
From: LIA06 Hoc
Sent: Thursday, March 17, 2011 7:25 PM
To: Coggins, Angela; Batkin, Joshua
Cc: McNamara, Nancy; Dean, Bill; Barkley, Richard; Tift, Doug; LIA04 Hoc; Virgilio, Martin
Subject: FW: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Importance: High

Please see the email from Region 1 regarding a request from the Gov. of New York to meet with the Chairman.

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

From: LIA04 Hoc
Sent: Thursday, March 17, 2011 6:48 PM
To: LIA06 Hoc
Subject: FW: Request from Governor Cuomo's Office Re: Mtg w/Chairman
Importance: High

From: McNamara, Nancy
Sent: Thursday, March 17, 2011 5:57 PM
To: LIA04 Hoc; OST05 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tift, Doug; Barkley, Richard
Subject: Request from Governor Cuomo's Office Re: Mtg w/Chairman
Importance: High

Liaison Team: Received a call from Tom Condon, NY State Deputy Secretary of Energy & Environment in the Governor's Office. The NY Lieutenant Governor, Robert Duffey is requesting a meeting with the Chairman to discuss the GI-199 report and how it relates to Indian Point. The other attendees from the Governor's office would be Mr. Howard Glaser, Director of State Operations and Mr. Condon. They also made the request via their Washington D.C. office.

Mr. Condon would like me to find out if the request has been received and what dates are being offered. They are flexible.

I informed Mr. Condon of our outreach today to several of his State agency representatives and the 4-County Executives and offered was there anything the Region I staff could assist the Governor's office in while their request was being processed. He stated that the Governor's office is very pleased with the communications from the Region to his State SLO and other agency reps; however, the Governor would prefer the meeting at the Chairman's level.

-Nancy

White, Bernard

From: Bajwa, Chris
Sent: Friday, March 18, 2011 12:58 PM
To: Gratton, Christopher
Cc: Howe, Allen; Boska, John; Ordaz, Vonna; Easton, Earl; Garcia-Santos, Norma
Subject: RE: NMSS input for Japan response Brief

It appears as if Vonna Ordaz will be the POC for NMSS at the briefing. Dan Dorman will be in Japan Monday.

The last paragraph of this article gives some information on the condition central spent fuel storage pool and the dry storage facility at Fukushima.

[http://www.world-nuclear-news.org/RS Spraying continues at Fukushima Daiichi 1803111.html](http://www.world-nuclear-news.org/RS_Spraying_continues_at_Fukushima_Daiichi_1803111.html)

From: Gratton, Christopher
Sent: Friday, March 18, 2011 6:54 AM
To: Bajwa, Chris
Cc: Howe, Allen; Boska, John
Subject: RE: NMSS input for Japan response Brief

Chris,

Something that seems to be missing from the slides is a bullet on SFP safety. Can I ask you to develop a bullet and attendant talking point(s) (one or more one sentence supporting statements) that address SFP safety similar in scope and breadth to the bullets on the slides you have. I am thinking it would go in the "Assessment of Reactor Safety" section. The talking points I am including as notes to the slides.

I am looking for general statement on the NRC's assessment of SFP safety, and talking points that support the statement (design theory, improvements, etc etc). Since the problems in Japan are not only in the reactor. All should be at a high level – ticklers that remind the EDO of the design features inherent in the SFP.

Thanks.....CG

From: Bajwa, Chris
Sent: Thursday, March 17, 2011 4:17 PM
To: Gratton, Christopher
Cc: Easton, Earl; Garcia-Santos, Norma; White, Bernard; Ordaz, Vonna
Subject: NMSS input for Japan response Brief

Chris,

Here is NMSS input for the Commission briefing. Since we did not explicitly discuss dry cask storage in the call, please let me know if this "scratches the itch" for the briefing. We will be sure that a representative from NMSS attends the briefing. The (2) slides are "talking points" for you to use any way you see fit. The other documents are background information, with information of interest highlighted. The second powerpoint provides background on Japanese dry storage at the Fukushima plant.

Of course, if there are any questions, or additional information needed, let me know.

Chris Bajwa

From: Hoc, PMT12
Sent: Friday, March 18, 2011 12:51 PM
To: PMT03 Hoc
Subject: FW: Briefing Sheet.doc
Attachments: Briefing Sheet.doc

Add to Chronology.
Diablo Canyon Iodine-131 reading...

From: Vegel, Anton
Sent: Friday, March 18, 2011 12:46 PM
To: Hoc, PMT12
Subject: FW: Briefing Sheet.doc

From: Carson, Louis
Sent: Friday, March 18, 2011 11:29 AM
To: Vegel, Anton
Subject: FW: Briefing Sheet.doc

Sorry:

From: Carson, Louis
Sent: Friday, March 18, 2011 11:27 AM
To: Collins, Elmo; Howell, Art; Pruett, Troy
Cc: Howell, Linda; Allen, Don; Miller, Geoffrey; Alexander, Ryan
Subject: FW: Briefing Sheet.doc

FYI: This' the info Diablo sent

From: Somerville, Mark [mailto:MOS3@pge.com]
Sent: Friday, March 18, 2011 11:00 AM
To: Carson, Louis
Subject: Briefing Sheet.doc

Louis,

Here's what I circulate inside the plant.

Mark

Mark O. Somerville Ph.D.
Manager-Radiation Protection
Certified Health Physicist
Registered Environmental Assessor
(805) 545-4007
(805) 545-3459 - Fax
mos3@pge.com

Briefing Sheet

9/16/2011 7:10:13 PM

Air Sample Data

Continuous air samplers monitoring gasses and particulate show **no increase in the past 24 hours.**

Particulate and Iodine grab samples revealed **NO DETECTABLE ACTIVITY.**

Particulate and Iodine grab samples revealed **NO DETECTABLE ACTIVITY.**

UPDATE: This morning Diablo identified Iodine-131 from the Fukushima Site. The level is **6.349 E-13** micro-curies per cubic centimeter of air. This is 0.3% of the NRC effluent concentrations (10CFR20, Appendix B, Table 2) values and 0.003% of occupational values. In other words, **VERY** low level and at the limits of our detection capability. 9/16/2011 7:10:13 PM

Other Samples

No samples obtained to date show Fukushima related radioisotopes.

Pressurized ion chamber dose rate trends are flat. That means no changes were seen in external dose rates

Pressurized ion chamber dose rate trends are flat. That means no changes were seen in external dose rates.

Pressurized ion chamber dose rate trends are flat. That means no changes were seen in external dose rates. 9/16/2011 7:10:13 PM

Weather Patterns

Current weather patterns predict an optimum sampling location in southern Oregon or Northern California. **This remains Current. MARCH 18 predictions show a slight southerly droop in the jet stream.**

IAEA/UN predict air mass ("plume") arrival also on March 18. We expect no detectable radioactivity.

500 milli-bar, high level winds predict Japanese winds blowing towards Washington State and Oregon. **This remains current.** 9/16/2011 7:10:13 PM

Coastal dispersion will pull some of the air mass south to the California coast.

Coastal touchdown of plume prediction confirmed. 9/16/2011 7:10:13 PM

Helpful Conversions

International Units (SI)	Standard Units
Sv (Sievert, pronounced seevert)	100 rem or 100,000 mrem
1 mSv (milli-Sievert)	100 mrem (milli-rem)
1 µSv (micro-Sievert)	0.1 mrem (milli-rem)
1 µSv (micro-Sievert)	100 µrem (micro-rem)

Typical Site Boundary Dose Rates – Diablo Canyon

International Units (SI)	Standard Units
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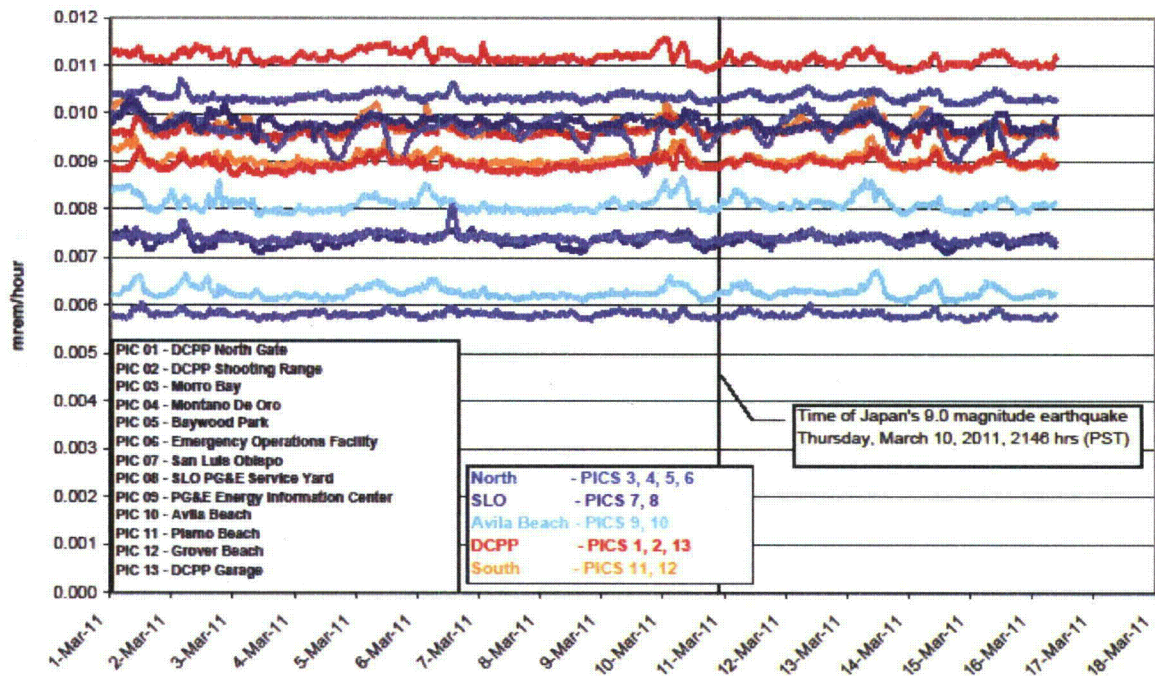
0.09 μ Sv (micro-Sievert)

9 μ rem or 0.009 milli-rem

Sample Protocol

- Continuous, trending air sampler deployed for monitoring external atmosphere.
- Daily radio-isotopic analysis of air sampler filter.
- Weekly off-site radio-isotopic analysis of environmental air sampler filters.
- Deposition sampling at Off-site Emergency Laboratory.
- Daily meteorology updates – PG&E meteorologist.
- Trending of PG&E network of high pressure ion chambers (low dose rate environmental monitors).

PG&E Pressurized Ion Chambers
In San Luis Obispo County



These pressurized ion chamber reading move up and down due to changes in temperature and barometric pressure. Higher barometric pressure drives the number down, lower barometric pressure drives the number up. Temperature drives the number up as it increases. The normal fluctuation in this area is 0.005 milli-rem per hour to 0.022 milli-rem per hour. The highest we've seen, due to an extreme low pressure cell, was 0.055 milli-rem per hour.

Bozin, Sunny

From: LIA07 Hoc
Sent: Friday, March 18, 2011 6:37 PM
Subject: USNRC Earthquake-Tsunami Update - 1800 EDT (March 18, 2011)
Attachments: USNRC Earthquake-Tsunami Update.031811.1800EDT.pdf

Attached, please find an 1800 EDT March 18, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

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

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

-Sara

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

Bozin, Sunny

From: Franovich, Mike
Sent: Friday, March 18, 2011 7:40 AM
To: Ostendorff, William
Cc: Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason
Subject: FW: USNRC Earthquake-Tsunami Update.031811.0600EDT
Attachments: NRC Status Update 3-18 11--0600am.pdf

From: LIA07 Hoc
Sent: Friday, March 18, 2011 6:14 AM
To: LIA07 Hoc
Subject: USNRC Earthquake-Tsunami Update.031811.0600EDT

Attached, please find a 0600 EDT from March 18 situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 11, 2011.

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

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

Thank you,

Rebecca Clinton
EBT Coordinator

From: OST02 HOC
Sent: Friday, March 18, 2011 1:27 PM
To: PMT03 Hoc
Subject: KI availability
Attachments: ~LWF0000.pdf - Adobe Acrobat Pro.pdf

From: LIA07 Hoc
Sent: Friday, March 18, 2011 7:21 PM
To: LIA06 Hoc
Subject: FW: NRC Federal Liaison Team

From: HOO Hoc
Sent: Friday, March 18, 2011 7:10 PM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: NRC Federal Liaison Team

From: Wiggins, Jim
Sent: Friday, March 18, 2011 5:35 PM
To: HOO Hoc; Boger, Bruce; Ross-Lee, MaryJane
Subject: FW: NRC Federal Liaison Team

Plz have the LT director talk to DHS on this.

From: Conklin, Craig [mailto:Craig.Conklin@dhs.gov]
Sent: Friday, March 18, 2011 4:52 PM
To: Wiggins, Jim
Subject: NRC Federal Liaison Team

Jim,

Yesterday, Thursday, March 17th, Marc Brooks sent a notice to LIA07 Hoc <LIA07.Hoc@nrc.gov> about our desired intention to deploy an individual to the NRC Federal Liaison Team to provide support and facilitate information sharing during the Japanese situation. We asked for confirmation that this course of action is appropriate. In addition we asked if any logistical preparations were needed and if so please let us know.

We have not received a reply and we may have sent it to the wrong address. We would like have Rachel Liang from the Nuclear Sector Branch sit in the Federal Liaison Team is that is possible. If you already have DHS representation then we would defer to that individual.

Can you help us out with an answer?

Thanks,

Craig Conklin
Director, SSA EMO
Office of Infrastructure Protection
Department of Homeland Security
(703) 603-5168

From: LIA02 Hoc
To: Fragovannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; "ShafferMR@state.gov"; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen
Cc: Emche, Danielle; Stahl, Eric; Dembek, Stephen; LIA03 Hoc
Subject: TRANSITION REPORT FOR MARCH 18, 2011 3 PM
Date: Friday, March 18, 2011 2:50:29 PM

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TRANSITION REPORT FOR MARCH 18, 2011 3 PM

- 1. NRC Relief Team to Japan.** The NRC will be sending a relief team to Japan beginning tomorrow (Saturday, March 19). Dan Dorman will be leaving tomorrow and will serve as deputy head of delegation (and ultimate replacement for Chuck Casto). Two more staff will depart on Monday to relieve Tony Ulses and Jim Trapp and a larger group will be dispatched Wednesday or Thursday. Aside from Dan Dorman, the group remains unnamed. As of 3 PM Friday, 3/18, the plan was for Dan to take the direct flight from IAD to Narita, departing Saturday 3/19 at approximately 1 PM, in business class. Preparations are being made for his departure and Dan has been briefed. Plans are in place for his blackberry, his passport, dosimetry, and possibly KI to be delivered to him at his home today. Action: The international liaison desk will need to continue its role as liaison between NRC Ops Center and USAID on the details and making sure Dan has everything he needs. Nader and Steve Dembek have been plugged into arrangements.
- 2. DOE Flyover Data.** DOE has released SitReps that include data from flyovers they've conducted. Mark Shaffer advises that the approximately 12 Ambassadors with whom he and Ambassador Davies have met each morning have heard of this data and would like to have it. In addition, Mark inquired whether he could share it with Jim Lyons with the caveat that Jim should not distribute to anyone. There is currently a DOE liaison in the liaison team room, David Freshwater. We have asked him to follow-up with his colleagues to get permission for Mark to share the flyover data. Action: Follow-up with David, his replacement, or, in the absence of DOE reps, the Federal Liaison, to find out if DOE will permit this. Get the answer to Mark ASAP.
- 3. Reminder to Keep Mark Shaffer in-the-loop.** A friendly reminder to keep Mark Shaffer apprised of any new information at shaffermr@state.gov, regardless of time of day, regardless of whether he is in the office or asleep. Especially cc Mark on all communication to IAEA.
- 4. New reporting requirements.** Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log!). There is an international updates file open on the LIA03 computer and the status board is available on WebEOC.
- 5. NRC Japan Team Feedback for Margie.** Margie has requested that the 11pm-7am shift make contact with Brooke and Kirk (by phone) to obtain information concerning their contact with Japanese government authorities throughout the day. Action: this information needs to be turned into a one-pager that will be used by Margie during her 8:30am morning meetings with the Chairman. One-pager should be completed and sent prior to 7am transition. Of particular interest is: general topic of discussion, position/organization of meeting participants, location of meeting, general

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impression of the discussion, attitude of Japanese, results, important things for the Chairman to know, etc. We are not looking for specific technical information.

6. **Communication with NRC Japan Team.** Jen spoke with Kirk and got a better sense of "a day in the life of the team." They have had a standing meeting with TEPCO each day at an appointed time, but all other meetings are on an ad hoc basis as the Japanese representatives are available. Splitting up into small groups, they have met with JNES, NISA, TEPCO, KANTEI (the Prime Minister's staff/advisory body) and the Ministry of Defense. They've met with a variety of levels from staff to senior managers. Kirk indicates that TEPCO has been least helpful, while the Ministry of Defense has been extremely helpful. He also stated that, after a day of attending separate meetings with separate organizations, the team came back together and compared notes and the information they were given by the respective organizations appeared consistent. Brooke Smith participated in a meeting with Russian representatives in Japan and is expected to call into the international liaison desk this evening to give a read-out. Action: talk to Brooke when she calls and take down any information about the Russia meeting and everything that may apply for Margie's one-pager (one is needed on weekends even when there is no impending Chairman's morning meeting in case she gets Chairman inquiries over the weekend).
7. **Japan Group Email Alias.** Kirk requested that we contact CSC about arranging an email group/distribution for all NRC team members in Japan to allow easier communication to/from/amongst the team. List was set up – it is "Liaison Japan". We have sent a test message and it was successful. Dan Dorman has been added. Action: Please forward any pertinent information to the team via this alias.
8. **Shift Changes.** Action: Put names of watch stander on emails; inform Brooke and Kirk when shift changes.
9. **Ongoing communication with the UK.** We (int'l and RST) participated in the daily 0930 call with the UK, Canada and France to discuss current conditions at the plant. This call will be held at the same time during the weekend. Separately, we have had a health physics call with these same countries and are working with the PMT on source-term-related information sharing with them. Another call on this subject has been scheduled for 2:00 PM tomorrow (Saturday). UK and IRSN have already shared information with us. We have shared NUREG 1465 with the group and have stated that we will share our source term data when it becomes available. PMT has advised us that our data has changed and the Chairman must review it before it can be sent anywhere, including the federal family. This should not preclude us ultimately sharing it with our bilateral partners, as long as it includes the caveat about abiding by our bilateral arrangements (no sharing with third parties). There is an email distribution list flagged on the LIA02 inbox (red flag, yellow box) where it should be sent when the time comes. Action 1: Int'l liaison and RST should staff 0930 daily call on Saturday and Sunday. Action 2: Int'l liaison and PMT should staff 2:00 PM health physics call on Saturday and arrange any requested subsequent calls. Action 3: Stay in touch with PMT on when U.S. source term data can be shared.
10. **NHK Query concerning 2000 Sandia Test.** NHK (Japan TV), through NEA, has requested information about Sandia testing done in 2000 related to RPV strength related to pressure and blasts. Email was sent to RES (Dehn, Sangimino, Eisenberg, Calvo). RES has no objection but requested we clear it with OPA. David McIntyre shared the request with Eliot Brenner. We are awaiting response from Eliot. Once OPA clears off we can reply to NEA (notify ET for info). Action: Follow-up with OPA on their response, then contact Jeff Dehn in RES.
11. **IAEA Japan Team.** Based on an ET request, Eric Stahl contacted the IAEA

Incident and Emergency Center (IEC) via phone about the arrival, makeup and goals of the IAEA team being sent to Japan. IEC requested we submit the questions via email to iec6@iaea.org. It was determined that the team consisted of DG Amano, Khammar Mrabit and 2 rad monitoring techs, but NRC and Mark Shaffer have been unsuccessful in obtaining names. Action: If names are provided, give them to ET, then inform NRC Team in Japan. They had requested to meet with members of the IAEA team if possible.

12. **Passing clearances.** There was an urgent request for Valerie Kerben/NRC Security to pass the team's security clearances to Cynthia Hoof at HoofC@State.gov or HoofC@State.sgov.gov. This action has been completed, but keep her information around because the replacement team's clearances will need to be passed. Her phone number is 81-3-3224-5583.
13. **Request from Indonesia.** We had a request from the Indonesian Embassy in Washington (Ricky Ichsan) to information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or meeting with NRC and their Minister-Counselor. Ricky and Danielle Emche traded emails and Ricky has proposed a call at 5 PM on Monday. His Minister Counsellor will be talking to Don Cool. No Action.
14. **TEPCO.** TEPCO had authorized one NRC person to be stationed at TEPCO. In case someone should ask the status, Kirk has informed us that this may not happen after all (it may no longer be what the NRC team in Japan needs).
15. **Egyptian Query.** Mugeh has been asked to check into the status of a question received from Egypt. Once she determines who the person is, we should respond appropriately. No action unless you hear from Mugeh.
16. **ENAC.** Please continue to regularly check ENAC for newly-posted documents. The translators are doing a great job working with the Japanese-language material and communicating with RST and PMT personnel.

Jen and Steve Bloom

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OPA

NR

From: Leeds, Eric
To: Collins, Elmo; Dean, Bill; Satorius, Mark; McCree, Victor
Cc: Howell, Art; Pederson, Cynthia; Lew, David; Wert, Leonard; Nelson, Robert
Subject: Heads up!!!! 50 mile EPZ
Date: Friday, March 18, 2011 1:11:00 PM
Attachments: QUAKE TP 3 17.docx

FYI – We're working on a Q&A on the 50 mile EPZ issue. See below for details. We will keep checking to get it to you for your people as best we can.

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

R

From: Nelson, Robert
Sent: Friday, March 18, 2011 1:04 PM
To: Leeds, Eric
Subject: FYI: Talking Points (3-17 (7:30 p.m. EDT))

Attached is the latest that I have. See the status below from the Liaison Team. I'll share status with my regional contacts.

NELSON

R

From: LIA06 Hoc *MSR*
Sent: Friday, March 18, 2011 12:43 PM
To: Nelson, Robert
Subject: RE: Talking Points (3-17 (7:30 p.m. EDT))

Yes Bob, we are engaged. The decision is not to share details on the basis for the EPZ outside of the federal family yet. I asked Rich Turtill to put together a proposal of what information should be shared with the states by NRC, even though DOE has the lead for communications with the states, and he and I will take it to the ET for consideration. That will probably happen later on today.

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

From: Nelson, Robert
Sent: Friday, March 18, 2011 12:41 PM
To: LIA06 Hoc
Subject: FYI: Talking Points (3-17 (7:30 p.m. EDT))

Mark Lombard:

There is a get deal of angst about getting the Q re: the 50 mile EPZ finalized & releasable. Is the Liaison Team involved? If so, what's the status. If not, who should I

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talk to?

NELSON

From: Markley, Michael
Sent: Friday, March 18, 2011 11:35 AM
To: Nelson, Robert
Subject: FW: Talking Points (3-17 (7:30 p.m. EDT))

Attached are the draft OPA talking points.

From: LIA05 Hoc
Sent: Friday, March 18, 2011 9:44 AM
To: Markley, Michael
Subject: FW: Talking Points (3-17 (7:30 p.m. EDT))

Per your request.

FEMA REP Liaison
NRC Operations Center
(301) 816-5187

*******FOR OFFICIAL USE ONLY*******
DO NOT RELEASE OUTSIDE OF THE FEDERAL FAMILY

From: OST05 Hoc
Sent: Friday, March 18, 2011 9:43 AM
To: LIA05 Hoc
Subject: FW: Talking Points (3-17 (7:30 p.m. EDT))

From: OST05 Hoc
Sent: Friday, March 18, 2011 7:55 AM
To: Nguyen, Quynh; Meighan, Sean
Cc: LIA04 Hoc; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tift, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; 'Heck, Jared'; McCree, Victor; Pederson, Cynthia; Satorius, Mark; Easson, Stuart; Flannery, Cindy; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta
Subject: Talking Points (3-17 (7:30 p.m. EDT))

Sean and Quynh –

Please update the file on the Sharepoint site with the attached Talking Points.

Kim Lukes
State Liaison – Liaison Team
Incident Response Center

OPA

TALKING POINTS

JAPAN NUCLEAR SITUATION

As of 3/17/2011 7:30 p.m. EDT

Update: Addition of bullets on expanding EPZ to 50 miles, and response to news report ranking plants by vulnerability to earthquakes.

- Based on calculations performed by NRC experts, we now believe that it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate. Our recommendation is based on NRC guidelines for public safety that would be used in the United States under similar circumstances.
- The 10-mile EPZ reflects the area where projected doses from design basis accidents at nuclear power plants would not exceed the EPA's protective action guidelines, and we are confident that it would be adequate even for severe accidents. However, the 10-mile zone was always considered a base for emergency response that could be expanded if the situation warranted. The situation in Japan, with four reactors experiencing exceptional difficulties simultaneously, creates the need to expand the EPZ beyond the normal 10-mile radius.

We have said from the beginning of this crisis that the NRC would analyze this situation for any lessons that can be derived to improve our oversight of U.S. nuclear power plants. Emergency planning will be part of that review.

- Given the results of the monitoring and distance between Japan and Hawaii, Alaska, U.S. Pacific Territories and the U.S. West Coast, the NRC expects the U.S. to avoid any harmful levels of radioactivity. The NRC is aware of various internet postings depicting modeled radiation plumes for the ongoing events at the nuclear power plants in Japan. All of the models the NRC has seen are based on generic assumptions regarding the potential radiation release from the plants and as such are unable to predict actual radiation levels away from the site. The NRC is working closely with our federal partners to monitor radiation releases from the Japanese nuclear power plants.
- The NRC is working with other U.S. agencies to monitor radioactive releases from Japan and to predict their path.
- The NRC continues to believe, based on all available information, that the type and design of the Japanese reactors, combined with how events have unfolded, will prevent radiation at harmful levels from reaching U.S. territory.
- The Department of Energy has been designated the lead agency for communicating information to the States regarding monitoring of radiation heading toward or over the United States. The DOE's Lawrence Livermore National Laboratory (National Atmospheric Release Assessment Center) is monitoring weather patterns over the Pacific Ocean. The Environmental Protection Agency maintains air monitoring stations throughout the country and has reinforced its monitoring effort. DOE will provide aerial monitoring. Questions about this effort should be directed to DOE at 202 586 4940.
- [Status as of 9:35pm on 3/16] The NRC is closely monitoring information about the spent fuel pools as well as radiation levels at the Japanese nuclear power plants. Given the totality of the situation, the NRC's recommendation for U.S. residents within 50 miles of the Fukushima reactors to evacuate remains unchanged. That recommendation was based on actual radiation levels in the nuclear complex.

- In accordance with established protocols, U.S. Customs and Border Protection (CBP) employs several types of radiation detection equipment in its operations at both air and sea ports, and uses this equipment, along with specific operational protocols, to resolve any security or safety risks that are identified with inbound travelers and cargo. Out of an abundance of caution, CBP has issued field guidance reiterating its operational protocols and directing field personnel to specifically monitor maritime and air traffic from Japan. CBP will continue to evaluate the potential risks posed by radiation contamination on inbound travelers and cargo and will adjust its detection and response protocols, in coordination with its interagency partners, as developments warrant.
- The Japanese government has formally asked for U.S. assistance in responding to nuclear power plant cooling issues triggered by an earthquake and tsunami on March 11. The NRC has eleven staff on the ground in Japan as part of the USAID team.
- The NRC is coordinating its actions with other federal agencies as part of the U.S. government response. The NRC's headquarters Operations Center was activated at the beginning of the event and has been monitoring the situation on a 24-hour basis ever since.
- The NRC is always looking to learn information that can be applied to U.S. reactors and we will analyze the information that comes from this incident. President Obama has directed the agency to conduct a comprehensive review of the safety of U.S. nuclear plants; the agency will do so.
- U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster.

- The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area. The NRC then adds a margin for error to account for the limitations on historical data. In other words, U.S. nuclear power plants are designed to be safe based on historical data to predict the area's maximum credible earthquake.
- In response to MSNBC report ranking US NPPs according to vulnerability to earthquakes: The NRC does not rank nuclear power plants according to their vulnerability to earthquakes. This "ranking" was developed by an MSNBC reporter using partial information and an even more partial understanding of how we evaluate plants for seismic risk. Each plant is evaluated individually according to the geology of its site, not by a "one-size-fits-all" model - therefore such rankings or comparisons are highly misleading.

From: LIA06 Hoc
Sent: Friday, March 18, 2011 8:48 AM
To: Jones, Cynthia
Subject: RE: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Thank you!

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

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

From: Jones, Cynthia
Sent: Friday, March 18, 2011 8:47 AM
To: LIA06 Hoc
Subject: FW: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Here tis.....

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

From: Jones, Cynthia
Sent: Friday, March 18, 2011 8:15 AM
To: Jones, Cynthia; HOO Hoc; Hoc, PMT12; LIA07 Hoc
Cc: Wiggins, Jim; Evans, Michele
Subject: RE: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Please see attached for the Level 5 ERF

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

From: Jones, Cynthia
Sent: Friday, March 18, 2011 8:11 AM
To: HOO Hoc; Hoc, PMT12; LIA07 Hoc
Cc: Wiggins, Jim; Evans, Michele
Subject: FW: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Please add to the ET notes that the new Provisional level of the event from Japan is now officially at a Level 5 per the Japanese National Officer. I am bringing a copy of the ERF to the PMT room now.

Cyndi

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

From: NEWS Automated Mailer [mailto:ContactPointNEWS@iaea.org]
Sent: Friday, March 18, 2011 4:49 AM
To: NEWS.Contact-Point@iaea.org
Subject: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:
"Abnormal rise of radioactive dosage value at site boundary (INES Level 4)"

has as of today, Friday, 18 March 2011, 09:48:34 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan
Location/Facility: FUKUSHIMA-DAIICHI-1
Event Type: Power Reactor
Event Date: 2011.03.12

Rating Date: 2011.03.12
ERF Version: Provisional
INES Rating Level: 5

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

From: Blount, Tom
Sent: Friday, March 18, 2011 9:57 PM
To: LIA08 Hoc; LIA06 Hoc
Subject: Re: IN 2011-05 (ML110760432)

This wasn't something that I'm aware of as occurring, just a thought - had and was wondering if someone else had it also....
And if it was being pursued in any fashion....

Sent from Tom Blount's NRC BB

From: LIA08 Hoc
To: LIA06 Hoc
Cc: Blount, Tom
Sent: Fri Mar 18 21:50:47 2011
Subject: FW: IN 2011-05 (ML110760432)

Hey Mark, this is not something I have heard anything about. Sound familiar to you?
Rani

From: Blount, Tom
Sent: Friday, March 18, 2011 9:49 PM
To: LIA08 Hoc
Subject: Re: IN 2011-05 (ML110760432)

Rani-
Since you responded....do you know whether we have tried to "phone into the japanese emergency operations center?"
Wondering if they have a public affairs arrangement like we do that would take our call to get as close to direct data as possible....thought maybe the State dept translator might be able to help???

Just wondering, pretty sure we didn't on my shifts....

Tom
Sent from Tom Blount's NRC BB

From: LIA08 Hoc
To: Blount, Tom; LIA06 Hoc
Sent: Fri Mar 18 21:31:06 2011
Subject: RE: IN 2011-05 (ML110760432)

Nope... this is my first glimpse. Thanks, Tom.
Rani

From: Blount, Tom
Sent: Friday, March 18, 2011 9:29 PM
To: LIA08 Hoc; LIA06 Hoc
Subject: Fw: IN 2011-05 (ML110760432)
Importance: High

I suspect this has already been seen there...just fyi

Tom

Sent from Tom Blount's NRC BB

From: Hawes, Cathy

To: Albert, Ronald; Beaulieu, David; Blount, Tom; Foster, Jack; Furst, David; Gray, Kathy; Hawes, Cathy; Laura, Richard; Markley, Anthony; McGinty, Tim; Murphy, Martin; OGCMailCenter Resource; Peduzzi, Francis; Quay, Theodore; RidsEdoMailCenter Resource; RidsFsmeOd Resource; RidsNmssOd Resource; RidsNrrAdes Resource <RidsNrrAdes.Resource@nrc.gov>; RidsNrrAdro Resource <RidsNrrAdro.Resource@nrc.gov>; RidsNrrDpr Resource; RidsNrrMailCenter Resource; RidsNrrOd Resource; RidsOcaaMailCenter Resource; RidsOpaMail Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; Rini, Brett; Stuchell, Sheldon; Tabatabai, Omid

Sent: Fri Mar 18 16:55:46 2011

Subject: IN 2011-05 (ML110760432)

Attached is NRC Information Notice 2011-05: Tohoku-Taiheiyou-Oki Earthquake Effects on Japanese Nuclear Power Plants, dated March 18, 2011.

This IN can also be found in ADAMs under Accession No. ML110760432

From: LIA05 Hoc
Sent: Friday, March 18, 2011 9:43 PM
To: Andrew Seward; Harry Sherwood; Michelle Ralston; Steve Horwitz; Tim Greten; Vanessa E. Quinn
Subject: FW: IN 2011-05 (ML110760432)
Attachments: ML110760432.pdf

Importance: High

FYI,

Bonnie Sheffield Dayshift 0700-1500
Ken Wierman Nightshift 1500-2300
FEMA REP Liaison
NRC Operations Center
(301) 816-5187

*****FOR OFFICIAL USE ONLY*****
DO NOT RELEASE OUTSIDE OF THE FEDERAL FAMILY

From: LIA08 Hoc
Sent: Friday, March 18, 2011 9:41 PM
To: LIA01 Hoc; LIA02 Hoc; LIA03 Hoc; LIA04 Hoc; LIA05 Hoc; LIA06 Hoc; LIA07 Hoc; LIA08 Hoc; LIA09 Hoc; LIA10 Hoc; LIA11 Hoc; LIA12 Hoc
Subject: FW: IN 2011-05 (ML110760432)
Importance: High

FYI, folks...

From: Blount, Tom
Sent: Friday, March 18, 2011 9:29 PM
To: LIA08 Hoc; LIA06 Hoc
Subject: Fw: IN 2011-05 (ML110760432)
Importance: High

I suspect this has already been seen there...just fyi
Tom
Sent from Tom Blount's NRC BB

From: Hawes, Cathy
To: Albert, Ronald; Beaulieu, David; Blount, Tom; Foster, Jack; Furst, David; Gray, Kathy; Hawes, Cathy; Laura, Richard; Markley, Anthony; McGinty, Tim; Murphy, Martin; OGCMailCenter Resource; Peduzzi, Francis; Quay, Theodore; RidsEdoMailCenter Resource; RidsFsmeOd Resource; RidsNmssOd Resource; RidsNrrAdes Resource <RidsNrrAdes.Resource@nrc.gov>; RidsNrrAdro Resource <RidsNrrAdro.Resource@nrc.gov>; RidsNrrDpr Resource; RidsNrrMailCenter Resource; RidsNrrOd Resource; RidsOcaaMailCenter Resource; RidsOpaMail Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; Rini, Brett; Stuchell, Sheldon; Tabatabai, Omid
Sent: Fri Mar 18 16:55:46 2011
Subject: IN 2011-05 (ML110760432)

Attached is NRC Information Notice 2011-05: Tohoku-Taiheiyou-Oki Earthquake Effects on Japanese Nuclear Power Plants, dated March 18, 2011.
This IN can also be found in ADAMs under Accession No. ML110760432

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, DC 20555-0001

March 18, 2011

NRC INFORMATION NOTICE 2011-05: TOHOKU-TAIHEIYOU-OKI EARTHQUAKE
EFFECTS ON JAPANESE NUCLEAR POWER
PLANTS

ADDRESSEES

All holders of or applicants for operating licenses for nuclear power reactors under the provision of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of or applicants for a standard design certification, standard design approval, manufacturing license, limited work authorization, early site permits or combined license issued under 10 CFR Part 52, "Licenses, Certifications and Approvals for Nuclear Power Plants."

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees of effects of the Tohoku-Taiheiyou-Okai Earthquake on nuclear power plants in Japan. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. Suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

DESCRIPTION OF CIRCUMSTANCES

The following summary of events is provided based on the best information available at this time. The situation in Japan regarding recovery efforts for the Fukushima Daiichi Nuclear Power Station continues to evolve on an hourly basis.

On March 11, 2011, the Tohoku-Taiheiyou-Okai 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.

ML110760432

Units 1 through 3, which had been operating at the time of the earthquake, scrambled 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 water appears to be increasing. Emergency power is available to provide cooling water flow through the SFPs for Units 5 and 6.

The Japanese Government ordered an evacuation out to 20 km for the area surrounding Fukushima Daiichi. Residents out to 30 km were ordered to shelter in place.

The damage to Fukushima Daiichi nuclear power station appears to have been caused by initiating events outside of the design basis for the facilities.

BACKGROUND

10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 2, "Design Bases for Protection against Natural Phenomena," or similar appropriate requirements in the licensing basis for a reactor facility, requires that structures, systems, and components (SSCs) important to safety be 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 design bases for these SSCs reflect: (1) appropriate consideration of the most severe of the natural phenomena that have been historically reported 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, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) the importance of the safety functions to be performed.

As a result of the terrorist events of September 11, 2001, the NRC issued EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (the ICM Order) dated February 25, 2002. The ICM Order, which is designated as Safeguards Information (SGI), modified then-operating licenses for commercial power reactor facilities to require compliance with specified interim safeguards and security compensatory measures. Section B.5.b of the ICM Order requires licensees to adopt mitigation strategies using readily available resources to maintain or restore core cooling, containment, and SFP cooling capabilities to cope with the loss of large areas of the facility due to large fires and explosions from any cause, including beyond-design-basis aircraft impacts.

By letter, dated February 25, 2005, the NRC staff provided guidance for implementing Section B.5.b of the ICM Order. This guidance, designated as SGI, included best practices for mitigating losses of large areas of the plant and measures to mitigate fuel damage and minimize releases. Following issuance of the B.5.b Phase 1 Guidance, the NRC staff conducted inspections at operating reactor sites using Temporary Instruction (TI) 2515/164 (SGI) and subsequently TI 2515/168 (SGI) to ensure compliance with Section B.5.b of the ICM Order.

In December 2006, the Nuclear Energy Institute (NEI) issued NEI 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guideline." NEI 06-12 is designated for Official Use Only – Security Related Information (OUO-SRI). The NRC endorsed NEI 06-12, Revision 2, by letter dated December 22, 2006, also designated OUO-SRI, as an acceptable means for developing and implementing the mitigation strategies requirement in Section B.5.b of the ICM Order. NEI 06-12, Revision 2, provides guidance for implementing a set of strategies intended to maintain or restore core cooling, containment, and SFP cooling capabilities under the circumstances associated with the loss of a large area of the plant due to explosions or fire. NEI 06-12 provides guidance in the following areas:

- Adding make-up water to the SFP,
- Spraying water on the spent fuel,
- Enhanced initial command and control activities for challenges to core cooling and containment, and
- Enhanced response strategies for challenges to core cooling and containment.

The specific strategies covered in NEI 06-12, Revision 2, were developed based on the results of assessments conducted at currently licensed power reactor facilities for the purpose of enhancing plant specific mitigation capability for damage conditions caused by a large explosion or fire. These assessments identified a wide spectrum of potential plant specific strategies. NEI 06-12, Revision 2, specifies one set of strategies applicable to all pressurized-water reactors and another set applicable to all boiling-water reactors. Both sets are derived from the results of the plant specific assessments.

The B.5.b Phase 1 Guidance and NEI 06-12, Revision 2, were used by each licensee in preparing information submitted to the NRC that describes a plant specific approach to implementing mitigating strategies and supports each plant specific license condition. The NRC staff has completed its review of the information submitted by each licensee, as well as information obtained during prior NRC inspections, and has issued an OUO-SRI safety

evaluation (SE) that documents the bases for its approval of the license condition for each facility. The SE issued for each licensee includes regulatory guidance in Section 3.0 of Appendix A, "Phase 1 Assessment," that recites the generic B.5.b Phase 1 Guidance of Reference 3, as clarified in TI 2515/168, in a form that is designated OOU-SRI rather than SGI.

By publishing new requirements in the *Federal Register* dated March 27, 2009 (74 FR 13926), the NRC amended 10 CFR Part 50, 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and 10 CFR Part 73, "Physical Protection of Plants and Materials." This rulemaking added paragraph (i) to 10 CFR 50.34, "Contents of Applications; Technical Information," and paragraph (d) to 10 CFR 52.80 "Contents of Applications; Additional Technical Information," to require submittal of a "description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions or fire as required by § 50.54(hh)(2) of this chapter." This rulemaking also added 10 CFR 50.54(hh)(2) to impose the same mitigating strategies requirements on all reactor applicants and licensees as those imposed by the ICM Order and associated license conditions. The Statement of Considerations for this rulemaking specifically noted that the requirements in 10 CFR 50.54(hh) are intended to address certain events that are the cause of large fires and explosions that affect a substantial portion of the nuclear power plant and are not limited or directly linked to an aircraft impact. In addition, the rule contemplates that the initiating event for such large fires and explosions could be any number of beyond-design basis events. Such events include natural phenomena such as those described in GDC 2 (i.e., earthquakes, tornadoes, floods, tsunamis, and seiches), without regard to the GDC 2 provisions governing the severity of natural phenomena.

NRC regulations at 10 CFR 50.63, "Loss of All Alternating Current Power," require that light-water-cooled nuclear power plants be capable of withstanding for a specified duration and recovering from a station blackout.

DISCUSSION

The nuclear power industry has taken the actions listed below at each licensed reactor site. Additional information is available in the NEI Fact Sheet, "Industry Taking Action to Ensure Continued Safety at U.S. Nuclear Energy Plants," dated March 16, 2011, available at www.nei.org.

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

NRC assessment of the implications of beyond design-basis natural phenomena is continuing as more information becomes available. The NRC staff is currently developing a TI to guide staff in performing independent assessments of nuclear power plant readiness to address beyond design-basis natural phenomena under the Reactor Oversight Process. The NRC is considering additional generic communications and additional action including requesting operating plants to provide specific information relating to their facilities to enable the NRC staff to complete a regulatory assessment of beyond design basis phenomena.

PAPERWORK REDUCTION ACT STATEMENT

This Information Notice does not contain any information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.).

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

CONTACTS

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

/RA/

Laura A. Dudes, Director
Division of Construction Inspection,
and Operational Programs
Office of New Reactors

/RA/

Timothy J. McGinty, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Technical Contact: Eric E. Bowman, NRR
301-415-2963
e-mail: Eric.Bowman@nrc.gov

Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.

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CONTACTS

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact(s) listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

/RA/

Laura A. Dudes, Director
Division of Construction Inspection,
and Operational Programs
Office of New Reactors

/RA/

Timothy J. McGinty, Director
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Office of Nuclear Reactor Regulation

Technical Contact: Eric E. Bowman, NRR
301-415-2963
e-mail: Eric.Bowman@nrc.gov

Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.
ADAMS Accession Number: ML110760432 * by e-mail

OFFICE	NRR/DPR/PGCB	TECH EDITOR*	NRR/DIRS/D*	NRR/DE/D*	NSIR/DSP*
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DATE	03/17/2011	03/17/2011	03/17/2011	03/17/2011	03/17/2011
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NAME	TFrye	CHawes	SRosenberg	LDudes (MShuaibi for)	TMcGinty
DATE	03/18/2011	03/17/2011	03/17/2011	03/18/2011	03/18/2011

OFFICIAL RECORD COPY

Lee, Richard

From: Santiago, Patricia
Sent: Friday, March 18, 2011 8:06 PM
To: Greenwood, Carol
Cc: Lee, Richard; Tinkler, Charles; Zigh, Ghani
Subject: RE: Reminder: FW: WAIVER OF WORK SCHEDULE AND PAY CAP RULES FOR WORK IN RESPONSE TO THE EVENTS IN JAPAN
Attachments: image001.jpg

Carol

I added Ghani, Carlos, myself, Richard Lee for later work related to Commissioner requests on SFP or support to the OCM briefing March 21. I also added Charlie/Jason when they got midnight calls from the op center.

Richard Lee should add any time.

Thanks

From: Greenwood, Carol
Sent: Friday, March 18, 2011 10:31 AM
To: Armstrong, Kenneth; Bajorek, Stephen; Boyd, Christopher; Elkins, Scott; Hoxie, Chris; Lee, Richard; Rubin, Stuart; Santiago, Patricia; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani; Tomon, John
Subject: FW: Reminder: FW: WAIVER OF WORK SCHEDULE AND PAY CAP RULES FOR WORK IN RESPONSE TO THE EVENTS IN JAPAN

Please update the Excel spreadsheet [by clicking here](#) with names and dates of any staff that have or will be performing emergency-related premium work in response to the events in Japan. This applies to the IRC, OIP, OPA or wherever they are doing emergency work.

Please confirm to me when your branch is updated.

The spreadsheet is at g:\DSA\Directors Office\JapanResponseWork.xlsx if the above link doesn't work.

Regards

Carol Greenwood

Lead Administrative Assistant

RES/DSA

U.S. Nuclear Regulatory Commission

Phone: 301-251-3319



From: Gibson, Kathy
Sent: Friday, March 18, 2011 8:07 AM
To: Greenwood, Carol
Subject: Fw: Reminder: FW: WAIVER OF WORK SCHEDULE AND PAY CAP RULES FOR WORK IN RESPONSE TO THE EVENTS IN JAPAN

Would you check with the BCs and compile this list for Andrea for DsA? Thx

From: Valentin, Andrea

To: Gibson, Kathy; Scott, Michael; Coyne, Kevin

Sent: Fri Mar 18 08:00:34 2011

Subject: Reminder: FW: WAIVER OF WORK SCHEDULE AND PAY CAP RULES FOR WORK IN RESPONSE TO THE EVENTS IN JAPAN

This is a reminder to provide me with a list of names of staff that are performing emergency-related premium work (and the dates that the people worked) in response to the events in Japan. This applies to the IRC, OIP, OPA or wherever they are doing emergency work.

Thanks,
Andrea

From: Khan, Charline

Sent: Thursday, March 17, 2011 7:29 AM

To: RidsAcrsAcnw_MailCTR Resource; RidsAslbpManagement Resource; RidsOgcMailCenter Resource; RidsOcaaMailCenter Resource; RidsOcofoMailCenter Resource; RidsOigMailCenter Resource; RidsOipMailCenter Resource; RidsOcaMailCenter Resource; RidsOpaMail Resource; RidsSecyMailCenter Resource; RidsSecyCorrespondenceMCTR Resource; RidsEdoMailCenter Resource; RidsAdmMailCenter Resource; RidsCsoMailCenter Resource; RidsOeMailCenter Resource; RidsFsmeOd Resource; RidsOiMailCenter Resource; RidsOIS Resource; RidsHrMailCenter Resource; RidsNroOd Resource; RidsNroMailCenter Resource; RidsNmssOd Resource; RidsNrrOd Resource; RidsNrrMailCenter Resource; RidsResOd Resource; RidsResPmdaMail Resource; RidsSbcrMailCenter Resource; RidsNsirOd Resource; RidsNsirMailCenter Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource

Cc: Davidson, Lawrence; Buchholz, Jeri; Johns, Nancy

Subject: WAIVER OF WORK SCHEDULE AND PAY CAP RULES FOR WORK IN RESPONSE TO THE EVENTS IN JAPAN

MEMORANDUM TO: Those on the Attached List

FROM: Miriam L. Cohen, Director/RA by J. Buchholz for/
Office of Human Resources

DATED: March 16, 2011

SUBJECT: WAIVER OF WORK SCHEDULE AND PAY CAP RULES FOR WORK IN RESPONSE TO THE EVENTS IN JAPAN

ADAMS Accession No. ML11075A003 refers

NOTE: Electronic distribution only

Charline Khan

Administrative Assistant (Rotation)

U.S. NUCLEAR REGULATORY COMMISSION

Office of Human Resources

P:301-492-2318

Charline.Khan@nrc.gov

From: McNamara, Nancy
Sent: Friday, March 18, 2011 11:18 AM
To: OST05 Hoc
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Hopefully, not me. Not sure how to tell Governor Cuomo, NO. Kidding aside, it probably should come from the Chairman's office since I'm sure they handle such requests diplomatically all the time.

From: OST05 Hoc
Sent: Friday, March 18, 2011 10:47 AM
To: McNamara, Nancy
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy,

We are currently trying to determine who should be the appropriate lead for the response.

From: McNamara, Nancy
Sent: Friday, March 18, 2011 10:11 AM
To: OST05 Hoc
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Can you please find out who has the lead for providing that response to the Governor's office?

From: OST05 Hoc
Sent: Friday, March 18, 2011 8:32 AM
To: McNamara, Nancy; LIA04 Hoc; LIA06 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard; Piccone, Josephine
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy,

The Chairman's Office has been notified of this request; however, we have been informed that it will not be scheduled, at this time.

Kim Lukes
State Liaison – Liaison Team
Incident Response Center

From: McNamara, Nancy
Sent: Thursday, March 17, 2011 6:58 PM
To: LIA04 Hoc; OST05 Hoc; LIA06 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard; Piccone, Josephine
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

NY's Governor's office apparently took 2 avenues for processing their request. Region I and through their Washington office to HQs.

So I guess the answer is yes, it is one of two official requests.

FYI. Under normal circumstances, we would have processed this through the EDO's office. Wasn't sure what rules I was playing under here.

From: LIA04 Hoc
Sent: Thursday, March 17, 2011 6:52 PM
To: McNamara, Nancy; OST05 Hoc; LIA06 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard; Piccone, Josephine
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy: is your e-mail the official request, or has NY and/or RI pursued contact with the Chairman's office?

Richard Turtill
State Liaison – Liaison Team
Incident Response Center

From: McNamara, Nancy
Sent: Thursday, March 17, 2011 5:57 PM
To: LIA04 Hoc; OST05 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard
Subject: Request from Governor Cuomo's Office Re: Mtg w/Chairman
Importance: High

Liaison Team: Received a call from Tom Condon, NY State Deputy Secretary of Energy & Environment in the Governor's Office. The NY Lieutenant Governor, Robert Duffey is requesting a meeting with the Chairman to discuss the GI-199 report and how it relates to Indian Point. The other attendees from the Governor's office would be Mr. Howard Glaser, Director of State Operations and Mr. Condon. They also made the request via their Washington D.C. office.

Mr. Condon would like me to find out if the request has been received and what dates are being offered. They are flexible.

I informed Mr. Condon of our outreach today to several of his State agency representatives and the 4-County Executives and offered was there anything the Region I staff could assist the Governor's office in while their request was being processed. He stated that the Governor's office is very pleased with the communications from the Region to his State SLO and other agency reps; however, the Governor would prefer the meeting at the Chairman's level.

-Nancy

From: OST05 Hoc
Sent: Friday, March 18, 2011 10:47 AM
To: McNamara, Nancy
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy,

We are currently trying to determine who should be the appropriate lead for the response.

From: McNamara, Nancy
Sent: Friday, March 18, 2011 10:11 AM
To: OST05 Hoc
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Can you please find out who has the lead for providing that response to the Governor's office?

From: OST05 Hoc
Sent: Friday, March 18, 2011 8:32 AM
To: McNamara, Nancy; LIA04 Hoc; LIA06 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard; Piccone, Josephine
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy,

The Chairman's Office has been notified of this request; however, we have been informed that it will not be scheduled, at this time.

Kim Lukes
State Liaison – Liaison Team
Incident Response Center

From: McNamara, Nancy
Sent: Thursday, March 17, 2011 6:58 PM
To: LIA04 Hoc; OST05 Hoc; LIA06 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard; Piccone, Josephine
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

NY's Governor's office apparently took 2 avenues for processing their request. Region I and through their Washington office to HQs.

So I guess the answer is yes, it is one of two official requests.

FYI. Under normal circumstances, we would have processed this through the EDO's office. Wasn't sure what rules I was playing under here.

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Sent: Thursday, March 17, 2011 6:52 PM
To: McNamara, Nancy; OST05 Hoc; LIA06 Hoc
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Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy: is your e-mail the official request, or has NY and/or RI pursued contact with the Chairman's office?

Richard Turtill
State Liaison – Liaison Team
Incident Response Center

From: McNamara, Nancy
Sent: Thursday, March 17, 2011 5:57 PM
To: LIA04 Hoc; OST05 Hoc
Cc: Lew, David; Dean, Bill; Wilson, Peter; Roberts, Darrell; Tifft, Doug; Barkley, Richard
Subject: Request from Governor Cuomo's Office Re: Mtg w/Chairman
Importance: High

Liaison Team: Received a call from Tom Condon, NY State Deputy Secretary of Energy & Environment in the Governor's Office. The NY Lieutenant Governor, Robert Duffey is requesting a meeting with the Chairman to discuss the GI-199 report and how it relates to Indian Point. The other attendees from the Governor's office would be Mr. Howard Glaser, Director of State Operations and Mr. Condon. They also made the request via their Washington D.C. office.

Mr. Condon would like me to find out if the request has been received and what dates are being offered. They are flexible.

I informed Mr. Condon of our outreach today to several of his State agency representatives and the 4-County Executives and offered was there anything the Region I staff could assist the Governor's office in while their request was being processed. He stated that the Governor's office is very pleased with the communications from the Region to his State SLO and other agency reps; however, the Governor would prefer the meeting at the Chairman's level.

-Nancy

From: OST05 Hoc
Sent: Friday, March 18, 2011 11:49 AM
To: Bradford, Anna; LIA04 Hoc; Warren, Roberta; McNamara, Nancy
Cc: Turtill, Richard; Pace, Patti; Jackson, Deborah; Piccone, Josephine
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Nancy,

Can you please provide the phone number/contact information to Anna Bradford? The Chairman's Office will respond.

Kim Lukes
State Liaison – Liaison Team
Incident Response Center

From: Bradford, Anna
Sent: Friday, March 18, 2011 11:44 AM
To: LIA04 Hoc; Warren, Roberta
Cc: Turtill, Richard; OST05 Hoc; Pace, Patti
Subject: RE: Request from Governor Cuomo's Office Re: Mtg w/Chairman

We will contact them. Do you have phone number information that you could give me?

Anna Bradford
Policy Advisor for Nuclear Materials
Office of Chairman Jaczko
U.S. Nuclear Regulatory Commission
301-415-1827

From: LIA04 Hoc
Sent: Friday, March 18, 2011 10:55 AM
To: Bradford, Anna; Warren, Roberta
Cc: Turtill, Richard; OST05 Hoc
Subject: FW: Request from Governor Cuomo's Office Re: Mtg w/Chairman

Hi Anna and Roberta,

We are trying to be sensitive about passing the message to the Governor of NY that the Chairman is unable to meet with him at this time. Regions I's Regional State Liaison Officer, Nancy McNamara, is now asking who would be the appropriate one to respond. Would the message come from someone in the Chairman's office? Or should it be delegated to Nancy, or NY's State Liaison Officer?

Thanks,
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State Liaison – Liaison Team
NRC Incident Response Center

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Incident Response Center

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Importance: High

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-Nancy

From: McNamara, Nancy
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That is good news, indeed. Will do.

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-Nancy

From: Schwartzman, Jennifer
To: LIA03 Hoc; LIA02 Hoc; Fragoyannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; "ShafferMR@state.gov"; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Tobin, Jennifer; Mavros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill
Subject: RE: 3/19/11 Morning Transition
Date: Saturday, March 19, 2011 8:10:17 AM

Also, can someone please forward the email re. the Chairman's meeting with Amb. Fujisaki to this group?

From: LIA03 Hoc
Sent: Saturday, March 19, 2011 7:13 AM
To: LIA02 Hoc; Fragoyannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill
Subject: 3/19/11 Morning Transition

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TRANSITION REPORT FOR MARCH 19, 2011 7 AM

Danielle and Elizabeth transitioning to Steve and Lance

GENERAL NOTES. **1)** Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook. **2)** Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log). **3)** 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled. **4)** Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email. **5)** Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.

- 1. Summary of the meeting with Ambassador Fujisaki.** Elizabeth and Danielle sent out email describing the Chairman's 3/18/11 meeting with Ambassador Fujisaki. Jack will also forward this to any other members of the interagency not included in the Ops Center interagency email list.
- 2. Discussion with NISA's Emergency Operation Center.** Mr. Koyama and Mr. Sakkuma of NISA's International Office both spoke several times with interpreter Chris Field regarding NRC EOC interest in getting in touch with NISA's EOC. NISA's international office said they'd put us in touch, but needed to see the questions we had first. We send a list of questions compiled by RST and PMT. Later, Kirk Foggie said he would be meeting with NISA's EOC team on Sunday. He said he already had similar question (we also heard that Jack Foster was trying to have similar communication with TEPCO's EOC). We communicated what we had sent to the NISA team (with both Kirk and Jack). Kirk said he would obtain responses and forward them to the NRC EOC. The NISA EOC is prepared to follow up and talk with NRC EOC team members to clarify responses. Action: receive responses from Kirk and coordinate teleconference for follow-up technical exchange with the HQ RST and PMT.

BBB/

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3. **NRC Japan Team Feedback for Margie.** Friday shifts received feedback from Brooke and Kirk. Action: a one-pager has been started and is saved to the MALT weekend notes from Brooke and Kirk.doc. This will be used by Margie during her 8:30am Monday morning meeting with the Chairman. During the week, this should be created nightly for the next day. Of particular interest is: general topic of discussion, position/organization of meeting participants, location of meeting, general impression of the discussion, attitude of Japanese, results, important things for the Chairman to know, etc. We are not looking for specific technical information.
4. **Saturday 2 PM Meeting with Industry, DOE, and Naval Reactors.** This meeting will include INPO, other industry, Pete Lyons, Naval reactors, etc., they will physically come to the Operations Center and Chuck Casto will call in. Briefing material has been created for the meeting and a Prep call has been set up for 7:45 AM. Elizabeth and Danielle started a spreadsheet, identifying relevant international players, their role, etc. Action: Continue with any updates necessary for the meeting. The spreadsheet is saved to MALT Key Organizations.
5. **NRC Relief Team to Japan.** The NRC will be sending a relief team to Japan beginning tomorrow (Saturday, March 19). Dan Dorman will serve as deputy head of delegation (and ultimate replacement for Chuck Casto) and will arrive Sunday at 4:35pm (Japan time). Two more staff will depart on Monday to relieve Tony Ulses and Jim Trapp and a larger group will be dispatched Wednesday or Thursday. Aside from Dan Dorman, the group remains unnamed. Dan has been briefed. As of 9:20 pm, Tim Kolb (one of the team members) is feeling ill (headcold and laryngitis) it appears that he will be coming home this weekend (arrival at 3:38 Saturday). The international liaison desk will need to continue its role as liaison between NRC Ops Center and USAID on the details and making sure Dan (and future travelers) has everything he needs. Action: The Japan team has pointed out that Mr. Nakanishi forgot his business cards and asked us to provide Dan with cards for Mr. Nakanishi. We sent an email to Dan in order to verify he has dosimeter, and inquire whether he can come to NRC prior to his flight to pick up the business cards. The NSIR admin team has said they will make cards for Mr. Nakanishi, if Dan is available to pick them up.
6. **DOE Flyover Data.** DOE has released SitReps that include data from flyovers they've conducted. Mark Shaffer advises that the Ambassadors, and their counselors and Attaches from USA, Canada and UK (about 12 people), with whom he and Ambassador Davies have met each morning have heard of this data and would like it to be shared with them. Our DOE representative checked within their infrastructure with the reply that this type of decision is up to the National Security Council and so the Ambassador should work it up through the State Department. Mark responded that he didn't think the Ambassador would be interested in pursuing the NSC approval chain and noted that the other parties have already shared their information with us. The DOE liaison is not staffing the graveyard shift but when they return to the Ops Center, we should convey Mark's message to DOE.
7. **Ongoing communication with the UK.** The daily 0930 call with the UK, Canada and France to discuss current conditions at the plant will occur on the weekends as well. Separately, this group has a call scheduled for 2:00 PM Saturday to discuss with PMT and source-term-related information sharing. has been. UK and IRSN have

already shared information with us. We have shared NUREG 1465 with the group and have stated that we will share our source term data when it becomes available. PMT has advised us that our data has changed and the Chairman must review it before it can be sent anywhere, including the federal family. This should not preclude us ultimately sharing it with our bilateral partners, as long as it includes the caveat about abiding by our bilateral arrangements (no sharing with third parties). There is an email distribution list flagged on the LIA02 inbox (red flag, yellow box) where it should be sent when the time comes. Action 1: Int'l liaison and RST should staff 0930 daily call on Saturday and Sunday. Action 2: Int'l liaison and PMT should staff 2:00 PM health physics call on Saturday and arrange any requested subsequent calls. Action 3: Stay in touch with PMT on when U.S. source term data can be shared.

8. **NHK Query concerning 2000 Sandia Test.** NHK (Japan TV), through NEA, has requested information about Sandia testing done in 2000 related to RPV strength related to pressure and blasts. Email was sent to RES (Dehn, Sangimino, Eisenberg, Calvo). RES has no objection but requested we clear it with OPA. David McIntyre shared the request with Eliot Brenner. We are awaiting response from Eliot. Once OPA clears off we can reply to NEA (notify ET for info). Followed-up with OPA on their response, then contacted Jeff Dehn in RES.
9. **IAEA Japan Team.** It was determined that the team consisted of DG Amano, Khammar Mrabit and 2 rad monitoring techs, but NRC and Mark Shaffer have been unsuccessful in obtaining names. Mark was pulsed again this evening around 8:00 EST. Action: If names are provided, give them to ET, then inform NRC Team in Japan. They had requested to meet with members of the IAEA team if possible.
10. **ENAC.** Please continue to regularly check ENAC for newly-posted documents. The translators are doing a great job working with the Japanese-language material and communicating with RST and PMT personnel.
11. **Conference Call with State. (+Fed. Family)** NRC on-site team gave a status update of their activities. Chuck Casto wanted help reducing the amount of radiation on the site and need help assessing the affect of seawater on the reactor vessel (and head) especially with regard to heat transfer. They are working on three different systems to cool the pools. The Australians are working on one (flying in equipment). The second one is the TEPCO solution which involves getting cement pumping trucks to pump water instead of cement. The third one is from Tokyo fire department who also have pump system that may be useful. U.S. believes that we should go forward with all 3 paths in the hopes that at least one of them work. They are fairly certain that pools at Units 3 and 4 are dry. Action: Same call tomorrow (Saturday, March 19 at 9:30EST)

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From: LIA03 Hoc
To: Fragovannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; "ShafferMR@state.gov"; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mavros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; LIA03 Hoc; Henderson, Karen
Cc: Emche, Danielle; Stahl, Eric; Dembek, Stephen; LIA03 Hoc; LIA07 Hoc
Subject: TRANSITION REPORT FOR MARCH 19, 2011/ 1500
Date: Saturday, March 19, 2011 3:12:58 PM

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~~ONLY~~

TRANSITION REPORT FOR MARCH 19, 2011 1500

Steve and Lance transitioning to Jenny T and Jill

GENERAL NOTES. (includes notes from previous updates)

- 1)** Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
- 2)** Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
- 3)** 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
- 4)** Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
- 5)** Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
- 6)** RST needs to follow up on Crystallization issue per the 0930 conference call (see item below)
- 7)** Prior to the 2 pm call, make sure you contact the HOOs to let them know that you are going to have the international call. Might be beneficial to establish a standing bridge.

- **Notes from Mark Shaffer.** It was determined that the IAEA Team Japan consisted of DG Amano, Khammar Mrabit and 2 rad monitoring techs, but NRC and Mark Shaffer have been unsuccessful in obtaining all of the names.
- **Two Questions From NISA.** The RST team provided answers to two questions from NISA. Response from RST team in e-mail date stamp 3/19/11 at 12:09.
- **Summary of the daily 0930 Conference Call.** Representatives from the US (OIP & RST)/UK (HSE/NII)/Canada(CNSC)/France (ASN & IRSN) Participated in the daily 0930 conference call to discuss the status of the reactors.
 1. We participated in the conference call with HSE/NII, ASN, IRSN, CNSC on dose/health physics issues. Held 9:30 daily call with UK, France and Canada. Call will continue over the weekend. Call with same countries will also occur over the weekend to discuss health physics issues on Saturday 3/19 at 1400. Due to the technical discussions recommend RST person phone in to answer technical questions.

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2. Question about the Reactor Vessel Pressure for Units 2 and 3 being lower than the Containment Vessel (Drywell) Pressure. For Unit 2, RPV pressure is 0.096/0.083 MPa and the Containment Vessel Pressure is 139 kPa. For Unit 3, RPV pressure is 0.146/0.106 MPa and the Containment Vessel Pressure is 160 kPa. Told 9:30 call we would ask the RST for explanation.
3. The French had a concern about the effects of seawater on the fuel, and the possible effects of clogging of the channels.
4. There was a question from Canadians about why with all of the seawater being injected into the reactor why the water level does not appear to be going up and what is the heat removal rate?
5. The Canadians discussed an report/email which listed the total number of rods in each units pools, the number of used, new and irradiated fuel bundles. The Canadians discussed the last start up and shutdown dates. Unit 1 startup – March 20, 2010, unit 2 startup - April 20, 2010, unit 3 startup - January 20, 2010, unit 4 shutdown – November 30, 2010, unit 5 shutdown – September 16, 2010, and unit 6 shutdown – August 15, 2010.
6. There was a discussion on the 32 MOX assemblies in the unit 3 SFP and the MOX fuel assemblies placed in the unit 3 reactor vessel in September 2010. The other countries explained how they individually were evaluating and calculating the release path and dose estimates. They asked if the NRC had revised dose numbers for our source terms. Told them that we could discuss at the 1400 call today. Followed up RST member (Peter) and he was also confused on the differences in the pressures for the reactor pressure vessel and the containment. His answer was that it did not make sense either and that it might be an instrumentation issue.

- **0930 Conference Call (Update).** Received a call from the (Ali Tehrani) UK as a follow-up to the 9:30 call. They are asking about crystallization on the fuel. With the decay heat they anticipate that there will be crystallization on the surface area within a day of them starting to inject seawater, and significant clogging within 3 days. They want to know our thoughts. They also asked about where the water is going? If they continue to add water, and the water is going out the relief valve into containment, then the pressure would increase, which has not been seen. Based on email from RST01, Based on a US built BWR: Continuing to inject into RPV for this many days means: - they are not injecting at the flow rate they are claiming, - the level readings they report are inaccurate, - if they were injecting at the rate they are reporting they should have filled the RPV up to the steam lines and out any SRVs that have pneumatics and dc control power, the RPV pressure would be the shutoff head of the pumping system (at the SRVs), therefore the RPV pressures they report are inaccurate. Based on US built BWRs Informed UK and Canada of this answer at the 1400 call. The question of crystallization was asked again by the British, and along with email from Chuck Casto and the fact that TEPCO is concerned, need to followup with RST. The UK also asked if there was no power what was the fail safe condition. Action: Followup with RST on crystallization issue and the SRV fail safe condition.
- **Summary of the daily 1400 Conference Call.** Representatives from the US (OIP & PMT)/UK (HSE/NII)/Canada(CNSC) participated in the daily 1400 conference call to discuss health physic issues. UK stated that they have a two tiered system, the meteorological staff provide data to the health physics staff who

determine the doses. They were using a dose fraction based on 10% from the reactor and 100% from the pond (SFP). They were using NUREG CR 6451 for information. The Canadians stated that they had gotten a worse case dose for I-131 at 10^{17} Becquerels. The UK agreed with the number and asked for the US assessment. The PMT representative (Kathy Brock) stated that we were evaluating and would email our results as soon as we were ready.

- **NRC Relief Team to Japan (Update).** Michelle Evans reported that there will be 2 additional NRC staff members leaving on Tuesday and the others on Thursday. Some of the staff members are from Region 1, Region 2 and Region 3. Started process for next staff members traveling to Japan. Sent list of names to all members of OIP. In addition, sent some additional recommendations from Michelle Evans for Checklist.
- **International request for information.** The Indonesian Embassy in Washington requested information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or meeting with NRC and their Minister-Counselor. Action: Call will occur at 5PM on Monday, March 21.
- **International aid/support for Japan.** IAEA and Russians have delegations in Japan. The Italians are interested in discussing what the USG is doing, and might be interested in helping in some way. We should receive more information from Roberto Ranieri soon. Spain has sent no one yet but Parliament will review and decide. South Africa and Slovenia have sent no one. And, as of today, has no plans.
- **Bechtel support possible diplomatic issue.** Sent email to Chuck and John from Tom Bergman about conference call to the position that other factors such as defense in depth, and diplomatic are causing us to rethink our decision on the Bechtel piping system for one train. Participants will be either of Chuck or John, ET, USAID, State Department (Embassy, likely Joe Young) and Naval Reactors. Call is 6 pm (ET), 7 am (Tokyo Time).
- **Use of USAid for Travel.** Contacted Joshua Batkin, Chief of Staff for the Chairman, on direction by Nader Mamish to discuss the fact that we are to use USAid and the need for a legal agreement between the NRC and USAid if we are to get additional support. Joshua Batkin said that he would make this his priority today and get back to us later today. Action: Need to followup with Joshua Batkin and report back to Nader outcome.

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From: LIA03 Hoc
To: Fragovannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; "ShafferMR@state.gov"; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mavros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; LIA03 Hoc; Henderson, Karen
Cc: Emche, Danielle; Stahl, Eric; Dembek, Stephen; LIA03 Hoc; LIA07 Hoc
Subject: TRANSITION REPORT FOR MARCH 19, 2011/ 2300
Date: Saturday, March 19, 2011 10:47:02 PM

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TRANSITION REPORT FOR MARCH 19, 2011 2300

Jenny T and Jill transitioning to Charlotte and Jen

GENERAL NOTES. (includes notes from previous updates)

- 1) Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
- 2) Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
- 3) 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
- 4) Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
- 5) Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
- 6) RST needs to follow up on Crystallization issue per the 0930 conference call (see item below)
- 7) Prior to the 2 pm call, make sure you contact the HOOs to let them know that you are going to have the international call with UK, etc. Might be beneficial to establish a standing bridge.

- **Notes from Mark Shaffer.** It was determined that the IAEA Team Japan consisted of DG Amano, Khammar Mrabit and 2 rad monitoring techs, but NRC and Mark Shaffer have been unsuccessful in obtaining all of the names.
- **Two Questions From NISA.** The RST team provided answers to two questions from NISA. Response from RST team in e-mail date stamp 3/19/11 at 12:09. Margie has revised the answers which were re-sent to Brooke and Kirk around 16:00.
- **0930 Conference Call (Update).** Received a call from the (Ali Tehrani) UK as a follow-up to the 9:30 call. They are asking about crystallization on the fuel. With the decay heat they anticipate that there will be crystallization on the surface area within a day of them starting to inject seawater, and significant clogging within 3 days. They want to know our thoughts. They also asked about where the water is going? If they continue to add water, and the water is going out the relief valve into containment, then the pressure would increase, which has not been seen. Based on email from RST01, Based on a US built BWR: Continuing to inject into RPV for

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this many days means: - they are not injecting at the flow rate they are claiming, - the level readings they report are inaccurate, - if they were injecting at the rate they are reporting they should have filled the RPV up to the steam lines and out any SRVs that have pneumatics and dc control power, the RPV pressure would be the shutoff head of the pumping system (at the SRVs), therefore the RPV pressures they report are inaccurate. Based on US built BWRs Informed UK and Canada of this answer at the 1400 call. The question of crystallization was asked again by the British, and along with email from Chuck Casto and the fact that TEPCO is concerned, need to follow-up with RST. The UK also asked if there was no power what was the fail safe condition. Action: Followup with RST on crystallization issue and the SRV fail safe condition.

- **NRC Relief Team to Japan (Update).** Michelle Evans reported that there will be 2 additional NRC staff members leaving on Tuesday and the others on Thursday. Some of the staff members are from Region 1, Region 2 and Region 3. Started process for next staff members traveling to Japan. Sent list of names to all members of OIP. Checklist has been updated to include additional items as well as contact numbers. This document was sent to the relief team 3/19 at approximately 20:00, LIA02 and LIA03 should expect questions from team members. Action: New team members should be added to Liaison Japan group.
- **International request for information.** The Indonesian Embassy in Washington requested information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or meeting with NRC and their Minister-Counselor. Action: Call will occur at 5PM on Monday, March 21.
- **International aid/support for Japan.** IAEA and Russians have delegations in Japan. The Italians are interested in discussing what the USG is doing, and might be interested in helping in some way. We should receive more information from Roberto Ranieri soon. Spain has sent no one yet but Parliament will review and decide. South Africa and Slovenia have sent no one. And, as of today, has no plans. The Swiss regulator (as a part of the Swiss government team) has sent one person to do radiation monitoring and transmit the results.
- **18:00 Teleconference involving Bechtel support .** Participants were TeamJapan (C. Casto and J. Monninger), Embassies of Japan and Australia, ET room and USAID. Cost initially discussed was \$750,000. Current cost approximately \$9.6B. Apparent miscommunication between Bechtel and NRC regarding cost. USAID originally green lighted the delivery based upon the initial cost of \$750,000 then halted action based upon new estimated cost of 9.6B. On the call, USAID informed everyone that this was NOT coming out of their funding that it would be coming from DOD. Per Kathleen Martin at USAID is that DOD paycom has authorized up to 10B for delivery of the requested pumps. Therefore, officials were attempting to confirm DOD funding and provide flight authorization for the first pump which is partially loaded in Perth, Australia. The thought now is to authorize the delivery of the first pump, which is staged and partially loaded on a plane in Perth and put the remaining pumps in stand-by pending need determination from the Japanese. Per NRC at HOC Japan stated they would accept the pumps and put them into secondary or tertiary use at the site. GEH also agreed to assemble

and test the pumps at their location in Japan before they are dispatched to Fukushima Dai-ichi. All offers for providing equipment appears to be on hold until DoD can confirm payment.

- **Use of USAid for Travel.** Contacted Joshua Batkin, Chief of Staff for the Chairman, on direction by Nader Mamish to discuss the fact that we are to use USAid and the need for a legal agreement between the NRC and USAid if we are to get additional support. Joshua Batkin has worked it through Steve and Jim who are interacting directly with USAID, he will let us know if there is anything additional needed from us.
- **Business Cards for TeamJapan.** Brooke, Kirk and Tony have requested an additional supply of business cards be provided to them. The ADM desk has generated the cards requested but FedEx wouldn't be able to get them out until Monday with delivery Tuesday so the best bet may be to send them with Mike Scott (RES) departing on Tuesday March 22. Action: Decision needs to be made on Sunday to FedEx the cards (provide to ADM for shipment) or send them with Mr. Scott on Tuesday, cards are on LIA03 desk.
- **21:30 Interagency Call.** No call tomorrow night (3/20), next one will be 3/21 at 21:30 EST. Based upon information from the Task Force conference call, Chuck Casto had just returned from a meeting with TEPCO and TEPCO was very interested in getting the robots and helicopter from Lockheed Martin. They requested that the specs for these items be forwarded to them as soon as possible. Based upon information from DOS earlier in the call DDTC was working to expedite the licensing for these items in the event they were requested and the passports for Lockheed Martin personnel to accompany the helicopter. Update on the Bechtel trains in Perth for Japan – DOD Paycom has confirmed payment and flight is being prepared. The flight is estimated to arrive late or overnight Japan time on Sunday. One train of pumps and valves is being provided on this flight with a decision on supplying the remaining trains to be determined later based upon need by Japan.
- **Radiological Data Request.** NRC PMT room requested that we ask NISA to connect with TEPCO regarding getting updated radiological information including offsite plume monitoring data on a routine and expedited frequency. This request was sent to Danielle (Emche) to engage with Kirk and potentially NISA counterpart if appropriate. Action: The answer to this request should be communicated to the PMT room.

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Kock, Andrea

From: Ostendorff, William
Sent: Saturday, March 19, 2011 1:43 PM
To: Magwood, William
Subject: Re: Japan Follow-up

Bill- do you have a moment for a phone call?

From: Magwood, William
To: Ostendorff, William
Sent: Sat Mar 19 13:31:03 2011
Subject: Fw: Japan Follow-up

Bill,

Before replying, I thought I'd touch base. This doesn't strike me as something that should be decided via a weekend email exchange - shouldn't this be a staff paper to the commission?

If so, this is the avenue to craft the response we discussed on Friday. If we agree via email, it seems to me we might give up any substantive role.

What do you think?

Bill

From: Jaczko, Gregory
To: Apostolakis, George; Magwood, William; Ostendorff, William; Svinicki, Kristine
Sent: Sat Mar 19 12:37:56 2011
Subject: Fw: Japan Follow-up

Thoughts? If we could come to some consensus I think that would be great

From: Borchardt, Bill
To: Jaczko, Gregory
Cc: Weber, Michael; Virgilio, Martin; Ash, Darren; Batkin, Joshua
Sent: Sat Mar 19 10:13:27 2011
Subject: Japan Follow-up

Chairman,

The following is my initial thinking of NRC lessons learned follow-up from the Japan event. Both of the activities would use a combination of current NRC staff (and SES managers) as well as retired annuitants. I would also like to explore the possibility of using some existing senior managers for the task force and then backfilling behind them as a succession planning tool.

Near Term Review:

- 90 day effort
- Evaluate currently available technical and operational information from the event to identify near term (or immediate) operational or regulatory issues affecting US operating reactors of all designs
- Develop recommendations for generic communications, orders, etc
- This would possibly include a 30 day quick look report
- Limited stakeholder involvement
- Public report

Longer Term Review:

- Would start after we have sufficient technical information from Japan
- Evaluate all technical and policy issues to identify additional research, generic issues, changes to ROP, rulemakings, adjustments to the regulatory framework, etc that should be conducted by NRC
- Evaluate interagency issues (EP)
- Applicability to non-operating reactor facilities
- Substantive stakeholder involvement
- Public report

These are only initial thoughts and will benefit from the input of others.

Bill

From: Hoc, PMT12
Sent: Saturday, March 19, 2011 12:16 PM
To: PMT03 Hoc
Subject: Current Doses Available as of 3_19_11 at 8am
Attachments: Current Doses Available as of 3_19_11 at 8am.doc

For PMT log

Current Doses Available as of 3/19/11 at 8:00 am

The PMT is working with DOE/NARAC to refine source term models in an effort to develop dose projections beyond 50 miles. The 50 mile distinction is made because NRC RASCAL modeling is only capable to estimate dose values out to 50 miles. Therefore, NRC has the responsibility to develop source terms and dose projections within Japan, up to 50 miles from the reactor site, while DOE has the lead for dose projections beyond 50 miles and for the United States and territories.

The PMT has received information from several various sources regarding radiological conditions around the reactors. Some information (from March 17) around the plant indicates dose rates between 36 mr/hr and 65 mr/hr at approximately ½ mile from the site (over land). Information recorded onsite on March 16, 2011 indicated approximately 10 R/h next to U-3 reactor building and 40 R/h next to U-4 reactor building, and an unconfirmed dose rate of 375 R/hr approximately 300 feet above the Unit 3 reactor (during a helicopter fly over). Department of Energy Aerial Monitoring System (AMS) fly over data on March 18, 2011 generally agrees with MESA supplied field monitoring team data out to approximately 30 km (18 miles) west of the site. Data shows that ground level dose rates from deposition are highest in the NW quadrant, with 20 – 40 mr/hr readings (recorded by AMS) and 18 mr/hr (field team) readings between 20km and 30 km in that quadrant.

Department of Energy Aerial Monitoring operations were conducted on March 17-18, 2011. Two missions using fixed wing (C-12 aircraft) conducted parallel and serpentine patterns near the Fukushima nuclear power plant. A narrow band to the northwest, 13 to 20 miles from the site, has a high concentration of contaminated materials.

AMS information shows that dose rates from ground deposition exist between 20 and 30 km that would result in a whole body dose of greater than 1 REM over continuous exposure for 4 days. This information agrees with Ministry of Education, Culture, Sports, Science and Technology (MEXT) field measurements in the same area.

From: LIA07 Hoc
Subject: 1800 EDT (March 19, 2011) USNRC Earthquake/Tsunami Status Update
Date: Saturday, March 19, 2011 5:51:04 PM
Attachments: [USNRC Earthquake-Tsunami Update.031911.1800EDT.pdf](#)

Attached, please find a 1800 EDT, March 19, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

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

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

-Sara

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

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From: LIA08 Hoc
Sent: Sunday, March 20, 2011 1:00 PM
To: LIA06 Hoc; RST01 Hoc; RST07 Hoc; RST06 Hoc; PMT01 Hoc; PMT03 Hoc; PMT07 Hoc; HOO Hoc
Subject: FW: Reoccurring Daily Calls list
Attachments: Reoccurring Daily Calls Rev4.docx

Please see attached daily meeting and daily call schedule. Please let me know about any changes or updates. This schedule reflects RECURRING calls and meetings. If you have a once a week call or a periodic call, please log that in your team log for posterity.

Jeff Temple
LT Coordinator/Response Program Manager

From: LIA11 Hoc
Sent: Sunday, March 20, 2011 12:24 PM
To: LIA08 Hoc; LIA06 Hoc
Subject: Reoccurring Daily Calls list

This is also located in the M Drive in the LT folder.
Thanks
Lisa

Reoccurring Daily Calls

-Time (EDT)	Description	Lead Team	Action/Purpose of the Call
0600	Status update & 2 pager/Sit Rep <i>(BRIEFING ONLY-not a call)</i>	EBT	EBT developed agency briefing documents
0600	Pumping Rig discussions w/INPO& Bechtel	RST ** (arranged by HOO's)	Discussions regarding the pumping project
0730	TAs & CAs briefing	ET ** (arranged by HOO's)	ET Director lead -briefed Commission TAs and ODs
0800	Deputy Secretaries	ET	White House lead (-Chairman participates) -Interagency discussion
0930	UK/Canada/France Call	RST ** (arranged by HOO's)	Information Exchange. Focused on Operational issues (<i>PMT call @ 1400 for Dose issues</i>)
1000	Call w/Industry (daily)	ET ** (arranged by HOO's)	ET led -Discussions with Industry
1100	ESF8-(Public Health & Medical Services)	LT (Conference number provided by FEMA)	FEMA lead -Interagency discussion
1400	UK/Canada/France Call	PMT ** (arranged by HOO's)	PMT led (<i>RST led call @ 0930 for Operational issues</i>) -Information sharing on current and projected dose
1400	USAID	LT/OCA	USAID lead -Interagency discussion
1400	NARAC	PMT ** (arranged by HOO's)	DOE lead -Interagency discussion of dose models
1500	Congressional call	OCA & NRC Go-To Team (Leeds, M.Johnson, Sherron, B.Boger, etc)	OCA lead -Audience is Congressional staff who have or are near a plant; Oversight committees; House & Senate leadership
1800	Status update & 2 pager/Sit Rep <i>(BRIEFING ONLY-not a call)</i>	EBT	EBT developed agency briefing documents
2000	TAs & CAs briefing	ET ** (arranged by HOO's)	ET Director lead -briefed Commission TAs and ODs
2130	DOS	LT ** (arranged by HOO's)	DOS lead -Interagency discussion
*** tbd	Daily update call w/Site Team	RST/PMT/Site Team ** (arranged by HOO's)	Daily update for Site Team and HQ (<i>at convenient time for the Site Team</i>)

From: OST02 HOC
Sent: Sunday, March 20, 2011 4:40 PM
To: PMT02 Hoc; PMT11 Hoc; PMT01 Hoc
Subject: FW: Attention NRC PMT: Please send DOE info on Supercore Total core inventory
Importance: High

From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Sunday, March 20, 2011 4:34 PM
To: HOO Hoc; LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Attention NRC PMT: Please send DOE info on Supercore Total core inventory
Importance: High

From: NITOPS[SMTP:NITOPS@NNSA.DOE.GOV]
Sent: Sunday, March 20, 2011 4:33:58 PM
To: HOO Hoc; PMT01 Hoc
Subject: FW: Attention NRC PMT: Please send DOE info on Supercore Total core inventory
Importance: High
Auto forwarded by a Rule

From: Nasstrom, John S. [mailto:Nasstrom1@llnl.gov]
Sent: Sunday, March 20, 2011 4:33 PM
To: pmt12@nrc.gov
Cc: NITOPS; 'narc@llnl.gov'
Subject: Attention NRC PMT: Please send DOE info on Supercore Total core inventory
Importance: High

PMT,

DOE urgently would like the **total core radionuclide inventory** (not the released activity, which they have) for the SuperCore source term.

Please reply to nitops@nnsa.doe.gov and narc@llnl.gov

Thanks,

From: Hoc, PMT12
Sent: Sunday, March 20, 2011 4:40 PM
To: PMT03 Hoc; PMT07 Hoc
Subject: FW: Attention NRC PMT: Please send DOE info on Supercore Total core inventory
Importance: High

Please add this to the task log – Steve is aware.

From: Nasstrom, John S. [mailto:Nasstrom1@llnl.gov]
Sent: Sunday, March 20, 2011 4:33 PM
To: Hoc, PMT12
Cc: NITOPS; 'narak@llnl.gov'
Subject: Attention NRC PMT: Please send DOE info on Supercore Total core inventory
Importance: High

PMT,

DOE urgently would like the **total core radionuclide inventory** (not the released activity, which they have) for the SuperCore source term.

Please reply to nitops@nnsa.doe.gov and narak@llnl.gov

Thanks,

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From: [hoo1](#)
To: [HOO Hoc](#)
Subject: Fax from 81355105111
Date: Sunday, March 20, 2011 11:34:09 AM
Attachments: [File1.PDF](#)

RECEIVE NOTIFICATION FOR JOB 00017774

Notice for: HOO1

Remote ID: 81355105111

Received at: 03/20/2011 11:33

Pages: 12

Routed by:

Routed at: 03/20/2011 11:33

BBBB/ 111

From : Rick DeVercelly
USNRC - JAPAN

TO : Laura Dudes
USNRC - RSTOI

SUBJECT : UNETS 1-4
Chronology

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Fukushima Daiichi**STATUS as of 1930 EDT, March 19, 2011 (****~~0830~~ Japan, March 20, 2011)****Unit 1 – (NRC priority: 4)****Core Status:** Damaged, extent undetermined**Core Cooling:** RCS pressure 2.75 atm (Source: IAEA); sea water injected to cool core (Source: NISA)**Primary Containment:** functional (Source: JAIF)**Secondary Containment:** lost (visual)**Spent Fuel Pool:** 292 bundles in pool (Source: GEH); water level unknown (Source: JAIF); Time margin 128 days; pool/area temp < 100 C (Source: NRC Team)**Other:** Offsite power line connected to local substation, power restoration ongoing (Source: IAEA)**Unit 2 – (NRC priority: 3)****Core Status:** damaged, extent undetermined**Core Cooling:** RCS pressure unknown (Source: IAEA, March 19); sea water injected enough to cool core (Source: NISA)**Primary Containment:** Possible Torus damage**Secondary Containment:** Hole cut in side of fuel floor metal to reduce H₂ buildup. Steam coming from hole (visual).**Spent Fuel Pool:** 587 bundles in pool (Source: GEH); Time margin 40 days; pool/area temp < 100 C (Source: NRC Team)**Other:** Offsite power line connected to local substation, power restoration ongoing (Source: NISA); usefulness in question for pump motors & instrumentation due to time**OFFICIAL USE ONLY**

Earthquake/Tsunami Status Update March 20, 2011 0600 EDT

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since equipment was last energized and current equipment environment (Source: NRC Team);

Unit 3 – (NRC priority: 1)**Core Status:** Damaged, extent undetermined**Core Cooling:** RCS pressure unknown (Source: FEPC); radiation released; sea water injected to cool core (Source: NISA)**Primary Containment:** status unknown**Secondary Containment:** lost (visual); white smoke (Source: IAEA – Interpreted by NRC as steam)**Spent Fuel Pool:** 514 bundles in pool (Source: GEH); fire trucks supplying cooling spray 40 tons at least twice daily. Time margin (for fuel to become uncovered from evaporation rate & volume) 0 days (Source: NRC Team)**Unit 4 – (NRC priority: 2)****Core Status:** offloaded**Core Cooling:** N/A**Primary Containment:** N/A**Secondary Containment:** lost (visual)**Spent Fuel Pool:** 1201 to 1331 bundles in pool (Source: GEH & NISA); pool may be dry; damage to fuel rods suspected (Source: JAIF); water was dumped on site with water cannons; time margin 6 days; pool/area temp < 100 C (Source: NRC Team)**Unit 5 – Shutdown since January 3, 2011 (NRC priority: 5)****Core Status:** Core in RPV (Source: INPO)

Spent Fuel Pool: 950 bundles (Source: GEH); (temperature 65 C) Unit 6 emergency diesel generator is available and supplying power to units 5 and 6; water injection to RVP & SFP continuing (Source: NISA)

Other: Ventilated the rooftop of reactors to release hydrogen and prevent explosions (Source: IAEA); pump for Residual Heat Removal started up and cooling of Spent Fuel Storage Pool has started using power supply from Emergency Diesel Generator for Unit 6 (Source: NISA)

Unit 6 – Shutdown since August 14, 2010 (NRC priority: 6)

Core Status: Core in RPV (Source: INPO)

Spent Fuel Pool: 876 bundles (Source: GEH); (temperature 62 C); 2 unit EDGs available.

Other: Ventilated the rooftops of reactors to release hydrogen and prevent explosions (Source: IAEA); second unit of EDG (A) has started up (Source: NISA)

Common Spent Fuel Pool (NRC priority: 7): 6,000 bundles (Source: GEH) maintained at 55 C (Source: NISA) located on land side of Unit 4 (visual)

Electrical Power (NRC priority: 7): Restoration from Aux Transformer to Unit 2, 480 v Pumps (first) in progress.

Dry Cask Storage: Visual inspection didn't reveal any problems.

TEPCO continues to lay cables to restore electricity to reactors No. 1, 2, 5 and 6 March 19 and said it hoped to start supplying electricity to reactors No. 3 and 4 on March 20. Once restored, TEPCO plans to test the pumps and other cooling systems, which might be damaged. Tests

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Earthquake/Tsunami Status Update March 20, 2011 0600 EDT

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could pose the risk of fire. Two diesel generators at reactor No. 6 are operational. TEPCO announced the water circulation function was restored at reactor No. 5.

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	A	B	C
1	Chronology at Fukushima Daiichi Nuclear Power Station after onset of the Tohoku Great Earthquake		
2	Unit 1		
3	Friday, March 11	14:00	14:46 Due to the Miyagi Prefecture Offshore Earthquake, turbine and reactor were shut down automatically. Out of two lines of off-site power, one line was shut down due to failure, which caused the loss of off-site power, and the emergency diesel generator was started automatically.
4		15:00	15:23 Employees of Fukushima Daiichi Nuclear Power Station confirmed the first wave of tsunami. 15:41 Emergency diesel generator failed. Loss of all AO power. 15:42 Determined that a specific event pursuant to the provision of Item 1, Article 10 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred. The first emergency order was issued.
5		16:00	16:36 Determined, as a preemptive measure, that a specific event pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred because flow rate of the emergency core cooling system could not be confirmed. 16:45 Unit 1 reactor water level monitoring function was recovered and the confirmation of flow rate of the emergency core cooling system was made possible, and therefore the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster was lifted.
6		17:00	17:07 Monitoring function of reactor water level was lost again and being unable to confirm flow rate of the emergency core cooling system, a specific event pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster was applied.
7		18:00	18:14 (Approximately) A radiation monitoring van measured radioactive materials inside and outside power station site (outdoor areas) and confirmed that the levels were normal and no radiological consequence in the external areas at that point.
8		2:00	02:30 Confirmed that D/W pressure had reached 840kPa. (Maximum operating pressure is 427kPa), Reactor water level: Top of Active Fuel (hereinafter referred to as TAF) + 1300mm (Fuel region A) TAF+530mm (Fuel region B) 02:50 Reactor pressure: 0.8MPa Reactor water level: TAF+1300mm (Fuel region A), TAF+500mm (Fuel region B) D/W pressure: 0.84Mpa
9		5:00	5:14 Determined that external leakage of radioactive materials was occurring based on the confirmation of rising radiation levels within the power plant site * and decreasing trend of D/W pressure (As of 5:09, the pressure dropped from 0.84MPa abs to 0.77Ma abs). * Results of radioactive material measurements by the monitoring van in the vicinity of environmental monitoring area boundary: 0.07 μ SV/h \rightarrow 1.59 μ SV/h (4:00 \rightarrow 5:10) Vicinity of MP8: 0.07 μ SV/h \rightarrow 0.57 μ SV/h (4:00 \rightarrow 4:45) 5:55 Reactor water level: TAF+1300mm (Fuel region A), TAF+530mm (Fuel region B) Reactor pressure 0.8Mpa D/W pressure: Unavailable due to power loss attributable to closing of door of the main control room for raising its air tightness.
			6:00 Reactor water level: TAF+1300mm (Fuel region A), TAF+530mm (Fuel region B)

10		<p>Reactor pressure 0.8Mpa D/W pressure: 0.74Mpa 6:30 Water of raw water tank was injected with a fire engine and 2000 liters was water was injected with diesel-driven fire pump (hereinafter referred to as D/D fire pump) via fire protection line. 6:00 Reactor water level: TAF+1300mm (Fuel region A), TAF+550mm (Fuel region B) Reactor pressure: 0.8Mpa D/W pressure: 0.79Mpa 6:47 Reactor water level: TAF+1200mm (Fuel region A), TAF+400mm (Fuel region B) Reactor pressure: 0.8Mpa D/W pressure: 0.77Mpa</p>
11		<p>7:00 Reactor water level: TAF+800~1200mm (Fuel region A), TAF+300mm (Fuel region B) Reactor pressure: 0.8Mpa D/W pressure: Unavailable (due to removal of power) 7:30 Reactor water level: TAF-100~+200mm (Fuel regions A and B) Reactor pressure: 0.8Mpa D/W pressure: 0.76Mpa abs 7:55 Completed injection of 3,000L</p>
12		<p>8:00 8:15 Completed injection of 4,000L 8:30 Completed injection of 5,000L</p>
13	Saturday, March 12	<p>9:00 9:04~ Initiated operation to depressurize reactor pressure vessel (Departure to the field). One TEPCO employee involved in the operation to open the MO valve to 25 % position received radiation dose exceeding 100 mSv (106.30mSv). 9:15 Completed injection of 6,000L 9:40 Completed injection of 21,000L</p>
14		<p>10:00 10:17 Valve on the S/C chamber side was remotely operated, and it was recognized that depressurization operation of reactor containment vessel had been started, based on the data from monitoring posts and other sources.</p>
15		<p>14:00 14:10 D/W pressure: 0/730MPa 14:30 Installed a temporary air compressor at around 14:00 and confirmed reduction of D/W pressure, and therefore determined "release of radioactive materials." (Initiation of depressurization operation) 14:41 D/W pressure: 0.610MPa 14:50 D/W pressure: 0.58MPa 14:53 Completed injection of 8,000L.</p>
16		<p>15:00 15:14 D/W pressure: 0.530MPa 15:36 Large tremor of near field type occurred and a large bang occurred in the vicinity of Unit 1, generating white smoke. 15:40 Confirmed rising smoke in the vicinity of Unit 1. Also, the monitoring van confirmed 1,015 μ Sv/h (15:29) at MP-4. Two TEPCO employees and two contractor workers evacuated from the field. No internal records of contacting fire department, etc. were confirmed.</p>
17		<p>16:00 16:17 Vicinity of MP4: Radioactive materials such as iodine within the power station site measured by the monitoring van was rising, and therefore determined that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.</p>
18		<p>20:00 20:20 Initiated sea water injection into Unit 1 reactor using fire protection line.</p>
19	Sunday, March 13	<p>8:00 08:56 Vicinity of MP4: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.</p>
		<p>14:00 14:15 Vicinity of MP4: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of</p>

20		Emergency Preparedness for Nuclear Disaster had occurred.
21	Monday, March 14	03:50 Vicinity of MP6: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
22		04:15 Vicinity of MP2: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
23		09:27 Vicinity of MP3: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
24		21:37 Vicinity of power station main gate: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
25	Tuesday, March 15	06:51 Vicinity of power station main gate: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
26		08:11 Vicinity of power station main gate: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
27		16:17 Vicinity of power station main gate: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.
28		23:05 Vicinity of power station main gate: Radioactive materials such as iodine within the power station site (outdoor areas) measured by the monitoring van were rising, and therefore determined, as follows, that a specific event (abnormal rise of radiation at site boundary) pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred.

2号機

	A	B	C	
1	Chronology at Fukushima Daiichi Nuclear Power Station after onset of the Tohoku Great Earthquake			
2	Unit 2			
3	Friday, March 11	14:00	14:46 Due to the Miyagi Prefecture Offshore Earthquake, turbine and reactor were shut down automatically. Out of two lines of off-site power, one line was shut down due to failure, which caused the loss of off-site power, and the emergency diesel generator was started automatically.	
4		15:00	15:23 Employees of Fukushima Daini Nuclear Power Station confirmed the first wave of tsunami. 15:41 Emergency diesel generator failed. Loss of all AC power. 15:42 Determined that a specific event pursuant to the provision of Item 1, Article 10 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred. The first emergency order was issued.	
5		16:00	16:36 Determined, as a preemptive measure, that a specific event pursuant to the provision of Item 1, Article 15 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred because flow rate of the emergency core cooling system could not be confirmed.	
6		18:00	18:14 (Approximately) A radiation monitoring van measured radioactive materials inside and outside power station site (outdoor areas) and confirmed that the levels were normal and no radiological consequence in the external areas at that point.	
7		22:00	22:00 Reactor water level gauge regained its function and the reactor water level was confirmed to be TAF+3400mm.	
8		Saturday, March 12	2:00	02:50 Confirmed that Reactor Core Isolation Cooling system (hereinafter referred to as RCIC) was in operation. Reactor pressure: 5.6MPa RCIC discharge pressure: 6.0MPa Reactor water level: TAF+3,600mm
9			13:00	13:25 Determined that reactor was in a state of "loss of cooling function," based on the drop of reactor water level, possibly caused by loss of RCIC function. Reactor water level: TAF+3,400mm ↓ 2,400mm (12:00) (13:24) 13:34 Conducted reactor depressurization operation and initiated seawater injection. Reactor water level: TAF±0mm (Fuel region) Reactor pressure: 6.998MPa D/W pressure: 0.42MPa abs
10	15:00		15:00 Reactor water level: TAF+1,200mm (Fuel region) Reactor pressure: 7.618~7.515MPa D/W pressure: 0.44MPa abs S/C pressure: Unavailable	
11	16:00		16:00 Reactor water level: TAF+300mm (Fuel region) Reactor pressure: 7.448MPa D/W pressure: 0.42MPa abs S/C pressure: Unavailable 16:34 Conducted reactor depressurization operation and initiated seawater injection using fire protection line.	
12	17:00		17:17 Reached TAF (Top of Active Fuel)	
	Monday,	18:00	18:22 Reactor water level reached -3,700mm from TAF and determined that the	

13	March 14	entire fuel was exposed.
14		19:03 Reactor water level:Downscale Reactor pressure:0.63MPa D/W pressure:0.40MPa abs S/C pressure:Unavailable 19:57 Started the second fire pump and water injection into reactor was in progress.
15		21:20 During seawater injection into reactor using fire protection line, closed two safety relief valves, and confirmed start of recovery of reactor water level. 21:30 Reactor water level:TAF-3000mm(Fuel region) Reactor pressure:0.49MPa D/W pressure:0.457MPa abs S/C pressure:Unavailable
16		22:23 Confirmed 3,170 μ Sv/h (21:37) in the vicinity of power station main gate, and determined that "to which abnormal rise of radiation at site boundary" was applicable. 22:40 Reactor water level:TAF-700mm(Fuel region) Reactor pressure:0.428MPa D/W pressure:0.428MPa abs S/C pressure:0.35MPa abs 22:50 D/W pressure (540Pa) exceeded the maximum operating pressure of 427KPa, and determined that "abnormal pressure rise of containment vessel" had occurred.
17		03:00 Reactor water level:Downscale Reactor pressure:0.653MPa D/W pressure:0.75MPa abs S/C pressure:0.33MPa abs
18		5:00 Reactor water level:Downscale Reactor pressure:0.626MPa D/W pressure:0.75MPa abs S/C pressure:0.30MPa abs
19	Tuesday, March 15	6:14 Large impact noises occurred. Transferred Fukushima Daiichi Emergency Headquarters to Fukushima Daini, and initiated evacuation. (About fifty members remained in the headquarters.) 6:20 Reactor water level:TAF-2,700mm(Fuel region) Reactor pressure:0.612MPa D/W pressure:0.73MPa abs S/C pressure:0MPa abs 6:51 Confirmed 583.7 μ Sv/h (6:50) in the vicinity of power station main gate, and determined that "abnormal rise of radiation at site boundary" was applicable.
20		8:00 8:25 TEPCO employees confirmed white smoke (seemingly steam) from the wall in the vicinity of fifth floor of the reactor building.
21		9:00 9:40 Confirmed that amount of white smoke from the reactor building was increasing. No TEPCO internal records of contacting fire department, etc. were confirmed.
22		11:00 11:25 Reactor water level:TAF-1,400mm(Fuel region) Reactor pressure:0.315MPa D/W pressure:0.155MPa abs S/C pressure:Downscale
23		16:00 16:00 Confirmed 531.6 μ Sv/h in the vicinity of power station main gate, and determined that "abnormal rise of radiation at site boundary" was applicable.

3号機

	A	B	C	
1	Chronology at Fukushima Daiichi Nuclear Power Station after onset of the Tohoku Great Earthquake			
2	Unit 3			
3	Friday, March 11	14:00	14:46 Due to the Miyagi Prefecture Offshore Earthquake, turbine and reactor were shut down automatically. Out of two lines of off-site power, one line was shut down due to failure, which caused the loss of off-site power, and the emergency diesel generator was started automatically.	
4		15:00	15:23 Employees of Fukushima Daiichi Nuclear Power Station confirmed the first wave of tsunami. 15:41 Emergency diesel generator failed. Loss of all AC power. 15:42 Determined that a specific event pursuant to the provision of Item 1, Article 10 of the Special Law of Emergency Preparedness for Nuclear Disaster had occurred. The first emergency order was issued.	
5		18:00	18:14 (Approximately) A radiation monitoring van measured radioactive materials inside and outside power station site (outdoor areas) and confirmed that the levels were normal and no radiological consequence in the external areas at that point.	
6		2:00	02:44 High Pressure Core Injection system (hereinafter referred to as HPCI) was shut down Due to low reactor pressure Reactor Core Isolation Cooling system (hereinafter referred to as RCIC) did not operate. D/D fire protection pump (discharge pressure of 0.61MPa) was started but unable to inject. Reactor pressure: 0.58MPa Reactor water level: Unavailable due to loss of instrumentation power	
7		3:00	03:44 Reactor pressure: 4.1MPa	
8	4:00	04:15 Reached TAF.		
9	3月13日(日)	5:00	05:00 Reactor water level: TAF-2000mm (Fuel region) 05:10 Determined that reactor was in a state of "loss of cooling function," based on the failure of reactor water injection by RCIC.	
10		7:00	07:39 Conducted containment vessel spray. 07:45 Reactor water level: TAF-3000mm (Fuel region) Reactor pressure: 7.31MPa D/W pressure: 460kPa abs S/P pressure: 440kPa abs	
11		8:00	08:41 Conducted operation to depressurize reactor containment vessel. 08:56 Confirmed 882 μ Sv/h (08:23) at MP4, and determined that "to which abnormal rise of radiation at site boundary" was applicable.	
12		9:00	09:03 (Approximately) Conducted rapid depressurization by SR valve of Unit 3. Reactor water level: TAF+1800mm (Fuel region) Reactor pressure: 0.46MPa D/W pressure: 637kPa S/P pressure: 590kPa 09:20 Confirmed decreasing trend of D/W pressure. Initiated preparation for water injection into reactor by fire protection line.	
13		11:00	11:25 D/D fire protection pump in operation.	
			14:15	Confirmed 905 μ Sv/h (13:50) at MP4, and determined that "abnormal

14		14:00	rise of radiation at site boundary" was applicable.
15		18:00	18:45 Seawater injection into reactor was in progress with temporary seawater injection pump connected to fire protection line. Reactor water level: TAF-1800mm (Fuel region) Reactor pressure: 0.25MPa D/W pressure: 420kPa abs
16		22:00	22:15 D/D fire protection pump was shut off. (Shut off before fuel run out.)
17		23:00	23:30 Reactor water level: TAF-1800mm (Fuel region) Reactor pressure: 0.066MPa D/W pressure: 250kPa abs
18	Monday, March 14	1:00	01:10 Sea water being injected into reactor was running out, so temporary seawater injection pump was shut down to replenish seawater in check valve pit.
19		2:00	02:00 Reactor water level: TAF-1800mm (Fuel region) Reactor pressure: 0.077MPa D/W pressure: 256kPa abs
20		3:00	03:00 Reactor water level: TAF-2300mm (Fuel region) Reactor pressure: 0.134MPa D/W pressure: 315kPa abs 03:20 Resumed seawater injection into Unit 3 reactor with temporary seawater injection pump.
21		4:00	04:00 Reactor water level: TAF-2800mm (Fuel region) Reactor pressure: 0.159MPa D/W pressure: 340kPa abs
22		5:00	05:00 Reactor water level: TAF-2000mm (Fuel region) Reactor pressure: 0.181MPa D/W pressure: 365kPa abs
23		6:00	06:00 Reactor water level: TAF-2350mm (Fuel region) Reactor pressure: 0.181MPa D/W pressure: 425kPa abs
24		7:00	07:00 Reactor water level: Overscale Reactor pressure: 0.338MPa D/W pressure: 520kPa abs 07:44 Determined that "containment vessel pressure abnormal rise" had occurred due to D/W pressure of 460kPa. (Maximum operating pressure is 427kPa.) (06:10)
25		8:00	08:00 Reactor water level: TAF-1000mm (Fuel region) Reactor pressure: 0.31MPa D/W pressure: 500kPa abs
26		9:00	09:05 Reactor water level: TAF-1500mm (Fuel region) Reactor pressure: 0.304MPa D/W pressure: 490kPa abs
27		11:00	11:01 Phenomenon seemingly an explosion occurred and white smoke was generated. 11:25 Reactor water level: TAF-1800mm (Fuel region) Reactor pressure: 0.191MPa D/W pressure: 360kPa abs No internal records of contacting fire department, etc. were confirmed. 11:43 Seemed that one person was injured and six were missing. Off-site center requested three ambulances..
28		12:00	12:15 Four TEPCO employees and two workers were injured. Seven Self Defense Force members were evacuated.
29	Tuesday, March 15	6:00	06:00~06:10 Confirmed steam was floating above the Unit 3 reactor building.
30		10:00	10:00 (Approximately) Confirmed 400mSv/h inside land side of reactor building
31	Wednesday, March 16	8:00	08:30 (Approximately) Confirmed steam-like haze coming out of reactor building.

32	Thursday, March 17	6:00	06:15(Approximately) A quick report of temporary rise of pressure indication of pressure suppression pool was made.
33		9:48	09:48 Conducted watering from Self Defense Force helicopter.
34		19:00	Shortly after 19:00 Watering from riot police high pressure water gun truck and Self Defense Force fire engine was started, and finished at 20:09.

4号機

	A	B	C
1	Chronology at Fukushima Daiichi Nuclear Power Station after onset of the Tohoku Great Earthquake		
2	Unit 4		
3	Friday, March 11	14:00	14:46 Due to the Miyagi Prefecture Offshore Earthquake, turbine and reactor were shut down automatically. Out of two lines of off-site power, one line was shut down due to failure, which caused the loss of off-site power, and the emergency diesel generator was started automatically.
4		15:00	15:23 Employees of Fukushima Daini Nuclear Power Station confirmed the first wave of tsunami. 15:41 Emergency diesel generator failed. Loss of all AC power.
5	Monday, March 14	4:00	04:08 Spent fuel pool temperature : 84°C
6	Tuesday, March 15	6:00	06:00~06:10 Large impact noises occurred. Discovered damage near ceiling of reactor building fifth floor. 06:50 Confirmed 583.7 μ Sv/h in the vicinity of power station main gate. Determined that "abnormal rise of radiation at site boundary" was applicable. 06:51
7		8:00	08:11 Confirmed damage of reactor building. Determined that "abnormal release of radioactive materials" due to fire, explosion, etc. 08:20 Confirmed 807 μ Sv/h in the vicinity of power station main gate.
8		9:00	09:38 Confirmed breakout of fire in the vicinity of northwest corner of reactor building third floor.... More information was being collected by the person who discovered fire. *Motor-driven reactor coolant recirculation unit (containing oil) is installed in the vicinity of northwest corner of reactor building third floor. 09:40 (Approximately) Fukushima Daini Nuclear Power Station requested public fire department for mobilization of fire fighters. Explanation by the management of Fukushima Daiichi Nuclear Power Station was asked, but Fukushima Daiichi was unable to give explanation due to on-going response to the fire in the field. Unable to contact Self Defense Forces and US forces for requesting cooperation.
9		10:00	10:00 (Approximately) Confirmed 100mSv/h inside land side of reactor building.
10		11:00	11:00 (Approximately) TEPCO employees checked the situation of the reactor building fire in the field and confirmed that fire was naturally out. No flame or smoke was seen from the yard and therefore it was considered that fire had died down.)
11		16:00	16:00 Confirmed 531.6 μ Sv/h in the vicinity of power station main gate. Determined that "abnormal rise of radiation at site boundary" was applicable.
12	Wednesday, March 16	5:00	05:45 TEPCO employees confirmed flame was coming out near northwest of reactor building fourth floor.
13		6:00	06:20 Fukushima Daini Nuclear Power Station reported fire and requested public fire department for mobilization of fire fighters. Fire fighters were mobilized.

From: Hoc, PMT12
Sent: Sunday, March 20, 2011 8:50 AM
To: Foster, Jack
Cc: Casto, Chuck; PMT03 Hoc
Subject: Request for info from PMT

Hi Jack.

The PMT is starting to consider the ingestion pathway protective actions within Japan and we would like to better understand what decisions are being made within country. It is our understanding that the Japanese have not made any decisions for the interdiction of food or milk. As you have the opportunity will you please find out for us what the current thinking is or what decisions have been made.

Much appreciated.

K. Brock
PMT, PAAD

From: [hoo1](#)
To: [HOO Hoc](#)
Subject: Fax from 81355105111
Date: Sunday, March 20, 2011 11:47:12 PM
Attachments: [File1.PDF](#)

RECEIVE NOTIFICATION FOR JOB 00017777

Notice for: HOO1

Remote ID: 81355105111

Received at: 03/20/2011 23:47

Pages: 1

Routed by:

Routed at: 03/20/2011 23:47

BBBB/ 113

Yokosuka 11:30 AM

Phung ADM THOMAS

- Current EST of sev^{exit} of this plume is

8x magnitude

NEXT DATA IN CFAY INCREASE IN BACKGROUND

LEVELS FROM 0 TO 4x SINCE 0630

Very small but

portable air sample 3×10^{-9} MCML

HAD 1ST POSITIVE SILVER GEL RADIO IODINE

Sample at 1.6×10^{-7} MCML

- EQUIV TO (150 MIL REM) / HOUR Threshold

SECURE TERM 90 NM NORTH = 90 MR/HOUR

TIME ~~09:35~~ 09:35

3611-46N
14016-87E

IN CFAY

~~Not to be distributed~~
Distributed with permission

+ UNDERSTAND DATA

- RECOMMEND TO CHEFJ DISTRIBUTE & ADMINISTER C.I.

- 3/4 hours after plume.

- Based on WIND / DATA UNKNOWN if SIT

in Tokyo

Based on Data 80mc / to Threshold

Iodine Cartridge

From: Foster, Jack
Sent: Sunday, March 20, 2011 9:55 PM
To: Hoc, PMT12
Cc: PMT03 Hoc
Subject: RE: Request for info from PMT

Don,

Going to a meeting with Mofa and DOE to discuss just that ... at 1:00pm local time. I'll pass along info/data when I return.

From: Hoc, PMT12
Sent: Sunday, March 20, 2011 9:01 PM
To: Foster, Jack
Cc: PMT03 Hoc
Subject: RE: Request for info from PMT

Jack

Thanks. This is a start. It would be very helpful to know what levels have been detected in the Tokyo tap water, the milk, and the spinach (and anything else that the press has not yet reported). Also useful to know what their action levels are, so we can see if we can agree with recommendations.

Donald A. Cool

From: Foster, Jack
Sent: Sunday, March 20, 2011 7:00 PM
To: Hoc, PMT12
Cc: PMT03 Hoc
Subject: RE: Request for info from PMT

PMT,

Info sources and news articles on food/water contamination reports and government actions.

This is the first wave. Will be discussing with DOE shortly. Let me know if this helps.

Thanks,

Jack

Information Regarding Food/Water Contamination and GOJ Countermeasures:

March 20, 2011 Sunday (earthquake/radiation-related GOJ website): The Ministry of Foreign Affairs (MOFA) informed all foreign missions in Japan of the following Government of Japan (GOJ) websites that may be of interest. 1) Food Safety Commission: <http://www.fsc.go.jp/> (information on radiation and food safety but mainly in Japanese). 2) Ministry of Health, Labor, and Welfare: <http://www.mhlw.go.jp/english/new-info/index.html> (English guidelines on what foods not to release to the public once contaminated). 3) Ministry of Land, Infrastructure, and

Transport: http://www.mlit.go.jp/page/kanbo01_hy_001411.html (transportation status around the country and links to Ministry of Education, Culture, Sports, Science and Technology (MEXT) websites which include information on radiation readings around the country, near the Fukushima Daiichi power plant, and in drinking water.

Compilation of related news articles (source listed in parentheses):

23:15 March 20, 2011 Sunday (Sankei [major Japanese daily newspaper]: Radioactive substance detected in spinach in Tochigi): Sankei posted a report on its website at 22:52 saying that Tochigi Prefecture announced on March 20 that radioactive substances (iodine and cesium) above the government-regulated limit have been detected in samples of spinach produced in the prefecture. The prefectural government has instructed agricultural organizations in the prefecture to suspend shipment of spinach. Radioactive substances were also detected in leeks and raw milk produced in the prefecture, but the radiation level was below the regulation cap.

22:00 March 20, 2011 Sunday (Sankei: More radiation found in spinach): Sankei reported that Gunma Prefecture announced on March 20 that radioactive substances above the normal level have been detected in some spinach produced in the prefecture.

17:00 March 20, 2011 Sunday (MOHLW website: Radioactive green onions): Following yesterday's revelation that some milk from Fukushima Prefecture and spinach from Ibaraki Prefecture have been tainted by radiation, the Ministry of Health, Labor and Welfare revealed on its website that local green onions have also been measured to contain trace amounts.

16:55 March 20, 2011 Sunday (NHK: Edano press conference): At a 16:30 press conference broadcast live by NHK [government broadcasting network], Chief Cabinet Secretary Edano announced that the government has hired two people to provide information and advice on the disaster to the prime minister: Japan Advanced Institute of Science and Technology (AIST) Vice President Yasushi Hibino and National Defense Academy Center for Security and Crisis Management Education Director Noboru Yamaguchi. He also noted that the health ministry has instructed the concerned local governments to take steps in accordance with the food safety law to deal with elevated radiation in spinach and milk. The health ministry will further analyze data and decide tomorrow whether to restrict shipments. Asked by a reporter what the government is doing following reports of radiation in Tokyo tap water, Edano said the government had increased its measurement efforts, and that the matter "will be dealt with by the health ministry." He added that the government has set very conservative limits for radiation. Later, another reporter asked why it took the government two days to reveal water contamination in Fukushima, to which Edano replied that "we have instructed all parties to report critical news speedily."

01:36 March 19, 2011 (AP: Fukushima water tested above safe limit 2 days ago): Radioactive iodine in drinking water was at one point above government safety limits in the prefecture that hosts a radiation-spewing nuclear plant, the Health Ministry said late Saturday after reporting that trace amounts had also been detected in Tokyo and five other prefectures. The Health Ministry said in a statement that iodine levels slightly above the limit were detected Thursday in Fukushima prefecture, the site of the Fukushima Daiichi nuclear power plant where workers are scrambling to prevent radiation leaks. On Friday, levels were about half that benchmark, and by Saturday they had fallen further.

21:32 March 19 21:32 March 19, 2011 Saturday (Sankei News: No radioactivity found in water in Kanagawa): Responding to the news that radioactive iodine and cesium were detected in tap water in Fukushima city, Kanagawa prefecture has examined the tap water of prefecture's health institution in Chigasaki. Kanagawa Prefecture announced that there was no detection of iodine and cesium. The Prefecture will continue the test once a day.

From: Hoc, PMT12
Sent: Sunday, March 20, 2011 8:49 AM
To: Foster, Jack
Cc: Casto, Chuck; PMT03 Hoc
Subject: Request for info from PMT

Hi Jack.

The PMT is starting to consider the ingestion pathway protective actions within Japan and we would like to better understand what decisions are being made within country. It is our understanding that the Japanese have not made any decisions for the interdiction of food or milk. As you have the opportunity will you please find out for us what the current thinking is or what decisions have been made.

Much appreciated.

K. Brock
PMT, PAAD

From: LIA02 Hoc
To: LIA02 Hoc; LIA03 Hoc; Fragovannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; "ShafferMR@state.gov"; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen
Subject: RE: 3/20/11 1500 Transition
Date: Sunday, March 20, 2011 4:38:00 PM

TRANSITION REPORT FOR MARCH 20, 2011 1500

Karen and Steve Baker transitioning to Eric and Nancy

GENERAL NOTES. (includes notes from previous updates; red highlight is general instruction to staff; yellow highlights from Jen/Charlotte 2300-0700 shift; current updated action in green highlight)

- 1)** Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
- 2)** Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
- 3)** 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
- 4)** Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
- 5)** Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
- 6)** RST needs to follow up on Crystallization issue per the 0930 conference call (see first item below)
- 7)** Prior to the 2 pm call or any other call you set up, make sure you contact the HOOs to let them know that you are going to have the international call with UK, etc. Might be beneficial to establish a standing bridge.

SPECIFIC ISSUES

- **0930 Conference Call (Update).** RST-international LT occurred at 1030 conference call on Sunday 3/20; France was not present. On 3/19 0930 conference call with UK/Canada/France (with RST), UK asked about crystallization on the fuel as a result of the salt from the sea water. We have so far been unable to get additional information on this from TEPCO. It was not raised at the 1030 call this morning. International liaison has verified there will be a 1400 call on health physics issues and has alerted the HOO to the call. ACTION: International liaison should verify if the 0930 call will occur on 3/21 with the RST, and if so, contact the HOO to give a heads up.

1. Update - The 2:00 meeting on March 20 with Canada and the UK gleaned little information due to the sensitivity of releasing the data. It was however agreed to continue to meet daily at 2:00 pm in hopes that more information sharing would be possible. Neither the UK nor Canada offered a counter proposal of Japan's current evacuation zone of 20K.

BOBB/115

- NRC Relief Team to Japan (Update).** Dan Dorman (NMSS) departed for Tokyo on March 19. Mike Scott (RES) and Alan Blamey (RI) depart on March 22. Todd Jackson (RI) departs March 23. Jack Giessner (RIII), Rob Taylor (NRR), Marie Miller (RI), Syed Ali (RES), Abdul Sheikh (NRR), Ralph Way (NSIR), and Jack Ramsey (OIP) will depart March 24. **Action:** New team members should be added to Liaison Japan group. Int'l liaison sent out an email to the new team members @ 0900 3/20 and is collecting bb numbers, email addresses and PII for the travelers and adding them to the traveler list. Still need flight arrival times. Dosimeters for team members are in drawer at LIA03 location.
- Action from the Chairman's Office 3/19 1625 (Update):** "Please have the interpreter verify if the following is on MEXT public site: AMS information shows that dose rates from ground deposition exist between 20 and 30 km that would result in a whole body dose of greater than 1 REM over continuous exposure for 4 days. This information agrees with Ministry of Education, Culture, Sports, Science and Technology (MEXT) field measurements in the same area. The Government of Japan may want to consider extending their evacuation zone beyond the current 20 km (12 mile) radius." **Answer from Int'l liaisons 1100 (provided to Margie via email):** Terumi (our interpreter) has scoured the MEXT public website. She did not see where MEXT posted any reports that reflected the Aerial monitoring system's information or any recommendation to increase the size of the evacuation zone beyond 20 km you referenced.
- Meteorological/Radiation Data.** PMT is looking to fill a gap in its data from 3/13-15. We may have received some of it tonight but the translator is still working on it. **Action:** Any data that comes in with those dates on it should be treated as a top priority for translation and providing to PMT. **Update:** Translator has been working continuously on data as it is received.
- Radiological Data Request.** NRC PMT room requested that we ask NISA to connect with TEPCO regarding getting updated radiological information including offsite plume monitoring data on a routine and expedited frequency. This request was sent to Danielle (Emche) to engage with Kirk and potentially NISA counterpart if appropriate. **Action:** The answer to this request should be communicated to the PMT room if received. **Update:** Nothing received during this watch.
- DOS Operations Center Request.** ISN Desk (202-647-6611, as for ISN desk) contacted International Liaison to have NRC confirm whether information DOS had on their 6 a.m. situation report was NRC information or TEPCO's. The information in question was "NRC representatives in Tokyo state that the spent fuel pools in Fukushima Units 3 and 4 have water." International Liaison team checked with RST, and confirmed that the information was from TEPCO, not NRC. DOS further consulted with NRC to update their situation report with the following bullet: "Regarding the spent fuel pools at the No. 3 and No. 4 reactors, TEPCO (not/not the NRC) reports there is water in both pools. NRC cannot confirm these reports." International team confirmed this bullet with RST and responded to DOS @1100.
- International aid/support for Japan.** IAEA and Russians have delegations in Japan. The Italians are interested in discussing what the USG is doing, and might be interested in

helping in some way. We should receive more information from Roberto Ranieri soon. Spain has sent no one yet but Parliament will review and decide. South Africa and Slovenia have sent no one. And, as of today, has no plans. The Swiss regulator (as a part of the Swiss government team) has sent one person to do radiation monitoring and transmit the results. Marty Virgilio asked if there was any one coordination point (e.g. IAEA) for assistance going to Japan to avoid duplication of efforts. This does not appear to be the case but we have reached out to various contacts (USAID, Embassy Tokyo). This will likely become an action for future LT shifts (not just intl). Update 3/20 1200: International team contacted Mark Shaffer @0915 to inquire whether, if IAEA were to be requested by Japan under the Convention on Assistance and Notification, whether the IAEA would accept the role as coordinator, and whether the International Emergency Center (IEC) would be able to take on the task. Mark responded that IAEA would respond positively to a Japanese request, but that there are doubts whether the IEC would be able to effectively handle the task.

- **Use of USAid for Travel.** Contacted Joshua Batkin, Chief of Staff for the Chairman, on direction by Nader Mamish to discuss the fact that we are to use USAid and the need for a legal agreement between the NRC and USAid if we are to get additional support. Joshua Batkin has worked it through Steve Burns and Jim Dyer who are interacting directly with USAID, he will let us know if there is anything additional needed from us. Update 3/20: No further dialogue on this issue during 0700-1500 shift.
- **France** - At the request of the PMT, @0830 3/20 International Liaison sent email to France/ASN/Thomas Mieusset (Thomas.MIEUSSET@asn.fr) to inquire about release to the NRC the results of the French simulation on possible source term and plume models.
- **IAEA** - In response to questions from Mark Shaffer (DOS) regarding variations in reports of the status of Reactor 3 and Unit 4's spent fuel storage, the team drafted and cleared a response back to DOS that better characterized their statuses.
- **Conference Room** - Efforts to arrange for a conference room of the US delegation in Japan at the request of the team were subsequently cancelled by the US Delegation. Barbara Gussack of Operations is braced to submit an actual request for a conference room once the delegation agrees they need one.
- **FOIA** - In support of a FOIA all Emails on LIA 02 through noon March 19, 2011 have been forwarded to a FOIA email address dedicated to the request. In some instances, the emails needed to be sent in small increments due to exceeding what Outlook could cope with.

ANTICIPATE ACTION ON 3/21

- **International request for information.** The Indonesian Embassy in Washington requested information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or

meeting with NRC and their Minister-Counselor. **Action: Call will occur at 5PM on Monday, March 21.**

- **Business Cards for TeamJapan.** Brooke, Kirk and Tony have requested an additional supply of business cards be provided to them. The ADM desk has generated the cards requested but FedEx wouldn't be able to get them out until Monday with delivery Tuesday. **Action: Provide to Mike Scott (RES) who is departing on Tuesday March 22. Cards are on LIA03 desk.**
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From: LIA02 Hoc

Sent: Sunday, March 20, 2011 6:56 AM

To: LIA03 Hoc; Fragoyannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroido, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen

Subject: 3/20/11 0700 Transition

TRANSITION REPORT FOR MARCH 20, 2011 0700

Charlotte and Jen transitioning to Karen and Steve Baker

GENERAL NOTES. (includes notes from previous updates)

- 1) Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
- 2) Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
- 3) 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
- 4) Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
- 5) Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
- 6) RST needs to follow up on Crystallization issue per the 0930 conference call (see item below).
- 7) Prior to the 2 pm call or any other call you set up, make sure you contact the HOOs to let them know that you are going to have the international call with UK, etc. Might be beneficial to establish a standing bridge.

- **0930 Conference Call (Update).** On yesterday's 0930 conference call with UK/Canada/France (with RST), UK asked about crystallization on the fuel as a result of the salt from the sea water. We have so far been unable to get additional information on this from TEPCO. They will likely ask for a follow-up on the 0930 call this morning. RST will be on the line and can respond. Action: International liaison should verify whether the group desires another 2 PM call on health physics issues – if so, contact the HOO to give a heads up.
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absorbent clay that is used in kitty litter and also is used as to seal (expands as it absorbs liquid). The Montana mine offers to donate the bentonite. Unlikely that clay is a solution at this stage and supplies are likely to be located closer to Japan. Resolved by the RST.

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From: LIA02 Hoc
To: LIA03 Hoc; Fragoyannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; "ShafferMR@state.gov"; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen
Subject: 3/20/11 0700 Transition
Date: Sunday, March 20, 2011 6:56:24 AM

TRANSITION REPORT FOR MARCH 20, 2011 0700

Charlotte and Jen transitioning to Karen and Steve Baker

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B000/116

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~~OFFICIAL USE ONLY~~

From: Schwartzman, Jennifer
Sent: Sunday, March 20, 2011 9:37 AM
To: LIA02 Hoc; LIA03 Hoc
Subject: Fw: Can you find out

Guys,

See below request from Margie. Please call Jenny T and find out if this was taken care of last night, and if not, please take it as a priority action. Thanks!!!

Sent from an NRC Blackberry

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

From: Doane, Margaret
To: Schwartzman, Jennifer
Sent: Sun Mar 20 09:31:57 2011
Subject: Re: Can you find out

Please. Have them check with Jen T maybe it was done. If not top priority.

Sent from an NRC Blackberry
Margaret Doane

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

From: Schwartzman, Jennifer
To: Doane, Margaret
Sent: Sun Mar 20 09:29:20 2011
Subject: Re: Can you find out

Aha. This did not get turned over to us and I was sitting at LIA02 last night so that explains why I did not see a note from you. Would you like me to ask our current shift to ask the translator to look at this now and get someone from PMT to give a technical opinion?

Sent from an NRC Blackberry

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

From: Doane, Margaret
To: Schwartzman, Jennifer
Sent: Sun Mar 20 09:26:38 2011
Subject: Fw: Can you find out

Correction On MEXT site.see below

Sent from an NRC Blackberry
Margaret Doane

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

From: Doane, Margaret

BBBBJ 117

To: LIA03 Hoc; Batkin, Joshua
Cc: Mamish, Nader
Sent: Sat Mar 19 16:25:35 2011
Subject: Can you find out

Please have the interpreter verify if the following is on MEXT public site. Please include Josh on the reply.

AMS information shows that dose rates from ground deposition exist between 20 and 30 km that would result in a whole body dose of greater than 1 REM over continuous exposure for 4 days. This information agrees with Ministry of Education, Culture, Sports, Science and Technology (MEXT) field measurements in the same area. The Government of Japan may want to consider extending their evacuation zone beyond the current 20 km (12 mile) radius. *Rel*

Sent from an NRC Blackberry
Margaret Doane

From: Leeds, Eric
To: Boger, Bruce; Grobe, Jack
Subject: RE: PMT Position on Expansion of Protective Actions for US Citizens Beyond the Current 50 Mile Evacuation Recommendation
Date: Monday, March 21, 2011 1:15:00 PM

Hoc
Bruce -

Can you request them to add us to the cc list? Thanks!

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

From: Boger, Bruce
Sent: Monday, March 21, 2011 12:53 PM
To: Leeds, Eric; Grobe, Jack
Subject: FW: PMT Position on Expansion of Protective Actions for US Citizens Beyond the Current 50 Mile Evacuation Recommendation
Importance: High

FYI. I didn't see your name on the distribution. Would you like me to forward future updates to you?

From: PMT09 Hoc
Sent: Monday, March 21, 2011 12:37 PM
To: Jaczko, Gregory
Cc: Carpenter, Cynthia; Lewis, Robert; Ordaz, Vonna; Camper, Larry; Holahan, Patricia; Miller, Charles; Gibson, Kathy; Sullivan, Randy; Jones, Cynthia; Reis, Terrence; Cool, Donald; Holahan, Vincent; Milligan, Patricia; Tappert, John; Lui, Christiana; Lubinski, John; Coe, Doug; Zimmerman, Roy; Wiggins, Jim; Sheron, Brian; Johnson, Michael; Virgilio, Martin; Weber, Michael; Boger, Bruce; Batkin, Joshua; Coggins, Angela; Borchardt, Bill; Weber, Michael; Casto, Chuck; Dorman, Dan; Hoc, PMT12
Subject: FW: PMT Position on Expansion of Protective Actions for US Citizens Beyond the Current 50 Mile Evacuation Recommendation
Importance: High

Mr. Chairman,

Attached is the latest update of the PMT position on expansion of protective actions for US Citizens.

From: Hoc, PMT12
Sent: Monday, March 21, 2011 8:58 AM
To: Jaczko, Gregory
Cc: Carpenter, Cynthia; Lewis, Robert; Ordaz, Vonna; Camper, Larry; Holahan, Patricia; Miller, Charles; Gibson, Kathy; Sullivan, Randy; Jones, Cynthia; Reis, Terrence; Cool, Donald; Holahan, Vincent; Milligan, Patricia; Tappert, John; Lui, Christiana; Lubinski, John; Coe, Doug; Zimmerman, Roy; Wiggins, Jim; Sheron, Brian; Johnson, Michael; Virgilio, Martin; Weber, Michael; Boger, Bruce; Batkin, Joshua; Coggins, Angela; Borchardt, Bill; Weber, Michael; Casto, Chuck; Dorman, Dan; Hoc, PMT12

BBBB/118

Subject: FW: PMT Position on Expansion of Protective Actions for US Citizens Beyond the Current 50 Mile Evacuation Recommendation

Importance: High

Mr. Chairman,

We sent you the attached previously and will update it with the following information. However, we wanted to ensure you received the following as soon as possible:

With regard to the $1E-7$ uCi/ml reading at a military installation 90 miles SW of the Fukushima Plant, we understand this was 1 of 23 samples taken 2035 jst 3/20 through 0315 jst 3/21. The remaining samples and follow up samples were below minimum detectible. Therefore, it would not be unreasonable that this is an inaccurate sample/count.

While the initial report stated the $1E-7$ uCi/ml reading was for radioactivity (possibly just radioactive iodine), the most recent gamma analysis performed and provided by Naval Reactors on the sample indicates the I-131 concentration is $2.67E-10$ uCi/ml.

If one were to assume this is an accurate sample, one should consider the wind and plant conditions. From 3/20 til approximately 0001 jst 3/21, the wind at the plant was from the west/northwest. It shifted around 0001 jst 3/21 to coming from the north at around 5 mph. Our understanding is that the plant conditions with respect to any releases since approximately 3/15 would have been predominantly from spent fuel pools. Therefore, if this material came from the plant, it most likely would have been generated prior to 3/15. It could have generated from a spent fuel pool or from one of the reactors when venting was occurring. We believe reactor venting is no longer occurring.

From: Hoc, PMT12

Sent: Monday, March 21, 2011 5:42 AM

To: Zimmerman, Roy; Wiggins, Jim; Sheron, Brian; Johnson, Michael; Virgilio, Martin; Weber, Michael; Boger, Bruce

Cc: Carpenter, Cynthia; Lewis, Robert; Ordaz, Vonna; Camper, Larry; Holahan, Patricia; Miller, Charles; Gibson, Kathy; Sullivan, Randy; Jones, Cynthia; Reis, Terrence; Cool, Donald; Holahan, Vincent; Milligan, Patricia; Tappert, John; Lui, Christiana; Lubinski, John; Coe, Doug

Subject: FW: PMT Position on Expansion of Protective Actions for US Citizens Beyond the Current 50 Mile Evacuation Recommendation

Importance: High

Attached is the staff's position on consideration for further protective actions for US citizens based on radiological information received from military assets in Japan.

From: Hoc, PMT12

Sent: Monday, March 21, 2011 5:34 AM

To: Jaczko, Gregory

Cc: Batkin, Joshua; Coggins, Angela; Borchardt, Bill; Weber, Michael; Casto, Chuck; Dorman, Dan

Subject: PMT Position on Expansion of Protective Actions for US Citizens Beyond the Current 50 Mile Evacuation Recommendation

Importance: High

Mr. Chairman,

Attached is the staff's position on the expansion of protective actions, for your 8AM meeting.

From: OST05 Hoc
Sent: Monday, March 21, 2011 8:59 AM
To: Maier, Bill
Cc: Erickson, Randy; Browder, Rachel; LIA04 Hoc; Howell, Linda
Subject: RE: Briefing Sheet.doc

Follow Up Flag: Follow up
Flag Status: Completed

Hi Bill,

We are not authorized to share the results of the measurements from SONGS and Diablo Canyon. These results belong to the plants; NRC is not in a position to share with the State/Counties.

Also, as a note, DOE has been designated the lead agency for communicating information to the States regarding monitoring of radiation heading toward or over the United States. DOE's Lawrence Livermore National Laboratory (National Atmospheric Release Assessment Center) is monitoring weather patterns over the Pacific Ocean. The EPA maintains air monitoring stations throughout the country and has reinforced its monitoring effort. DOE will provide aerial monitoring.

I hope this provides the clarification that you were seeking.

Thanks,
Cindy Flannery
State Liaison – Liaison Team
NRC Incident Response Center

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

From: Maier, Bill
Sent: Sunday, March 20, 2011 2:27 PM
To: Howell, Linda; LIA04 Hoc; OST05 Hoc
Cc: Erickson, Randy; Browder, Rachel
Subject: FW: Briefing Sheet.doc

Here is Diablo Canyon results from Friday evening. I am hoping to get NRC response team approval to share with CA and CA Counties on the next CA Statewide Conference Call.

Bill Maier

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

From: Carson, Louis
Sent: Friday, March 18, 2011 9:01 PM
To: Somerville, Mark
Cc: Maier, Bill
Subject: RE: Briefing Sheet.doc

Th'X Mark, We were also wondering if you notified any State Officials.

From: Somerville, Mark [MOS3@pge.com]
Sent: Friday, March 18, 2011 7:38 PM

BBBB/119

To: Carson, Louis
Subject: RE: Briefing Sheet.doc

Louis,

We pulled the charcoal and filter from one of our samplers at the front gate placed to monitor this event.

That sample is about 6 miles from the plant site as you of course know.

It showed 3.779 E-13 micro-Ci/cc I-131.

There were no particulates.

We notified Headquarters - Protective Measures team as requested.

Mark

Mark O. Somerville Ph.D.
Manager-Radiation Protection
Certified Health Physicist
Registered Environmental Assessor
(805) 545-4007
(805) 545-3459 - Fax
mos3@pge.com

From: Carson, Louis [mailto:Louis.Carson@nrc.gov]
Sent: Friday, March 18, 2011 10:06 AM
To: Somerville, Mark
Subject: RE: Briefing Sheet.doc

Th'X V-Much Mark.

Did you all do a confirmatory sample/count?

Louis

From: Somerville, Mark [mailto:MOS3@pge.com]
Sent: Friday, March 18, 2011 11:00 AM
To: Carson, Louis
Subject: Briefing Sheet.doc

Louis,

Here's what I circulate inside the plant.

Mark

Mark O. Somerville Ph.D.
Manager-Radiation Protection
Certified Health Physicist
Registered Environmental Assessor

(805) 545-4007
(805) 545-3459 - Fax
mos3@pge.com

Coyne, Kevin

From: Rini, Brett
Sent: Monday, March 21, 2011 6:41 PM
To: Coyne, Kevin; Elkins, Scott; Grancorvitz, Teresa; Rivera-Lugo, Richard; Armstrong, Kenneth; Ibarra, Jose; Hudson, Daniel
Subject: FW: Funding Needs for Japan Follow-up - Resent to provide Attachment
Importance: High

FYI, since you weren't on the e-mail below. The previous request has been canceled.

Brett

From: Sheron, Brian
Sent: Monday, March 21, 2011 6:39 PM
To: Rini, Brett; Case, Michael; Coe, Doug; Correia, Richard; Gibson, Kathy; Lui, Christiana; Richards, Stuart; Sangimino, Donna-Marie; Scott, Michael; Uhle, Jennifer; Valentin, Andrea
Subject: FW: Funding Needs for Japan Follow-up - Resent to provide Attachment
Importance: High

See below. They called it off.

From: Flory, Shirley **On Behalf Of** RidsResOd Resource
Sent: Monday, March 21, 2011 6:20 PM
To: Sheron, Brian; Uhle, Jennifer; RidsResPmdaMail Resource
Subject: FW: Funding Needs for Japan Follow-up - Resent to provide Attachment
Importance: High

From: Jacobs-Baynard, Elizabeth
Sent: Monday, March 21, 2011 5:44 PM
To: Kasputys, Clare; RidsNroOd Resource; RidsNrrOd Resource; RidsNsirOd Resource; RidsResOd Resource; RidsFsmeOd Resource; RidsNmssOd Resource; RidsOgcMailCenter Resource; RidsCsoMailCenter Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; RidsOipMailCenter Resource
Cc: RidsNrrPmda Resource; RidsNroPmda Resource; RidsNsirPmda Resource; RidsResPmdaMail Resource; RidsFsmePbpaFmb Resource; RidsNmssTa Resource; Golder, Jennifer; Smolik, George; Muessle, Mary; Andersen, James; Allwein, Russell; Peterson, Gordon; Peterson, Gordon; Virgilio, Martin; Virgilio, Martin; Weber, Michael; Weber, Michael; Ash, Darren; Ash, Darren; Jacobs-Baynard, Elizabeth
Subject: RE: Funding Needs for Japan Follow-up - Resent to provide Attachment
Importance: High

Recalling e-mail. At this time, there is no need for offices to respond to the requested e-mail. OCFO has come up with rough estimates of the associated costs for near-term and long term tasks. Please be informed that there may be additional assistance requested from offices at a later date. Thanks for your support and cooperation.

Liz

From: Kasputys, Clare
Sent: Monday, March 21, 2011 4:18 PM
To: RidsNroOd Resource; RidsNrrOd Resource; RidsNsirOd Resource; RidsResOd Resource; RidsFsmeOd Resource;

RidsNmssOd Resource; RidsOgcMailCenter Resource; RidsCsoMailCenter Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; RidsOipMailCenter Resource
Cc: RidsNrrPmda Resource; RidsNroPmda Resource; RidsNsirPmda Resource; RidsResPmdaMail Resource; RidsFsmePbpaFmb Resource; RidsNmssTa Resource; Golder, Jennifer; Smolik, George; Muessle, Mary; Andersen, James; Jacobs-Baynard, Elizabeth; Allwein, Russell; Peterson, Gordon; Peterson, Gordon; Virgilio, Martin; Virgilio, Martin; Weber, Michael; Weber, Michael; Ash, Darren; Ash, Darren

Subject: Funding Needs for Japan Follow-up - Resent to provide Attachment

Resent to provide the Attachment

All,

The Chairman has requested for the NRC to conduct a Near-term (90 day effort) and a longer-term review (as discussed by Bill B at the Commission meeting today) of regulatory issues affecting U.S. operating reactors based on the events in Japan. The Chairman is interested in seeking supplemental funding to support our efforts for the above effort, in addition to NRC's costs associated with emergency response and technical experts sent to Japan. OCFO is preparing cost data associated with emergency response and technical support to Japan.

On Friday, the OCFO requested some initial estimates to support the reviews (see attached). At this time, we are requesting the offices to review these initial estimates and include some information concerning the work that is envisioned to support these reviews. Listed below are some initial thoughts about the scope of the near-term and long-term reviews. Also, consider what on-going efforts related to the development of our regulatory program could benefit with supplemental funding. For example, it was mentioned in the Commission meeting that NRC is currently working on GSI-199. Should funding be accelerated for this effort and others of this nature.

Near Term Review (90 day effort):

- Evaluate currently available technical and operational information from the Japan event to identify near-term (or immediate) operational or regulatory issues affecting U.S. operating reactors of all designs in areas such as protection against earthquakes, tsunami, flooding, hurricanes, station blackout and a degraded ability to restore power; severe accident mitigation and emergency preparedness
- Develop recommendations for generic communications, orders, changes to inspection procedures and licensing review guidance, etc.
- Possibly prepare a 30 day quick look report

Longer-Term Review (Following obtaining sufficient technical information from the Japan event)

- Evaluate all technical and policy issues related to the event to identify additional research, generic issues, changes to the reactor oversight process, rulemakings and adjustments to the regulatory framework that should be conducted by the NRC.
- Evaluate interagency issues such as emergency preparedness.
- Applicability of the lessons learned to non-operating reactor and non-reactor facilities.

It is recognized that the full scope of the reviews has yet to be determined or the size of the group that will be conducting the analysis. Therefore, we are looking only for rough cost estimates. You are requested to send the level of funding (dollars and FTE) that is anticipated that could be obligated in FY 2011 for both the near-term and long-term efforts. We are asking the business line leads to coordinate with supporting offices and submit a response by business line and by office. Please send your responses to me and Liz Jacobs-Baynard and copy Jennifer Golder and George Smolik, OCFO NLT than Noon on Tuesday.

If you have any questions, please let me know.

Thank you for your support.

From: Dion, Jeanne
Sent: Monday, March 21, 2011 8:47 AM
To: RES Distribution
Subject: Staff Slides for March 21 Meeting Rev 1.pptx
Attachments: Staff Slides for March 21 Meeting Rev 1.pptx

Attached are slides for this morning's Commission meeting. There will be hard copies available in the Church St. conference rooms where the meeting will be VTC'd.

Jeanne Dion
Technical Assistant (Acting)
U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
jeanne.dion@nrc.gov
301-251-7482

BBB/ 12/



Briefing on NRC Response to Recent Nuclear Events in Japan

Bill Borchardt
Executive Director for Operations
March 21, 2011

Agenda

- **Event Overview**
- **Immediate NRC Response**
- **Continuing NRC Response**
- **Health Effects of Radiation**
- **Domestic Reactor Safety**
- **Path Forward**

Event Overview

- ***Discussion of initiating event***
- ***Current status of reactors***
- ***Current status of spent fuel pools***

3

Immediate NRC Response

- ***Activated Operations Center***
- ***Dispatched NRC experts to Japan***
- ***Areas of focus***
- ***Extensive outreach to stakeholders***

4

Continuing NRC Response

- ***Operations Center***
- ***Support U.S. response***
- ***Provide assistance***
- ***Mobilize resources***

5

Health Effects of Radiation

- ***Offsite Doses***
- ***Radiological Consequences***

6

Domestic Reactor Safety

- ***NRC oversight of U.S. plant safety***
- ***Continuous improvement based on operating experience***

7

NRC Activities - Near Term

- ***Inspection Activities***
- ***Generic Communications***
- ***Immediate regulatory actions***

8

NRC Activities – Longer Term

- ***Lessons learned and recommendations***
- ***Regulatory actions, for example, to identify potential:***
 - ***Research projects***
 - ***Generic issues***
 - ***Regulatory enhancements***

9

Conclusion

10

From: ET02 Hoc
Sent: Monday, March 21, 2011 4:28 PM
To: RST01 Hoc; RST12 Hoc
Subject: smoke could be core-concrete interaction - see Chernobyl article (concrete is largely sand)

Excerpt below:

Flight Over Reactor

The director of the U.N.-affiliated IAEA, Hans Blix, flew over the reactor Thursday and said that smoke was coming from it.

But Rosen, an American who is director of the agency's division of nuclear safety, said today that the smoke was light gray and appeared to come from smoldering sand, lead, boron and dolomite thrown over the reactor to smother the fire. He said smoke was thicker and darker when the fire was burning.

Article:

http://articles.latimes.com/1986-05-09/news/mn-4240_1_nuclear-reactor

From: ET02 Hoc
Sent: Monday, March 21, 2011 8:56 PM
To: RST12 Hoc; RST01 Hoc
Subject: Check this post where people postulating corium coming out of U4 square hole in side

<http://www.physicsforums.com/showpost.php?p=3195114&postcount=416>

<http://www.physicsforums.com/showpost.php?p=3194084&postcount=381>

BBB/ 123

From: ET02 Hoc
Sent: Monday, March 21, 2011 4:54 PM
To: RST12 Hoc; RST01 Hoc
Subject: helicopter photos

<http://www.youtube.com/watch?v=4woiNg5syYk>

BBBB/ 124

From: ET05 Hoc
Sent: Monday, March 21, 2011 8:55 PM
To: FOIA Response.hoc Resource
Subject: FW: March 21 2300EDT one pager.docx
Attachments: March 21 2300EDT one pager.docx

From: Miller, Chris
Sent: Monday, March 21, 2011 7:51 PM
To: Wiggins, Jim
Cc: ET05 Hoc; Miller, Chris
Subject: March 21 2300EDT one pager.docx

Update for the 8pm call tonight

BBB) 125

From: PMT03 Hoc
Sent: Monday, March 21, 2011 4:02 AM
To: Hoc, PMT12
Subject: Draft USNRC Earthquake-Tsunami Update 032111 0600EDT.docx
Attachments: Draft USNRC Earthquake-Tsunami Update 032111 0600EDT.docx

Importance: High

Greg- For your review.

From: [LIA07 Hoc](#)
Subject: 1800 EDT (March 21, 2011) USNRC Earthquake/Tsunami Status Update
Date: Monday, March 21, 2011 6:16:05 PM
Attachments: [USNRC Earthquake-Tsunami Update.032111.1800EDT.pdf](#)

Attached, please find an 1800 EDT (March 21, 2011) status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

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

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

-Sara

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

BBB/ 127

From: LIA04 Hoc
Sent: Tuesday, March 22, 2011 2:37 PM
To: Turtil, Richard
Subject: RE: URGENT REQUEST FOR INFORMATION FROM PMT

Good

Cardelia just finished her debrief. Michelle and I are settling in.

Leira will be heading down at 3:30 to shadow us.

Stuart Easson
State Liaison – Liaison Team
Incident Response Center
301-816-5193
LIA04.HOC@nrc.gov

From: Turtil, Richard
Sent: Tuesday, March 22, 2011 2:33 PM
To: LIA04 Hoc
Subject: RE: URGENT REQUEST FOR INFORMATION FROM PMT

How are you doing down there?

Rich

From: LIA04 Hoc
Sent: Tuesday, March 22, 2011 1:31 PM
To: PMT01 Hoc; Hoc, PMT12; PMT03 Hoc
Cc: Maier, Bill; LIA08 Hoc; LIA07 Hoc; Easson, Stuart; Flannery, Cindy; Jackson, Deborah; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Piccone, Josephine; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: FW: URGENT REQUEST FOR INFORMATION FROM PMT

Per my discussion with the PMT 03, this is information relative to the Arizona request.

From: Aubrey Godwin [<mailto:agodwin@azrra.gov>]
Sent: Tuesday, March 22, 2011 1:06 PM
To: Milligan, Patricia; Maier, Bill; LIA04 Hoc; OST05 Hoc
Cc: Howell, Linda; Toby Morales; Howell, Art
Subject: RE: URGENT REQUEST FOR INFORMATION FROM PMT

Yes, but, for releases during emergencies at apvngs we have to calculate an iodine dose and estimate when to use KI. We would not have to use KI for an ingestion hazard, we would not eat or drink.

Aubrey

BBB/ 128

From: Milligan, Patricia [mailto:Patricia.Milligan@nrc.gov]
Sent: Tuesday, March 22, 2011 9:57 AM
To: Maier, Bill; LIA04 Hoc; OST05 Hoc
Cc: Howell, Linda; Aubrey Godwin; Toby Morales; Howell, Art
Subject: RE: URGENT REQUEST FOR INFORMATION FROM PMT

Important to remember that iodine is primarily (and based on Chernobyl data) exclusively an ingestion hazard

From: Maier, Bill
Sent: Tuesday, March 22, 2011 12:49 PM
To: LIA04 Hoc; OST05 Hoc
Cc: Howell, Linda; agodwin@azrra.gov; 'tmorales@azrra.gov'; Howell, Art; Milligan, Patricia
Subject: URGENT REQUEST FOR INFORMATION FROM PMT
Importance: High

I just got off the phone with Aubrey Godwin, Director of the Arizona Radiation Regulatory Agency (ARRA) and Arizona State Liaison Officer to the NRC.

Mr. Godwin is planning to issue a news release following up on the attached. Mr. Godwin was aware of Palo Verde's confirmed measurement(s), so the licensee is in communication with the State about its findings.

One of the items Mr. Godwin needs to include in his follow-up news release is the air concentration of iodine that would prompt the recommendation, following the present Federal guidance, for persons to ingest potassium iodide. Mr. Godwin is asking for NRC input to check the calculated value which he proposes to include in his news release. That calculated value is

1000 picoCuries per cubic meter of air, or 1000E-12 microCuries per millileter of air

Mr. Godwin did not elaborate on what assumptions contributed to the derivation of that value, but he is asking for an independent calculation from the NRC that would confirm or deny the feasibility of the above value.

He asked that the answer to this request be expedited, if possible, because he informed me he has to issue this news release soon (a few hours).

Bill Maier
Region 4

From: PMT03 Hoc
Sent: Tuesday, March 22, 2011 1:10 PM
To: Shoop, Undine; Harrington, Holly; Riley (OCA), Timothy
Subject: Assumed plant conditions supporting March 16, 2011 NRC press release.docx
Attachments: Assumed plant conditions supporting March 16, 2011 NRC press release.docx

BBB/ 129

Assumed plant conditions supporting March 16, 2011 NRC press release

There are two dose assessments attached to the March 16th (2011) NRC press release. Both assessments are hypothetical, stylized analyses of consequences of releases from the Fukushima nuclear power plant Units 2, 3 and 4.

The first assessment assumed release from one reactor unit, specifically Unit 2. It assumed an ex-vessel, unfiltered release from a totally failed containment, 100% fuel damage, and actual meteorological conditions during early morning hours. The low dispersion characteristics included low wind speeds, relatively stable air, and light precipitation. The assessment considered the conditions of the plant at the time and possible degrading conditions. The assumptions included total failure, sprays off, no removal mechanism (e.g., scrubbing), no mitigation by the operator. A ground level release was assumed with release duration of 16 hours.

The second assessment represented multiple unit failures, in this case Units 2 and 3 and the spent fuel pool (SFP) of Unit 4. Specifically, it assumed 30% core damage at Units 2 and 3, and 100% fuel damage for the Unit 4 spent fuel pool. The Unit 4 spent fuel pool was assumed to include only a full core offload from the current outage. To account for the combined inventories of the three units sources (i.e., from Units 2 and 3 and Unit 4 spent fuel pool), the staff adjusted the reactor power level, fuel burnup and number of assemblies, and included that in one calculation. This resulted in 917 assemblies in the core. The assumptions included total failure, sprays off, no removal mechanism (e.g., scrubbing), no mitigation by the operator. The meteorological conditions for the second assessment also assumed actual conditions with light precipitation, fairly stable wind conditions with occasional higher wind speeds and less stable atmospheric conditions, resulting in greater atmospheric dispersion. A ground level release was assumed with release duration of 15 hours.