AREVA

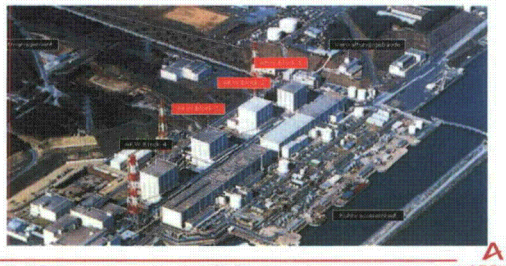
The Fukushima Daiichi Incident

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

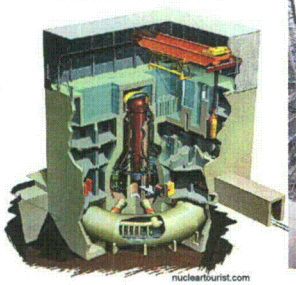
The Fukushima Daiichi Incident
1. Plant Design

- 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



nuclear tourist.com

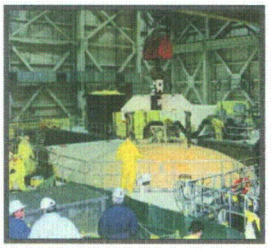
en.wikipedia.org/wiki/Browns_Ferry_Nuclear_Power_Plant

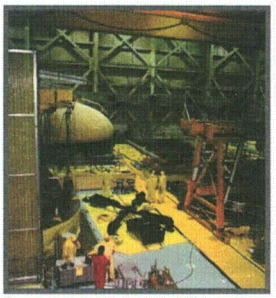
The Fukushima Daiichi Incident
1. Plant Design

- Service Floor

The Fukushima Daiichi Incident
1. Plant Design

- Lifting the Containment closure head

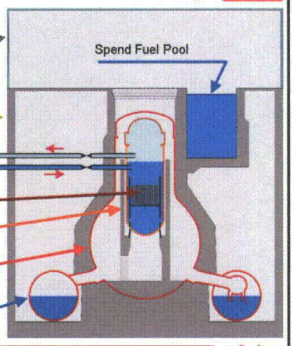




E/40

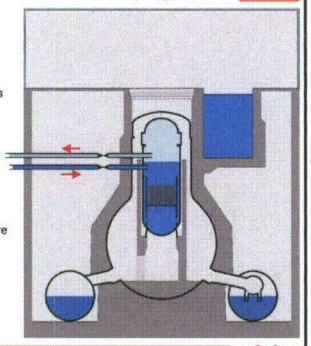
The Fukushima Daiichi Incident
1. Plant Design

- Reactor Service Floor (Steel Construction)
- Concrete Reactor Building (secondary Containment)
- Reactor Core
- Reactor Pressure Vessel
- Containment (Dry well)
- Containment (Wet Well) / Condensation Chamber



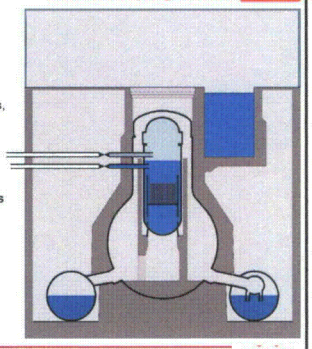
The Fukushima Daiichi Incident
2. Accident progression

- 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%



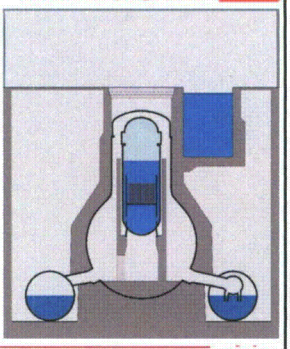
The Fukushima Daiichi Incident
2. Accident progression

- 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



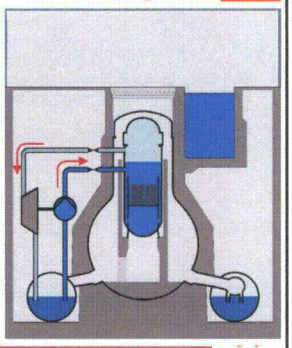
The Fukushima Daiichi Incident
2. Accident progression

- 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



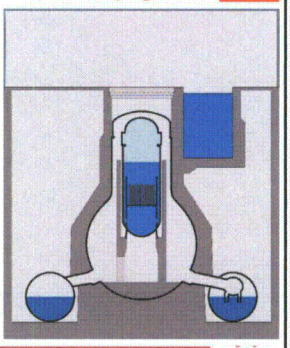
The Fukushima Daiichi Incident
2. Accident progression

- 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



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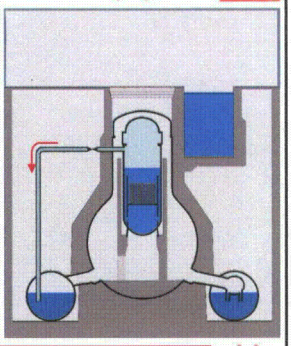

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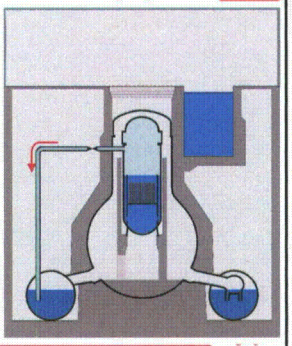

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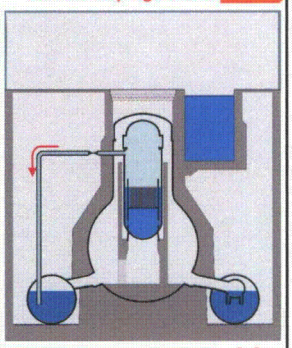

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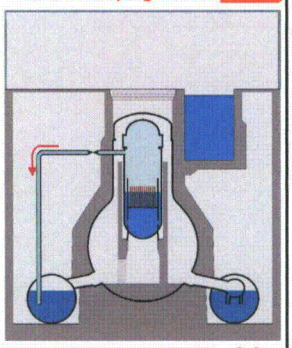
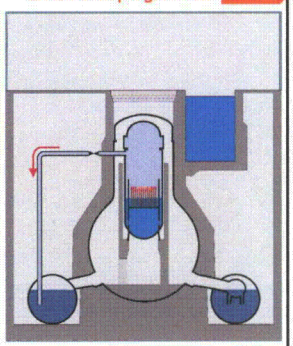


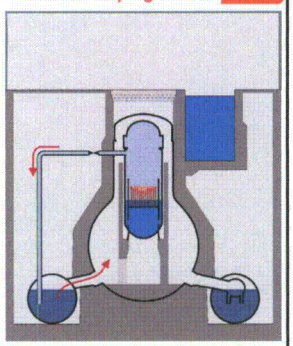
The Fukushima Daiichi Incident
2. Accident progression

- 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 ~900°C
  - Balooning / Breaking of the cladding
  - Release of fission products form the fuel rod gaps



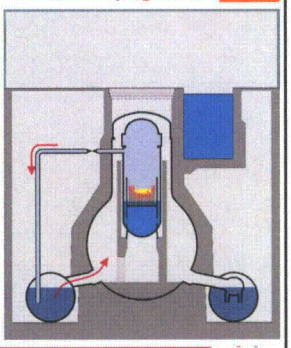
The Fukushima Daiichi Incident
2. Accident progression

- ~3/4 of the core exposed
  - Cladding exceeds ~1200°C
  - Zirconium in the cladding starts to burn under Steam atmosphere
  - $Zr + 2H_20 \rightarrow ZrO_2 + 2H_2$
  - 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



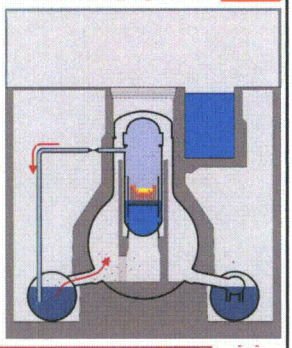
The Fukushima Daiichi Incident
2. Accident progression

- 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)



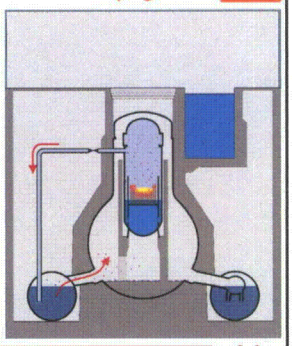
The Fukushima Daiichi Incident
2. Accident progression

- 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



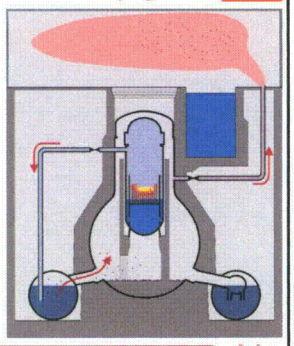
The Fukushima Daiichi Incident
2. Accident progression

- 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



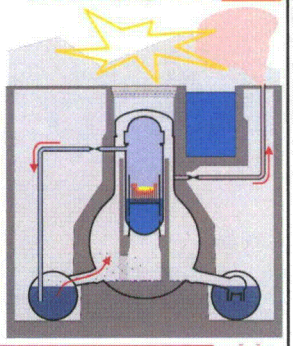
The Fukushima Daiichi Incident
2. Accident progression

- Positive und 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



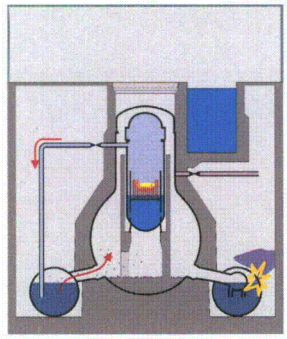
The Fukushima Daiichi Incident
2. Accident progression

- 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



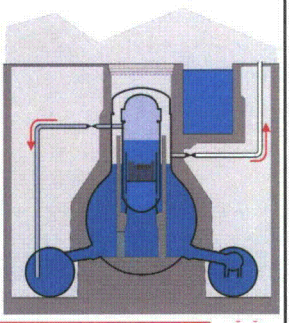
The Fukushima Daiichi Incident
2. Accident progression

- 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 floode in all Units with mobile pumps
  - At least containment in Unit 1 flooded
- Further cooling of the Reactors by releasing steam to the atmospher
- Only small further releases of fission products can be expected



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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

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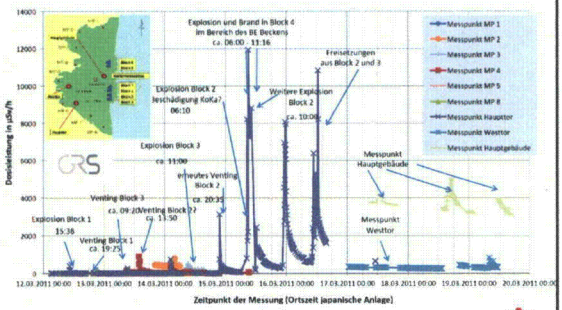
The Fukushima Daiichi Incident
3. Radiological releases



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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

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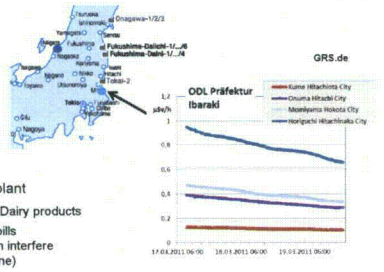
The Fukushima Daiichi Incident
3. Radiological releases



- ~50km around the plant
  - Control of Crop / Dairy products
  - Usage of Iodine pills (Caution, pills can interfere with heart medicine)

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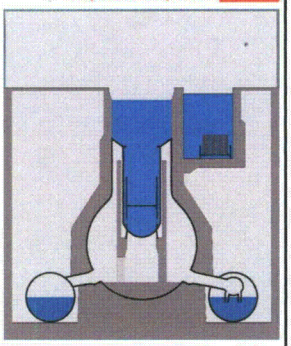
The Fukushima Daiichi Incident
4. Spend fuel pools

- Spend 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



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The Fukushima Daiichi Incident
4. Spend fuel pools

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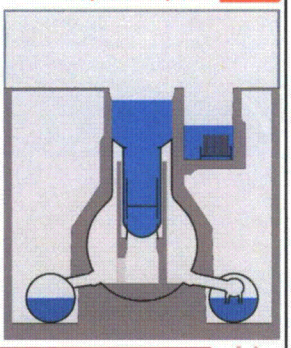

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The Fukushima Daiichi Incident
4. Spend fuel pools

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  - **Leakage of the pools due to Earthquake?**
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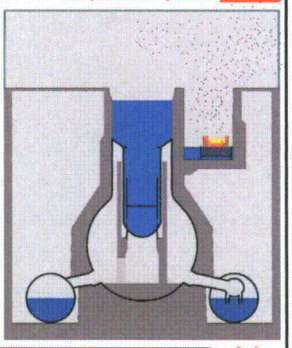
  - Nearly no retention of fission products
  - Large release
- **It is currently unclear if release from fuel pool already happened**



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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

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Raione, Richard

From: Jones, Henry
Sent: Tuesday, April 05, 2011 9:04 AM
To: Raione, Richard
Subject: RE: Request for briefing to the Japan Near-Term Task force on tsunami and other flooding issues

Chris has significant experience modeling thermal plumes and biota. He is also familiar with the Princeton Ocean Model (POM) that forms the basis of the NOAA and Navy ocean forecast systems.

From: Raione, Richard
Sent: Tuesday, April 05, 2011 6:50 AM
To: Jones, Henry
Subject: RE: Request for briefing to the Japan Near-Term Task force on tsunami and other flooding issues

Henry – quick question – regarding the rad within the ocean.... Shouldn't a RHEB hydrologist be doing this work with you rather than Chris ? We don't get involved in geology with rgs, they should not be getting involved with our business.... Your thoughts ?

From: Jones, Henry
Sent: Monday, April 04, 2011 8:45 PM
To: Cubbage, Amy
Cc: Raione, Richard
Subject: RE: Request for briefing to the Japan Near-Term Task force on tsunami and other flooding issues

Amy,

I will copy my presentation to CD and deliver it to you tomorrow afternoon.

Henry

From: Cubbage, Amy
Sent: Friday, April 01, 2011 2:16 PM
To: Kammerer, Annie; See, Kenneth; Jones, Henry
Cc: Raione, Richard; Hogan, Rosemary; Case, Michael; Chokshi, Nilesh; Richards, Stuart; Flanders, Scott
Subject: Request for briefing to the Japan Near-Term Task force on tsunami and other flooding issues

Henry/Ken/Annie:

The Japan Near-Term Evaluation Task force is requesting an informal information briefing on the design basis for tsunami and other external flooding events. I spoke to Scott Flanders this afternoon and he recommended you as the experts in this area. Your support on this request is

greatly appreciated. There is no need to develop any new presentation materials. You can speak from existing presentation materials and talking points. I will be sending you an outlook appointment for next week. If you have any presentation materials you plan to use please email them to me in advance and we can get copies made and display them on the computer/projector already setup in the room.

Please contact me if you have any questions,

Thanks,

Amy Cubbage
Japan Near-Term Evaluation Task Force

From: Sheron, Brian
To: Wiggins, Jim
Cc: Johnson, Michael
Subject: RE: Document1
Date: Wednesday, April 06, 2011 10:21:58 AM

And they want to do this because....? Does someone want this, or did they just run out of stuff to work on?

Some of the stuff they want to do seems to be putting us in charge of the accident, not the Japanese.

From: Wiggins, Jim
Sent: Wednesday, April 06, 2011 9:46 AM
To: Sheron, Brian
Subject: FW: Document1

Here's the outline of the Global Assessment....

From: Johnson, Michael
Sent: Wednesday, April 06, 2011 5:11 AM
To: Wiggins, Jim; Boger, Bruce; Zimmerman, Roy; Uhle, Jennifer
Subject: FW: Document1

Elmo/Chuck plan to provide this assessment (previously referred to as a global assessment) to US and Japanese Govt once cleared by NRC. Outline is a work in progress. This explains tasking requests regarding development of an timeline of events, sandia MELCOR runs, etc.

Mike

From: Collins, Elmo
Sent: Wednesday, April 06, 2011 2:49 AM
To: Virgilio, Martin; Weber, Michael
Cc: Johnson, Michael; Casto, Chuck
Subject: Fw: Document1

Marty and Mike

Attached is a document portraying the material we propose to use to support the "Global Assessment". This compilation of our work to date should give a picture of what we believe about the site at that moment in time and a view looking ahead.

Most of the documents are already done.

We would appreciate comments/input/ wise guidance. Thank you.

We'll discuss

Elmo

From: Hay, Michael
To: Collins, Elmo
Sent: Wed Apr 06 02:40:21 2011
Subject: Document1

From: ____
To: Johnson, Michael
Cc: ____
Subject: RE: Regulatory Information Conference
Date: Wednesday, April 06, 2011 8:47:11 PM

Dear Mike,

It was also of great pleasure for me to meet you at the RIC 2011.
I think that the meeting with you and your staff was very fruitful in moving forward the cooperation between USNRC and KINS in the area of experience exchange for new build. As you suggested, the visit of Sam Lee and Hossein Hamzehee to KINS in late July or August will be a good preparation for the their successful mission. In my side, it will be also a good starting point for KINS staff to work with NRC. As you may know, the IRRS Mission to Korea is scheduled to take place in the second and third weeks of July. So, if they come to Koran after this event, they will be welcome.
When it comes to an additional KINS assignee to the NRC Region Office, we are not ready to send an appropriate person. I will get you informed when it is ready.
I also appreciate your support for the new activities of DSWG APR-1400 under MDEP.
The nuclear disaster in Japan put us into a deep trouble. Many Korean people are very much nervous about radioactive materials coming over from Japan through winds or rains whatever it might be extreme small. We are all the time vigilant to provide any answer to the public and mass media. I think this accident might be giving you an impact to some extent. I hope the accident will get into under control as early as possible.
Let's keep in touch.

Best regards,
Y.W. Jerom-Park

From: Johnson, Michael [mailto:Michael.Johnson@nrc.gov]
Sent: Friday, April 01, 2011 10:01 PM
To:
Cc: Holahan, Gary; Rosales-Cooper, Cindy
Subject: Regulatory Information Conference

Dr. Youn-Won Park,

It was a pleasure to meet you and the KINS delegation at the NRC 2011 RIC. Gary Holahan and I found the discussion to be very positive and mutually beneficial. I am pleased to move forward with the NRC/NRO- KINS exchange of staff and have asked Samuel Lee and Hossein Hamzehee to plan a short visit in July/August to KINS to further solidify their assignments on your staff. Hossein is one of our Severe Accident Analysis specialists and will be prepared to assist you with your inquiries in this area. I've also asked my staff and the Office of International Programs to assist you in placing the KINS assignee in the NRC's Region II Office.

I also look forward to your support on our efforts to raise international awareness of Counterfeit, Fraudulent, and Suspect Items (CFSI). I believe this issue goes beyond non-conforming parts and will affect all countries building new reactors or extending the life of existing ones. As Gary mentioned, the NRC would be supportive of and interested in issue-specific working groups for the AP 1400 under MDEP.

I look forward to future interactions with you and KINS.

Mike

From: Burnell, Scott
To: Matthews, David; Johnson, Michael; Akstulewicz, Frank; Cruz, Jeffrey; McKenna, Eileen
Subject: FW: Advisory: Legal challenge vs nuclear design approval
Date: Wednesday, April 06, 2011 11:46:02 AM

FYI

From: Jim Warren [mailto:jim@ncwarn.org]
Sent: Tuesday, April 05, 2011 11:38 AM
To: Jim Warren
Subject: Advisory: Legal challenge vs nuclear design approval

AP1000 OVERSIGHT GROUP

ADVISORY for WEDNESDAY, APRIL 6th

Contact: Jim Warren, NC WARN
919-416-5077 or
Jim@ncwarn.org

Legal Challenge to Contest Westinghouse Nuclear Reactor Design Approval

PRESS TELECONFERENCE WEDNESDAY, 11am ET

On Wednesday an alliance of public interest groups and attorneys will announce legal action to contest the U.S. Nuclear Regulatory Commission's preliminary Design Certification of a new reactor model that Westinghouse hopes will be built across the U.S. South.

Members of the alliance will describe new information about long-running design problems with the AP1000, particularly how they relate to various system failures at the ongoing nuclear emergency at Fukushima, Japan.

The AP1000 is the design chosen for attempted licensing and construction by Duke Energy, Southern Company, Florida Power & Light, Progress Energy, TVA and SCANA. But although the

Members of the media are invited to join the teleconference at 11am ET, Wednesday, April 6th by calling 1-800-860-2442 and ask for the AP1000 call.

RSVP is helpful but not required: Jim@ncwarn.org

###

E/44

See more on the AP1000 Oversight Group at www.ncwarn.org

Trying to build nuclear plants is making climate change worse – by squandering many years and billions of dollars instead of ramping up energy efficiency and safe, clean generation.

Jim Warren, Executive Director
NC WARN
Waste Awareness & Reduction Network
Durham, NC 919-416-5077 www.ncwarn.org

From:	Evans, Michele
To:	Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc:	Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader
Subject:	ACTION: Identify 4th wave of NRC staff to Japan
Date:	Wednesday, April 06, 2011 2:58:02 PM

ODs and RAs:

There is discussion of potentially sending an additional 6 or so staff to Japan.

These individuals would likely depart the USA on April 12 or 13, with a return date of about April 27. (For awareness, this time period spans religious holidays)

Specifically Chuck is looking for 4 individuals with severe accident experience. Lots of EOP/SAMG experience. He is looking for two protective measures staff. Specifically an ingestion pathway person and a "plume" person.

As always, looking for these skill sets combined with the best interpersonal skills.

OD/RA ACTION:

1. **Please confirm that you received this email.**
2. **Please identify potential candidates to me by COB Friday April 8.**

If you have any questions or need any clarification, please call me. Thank you.

Michele Evans
Acting Deputy OD, NSIR
301-415-3236

Raione, Richard

From: LaVera, Ronald
Sent: Wednesday, April 06, 2011 7:03 AM
To: Raione, Richard
Cc: Roach, Edward
Subject: Analysis support for Pacific-Alaskan water

Rich

I spoke with Ed Roach this morning about possible assistance should you all be asked to evaluate potential contamination of waters near Alaska resulting from Pacific current transport of material from the Japan. The best person in CHPB for providing this type of assistance is Jean-Claude Dehmel. Unfortunately, he is doing an audit of AREVA over the next couple of days, so I was not able to talk to him this morning.

Ed did suggest that you contact Dr. Stephen Schaffer who works for Stephanie Bush-Goddard in Research. Prior to transferring to Research, Dr. Schaffer worked in the effluents portion of CHPB, so I believe that he would be familiar with the type of support that you seek.

You may want to contact Dr. Schaffer earlier, rather than later to see if any baseline sampling needs to be done, prior to the projected plume arrival. Since some of the sample target values are pretty low and may not be routinely performed, collection of baseline samples may aid in the evaluation of data scatter.

Please let me know if there is anything else we can do to assist your efforts.

Ron LaVera

Vera, Marieliz

From: Tegeler, Bret
Sent: Wednesday, April 06, 2011 9:13 AM
To: Vera, Marieliz
Subject: FW: OP CTR Support

This, and probably a few more to follow.
Bret

From: Tegeler, Bret
Sent: Thursday, March 17, 2011 6:34 AM
To: Ma, John; Patel, Pravin; Shams, Mohamed
Subject: OP CTR Support

Mohamed,
Pravin just came to relieve me from the OP CTR. No structural issues came up during my shift. There was some discussion about using sand in the SFP, but that seemed to fade away after more discussion. In fact, I was mostly lending a hand to a few others who were working on the development of a water-cannon system for cooling the RX building. Anyway, I did not hear about any impending structural issues that may come our way. Based on this, I am not sure SEB needs to provide round the clock support unless we just want to pitch in. Just my thoughts. I don't mind helping out, but it lowers the urgency.

I will call later today see if I should come in tonight. Else, I will come in Friday morning.
Bret

Bret Tegeler, Sr. Structural Engineer
U. S. Nuclear Regulatory Commission
Mail Stop T-10H9
Washington, DC 20555-0001
(301) 415-6793

E147

From: Johnson, Michael
To: Rosales-Cooper, Cindy
Cc: Flanders, Scott
Subject: FW: ACTION: Identify 4th wave of NRC staff to Japan
Date: Thursday, April 07, 2011 2:21:00 AM

Cindy, would you update our list of potential folks who can support?

From: Evans, Michele
Sent: Wednesday, April 06, 2011 2:58 PM
To: Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc: Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader
Subject: ACTION: Identify 4th wave of NRC staff to Japan

ODs and RAs:

There is discussion of potentially sending an additional 6 or so staff to Japan.

These individuals would likely depart the USA on April 12 or 13, with a return date of about April 27. (For awareness, this time period spans religious holidays)

Specifically Chuck is looking for 4 individuals with severe accident experience. Lots of EOP/SAMG experience. He is looking for two protective measures staff. Specifically an ingestion pathway person and a "plume" person.

As always, looking for these skill sets combined with the best interpersonal skills.

OD/RA ACTION:

1. **Please confirm that you received this email.**
2. **Please identify potential candidates to me by COB Friday April 8.**

If you have any questions or need any clarification, please call me. Thank you.

Michele Evans
Acting Deputy OD, NSIR
301-415-3236

E/48

From: Johnson, Michael
To: Rosales-Cooper, Cindy; Evans, Michele
Cc: Flanders, Scott; Salus, Amy; Williams, Donna
Subject: RE: Background 3rd team to Japan - NRO Updated list
Date: Thursday, April 07, 2011 2:38:00 AM

Thanks. Ignore my earlier email.

From: Rosales-Cooper, Cindy
Sent: Monday, March 28, 2011 2:20 PM
To: Evans, Michele
Cc: Flanders, Scott; Johnson, Michael; Salus, Amy; Williams, Donna
Subject: FW: Background 3rd team to Japan - NRO Updated list

Michele,
Please see additional nominee for NRO below. We have also updated the background expertise of Mr. Drozd.

Thanks
Cindy

NRO's nominees for teams 3 and 4 to Japan. Summaries of their expertise are attached.

Team 3 (Departing ~April 2)

Rebecca Karas (currently on shift in Ops Center**)**
Hossein Hamzehee

Team 3 (Departing ~ April 16)

Andrzej Drozd

Available for departure on or after April 22

Edward Fuller

Please have the organizers contact me if Hossein is selected. He is currently out of the office but reachable.

Cindy E. Rosales-Cooper
Technical Assistant for International Activities
Office of New Reactors
(301) 415-1168

From: Holahan, Gary
Sent: Thursday, March 24, 2011 4:23 PM

To: Rosales-Cooper, Cindy
Subject: FW: Background 3rd team to Japan .docx

Cindy,

Please read the attachment to the e-mail below.

NRO should propose severe accident experts who could support the 3rd group to Japan (for 2 weeks). List due Monday.

Gary

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

Raione, Richard

From: Chokshi, Nilesh
Sent: Thursday, April 07, 2011 12:56 PM
To: Raione, Richard; See, Kenneth
Cc: Flanders, Scott; Hatchett, Gregory
Subject: FW: Flooding protection support

Importance: High

Ken – excellent job of presentation. The task force, as a follow-on to our presentation, is requesting discussion on flood protection. See Charlie's request below. I spoke to Charlie and told him that we define flood hazard and associated conditions and pass this information on to DE and DSRA. In addition to the SGEB and Electrical in DE, which are the other branches in the DE and DSRA we are interfacing with? Please let me know so that I can inform Charlie. Thanks,

Nilesh

From: Ader, Charles
Sent: Thursday, April 07, 2011 12:24 PM
To: Chokshi, Nilesh; Bergman, Thomas; Lee, Samuel; Mrowca, Lynn
Cc: Lombard, Mark
Subject: FW: Flooding protection support
Importance: High

Tom/Nilesh - Suggestions on who would be best for discussing flood protection. I don't know if this review area falls more within DE or DSER. Lynn and Sam – any insights on individuals from either the internal flooding part of the PRA or from BOP perspective.

From: Cubbage, Amy
Sent: Thursday, April 07, 2011 12:03 PM
To: Ader, Charles; Westreich, Barry
Subject: Flooding protection support

The task force has had briefing on Tsunami, PMP, Dam failure etc. from NRO and RES folks this week. We are requesting an informal information briefing for the task group next week (Wed) ideally from NRO and NRR flooding protection experts from the perspective of protection of plant equipment from postulated external flooding sources. Please identify personnel that can support. Once I get some names, I will send out an appt.

Thanks,
Amy

From:	Burton, William
To:	Johnson, Michael; Flanders, Scott; Matthews, David; Akstulewicz, Frank; Madden, Patrick; Bergman, Thomas; Shuaibi, Mohammed
Subject:	FW: Where is the Runkle petition on AP1000?
Date:	Thursday, April 07, 2011 11:08:23 AM
Importance:	High

Apparently a petition was submitted (see below).

From: Gilles, Nanette
Sent: Thursday, April 07, 2011 11:03 AM
To: Matthews, David; Akstulewicz, Frank; Madden, Patrick; Burton, William
Cc: Tartal, George; Sanders, Serita
Subject: FW: Where is the Runkle petition on AP1000?
Importance: High

Apparently, a petition for rulemaking was submitted yesterday by a coalition of 12 anti-nuclear organizations to stop the AP1000 DC rulemaking. ADM is trying to find the PRM.

From: Ngbea, Evangeline
Sent: Thursday, April 07, 2011 10:44 AM
To: Bladey, Cindy; Terry, Leslie; Sanders, Serita; Gilles, Nanette; Mizuno, Geary
Cc: Julian, Emile; McKelvin, Sheila; Ngbea, Evangeline
Subject: RE: Where is the Runkle petition on AP1000?

Cindy,

I haven't seen any PRM on that subject....I'll check around in the SECY office. I have a Proposed Rules PR 52 "AP 1000 Design Certification Amendment".

Van

From: Bladey, Cindy
Sent: Thursday, April 07, 2011 10:15 AM
To: Ngbea, Evangeline
Subject: Fw: Where is the Runkle petition on AP1000?

Hi Van, do you have this PRM? Cindy

From: Mizuno, Geary
To: Bladey, Cindy; Terry, Leslie; Sanders, Serita; Gilles, Nanette
Sent: Thu Apr 07 09:36:00 2011
Subject: Where is the Runkle petition on AP1000?

Larry Chandler called me late yesterday about this petition, and today in Nuclear News Flashes, the petition is mentioned:

*** Environmental group asks NRC to suspend AP100 design certification

A coalition of environmental groups petitioned the NRC April 6 to suspend a rulemaking to approve the
design certification for the Westinghouse AP1000 design, asserting the agency first needs to consider

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lessons learned from the Fukushima I accident.

The AP1000 design is referenced in 13 combined construction permit-operating license applications submitted to NRC.

John Runkle, a Chapel Hill, North Carolina-based environmental attorney, filed the petition with NRC on behalf of the AP100 Oversight Group, comprised of 12 anti-nuclear organizations, including Blue Ridge Environmental Defense League, Friends of the Earth and Nuclear Information and Resource Service. In an April 6 conference call with reporters, Runkle said the NRC "is trying to rush this new reactor certification through rather than find out what happened in Japan," where four of six units at Fukushima I were damaged following the March 11 earthquake and tsunami.

NRC spokesman Scott Burnell said in an e-mail April 6 there is "no estimate on when we'll have a reply or how the request will be handled."

Scott Shaw, a Westinghouse spokesman, said in an April 6 interview that the issues the AP1000 Oversight Group is raising "about the shield building are old ones that have been thoroughly addressed by NRC, the NRC Advisory Committee on Reactor Safeguards and in independent reviews."

Why hasn't the petition been distributed? Have we not received it yet??

Geary

Geary S. Mizuno
Senior Regulations Attorney
Division of Reactors and Materials Rulemaking
OGC/NRC
301-415-1639

From: Johnson, Michael
To: Evans, Michele
Subject: RE: ACTION: Identify 4th wave of NRC staff to Japan
Date: Thursday, April 07, 2011 2:19:00 AM

Received.

From: Evans, Michele
Sent: Wednesday, April 06, 2011 2:58 PM
To: Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc: Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader
Subject: ACTION: Identify 4th wave of NRC staff to Japan

ODs and RAs:

There is discussion of potentially sending an additional 6 or so staff to Japan.

These individuals would likely depart the USA on April 12 or 13, with a return date of about April 27. (For awareness, this time period spans religious holidays)

Specifically Chuck is looking for 4 individuals with severe accident experience. Lots of EOP/SAMG experience. He is looking for two protective measures staff. Specifically an ingestion pathway person and a "plume" person.

As always, looking for these skill sets combined with the best interpersonal skills.

OD/RA ACTION:

1. **Please confirm that you received this email.**
2. **Please identify potential candidates to me by COB Friday April 8.**

If you have any questions or need any clarification, please call me. Thank you.

Michele Evans
Acting Deputy OD, NSIR
301-415-3236

E152

From:	Evans, Michele
To:	Evans, Michele; Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc:	Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader; Howell, Linda; FOIA Response.hoc Resource
Subject:	RE: ACTION: Identify 4th wave of NRC staff to Japan
Date:	Friday, April 08, 2011 2:51:05 PM

ODs/RAs

Thanks for all of the input I have received so far. Since Wednesday, views regarding composition and length of stay of the site team to Japan have evolved.

First, be aware that the staff selected to go to Japan will be expected to be deployed for up to 3 weeks, instead of the previous 2 week commitment. Therefore, staff leaving the country on April 12/13, would return around May 3/4.

Second, approval has been given for Chuck to maintain a team of about 11 people for the immediate future. It has been decided that the protective measures component of the team, does not need to have the specific expertise that was previously noted. Any modeling work/analysis that would need to be done, would be completed here at HQs. Instead, Chuck has indicated that he is looking for **someone with a health physics background that could assist in briefings and can effectively communicate radiation exposure and contamination to a lay audience.**

I will be in contact with Chuck over the next 24 hours to further discuss the composition of his team of 11. If there is a skill set needed that hasn't been identified in this email or the one below, I will send you that information tomorrow.

I still plan to be able to identify at least 4 staff to support Chuck's original request by Sunday, so their travel could start on 4/12 or 4/13.

With regard to the new request above and any additional request that I learn from Chuck in the next 24 hours, please provide all nominees by COB on Monday 4/11. Those individuals would be expected to travel later in the week (target 4/14 or 4/15).

Sorry about this lengthy email. If something is not clear, feel free to call me or email.

Michele

Michele Evans
Acting Deputy OD, NSIR
301-415-3236

From: Evans, Michele
Sent: Wednesday, April 06, 2011 2:58 PM
To: Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc: Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger,

Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader
Subject: ACTION: Identify 4th wave of NRC staff to Japan

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Michele Evans
Acting Deputy OD, NSIR
301-415-3236

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
EVENTS AT THE FUKUSHIMA REACTOR SITE IN JAPAN
April 7, 2011
ROCKVILLE, MARYLAND

- STATUS REPORT -

PURPOSE:

The purpose of this session is to discuss the recent events at the Fukushima Daiichi Nuclear Power Station in Japan.

BACKGROUND:

The following is taken from the Description of Circumstances in Information Notice 2011-05, "Tohoku-Taiheiyou-Oki Earthquake Effects on Japanese Nuclear Power Plants."

> On March 11, 2011, the Tohoku-Taiheiyou-Oki Earthquake occurred near the east coast of Honshu, Japan. This magnitude 9.0 earthquake and the subsequent tsunami caused significant damage to at least four of the six units of the Fukushima Daiichi nuclear power station as the result of a sustained loss of both the offsite and on-site power systems. Efforts to restore power to emergency equipment have been hampered or impeded by damage to the surrounding areas due to the tsunami and earthquake.
>
> Units 1 through 3, which had been operating at the time of the earthquake, scrammed automatically, inserting their neutron absorbing control rods to ensure immediate shutdown of the fission process. Following the loss of electric power to normal and emergency core cooling systems and the subsequent failure of back-up decay heat removal systems, water injection into the cores of all three reactors was compromised, and reactor water levels could not be maintained. Tokyo Electric Power Company (TEPCO), the operator of the plant, resorted to injecting sea water and boric acid into the reactor vessels of these three units, in an effort to cool the fuel and ensure the reactors remained shutdown. However, the fuel in the reactor cores became partially uncovered. Hydrogen gas built up in Units 1 and 3 as a result of exposed, overheated fuel reacting with water. Following gas venting from the primary containment to relieve pressure, hydrogen explosions occurred in both units and damaged the secondary containments. It appears that primary containments for Units 1 and 3 remain functional, but the primary containment for Unit 2 may be damaged. TEPCO cut a hole in the side of the Unit 2 secondary containment to prevent hydrogen buildup following a sustained period when there was no water injection into the core.
>
> In addition, Units 3 and 4 have low spent fuel pool (SFP) water levels. Efforts continue to supply seawater to the SFPs for Units 1 through 4 using various methods. At this time, the integrity of the SFPs for Units 3 and 4 is unknown.
>
> Fukushima Daiichi Units 4 through 6 were shutdown for refueling outages at the time of the earthquake. The fuel assemblies for Unit 4 had been offloaded from the reactor core to the SFP. The SFPs for Units 5 and 6 appear to be intact, but the temperature of the pool

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water appears to be increasing. Emergency power is available to provide cooling water flow through the SFPs for Units 5 and 6.

DISCUSSION

The nuclear industry has taken the following actions have been taken at each reactor site:

1. verification of the capability to mitigate conditions that result from severe adverse events, including the loss of significant operational and safety systems due to natural events, fires, aircraft impact and explosions

2. verification of the capability to mitigate a total loss of electric power to a nuclear power plant

3. verification of the capability to mitigate flooding and the impact of floods on systems inside and outside the plant

4. identification of the potential for loss of equipment functions during seismic events appropriate for the site and the development of mitigating strategies to address potential vulnerabilities

In the near term, the NRC staff plans to develop a Temporary Instruction to guide the staff in performing independent assessments of power plant readiness to address beyond design basis phenomena. For the longer term, the NRC plans to develop lessons learned and recommendations for additional regulatory actions.

In a Chairman's tasking memorandum dated March 23, 2011, the staff was directed "to conduct a methodical and systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system and make recommendations to the Commission for its policy direction." This review was divided into near-term (90-days) and long-term activities. The tasking memorandum also directed the ACRS to review the (long-term review report) "as issued in its final form and provide a letter report to the Commission."

The specific activities to be performed as part of the near term and long term reviews are listed in the attachment.

EXPECTED COMMITTEE ACTION

This session is for information only. No Committee action is necessary.

From: Flanders, Scott
To: Leeds, Eric
Cc: Johnson, Michael
Subject: NRO Response to request for names to replace Elmo and To replace Vince Holahan at PACOM
Date: Friday, April 08, 2011 3:12:46 PM

Eric, NRO offers the following person to replace Elmo Collins on the Japan team.

Mike Mayfield

We have four individuals that are not available to go next week, but could be available if there is a future need to send a Senior Manager to support the Japan team

Tom Bergman
Pat Madden
Charlie Ader
Mohammed Shuabi

NRO offers the following name to replace Vince Holahan at PACOM in Hawaii:

Ed Roach

Please let me know if you have any questions or need any additional information.

Scott

Reeves, Rosemary

From: Nuclear Plant Journal [anu@goinfo.com]
Sent: Monday, April 18, 2011 6:07 PM
To: Reeves, Rosemary
Subject: NPJ E-News April 18, 2011 Fukushima Update

Having trouble viewing this email? Click here

Like

Nuclear Plant Journal
An International Publication
Published in the United States

Nuclear Plant Journal E-News

Japan Update
April 18, 2011

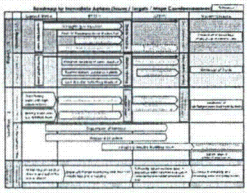
In this issue of NPJ E-News you'll find an update of the Fukushima Nuclear Plants in Japan. Information is current as of April 18, 2011, 16:00 CDT. All items are directly quoted, without any editing.

In this issue

TEPCO Update

From the TEPCO website:

- **Roadmap towards Restoration from the Accident at Fukushima Daiichi Nuclear Power Station**



With regard to the accident at Fukushima Daiichi Nuclear Power Station due to the Tohoku-Chihou-Taiheiyo-Oki Earthquake occurred on Friday, March 11th, 2011, we are currently making our utmost effort to bring the situation under control. This announcement is to notify the roadmap that we have put together towards restoration from the accident. Click for more.

- Plant status update: Click for more

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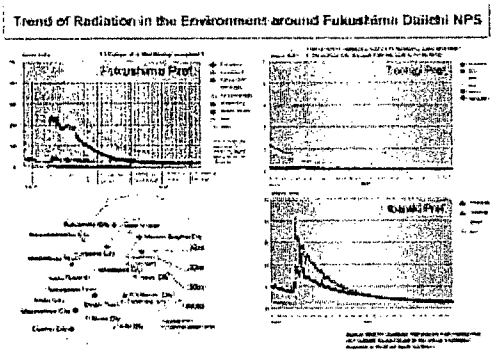
JAIF Status Update



Trends of radiation monitoring, April 17, 2011

Update 100, April 18, 2011
A PDF document provides a simple summary of each of the units at Fukushima nuclear power plants. This is a multi-page document that also provides a chronology of events and a map that details the status of each of the Japanese nuclear units.

Earthquake Update 56.

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- NPJ Website
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- TEPCO
- NISA
- U.S. NRC Actions on Japan

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Contact Information
phone: 630-313-6739
email: NPJ@goinfo.com

From: Johnson, Michael
To: Virgilio, Martin; Evans, Michele; Wiggins, Jim
Subject: Re: MEMO: Approval of Operations Center Reduction in Support of the Japan Event
Date: Friday, April 08, 2011 7:55:38 PM

Thanks Marty.
From my blackberry.

From: Virgilio, Martin
To: Johnson, Michael; Evans, Michele; Wiggins, Jim
Sent: Fri Apr 08 19:50:43 2011
Subject: Re: MEMO: Approval of Operations Center Reduction in Support of the Japan Event

Mike

Michele has the details around 5 teams that will rotate and provide 24 hour coverage and allow time off.

Marty

From: Johnson, Michael
To: Virgilio, Martin
Sent: Fri Apr 08 19:24:49 2011
Subject: Re: MEMO: Approval of Operations Center Reduction in Support of the Japan Event

Hi Marty. I don't understand "one team." Does this anticipate rotating shifts?
From my blackberry.

From: Virgilio, Martin
To: Muessle, Mary; Andersen, James; Cohen, Miriam; Tracy, Glenn; Dyer, Jim; Evans, Michele; Wiggins, Jim; Casto, Chuck
Cc: Leeds, Eric; Weber, Michael; Borchardt, Bill; Johnson, Michael; Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo; Howell, Art; Haney, Catherine; Zimmerman, Roy; Sheron, Brian; Landau, Mindy; McDermott, Brian; Morris, Scott; Ash, Darren
Sent: Fri Apr 08 18:57:56 2011
Subject: MEMO: Approval of Operations Center Reduction in Support of the Japan Event

All

Please see the attached. This memo supports rightsizing the ops center and site team staffing to match today's conditions and our efforts to more precisely estimate the number of excepted staff if we have to run the agency under a government wide shut down (after we have exhausted our funds). In signing this memo the Chairman made clear his expectations that we would have sufficient staff in the building to support the ops center and the ability to call back others, if necessary.

Jim/Michele – I will leave the details around implementation to you. The chairman has given us some relief around when we would need to have the four products available to support a future deputies meeting. He is looking to have final products in hand by mid week, that have been vetted with the other agencies who have been party to these types of recommendations in the

E/56

past.

I know some of managers and staff have been asking what defines success and what is our exit strategy from this intense near term support. I see this as a step in the right direction. I also see the four products were are developing for the Chairman (to define stabile conditions at the site, and criteria for allowing Americans back into the areas where they live and work) as major milestones in that effort.

Finally, I sincerely appreciate all of the contributions, products, and support, and sacrifices you and the staff of NRC have made. You make me proud to be a part of this organization

Marty

From: Pace, Patti
Sent: Friday, April 08, 2011 6:19 PM
To: Virgilio, Martin; Borchardt, Bill
Cc: Weber, Michael; Ash, Darren; Sharkey, Jeffry; Sosa, Belkys; Bubar, Patrice; Nieh, Ho; Batkin, Joshua; Coggins, Angela; Garland, Stephanie; Boyer, Rachel; Cianci, Sandra; Taylor, Renee; Lepre, Janet; Harves, Carolyn; Savoy, Carmel; Blake, Kathleen; Jimenez, Patricia; Crawford, Carrie; Herr, Linda; Bozin, Sunny; Gibbs, Catina; Speiser, Herald
Subject: MEMO: Approval of Operations Center Reduction in Support of the Japan Event

Good Evening,

Please find subject memo from Chairman Jaczko to EDO, attached.

Thanks,

Patti Pace
Assistant to Chairman Gregory B. Jaczko
U.S. Nuclear Regulatory Commission
301-415-1820 (office)
301-415-3504 (fax)

From: Leeds, Eric
To: Flanders, Scott
Cc: Johnson, Michael
Subject: RE: NRO Response to request for names to replace Elmo and To replace Vince Holahan at PACOM
Date: Friday, April 08, 2011 3:50:23 PM

Thanks, NRO!

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

From: Flanders, Scott
Sent: Friday, April 08, 2011 3:11 PM
To: Leeds, Eric
Cc: Johnson, Michael
Subject: NRO Response to request for names to replace Elmo and To replace Vince Holahan at PACOM

Eric, NRO offers the following person to replace Elmo Collins on the Japan team.

Mike Mayfield

We have four individuals that are not available to go next week, but could be available if there is a future need to send a Senior Manager to support the Japan team

Tom Bergman
Pat Madden
Charlie Ader
Mohammed Shuabi

NRO offers the following name to replace Vince Holahan at PACOM in Hawaii:

Ed Roach

Please let me know if you have any questions or need any additional information.

Scott

E/S7

From: Sheron, Brian
To: Johnson, Michael; Uhle, Jennifer
Subject: RE: NRC"s Daily Assessment of Conditions at Fukushima Daiichi
Date: Friday, April 08, 2011 3:18:55 PM

Because that's the way we do things here.....

From: Johnson, Michael
Sent: Friday, April 08, 2011 2:50 PM
To: Sheron, Brian; Uhle, Jennifer
Subject: FW: NRC's Daily Assessment of Conditions at Fukushima Daiichi

So if the site team is now providing direct updates on status, why are we killing ourselves to update the status sheets?

From: Weber, Michael
Sent: Friday, April 08, 2011 5:46 AM
To: Johnson, Michael; ET01 Hoc; ET05 Hoc; OST02 HOC; RST01 Hoc
Subject: FYI - NRC's Daily Assessment of Conditions at Fukushima Daiichi

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From: Salay, Michael
To: Jaczko, Gregory
Cc: Borchardt, Bill; Weber, Michael; Virgilio, Martin; Casto, Chuck; Leeds, Eric; RST01 Hoc
Sent: Fri Apr 08 04:28:17 2011
Subject: NRC's Daily Assessment of Conditions at Fukushima Daiichi

Dear Chairman,

Attached please find the NRC Japan Team's Daily Assessment of conditions at the Fukushima Daiichi nuclear power plants and spent fuel pools. There are two changes of note for today. Following the earthquake last night the unit 1 feedwater nozzle temperature and drywell radiation monitors indicated higher levels. This is reflected by a down arrow in the attached for cooling of the Unit 1 Vessel. The injection flow rate to the Unit 2 reactor vessel was reduced from 8 cubic meters per hour to 7 cubic meters per hour. This is reflected by a down arrow in the attached for cooling of the Unit 2 Vessel. We will continue to discuss these issues with NISA and TEPCO.

If you have any questions, please don't hesitate to ask.

Best regards,
Mike Salay
NRC Japan Team

E158

Raione, Richard

From: Clayton, Brent
Sent: Friday, April 08, 2011 8:52 AM
To: Raione, Richard
Subject: From Nuclear News Flashes

Is the highlighted statement true?

*** Chinese official warns of flooding threat to nuclear safety

Safety checks of nuclear power plants in China, ordered by the government after the Fukushima nuclear accident in Japan, must focus on the plant operators' ability to prevent and respond to flooding, said a government official.

Chaofei Yang, chief nuclear safety engineer at the Chinese Ministry of Environmental Protection, outlined the guidelines for the safety check April 7 at the China Nuclear Energy Association annual meeting in Shenzhen. He said the guidelines were jointly developed by MEP and the National Energy Administration.

Operators of nuclear power plants have to pay special attention to the impact of multiple extreme disasters, he said, of which it is "most important" to examine the effect of flooding. Despite the frequency of flooding in China, the country is inadequately prepared to prevent it, he said.

China currently focuses on blocking flood waters, while developed countries such as the US are focusing on diverting the water, Yang said, adding that the latter is a more effective method.

Yang said the guidelines also require nuclear plant operators to assess reactors' capability to survive massive earthquakes. "If a magnitude 9.0 earthquake" â€" the size of the earthquake that struck Japan last month â€" "happens in China, can our plants be safe? We have to think about it," he said.

Plant operators also have to check and test the reliability of their firefighting systems, power supply, backup power supply, emergency response plan and environmental monitoring in the case of an accident, he said.

Wind legend

- = North
- = North northeast
- = Northeast
- Help

Configuration

Change units

Surfspot

- Tide forecast
- Surf- & sailing schools
- Surf- & sailing shops
- Kite- & windsurfing spot guide
- Weather & surf webcams

Homepage weather

- Wind forecast for your website
- Setup your own weather station
- Setup your own webcam
- Contribute weather data

Windfinder - Wind & weather forecast Onahama

Wind statistic | Wind report | Forecast | Local forecasts

Onahama (ONAHAMA)
Time zone: UTC +9.0 | Sunrise: 05:50 Sunset: 17:42 | Last update: 01:29 local time - Initial Time: 12:00 UTC

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Local date	Tuesday, Mar 15								Wednesday, Mar 16							
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h	06h	09h	12h	15h	18h	21h
Wind direction																
Wind speed (Knots)	12	12	12	11	6	6	9	9	10	14	17	23	22	19	22	19
Wind gusts (Knots)	14	15	12	12	6	6	11	12	12	27	33	35	34	28	32	30
Cloud cover																
Precipitation (mm/3h)	0	0	0	0	0	0	1	1	7	8	0	0	0	0	0	0
Air pressure (hPa)	1012	1011	1011	1012	1010	1007	1004	1001	997	995	995	995	995	995	1002	1007
Air temperature (°C)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Local date	Thursday, Mar 17								Friday, Mar 18							
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h	06h	09h	12h	15h	18h	21h
Wind direction																
Wind speed (Knots)	14	11	14	19	18	21	19	13	11	15	14	11	5	2	5	8
Wind gusts (Knots)	29	27	28	28	27	32	29	[illegible]	[illegible]	14	13	12	7	4	5	11
Cloud cover																
Precipitation (mm/3h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air pressure (hPa)	1009	1009	1010	1012	1011	1012	1014	1017	1019	1019	1022	1026	1026	1026	1027	1026
Air temperature (°C)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Local date	Saturday, Mar 19								Sunday, Mar 20							
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h	06h	09h	12h	15h	18h	21h
Wind direction																
Wind speed (Knots)	12	13	12	10	6	5	1	5	7	6	6	4	9	13	18	23
Wind gusts (Knots)	[illegible]	22	22	12	6	5	1	5	7	6	6	4	10	22	31	37
Cloud cover																
Precipitation (mm/3h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air pressure (hPa)	1026	1024	1024	1024	1022	1020	1021	1022	1021	1020	1021	1020	1016	1012	1010	1007
Air temperature (°C)	[illegible]	5	5	[illegible]	12	13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11	12	14	13	13

Local date	Monday, Mar 21									
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h
Wind direction										
Wind speed (Knots)	22	16	10	13	32	31	23	17	9	6
Wind gusts (Knots)	38	35	[illegible]	33	42	44	38	32	17	9
Cloud cover										
Precipitation (mm/3h)	0	0	1	1	0	0	0	0	0	0
Air pressure (hPa)	1004	1002	1000	1001	1004	1009	1013	1015	1017	1016
Air temperature (°C)	13	13	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

E\60

Windfinder - Wind & weather forecast Sendai Airport/Shinko

Wind analysis | Wind report | Forecast | Local forecasts

Sendai Airport/Shinko (SENDAI)

Time zone: UTC +9.0 | Sunrise: 05:50 Sunset: 17:41 | Last update: 01:39 local time - Next Time: 13:00 UTC

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Local date	Tuesday, Mar 15								Wednesday, Mar 16							
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h	06h	09h	12h	15h	18h	21h
Wind direction																
Wind speed (Knots)	13	12	8	5	8	12	13	10	9	9	3	16	19	15	17	21
Wind gusts (Knots)	14	13	10	5	8	12	13	14	11	10	6	25	32	21	19	31
Wave direction [WW3]																
Wave height (m) [WW3]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Wave period (s) [WW3]	5	5	5	5	5	5	5	3	3	4	4	5	5	5	3	4
Cloud cover																
Precipitation (mm/3h)	0	0	0	0	0	0	1	3	5	4	1	0	0	0	0	0
Air pressure (hPa)	1014	1013	1013	1013	1011	1007	1005	1003	1000	997	997	995	995	997	1003	1007
Air temperature (°C)	1	0	-1	0	7	5	0	0	-1	1	2	-1	5	5	1	1

Local date	Thursday, Mar 17								Friday, Mar 18							
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h	06h	09h	12h	15h	18h	21h
Wind direction																
Wind speed (Knots)	16	16	14	17	19	21	13	10	6	7	14	11	8	8	4	4
Wind gusts (Knots)	30	29	25	29	35	39	13	13	6	9	13	13	9	7	4	4
Wave direction [WW3]																
Wave height (m) [WW3]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Wave period (s) [WW3]	4	4	4	4	4	5	5	5	5	5	4	4	4	4	6	6
Cloud cover																
Precipitation (mm/3h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air pressure (hPa)	1008	1008	1010	1011	1011	1011	1014	1017	1019	1019	1024	1025	1026	1026	1027	1027
Air temperature (°C)	1	-1	-1	1	3	3	1	1	1	1	1	1	1	3	1	1

Local date	Saturday, Mar 19								Sunday, Mar 20							
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h	06h	09h	12h	15h	18h	21h
Wind direction																
Wind speed (Knots)	7	8	7	5	5	7	5	8	8	8	4	3	9	10	10	13
Wind gusts (Knots)	10	10	7	8	9	13	8	9	8	7	4	5	13	14	13	17
Wave direction [WW3]																
Wave height (m) [WW3]	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Wave period (s) [WW3]	6	5	5	4	4	13	13	13	13	13	13	13	13	13	11	5
Cloud cover																
Precipitation (mm/3h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air pressure (hPa)	1025	1024	1024	1024	1022	1021	1022	1022	1022	1021	1021	1020	1018	1011	1008	1004
Air temperature (°C)	1	1	1	5	11	11	7	5	4	4	4	3	11	12	12	12

Local date	Monday, Mar 21									
Local time	00h	03h	06h	09h	12h	15h	18h	21h	00h	03h
Wind direction										
Wind speed (Knots)	13	9	8	31	37	37	15	13	11	8
Wind gusts (Knots)	28	19	19	42	47	48	32	28	24	19
Wave direction [WW3]										
Wave height (m) [WW3]	1.0	1.0	1.0	2.0	2.0	2.0	1.0	1.0	1.0	0.0
Wave period (s) [WW3]	6	7	7	6	6	5	5	6	5	
Cloud cover										
Precipitation (mm/3h)	0	0	0	0	0	0	0	0	0	0
Air pressure (hPa)	1001	999	1002	1002	1008	1010	1015	1017	1017	1016
Air temperature (°C)	1	0	1	0	3	4	1	1	1	1

From:	Evans, Michele
To:	Evans, Michele; Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric; Ferrell, Kimberly; Kokajko, Lawrence
Cc:	Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader; Howell, Linda; FOIA Response.hoc Resource
Subject:	ACTION: New skill set - Identify 4th wave of NRC staff to Japan
Date:	Saturday, April 09, 2011 12:51:59 PM

In talking with Chuck this morning he identified 2 additional staff skill sets that he needed, as described below.

1 - Someone who could fill a PM role and specifically help us with the equipment logistics eg coordination with USAID to obtain repair equipment and who can help determine the technical priority of that equipment. That is help judge how urgently the equipment is needed based upon plant status. So they need logistical skills and BWR plant knowledge.

2 – A nuclear plant seasoned generalist. This person would be involved in figuring out how to move a lot of water with temporary systems.

3 – I haven't identified the 4th person for the originally requested SAMG/EOP/Severe accident skill set. There are two names that I am considering from the previously provided names. I will contact offices directly for some info. Meanwhile, if there are any other nominations for this skill set, please provide them to me.

These three individuals would travel by 4/14. Please provide names as soon as you have them and by COB Monday 4/11 at the latest.

Thanks!

Michele

From: Evans, Michele
Sent: Friday, April 08, 2011 2:51 PM
To: Evans, Michele; Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc: Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader; Howell, Linda; FOIA Response.hoc Resource
Subject: RE: ACTION: Identify 4th wave of NRC staff to Japan

ODs/RAs

Thanks for all of the input I have received so far. Since Wednesday, views regarding composition and length of stay of the site team to Japan have evolved.

First, be aware that the staff selected to go to Japan will be expected to be deployed for up to 3 weeks, instead of the previous 2 week commitment. Therefore, staff leaving the country on April 12/13, would return around May 3/4.

Second, approval has been given for Chuck to maintain a team of about 11 people for the immediate future. It has been decided that the protective measures component of the team, does not need to have the specific expertise that was previously noted. Any

modeling work/analysis that would need to be done, would be completed here at HQs. Instead, Chuck has indicated that he is looking for **someone with a health physics background that could assist in briefings and can effectively communicate radiation exposure and contamination to a lay audience.**

I will be in contact with Chuck over the next 24 hours to further discuss the composition of his team of 11. If there is a skill set needed that hasn't been identified in this email or the one below, I will send you that information tomorrow.

I still plan to be able to identify at least 4 staff to support Chuck's original request by Sunday, so their travel could start on 4/12 or 4/13.

With regard to the new request above and any additional request that I learn from Chuck in the next 24 hours, please provide all nominees by COB on Monday 4/11. Those individuals would be expected to travel later in the week (target 4/14 or 4/15).

Sorry about this lengthy email. If something is not clear, feel free to call me or email.

Michele

Michele Evans
Acting Deputy OD, NSIR
301-415-3236

From: Evans, Michele
Sent: Wednesday, April 06, 2011 2:58 PM
To: Howell, Art; McCree, Victor; Dean, Bill; Satorius, Mark; Haney, Catherine; Moore, Scott; Sheron, Brian; Johnson, Michael; Leeds, Eric
Cc: Pederson, Cynthia; Lew, David; Wiggins, Jim; Ordaz, Vonna; Uhle, Jennifer; Ruland, William; Boger, Bruce; Virgilio, Martin; Weber, Michael; Flanders, Scott; Lewis, Robert; Muessle, Mary; Mamish, Nader
Subject: ACTION: Identify 4th wave of NRC staff to Japan

ODs and RAs:

There is discussion of potentially sending an additional 6 or so staff to Japan.

These individuals would likely depart the USA on April 12 or 13, with a return date of about April 27. (For awareness, this time period spans religious holidays)

Specifically Chuck is looking for 4 individuals with severe accident experience. Lots of EOP/SAMG experience. He is looking for two protective measures staff. Specifically an ingestion pathway person and a "plume" person.

As always, looking for these skill sets combined with the best interpersonal skills.

OD/RA ACTION:

1. **Please confirm that you received this email.**

2. Please identify potential candidates to me by COB Friday April 8.

If you have any questions or need any clarification, please call me. Thank you.

Michele Evans
Acting Deputy OD, NSIR
301-415-3236

Raione, Richard

From: Jones, Henry
Sent: Saturday, April 09, 2011 4:19 PM
To: Cubbage, Amy
Cc: Raione, Richard
Subject: RE: Flooding

The following may help:

RG 1.59
RG 1.206, Section 2.4.5 (Surge and Seiche) NUREG 0800 (Safety Standard Review Plan), Section 2.4.5 (Surge and Seiche)

Henry

From: Cubbage, Amy
Sent: Saturday, April 09, 2011 9:03 AM
To: Jones, Henry
Cc: Raione, Richard
Subject: RE: Flooding

The table would be helpful when you have it. Is there any info you have readily available about how the design storm surge is selected for a given site? Is it deterministic? Probabilistic? If this is in the SRP you can refer me there. I don't want to overly burden you.

-----Original Message-----
From: Jones, Henry
Sent: Saturday, April 09, 2011 12:38 AM
To: Cubbage, Amy
Cc: Raione, Richard
Subject: RE: Flooding

Amy,

No problem. When do you need the information? I am currently working on creating a flooding table for the operating sites which will include storm surge.

Henry

From: Cubbage, Amy

Sent: Friday, April 08, 2011 10:28 PM
To: Jones, Henry
Subject: Flooding

Henry - I think we got distracted by the HRMS drama on Thursday and missed hearing from you about Storm surge issues. Do you have any info you can share about how the design basis surge is established and what the surge amounts are for US sites? Are Tsunami and storm surge your main review areas or do you look at any additional flooding sources. Thanks again for sharing your expertise with the group last week. it was very helpful.

Amy

PUBLIC SOURCE (External)

Monday, April 11, 2011 9:10 AM
Stirewalt, Gerry
Subject: FUKUSHIMA

Source: world-nuclear.org

Site and earthquakes: background

The Daiichi (first) and Daini (second) Fukushima plants are sited about 11 km apart on the coast.

Japanese nuclear power plants are designed to withstand specified earthquake intensities evident in ground motion. If they register ground acceleration of a set level, systems will be activated to automatically bring the plant to an immediate safe shutdown. In this case the set scram level was 135 Gal (150 Gal at Daini). The maximum response acceleration against design basis ground motion for both Fukushima plants had been upgraded since 2006, and is now quoted at horizontal 438-489 Gal for Daiichi and 415-434 Gal for Daini. At this level they must retain their safety functions. In 2008 Tepco upgraded its estimates of likely Design Basis Earthquake Ground Motion Ss for Fukushima to 600 Gal, and other Japanese operators have adopted the same figure. The interim recorded data for both plants shows that 550 Gal (0.56 g) was the maximum for Daiichi, in the foundation of unit 2 (other figures 281-548 Gal), and 254 Gal was maximum for Daini. Units 2, 3 and 5 exceeded their maximum response acceleration design basis in E-W direction by about 20%. Recording was over 130-150 seconds. All nuclear plants in Japan are built on rock (ground acceleration was around 2000 Gal a few kilometres north, on sediments).

The design basis tsunami height is 5.7 m for Daiichi and 5.2 m for Daini, though the Daiichi plant was built about 10 metres above sea level. Tsunami heights were more than 14 metres for both plants, and Tepco said that the Daiichi units were under up to 5 metres of seawater until levels subsided.

E/63

From: Flanders, Scott
To: Evans, Michele
Cc: Johnson, Michael; Akstulewicz, Frank; Mayfield, Michael
Subject: RE: Action: Please provide by noon Monday April 11 - Office POC to support Ops Center
Date: Monday, April 11, 2011 11:46:13 AM

Michele, NRO points of contact are Jeff Ciocco (primary) and Tom Kevern (alternate).

Please let me know if you have any questions.

Scott

From: Evans, Michele
Sent: Saturday, April 09, 2011 4:33 PM
To: Leeds, Eric; Moore, Scott; Haney, Catherine; Kokajko, Lawrence; Johnson, Michael; Sheron, Brian; Mamish, Nader; Schmidt, Rebecca; Brenner, Eliot
Cc: Boger, Bruce; Ruland, William; Lewis, Robert; Flanders, Scott; Zimmerman, Roy; Uhle, Jennifer; Doane, Margaret; Hayden, Elizabeth; Powell, Amy; Wiggins, Jim; Dyer, Jim; Carpenter, Cynthia; Tracy, Glenn; Cohen, Miriam; Stewart, Sharon; McDermott, Brian; Morris, Scott; Correia, Richard; Marshall, Jane; Holahan, Patricia; FOIA Response.hoc Resource
Subject: Action: Please provide by noon Monday April 11 - Office POC to support Ops Center
Importance: High

Office Directors (NRR, NMSS, FSME, NRO, RES, OIP, OCA, OPA):

As described in the attached document, the Chairman has approved reduction of the Ops Center staffing for the Japanese event. We intend to implement this reduced staffing level as of day shift on Monday 4/11 at 7 am. At that point in time, the goal is to reduce to 6 individuals on each shift – ET director, two RST representatives, one PMT representative, one LT representative, and an ET admin assistant.

We are defining the roles and responsibilities of these positions and considering changes to the work we are doing in the Ops Center given the reduction in staff. For example, we will be producing shorter, less frequent status updates, participating in less conference calls, and providing less briefings.

In order to continue to provide high quality support to the site team in Japan, we do expect to provide more requests for action to the line organization. **In order to control these requests within each office, please provide an office point of contact (and alternate if deemed necessary), to me by noon on Monday, April 11.**

Thank you for your continued support of this effort.

Michele
Michele Evans
Acting Deputy OD, NSIR

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From: Johnson, Michael
To: Mayfield, Michael
Subject: RE: JAPAN
Date: Monday, April 11, 2011 4:40:00 PM

Mark Satorius.

From: Mayfield, Michael
Sent: Monday, April 11, 2011 3:13 PM
To: Johnson, Michael
Subject: JAPAN

So who did they send to replace Elmo?

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From: Dean, Bill
To: Cianci, Sandra; McCree, Victor; Satorius, Mark; Collins, Elmo; Leeds, Eric; Johnson, Michael; Wiggins, Jim
Cc: Bush-Goddard, Stephanie; Matakas, Gina; Andersen, James
Subject: Re: April 19 DEDR Direct Reports Meeting
Date: Monday, April 11, 2011 9:03:25 PM

A couple obvious ones are agency future efforts wrt Japan, early feedback from regions on annual assessment meetings including lessons learned on dealing with public on the japan event and its implications here, and plans for any NRC continuing presence in japan.

Other topics of interest may potentially be implications of 2011 budget decisions by Congress on 2012 and 2013 budgeting activities in the reactor area, the new security advisory system and implications for licensees (NSIR has set up a planning meeting in near future so may be OBE), and NLE 11 revised plans and support needs.
Bill Dean
Regional Administrator
Region I, USNRC
Sent from NRC BlackBerry

From: Cianci, Sandra
To: Cianci, Sandra; Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo; Leeds, Eric; Johnson, Michael
Cc: Bush-Goddard, Stephanie; Matakas, Gina; Miles, Patricia; Buckley, Patricia; Owen, Lucy; Quayle, Lisa; Wiggins, Jim; Schwarz, Sherry; Sprogeris, Patricia; Salus, Amy; Andersen, James
Sent: Mon Apr 11 10:42:34 2011
Subject: RE: April 19 DEDR Direct Reports Meeting

Please submit topics by COB Tuesday, 4/12

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

From: Cianci, Sandra
Sent: Monday, April 11, 2011 10:35 AM
To: Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo; Leeds, Eric; Johnson, Michael
Cc: Bush-Goddard, Stephanie; Matakas, Gina; Miles, Patricia; Buckley, Patricia; Owen, Lucy; Quayle, Lisa; Wiggins, Jim; Schwarz, Sherry; Sprogeris, Patricia; Salus, Amy; Andersen, James
Subject: April 19 DEDR Direct Reports Meeting
Importance: High

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Please provide your agenda topics for the DEDR Direct Reports Meeting, to be held on Tuesday, April 19, 8:30am-5:00pm in O-13D20.

Thank you

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

Louden, Patrick

From: Lynch, James
Sent: Monday, April 11, 2011 8:07 AM
To: DNMSIII
Subject: La dispersion des rejets radioactifs dans l'atmosph?re - 22 mars 2011

FYI,

This is a very cool simulation of radionuclide deposition in Japan since March 11.

http://www.irsn.fr/FR/popup/Pages/animation_dispersion_rejets_22mars.aspx

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From: Weber, Michael
To: Johnson, Michael
Subject: RESPONSE - April 25, 2011, KMSC meeting, background information
Date: Monday, April 11, 2011 5:36:26 PM

Thanks, Mike. I appreciate your support. The last meeting of the steering committee we held in November. We put off another meeting until the end of April because of the press of business. This would be a good meeting for your acting Deputy to take the lead on.

From: Johnson, Michael
Sent: Monday, April 11, 2011 4:39 PM
To: Weber, Michael
Subject: RE: FYI/ACTION - April 25, 2011, KMSC meeting, background information

Mike,

We will do our best to support this. However, we will be challenged to give it the attention it deserves. I have actors at deputy OD and KM lead. I am unavailable beginning Wednesday to support the Ops. Ctr. for the remainder of the week. Next week is the AARM/SLM and Marty's direct report meeting. The following Monday is the 25th.

If relief in the schedule is possible, we would all benefit. If not, we'll do our best.

Mike

From: Weber, Michael
Sent: Monday, April 11, 2011 3:27 PM
To: Greene, Kathryn; Stewart, Sharon; Gusack, Barbara; Howard, Patrick; Moore, Scott; Lewis, Robert; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Kokajko, Lawrence; Johnson, Michael; Flanders, Scott; Leeds, Eric; Boger, Bruce; Ruland, William; Wiggins, Jim; Evans, Michele; Zimmerman, Roy; Campbell, Andy; McCrary, Cheryl; Krupnick, David; Boyce, Thomas (OIS); Schaeffer, James; Sheron, Brian; Uhle, Jennifer; Kelley, Corenthis; Williams, Barbara; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Hackett, Edwin; Hawkens, Roy; Burns, Stephen; Itzkowitz, Marvin; Rothschild, Trip; Vietti-Cook, Annette; Bates, Andrew; Brenner, Eliot; Hayden, Elizabeth; Schmidt, Rebecca; Powell, Amy; Poole, Brooke; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton
Cc: Borchardt, Bill; Virgilio, Martin; Ash, Darren; Muessle, Mary; Andersen, James; Landau, Mindy; Rakovan, Lance; Hudson, Jody; Eng, Patricia; Schmitt, Ronald; Boyer, Rachel; Ellmers, Glenn
Subject: FYI/ACTION - April 25, 2011, KMSC meeting, background information

Good afternoon. I am inviting your office to participate in the upcoming April 25th Knowledge Management (KM) Steering Committee meeting. My objective is to ensure all participants come to the meeting ready for a productive exchange. I understand that everyone is busy, especially with the continuing response to the nuclear emergency in Japan. However, we need to continue to focus on KM today to accomplish the agency's mission both now and in the future. To enhance the success of our meeting on April 25, I would encourage Steering Committee members to review the agenda with their KM staff leads and gain their perspectives on the key questions listed below.

The purpose of the meeting is to reach consensus on NRC's KM program approach for the next several years. To accomplish this goal, we are planning to break into groups to discuss a set of questions which will help focus our brainstorming. These questions are

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- What is the goal of NRC's KM program? What needs to be accomplished?
- What will be the benefits to our customers, the organization, NRC and you of reaching this goal?
- What is already working with the program? What are our strengths? Where are our successes?
- What specifically makes it work?
- What can we do more, better, or differently to begin moving toward our goal?

We've taken the liberty of putting together groups that we think will provide for active and balanced discussion, as follows:

Group	Representatives						
1	ACRS	EDO	NMSS	OGC	CSO	Region 3	OCAA
2	ADM	FSME	NRO	OI	SECY	Region 4	ASLBP
3	OCA	HR	OPA	RES	OE	Region 2	OIS
4	CFO	OIP	NSIR	SBCR	NRR	Region 1	

If necessary, we can arrange a short amount of time to organize/finalize group discussion results towards the start of the meeting. However it would be valuable if the groups begin their discussions on these important topics prior to the meeting, so they are more-or-less ready to "report out" on the 25th. We hope that this format will be the most efficient in helping us get to some form of agreement quicker.

I've also attached a good deal of background material for the meeting that you will find useful in your preparation, including the agenda and other useful references. If you have any questions about the meeting, please contact Patricia Eng, Ronald Schmitt, Jody Hudson, Lance Rakovan, or myself.

Thanks for your support.

Mike

Michael Weber
Deputy Executive Director for Materials, Waste, Research,
State, Tribal, and Compliance Programs
U.S. Nuclear Regulatory Commission

301-415-1705
Mail Stop O16E15

Tsunami Catalogue for the Sanriku District near the Sendai Area, mostly based upon Miyagi Showa Shinsho-Shi (Record of the Showa Earthquake and Tsunami in Miyagi Prefecture) and partially on Shuto's memory.

Year	Source	Description
869	document	Giant earthquake in the Tohoku District. Tsunami flooded up to the Tagajo castle near Sendai. Over 1,000 drowned.
1585	legend	Tsunami hit Tokura, Motoyoshi, Miyagi Pref.
1611	document	After an earthquake, a big tsunami hit the Date clan (nearly equal to Miyagi Pref.). 1,783 people drowned. This is the first document to record this phenomenon as tsunami.
1616	document	A strong earthquake, then big tsunami.
1651	legend	Watari, Miyagi Pref. was hit by a tsunami.
1676	document	A tsunami hit Mito, Kanto District and Iwaki, Fukushima Pref. Several drowned.
1677	legend	Nanbu clan (Iwate Pref.) felt several earthquakes. No damage due to earthquake. At Miyako, Kuwagasaki and Oozuchi in Iwate Pref., houses were washed away.
1687	document	Coastal area in the Miyagi Pref., including Shiogama, was hit by tsunami. Tsunami height was about 50 cm above ground, flood and ebb 12 or 13 times.
1689	legend	A tsunami in Rikuchu District (Iwate Pref.)
1693	document	High waves hit the Kitakami River. 300 boats were lost. Many persons were drowned. (Storm Surge ? : Shuto)
1793	document	Earthquake and tsunami along the Sanriku Coast. At Ogatu in the Miyagi Pref., tsunami height was 60 cm above the first floor.
1836	document	A big earthquake in the Sendai Area. A large flood of sea water washed away several hundred houses. Many drowned.
1856	document	An earthquake in the Sanriku District at noon. Then big tsunami hit. At Ogatu, Miyagi Pref.

		tsunami height was about 1 m above the first floor. Flood and ebb 14 or 15 times until 10 p.m.
1867	document	A tsunami in the Motoyosi, Miyagi Pref.
1894	document	A small tsunami along the Iwate Pref.
1896	document	The Meiji Great Sanriku Tsunami was generated by a tsunami-earthquake. 22,000 loss of lives. The highest run-up of 38 m at Ryori Shirahama, in Iwate Pref.
1915	document	A small tsunami in Shizugawa Bay (Minami Sanriku Town).
1933	document	The Showa Great Sanriku Tsunami. Nearly 3,000 loss of lives. The highest run-up of 28 m at Ryori Shirahama.
1960	document	The 1960 Chilean Tsunami. Tsunami height was about 3 m, at the highest 6 m or so. All the Pacific Coast of Japan from Hokkaido to Okinawa was damaged.

(SHUTO Nobuo is responsible for the catalogue)

Fact Sheet on Protection of Nuclear Power Plants against tsunami flooding

Nuclear power plants are designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The word tsunami literally means harbor wave. Tsunamis can be generated by large off shore earthquakes (usually greater than magnitude 6.5), submarine or on shore land slides or volcanoes. Some large on shore earthquakes close to the shoreline can generate tsunami. The Nuclear Regulatory Commission (NRC) requires all nuclear power plants to be protected against earthquakes, tsunamis and other natural hazards.

Background

Protection against tsunami effects was required for all operating plants and is required for all new reactors. Following the Indian Ocean tsunami on December 26, 2004, the President moved to protect lives and property by launching an initiative to improve domestic tsunami warning capabilities. This plan was placed under the auspices of the National Science and Technology Council through the President's initiative in July 2005 in the context of a broad national effort of tsunami risk reduction, and United States participated in international efforts to reduce tsunami risk worldwide. In response to the president's initiative, the NRC reviewed its licensing criteria and conducted independent studies and participated in international forums under the auspices of the International Atomic Energy Agency with many participating countries including India and Japan. The final report of the study was published in April 2009 as NUREG/CR 6966, "Tsunami Hazard Assessment at Nuclear Power Plant Sites in the United States of America," ADAMS Accession # ML0915901933. NRC revised its Standard Review Plan for conducting safety reviews of nuclear power plants in 2007. The Office of Nuclear Regulatory Research is conducting tsunami studies in collaboration with the United States Geological Survey and has published a report on tsunami hazard in the Atlantic, Gulf and Pacific coastal areas. Selected nuclear power plants now get tsunami warning notification. The agency requires plant designs to withstand the effects of natural phenomena including effects of tsunamis. The agency's requirements, including General Design Criteria for licensing a plant, are described in Title 10 of the *Code of Federal Regulations* (10 CFR). These license requirements consist of incorporating margins in the initiating hazard and additional margins are due to traditional engineering practices such as "safety factors." Practices such as these add an extra element of safety into design, construction, and operations.

The NRC has always required licensees to design, operate, and maintain safety-significant structures, systems, and components to withstand the effects of natural hazards and to maintain the capability to perform their intended safety functions. The

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agency ensures these requirements are satisfied through the licensing, reactor oversight, and enforcement processes.

Tsunami Hazard Evaluation

Tsunami hazard evaluation is one component of the complete hydrological review requirements provided in the Standard Review Plan. The safety determination of reactor sites require consideration of major flood causing elements, including consideration of combined flood causing conditions. These are for example, Probable Maximum Flood (PMF) on Streams and Rivers, Potential Dam Failures, Probable Maximum Surge and Seiche Flooding, Probable Maximum Tsunami Hazards, Ice Effects, Cooling Water Canals and Reservoirs, Channel Diversions, Flooding Protection Requirements.

The Probable Maximum Tsunami (PMT) is defined as that tsunami for which the impact at the site is derived from the use of best available scientific information to arrive at a set of scenarios reasonably expected to affect the nuclear power plant site taking into account (a) appropriate consideration of the most severe of the natural phenomena that have been historically reported or determine from geological and physical data for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (b) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (c) the importance of the safety functions to be performed.

Site-specific tsunami data are collected from historical tsunami records, paleotsunami evidence, regional tsunami assessments, site-specific tsunami mechanisms, site-specific data, such as submarine survey of sea bed and approach channel geometry etc. Effects of tsunami on a nuclear power plant can be flooding due to water run up, hydro-dynamic pressure on exterior walls of structures, impact of floating debris, and foundation scouring. In addition, tsunami can draw down water from the intake source of plant cooling water.

The tsunami database is available for interactive search and downloads on the internet at http://www.ngdc.noaa.gov/hazard/tsu.shtml.

Tsunami Safety Assessment

The licensing bases for existing nuclear power plants are based on historical data at each site. This data is used to determine probable maximum tsunami and the tsunami effects are evaluated for each site with potential for tsunami flooding. The potential for tsunami hazard is determined on a hierarchical analysis process that can identify tsunami potential based primarily on distance from tsunami source and site elevation. The NRC also required existing plants to assess their potential vulnerability to external

events, as part of the Individual Plant Examination of External Events Program. This process ensured that existing plants are not vulnerable to tsunami hazard, and they continue to provide adequate public health and safety.

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

Tsunami Lessons Learned

The NRC is fully engaged in national international tsunami hazard mitigation programs, and is conducting active research to refine the tsunami sources in the Atlantic, Gulf Coast and Pacific Coast areas. Diablo Canyon and San Onofre are two nuclear plant sites that have potential for tsunami Hazard. Both the Diablo Canyon (main plant) and SONGS are located above the flood level associated with tsunami. However, the intake structures and Auxiliary Sea Water System at Diablo canyon are designed for combination of tsunami-storm wave activity. SONGS has reinforced concrete cantilevered retaining seawall and screen well perimeter wall designed to withstand the design basis earthquake, followed by the maximum predicted tsunami with coincident storm wave action. These reactors are adequately protected against tsunami effects.

Additional Information

To read more about risk-related NRC policy, see the fact sheets on Probabilistic Risk Assessment (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/probabilistic-risk-asses.html) and Nuclear Reactor Risk (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/reactor-risk.html). Each provides more information on the use of probability in evaluating hazards (including earthquakes) and their potential impact on plant safety margins.

March 2011

Statement of Mr. Banri Kaieda, Minister of Economy, Trade and Industry at the press conference following the announcement of Roadmap by Tokyo Electric Power Company (TEPCO)

1. Presentation at the earliest possible date of a roadmap towards settling the situation at Fukushima Daiichi Nuclear Power Station has been requested by people home and abroad, especially the residents around Fukushima Daiichi Nuclear Power Station.

   TEPCO has just released this roadmap, which is an important step forward.

   Taking this opportunity, we would like to move from the "emergency response phase" up until now that includes water spray by fire engines over the facilities and the prevention of high-level radioactive water to the sea, to the "stabilizing phase" in which the settlement of the situation will be aimed in a planned manner under the solid roadmap.

2. In response to the release of the roadmap,
   (1) The Government will request TEPCO to ensure the implementation of this roadmap steadily and as early as possible. To this end, the Nuclear and Industrial Safety Agency and others will make regular follow-up, monitoring of the progress of the works and necessary safety checks;
   (2) The Government will request TEPCO to ensure the mobilization and deployment of workers, the procurement and preparation of equipment and materials, and the arrangement of accommodation and other facilities, which are necessary to ensure implementation of the roadmap;
   (3) At the end of Step 2, the release of radioactive materials will be under control. At this stage, the Government will review the "Deliberate Evacuation Area" and the "Evacuation Prepared Area". Up until that time, we will consider the details of review criteria, and will decontaminate the widest possible area.

   By implementing this, we would like to announce, within 6 to 9 months as our target, to the residents of some of the areas whether they will be able to come home.

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Roadmap towards Restoration from the Accident at Fukushima Daiichi Nuclear Power Station

April 17th, 2011
Tokyo Electric Power Company

With regard to the accident at Fukushima Daiichi Nuclear Power Station due to the Tohoku-Chihou-Taiheiyo-Oki Earthquake occurred on Friday, March 11th, 2011, we are currently making our utmost effort to bring the situation under control. This announcement is to notify the roadmap that we have put together towards restoration from the accident.

1. Basic Policy

By bringing the reactors and spent fuel pools to a stable cooling condition and mitigating the release of radioactive materials, we will make every effort to enable evacuees to return to their homes and for all citizens to be able to secure a sound life.

2. Targets

Based on the basic policy, the following two steps are set as targets: "Radiation dose is in steady decline" as "Step 1" and "Release of radioactive materials is under control and radiation dose is being significantly held down" as "Step 2." Target achievement dates are tentatively set as follows: "Step 1" is set at around 3 months and "Step 2" is set at around 3 to 6 months after achieving Step 1.

3. Immediate Actions

Immediate actions were divided into three groups, namely, "I. Cooling", "II. Mitigation", "III. Monitoring and Decontamination." For the following five issues—"Cooling the Reactors," "Cooling the Spent Fuel Pools," "Containment, Storage, Processing, and Reuse of Water Contaminated by Radioactive Materials (Accumulated Water)," "Mitigation of Release of Radioactive Materials to Atmosphere and from Soil," and "Measurement, Reduction and Announcement of Radiation Dose in Evacuation Order/Planned Evacuation/ Emergency Evacuation Preparation Areas"—targets are set for each of the five issues and various countermeasures will be implemented simultaneously.

Please see the attachment for detailed actions.

We would like to deeply apologize again for the grave inconvenience and anxiety that the broad public has been suffering due to the accident at the Fukushima Daiichi Nuclear Power Station. We will continue to make every endeavor to bring the situation under control.

April 17, 2011

Tokyo Electric Power Company

Roadmap towards Restoration from the Accident at Fukushima Daiichi Nuclear Power Station

1. Basic Policy

By bringing the reactors and spent fuel pools to a stable cooling condition and mitigating the release of radioactive materials, we will make every effort to enable evacuees to return to their homes and for all citizens to be able to secure a sound life.

2. Targets

- Based on the basic policy, the following two steps are set as targets:
  - Step 1: Radiation dose is in steady decline.
  - Step 2: Release of radioactive materials is under control and radiation dose is being significantly held down.
  - (Note) Issues after Step 2 will be categorized as "Mid-term Issues"
- Target achievement dates are tentatively set as follows, although there will still be various uncertainties and risks:
  - Step 1: around 3 months
  - Step 2: around 3 to 6 months (after achieving Step 1)
  - (Note) Announcements will be made as soon as timing of step-wise target achievement or quantitative prospects are determined, as well as if revisions to the targets or achievement dates become necessary.

3. Immediate Actions

- In order to achieve the above targets, immediate actions were divided into 3 groups with targets set for each of the 5 issues. Various countermeasures will be implemented simultaneously (see the table in right.)
- In order to achieve Step 1, overcoming the following two issues that are currently being addressed will be critical:

① Prevention of hydrogen explosion inside the primary containment vessel (hereafter, PCV) (Units 1 to 3.)

- Cooling the reactor by injecting fresh water into the reactor increases the chance of steam condensation, leading to a concern of potentially triggering a hydrogen explosion.

→Nitrogen gas will be injected into the PCV of each unit to keep the concentration of hydrogen and oxygen below flammability limit.

② Prevention of release of contaminated water with high radiation level outside of the site boundary (Unit 2.)

- While cooling the reactor by injecting fresh water, accumulation of contaminated water with high radiation level in the turbine building is increasing (possible release to outside of the site boundary.)

→Actions will be taken against accumulated water to (1) secure several storage places and (2) install facilities to process the contaminated water and reduce the radiation dose, among others.

Roadmap for Immediate Actions

Areas	Issues	Targets and Countermeasures	
		Step 1	Step 2
I. Cooling	(1) Cooling the Reactors	① **Maintain stable cooling** ・Nitrogen gas injection ・Flooding up to top of active fuel ・Examination and implementation of heat exchange function ② **(Unit 2) Cool the reactor while controlling the increase of accumulated water until the PCV is sealed**	③ **Achieve cold shutdown condition (sufficient cooling is achieved depending on the status of each unit.)** ・Maintain and reinforce various countermeasures in Step 1.
	(2) Cooling the Spent Fuel Pools	④ **Maintain stable cooling** ・Enhance reliability of water injection ・Restore coolant circulation system ・(Unit 4) Install supporting structure	⑤ **Maintain more stable cooling function by keeping a certain level of water.** ・Remote control of coolant injection operation ・Examination and implementation of heat exchange function
II. Mitigation	(3) Containment, Storage, Processing, and Reuse of Water Contaminated by Radioactive Materials (Accumulated Water)	⑥ **Secure sufficient storage place to prevent water with high radiation level from being released out of the site boundary.** ・Installation of storage / processing facilities. ⑦ **Store and process water with low radiation level** ・Installation of storage facilities/decontamination processing.	⑧ **Decrease the total amount of contaminated water.** ・Expansion of storage/processing facilities. ・Decontamination/Desalt processing (reuse), etc.
	(4) Mitigation of Release of Radioactive Materials to Atmosphere and from Soil	⑨ **Prevent scattering of radioactive materials on buildings and ground** ・Dispersion of inhibitor ・Removal of debris ・Installing reactor building cover	⑩ **Cover the entire buildings (as temporary measure).**
III. Monitoring/ Decontamination	(5) Measurement, Reduction and Announcement of Radiation Dose in Evacuation Order/Planned Evacuation/ Emergency Evacuation Preparation Areas	⑪ **Expand/enhance monitoring and inform of results fast and accurately** ・Examination and implementation of monitoring methods.	⑫ **Sufficiently reduce radiation dose in evacuation order / planned evacuation / emergency evacuation preparation areas** ・Decontamination/monitoring of homecoming residences.
		(Note) With regard to radiation dose monitoring and reduction measures in evacuation order/planned evacuation/emergency evacuation preparation areas, we will take every measure through thorough coordination with the national government and by consultation with the prefectural and municipal governments.	

Attachment ①

Roadmap towards Restoration from the Accident at Fukushima Daiichi Nuclear Power Station

Basic Policy: By bringing the reactors and spent fuel pools to a stable cooling condition and mitigating the release of radioactive materials, we will make every effort to enable evacuees to return to their homes and for all citizens to be able to secure a sound life.

Areas	Issues	Current Status (as of April 16th)	Targets, Countermeasures and Risks <Step 1 (around 3 months)> Radiation dose is in steady decline.	Targets, Countermeasures and Risks <Step 2 (around 3 to 6 months*)> Release of radioactive materials is under control and radiation dose is being significantly held down. * After achieving Step 1	Mid-term Issues
I. Cooling	(1) Cooling the Reactors	**Current Status [1] (Units 1 to 3) Cooling achieved by water injection while there is partial damage to fuel pellets.** ⇒Continued injection of fresh water and further cooling measures are required. Countermeasure [1]: Injecting fresh water into the RPV by pumps. Risk [1]: Possibility of hydrogen explosion due to condensation of steam in the PCV when cooled, leading to increased hydrogen concentration. Countermeasure [2]: Injecting nitrogen gas into the PCV (start from Unit 1.) Countermeasure [3]: Consideration of flooding the PCV up to the top of active fuel. **Current Status [2] (Units 1 to 3) High likelihood of small leakage of steam containing radioactive materials through the gap of PCV caused by high temperature.** ⇒Lowering the amount of steam through cooling and implementation of leakage prevention are required. Countermeasure [4]: Lower the amount of steam generated by sufficiently cooling the reactor (to be achieved by measures in Steps 1 and 2.) Countermeasure [5]: Consideration of shielding the leakage by covering the reactor building (coordinate with issue [4].) **Current Status [3] (Unit 2) Large amount of water leakage, indicating high likelihood of PCV damage.** ⇒Repairing the damaged location is required. ⇒Need to control the amount of water injection since leakage increases as injection increases. Countermeasure [6]: Consideration of sealing the damaged location (e.g., filling with grout (glutinous cement)) Countermeasure [7]: Cooling at minimum water injection rate (control the leakage of contaminated water.) Risk[2]: Possibility of prolonged work of sealing the damaged location (→countermeasures [12] and [14]) **Current Status [4] Secured multiple off-site power (1 system each from TEPCO and Tohoku EPCO) and deployed backup power (generator cars / emergency generators)** Risk [3]: Possibility of (partial) loss of power from the grid caused by ensuring aftershocks and lightning in summer. Countermeasure [8]: Install interconnecting lines of offsite power soon.	**Target [1] (Unit 1 to 3) Maintain stable cooling.** Countermeasure [9]: Flood the PCV up to the top of active fuel. Countermeasure [10]: Reduce the amount of radioactive materials (utilization of standby gas treatment system (filter), etc.) when PCV venting (release of steam containing radioactive materials into the atmosphere). Countermeasure [11]:Continue preventing hydrogen explosion by injecting nitrogen into the PCV. Risk [4]: Increase in water leakage into the turbine building in the process of flooding the PCV. Countermeasure [12]: Consideration and implementation of measures to hold down water inflow (e.g., circulating the water back into the RPV by storing and processing the accumulated water in the turbine building.) Countermeasure [13]: Consideration of recovering heat exchange function for the reactor (installing heat exchangers). Risk [5]: Possibility of prolonged work in high dose level area (→keep countermeasures [9] and [12]) **Target [2] (Unit 2) Cool the reactor while controlling the increase of accumulated water until PCV is sealed.** Countermeasure [14]: Continue cooling by current minimum injection rate. Countermeasure [15]: Continue prevention of hydrogen explosion by nitrogen injection into the PCV. Countermeasure [16]: Continue consideration and implementation of sealing measure at damaged location. Implement cooling measures similar to those for Units 1 and 3 once the dameged location is sealed. Risk[2]: Possibility of prolonged work of sealing the damaged location (→continue countermeasures [12] and [14])	**Target [3] Achieve cold shutdown condition (sufficient cooling is achieved depending on the status of each unit.)** Countermeasure [17]: Maintain and enhance countermeasures in Step 1 if needed.	**Issue [1] Prevention of breakage, clogging and water leakage of structural materials (reactor and pipes, etc.) due to corrosion caused by salt.**

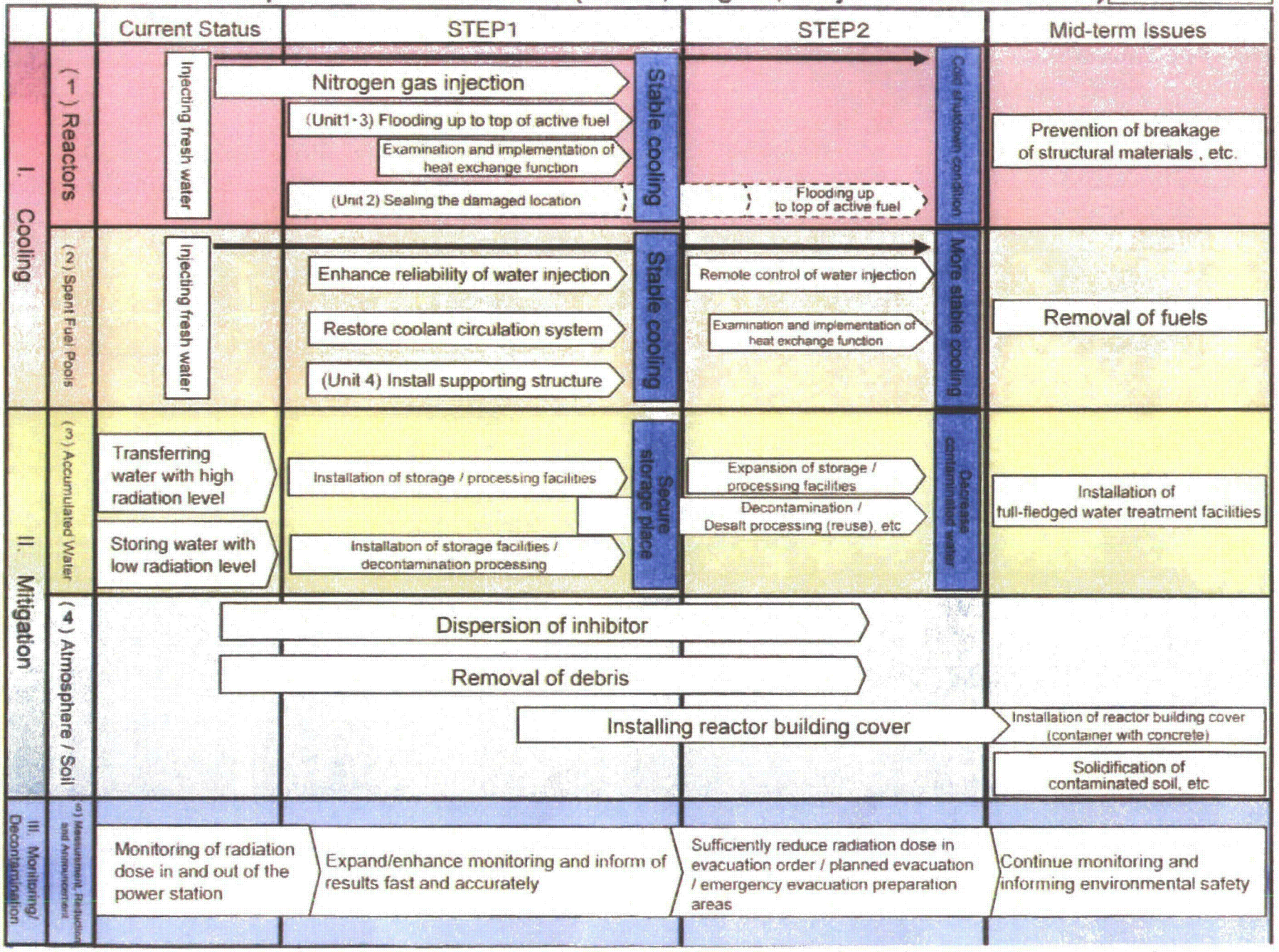
Note: Reactor pressure vessel is denoted as "RPV" and primary containment vessel is denoted as "PCV."

Areas	Issues	Current Status (as of April 16th)	Targets, Countermeasures and Risks <Step 1 (around 3 months)> Radiation dose is in steady decline.	<Step 2 (around 3 to 6 months*)> Release of radioactive materials is under control and radiation dose is being significantly held down. * After achieving Step 1	Mid-term Issues
I. Cooling	(2) Cooling the Spent Fuel Pools	**Current Status [5] Fresh water is injected from outside for Units 1, 3, 4 and through normal cooling line for Unit 2.** ⇒Reduction of worker exposure and countermeasures for aftershocks are required. Countermeasure [18]: Consideration/implementation of improving reliability of external water injection by concrete pumpers ("Giraffe", etc.)/switch to remote-controlled operation. **Current Status [6]: Confirmation of release of radioactive materials from the pool** Countermeasure [19]: Sampling and measurement of steam/pool water by "Giraffe", etc. ⇒Most fuels in Unit 4 have been confirmed intact according to the result of pool water analysis. **Current Status [7]: Walls of the building supporting the pool have been damaged.** ⇒Tolerance evaluation is especially needed for Unit 4. Countermeasure [20]: Seismic tolerance assessment of Unit 4. ⇒A certain level of seismic tolerance has been confirmed. Countermeasure [21]: Continue monitoring and examine necessary countermeasures (→ countermeasure [26].)	**Target [4]: Maintain stable cooling.** Countermeasure [22]: Continuation of water injection by "Giraffe", etc (reliability improvement (enhanced durability of hoses)/switch to remote-controlled operation.) Countermeasure [23]: Add cooling function to normal Fuel Pool Cooling system and continue injecting water for Unit 2. Countermeasure [24]: Examination and implementation of restoration of normal cooling system for Units 1, 3, and 4. Risk [6]: Possibility of inability to restore normal cooling line due to damages to the building. Countermeasure [25]: Examination and implementation of installing heat exchangers. Countermeasure [26]: (Unit 4) Installation of supporting structure under the bottom of the pool.	**Target [5]: Maintain more stable cooling function by keeping a certain level of water.** Countermeasure [27]: Cooling by installation of heat exchangers. Countermeasure [28]: Expansion of remote-controlled operation areas of "Giraffe", etc.	**Issue [2]: Removal of fuels (including Units 5 & 6.)**
II. Mitigation	(3) Containment, Storage, Processing, and Reuse of Water Contaminated by Radioactive Materials (Accumulated Water)	**Current Status [8]: Leakage of high radiation-level contaminated water assumed to have originated from Unit 2 reactor occurred, but was subsequently stopped.** Countermeasure [29]: Identify leakage path and examine and implement preventive measures. ・Placing sandbags with radioactive-material adsorption material (zeolite) in the bay. ・Installing fences in the bay to prevent contamination from spreading (silt fence.) ・Blockage between trenches and buildings, etc **Current Status [9]: Leakage and accumulation of high radiation level contaminated water at Unit 2's turbine building, vertical shafts and trenchs.** Countermeasure [30]: Transferring accumulated water to facilities that can store it (condenser and Centralized Waste Treatment Facility). Countermeasure [31]: Preparing decontamination and desalt of transferred accumulated water. (→Countermeasure [38]) Countermeasure [32]: Preparing to install tanks. **Current Status [10]: Increase of storage volume of water with low radiation level.** Countermeasure [33]: Preparing to store with tanks and barges. Countermeasure [34]: Preparing for decontamination and desalt of contaminated water (→Countermeasure [41]) Countermeasure [35]: Preparing to install a reservoir. **Current Status [11]: High likelihood of underground water around the building (sub-drainage water) to be contaminated.** Countermeasure [36]: Preparing to decontaminate sub-drainage water after being pumped up.	**Target [6]: Secure sufficient storage place to prevent water with high radiation level from being released out of the site boundary.** Countermeasure [37]: Utilization of "Centralized Waste Treatment Facility", etc. to store water. Countermeasure [38]: Install water processing facilities; decontaminate and desalt highly-contaminated water and store in tanks. Risk [7]: Possibility of delay in installing water processing facilities or poor operating performance of the facilities. Countermeasure [39]: Examination and implementation of backup measures (installment of additional tanks or pools or leakage prevention by coagulator, etc.) **Target [7]: Store and process water with low radiation level.** Countermeasure [40]: Increase storage capacity by adding tanks, barges, Megafloat, etc. Countermeasure [41]: Decontaminating contaminated water using decontaminants to below acceptable criteria.	**Target [8]: Decrease the total amount of contaminated water.** Countermeasure [42]: Expansion of additional tanks to store high radiation-level contaminated water. Countermeasure [43]: Continuation and reinforcement of decontamination and desalt of high radiation-level water. Countermeasure [44]: Continuation and reinforcement of decontamination and desalt of low radiation-level water. Countermeasure [45]: Reuse of processed water as reactor coolant. Countermeasure [46]: Decontamination to the level below criteria level.	**Issue [3] Installation of full-fledged water treatment facilities.**

Areas	Issues	Current Status (as of April 16th)	Targets, Countermeasures and Risks		Mid-term Issues
			<Step 1 (around 3 months)> Radiation dose is in steady decline.	<Step 2 (around 3 to 6 months*)> Release of radioactive materials is under control and radiation dose is being significantly held down. * After achieving Step 1	
II. Mitigation	(4) Mitigation of Release of Radioactive Materials to Atmosphere and from Soil	**Current Status [12]: Debris are scattered outside the buildings and radioactive materials are being scattered.** Countermeasure [47]: Inhibit scattering of radioactive materials by full-scale dispersion of inhibitor after confirming its performance by test. Countermeasure [48]: Prevent rain water contamination by dispersion of inhibitor. Countermeasure [49]: Removal of debris. Countermeasure [50]: Examination and implementation of basic design for reactor building cover and full-fledged measure (container with concrete roof and wall, etc.) Countermeasure [51]: Consideration of solidification, substitution and cleansing of contaminated soil (med-term issues.)	**Target [9]: Prevent scattering of radioactive materials on buildings and ground.** Countermeasure [52]: Improvement of work condition by expanding application and dispersion of inhibitors to the ground and buildings. Countermeasure [53]: Continue removal of debris. Countermeasure [54]: Begin installing reactor building cover (with ventilator and filter.) Risk [8]: Considerable reduction of radiation dose is a prerequisite to launch construction (→continue countermeasure [52] and [53].)	**Target [10]: Cover the entire buildings (as temporary measure).** Countermeasure [55]: Complete installing reactor building covers (Units 1, 3, 4.) Risk [9]: Possibility of cover being damaged by a huge typhoon. Countermeasure [56]: Begin detailed design of full-fledged measure (container with concrete roof and wall, etc.)	**Issue [4]: Cover the entire building (as full-fledged measure)** Issue [5]: Solidification, substitution and cleansing of contaminated soil.
III. Monitoring/ Decontamination	(5) Measurement, Reduction and Announcement of Radiation Dose in Evacuation Order/Planned Evacuation/Emergency Evacuation Preparation Areas	**Current status [13]: Monitoring of radiation dose in and out of the power station is carried out.** Countermeasure [57]: Monitoring sea water, soil and atmosphere within the site boundary (25 locations.) Countermeasure [58]: Monitoring radiation dose at the site boundary (12 locations.) Countermeasure [59]: Consideration of monitoring methods in evacuation order/planned evacuation/emergency evacuation preparation areas. (→countermeasure [60] to [63])	**Target [11]: Expand/enhance monitoring and inform of results fast and accurately.** Countermeasure [60]: Consideration and implementation of monitoring methods in evacuation order / planned evacuation / emergency evacuation preparation areas (in cooperation and consultation with national/prefectural/municipal governments.) Countermeasure [61]: Announce accurately monitoring results of long half-life residue radioactive materials such as cesium 137.	**Target [12]: Sufficiently reduce radiation dose in evacuation order / planned evacuation / emergency evacuation preparation areas.** Countermeasure [62]: Monitoring of homecoming residences <in cooperation and consultation with national / prefectural / municipal governments.> Countermeasure [63]: Examination and implementation of necessary measures to reduce radiation dose (decontamination of homecoming residences and soil surface) <in cooperation and consultation with national/prefectural/municipal governments.>	Issue [6]:Continue monitoring and informing environmental safety.
		(Note) With regard to radiation dose monitoring and reduction measures in evacuation order/planned evacuation/emergency evacuation preparation areas, we will take every measure through thorough cooperation with the national government and by consultation with the prefectural and municipal governments.			

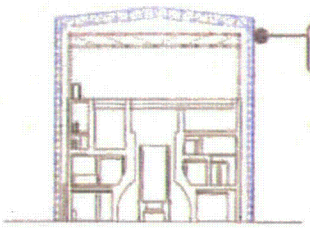
Roadmap for Immediate Actions (Issues / Targets / Major Countermeasures)

Reference 1



Overview of Major Countermeasures in the Power Station

Reference 2



Reactor building cover (countermeasures 5, 50, 54, 55)

Cooling of spent fuel pool by external water injection (countermeasures 18, 22, 28)

Sampling of steam/pool water and measurement of radioactive materials (countermeasure 19)

Storage of low radiation-level water (countermeasures 33, 35, 40)

Nitrogen gas injection (countermeasures 2, 11, 15)

Reactor Building

Circulation cooling of spent fuel pool (countermeasures 23, 24, 25, 27)

Tank

Processing high radiation-level water (countermeasures 31, 38, 43)

Water processing facility (Decontamination and desalt processing)

Tanks, Megafloats, Barges, Reservoir

PCV venting (with filtration) (countermeasure 10)

Primary Containment Vessel (PCV)

Tank Lorry

Reuse of processed water (Countermeasure 45)

Storage of high radiation-level water (countermeasures 30, 32, 37, 39, 42)

Flooding up to top of active fuel (countermeasures 3, 9)

Reactor Pressure Vessel (RPV)

Turbine Building

Steam Turbine

Heat Exchanger

Additionally-installed Tank

Installation of heat exchangers (countermeasure 13)

Centralized Waste Treatment Building

Condenser

Injection of fresh water with pumps (countermeasure 1)

Suppression Chamber

(Unit 2) Sealing the damaged location (countermeasures 6, 16)

Dispersion of inhibitor (countermeasures 47, 48, 52)
Removal of debris (countermeasures 49, 53)
Consideration of countermeasures for contaminated soil (countermeasure 51)

Preventive measures against leakage of high radiation-level water (countermeasure 29)

Treatment of sub-drainage water after being pumped up (countermeasure 36)

Seismic assessment (countermeasure 20),
Continued monitoring (countermeasure 21),
(Unit 4) Installation of supporting structure under the bottom of spent fuel pool (countermeasure 26)

piping

pumps

heat exchangers, water processing facilities

Statement of Mr. Banri Kaieda, Minister of Economy, Trade and Industry at the press conference following the announcement of Roadmap by Tokyo Electric Power Company (TEPCO)

1. Presentation at the earliest possible date of a roadmap towards settling the situation at Fukushima Daiichi Nuclear Power Station has been requested by people home and abroad, especially the residents around Fukushima Daiichi Nuclear Power Station.
   TEPCO has just released this roadmap, which is an important step forward. Taking this opportunity, we would like to move from the "emergency response phase" up until now to the "planned & stabilizing action phase" in which the settlement of the situation will be aimed under the solid roadmap.
2. In response to the release of the roadmap,
   (1) The Government will request TEPCO to ensure the implementation of this roadmap steadily and as early as possible. To this end, the Nuclear and Industrial Safety Agency and others will make regular follow-up, monitoring of the progress of the works and necessary safety checks;
   (2) The Government will request TEPCO to ensure the mobilization and deployment of workers, the procurement and preparation of equipment and materials, and the arrangement of accommodation and other facilities, which are necessary to ensure implementation of the roadmap;
   (3) At the end of Step 2, the release of radioactive materials will be under control. At this stage, the Government will, following advices of the Nuclear Safety Commission of Japan, review the "Deliberate Evacuation Area" and the "Evacuation Prepared Area". Up until that time, we will consider the details of review criteria, and will decontaminate the widest possible area.
   By implementing this, we would like to announce, within 6 to 9 months as our target, to the residents of some of the areas whether they will be able to come home.

(Division in Charge)
Nuclear and Industrial Safety Agency
Nuclear Safety Public Relations and Training Division

Date: 3/13/2011 Time: 1:55am

State Q&A's:

Q. What is the radiological consequence of the event in Japan for the U.S.?
A. At this time, there is no indication that materials from the incidents in Japan have the potential to have any significant radiological effect on the U.S.

Q. Are there any protective measures that residents in the U.S. should be considering?
A. No, not given current information.

Q. What is the Federal family, i.e., NRC-EPA-DOE, doing to monitor the radiological consequence of the event in Japan on the United States?

A. 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.

U.S. nuclear power plants have sensitive equipment to monitor the status of radiological conditions. Additionally, personnel at nuclear power plants have specific knowledge in radiological field monitoring techniques and could assist State and Federal personnel in environmental sampling activities, should that be necessary to evaluate public health and safety concerns.

EPA has permanent stationary radiological monitoring stations on the West coast. In the event of a confirmed radiological release with a potential to impact the U.S., EPA is the Federal agency responsible for radiological monitoring. DOE would be responsible for aerial monitoring, should there be a confirmed radiological release.

Non-Public Info For States Only: Questions about any radiological impact on the U.S. West coast is Adora Andy, the Deputy Associate Administrator for EPA's Office of External Affairs: cell is 202.527.5866; email andy.adora@epa.gov

Key Messages:

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'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 officials in Rockville, MD have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from NRC with expertise in 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 disaster administering.

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 into 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. See NRC's web site at www.nrc.gov or blog at http://public-blog.nrc-gateway.gov for the latest information on NRC actions.

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC's website at www.nrc.gov

Other sources of information:

USAID -- www.usaid.gov
U.S. Dept. of State -- www.state.gov
FEMA -- www.fema.gov
White House -- www.whitehouse.gov
Nuclear Energy Institute -- www.nei.org
International Atomic Energy Agency -- www.iaea.org/press

Reeves, Rosemary

From: Reeves, Rosemary
Sent: Monday, April 11, 2011 4:31 PM
To: 'Reeves, Steven'
Subject: A 6.6 quake in Japan today

I was just catching up on things in Japan. I can't find the location of the sheets we were getting info on, but I'm going to make a few calls in a minute…

http://www.iaea.org/newscenter/news/tsunamiupdate01.html

E\73

3/11/11

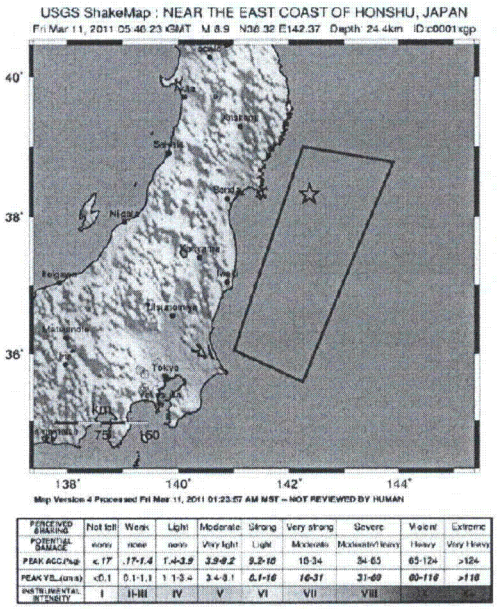
ShakeCast Report

Magnitude 8.9 - NEAR THE EAST COAST OF HONSHU, JAPAN **Version 4**

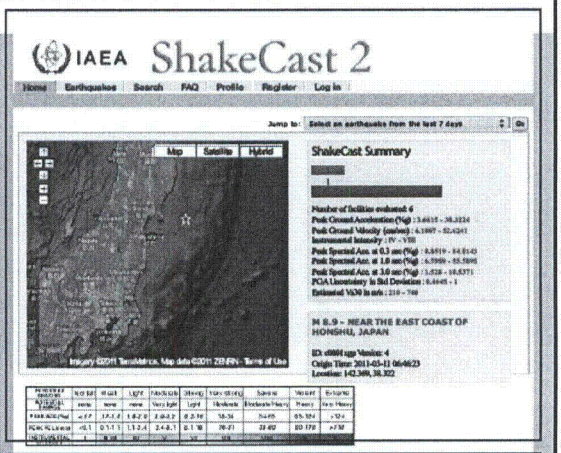
Time: 2011-03-11 05:46:23 GMT
Location: 38.32 N/ 142.37 E
Depth: 24.4 km

Created: 2011-03-11 09:37:54 GMT
For more information and latest version see
http://earthquake.usgs.gov/shakemap

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



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



Recent significant earthquakes in the region

- M7.7 Miyagi-Oki, Japan at 6/12/1978 8:14
- M7.4 NEAR THE EAST COAST OF HONSHU, JAPAN at 11/1/1989 18:25
- M7.2 Miyagi-Oki, Japan at 8/16/2005 2:46
- M7 NEAR THE EAST COAST OF HONSHU, JAPAN at 1/18/1981 18:11
- M7 Miyagi-Oki, Japan at 5/26/2003 9:24

FACILITY_TYPE	FACILITY_ID	FACILITY_NAME	LATITUDE	LONGITUDE	DAMAGE_LEVEL	MMI	PGA	PGV	PSA03	PSA10	PSA30
NPP	JPN1	Fukushima Daiichi	37.4215	141.034	RED	7.72	25.8708	35.5119	57.8466	37.5128	7.4042
NPP	JPN2	Fukushima Daini	37.3163	141.025	RED	7.76	26.6768	36.4785	59.5783	38.5339	7.5874
NPP	JPN10	Onagawa	38.3998	141.501	RED	7.34	23.483	27.6412	52.4778	29.1987	5.7565
NPP	JPN4	Hamaoka	34.6242	138.14	GREEN	4.96	6.5016	10.322	15.3754	10.9036	2.4143
NPP	JPN7	Kashiwazaki - Kariwa	37.4317	138.598	YELLOW	5.53	8.5166	13.0735	19.9327	13.8102	2.9935
NPP	JPN15	Tokai	36.4654	140.607	RED	7.72	25.8298	35.4623	57.7583	37.4606	7.3948

6/74

Johnson, Michael

From: Schum, Constance
Sent: Tuesday, April 12, 2011 9:14 AM
To: Flanders, Scott; Johnson, Michael
Cc: Segala, John; Gusack, Barbara
Subject: EDO Pre-brief Japanese Earthquake Status - Focus on Station Blackout

I spoke with Jim Andersen yesterday with regard to the briefing. He said that NRR has the lead and we should send someone from NRO to the pre-brief. He said for the Commission briefing, that the OD or Deputy OD should attend and be able to answer questions that may arise as to how issues may affect new reactors. I would think a division director would be appropriate for this role.

Connie Schum, Acting Director
Program Management, Policy Development
and Analysis Staff
Office of New Reactors
301.415.1207

E\75

Release

Heck, Jared

From: Logaras, Harral
Sent: Tuesday, April 12, 2011 12:54 PM
To: Giessner, John; Stoedter, Karla; Zurawski, Paul
Cc: Heck, Jared; Lipa, Christine; Rodriguez, Lionel; Barker, Allan; Wengert, Thomas; Mitlyng, Viktoria
Subject: Prairie Island G2G Japan Speech
Attachments: G2G PINGP SPEECH ILO JAPAN.docx

Dear Jack, Karla and Paul,

I have prepared a 12 minute speech with a focus on the events in Japan. After reading all of the public comments made by our executives, I have taken the content from a speech by Chairman Jaczko in Vienna and from EDO Borchardt's presentation to the Commission. So the attached is fully (except the last paragraph) made up from these two sources. I planned to deliver this at our G2G if and when the meeting goes there. If any one of you wishes to deliver this speech, please let me know. This speech is

Sincerely,

Harral Logaras
U. S. NRC Region III
Regional Government Liaison
630-829-9659

Link to the *Award Winning* NRC Information Digest http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf

Link to NRC Fact Sheets and Brochures http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

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G2G SPEAKERS NOTES ILO JAPAN

(REF NRC NEWS S11-011, EDO COMMISSION BRIEFING 03/21/2011)

FOUO – SPEAKERS PERSONAL NOTES NOT TO BE SHARED - FOUO

Good afternoon. We are pleased to have the opportunity to speak to our counterparts in the Prairie Island Emergency Planning Zone.

We are heartsick for all who have been dealing with the aftermath of the earthquake and tsunami in Japan, and we are mindful of the long and difficult road they will face in recovering. We know that the people of Japan are resilient and strong, and we have every confidence that they will come through this terrible time and move forward, with resolve, to rebuild their vibrant country.

NRC Response to Japan Events

I'd like to take a few minutes to address the response of the NRC to the tragic events in Japan, and then to briefly describe how we plan to proceed.

On Friday, March 11, when the earthquake and tsunami struck, the NRC's Operations Center began operating on a 24-hour basis to monitor and analyze events at nuclear power plants in Japan. At the request of the Japanese government, and through the United States Agency for International Development (USAID), the NRC sent a team of its technical experts to provide on-the-ground support, and we have been in continual contact with them since that time. And, within the United States, the NRC has been working closely with an extensive range of stakeholders, including the White House, Congressional staff, our state regulatory counterparts, a number of other federal agencies, and the international regulatory bodies around the world.

Shortly after 4:00 AM (Washington, DC time) on Friday, March 11th, the NRC Emergency Operations Center made the first telephone call to inform NRC management of the earthquake and the potential impact on U.S. plants. We went into monitoring mode at our Emergency Operations Center, and the NRC's initial focus was on the possible impacts of the tsunami on U.S. plants and radioactive materials on the West Coast, and in Hawaii, Alaska, and U.S. Territories in the Pacific.

We were in communication with our licensees and our resident inspectors at the Diablo Canyon and San Onofre plants in California, and the Radiation Control Program Directors for California, Washington, Oregon and Hawaii.

On that same day, we began interactions with our Japanese regulatory counterparts and dispatched two NRC experts to Japan to help at the embassy in Tokyo.

By Monday, March 14, we had dispatched a total of 11 NRC staff to Japan. We have subsequently rotated in additional staff to continue on-the-ground assistance in Japan. The areas of focus for this team are: 1) to assist the Japanese government and respond to requests from our Japanese regulatory counterparts; 2) to support the U.S. Ambassador and the U.S. government assistance effort.

On Wednesday, March 16, we collaborated with other U.S. government agencies and decided to advise American citizens to evacuate within a 50-mile range around the plant. We believed this decision was a prudent course of action, and would be consistent with what we would do in a similar situation in the United States. This evacuation range was predicated on the

information that we had available at the time, which indicated the possibility that reactor cores and spent fuel pools may have been compromised.

Steps Already Taken

The NRC's program of continuous improvement will in the future include lessons learned from the events in Japan. We already have begun enhancing inspection activities through temporary instructions to our inspection staff, including the resident inspectors and the inspectors in our four Regional offices.

We've also issued an information notice to licensees to make them aware of activities they should undertake to verify that their capabilities to mitigate conditions due to severe accidents—including the loss of significant operational and safety systems—are in effect and operational. Specific conditions include a total loss of electric power, flooding, and damage from seismic events.

On their own initiative, the Institute of Nuclear Power Operations (INPO) issued a Level I Event Report (highest level) to its members on March 15, identifying four actions requiring written responses. Those include walkdowns and verifications of capabilities to address large fires and explosions; severe accident management guidelines; mitigation of station blackout conditions; internal and external flooding, and fire and flooding events that could be impacted by a concurrent seismic event.

NRC Plans Moving Forward

While we are confident about the safety of U.S. nuclear power plants, our regulatory agency has a responsibility to the American people to undertake a systematic and methodical review of the safety of our domestic facilities, in light of the natural disaster and the resulting nuclear situation in Japan. Examining all available information is an essential part of that effort.

On March 21, the NRC Commissioners established a senior level task force to conduct a comprehensive review of our processes and regulations to determine whether the agency should make improvements to our regulatory system.

This review will be conducted in a short-term and a longer-term timeframe. The short-term review has already begun, and will identify potential or preliminary near-term operational or regulatory issues. A longer-term review will begin as soon as we have sufficient information from Japan. That review will be completed in six months from the beginning of the evaluation. The task force's reports will be publicly available.

The task force will evaluate all technical and policy issues related to the event to identify additional potential research, generic issues, changes to the reactor oversight process, rulemakings, and adjustments to the regulatory framework that should be pursued by the NRC. We also expect to evaluate issues that may involve multiple U.S. Government agencies, such as emergency preparedness. We will seek input from all key stakeholders during this process. Based on what we learn in our review, we will take all of the appropriate actions that are necessary to ensure the continuing safety of the American people.

We will also continue to communicate closely with our regulatory counterparts including the International Atomic Energy Agency throughout this process. As we proceed with lessons-learned efforts in the months ahead, international cooperation takes on new importance.

NRC Domestic Safety Focus

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

The fact that every reactor in this country is designed for natural events based upon the specific site that that reactor is located, that there are multiple fission product barriers, and that there are a wide range of diverse and redundant safety features in order to provide that public health and safety assurance. We have a long regulatory history of conservative decision-making. We have never stopped making improvements to the plant design as we learn from operating experience over the more than 35 years of civilian nuclear power in this country. Some have been derived from lessons learned from previous significant events, such as Three Mile Island. We have severe accident management guidelines, revisions to the emergency operating procedures, procedures and processes for dealing with large fires and explosions, regardless of the cause. We have a station blackout rule. We have a hydrogen rule for reactors and many others.

We have, since the beginning of the regulatory program in the United States, used a philosophy of Defense-in-Depth, which recognizes that the nuclear industry requires the highest standards of design, construction, oversight, and operation, but even with that we will not rely on any one level of protection for the purposes of protecting public health and safety. So the designs for every single reactor in this country take into account the specific site that that reactor is located and does a detailed evaluation for any natural event such as earthquakes, tornadoes, hurricanes, floods, tsunami, and many others. In addition, there are multiple physical barriers to fission product release at every reactor. And then in addition to that, there are both diverse and redundant safety systems that are required by NRC regulations to be maintained operable and frequently tested to ensure that the plant is in a high condition of readiness to respond to any scenario.

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

degradation. And of course one of the most significant changes is after Three Mile Island we created the Resident Inspector Program, which has at least two full time NRC inspectors on site that have unfettered access every day to all licensees' activities 24 hours a day, seven days a week.

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

As a result of the events of September 11, 2001, we did a similar evaluation, and identified important pieces of equipment that, if, regardless of the cause of a significant fire or explosion at a plant, we would have pre-staged equipment, procedures, and policies to help deal with that situation.

All of these things are directly applicable to the kinds of very significant events that are taking place in Japan. Over the last 15 or 20 years, there's been a number of new rulemakings that directly relate to Japan. There's a station blackout rule that has required every plant in the country to analyze what the plant response would be if it were to lose all alternating current so that it could respond using batteries for a while, and then have procedures and arrangements in place in order to restore alternating current power to the site, to provide cooling to the core.

As I mentioned earlier, there's a hydrogen rule, which requires modifications to reduce the impacts of hydrogen generated for beyond-design basis events and core damage. There are equipment qualification rules that require equipment, indication equipment, as well as pumps and valves, to remain operable under the kinds of environmental conditions (i.e. temperature, radiation) that you would see under a design basis accident. And then, going directly to the type of containment design that the plants in Japan of highest interest have, we've had a Mark I Containment Improvement Program since the late 1980s, which had installed hardened vent systems for the containment cooling and fission product scrubbing for all BWR Mark I's, as well as enhanced reliability of the automatic depressurization system.

And to recap…

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

The NRC has:

1. informed the industry to verify readiness for very significant events,

2. chartered a senior level task force to conduct short-term and longer-term timeframe reviews of processes and regulations to determine whether improvements to our regulatory system should be made.

    a. The short-term review underway will identify potential or preliminary near-term operational or regulatory issues.

    b. A longer-term review to begin when we have sufficient information from Japan; to be completed in six months from the beginning of the evaluation.

    c. The task force will evaluate the event to identify additional potential changes to the reactor oversight process and regulatory framework and look at emergency preparedness. We will seek input from stakeholders and from what we learn, we will take all of the appropriate actions that are necessary.

The Prairie Island plant is not a similar design to reactors in Japan. The NRC is confident that the robust design of the U. S. plants including Prairie Island makes it highly unlikely that a similar event could occur in the United States. We are confident in light of the events of Japan in the design, upgrades and operation of the Prairie Island plant and that it is safe. As you know, the NRC has the responsibility and independent authority to take action to ensure safety up to and including requiring a shutdown.

Closing (RGLO Standard Closing Acknowledgement)

I want to wrap up with acknowledging the emergency preparedness and planning requirements that are maintained at the ready by the State of Ohio and the counties of Lake, Geauga and Ashtabula. It is on this point of public safety that we share a clearly focused mission element for the protection of the public health and safety and the environment.

Phalen, Martin

From: PATRICIA.VOSS@NRC.GOV
Sent: Tuesday, April 12, 2011 12:32 PM
To: Phalen, Martin
Subject: fyi i-131 results
Attachments: Document.pdf

E/77

REMP Charcoal Air Sample Results

Location	3/23/2011	3/30/2011	4/6/2011					
M-1 - 11.0 miles NW	0.059	0.066	0.112					
M-2 - 0.8 miles SE	0.076	0.055	0.089					
M-3 – 0.6 miles ESE	0.071	0.050	0.098					
M-4 – 0.8 miles SSE	0.098	0.061	0.134					
M-5 – 2.6 miles SE	0.077	0.047	0.113					

All results in pCi/M^3

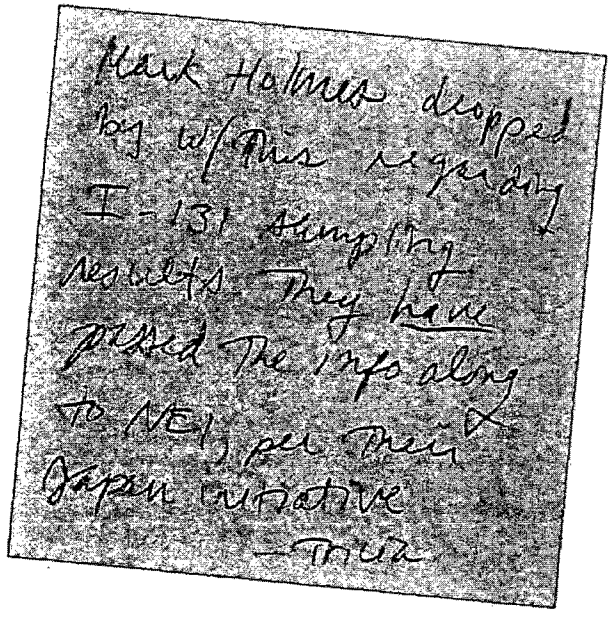

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Namie

Latitude: 37°29.5'N, Longitude: 140°57.8'E, Altitude: 47m Today

This site is not in operation.

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Namie

Latitude: 37°29.5'N, Longitude: 140°57.8'E, Altitude: 47m Yesterday

This site is not in operation.

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Tomioka

Latitude: 37°20.8'N, Longitude: 141°0.9'E, Altitude: 50m Today

This site is not in operation.

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Tomioka

Latitude: 37°20.8'N, Longitude: 141°0.9'E, Altitude: 50m Yesterday

This site is not in operation.

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Taira

Latitude: 37°3.9'N, Longitude: 140°52.6'E, Altitude: 12m Today

Time	Precipitation
Hour	mm
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0
15	0.0
16	0.0
17	0.0
18	0.0
19	0.0
20	0.0
21	0.0
22	0.0
23	0.0
24	0.0

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Taira

Latitude: 37°3.9'N, Longitude: 140°52.6'E, Altitude: 12m Yesterday

Time	Precipitation
Hour	mm
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0
15	0.0
16	0.0
17	0.0
18	0.0
19	0.0
20	0.0
21	0.0
22	0.0
23	0.0
24	0.0

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Onahama

Latitude: 36°56.8'N, Longitude: 140°54.2'E, Altitude: 3m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration	Humidity	Pressure
Hour	°C	mm	In 16 Compass Points	m/s	h	%	hPa
1	4.1	0.0	W	1.8		56	1017.0
2	4.4	0.0	W	2.1		58	1016.9
3	3.2	0.0	NNW	0.4		67	1016.6
4	3.4	0.0	NNW	1.0	0.0	68	1016.1
5	3.6	0.0	NNW	1.7	0.0	70	1015.8
6	6.0	0.0	NNE	2.3	0.3	63	1015.9
7	9.4	0.0	WSW	3.4	1.0	58	1015.3
8	11.1	0.0	SSW	2.9	1.0	61	1014.7
9	14.0	0.0	SSW	5.1	1.0	57	1014.0
10	14.3	0.0	S	4.6	1.0	57	1013.2
11	14.7	0.0	S	6.5	1.0	59	1012.4
12	15.0	0.0	S	6.5	1.0	59	1011.5
13	15.9	0.0	S	5.3	1.0	56	1010.7
14	17.0	0.0	S	6.1	1.0	45	1009.9
15	16.6	0.0	S	4.2	1.0	49	1009.4
16	21.4	0.0	NW	4.3	1.0	14	1009.5
17	17.5	0.0	WNW	1.6	1.0	34	1010.4
18	16.0	0.0	SE	0.6	0.5	48	1011.0
19	15.0	0.0	WSW	1.1	0.0	44	1011.7
20	14.4	0.0	ENE	1.0	0.0	39	1012.9
21	12.2	0.0	N	1.3		39	1013.7
22	12.5	0.0	NW	2.8		38	1013.4
23	12.3	0.0	NNW	2.2		41	1013.3
24	11.1	0.0	NE	1.0		46	1013.3

	Data	Time
Low Temperature(°C)	3.1	04:13
High Temperature(°C)	21.6	15:53
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	12.4(S)	13:25

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Onahama

Latitude: 36°56.8'N, Longitude: 140°54.2'E, Altitude: 3m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration	Humidity	Pressure
Hour	°C	mm	In 16 Compass Points	m/s	h	%	hPa
1	6.2	0.0	N	3.4		73	1010.9
2	6.0	0.0	N	4.1		70	1010.7
3	5.9	0.0	NNW	6.4		57	1011.4
4	5.1	0.0	N	4.2	0.0	57	1012.0
5	4.4	0.0	N	2.3	0.0	61	1012.6
6	5.4	0.0	N	3.1	0.3	54	1013.4
7	6.5	0.0	NNW	2.8	1.0	51	1014.1
8	7.9	0.0	NNW	5.0	0.6	39	1014.4
9	9.2	0.0	NNW	5.2	0.9	28	1014.2
10	10.5	0.0	NNW	7.8	1.0	24	1014.3
11	11.3	0.0	N	6.5	1.0	23	1014.0
12	12.6	0.0	NW	6.9	1.0	25	1013.5
13	12.4	0.0	NW	6.1	1.0	22	1013.3
14	12.9	0.0	NNW	6.4	1.0	21	1013.4
15	13.0	0.0	NW	5.8	1.0	20	1013.7
16	12.7	0.0	NW	6.2	1.0	19	1014.3
17	11.8	0.0	NW	4.6	1.0	20	1015.1
18	10.7	0.0	NNW	4.1	0.7	23	1015.6
19	9.9	0.0	NNW	2.5	0.0	26	1016.3
20	9.1	0.0	NNW	2.7	0.0	30	1016.9
21	7.2	0.0	N	3.2		41	1016.9
22	7.7	0.0	SW	3.9		43	1017.6
23	5.5	0.0	NW	1.6		51	1017.6
24	4.1	0.0	NW	1.3		58	1017.5

	Data	Time
Low Temperature(°C)	4.1	24:00
High Temperature(°C)	13.6	13:57
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	14.4(NNW)	10:03

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Marumori

Latitude: 37°55.9'N, Longitude: 140°46.7'E, Altitude: 18m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	-1.7	0.0	SSE	1.3	
2	-0.8	0.0	S	2.4	
3	-2.1	0.0	SE	1.2	
4	-2.1	0.0	SE	1.0	0.0
5	-2.0	0.0	SSE	1.1	0.0
6	3.0	0.0	SW	1.6	0.2
7	7.5	0.0	S	0.6	1.0
8	10.3	0.0	WSW	5.2	1.0
9	13.5	0.0	WSW	4.5	1.0
10	16.7	0.0	SW	6.2	1.0
11	18.6	0.0	WSW	7.9	1.0
12	18.8	0.0	W	7.7	1.0
13	19.2	0.0	W	11.0	1.0
14	18.7	0.0	W	9.3	1.0
15	18.1	0.0	W	11.4	1.0
16	17.7	0.0	W	6.6	1.0
17	16.8	0.0	WSW	6.9	1.0
18	15.7	0.0	WSW	4.5	0.6
19	14.4	0.0	WSW	3.6	0.0
20	13.7	0.0	WNW	3.8	0.0
21	12.7	0.0	WNW	2.6	
22	10.3	0.0	SW	3.0	
23	7.9	0.0	SSW	2.5	
24	10.3	0.0	WSW	3.1	

	Data	Time
Low Temperature(°C)	-3.0	03:24
High Temperature(°C)	19.7	12:53
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	21.6(WSW)	12:58

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Marumori

Latitude: 37°55.9'N, Longitude: 140°46.7'E, Altitude: 18m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	4.2	0.0	W	2.8	
2	3.6	0.0	WNW	1.7	
3	3.0	0.0	W	1.8	
4	0.6	0.0	WSW	0.9	0.0
5	2.8	0.0	NW	1.8	0.0
6	3.4	0.0	WNW	1.7	0.3
7	5.1	0.0	NW	2.7	0.6
8	5.8	0.0	NNW	3.9	0.6
9	7.3	0.0	NW	6.4	0.8
10	8.4	0.0	NW	7.0	1.0
11	9.3	0.0	NW	5.0	0.7
12	9.8	0.0	NW	6.1	0.9
13	10.9	0.0	NW	7.4	0.9
14	11.5	0.0	WNW	5.8	1.0
15	11.0	0.0	NW	6.5	1.0
16	11.0	0.0	WNW	5.0	1.0
17	10.2	0.0	W	4.8	0.9
18	8.4	0.0	W	5.0	0.7
19	7.4	0.0	W	2.7	0.0
20	6.5	0.0	W	1.7	0.0
21	0.9	0.0	S	1.2	
22	1.2	0.0	S	1.3	
23	1.9	0.0	SW	2.0	
24	-0.1	0.0	Calm	0.2	

	Data	Time
Low Temperature(°C)	-1.1	23:48
High Temperature(°C)	12.0	14:03
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	14.8(NW)	09:01

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Watari

Latitude: 38°1.5'N, Longitude: 140°51.5'E, Altitude: 4m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	4.8	0.0	SSW	3.4	
2	4.8	0.0	SW	4.0	
3	4.4	0.0	WSW	1.7	
4	3.4	0.0	S	2.7	0.0
5	2.5	0.0	NE	0.6	0.0
6	5.4	0.0	SW	7.9	0.2
7	8.3	0.0	SSE	4.4	1.0
8	11.1	0.0	SSW	7.4	1.0
9	13.1	0.0	SW	7.1	1.0
10	16.0	0.0	WSW	7.5	1.0
11	18.4	0.0	W	5.2	1.0
12	18.1	0.0	WSW	8.2	1.0
13	18.6	0.0	W	9.0	1.0
14	18.3	0.0	W	12.9	1.0
15	18.2	0.0	W	8.5	1.0
16	17.5	0.0	WSW	5.6	1.0
17	16.8	0.0	WSW	7.8	1.0
18	15.8	0.0	WSW	7.6	0.4
19	13.6	0.0	ENE	2.1	0.0
20	11.8	0.0	NW	1.7	0.0
21	13.4	0.0	NW	2.9	
22	11.7	0.0	SW	1.6	
23	11.7	0.0	SW	4.9	
24	12.1	0.0	WSW	5.1	

	Data	Time
Low Temperature(°C)	1.3	04:57
High Temperature(°C)	18.9	13:38
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	21.4(WNW)	13:44

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Watari

Latitude: 38°1.5'N, Longitude: 140°51.5'E, Altitude: 4m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	4.9	0.0	WNW	3.2	
2	4.2	0.0	NNW	1.4	
3	3.5	0.0	NW	2.8	
4	2.8	0.0	NW	1.7	0.0
5	3.3	0.0	WNW	3.2	0.0
6	3.1	0.0	NW	2.4	0.4
7	4.0	0.0	NNW	5.4	1.0
8	4.8	0.0	NW	5.7	0.7
9	6.1	0.0	NW	6.7	0.6
10	7.9	0.0	NNW	7.2	0.7
11	8.7	0.0	NW	8.3	0.9
12	9.6	0.0	NW	8.3	0.9
13	10.4	0.0	NW	7.5	1.0
14	10.7	0.0	NW	7.4	1.0
15	10.6	0.0	WNW	6.7	0.9
16	10.5	0.0	NW	6.4	0.9
17	9.8	0.0	NW	5.8	1.0
18	8.1	0.0	W	2.8	0.6
19	6.5	0.0	SW	3.0	0.0
20	5.1	0.0	WSW	3.1	0.0
21	4.3	0.0	SW	3.7	
22	4.0	0.0	SW	2.7	
23	5.6	0.0	SW	3.3	
24	4.4	0.0	SSW	2.8	

	Data	Time
Low Temperature(°C)	2.3	21:24
High Temperature(°C)	11.4	15:07
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	16.8(NNW)	11:55

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Natori (Sendai Airport)

Latitude: 38°8.3'N, Longitude: 140°55.0'E, Altitude: 2m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed
Hour	°C	mm	In 16 Compass Points	m/s
1	4.5	0.0	SW	1.8
2	4.0	0.0	SSW	2.1
3	2.4	0.0	WNW	1.7
4	3.4	0.0	N	0.9
5	3.9	0.0	WSW	2.5
6	4.4	0.0	SW	3.2
7	6.5	0.0	WSW	3.6
8	9.9	0.0	SSW	4.1
9	11.9	0.0	SSW	6.6
10	16.4	0.0	WSW	8.4
11	18.3	0.0	WSW	11.6
12	18.5	0.0	WSW	11.9
13	19.6	0.0	WNW	7.1
14	18.9	0.0	W	7.8
15	18.7	0.0	WNW	7.4
16	17.8	0.0	W	5.8
17	17.2	0.0	WNW	3.7
18	16.2	0.0	NW	2.7
19	15.2	0.0	NW	2.4
20	14.1	0.0	WSW	3.2
21	11.2	0.0	SE	2.7
22	11.2	0.0	ENE	1.0
23	8.9	0.0	SSW	0.9
24	9.0	0.0	NW	0.9

	Data	Time
Low Temperature(°C)	1.5	04:39
High Temperature(°C)	19.6	13:03
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	19.5(WSW)	10:57

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Natori (Sendai Airport)

Latitude: 38°8.3'N, Longitude: 140°55.0'E, Altitude: 2m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed
Hour	°C	mm	In 16 Compass Points	m/s
1	5.5	0.0	WNW	1.4
2	5.5	0.0	NW	2.5
3	5.1	0.0	NW	2.2
4	4.2	0.0	NW	1.7
5	4.2	0.0	NW	3.6
6	3.5	0.0	WNW	2.2
7	4.0	0.0	WNW	5.2
8	5.5	0.0	WNW	3.8
9	6.8	0.0	NW	4.9
10	7.4	0.0	WNW	6.3
11	8.8	0.0	NW	6.3
12	9.0	0.0	WNW	6.9
13	9.9	0.0	NW	6.2
14	10.9	0.0	NW	5.8
15	11.2	0.0	NW	5.7
16	10.6	0.0	NW	4.0
17	10.3	0.0	WNW	4.0
18	9.1	0.0	WNW	3.8
19	8.3	0.0	WNW	1.6
20	7.3	0.0	SSW	2.5
21	5.7	0.0	SW	0.9
22	3.9	0.0	WSW	2.2
23	3.8	0.0	WSW	0.8
24	4.3	0.0	SW	1.7

	Data	Time
Low Temperature(°C)	2.9	06:37
High Temperature(°C)	11.7	13:38
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	13.9(NNW)	13:58

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Sendai

Latitude: 38°15.7'N, Longitude: 140°53.8'E, Altitude: 39m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration	Snow Depth	Humidity	Pressure
Hour	°C	mm	In 16 Compass Points	m/s	h	cm	%	hPa
1	4.4	0.0	SW	1.9		0	56	1015.6
2	4.6	0.0	SW	3.2		0	48	1014.7
3	3.3	0.0	S	2.4		0	55	1014.6
4	2.3	0.0	S	1.4	0.0	0	64	1014.0
5	1.6	0.0	SSW	1.6	0.0	0	68	1013.7
6	3.7	0.0	SSW	5.0	0.2	0	53	1013.0
7	6.0	0.0	SSW	3.0	1.0	0	50	1012.3
8	9.8	0.0	SSW	6.5	1.0	0	40	1011.3
9	12.4	0.0	S	6.2	1.0	0	34	1010.8
10	15.3	0.0	SE	3.1	1.0	0	28	1009.6
11	18.4	0.0	W	6.6	1.0	0	18	1008.7
12	19.0	0.0	WNW	7.3	1.0	0	21	1008.3
13	18.4	0.0	WNW	11.6	1.0	0	25	1007.9
14	18.2	0.0	WNW	11.9	1.0	0	25	1008.0
15	18.1	0.0	WNW	11.2	1.0	0	25	1007.8
16	17.5	0.0	WNW	11.5	1.0	0	23	1008.2
17	16.3	0.0	WNW	10.5	1.0	0	31	1008.8
18	15.5	0.0	WSW	3.5	0.4	0	33	1010.2
19	14.9	0.0	NW	3.3	0.0	0	31	1011.3
20	14.4	0.0	WNW	5.3	0.0	0	33	1011.8
21	11.9	0.0	NNW	4.5		0	49	1012.5
22	11.1	0.0	NNE	1.2		0	50	1013.1
23	9.6	0.0	E	1.9		0	59	1013.3
24	9.3	0.0	W	1.2		0	60	1013.0

	Data	Time
Low Temperature(°C)	1.4	05:07
High Temperature(°C)	19.5	11:57
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	19.8(WNW)	13:55

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Sendai

Latitude: 38°15.7'N, Longitude: 140°53.8'E, Altitude: 39m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration	Snow Depth	Humidity	Pressure
Hour	°C	mm	In 16 Compass Points	m/s	h	cm	%	hPa
1	6.1	0.0	WNW	3.6		0	54	1011.6
2	5.4	0.0	NNW	5.1		0	50	1011.6
3	4.9	0.0	N	4.7		0	57	1011.9
4	4.8	0.0	NW	4.6	0.0	0	52	1012.2
5	4.3	0.0	NW	3.3	0.0	0	61	1012.9
6	3.1	0.0	NW	3.6	0.3	0	78	1013.8
7	4.8	0.0	NNW	6.9	0.9	0	51	1013.8
8	6.2	0.0	NNW	8.9	1.0	0	41	1013.9
9	7.3	0.0	NNW	10.4	1.0	0	36	1014.0
10	7.8	0.0	NW	10.0	0.9	0	31	1014.1
11	9.2	0.0	NNW	9.8	0.9	0	28	1013.8
12	9.6	0.0	NW	9.6	1.0	0	26	1013.8
13	10.2	0.0	NW	8.3	1.0	0	26	1014.0
14	10.1	0.0	NW	10.4	1.0	0	24	1013.8
15	10.5	0.0	NNW	8.5	1.0	0	22	1013.7
16	10.3	0.0	NNW	7.6	0.9	0	24	1014.1
17	9.8	0.0	NW	6.7	1.0	0	27	1014.5
18	9.1	0.0	WNW	3.1	0.6	0	29	1015.0
19	8.5	0.0	WNW	2.2	0.0	0	31	1015.5
20	7.0	0.0	E	0.7	0.0	0	45	1016.1
21	6.3	0.0	SSE	1.8		0	49	1016.3
22	5.4	0.0	S	0.9		0	52	1016.2
23	4.7	0.0	NNE	1.0		0	53	1015.9
24	3.9	0.0	SE	1.2		0	60	1016.1

	Data	Time
Low Temperature(°C)	2.9	05:51
High Temperature(°C)	10.8	14:25
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	20.5(NW)	13:49

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Shiogama

Latitude: 38°20.3'N, Longitude: 141°0.8'E, Altitude: 105m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	3.8	0.0	SW	1.2	
2	3.2	0.0	SSW	1.5	
3	2.2	0.0	SE	0.6	
4	3.0	0.0	SW	1.3	0.0
5	3.6	0.0	SSW	2.7	0.0
6	3.2	0.0	SW	2.2	0.2
7	5.6	0.0	SW	2.5	1.0
8	8.1	0.0	SSW	5.1	1.0
9	11.7	0.0	S	2.5	1.0
10	12.9	0.0	SE	2.7	1.0
11	17.4	0.0	WSW	3.3	1.0
12	18.0	0.0	WNW	6.6	1.0
13	18.3	0.0	W	7.5	1.0
14	18.9	0.0	WNW	6.2	1.0
15	17.3	0.0	NW	4.4	1.0
16	17.0	0.0	WNW	4.7	1.0
17	15.6	0.0	NNW	1.5	1.0
18	12.8	0.0	N	2.3	0.5
19	11.6	0.0	NNW	2.9	0.0
20	10.4	0.0	NNW	2.6	0.0
21	9.9	0.0	NE	1.5	
22	9.4	0.0	NNW	2.9	
23	8.7	0.0	WNW	1.4	
24	8.1	0.0	NW	1.4	

	Data	Time
Low Temperature(°C)	1.9	02:59
High Temperature(°C)	19.6	14:08
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	18.5(WNW)	11:17

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Shiogama

Latitude: 38°20.3'N, Longitude: 141°0.8'E, Altitude: 105m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	4.0	0.0	NW	4.2	
2	3.7	0.0	NW	4.1	
3	3.1	0.0	WNW	3.1	
4	2.3	0.0	NW	0.7	0.0
5	2.3	0.0	WNW	3.7	0.0
6	2.8	0.0	WNW	3.8	0.4
7	3.6	0.0	NW	3.7	0.9
8	4.3	0.0	WNW	5.4	0.9
9	6.1	0.0	NNW	7.4	0.8
10	7.0	0.0	NW	6.3	0.5
11	8.0	0.0	NW	7.4	0.9
12	8.3	0.0	NW	7.9	0.9
13	9.1	0.0	WNW	6.8	1.0
14	9.5	0.0	WNW	6.6	1.0
15	9.7	0.0	NW	6.0	0.9
16	9.2	0.0	WNW	5.3	1.0
17	8.0	0.0	NW	5.7	1.0
18	7.1	0.0	NW	4.6	0.7
19	6.1	0.0	NNW	2.8	0.0
20	5.1	0.0	NW	1.6	0.0
21	4.9	0.0	NW	1.4	
22	4.9	0.0	W	0.8	
23	4.9	0.0	S	1.8	
24	4.1	0.0	SW	1.1	

	Data	Time
Low Temperature(°C)	2.1	05:39
High Temperature(°C)	10.0	15:19
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	17.1(NW)	13:26

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Soma

Latitude: 37°47.0'N, Longitude: 140°55.5'E, Altitude: 9m Today High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	1.7	0.0	SW	1.3	
2	1.0	0.0	S	0.6	
3	2.6	0.0	SSE	1.7	
4	4.9	0.0	SSW	3.5	0.0
5	4.2	0.0	S	2.8	0.0
6	4.5	0.0	S	2.8	0.0
7	8.1	0.0	SE	1.8	1.0
8	12.3	0.0	SSE	2.7	1.0
9	16.1	0.0	SW	3.4	1.0
10	17.8	0.0	WSW	4.5	1.0
11	19.4	0.0	WSW	4.4	1.0
12	20.8	0.0	WSW	8.0	1.0
13	21.4	0.0	W	6.6	1.0
14	20.6	0.0	W	9.9	1.0
15	20.1	0.0	WNW	7.6	1.0
16	19.3	0.0	W	5.1	0.9
17	17.9	0.0	W	7.5	0.8
18	15.9	0.0	W	4.9	0.6
19	13.7	0.0	SSW	0.8	0.0
20	9.2	0.0	WSW	0.9	0.0
21	6.7	0.0	SW	0.9	
22	6.2	0.0	WSW	1.5	
23	7.0	0.0	SSW	0.5	
24	7.6	0.0	SSW	2.1	

	Data	Time
Low Temperature(°C)	0.5	01:50
High Temperature(°C)	21.6	12:57
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	18.2(WSW)	13:53

*24

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Soma

Latitude: 37°47.0'N, Longitude: 140°55.5'E, Altitude: 9m Yesterday High/Low

Time	Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine Duration
Hour	°C	mm	In 16 Compass Points	m/s	h
1	5.5	0.0	NW	3.1	
2	5.0	0.0	NW	3.4	
3	3.8	0.0	NW	2.8	
4	3.8	0.0	WNW	4.2	0.0
5	3.5	0.0	NNW	2.2	0.0
6	4.1	0.0	NW	3.2	0.0
7	5.7	0.0	NW	3.9	0.5
8	6.3	0.0	N	5.6	0.8
9	7.4	0.0	NNW	5.9	0.9
10	9.0	0.0	NW	7.2	0.6
11	9.7	0.0	NW	6.1	0.8
12	10.9	0.0	NW	7.3	1.0
13	11.7	0.0	NW	7.9	0.9
14	12.2	0.0	NNW	7.1	1.0
15	12.0	0.0	NNW	7.1	0.9
16	11.4	0.0	NW	6.5	0.6
17	10.3	0.0	WNW	6.2	0.7
18	8.1	0.0	W	4.0	0.7
19	7.1	0.0	W	3.4	0.0
20	4.7	0.0	WSW	1.1	0.0
21	3.1	0.0	SW	1.8	
22	2.9	0.0	SSW	1.1	
23	1.8	0.0	SSW	0.7	
24	2.3	0.0	SW	1.8	

	Data	Time
Low Temperature(°C)	1.7	23:31
High Temperature(°C)	12.5	14:49
Maximum Instantaneous Wind Speed(m/s) (Wind Direction(In 16 Compass Points))	15.0(WNW)	14:14

*24

Table of Hourly Weather Observations (Today/Yesterday)

13 April 2011 Haramachi

Latitude: 37°38.3'N, Longitude: 140°59.1'E, Altitude: 10m Today

Time	Precipitation
Hour	mm
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0
15	0.0
16	0.0
17	0.0
18	0.0
19	0.0
20	0.0
21	0.0
22	0.0
23	0.0
24	0.0

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Table of Hourly Weather Observations (Today/Yesterday)

12 April 2011 Haramachi

Latitude: 37°38.3'N, Longitude: 140°59.1'E, Altitude: 10m Yesterday

Time	Precipitation
Hour	mm
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0
15	0.0
16	0.0
17	0.0
18	0.0
19	0.0
20	0.0
21	0.0
22	0.0
23	0.0
24	0.0

04/12/2011

Summary of 3/11/2011 Honshu earthquake in Japan

An earthquake with a magnitude 8.8 (Mw, USGS) struck the east coast of Japan on 3/11/201, at 2:46PM local time, 3/11/2011 12:46 AM Eastern Standard Time. The epicenter of the main shock (38.322°N, 142.369°E) is located about 373 km North-East of Tokyo, Japan. The earthquake occurred at the depth of 24 km, according to the USGS.

The earthquake occurred as a result of thrust faulting near the subduction zone between the Pacific and North American Plates. The main shock was preceded y a series of large foreshocks over the previous two days beginning on March 9th with a 7.2 event approximately 40 km from the March 11 earthquake. The main shock was also followed by a series of strong aftershocks. The earthquake triggered tsunami swept across coastal area in Japan. US National Weather Service issued a tsunami warning for at least 50 countries and territories.

Four nuclear power plants closest to the quake were safely shut down, according to the U.N. nuclear watchdog agency. But The Japanese government declared a state of emergency at the Fukushima No. 1 power plant after its cooling system failed during the earthquake. About 2000 residents near the nuclear power plant were being told to evacuate, based on Kyodo News. MMI intensity value is about 7 for the three nuclear power plants closest to the epicenter (see attached figure).

There were at least 50 deaths related to the earthquake and more casualties will be expected. Several fires were also reported.

Plant

Logaras, Harral

From: Logaras, Harral
Sent: Wednesday, April 13, 2011 11:22 AM
To: Marshfield, Mark
Cc: Heck, Jared; Barker, Allan; Cameron, Jamnes
Subject: RE: Lake County Health Department Request for Information
Attachments: G2G SPEECH ILO JAPAN.docx

Dear Mark,

I have attached a draft speech for your use in presenting to the Lake County Health Department. The content (public information and OPA approved for use with the public) is fully copied from 2 recent speeches (the Chairman speaking in Vienna and the EDO briefing the Commission) with the last paragraph added. It is designed to address the request from Mr. Burt Mechenbier. Also, please do not share these personal speakers notes folks outside of the NRC.

Please let me know if you any questions or comments about the material or the presentation, and please let me know when you plan to make the presentation. Thank you for your support!

Sincerely,

Harral Logaras
U. S. NRC Region III
Regional Government Liaison
630-829-9659

Link to the *Award Winning* NRC Information Digest http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf
Link to NRC Actions on Japan Emergency http://www.nrc.gov/japan/japan-info.html
Link to NRC Fact Sheets and Brochures http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

From: Logaras, Harral
Sent: Monday, April 11, 2011 10:01 AM
To: Marshfield, Mark
Cc: Mitlyng, Viktoria; Chandrathil, Prema; Cameron, Jamnes; Heck, Jared
Subject: RE: Lake County Health Department Request for Information

Dear Mark,

Thank you for your message. It is my intent to minimize the impact to you and your office of having to prepare a presentation. I have a draft presentation for use with local government counterpart audiences such as the Lake County Health Department, and I will make sure that it contains the key messages agency leadership has delivered effectively in their speeches and briefings on events in Japan and that it is scaled to fit a 10 to 12 minute timeframe. The presentation source is 100% OPA approved material that has been posted on the internal web page: "FAQ Related to Events Occurring in Japan" (http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx), and on the NRC's Fact Sheets and Brochures public web page (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/). I will complete working this material soon so I can provide it to you later today or possibly tomorrow.

Just a reminder that as I left it with Mr. Mechenbier of the Lake County Health Department, it's not currently clear whether we have the option to present at the April 18th meeting or if we must wait to present at the May 16th meeting. Therefore, after you have clearance to conduct this outreach activity, I will contact the Health Department to confirm the date and time for you. Thank you for your support.

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Sincerely,

Harral Logaras
U. S. NRC Region III
Regional Government Liaison
630-829-9659

Link to the *Award Winning* NRC Information Digest http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf

Link to NRC Fact Sheets and Brochures http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

From: Marshfield, Mark
Sent: Monday, April 11, 2011 8:52 AM
To: Logaras, Harral
Cc: Mitlyng, Viktoria; Chandrathil, Prema
Subject: RE: Lake County Health Department Request for Information

Harral,

I am waiting for my management to say go ahead. This date is during an outage but I am trying to get permission to do the meeting. I'll get to reviewing later and will probably call for help to prepare from you/Vika/Prema.

Thanks,

Mark

From: Logaras, Harral
Sent: Thursday, April 07, 2011 4:52 PM
To: Marshfield, Mark
Subject: Lake County Health Department Request for Information

Dear Mark,

From our last conversation I learned that the Lake County, Ohio Board of Health has requested the NRC to provide a 15-minute presentation at their regularly scheduled meeting. I called and spoke with Mr. Burt Mechenbier of the Board of Health and he explained the purpose would be to inform the Board of NRC response to the events in Japan with an eye towards local implications. I told Mr. Mechenbier that we would consider the request and get back to him. I believe the next opportunity to make a presentation to the Board will be at the May 16, 2011 meeting.

The request is an excellent opportunity for the NRC to present information about who we are and what we do and the forum is professional and receptive. At this time of increased interest among our counterparts in the public safety community we are in position to build long lasting relationships and to share an excellent story about this Agency and nuclear safety. I believe we should accept the invitation. The Board of Health meets once per month on the third Monday. This schedule however presents a challenge for me to fulfill because I would have to travel on Sunday to be in position with certainty for the appointed meeting time. It would be highly beneficial if you could find the means to support this request with resources in your office. To that end, I will provide ready to use talking points and an inventory of Q's & A's. In addition, I will coordinate all calls with the Board of Health to make final arrangements.

Please let me know your decision and I will close the loop with the Board of Health. Thank you for your attention.

Sincerely,

Harral Logaras
U. S. NRC Region III
Regional Government Liaison
630-829-9659

Link to the *Award Winning* NRC Information Digest http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf

Link to NRC Fact Sheets and Brochures http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

Good afternoon. I am Mark Marshfield, senior resident inspector at the Perry Nuclear Power Plant. I was previously resident inspector at the Ginna nuclear power plant in Rochester, N.Y. I joined the NRC as a reactor engineer in 2002. Prior to joining the agency, I served more than 20 years in the United States Navy as an executive officer aboard the ballistic missile submarine USS Alaska and also aboard the USS Simon Lake. I was a director of the Navy Nuclear Power School and the commanding officer for Navy recruiting in parts of upstate New York. I graduated from the U.S. Naval Academy with a Bachelors of Science degree in physics and received a Masters of Science degree from the Georgia Institute of Technology. I would like to take your questions after I have provided my remarks. Thank you for the opportunity to speak before the Lake County Board of Health.

We are heartsick for all who have been dealing with the aftermath of the earthquake and tsunami in Japan, and we are mindful of the long and difficult road they will face in recovering. We know that the people of Japan are resilient and strong, and we have every confidence that they will come through this terrible time and move forward, with resolve, to rebuild their vibrant country.

NRC Response to Japan Events

I'd like to take a few minutes to address the response of the NRC to the tragic events in Japan, and then to briefly describe how we plan to proceed.

On Friday, March 11, when the earthquake and tsunami struck, the NRC's Operations Center began operating on a 24-hour basis to monitor and analyze events at nuclear power plants in Japan. At the request of the Japanese government, and through the United States Agency for International Development (USAID), the NRC sent a team of its technical experts to provide on-the-ground support, and we have been in continual contact with them since that time. And, within the United States, the NRC has been working closely with an extensive range of stakeholders, including the White House, Congressional staff, our state regulatory counterparts, a number of other federal agencies, and the international regulatory bodies around the world.

Shortly after 4:00 AM (Washington, DC time) on Friday, March 11th, the NRC Emergency Operations Center made the first telephone call to inform NRC management of the earthquake and the potential impact on U.S. plants. We went into monitoring mode at our Emergency Operations Center, and the NRC's initial focus was on the possible impacts of the tsunami on U.S. plants and radioactive materials on the West Coast, and in Hawaii, Alaska, and U.S. Territories in the Pacific.

We were in communication with our licensees and our resident inspectors at the Diablo Canyon and San Onofre plants in California, and the Radiation Control Program Directors for California, Washington, Oregon and Hawaii.

On that same day, we began interactions with our Japanese regulatory counterparts and dispatched two NRC experts to Japan to help at the embassy in Tokyo.

By Monday, March 14, we had dispatched a total of 11 NRC staff to Japan. We have subsequently rotated in additional staff to continue on-the-ground assistance in Japan. The

areas of focus for this team are: 1) to assist the Japanese government and respond to requests from our Japanese regulatory counterparts; 2) to support the U.S. Ambassador and the U.S. government assistance effort.

On Wednesday, March 16, we collaborated with other U.S. government agencies and decided to advise American citizens to evacuate within a 50-mile range around the plant. We believed this decision was a prudent course of action, and would be consistent with what we would do in a similar situation in the United States. This evacuation range was predicated on the information that we had available at the time, which indicated the possibility that reactor cores and spent fuel pools may have been compromised.

Steps Already Taken

The NRC's program of continuous improvement will in the future include lessons learned from the events in Japan. We already have begun enhancing inspection activities through temporary instructions to our inspection staff, including the resident inspectors and the inspectors in our four Regional offices.

We've also issued an information notice to licensees to make them aware of activities they should undertake to verify that their capabilities to mitigate conditions due to severe accidents—including the loss of significant operational and safety systems—are in effect and operational. Specific conditions include a total loss of electric power, flooding, and damage from seismic events.

On their own initiative, the Institute of Nuclear Power Operations (INPO) issued a Level I Event Report (highest level) to its members on March 15, identifying four actions requiring written responses. Those include walkdowns and verifications of capabilities to address large fires and explosions; severe accident management guidelines; mitigation of station blackout conditions; internal and external flooding, and fire and flooding events that could be impacted by a concurrent seismic event.

NRC Plans Moving Forward

While we are confident about the safety of U.S. nuclear power plants, our regulatory agency has a responsibility to the American people to undertake a systematic and methodical review of the safety of our domestic facilities, in light of the natural disaster and the resulting nuclear situation in Japan. Examining all available information is an essential part of that effort.

On March 21, the NRC Commissioners established a senior level task force to conduct a comprehensive review of our processes and regulations to determine whether the agency should make improvements to our regulatory system.

This review will be conducted in a short-term and a longer-term timeframe. The short-term review has already begun, and will identify potential or preliminary near-term operational or regulatory issues. A longer-term review will begin as soon as we have sufficient information from Japan. That review will be completed in six months from the beginning of the evaluation. The task force's reports will be publicly available.

The task force will evaluate all technical and policy issues related to the event to identify additional potential research, generic issues, changes to the reactor oversight process, rulemakings, and adjustments to the regulatory framework that should be pursued by the NRC. We also expect to evaluate issues that may involve multiple U.S. Government agencies, such as emergency preparedness. We will seek input from all key stakeholders during this process. Based on what we learn in our review, we will take all of the appropriate actions that are necessary to ensure the continuing safety of the American people.

We will also continue to communicate closely with our regulatory counterparts including the International Atomic Energy Agency throughout this process. As we proceed with lessons-learned efforts in the months ahead, international cooperation takes on new importance.

NRC Domestic Safety Focus

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

The fact that every reactor in this country is designed for natural events based upon the specific site that that reactor is located, that there are multiple fission product barriers, and that there are a wide range of diverse and redundant safety features in order to provide that public health and safety assurance. We have a long regulatory history of conservative decision-making. We have never stopped making improvements to the plant design as we learn from operating experience over the more than 35 years of civilian nuclear power in this country. Some have been derived from lessons learned from previous significant events, such as Three Mile Island. We have severe accident management guidelines, revisions to the emergency operating procedures, procedures and processes for dealing with large fires and explosions, regardless of the cause. We have a station blackout rule. We have a hydrogen rule for reactors and many others.

We have, since the beginning of the regulatory program in the United States, used a philosophy of Defense-in-Depth, which recognizes that the nuclear industry requires the highest standards of design, construction, oversight, and operation, but even with that we will not rely on any one level of protection for the purposes of protecting public health and safety. So the designs for every single reactor in this country take into account the specific site that that reactor is located and does a detailed evaluation for any natural event such as earthquakes, tornadoes, hurricanes, floods, tsunami, and many others. In addition, there are multiple physical barriers to fission product release at every reactor. And then in addition to that, there are both diverse and redundant safety systems that are required by NRC regulations to be maintained operable and frequently tested to ensure that the plant is in a high condition of readiness to respond to any scenario.

As I mentioned earlier, we've taken advantage of the lessons learned from previous operating experience, one of the most significant in this country, of course, being the Three Mile Island accident in the late 1970s. As a result of those lessons learned, we've significantly revised the emergency planning, the emergency operating procedures, and many human factors issues as it relates to how control room operators operate the plant. We added new requirements for hydrogen control to help prevent explosions inside of containment and we also created requirements for enhanced indication of pumps and valves. We have a post-accident sampling system that allows -- for the monitoring of radioactive material release and possible fuel degradation. And of course one of the most significant changes is after Three Mile Island we created the Resident Inspector Program, which has at least two full time NRC inspectors on site that have unfettered access every day to all licensees' activities 24 hours a day, seven days a week.

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

As a result of the events of September 11, 2001, we did a similar evaluation, and identified important pieces of equipment that, if, regardless of the cause of a significant fire or explosion at a plant, we would have pre-staged equipment, procedures, and policies to help deal with that situation.

All of these things are directly applicable to the kinds of very significant events that are taking place in Japan. Over the last 15 or 20 years, there's been a number of new rulemakings that directly relate to Japan. There's a station blackout rule that has required every plant in the country to analyze what the plant response would be if it were to lose all alternating current so that it could respond using batteries for a while, and then have procedures and arrangements in place in order to restore alternating current power to the site, to provide cooling to the core.

As I mentioned earlier, there's a hydrogen rule, which requires modifications to reduce the impacts of hydrogen generated for beyond-design basis events and core damage. There are equipment qualification rules that require equipment, indication equipment, as well as pumps and valves, to remain operable under the kinds of environmental conditions (i.e. temperature, radiation) that you would see under a design basis accident. And then, going directly to the type of containment design that the plants in Japan of highest interest have, we've had a Mark I Containment Improvement Program since the late 1980s, which had installed hardened vent systems for the containment cooling and fission product scrubbing for all BWR Mark I's, as well as enhanced reliability of the automatic depressurization system.

And to recap…

The U.S. Government has an extensive network of radiation monitors across the country. EPA's system has not identified any radiation levels of concern in this country. In fact, natural background from things like rocks, the sun, buildings, is 100,000 times more than any level

that has been detected to date. We feel confident in our conclusion that there is no reason for concern in the United States regarding radioactive releases from Japan.

The NRC has:

1. informed the industry to verify readiness for very significant events,

2. chartered a senior level task force to conduct short-term and longer-term timeframe reviews of processes and regulations to determine whether improvements to our regulatory system should be made.

    a. The short-term review underway will identify potential or preliminary near-term operational or regulatory issues.

    b. A longer-term review to begin when we have sufficient information from Japan; to be completed in six months from the beginning of the evaluation.

    c. The task force will evaluate the event to identify additional potential changes to the reactor oversight process and regulatory framework and look at emergency preparedness. We will seek input from stakeholders and from what we learn, we will take all of the appropriate actions that are necessary.

The Perry plant is a similar design to reactors in Japan. The NRC is confident that the robust design of the U. S. plants including Perry makes it highly unlikely that a similar event could occur in the United States. We are confident in light of the events of Japan in the design, upgrades and operation of the Perry plant and that it is safe. As you know, the NRC has the responsibility and independent authority to take action to ensure safety up to and including requiring a shutdown.

Closing (RGLO Standard Closing Acknowledgement)

I want to wrap up with acknowledging the emergency preparedness and planning requirements that are maintained at the ready by the State of Ohio and the counties of Lake, Geauga and Ashtabula. It is on this point of public safety that we share a clearly focused mission element for the protection of the public health and safety and the environment.

Heck, Jared

From: Logaras, Harral
Sent: Wednesday, April 13, 2011 10:57 AM
To: LIA04 Hoc
Cc: Barker, Allan; Heck, Jared
Subject: FW: Rad Worker Exposure Totals

Dear State Liaison Desk,

We have a question from the State of Ohio and I am at a loss to respond authoritatively - can you help us with this item (please see below).

Sincerely,

Harral Logaras
U. S. NRC Region III
Regional Government Liaison
630-829-9659
Link to the Award Winning NRC Information Digest http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf
Link to NRC Actions on Japan Emergency http://www.nrc.gov/japan/japan-info.html
Link to NRC Fact Sheets and Brochures http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

-----Original Message-----
From: Michael L. Bear [mailto:MLBear@dps.state.oh.us]
Sent: Wednesday, April 13, 2011 8:43 AM
To: Barker, Allan; Logaras, Harral
Subject: Rad Worker Exposure Totals

Allan/Harral,

A question came up in conversation yesterday that I'm hoping the NRC may have an answer for. Presently U.S. workers are being recruited to work over in Japan at the Fukashima site. How will exposure that workers get in a foreign country be dealt with? I'm assuming it will count on their lifetime exposure record, but will it count toward their annual occupational exposure limits here in the U.S.? Would it count as an emergency exposure so it doesn't affect their annual occupational exposure? Would working in Japan in this situation constitute a Planned Special Exposure?

My gut feeling is that radiation exposure is radiation exposure and it will count towards totals no matter where in the world the exposure occurs. But since things in life are rarely as I think they should be, I figured this was something I'd better confirm with the NRC.

Hope all is well!

Mike

Michael L. Bear
Radiological Analyst Supervisor
Ohio Emergency Management Agency

Phone: 614-799-3687

E|91

Johnson, Michael

From: Segala, John
Sent: Thursday, April 14, 2011 4:56 PM
To: NRO_Distribution
Subject: SUPPORT FOR EVENTS IN JAPAN

To: All NRO Employees

Subject: SUPPORT FOR EVENTS IN JAPAN

Support for the events in Japan remains a high priority for the Agency. As we have from the outset, we continue to respond to the emergency at the Fukushima Daiichi site through the Headquarters Operations Center and the agency team working in Japan. However, as this critical response effort continues, it is important that NRO staff members are appropriately tasked to support these events to minimize the impacts on our existing work. To ensure this occurs, the staff needs to confirm that all requests for action to support the events in Japan are appropriately channeled through one of the following points of contact (POC):

Team	Point of Contact (POC)	
	Primary	Backup
Japan Event HQ Operations Center, including: - Japan Support Team (In Japan)	Jeffrey Ciocco	Thomas Kevern
Agency Japan Event Task Force	Charles Ader	Mark Lombard
Office of International Programs (OIP) Support	Cindy Rosales-Cooper	Donna Williams

If you seek additional information about a request or receive a request from someone other than the POCs, please discuss it with your immediate supervisor.

John Segala, Acting Deputy Director
Program Management, Policy Development
and Analysis Staff
Office of New Reactors
301.415.1992

E|92

Release

Dube, Donald

From: Dube, Donald
Sent: Thursday, April 14, 2011 10:08 AM
To: Fuller, Edward
Subject: trend
Attachments: SOARCA plots.doc

Debris location into lower head: both RPV pressure and containment pressure rise (~13.5 hr)

Lower head failure: RPV pressure decreases while containment pressure increases (~20 hr)

Fukushima Unit 2 accident progression is protracted because of various mitigation measures taken.

E|93

Peach Bottom
Long-term SBO

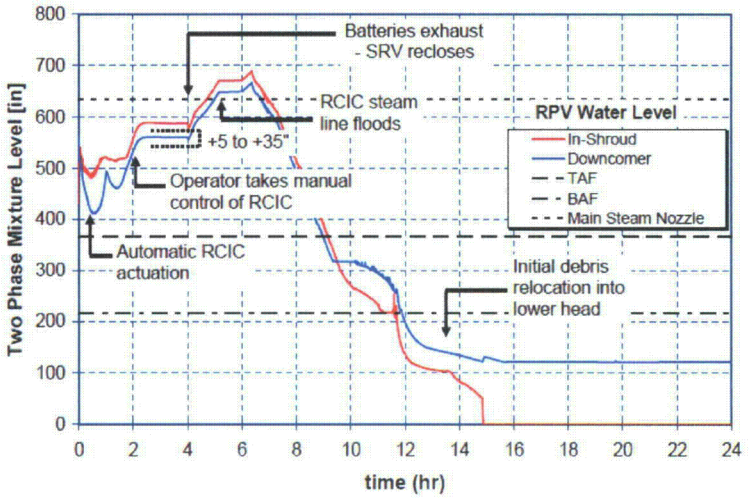

Figure 15 LTSBO Coolant Level

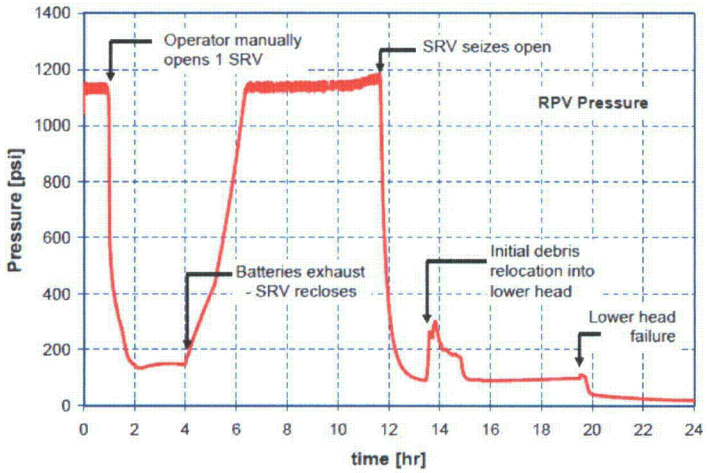

Figure 14 LTSBO Vessel Pressure

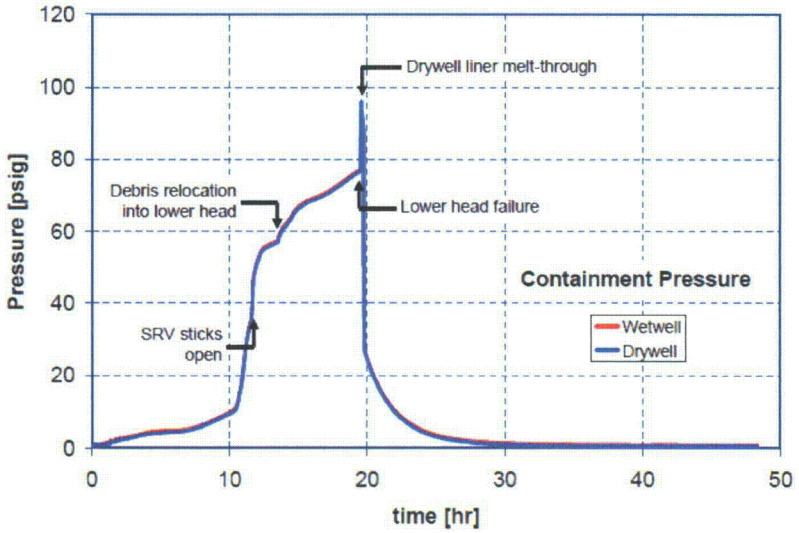

Figure 19 LTSBO Containment Pressure

USAID
FROM THE AMERICAN PEOPLE

BUREAU FOR DEMOCRACY, CONFLICT, AND HUMANITARIAN ASSISTANCE (DCHA)
OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE (OFDA)

Japan – Earthquake and Tsunami

Fact Sheet #7, Fiscal Year (FY) 2011 — March 17, 2011

Note: The last fact sheet was dated March 16, 2011.

KEY DEVELOPMENTS

- The earthquake and tsunami have resulted in 5,692 deaths and left 9,522 people missing, as reported by the Government of Japan (GoJ) on March 17. The disasters have damaged or destroyed more than 86,000 buildings and 1,200 roads.
- On March 17, U.S. Government (USG) Disaster Assistance Response Team (DART) and U.N. Disaster Assessment and Coordination (UNDAC) staff conducted an aerial assessment of tsunami- and earthquake-affected areas from Tokyo to just south of Fukushima Prefecture and a ground assessment of Oarai village in Ibaraki Prefecture. In Oarai, DART staff observed some road damage but no significant levels of damage to houses in the areas visited, where the tsunami wave height was estimated at nearly 5 feet. No individuals are currently displaced in Oarai, according to village residents.
- On March 17, a 35-member U.S. Department of Energy (DoE) team in Japan began aerial surveillance missions to measure air contamination between Tokyo and Fukushima. The DoE continues to collect data to inform analysis.

NUMBERS AT A GLANCE[1]		SOURCE
Confirmed Deaths	5,692	GoJ NPA[2] – March 17, 2011
Missing Persons	9,522	GoJ NPA – March 17, 2011
Number of People in Evacuation Centers	413,516	JSDF[3] – March 17, 2011

FY 2011 HUMANITARIAN FUNDING PROVIDED TO JAPAN TO DATE

USAID/OFDA Assistance for the Japan Earthquake and Tsunami $7,191,171
Total USAID Humanitarian Assistance for the Japan Earthquake and Tsunami $7,191,171
Total Planned Assistance from USAID for the Japan Earthquake and Tsunami $8,000,000

CONTEXT

- On March 11 at 0046 hours Eastern Standard Time (EST), or 1446 hours Japan Standard Time (JST), a magnitude 9.0 earthquake occurred east of Honshu—the largest and main island of Japan—at a depth of approximately 15 miles. The epicenter of the earthquake was located 80 miles east of Sendai, the capital of Miyagi Prefecture, and 231 miles northeast of Tokyo. The earthquake generated a large tsunami that resulted in additional fatalities and damage, particularly in Miyagi, Fukushima, and Iwate prefectures.
- On March 11, U.S. Ambassador John V. Roos declared a disaster due to the effects of the earthquake and tsunami in Japan. In response, USAID/OFDA provided an initial $100,000 through the U.S. Embassy in Tokyo to assist with local relief efforts. USAID deployed a DART—including two urban search and rescue (USAR) teams from Fairfax County, Virginia, and Los Angeles County, California—to Japan to coordinate the USG response and support Japanese USAR efforts. In addition, USAID activated a Response Management Team (RMT) in Washington, D.C.
- InterAction, an alliance of U.S.-based non-governmental organizations (NGOs), maintains a list of organizations accepting donations for the Japanese earthquake response. The American Red Cross (AmRC) accepts donations of $10 through text messages of "redcross" sent to 90999.

USAR Operations

- On March 17, U.S. and U.K. USAR teams conducted a joint mission in three previously unsearched sectors of Kamaishi City, Iwate Prefecture. USAR teams noted that the damages in Kamaishi were due to the tsunami, with no earthquake-related damages observed. The combined U.S. and U.K. teams searched a wide area of Kamaishi for five hours but did not detect any live victims.

[1] Figures remain preliminary and are expected to change.
[2] National Police Agency (NPA).
[3] Japan Self Defense Force (JSDF).

- The L.A. County and Fairfax County USAR teams have completed all searches requested by the Osaka Fire Department, coordinator of USAR efforts in Ofunato and Kamaishi cities, with no live rescues.
- According to UNDAC, international teams are expected to finish rescue operations in the coming days as the priority shifts to relief and recovery. On March 17, UNDAC reported that three teams from Germany, Singapore, and Switzerland have closed their camps and are returning to their respective countries.
- To date, the U.S. Military has conducted 132 helicopter and 641 aircraft missions to assist in survivor recovery, personnel transport, and relief commodities distribution. The U.S. Department of Defense (DoD) continues to support search and rescue operations at sea through the use of aerial and surface assets.

Logistics and Relief Supplies

- To date, the GoJ has restored 18 main roads, 5 airports, and 6 ports to facilitate aid delivery in affected areas, according to the U.N. Office for the Coordination of Humanitarian Affairs (OCHA). The International Medical Corps (IMC) reported that systems for delivery of basic goods do not appear overwhelmed at this time in Sendai, with taxis, running water, and electricity available. However, the current shortage of fuel is limiting the aid delivery capacity of relief agencies, private transportation companies, municipalities, and the JSDF. Furthermore, poor communications and insufficient capacity in affected areas has also restricted the delivery of relief items.
- As reported by OCHA, the International Telecommunication Union has dispatched 37 broadband global area network terminals to Japan to aid rescue operations.
- OCHA also reports that All Nippon Airways Group has agreed to provide free air transport of humanitarian personnel and relief items.
- Approximately 13 NGOs—including Médecins Sans Frontières, Save the Children, and AmRC—are working through local partners to provide assistance in Japan's tsunami- and earthquake-affected areas, according to OCHA. In addition, the U.N. World Food Program is assisting in the transport of 60,000 blankets to affected areas.

Humanitarian Assessments

- On March 17, DART and UNDAC staff conducted an aerial assessment of tsunami- and earthquake-affected areas from Tokyo to just south of Fukushima Prefecture and a ground assessment of Oarai village in Ibaraki Prefecture. In Oarai, DART staff observed some road damage but no significant levels of damage to houses in the areas visited, where the tsunami wave height was estimated at nearly 5 feet. No individuals are currently displaced in Oarai, according to village residents. DART staff did not observe any dire humanitarian needs in Oarai but noted that residents reported fuel shortages, with numerous gas stations closed.
- On March 17, DART staff continued to engage at three levels to determine any possible humanitarian needs in Japan—nationally through Japan's Ministry of Foreign Affairs (MoFA) and other GoJ contacts, locally at the prefecture level and in coordination with U.S. Forces-Japan, and through Japanese civil society organizations, including Japan Platform (JP).

Humanitarian Needs and Response

- While complete information on the extent of needs remains unavailable at this time, IMC reported that the GoJ, the Japanese Red Cross Society, and the private sector appear to have significant resources and are providing a substantial amount of assistance to individuals in affected areas. To date, more than 72,400 JSDF personnel, as well as police, fire service, and Japanese coast guard personnel, are located throughout earthquake-, tsunami-, and nuclear-affected areas.
- Due to the significant capacity in Japan, DART staff reported that local and international NGOs likely will provide only a small, supporting role during the response targeting specific gaps. At present, a minimal number of local and international NGOs appear to be implementing programs in affected areas.
- Japan's NEC Corporation is working to restore information technology capabilities to affected prefectures, hospitals, and private companies in the northeastern region, according to OCHA.

Displacement

- According to the JSDF, approximately 413,516 people are currently staying in evacuation centers. Various agencies report differing numbers of people residing in these centers, with the U.N. reporting that up to 430,000 people may be staying in the centers. More than 90 percent of people in evacuation centers are in the prefectures of Iwate, Myagi, and Fukushima. An unconfirmed number of individuals are also staying with host families.

Emergency Food Assistance

- According to OCHA, the GoJ has delivered approximately 1.5 million meals to evacuation centers and hospitals in affected areas—a significant increase from the 483,550 meals delivered as of yesterday.

- Nearly 40 private sector companies have offered 2.4 million meals and 300,000 liters of water to assist affected populations, as reported by OCHA. The Japanese Consumers' Co-operative Union has delivered 1.3 million food and relief items to affected areas.

Water, Sanitation, and Hygiene

- OCHA reports that 1.6 million households in 12 prefectures remain without water. GoJ officials are coordinating with 245 water supply companies to secure an emergency water supply and have arranged to send 314 water supply vehicles to the most affected areas, including Fukushima, Iwate, Miyagi, and Ibaraki prefectures.

Health

- Humanitarian agencies have indicated concerns regarding the health of evacuees due to inadequate heating and medical supplies in evacuation centers, according to OCHA. Doctors deployed to affected areas have reported that a lack of clean water and the freezing weather are contributing to the poor health of evacuees, particularly the elderly. On March 17, GoJ officials announced that public services for people living in evacuation centers will be a priority and requested that psycho-social activities be a part of humanitarian assistance offered to affected populations and rescue teams.
- IMC staff have reported that the GoJ is supporting a robust medical response through Japanese Disaster Medical Assistance Teams (DMATs) in affected areas, augmented by the substantial medical capacity based in country and networks of local volunteers. According to OCHA, the number of Japanese DMATs operating in Iwate, Miyagi, and Fukushima prefectures has decreased from 100 to 30 as the GoJ response shifts away from emergency medical assistance.
- IMC staff reported that health staff in Sendai are not currently treating a large number of individuals with significant injuries or tsunami-related illnesses. According to medical personnel, the hospital in Sendai currently has approximately 200 vacant beds for patients.

Nuclear Infrastructure

- In addition to conducting aerial surveillance missions, DoE installed high volume air pump sensors on the roof of the U.S. Embassy for advanced radiation detection. To date, the sensors have not detected any increases in radiation in Tokyo.
- Eleven Nuclear Regulatory Commission (NRC) personnel remain on the DART to provide guidance to the U.S. Embassy in Tokyo regarding the evolving situation at the Fukushima Daiichi nuclear power plant.
- DoD has established a chemical, biological, radiological, and nuclear control center with limited decontamination assets at Yokota Air Force Base.

Humanitarian Coordination and Information Management

- In response to international offers of assistance, the GoJ maintains that officials continue to identify needs and establish mechanisms to store and transport relief commodities for affected populations. The GoJ has recommended that no individual, organization, or government send relief goods without coordination with the GoJ.
- Information regarding DoD activities may be available on the All Partners Access Network (APAN) at https://community.apan.org, an unclassified network connecting partners through various subscriber groups.
- DoE press releases are available at http://www.energy.gov/news/releases.htm.
- NRC press releases are available at http://www.nrc.gov/reading-rm/doc-collections/news/2011/.

U.S. Citizen Services

- U.S. citizens in need of emergency assistance should send an e-mail to JapanEmergencyUSC@state.gov with detailed information about their location and contact information and monitor the U.S. Department of State website at travel.state.gov. Individuals should also monitor the Embassy's website (http://japan.usembassy.gov/) for updated information. For telephone inquiries, individuals may call 202-501-4444 or 1-888-407-4747.

USAID HUMANITARIAN ASSISTANCE TO JAPAN

Implementing Partner	*Activity*	*Location*	*Amount*
USAID/OFDA ASSISTANCE[1]			
U.S. Embassy in Tokyo	Emergency Relief Support	Affected Areas	$100,000
DoD	USAR Operations (Transport of USAR teams)	Affected Areas	$1,000,000
L.A. County USAR Team	USAR Operations	Affected Areas	$2,058,000
Fairfax County USAR Team	USAR Operations	Affected Areas	$2,058,000
U.S. Department of Health and Human Services	Health	Affected Areas	$93,360
	USAID/DART Support Costs		$1,599,600
	Administrative Support		$282,211
TOTAL USAID/OFDA			**$7,191,171**
TOTAL USAID HUMANITARIAN ASSISTANCE TO JAPAN IN FY 2011			**$7,191,171**

[1] USAID/OFDA funding represents anticipated or actual obligated amounts as of March 17, 2011.

PUBLIC DONATION INFORMATION

- The most effective way people can assist relief efforts is by making cash contributions to humanitarian organizations that are conducting relief operations. A list of humanitarian organizations that are accepting cash donations for earthquake and tsunami response efforts in Japan can be found at www.interaction.org.
- USAID encourages cash donations because they allow aid professionals to procure the exact items needed (often in the affected region); reduce the burden on scarce resources (such as transportation routes, staff time, warehouse space, etc.); can be transferred very quickly and without transportation costs; support the economy of the disaster-stricken region; and ensure culturally, dietary, and environmentally appropriate assistance.
- More information can be found at:
  - USAID: www.usaid.gov
  - The Center for International Disaster Information: www.cidi.org or (703) 276-1914
  - Information on relief activities of the humanitarian community can be found at www.reliefweb.int

Burza, Justine

From: Phalen, Martin
Sent: Monday, April 18, 2011 12:29 PM
To: Burza, Justine
Subject: FW: Radiation testing results (2).doc
Attachments: Radiation testing results (2).doc

From: Zurawski, Paul
Sent: Tuesday, April 05, 2011 11:34 AM
To: Giessner, John; Duncan, Eric; Lerch, Robert; Wengert, Thomas; Phalen, Martin
Cc: Barker, Allan; Logaras, Harral; Mitlyng, Viktoria; Chandrathil, Prema; Shah, Swetha
Subject: FW: Radiation testing results (2).doc

The PI RIO received a courtesy call from the Prairie Island Regulatory Affairs group around 11am this morning informing us that the State of Minnesota Health Department will be issuing a news release sometime this afternoon regarding routine monitoring finding trace amounts of radioactive iodine in air samples. A **draft** of the release is attached. After both the Prairie Island and Monticello resident offices are notified, Xcel intends to implement its external stakeholder communication plan. Our understanding of this means the following:

Xcel Primary Messages (Abbreviated):

- Slightly increased levels of I-313 have been seen in air and rainwater samples obtained at the sites;
- Xcel will continue to take weekly air and precipitation samples;
- Radioactive levels are extremely small and do not pose any public health risk;
- The sites maintain the required NRC Radioactive Environmental Monitoring Program as required; and
- Levels seen by the sites are consistent with those of the State

External Stakeholders:

- Prairie Island Indian Community;
- State and Local Emergency Manager & Public Safety Officials, WI/MN Public Safety
- MN Public Safety

With information currently available, the MN Department of Health intends to make this news release around 1PM this afternoon.

From: Anderson, Jon S. [mailto:Jon.Anderson@xenuclear.com]
Sent: Tuesday, April 05, 2011 11:05 AM
To: Zurawski, Paul; Stoedter, Karla
Subject: FW: Radiation testing results (2).doc

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schill, John
ay, April 05, 2011 11:01 AM
on, Jon S.
Radiation testing results (2).doc

E195

News Release

FOR IMMEDIATE USE
April 5, 2011

Contact: Doug Schultz
MDH Communications Office
651-201-4993

Sherrie Flaherty
Radiation Control Program
651-201-xxxx

DRAFT DRAFT DRAFT DRAFT

Routine monitoring finds trace amounts of radioactive iodine in air samples

Health officials say amounts from Japan disaster are well below levels of health concern in state

Routine monitoring by the Minnesota Department of Health has found trace amounts of radioactive material likely from the damaged Japanese nuclear power plants in air samples taken in March from St. Paul and two other locations. The amounts recorded are thousands of times less than normal background radiation and well below levels that would be of health concern, health officials said.

Air samples taken from a monitor in St. Paul on March 22 found concentrations of Iodine-131 that would give the average person a dose 0.004 millirem of radiation over the course of a year. The average person is exposed to at least 365 millirem per year (or 1 millirem per day) from background sources of radiation. Iodine-131 is a "man-made" isotope or substance that is only found as a byproduct of nuclear fission or reactions, such as those from power plants.

Results from samples taken in St. Paul on March 29 were slightly higher, at 0.011 millirem. Samples from near the Prairie Island nuclear power plant on March 22 yielded an estimated dose of 0.003 millirem per year. Samples from near the Monticello nuclear power plant on March 29 showed a concentration that would give a dose of 0.006 millirem per year.

MDH sampling results, including concentration levels, can be found at http://www.health.state.mn.us/divs/eh/radiation/index.html

"The amounts of radiation we are detecting are just a very small fraction of the amount of radiation we are exposed to on a daily basis from a variety of sources," said Sherrie Flaherty, radiation control supervisor with MDH. A standard chest x-ray will give a dose of about 4-10 millirem and a transatlantic flight will expose the average person to about 7 millirem.

"The exposure level at which we would begin to have concerns for human health is 50 millirem per year," Flaherty said. (why?) "We are clearly well below that." Even at the level of 50 millirem, the concern would be for exposure to that same level everyday over the course of 70 years. That amount of exposure could produce a slight statistical increase (what is the factor?) in one's risk of cancer.

MDH's findings are consistent with those of other agencies conducting sampling in Minnesota. Air monitoring by the Environmental Protection Agency (EPA) found slightly elevated levels of iodine around March 22 and xx. Sampling of rainwater in St. Paul by the EPA found a concentration of Iodine 131 on March 22 of 32 picoCuries/liter. It would take a concentration of 1,000 picoCuries/liter to produce a dose of 50 millirem per year. Sampling by Xcel Energy from sites around its two nuclear power plants has found similar results since the incidents in Japan.

"We fully expected to see some slight increases in radiation as the result of the releases from the reactors in Japan," Flaherty said, "and that's what we're finding."

-more-

Because Minnesota is home to two nuclear power plants, one at Prairie Island and one at Monticello, MDH conducts routine sampling for radiation as part of its environmental monitoring program. Air samples are taken weekly from a unit in St. Paul and bi-weekly from units at Prairie Island and Monticello. Surface water is sampled quarterly from the Mississippi River at sites just downstream from the power plants. Samples of milk from a farm downwind from each of the power plants are taken and tested monthly (no results from March were yet available for this press release). However, because some radioactive material has been found in milk elsewhere in the U.S., MDH has begun sampling milk weekly to make sure nothing of significance is turning up on local dairy farms. *(better way to state why we're going weekly?)*

MDH may increase the frequency of other sampling if further test results indicate a need to monitor more closely.

"Unless there are continued releases from Japan's nuclear power plants, we would expect to see the levels of radioactive substances in Minnesota be undetectable in four to six weeks and to be gone entirely from the environment in about two months," Flaherty said.

More information on MDH's radiation control program is available on the MDH website or by calling 651-201-4600x?

-MDH-

Burza, Justine

From: Phalen, Martin
Sent: Monday, April 18, 2011 12:29 PM
To: Burza, Justine
Subject: FW: DEQ news release on radiation detection in MI
Attachments: 033011iodinealert.doc

From: Logaras, Harral
Sent: Thursday, March 31, 2011 3:39 PM
To: Phalen, Martin
Cc: Chandrathil, Prema; Mitlyng, Viktoria; Barker, Allan; Heck, Jared; Pederson, Cynthia
Subject: RE: DEQ news release on radiation detection in MI

Marty,

Thanks for sharing this press release from Michigan. I like what Michigan has done - using their own measurement products and putting the results in context.

Sincerely,

Harral Logaras
U. S. NRC Region III
Regional Government Liaison
630-829-9659

Link to the *Award Winning* NRC Information Digest http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf

Link to NRC Fact Sheets and Brochures http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

From: Phalen, Martin
Sent: Thursday, March 31, 2011 3:24 PM
To: Chandrathil, Prema; Mitlyng, Viktoria; Logaras, Harral; Barker, Allan
Subject: FW: DEQ news release on radiation detection in MI

Just thought that you might be interested.....

From: Mitchell, Mark
Sent: Thursday, March 31, 2011 2:41 PM
To: Phalen, Martin; Cassidy, John; Go, Tony; Dickson, Billy; Myers, Valerie
Subject: FW: DEQ news release on radiation detection in MI

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Michigan Department of Environmental Quality

News Release

March 30, 2011 11-0302

For More Information

Brad Wurfel, DEQ, 517-373-7917, wurfelb@michigan.gov
Kelly Niebel, MDCH, 517-241-2112, niebelk@michigan.gov
Ken Yale, DEQ, 517-241-1278, yalek@michigan.gov.

Radioactive material from Japanese nuclear plant detected in Michigan air

Detected levels pose no health threat

The Michigan Department of Environmental Quality has detected very low concentrations of iodine-131, a kind of radiation released from the nuclear power plant in Japan, in an air sample taken over the past week.

The levels detected in Michigan pose no health threat to residents.

The DEQ's Radiological Protection Program performs regular monitoring of air samples taken in Lansing. The air sampler runs continuously, processing 50 liters of air per minute for a total of 504,000 liters last week. The average human uses 7 liters of air per minute. Air monitoring staff change the air sampler filters each Monday morning and analyze the filters in DEQ's radiological laboratory.

Monday's lab results indicated a total activity of 23 picocuries or 0.85 becquerels of iodine-131, a signature radioactive isotope for Japan's nuclear power plant emergency. These are scant detection levels, even when compared to the radiation levels people are exposed-to every day. For example, a typical banana contains 15 becquerels of potassium 40, a common radioactive isotope.

Officials at the Michigan Department of Community Health said the scant levels detected by DEQ monitors are thousands of times less than what would trigger any sort of protective action recommendation, such as taking potassium iodide, a drug that protects the thyroid gland from radioactive iodine.

During the height of the Chernobyl nuclear disaster in 1986, the DEQ measured iodine-131 levels that were 4 times higher than the current results. Even at those levels, the resulting dose to Michigan residents was thousands of times less than the activity triggering protective action recommendations.

The DEQ has conducted regular monitoring of air, milk and rainwater for radiological detection since 1958.

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Public

POTENTIAL QUESTIONS FOR THE CHAIRMAN – ~~Not for External Distribution~~

Can this happen here?
I live near a nuclear power plant similar to the ones having trouble in Japan. How can we now be confident that this plant won't experience a similar problem?
Has this crisis changed your opinion about the safety of US nuclear power plants?
With all this happening, how can the NRC continue to approve new nuclear power plants?

What is the NRC doing in response to the situation in Japan?
What other US agencies are involved, and what are they doing?
What else can go wrong?
What is the worst-case scenario?
The US has troops in Japan and has sent ships to help the relief effort – are they in danger from the radiation?
Is there a danger of radiation making it to the United States?
Is the US Government tracking the radiation released from the Japanese plants?
Has the government set up radiation monitoring stations to track the release?
The radiation "plume" seems to be going out to sea – what is the danger of it reaching Alaska? Hawaii? The west coast?
I live in the Western United States – should I be taking potassium iodide (KI)?
Are there other protective measures I should be taking?
What are the risks to my children?
My family has planned a vacation to Hawaii/Alaska/Seattle next week – is it safe to go, or should we cancel our plans?
What are the short-term effects of exposure to radiation?
What are the long-term effects of exposure to radiation?

E197

NIIGATA WEST COAST	37° 57'	139° 07'	3 m	WWAS	475730	
WAKAMATSU WEST OF LAKE NR FUKUSHIMA	37° 29'	139° 55'	699	USNT	475700	RJ13
WAJIMA WEST COAST	37° 23'	136° 54'	46	USNT	476000	RJ03
ONAHAMA ✓	36° 57'	140° 54'	16	USNT	475980	RJ21
TOYAMA WEST COAST	36° 42'	137° 12'	56	USNT	476070	RJ24
AIKAWA SOUTH COAST	38° 01'	138° 15'	118	WWAS	476020	
SADO WEST COAST	38° 03'	138° 25'	82	WWAS	477000	
SENDAI ✓	38° 08'	140° 55'	6	WWAS	475690	
KASUMINOME KASUMINOME AB	38° 13'	140° 55'	18	WWAS	475670	
YAMAGATA CENTER, NORTH OF FUKUSHIMA	38° 24'	140° 22'	340	WWAS		
MATSUSHIMA AB NE OF SENDAI	38° 24'	141° 23'	9	WWAS		
ISHINOMAKI NE OF SENDAI	38° 26'	141° 18'	148	USNT	475920	RJ19

E-98

3:23 A = JST

18:23 P = UTC

FUKUSHIMA

1 Am	JST	2 m/s	NNE
2 Am	JST	2 m/s	SSW

SENDAI

2 Am	NE @ 2
1 Am	N @ 3
24 Am	N @ 5
23 P	NNW @ 5
22 P	NW @ 3
21 P	NW @ 5
20 P	NW @ 6

ONAHAMA

2 AM	NNE @ 3
1 Am	NNE @ 3
24 A	NE @ 4
23 P	NNW @ 2
22 P	N @ 2
21 P	N @ 1
20 P	N @ 1

FUKUSHIMA

2 Am	SSW @ 2
1 Am	NNE @ 2
24 Am	NW @ 1 ?
23 P	S @ 1
22 P	NNE @ 3
21 P	W @ 1
20 P	WNW @ 3