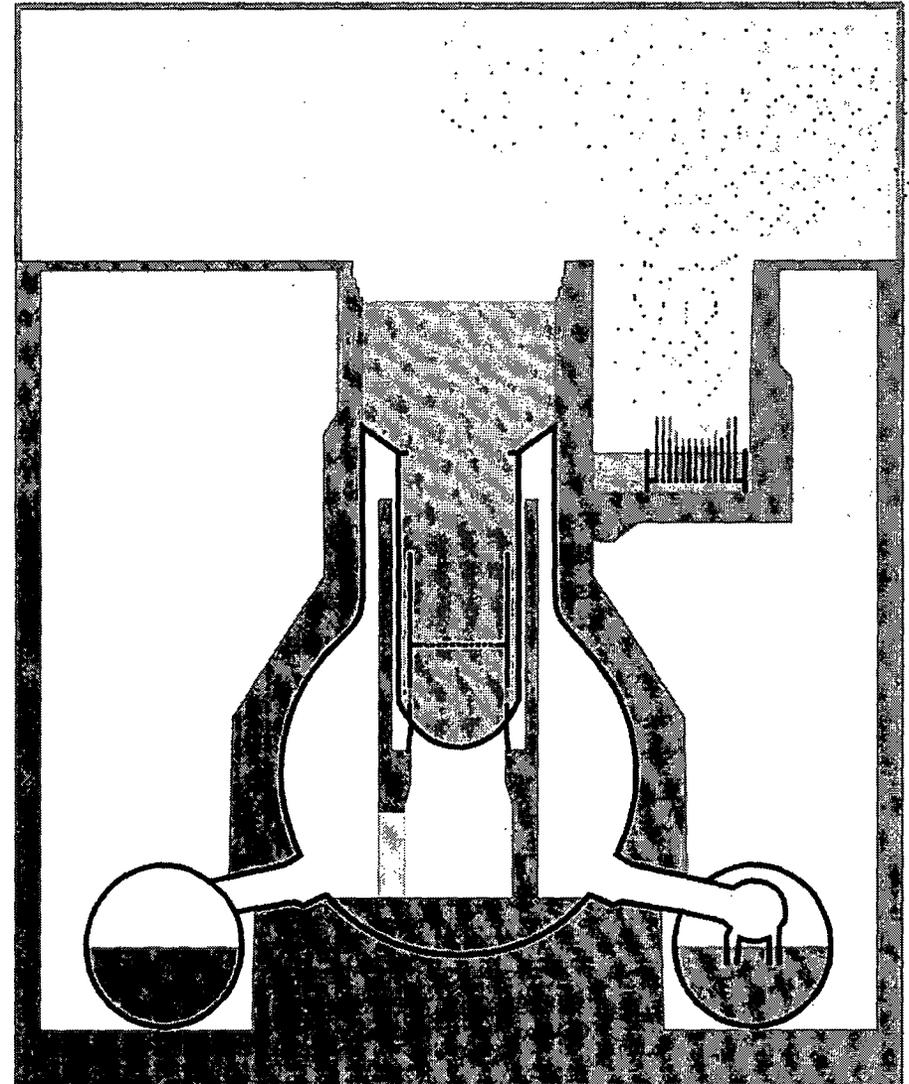
- ◆ Core melt „on fresh air “
- ◆ Nearly no retention of fission products
- ◆ Large release



# The Fukushima Daiichi Incident

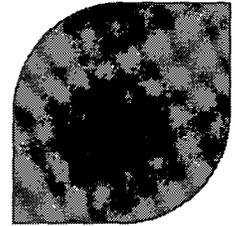
## 4. Spent fuel pools

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  - ◆ Dry-out of the pools
    - Unit 4: in 10 days
    - Unit 1-3,5,6 in few weeks
  - ◆ **Leakage of the pools due to Earthquake?**
  
- ▶ Consequences
  - ◆ Core melt „on fresh air “
  - ◆ Nearly no retention of fission products
  - ◆ Large release
  
- ▶ **It is currently unclear if release from fuel pool already happened**



# The Fukushima Daiichi Incident

## 5. Sources of Information



### ► Good sources of Information

- ◆ Gesellschaft für Reaktorsicherheit [GRS.de]
  - Up to date
  - Radiological measurements published
  - German translation of japanese/englisch web pages
  
- ◆ Japan Atomic Industrial Forum [jaif.or.jp/english/]
  - Current Status of the plants
  - Measurement values of the reactors (pressure liquid level)
  
- ◆ Tokyo Electric Power Company [Tepco.co.jp]
  - Status of the recovery work
  - Casualties

### ► May too few information are released by TEPCO, the operator of the plant

**From:** [Janbergs, Holly](#)  
**To:** [Harrington, Holly](#)  
**Subject:** FW: ERROR in your answers to faqs related to Japan document  
**Date:** Sunday, March 20, 2011 10:30:07 AM

---

Who should I send this to to have it checked out?

---

**From:** Christine Goulet [mailto:[goulet@berkeley.edu](mailto:goulet@berkeley.edu)]  
**Sent:** Saturday, March 19, 2011 5:54 PM  
**To:** OPA Resource  
**Subject:** ERROR in your answers to faqs related to Japan document

Good afternoon,

I just opened your pdf at <http://www.nrc.gov/japan/faqs-related-to-japan.pdf> and found a **major error** in the answer to question 1.  
At the bottom of the answer, "ten times" should be replaced by "approximately 32 times":  
"Magnitude is measured on a log scale and so a magnitude 9 earthquake is ten times larger than a magnitude 8 earthquake."

I hope this can be corrected soon!

Sincerely,

**Christine Goulet, PhD**  
Assistant Researcher  
NGA East TI team co-chair  
Pacific Earthquake Engineering Research Center (PEER),  
University of California, Berkeley

---

Tel (510) 374-4620  
[goulet@berkeley.edu](mailto:goulet@berkeley.edu)

On 3/19/11,12:31 PM 12:31 PM, opa administrators wrote:

RRRR-191

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** New piece of guidance  
**Date:** Sunday, March 20, 2011 11:16:00 AM

---

WE have not pulled together all relevant Japan stuff in one place on the NRC Web site, so you can try referring folks here: <http://www.nrc.gov/japan/japan-info.html> (just went live yesterday)

RRR-192

**From:** McIntyre, David  
**To:** Harrington, Holly  
**Subject:** RE: any reason to add this to the talking points?  
**Date:** Sunday, March 20, 2011 11:09:05 AM

---

Although, most of the links on that website don't work.

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 11:03 AM  
**To:** McIntyre, David  
**Subject:** any reason to add this to the talking points?

The EPA website has current radiation monitor readings from locations on the west coast. Members of the public may obtain radiation level readings if they are concerned regarding radiological impact from the Japanese reactor accident in the US.

<http://www.epa.gov/japan2011/rert/radnet-data.html>

RRR-193

**From:** [McIntyre, David](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: any reason to add this to the talking points?  
**Date:** Sunday, March 20, 2011 11:05:38 AM

---

Might be worth adding either to the FAQs on "What Do I Need to Know?" and/or the list of Other Information Sources.

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 11:03 AM  
**To:** McIntyre, David  
**Subject:** any reason to add this to the talking points?

The EPA website has current radiation monitor readings from locations on the west coast. Members of the public may obtain radiation level readings if they are concerned regarding radiological impact from the Japanese reactor accident in the US.

<http://www.epa.gov/japan2011/rert/radnet-data.html>

RRR-194

**From:** [Janbergs, Holly](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: Radiation Computer Modeling  
**Date:** Sunday, March 20, 2011 10:48:21 AM

---

K, thanks

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

From: Harrington, Holly  
Sent: Sunday, March 20, 2011 10:48 AM  
To: Janbergs, Holly  
Subject: RE: Radiation Computer Modeling

Not gonna happen, I don't think

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

From: Janbergs, Holly  
Sent: Sunday, March 20, 2011 10:29 AM  
To: Harrington, Holly  
Subject: FW: Radiation Computer Modeling

I don't know if we're interested in doing this, but the fellow makes a valid request.

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

From: Peter Chang [<mailto:pchang@sagientresearch.com>]  
Sent: Saturday, March 19, 2011 3:59 PM  
To: OPA Resource  
Subject: Radiation Computer Modeling

Dear NRC Official,

I appreciate your publishing your modeling of radiation from the Japan nuclear disaster for the 50 mile range (<http://nrc.gov/reading-rm/doc-collections/news/2011/11-050.pdf>), but I would urge you to also make public your modeling behind your statements that you do not think radiation levels will reach significant levels in California. That would be quite helpful for people to see your numbers and assumptions behind that statement.

Thanks

---

Peter Chang, MD  
Sagient Research  
3655 Nobel Drive, Suite 540  
San Diego, California 92122  
(858) 200-2347

RRRR-195

**From:** [Harrington, Holly](#)  
**To:** [Janbergs, Holly](#)  
**Subject:** RE: Radiation Computer Modeling  
**Date:** Sunday, March 20, 2011 10:48:00 AM

---

Send him this:

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Thanks

---

Peter Chang, MD  
Sagient Research  
3655 Nobel Drive, Suite 540  
San Diego, California 92122  
(858) 200-2347

RRRR-196

## David Decker

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**From:** Droggitis, Spiros  
**Sent:** Saturday, March 12, 2011 6:11 PM  
**To:** Schmidt, Rebecca; Powell, Amy; Shane, Raeann; Riley (OCA), Timothy; Dacus, Eugene; Decker, David; Weil, Jenny  
**Subject:** FW: Japanese Earthquake and Tsunami--10:00 am Saturday  
**Attachments:** 11-044.docx; 11-045.docx

This is what I just sent to Jonathan since he was not on the earlier distributions. At the bottom are links to TEPCO and IAEA websites, TEPCO because Bill said it was the best source of information on plant conditions and IAEA because we got an inquiry from Chris Miller on the INES designation. Josh told him that it was too early for that, but it turns out it was not. I sent it to Chris to clarify. I don't think we need to forward outside press release to others unless they inquire. Jenny forwarded questions from Markey, that Josh said were not a priority to respond to and to give them to OPA to add to the Q's & A's that they are developing.

---

**From:** Droggitis, Spiros  
**Sent:** Saturday, March 12, 2011 5:47 PM  
**To:** 'Jonathan\_Epstein@bingaman.senate.gov'  
**Subject:** FW: Japanese Earthquake and Tsunami--10:00 am Saturday

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**From:** Schmidt, Rebecca  
**Sent:** Saturday, March 12, 2011 10:15 AM  
**To:** [jeff.baran@mail.house.gov](mailto:jeff.baran@mail.house.gov); [abigail.pinkele@mail.house.gov](mailto:abigail.pinkele@mail.house.gov); [mary.neumayr@mail.house.gov](mailto:mary.neumayr@mail.house.gov); [david.mccarthy@mail.house.gov](mailto:david.mccarthy@mail.house.gov); [JohnM@mail.house.gov](mailto:JohnM@mail.house.gov); [maryam.brown@mail.house.gov](mailto:maryam.brown@mail.house.gov); [michael.beckerman@mail.house.gov](mailto:michael.beckerman@mail.house.gov); [chris.sarley@mail.house.gov](mailto:chris.sarley@mail.house.gov); [kathy\\_dedrick@epw.senate.gov](mailto:kathy_dedrick@epw.senate.gov); [ruth\\_vanmark@epw.senate.gov](mailto:ruth_vanmark@epw.senate.gov); [annie\\_caputo@epw.senate.gov](mailto:annie_caputo@epw.senate.gov); [laura\\_haynes@carper.senate.gov](mailto:laura_haynes@carper.senate.gov); [Brian\\_Clifford@barrasso.senate.gov](mailto:Brian_Clifford@barrasso.senate.gov); [elizabeth\\_craddock@landrieu.senate.gov](mailto:elizabeth_craddock@landrieu.senate.gov); [Doug\\_clapp@appro.senate.gov](mailto:Doug_clapp@appro.senate.gov); [Carrie\\_apostolou@appro.senate.gov](mailto:Carrie_apostolou@appro.senate.gov); [Taunja.berquam@mail.house.gov](mailto:Taunja.berquam@mail.house.gov); [Rob.blair@mail.house.gov](mailto:Rob.blair@mail.house.gov); [Karen.Wayland@mail.house.gov](mailto:Karen.Wayland@mail.house.gov); [Bettina\\_Poirier@epw.senate.gov](mailto:Bettina_Poirier@epw.senate.gov); [Mary.Frances.Repko@mail.house.gov](mailto:Mary.Frances.Repko@mail.house.gov)  
**Cc:** Powell, Amy; Decker, David; Riley (OCA), Timothy; Shane, Raeann; Droggitis, Spiros  
**Subject:** Japanese Earthquake and Tsunami--10:00 am Saturday

I wanted to pass on the latest info as of this morning. We will continue to update you throughout the day.

- The Nuclear Regulatory Commission has spoken with its counterpart agency in Japan, offering the assistance of U.S. technical experts. Should the Japanese want to make use of U.S. expertise, NRC staffers with extensive background in boiling water reactors are available to assist efforts in Japan.

RRR-197

- The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response.
- 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 has regulations in place that require licensees to design their plants to withstand the effects of tsunamis.  
(10CFR 50, Appendix A, Criterion 2, “Design bases for protection against natural phenomenon” requires licensees to design structures, systems, and components important to safety to withstand the effects of natural phenomenon, including tsunamis.)
- 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 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. In other words, U.S. nuclear power plants are designed to be safe based on historical data from the area’s maximum credible earthquake.

<http://www.iaea.org/press/?p=1160>

<http://www.tepco.co.jp/en/press/corp-com/release/11031301-e.html>

Nuclear News Flashes

Sunday, Mar 20, 2011

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[Inside This Issue:]

- \*\* Recovery efforts continue at Fukushima nuclear power plant
- \*\* Fukushima units remain in 'precarious' situation: ASN
- \*\* Food contamination around Fukushima requires countermeasures: ASN
- \*\* Focus must remain on cooling Fukushima's damaged reactors: Jaczko
- \*\* US nuclear power plants safe: Energy secretary Chu

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\*\*\* Recovery efforts continue at Fukushima nuclear power plant

Pressure levels rose March 20, then later stabilized, in one of the crippled reactors at the Fukushima I nuclear power plant in Japan, government and industry officials said.

Plans being considered earlier March 20 to vent radioactive steam from unit 3 to reduce pressure were deferred, and workers will continue to monitor reactor pressure, Tokyo Electric Power Co. said in a statement the afternoon of March 20 (local time).

Efforts continue to restore outside electric power to instruments and safety systems at the site's six reactors and spent fuel pools. The Japan Atomic Industrial Forum, the nation's nuclear industry group, said in an update that as of 10 pm March 20 local time, an external AC power cable had been connected to the "distribution switchboards" at units 1 and 2, but core cooling systems requiring AC power are still "not functional" at those units and unit 3.

Tepco said in its most recent statement that as of 2 pm local time March 20 it was still working to restore external AC power to units 3 and 4.

Fuel is still "partially or fully exposed" in units 1, 2 and 3, JAIF said. This creates risk of fuel damage, generation of explosive hydrogen gas and possible core melting.

Reactor pressure levels are "stable" at units 1 and 3, but are "unknown" for unit 2, JAIF said.

Injection of seawater to cool reactor cores continues at units 1, 2 and 3, Tepco said.

Cooling capability was restored March 20 to spent fuel pools at unit 5 and 6, where temperatures had been rising, JAIF said. Emergency workers continued efforts to spray water into the pools at units 3 and 4 and had some effect, it said without providing details. Seawater "injection" continues at the unit 2 pool and is being considered for the unit 1 pool, it said.

**\*\*\* Fukushima units remain in 'precarious' situation: ASN**

The situation at Japan's Fukushima I nuclear power plant "remains serious and precarious," Olivier Gupta, deputy director general of France's nuclear safety authority ASN, told journalists in Paris the morning of March 20 (local time).

Gupta said that the most serious short-term danger was at the plant's unit 3 reactor, where operator Tepco had earlier in the day planned to vent the reactor vessel to relieve mounting pressure without knowing for sure whether the pressure suppression pool at the bottom of the containment was intact. Tepco later deferred those plans, saying pressure had stabilized.

"If the pool is too damaged, the [radioactive] releases will not be filtered" before attaining the atmosphere, Gupta said. The pool is designed in normal operation to trap radionuclides via a bubbling mechanism before the containment gases are vented.

Tepco said that the proposed venting would release radioactive materials totaling  $6.5 \times 10^{18}$  Bq (6.5 Exabecquerels), "which surpasses the standard for a serious accident."

On March 18, France's Institute of Radiological Protection and Nuclear Safety had estimated that radioactive releases from the Fukushima plant so far were about an order of magnitude lower than that. Most of the releases have been from voluntary venting of the reactors at units 1, 2 and 3 to prevent pressure from building up inside. Up to now, all those releases have been filtered.

Gupta said that although Tepco was doing what it could to restore power and cooling to the stricken reactors and spent fuel pools at Fukushima, "the situation from a technical viewpoint has not changed significantly for several days."

Gupta added that the situation cannot be considered stabilized until Tepco has restored more permanent power supply and more lasting means of cooling the units than those being used now.

---

**\*\*\* Food contamination around Fukushima requires countermeasures: ASN**

Concentrations of iodine-131 in milk from cows within 20 kilometers (about 12 miles) of Japan's stricken Fukushima I nuclear power station have reached levels 10 times or more the maximum admissible levels, and "no one should consume this milk," Jean-Luc Godet, director for ionizing radiation of France's Nuclear Safety Authority, ASN, said March 20.

Godet said ASN had received information on a limited number of samples that were taken of foodstuffs around the plant through the IAEA. The milk samples vary between 1,000 and 1,500 becquerels per kilogram, he said, compared to a Japanese limit for consumption of 100 Bq/kg, which he said was consistent with international standards.

I-131 measured in spinach as far as 160 kilometers from the plant site are also high, Godet said at a press briefing in Paris.

"The government must take measures to prohibit sale or consumption" of these foodstuffs, he said.

He said measurements of I-131 in tap water were not on a level that posed a health risk.

I-131 has a half-life of seven days, meaning that "after a month it will no longer be measurable" in the environment. Iodine is accompanied in the Fukushima radioactive plume by cesium-137 and strontium-90, which have much longer half-lives and so present a longer-term problem. People near the plant were protected from external exposure by evacuation and sheltering, and now they must be prohibited from consuming contaminated food, he said.

---

\*\*\* Focus must remain on cooling Fukushima's damaged reactors: Jaczko

NRC Chairman Gregory Jaczko said in an interview on C-SPAN the morning of March 20 that the most urgent priority remains restoring reliable cooling to Fukushima's reactors and spent fuel pools.

Jaczko declined to assess the plant's current safety status, but said "it's still a very difficult situation."

Jaczko also declined to comment on a March 19 report in the New York Times about Tokyo Electric Power Co.'s early response to the plant's problems, saying "we will have an opportunity when the crisis is resolved to go back and see how decisions were made."

The newspaper reported that executives may have "wasted precious time in the early hours of the nuclear crisis, either because of complacency or because they did not want to resort to emergency measures that could destroy the valuable plant."

The story cited Kuni Yogo, formerly an atomic energy policy planner in Japan's Science and Technology Agency, as saying he believed Tepco executives "did not recognize the risks soon enough. They failed to cool the reactors on the day of the earthquake, March 11, and even after a hydrogen explosion the following day, they waited more than four hours to start dousing the reactors with seawater. They did not even try to put water into the spent fuel pools for several days."

The US NRC is conducting short-term and long-term safety reviews to determine what issues the Fukushima accident raises for the US fleet of 104 nuclear power reactors, roughly a fourth of which are similar in design and vintage to the reactors at Fukushima. The NRC staff will brief the commission March 21 on the accident.

Much more detailed information on the events in Japan will be available to inform the long-term NRC safety review, which will take "several months," Jaczko said.

---

\*\*\* US nuclear power plants safe: Energy secretary Chu

US Energy Secretary Steven Chu on March 20 defended the safety of US nuclear power plants and said the US is working with Japanese officials to address the crisis at Tokyo Electric Power Co.'s Fukushima I nuclear power plant.

Chu said on Fox News he has confidence in Japan's public statements about the accident. "There's no evidence I've ever heard that the Japanese were holding back," Chu said. "We are getting information from them, we have confidence in that information."

Chu also repeated assurances that US residents are not in danger from the Japanese reactors, and said

US nuclear plants are safe, including reactors in New York and California.

Although some US lawmakers have questioned whether the Diablo Canyon nuclear plant near San Louis Obispo, California, could withstand a major earthquake, Chu said on CNN's State of the Union that the plant was built to survive any likely tremor. "The probability is so low, we're looking for a potential earthquake that could occur once every seven to ten thousands years," Chu said.

Chu said the NRC will review the safety of US nuclear plants, including the Indian Point plant about 40 miles (about 64 km) from New York City. "And again, we're going to have to look at whether this reactor should remain," Chu said on Fox News Sunday. "But, again, I don't want to jump to some judgment about what we should do going forward."

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\*\*\*  
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Contact Us:

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| Tel: +65-6530-6430 |

**From:** [Mitlyng, Viktoria](#)  
**To:** [Burnell, Scott](#); [Harrington, Holly](#); [Sheehan, Neil](#)  
**Cc:** [McIntyre, David](#)  
**Subject:** Re: QUAKE\_TP\_3\_20.docx  
**Date:** Sunday, March 20, 2011 6:35:12 PM

---

Thanks, Scott. Yelling now: Stop checking email! Put your feet up. You'll be dancing soon enough...  
(Sent from my Blackberry)

---

**From:** Burnell, Scott  
**To:** Mitlyng, Viktoria; Harrington, Holly; Sheehan, Neil  
**Cc:** McIntyre, David  
**Sent:** Sun Mar 20 15:04:12 2011  
**Subject:** RE: QUAKE\_TP\_3\_20.docx

No yelling at me for checking e-mail on my "day off," Holly, I felt a disturbance in the Force and I was right, wasn't I?? :-)

I've already told at least one reporter that two primary BWR Mark I issues were resolved decades ago:

Suppression pool torus -- there were concerns about the torii (plural of torus?) being able to withstand the forces of a full-blown steam release from the reactor vessel. All the BWR Mark I torii were reinforced to resolve the concern.

Hydrogen venting -- post-TMI, all plants had to include systems for dealing with hydrogen buildup, to avoid exactly what apparently has happened in Japan. All BWR Mark I (and probably other BWR containments but I'm not sure) had to install "hardened vents" to shunt releases in such a way as to preclude hydrogen buildup and potential detonation.

I talked this over with Neil in the Ops Ctr at some point last week and he agrees with my recollection.

IIRC, the folks in NRR Division of Safety Systems should have more details, so I'll check with them first thing tomorrow on formalising the above language.

---

**From:** Mitlyng, Viktoria  
**Sent:** Sunday, March 20, 2011 2:37 PM  
**To:** Harrington, Holly  
**Cc:** Burnell, Scott; McIntyre, David  
**Subject:** RE: QUAKE\_TP\_3\_20.docx

Thanks! It would be very useful, especially as we are going into a Braidwood meeting Thursday. I am sure questions about Dresden and the safety of this type of containment will come as the plant are less than 30 miles apart.

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 2:24 PM  
**To:** Mitlyng, Viktoria  
**Cc:** Burnell, Scott; McIntyre, David  
**Subject:** RE: QUAKE\_TP\_3\_20.docx

To my knowledge we are not, but maybe we can if things are quieter Monday afternoon. Scott – what do you think?

---

**From:** Mitlyng, Viktoria  
**Sent:** Sunday, March 20, 2011 2:18 PM

R R R R -199

**To:** Harrington, Holly  
**Subject:** RE: QUAKE\_TP\_3\_20.docx

Thanks, Holly. I know you all are REALLY busy but are we working on GE Mark 1 Containment talking points - as in how the NRC has addressed issues that have come up with this design historically speaking. The statements out there make it sound like the NRC has done nothing with issues raised for the past 30 years.

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 1:40 PM  
**To:** Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Subject:** FW: QUAKE\_TP\_3\_20.docx

For your use . . . Some updates and re-arranging . . .

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 1:34 PM  
**To:** Harrington, Holly  
**Subject:** QUAKE\_TP\_3\_20.docx

Brian agrees with me that dividing this into topics helps make it more coherent.

## **PART 1: THE SITUATION IN JAPAN**

- As of Sunday, March 20, 2011, the NRC continues to monitor the nuclear crisis in Japan stemming from the March 11 earthquake and tsunami. NRC's top priorities are the continued assessment of radiological conditions, dose predictions, and protective action recommendations. This effort focuses primarily on conditions in Japan around the vicinity of the Fukushima Daiichi nuclear power plant. The NRC is also working with DOE to model the flow of radiation across the Pacific Ocean toward the United States.
- A team of 10 NRC experts continues to assist Japanese efforts in Tokyo as part of a USAID-sponsored assistance effort. [If asked: One team member fell ill and returned to the US.]
- The Commission will be briefed by the NRC staff on the situation in Japan at a public meeting on Monday, March 21, 2011. See the media advisory for details. This briefing will be webcast from the NRC website at [www.nrc.gov](http://www.nrc.gov).
- Based on calculations performed by NRC experts, we continue to believe that it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate. Our recommendation is based on NRC guidelines for public safety that would be used in the United States under similar circumstances.
- The 10-mile EPZ reflects the area where projected doses from design basis accidents at nuclear power plants would not exceed the EPA's protective action guidelines, and we are confident that it would be adequate even for severe accidents. However, the 10-mile zone was always considered a base for emergency response that could be expanded if the situation warranted. The situation in Japan, with four reactors experiencing exceptional difficulties simultaneously, creates the need to expand the EPZ beyond the normal 10-mile radius.

We have said from the beginning of this crisis that the NRC would analyze this situation for any lessons that can be derived to improve our oversight of U.S. nuclear power plants. Emergency planning will be part of that review.

- The NRC is closely monitoring information about the spent fuel pools as well as radiation levels at the Japanese nuclear power plants. Given the totality of the situation, the NRC's recommendation for U.S. residents within 50 miles of the Fukushima reactors to evacuate remains unchanged. That recommendation was based on actual radiation levels in the nuclear complex.
- The Japanese government has formally asked for U.S. assistance in responding to nuclear power plant cooling issues triggered by an earthquake and tsunami on March 11. ~~The NRC has eleven staff on the ground in Japan as part of the USAID team.~~
- The NRC is coordinating its actions with other federal agencies as part of the U.S. government response. The NRC's headquarters Operations Center was activated at the beginning of the event and has been monitoring the situation on a 24-hour basis ever since.

## **PART 2: MONITORING RADIATION IN THE UNITED STATES**

- **REVISED:** The NRC is working closely with our federal partners to monitor radiation releases from the Japanese nuclear power plants. Given the results of the monitoring and distance between Japan and Hawaii, Alaska, U.S. Pacific Territories and the U.S. West Coast, the NRC expects the U.S. to avoid any harmful levels of radioactivity. Reports of radiation being detected in the United States are all far below levels that would present a health risk. Additional questions regarding monitoring of the radioactive release should be referred to DOE at 202 586 4940.
- The Department of Energy has been designated the lead agency for communicating information to the States regarding monitoring of radiation heading toward or over the United States. The DOE's Lawrence Livermore National Laboratory (National Atmospheric Release Assessment Center) is monitoring weather patterns over the Pacific Ocean. The Environmental Protection Agency maintains air monitoring stations throughout the country and has reinforced its monitoring effort. DOE will provide aerial monitoring. Questions about this effort should be directed to DOE at 202 586 4940.
- The Environmental Protection Agency has increased its radiation monitoring in the western U.S. Data from the EPA's RadNet is available on the EPA's website.
- [Only if specifically asked] The NRC is aware that Diablo Canyon nuclear power plant in California detected a very low level of radiation. The site believes that the source of the radiation is likely the Fukushima Daiichi nuclear power plant in Japan. The amounts detected are barely detectable on the instruments and pose no danger to public health and safety. The NRC continues to believe, based on all available information, that no harmful levels of radiation will reach U.S. territory. This information has been shared with the U.S. Department of Energy and the U.S.

Environmental Protection Agency. Additional questions regarding monitoring of the radioactive release should be referred to DOE at 202 586 4940.

- In accordance with established protocols, U.S. Customs and Border Protection (CBP) employs several types of radiation detection equipment in its operations at both air and sea ports, and uses this equipment, along with specific operational protocols, to resolve any security or safety risks that are identified with inbound travelers and cargo. Out of an abundance of caution, CBP has issued field guidance reiterating its operational protocols and directing field personnel to specifically monitor maritime and air traffic from Japan. CBP will continue to evaluate the potential risks posed by radiation contamination on inbound travelers and cargo and will adjust its detection and response protocols, in coordination with its interagency partners, as developments warrant.

### **PART 3: THE SAFETY OF U.S. NUCLEAR POWER PLANTS**

- The NRC is always looking to learn information that can be applied to U.S. reactors and we will analyze the information that comes from this incident. President Obama has directed the agency to conduct a comprehensive review of the safety of U.S. nuclear plants; the agency will do so.
- The NRC issued an Information Notice on March 18 to all of its operating nuclear power plants describing the effects of the March 11 earthquake and tsunami on Japanese nuclear power plants. The purpose of the Information Notice is to inform the plants of the most recent information available to the NRC. The NRC expects U.S. nuclear power plants will review the entire notice to determine how it applies to their facilities and consider actions, as appropriate.
- U.S. 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 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 limitations on historical data. In other words, U.S. nuclear power plants are designed to be safe based on historical data to predict the area's maximum credible earthquake.
- In response to MSNBC.com report ranking US NPPs according to vulnerability to earthquakes: The NRC does not rank nuclear power plants according to their vulnerability to earthquakes. This "ranking" was developed by an MSNBC reporter using partial information and an even more partial understanding of how we evaluate plants for seismic risk. Each plant is evaluated individually according to the geology

of its site, not by a "one-size-fits-all" model - therefore such rankings or comparisons are highly misleading.

## David Decker

---

**From:** Haynes, Laura (Carper) [Laura\_Haynes@carper.senate.gov]  
**Sent:** Sunday, March 13, 2011 6:31 PM  
**To:** Riley (OCA), Timothy  
**Cc:** Powell, Amy; Decker, David; Droggitis, Spiros; Dacus, Eugene; Weil, Jenny; Schmidt, Rebecca; Shane, Raeann  
**Subject:** Re: Updated Press Release: NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S.

What is being done to ensure this message is out there - have you all reached out to folks like CNN, Post and Times? Just not hearing this message.

-----  
Laura Haynes  
Office of U.S. Senator Tom Carper  
Sent using BlackBerry

---

**From:** Riley (OCA), Timothy [mailto:Timothy.RileyOCA@nrc.gov]  
**Sent:** Sunday, March 13, 2011 04:25 PM  
**To:** Riley (OCA), Timothy <Timothy.RileyOCA@nrc.gov>  
**Cc:** Powell, Amy <Amy.Powell@nrc.gov>; Decker, David <David.Decker@nrc.gov>; Droggitis, Spiros <Spiros.Droggitis@nrc.gov>; Dacus, Eugene <Eugene.Dacus@nrc.gov>; Weil, Jenny <Jenny.Weil@nrc.gov>; Schmidt, Rebecca <Rebecca.Schmidt@nrc.gov>; Shane, Raeann <Raeann.Shane@nrc.gov>  
**Subject:** Updated Press Release: NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S.

The last press release from the NRC has been updated to include guidance for US citizens in Japan:  
"United States citizens in Japan are encouraged to follow the protective measures recommended by the Japanese government."

RRR-200

**From:** [McIntyre, David](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: QUAKE\_TP\_3\_20.docx  
**Date:** Sunday, March 20, 2011 1:34:53 PM

---

Will do!

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 1:35 PM  
**To:** McIntyre, David  
**Subject:** RE: QUAKE\_TP\_3\_20.docx

This is great. Will you put in WebEOC and I'll send around to folks

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 1:34 PM  
**To:** Harrington, Holly  
**Subject:** QUAKE\_TP\_3\_20.docx

Brian agrees with me that dividing this into topics helps make it more coherent.

RRR-201

# OPA

## TALKING POINTS

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### JAPAN NUCLEAR SITUATION

As of 3/20/2011 12:53 PM

Updates in Red

#### CONTENTS

1. The Situation in Japan
2. Monitoring Radiation in the United States
3. The Safety of U.S. Nuclear Power Plants

## **PART 1: THE SITUATION IN JAPAN**

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of its site, not by a "one-size-fits-all" model - therefore such rankings or comparisons are highly misleading.

## David Decker

---

**From:** Schmidt, Rebecca  
**Sent:** Saturday, March 12, 2011 6:29 PM  
**To:** Droggitis, Spiros; Powell, Amy; Decker, David  
**Subject:** Fw: Updates on Japan nuclear plant

Add to list. Waiting on her intro to Cantor's staff. When I hear I'll send that name too

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

**From:** Caputo, Annie (EPW) <Annie\_Caputo@epw.senate.gov>  
**To:** 'jay.cranford@mail.house.gov' <jay.cranford@mail.house.gov>; Chatterjee, Neil (McConnell) <Neil\_Chatterjee@mccconnell.senate.gov>  
**Cc:** Schmidt, Rebecca  
**Sent:** Sat Mar 12 18:26:18 2011  
**Subject:** Updates on Japan nuclear plant

Gentlemen,

Becky Schmidt, NRC Director of Congressional Affairs, asked for contacts for your offices so she can provide updates from the NRC on the Fukushima nuclear plants in Japan. I've cc'd her on this list so that she has your emails. Given the nature of the situation, I didn't think you'd mind.

Annie

*RARR-202*

**From:** [Harrington, Holly](#)  
**To:** [McIntyre, David](#)  
**Subject:** RE: talking points  
**Date:** Sunday, March 20, 2011 1:09:00 PM

---

But she doesn't have a sense of humor!!

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 1:04 PM  
**To:** Harrington, Holly  
**Subject:** RE: talking points

Vonna just asked me what materials we've provided the Chairman to prep for tomorrow's public briefing. I gave her the Onion piece.

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 1:03 PM  
**To:** McIntyre, David  
**Subject:** RE: talking points

gracias

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 12:58 PM  
**To:** Harrington, Holly  
**Subject:** talking points

I've updated the talking points and arranged them according to 3 topics:

The situation in Japan  
Monitoring radiation in the US  
Safety of US NPPs

Brian is looking over them now for coherence; when he's done I'll send to you.

RRR-203

**From:** [Harrington, Holly](#)  
**To:** [McIntyre, David](#)  
**Subject:** RE: 03-21-2011\_EDOBriefingtoCommisisonSVWedit.docx  
**Date:** Sunday, March 20, 2011 12:11:00 PM

---

This might have been an early draft . . . by Michael?

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 12:09 PM  
**To:** Harrington, Holly  
**Subject:** 03-21-2011\_EDOBriefingtoCommisisonSVWedit.docx

Also this, which I hadn't seen. I believe it is somewhat dated, esp since it has CBS still doing the pool video, tho there is no time stamp on it.

RRRR-204

**INFORMATION  
ON COMMISSION MEETING  
MONDAY, MARCH 21, 2011  
COMMISSION BRIEFING ROOM  
OWFN**

The EDO will be briefing the Commission on the events in Japan at a PUBLIC meeting. Calls on this meeting are being directed to 301-415-8200. You may respond to inquiries with the following:

- Monday, March 21, 2011
  - 9am –11am with the possibility of it ending earlier, but it will go no later than 11 am. ~~and promptly at 11am~~
  - Commission ~~hearing~~ Conference room (to be consistent with public notice)
    - One White Flint North
    - 11555 Rockville Pike
    - Rockville, MD
  - Overflow will be directed to the TWFN auditorium
- This is NOT a question/answer session, it is an invitation to be present when the EDO briefs the Commission
- There is a Closed Commission Meeting directly following Open Meeting, so Chairman and Commissioners will not be available for questions or interviews.
- Public is welcome
  - Must have photo ID to gain entrance
- Print Media is welcome
  - Must have photo ID to gain entrance
  - ~~NO Cameras~~
- Cameras
  - There is going to be a video camera pool
    - CBS has video
    - No pool for stills (will get more info on this at 11:30 mtg) cameras are allowed
- Parking
  - Encourage people to take Metro
  - There is NO on-site parking
  - Parking is available at the Metro garage on Marinelli Rd.
- This meeting will be webcast direct them to:
  - [www.nrc.gov](http://www.nrc.gov)
  - Public Involvement and Meetings Tab (far right at top of page)
  - Click on Public Meeting Schedule
  - Locate meeting by

- Date/time
- Purpose
  - Click on [webcast]

**From:** [Harrington, Holly](#)  
**To:** [Main, Jeffrey](#)  
**Subject:** RE: Japan page: KI info  
**Date:** Sunday, March 20, 2011 12:19:00 PM

---

Thank you

---

**From:** Main, Jeffrey  
**Sent:** Sunday, March 20, 2011 12:14 PM  
**To:** Harrington, Holly; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** RE: Japan page: KI info

Fixed.

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 12:04 PM  
**To:** Main, Jeffrey; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** RE: Japan page: KI info

The following links on this page <http://www.nrc.gov/japan/japan-info.html> don't work:

FEMA, White House, NEI and IAEA

Can you fix immediately? Thank you!

---

**From:** Main, Jeffrey  
**Sent:** Sunday, March 20, 2011 11:43 AM  
**To:** Harrington, Holly; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** RE: Japan page: KI info

Yes, I understand, thanks.

I guess my thought was that we do have KI info at the site. You can find it if you simply enter "KI" in a site search. By not linking to it from the Japan page when we have it and 1000s of people are looking for it, people may infer we are trying to hide it.

--Jeffrey

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 11:37 AM  
**To:** Main, Jeffrey; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** FW: Japan page: KI info

Jeffrey – Thank you so much for getting the redirect to the KI page! As for adding a link to the Japan page, I'll let Beth weigh in. She created and organized the page and there might have been a specific reason why KI was not added (since we say that no one in the U.S. needs it right now, perhaps?)

RRR-205

Holly

---

**From:** Janbergs, Holly **On Behalf Of** OPA Resource  
**Sent:** Sunday, March 20, 2011 11:35 AM  
**To:** Harrington, Holly  
**Subject:** FW: Japan page: KI info

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**From:** Main, Jeffrey  
**Sent:** Sunday, March 20, 2011 11:02 AM  
**To:** OPA Resource  
**Cc:** Hardy, Sally; Hoffman, Joan; Main, Jeffrey  
**Subject:** Japan page: KI info

Good morning!

I was looking through the usage stats for the public site and noticed **over 12,000** failed attempts to get to the old KI FAQ page in the past 7 days. During that period, this old page is by far the single most requested page that can not be found at our site.

<http://www.nrc.gov/about-nrc/emerg-preparedness/protect-public/ki-faq.html>  
that was moved to .  
<http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/potassium-iodide/ki-faq.html>

I've created a redirect to push the requests to the new location. It will take a few hours to become effective, but should get users the info they are looking for soon.

However, I also noticed that the new Japan info page does not actually mention KI. I know there is a PDF on how to protect yourself (linked from the Japan page), but I think people may be looking specifically for KI information and may bypass this PDF since KI is not mentioned in the title. In addition, the PDF file does not mention the other info we have on KI at the site. Given the recent news reports on the KI scare out west, we might want to specifically mention it on the Japan page with links to the KI information.

Just a thought.

--Jeffrey

**From:** [Hardy, Sally](#)  
**To:** [Harrington, Holly](#)  
**Subject:** RE: Japan page: KI info  
**Date:** Sunday, March 20, 2011 12:08:54 PM

---

Yes we will take care of it

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 12:04 PM  
**To:** Main, Jeffrey; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** RE: Japan page: KI info

The following links on this page <http://www.nrc.gov/japan/japan-info.html> don't work:

FEMA, White House, NEI and IAEA

Can you fix immediately? Thank you!

---

**From:** Main, Jeffrey  
**Sent:** Sunday, March 20, 2011 11:43 AM  
**To:** Harrington, Holly; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** RE: Japan page: KI info

Yes, I understand, thanks.

I guess my thought was that we do have KI info at the site. You can find it if you simply enter "KI" in a site search. By not linking to it from the Japan page when we have it and 1000s of people are looking for it, people may infer we are trying to hide it.

--Jeffrey

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 11:37 AM  
**To:** Main, Jeffrey; Hardy, Sally; Hoffman, Joan  
**Cc:** Hayden, Elizabeth  
**Subject:** FW: Japan page: KI info

Jeffrey – Thank you so much for getting the redirect to the KI page! As for adding a link to the Japan page, I'll let Beth weigh in. She created and organized the page and there might have been a specific reason why KI was not added (since we say that no one in the U.S. needs it right now, perhaps?)

Holly

---

**From:** Janbergs, Holly **On Behalf Of** OPA Resource  
**Sent:** Sunday, March 20, 2011 11:35 AM  
**To:** Harrington, Holly  
**Subject:** FW: Japan page: KI info

RRRR-206

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**From:** Main, Jeffrey  
**Sent:** Sunday, March 20, 2011 11:02 AM  
**To:** OPA Resource  
**Cc:** Hardy, Sally; Hoffman, Joan; Main, Jeffrey  
**Subject:** Japan page: KI info

Good morning!

I was looking through the usage stats for the public site and noticed **over 12,000** failed attempts to get to the old KI FAQ page in the past 7 days. During that period, this old page is by far the single most requested page that can not be found at our site.

<http://www.nrc.gov/about-nrc/emerg-preparedness/protect-public/ki-faq.html>

that was moved to .

<http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/potassium-iodide/ki-faq.html>

I've created a redirect to push the requests to the new location. It will take a few hours to become effective, but should get users the info they are looking for soon.

However, I also noticed that the new Japan info page does not actually mention KI. I know there is a PDF on how to protect yourself (linked from the Japan page), but I think people may be looking specifically for KI information and may bypass this PDF since KI is not mentioned in the title. In addition, the PDF file does not mention the other info we have on KI at the site. Given the recent news reports on the KI scare out west, we might want to specifically mention it on the Japan page with links to the KI information.

Just a thought.

--Jeffrey

**From:** [Harrington, Holly](#)  
**To:** [McIntyre, David](#)  
**Subject:** RE: 3\_19\_TP\_closehold.docx  
**Date:** Sunday, March 20, 2011 12:08:00 PM

---

Ah, got it

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 12:06 PM  
**To:** Harrington, Holly  
**Subject:** 3\_19\_TP\_closehold.docx

Found this in the CriComm folder – it explains that phone call I monitored just before you came over this morning.

RRRR-207

# OPA

## TALKING POINTS

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### JAPAN NUCLEAR SITUATION – “CONSORTIUM”

As of 3/19/2011 9:00 a.m. EDT

**NOT FOR DISTRIBUTION – USE AS RESPONSE TO QUERIES ONLY**

- The Nuclear Regulatory Commission is in discussions with the Department of Energy, the U.S. Navy, the Institute for Nuclear Power Operations (a U.S. nuclear industry body), individual nuclear utilities and other sources of technical expertise, regarding potential additional U.S. assistance to Japan.
- Any decision on providing additional assistance will be closely coordinated with the U.S. and Japanese governments, as well as TEPCO.

**From:** [Harrington, Holly](#)  
**To:** [PMT09 Hoc](#)  
**Subject:** RE: Suggested Q&A  
**Date:** Sunday, March 20, 2011 9:19:00 AM

---

Yes, useful. thanks

---

**From:** PMT09 Hoc  
**Sent:** Saturday, March 19, 2011 6:51 AM  
**To:** Brenner, Eliot; Harrington, Holly  
**Cc:** Gibson, Kathy; PMT04 Hoc; PMT09 Hoc  
**Subject:** Suggested Q&A

The ET suggested that some information be passed on to NRC/OPA. I am not sure how to frame the information, although a Q&A and incorporation in a press release were suggested. In any case, the information follows:

The EPA website has current radiation monitor readings from locations on the west coast. Members of the public may obtain radiation level readings if they are concerned regarding radiological impact from the Japanese reactor accident in the US.

<http://www.epa.gov/japan2011/rert/radnet-data.html>

Hope this can be used.

Randy Sullivan, pmt

The PMT response team should be able to answer questions.

RRRR-208

**David Decker**

---

**From:** Dedrick, Kathy (EPW) [Kathy\_Dedrick@epw.senate.gov]  
**Sent:** Sunday, March 13, 2011 4:07 PM  
**To:** Decker, David

NEI is coming to the hill to brief Senate staff at 3pm tomorrow on the Japan situation. would it be possible to shift our budget briefing to another time so we can do both?

RRR-209

**From:** [Dricks, Victor](#)  
**To:** [Harrington, Holly](#); [Brenner, Eliot](#); [Burnell, Scott](#); [Couret, Ivonne](#); [Hayden, Elizabeth](#); [McIntyre, David](#); [Chandrathil, Prema](#); [Hannah, Roger](#); [Ledford, Joey](#); [Mittlyng, Viktoria](#); [Screnci, Diane](#); [Sheehan, Neil](#); [Uselding, Lara](#)  
**Subject:** RE: QUAKE\_TP\_3\_20.docx  
**Date:** Sunday, March 20, 2011 3:24:24 PM

---

Very helpful. Thanks!

---

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 12:40 PM  
**To:** Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mittlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Subject:** FW: QUAKE\_TP\_3\_20.docx

For your use ... Some updates and re-arranging ...

---

**From:** McIntyre, David  
**Sent:** Sunday, March 20, 2011 1:34 PM  
**To:** Harrington, Holly  
**Subject:** QUAKE\_TP\_3\_20.docx

Brian agrees with me that dividing this into topics helps make it more coherent.

RRRR-210

**From:** [LIA07 Hoc](#)  
**Cc:** [LIA07 Hoc](#)  
**Subject:** USNRC Earthquake-Tsunami Update 03-20.11--0600 EDT  
**Date:** Sunday, March 20, 2011 6:20:20 AM  
**Attachments:** [NRC Status Update 3-20.11--0600.pdf](#)

---

Attached, please find the 0600 EDT March 20, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

Please note that this information is "~~Official Use Only~~" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Jim

Jim Anderson  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[james.anderson@nrc.gov](mailto:james.anderson@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

RRRR-211

**From:** [LIA07 Hoc](#)  
**Subject:** USNRC Earthquake-Tsunami Update 03.20.11--1800 EDT  
**Date:** Sunday, March 20, 2011 5:57:05 PM  
**Attachments:** [USNRC Earthquake-Tsunami Update.032011.1800EDT.pdf](#)

---

Attached, please find the **1800 EDT March 20, 2011** status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

Please note that this information is "~~Official Use Only~~" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

- Caroline

Caroline Nguyen  
Office of Nuclear Reactor Regulation  
US Nuclear Regulatory Commission  
[Caroline.Nguyen@nrc.gov](mailto:Caroline.Nguyen@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

RRR-212

**From:** [Bulletin News](#)  
**To:** [NRC-editors@bulletinnews.com](mailto:NRC-editors@bulletinnews.com)  
**Subject:** NRC News Summary for Monday, March 21, 2011  
**Date:** Monday, March 21, 2011 7:05:27 AM  
**Attachments:** [NRCSummary110321.doc](#)  
[NRCSummary110321.pdf](#)  
[NRCClips110321.doc](#)  
[NRCClips110321.pdf](#)

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This morning's Nuclear Regulatory Commission News Summary and Clips are attached.

**Website:** You can also read today's briefing, including searchable archive of past editions, at <http://www.BulletinNews.com/nrc>.

**Full-text Links:** Clicking the hypertext links in our write-ups will take you to the newspapers' original full-text articles.

**Interactive Table of Contents:** Clicking a page number on the table of contents page will take you directly to that story.

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RRRR-213

**From:** [Jones, Cynthia](#)  
**To:** [McIntyre, David](#); [Harrington, Holly](#); [LIA06 Hoc](#)  
**Subject:** Q&As from EDF for your information and use.....This was widely disseminate  
**Date:** Monday, March 21, 2011 1:54:55 PM  
**Attachments:** [Questions and Answers on Japanese Earthquake - 18 March 2011.pdf](#)

---

FYI-

This was widely disseminated amongst all EDF employees. For your info or use,,,,

Cyndi

RRR-214

## **SAFETY OF UK PLANTS**

### **Could a similar event happen in the UK?**

- The UK does not have the same seismic activity as Japan. Nor do we operate the same type of plants.
- Even if they were hit by the worst earthquake, tsunami or flood that could be expected in 10,000 years, our plants would be safe.
- These measures are detailed in approved safety cases which are tested and agreed with the independent safety authority.
- Further, beyond that design principle, in even more extreme and unlikely scenarios there are back up systems and steps we could take to provide protection.
- Nonetheless, if there are relevant lessons to be learnt from Japan, they will be implemented.

### **What level of seismic activity is credible in the UK?**

- An earthquake the size of the one in Japan is not credible in the UK.
- The largest earthquake in the UK occurred on the Dogger Bank in 1931, 100km into the North Sea with a magnitude of 6.1. The energy from this UK earthquake was 130,000 times smaller than the earthquake which hit Japan on 11 March (8.9 on the Richter scale).
- It caused minor damage along the east coast of England to chimneys and roofs. There is no chance of a tsunami from a British earthquake because they are small and low in energy.
- Earthquakes of the size of the Japanese earthquake can only occur in zones where tectonic plates collide. The UK is located in the middle of a tectonic plate. The nearest place to the UK where plates meet is thousands of kilometres away.
- The largest earthquake ever recorded in Northern Europe was in 1356 (6.5 on the Richter scale).

### **What magnitude of earthquake are UK plants protected against.**

- They are protected against the effects of a 1 in 10,000 years earthquake.
- That means: Even if they were hit by the worst earthquake that could be expected in 10,000 years, our plants would be safe.
- These measures are detailed in approved safety cases which are tested and agreed with the independent safety authority.
- Further, beyond that design principle, in even more extreme and unlikely scenarios there are back up systems and steps we could take to provide protection.
- Because of the different geological conditions at each site that means different magnitudes for each.
- But it means that they are protected against all credible seismic activity in the UK.

### **What level of storm surge/tsunami are UK plants protected against:**

- All the plants are protected against credible storm surge and tsunami events for the UK.
- Even if they were hit by the worst storm or tsunami or flood that could be expected in 10,000 years, our plants would be safe.
- These measures are detailed in approved safety cases which are tested and agreed with the independent safety authority.
- Further, beyond that design principle, in even more extreme and unlikely scenarios there are back up systems and steps we could take to provide protection.

- The levels are different for each plant because of the range of geographical conditions at each.
- For Sizewell as an example, the worst case scenario for extreme high tide and tsunami combining is 2.3m. The plant is designed to withstand a wave of 7.6m – more than 5m higher.
- We have applied similar standards to all the sites, reflecting the local conditions.

#### **Is Nuclear power safe?**

- Nuclear power stations are some of the most robust buildings ever built.
- The training and safety culture in the nuclear industry is particularly high.
- It is part of the safety-case licensing programme, overseen by the Nuclear Installations Inspectorate, that all UK nuclear plants are robust to withstand the most extreme conditions including earthquake.
- Emergency arrangements are regularly tested at all UK nuclear plant and local populations are briefed on safety issues and emergency arrangements. Various countermeasures can be taken, including evacuation, sheltering and administering iodine tablets.

#### **How does regulation support this?**

- Independent Nuclear and environmental regulation in the UK is extremely stringent.
- Regulation is provided by both the NII and the Environment Agency (SEPA in Scotland).
- The regulator (NII) has said that it is confident that the UK's fleet of nuclear power reactors and operators are prepared appropriately for any seismic activity that could be anticipated in the UK.
- Safety-cases must demonstrate UK nuclear reactors could withstand the most extreme seismic conditions – otherwise they would not be licensed.
- Preparedness for seismic activity is examined and inspected by UK regulators during 10-yearly periodic safety reviews and continuously through the year as required.
- The UK regulator ensures each and every nuclear plant has access to emergency power supplies should connection to the grid fail - and that back-up plans are robust.
- The regulator oversees regular testing of on-site and offsite emergency procedures at each UK nuclear plant. The police, local authorities, emergency services and other agencies are involved and regularly practice such scenarios with the plant operators.
- We learn from every exercise and ensure we enhance safety standards.

#### **The latest reactor designs are even safer than previous ones. Does that mean our existing plants are unsafe?**

- No it doesn't. All our plants have very robust safety cases agreed with and tested by the safety authority. One analogy might be - when you buy a new car, it's state of the art.
- However, as time goes on there are constant developments and improvements. This doesn't make the car you have unsafe; it just means that there are now better options on the market.
- In our case every 10 years in a Periodic Safety Review (PSR), we take stock of what better options there are and back fit improvements as necessary.
- To use the car analogy, this doesn't mean you make your old car exactly like a brand new one but, to give some historical examples, you would fit seat belts, ABS brakes, better headlights.
- That's what a PSR is and we have to satisfy the NII with our review.
- Practically this means that, for example on Dungeness B, (our oldest AGR and therefore with the biggest gap in time with newer models) we spent around £100m back fitting systems - additional feed systems, electrical overlay systems, additional fault protection – as part of our first PSR to enhance our safety standards.

- Ongoing investment and improvements take place between PSRs.

**What serious nuclear events have there been in the UK?**

- Level 5 on INES scale, Windscale Reactor Fire, October 1957 - a reactor built for plutonium production caught fire releasing substantial amounts of radioactive contamination into the surrounding area. (Windscale was an early experimental reactor owned by United Kingdom Atomic Energy Authority which was completely different to those we have)
- Level 4 on INES scale, Windscale reprocessing plant September 1973 - an exothermic reaction occurred involving accumulated zirconium fines and solvent in a vessel in the Head End Treatment Plant, Building B204. This caused contamination of the plant operating area although nothing to the local environment.
- The highest level incident at one of our plants has been a Level 2.

**How can we guarantee our cooling systems in other situations?**

- We assess the nuclear facilities for preparation not just on seismic activities but against a range of possibilities, including direct aeroplane strike, terrorist attack etc. The regulator assesses this.
- The regulator continues to express confidence in our fleet.
- All our plants have access to emergency power supplies should connection to the grid fail.
- EDF Energy and the regulator ensure these back up plans are robust.
- The regulator oversees regular testing of on-site and offsite emergency procedures at each UK nuclear plant. The police, local authorities, emergency services and other agencies are involved and regularly practice such scenarios with the plant operators. These exercises must be successfully demonstrated to the regulator or they can to shut the plant down.

**What if mains power was lost to stations because of the national grid?**

- All our stations are designed with the capability to withstand a loss of grid.
- All are equipped with back up generators capable of supplying power to essential equipment.
- These are protected from credible natural events.

**Is Nuclear still needed?**

- We always operate our plants with safety at the forefront of our mind.
- The safety case for nuclear plants in the UK is strong and regulation is stringent.
- Britain's need for a diverse energy mix is unchanged.
- What is important is to learn the lessons from the events in Japan and to incorporate any lessons.
- The imperative need for affordable, low carbon power supply remains as strong as ever.

**How much radiation are people exposed to in everyday life? (in millisieverts, which is the standard unit for measuring radiation)**

- 0,002 Annual dose received when in the vicinity of a nuclear power plant
- 0,006 Dose received during a dental panoramic radiograph
- 0,03 Dose received during a flight from London to New York
- 0,3 Dose received during a lung/chest radiograph/x-ray
- 0,3 Annual dose received due to radioactivity in food and water
- 2,5 Average annual dose background dose
- 8 Average annual background dose in areas of Cornwall due to the granite rock

**At what level does radiation become harmful?**

- 100 Dose at which the first biological effects appear
- 500 Dose causing long term effects
- 1 000 Dose causing immediate clinical effects
- 4 000 Dose that is lethal if not treated in 50% of cases
- 7 000 Dose that is lethal in a few hours

**Are EDF Energy and the public authorities ready to deal with a nuclear accident?**

- EDF Energy has well-established emergency plans in place for each of its nuclear power stations, to be activated in the unlikely event of emergency.
- These arrangements form part of the emergency response plan and involve a number of different agencies who work together to provide a robust response.
- In conjunction with our regulator, EDF Energy runs a programme of emergency exercises across all of its eight nuclear power stations in the UK. These test how all of the agencies involved in emergency planning would respond in the unlikely event of an emergency being declared at our nuclear sites.

**Are we supporting the international effort to assist the Japanese nuclear operator?**

- EDF Group is monitoring the situation closely. We are preparing to send experts as required through the auspices of the World Association of Nuclear Operators. We are also providing nuclear expertise to the Foreign and Commonwealth Office and other official bodies.
- We are sending 95 tonnes of boric acid to Japan, to put into the water to prevent uncontrolled criticality in the storage ponds.
- We are also making available robots, detection systems and radioprotection equipment to Tepco (the Fukushima plant owners and operators).
- In total 130 tonnes of equipment made available by EDF and Areva will be flown out to Japan this weekend, with the required accompanying personnel.
- Tepco has also asked EDF Group to help them get the networks back up and running as soon as possible. ERDF (the networks division of EDF) is fully involved with these efforts.
- EDF Energy has also provided iodine tablets for the British and Commonwealth Foreign Office (FCO) and stands ready to mobilise additional resources if and when required.

**What actions are we taking in our existing stations following the events in Japan?**

- We are monitoring the situation in Japan carefully.
- As the full facts emerge from Japan we will ensure any appropriate lessons are implemented.
- In our existing stations, as in the whole of EDF Energy, we are ensuring that safety continues to be our top priority.
- We are not complacent. We called a special meeting of the board to initiate an immediate action plan. This included:
  - Immediate check by station directors of back up systems, over and above normal audit process.
  - Refresher training for employees on use of back up systems – in addition to usual training programme
  - Initiate review of the Emergency plan with particular focus on the impact on infrastructure disturbance
  - Establish formal arrangements to ensure that learning from the event are fed into our safety processes.

- In addition, we have sent the list of actions we are talking to WANO to ensure our steps are shared with nuclear operators across the world.

#### **What is WANO?**

- WANO is the World Association of Nuclear Operators. WANO was set up following the Chernobyl accident in order to ensure the highest possible standards of nuclear safety across the World. Every company and country with an operating commercial nuclear power plant is a member. The WANO mission is to maximise the safety and reliability of nuclear power plants worldwide by working together to assess, benchmark and improve performance through mutual support, exchange of information and emulation of best practices. Many EDF Energy people participate in WANO reviews around the World and, in turn, EDF Energy's power stations host nuclear experts from member companies around the world in a bid to share learning and ensure the highest standards of safety.

#### **What action will the UK safety regulator take after this?**

- The Secretary of State, Chris Huhne, has asked the NII, the UK Safety Authority, for a full report on the implications of the Japanese incident. We welcome this.
- We also welcome the fact that this will be done in close cooperation with other regulators internationally.

#### **IMPACT ON OUR CUSTOMERS**

##### **Q: Will prices rise as a result of the events in Japan?**

- It is too early to tell.
- There has been an increase in wholesale prices since last Thursday (10th Mar).
- While there is speculation that market prices could increase further it should be remembered that they could also fall.
- We continue to offer some very good deals, including some very competitive fixed prices for those concerned about rising prices.

#### **NUCLEAR NEW BUILD**

##### **What does this mean for our Nuclear New Build plans?**

- We welcome the political consensus in the UK on the appropriate response to the events in Japan. It steers the right course.
- There should be no knee jerk reactions and no rush to judgement.
- On new nuclear: On the one hand we need to continue working on our plans.
- On the other, of course, any learning from Japan will be incorporated into our plans in the proper way. We expect this to be achievable.

##### **How does the EPR's safety system differ to the Japanese reactors?**

- EDF reactors in France are pressurised water reactors which do not involve the same technology as that of the Fukushima plant in which boiling water reactors are used, a technology with which EDF is less familiar.
- The EPR is an evolutionary design of pressurised water reactor, taking the best of existing technology and making improvements to enhance safety, efficiency and performance.

**How confident are we in the safety systems of the EPR?**

- The EPR incorporates and builds on over 30 years of experience of operating pressurised water reactors around the world.
- The EPR design combines familiar and proven technology based on the most recent French N4 and German KONVOI reactors.
- A number of technological advances put the EPR reactor at the forefront of reactor safety. These include additional systems to prevent core meltdown and innovation to mitigate its potential consequences as well as technological advances to ensure high resistance to external hazards, in particular airplane crashes and earthquakes.