From: ET07 Hoc
Sent: Tuesday, March 29, 2011 5:27 PM
To: Gott, William
Attachments: 2010 Ops Tour (NoAnimation).pptx

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NRC HQ Operations Center

U.S.NRC
United States Nuclear Regulatory Commission

RESPONSE PROGRAM

- National Response Framework
- Nuclear/Radiological Incident Annex
  - "Coordinating Agency" for Incidents Involving NRC Licensed Facilities and Materials
- NRC Specific Plans and Procedures
  - Incident Response Plan (NUREG-0728)
  - NRC Incident Response Manual

U.S.NRC
United States Nuclear Regulatory Commission

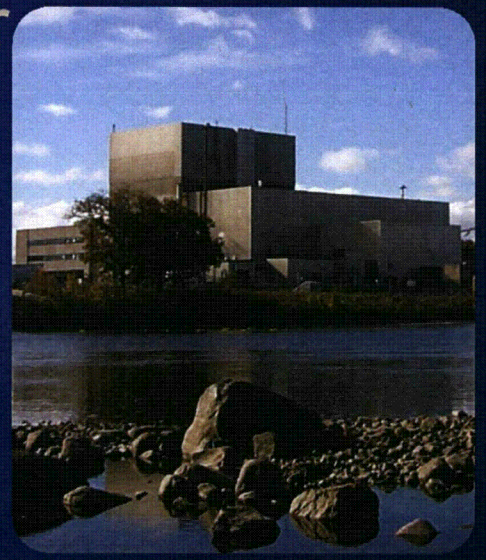
NRC Response Actions

- Assess Plant Conditions
- Evaluate Protective Action Recommendations
- Support Offsite Officials
- Coordinate with Federal Partners
- Inform News Media

U.S.NRC
United States Nuclear Regulatory Commission

LICENSEE EMERGENCY CLASSIFICATION

- Notification of Unusual Event
  - Potential Degradation in the Level of Safety
- Alert
  - Loss of a Vital System or Barrier
- Site Area Emergency
  - Loss of a Vital Safety Function
- General Emergency
  - Severe Core Damage Accident
  - Potential Offsite Consequences



U.S.NRC
United States Nuclear Regulatory Commission

Response Modes

Agency Response Decisions are Based on NRC's Independent Assessment of an Event

- Normal Operations
- Monitoring Mode
- Activation Mode
- Expanded Activation Mode

Normal | Monitoring | Activation | Expanded Activation

- HQ Operations Officers Staff the Operations Center 24/7
- Receive and Assess all Incoming Information, Coordinate Event-Related Communications
- Facilitate a Fast Startup of the NRC Incident Response Organization.

Normal | Monitoring | Activation | Expanded Activation

Licensed Facility

Blast Dial Conference Call

- Regional Administrator
- Program Office Director
- NSIR Manager On Call

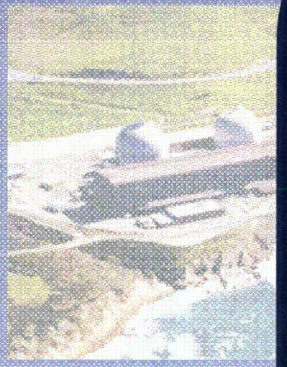
Notifications to Federal Departments and Agencies

Normal | Monitoring | Activation | Expanded Activation

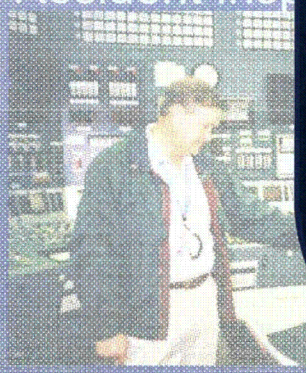
Regional Office Leads Response

- Regional Administrator Serves as Agency Senior Official
- Regional Incidence Response Center staffed
  - Technical Assessment & Event Monitoring
  - Communication with Licensee & Resident Inspectors
- NRC Headquarters
  - Technical Assistance
  - Communication with Federal Partners

Licensed Fa



Resident Insp



Support Role

Headquarters
erations Center

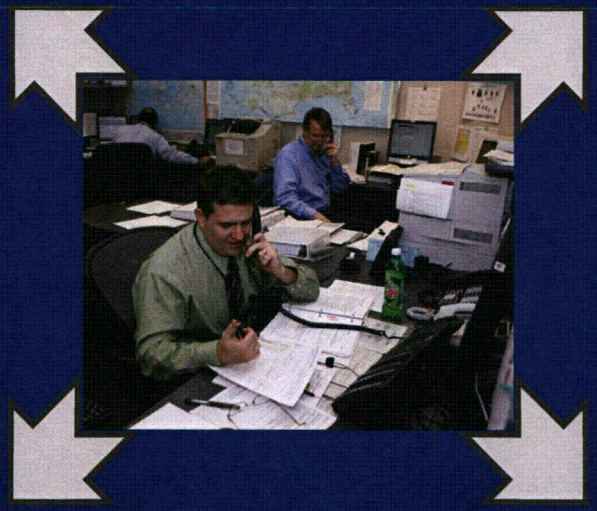
Lead Role

gional Incident
sponse Center

Normal | Monitoring | Activation | Expanded Activation

Licensed Facility

Resident Inspectors

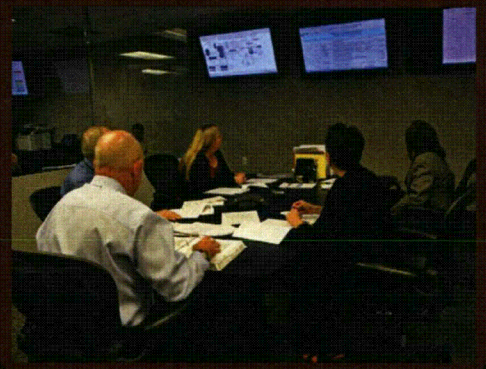


Support Role

Headquarters Operations Center

Lead Role

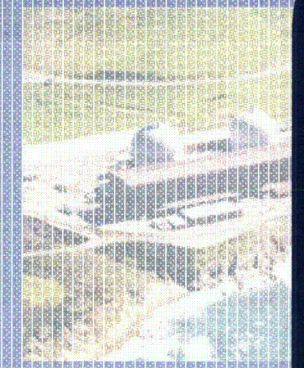
Regional Incident Response Center

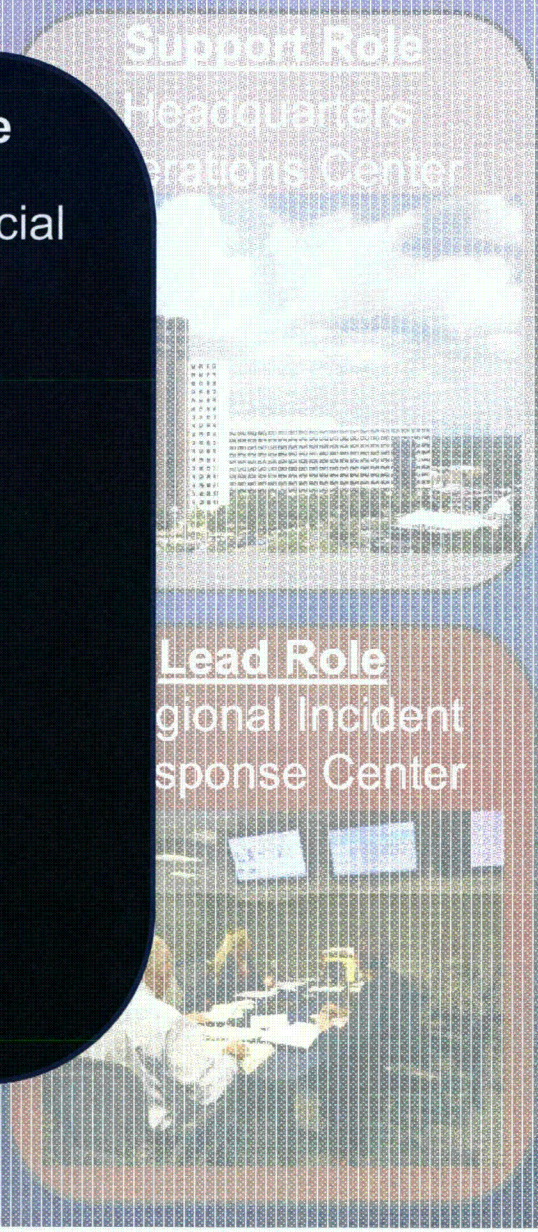


Normal | Monitoring | Activation | Expanded Activation

NRC Headquarters Leads Response

- Chairman Serves as Agency Senior Official
- Full Incident Response Organization staffed
  - Reactor Safety Team
  - Protective Measures Team
  - Liaison Team
  - Safeguards Team
- Regional Site Team may be dispatched

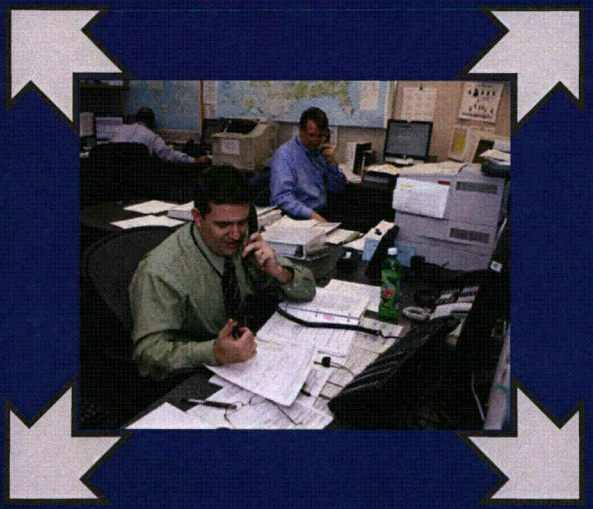




Normal | Monitoring | Activation | Expanded Activation

Licensed Facility

Site Team



Lead Role

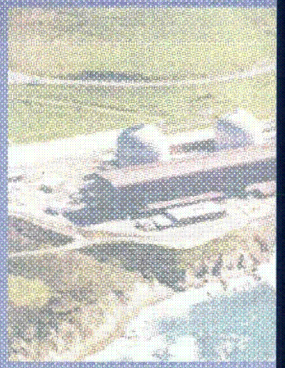
Headquarters Operations Center

Support Role

Regional Incident Response Center

Normal	Monitoring	Activation	Expanded Activation

Licensed F



Site Te

Site Team Leads Response

- Site Team Director Delegated Specific Authorities
- Site Team
  - On-site Assessment
  - Coordination with Joint Field Office
- NRC Headquarters
  - Retains Interagency and Congressional Liaison Roles

Lead Role

Headquarters
erations Center

upport Role

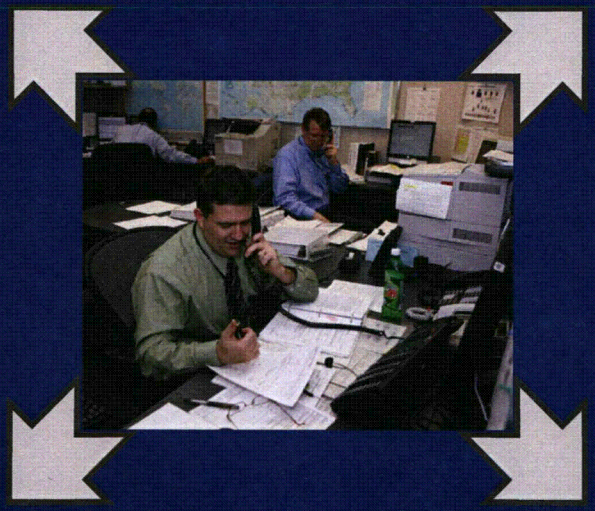
gional Incident
sponse Center

Normal | Monitoring | Activation | Expanded Activation

Licensed Facility

Lead Role

Site Team

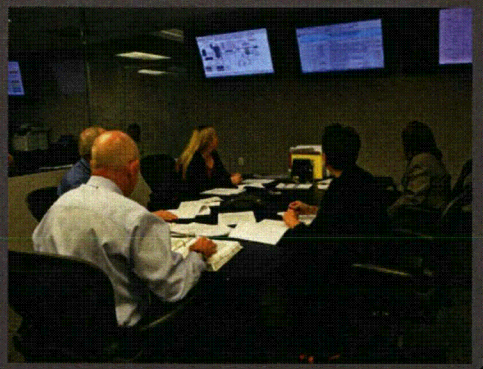


Support Role

Headquarters Operations Center

Support Role

Regional Incident Response Center



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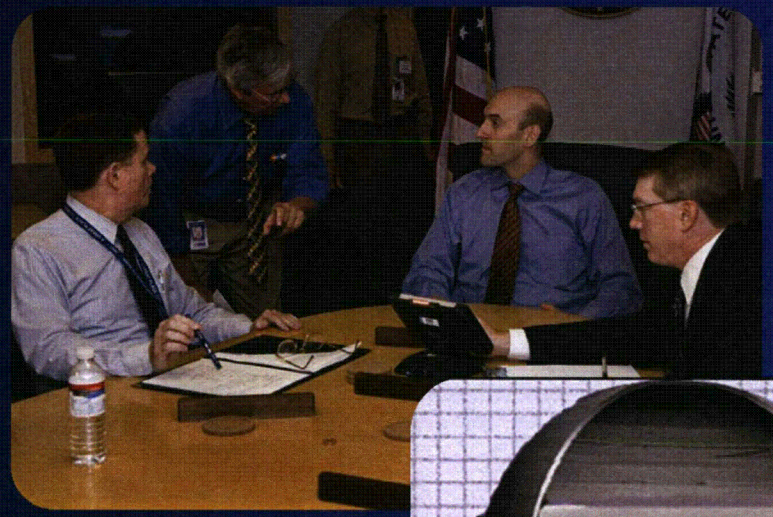
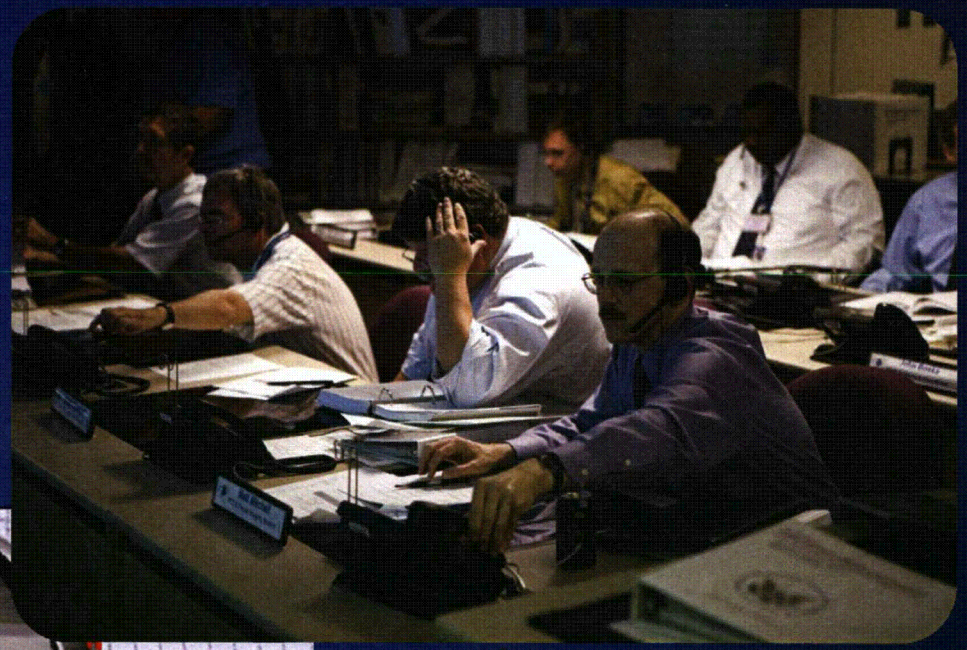
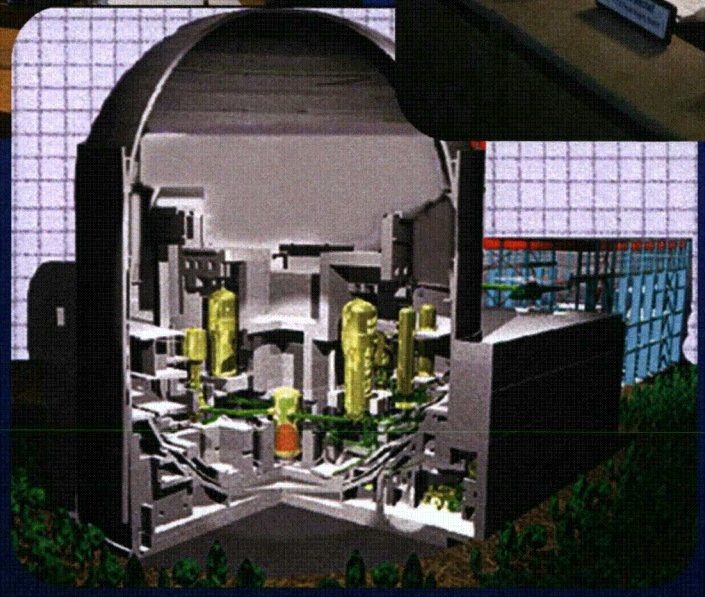
QUESTIONS?







From: LIA06 Hoc
Sent: Tuesday, March 29, 2011 1:43 PM
To: LIA01 Hoc
Subject: FW: FYI - REPORT FROM THE DOE EMBEDDED INDIVIDUAL (Bisconti TDY-Tokyo)

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

-----Original Message-----
From: Weber, Michael
Sent: Tuesday, March 29, 2011 1:19 PM
To: RST01 Hoc; LIA06 Hoc; LIA08 Hoc
Cc: ET07 Hoc; ET05 Hoc; OST02 HOC; FOIA Response.hoc Resource; Casto, Chuck; Dorman, Dan
Subject: FYI - REPORT FROM THE DOE EMBEDDED INDIVIDUAL (Bisconti TDY-Tokyo)

Here is a report from one of the DOE staff members who is embedded with the DART Team in Tokyo, along with our team.

-----Original Message-----
From: Bisconti, Giulia [mailto:Giulia.Bisconti@nuclear.energy.gov]
Sent: Tuesday, March 29, 2011 12:26 PM
To: PWG; DL-NITsolutions
Cc: Bisconti, Giulia
Subject: Bisconti TDY-Tokyo

Dear all:

As requested, this is an update of how I am helping in Tokyo for the week. My main duty is to be embedded with the NRC team at the Embassy. I am also performing other duties where I can be helpful to Ron and Aleshia. They have both been very welcoming.

Giulia

Here are some items of interest:

--Two PNNL experts to visit Japan (at the request of Japan)to help on water decontamination and storage issues.
--Japanese government is seeking private sector experts on fuel rod/pool issues with hands-on TMI experience (per NRC meetings).
--Japanese government is thrilled with NNSA's airborne monitoring cooperation (I joined MOFA/MEXT meeting with Alan).
--Met with Toshiba and B&W. Toshiba has hundreds of employees at the accident site and the TEPCO emergency control room. Toshiba is deploying equipment and resources. Toshiba and Hitachi are both in the emergency control room, and TEPCO is heavily relying on them. Toshiba offered to be an information resource to our specialists.
--6.3 quake in Northeastern Japan today--no damage reported to facilities.

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--Aleshia and I met today with METI Vice Minister Okada (at his invitation). Okada mentioned that Japan is thinking about a "cover" for the Fukushima plants in the coming months. He and his colleagues expressed very deep appreciation for assistance from DOE and its National labs and everyone's hard work and long hours. They appreciated DOE recommendations on the salt/fresh water issue. Okada offered to personally work with DOE on any matter related to the Fukushima response and to help overcome any barrier. Although, he mentioned that information flow is much better now (the government is better organized to receive and respond to inquiries) and the mechanisms seem to be working. He noted that Japan will be looking for assistance-including on the issue of water decontamination (10,000 tons ? of contaminated water). He said that the Japanese government would seek input from DOE and its labs, including PNNL, Idaho, Livermore, others...

--Participated in NRC meeting. Issues: remove heat from the reactor. Structural concerns for the pools. Controlling releases. Water management is a big issue. Are the Japanese workers wearing adequate protective clothing? Flooding--continued leakages? Need to establish the water level of the pools--want to get water above the rods, maybe 3-4 feet above.

From: Harrington, Holly
Sent: Tuesday, March 29, 2011 12:42 PM
To: LIA03 Hoc
Cc: Schwartzman, Jennifer; LIA02 Hoc
Subject: RE: Meeting Transcript

Nope, I got it . . . thanks

From: LIA03 Hoc
Sent: Tuesday, March 29, 2011 11:45 AM
To: Harrington, Holly
Cc: Schwartzman, Jennifer; LIA02 Hoc
Subject: RE: Meeting Transcript

Hi Holly,

I guess my earlier response didn't get delivered – we are continuing to staff the international liaison desk for at least another week, so you can send these requests to us here. In the case of this particular request, we have passed it along to Jen Schwartzman who is our IAEA desk officer.

Cheers,

Karen

From: Harrington, Holly
Sent: Tuesday, March 29, 2011 10:08 AM
To: LIA03 Hoc
Cc: Henderson, Karen
Subject: FW: Meeting Transcript

Please let me know if I should continue to use the liaison team address for OIP or direct to a person (and if, so, who is best?).

Thanks,

Holly

From: Janbergs, Holly
Sent: Tuesday, March 29, 2011 10:05 AM
To: Harrington, Holly
Subject: FW: Meeting Transcript

From: Porter, Charlene [mailto:PorterMC@state.gov]
Sent: Tuesday, March 29, 2011 10:02 AM
To: Janbergs, Holly
Subject: RE: Meeting Transcript

000183

Hi, Ms. Janbergs:

I'm looking at a statement from the IAEA yesterday calling for a high-level conference to follow up on Fukushima incident, review lessons learned, discuss strengthening nuclear safety.

Seeking NRC comment, and statement of intent to participate.

Thanks,

Charlene Porter
International Information Service
U.S. Department of State
202 6321 9918

This email is UNCLASSIFIED.

From: Janbergs, Holly [mailto:Holly.Janbergs@nrc.gov]
Sent: Tuesday, March 22, 2011 7:44 AM
To: Porter, Charlene
Subject: Re: Meeting Transcript

Ms. Porter,

A full transcript of the briefing will be posted later in the week.

Thank you,
Bethany

Beth Janbergs
Public Affairs Assistant
301-415-8211

From: LIA07 Hoc
Sent: Tuesday, March 29, 2011 4:39 AM
Cc: LIA07 Hoc
Subject: 0430 EDT (March 29, 2011) USNRC Earthquake/Tsunami Status Update
Attachments: NRC Status Update 3.29.11--0430.pdf

Attached, please find a 0430 EDT (March 29, 2011) status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

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

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

-Jim

Jim Anderson
Office of Nuclear Security and Incident Response
US Nuclear Regulatory Commission
LIA07.HOC@nrc.gov (Operations Center)
James.anderson@nrc.gov

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Search

Press Releases

Press Release (Mar 29,2011)
Plant Status of Fukushima Daiichi Nuclear Power Station (as of 4:00 PM Mar 29th)

*Updates are underlined

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down.

Unit 1(Shut down)
-Explosive sound and white smoke were confirmed after the big quake occurred at 3:36 pm Mar 12th. It was assumed to be hydrogen explosion.
-At approximately 2:30 am on March 23rd, seawater injection to the nuclear reactor through the feed water system was initiated.
-At approximately 10:50 am on March 24th, white fog-like steam arising from the roof part of the reactor building was observed.
-At approximately 11:30 am on March 24th, lights in the main control room was restored.
-We had been injecting seawater into the reactor, but from 3:37 pm on March 25th, we started injecting freshwater.
-At 8:20 am on March 29th, we switched injection of fresh water from using fire engine to temporary electrical pump.

Unit 2(Shut down)
-At approximately 6:00 am on March 15th, an abnormal noise began emanating from nearby Pressure Suppression Chamber and the pressure within the chamber decreased.
-At 6:20 pm on March 21st, white smoke was confirmed arising from the top of the reactor building. As of 7:11 am on March 22nd, smoke decreased to the level to nearly non-existent.
-We have been injecting seawater into the reactor, but from 10:10 am on March 26th, we started injecting fresh water (with boric acid).
-At approximately 4:46 pm on March 26th, the light in the main control room was restored.
-We had been injecting fresh water in to the reactor utilizing fire pump, however, we switched over to utilizing temporary electrical pump from 6:31 pm on March 27th.

Unit 3(Shut down)
-Explosive sound and white smoke were confirmed at 11:01am March 4th. It was assumed to be hydrogen explosion.
-At 8:30am on March 16th, fog like steam was confirmed arising from the reactor building.
-At approximately 6:15 am on March 17th the pressure of the Suppression Chamber has temporarily increased. We were preparing to implement measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive material to outside) in order to fully secure safety. However, at present, it is not a situation to immediately implement measures and discharge air containing radioactive material to outside. We will continue to monitor the status of the pressure of the reactor containment vessel.
-At approximately 4:00 pm, March 21st, light gray smoke was confirmed arising from the floor roof of the Unit 3 building. On March 22nd, the color of smoke changed to somewhat white and it is slowly dissipating.
-At approximately 10:45 pm on March 22nd, the light in the main control room was turned on.
-At around 4:20 pm on March 23rd, our staff confirmed light black smoke belching from the Unit 3 building. At approximately 11:30 pm on March 23rd and 4:50 am on March 24th, our employee found no signs of smoke.
-We had been injecting sea water into the reactor pressure vessel, but from 6:02 pm on March 25th, we started injecting freshwater.
-We had been injecting fresh water in to the reactor utilizing fire pump, however, we switched over to utilizing temporary electrical pump from 8:30 pm on March 28th.

Unit 4 (outage due to regular inspection)

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-At approximately 6 am on March 15th, we confirmed the explosive sound and the sustained damage around the 5th floor rooftop area of the Nuclear Reactor Building.
-On March 15th and 16th, we respectively confirmed the outbreak of fire at the 4th floor of the northwestern part of the Nuclear Reactor Building. We immediately reported this matter to the fire department and the related authorities. TEPCO employees confirmed that each fire had already died down by itself.
-At this moment, we do not consider any reactor coolant leakage inside the reactor happened.
-At 11:50 am on March 29th, lights in the main control room was restored.

Unit 5 (outage due to regular inspection)
-Sufficient level of reactor coolant to ensure safety is maintained.
-At 5 am, March 19th, we started the Residual Heat Removal System Pump (C) in order to cool the spent fuel pool.
-At 2:30 pm, March 20th, the reactor achieved reactor cold shutdown. At around 5:24 pm on March 23rd, when we switched the temporary Residual Heat Removal System Seawater Pump, it has stopped automatically. At around 4:14 pm, March 24th we replaced the pump, and restarted cooling of reactor at around 4:35 pm.
-At this moment, we do not consider any reactor coolant leakage inside the reactor happened.

Unit 6 (outage due to regular inspection)
-Sufficient level of reactor coolant to ensure safety is maintained.
-We completed the repair work on the emergency diesel generator (A).
-At 10:14 pm, March 19th, we started the Residual Heat Removal System Pump (B) of Unit 6 in order to cool the spent fuel pool.
-At 7:27 pm, March 20th, the reactor achieved reactor cold shutdown.
-In relation to the two seawater side pumps of the Residual Heat Removal System, we switched the power source from temporary to permanent at 3:38 PM and 3:42PM, Mar 25 respectively.
-At this moment, we do not consider any reactor coolant leakage inside the reactor happened.

Today's work for cooling the spent fuel pools
-At 2:17 pm on March 29th, water injection to Unit 3 by the concrete pump truck was started. We had been injecting seawater into the reactor, but hereafter we started injecting freshwater.
-We are considering further spraying subject to the conditions of spent fuel pools.

Casualty
-Presence of 2 TEPCO employees at the site is not confirmed on March 11th.
-On March 24th, it was confirmed that 3 workers from cooperative companies who were in charge of cable laying work in the 1st floor and the underground floor of turbine building were exposed to the radiation dose of more than 170 mSv. 2 of them were confirmed that their skins on legs were contaminated. After they were decontaminated, since there was a possibility of beta ray burn injury, they were transferred to Fukushima Medical University Hospital. The third worker was also transferred to Fukushima Medical University Hospital on March 25th. Later, the 3 workers were transferred to National Institute of Radiological Sciences in Chiba Prefecture. They all left the hospital on March 28th.
Regarding this event, TEPCO has reported to the related government ministries and agencies on measures to be taken to assure appropriate radiation dose control and radiation exposure related operations. We will inform the related parties of countermeasures and continue to take all possible measures to future management.

Others
-We measured radioactive materials (iodine etc.) inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is getting higher than ordinary level. As listed below, we have determined that specific incidents stipulated in article 15, clause 1 of Act on Special Measures Concerning Nuclear Emergency Preparedness (Abnormal increase in radiation dose measured at site boundary) have occurred.
·Determined at 4:17 pm Mar 12th (Around Monitoring Post 4)
·Determined at 8:56 am Mar 13th (Around Monitoring Post 4)
·Determined at 2:15 pm Mar 13th (Around Monitoring Post 4)
·Determined at 3:50 am Mar 14th (Around Monitoring Post 6)
·Determined at 4:15 am Mar 14th (Around Monitoring Post 2)
·Determined at 9:27 am Mar 14th (Around Monitoring Post 3)
·Determined at 9:37 pm Mar 14th (Around main entrance)
·Determined at 6:51 am Mar 15th (Around main entrance)
·Determined at 8:11 am Mar 15th (Around main entrance)
·Determined at 4:17 pm Mar 15th (Around main entrance)
·Determined at 11:05 pm Mar 15th (Around main entrance)
·Determined at 8:58 am Mar 19th (Around MP5)
From now on, if the measured figure fluctuates and goes above and below 500 micro Sv/h, we deem that as the continuous same event and will not regard that as a new specific incidents stipulated in article 15,

clause 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness (Abnormal increase in radiation dose measured at site boundary) has occurred. In the interim, if we measure a manifestly abnormal figure and it is evident that the event is not the continuous same event, we will determine and notify.

-The national government has instructed evacuation for those local residents within 20km radius of the periphery and evacuation to inside for those residents from 20km to 30km radius of the periphery, because it is possible that radioactive materials are discharged.
-At around 10:37 am March 21st, water spraying to common spent fuel pool and finished at 3:30 pm (conducted by TEPCO).
-At around 3:37 pm, March 24th, electricity supply to common spent fuel pool has started from external power source. At around 6:05 pm, fuel pool cooling pump was started to cool the pool.
-We found no signs of abnormal situation for the casks by visual observation during the patrol activity. A detailed inspection is under preparation.
-At Units 5 and 6, in order to prevent hydrogen gas from accumulating within the buildings, we have made three holes on the roof of the reactor building for each unit.
-In total 12 fire engines are lent for the water spraying to the spent fuel pools and water injection to the nuclear reactors by various regional fire departments* as well as Tokyo Fire Department. Also, instruction regarding the setting and operation of large scale decontamination system was provided by Niigata City Fire Headquarter and Hamamatsu City Fire Headquarter.
*: Koriyama Fire Department, Iwaki Fire Brigade Headquarters, Fire Headquarters of Sukagawa District Wide Area Fire-fighting Association, Yonezawa City Fire Headquarters, Utsunomiya City Fire Headquarters, Fire Headquarters of Aizu-Wakamatsu wide area municipal association, Saitama City Fire Bureau, and Niigata City Fire Bureau.
-By March 22nd, Units 1 through 6 were started to be energized from the external power source.
-At 3:30PM, March 27th, we found that there was water in the trenches of Units 1 to 3. The radioactive emission at the surface of the water was 0.4mSv/h for Unit 1 and over 1,000mSv/h for Unit 2. As for Unit 3, we couldn't have access to the surface because of debris. We will continue to monitor water in the trenches.
-At 12:03 pm, March 29th, when taking off the flange of the pipe to remove the residual heat in the seawater system, 3 workers from other companies received water in the pipe. Mopping up water, we confirmed no radioactive material had adhered to their bodies.
-We will continue to take all measures to ensure the safety and to continue monitoring the surrounding environment around the Power Station.

Back to page top

From: Scott, Michael
Sent: Tuesday, March 29, 2011 5:44 AM
To: RST01 Hoc
Subject: RE: USNRC Earthquake-Tsunami Update.032911.0430EDT.docx

Follow Up Flag: Follow up
Flag Status: Flagged

We in Japan believe the rationale for the unit prioritizations should be included in the report. Also, the SFP prioritizations should probably be included separately. (E.g., U-1 SFP clearly not top priority among the SFPs). Suggest we discuss during next call.

Mike

From: LIA07 Hoc
Sent: Tuesday, March 29, 2011 4:23 AM
To: Liaison Japan
Cc: LIA07 Hoc
Subject: USNRC Earthquake-Tsunami Update.032911.0430EDT.docx

Please find attached the 0430 EDT 3/29/11 NRC Status Update.

If you have any comments or edits for the next update, scheduled for 1800 EDT today, please let me know.

Thank you,

-Jim

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

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From: Vietti-Cook, Annette
Sent: Tuesday, March 29, 2011 6:24 PM
To: ET05 Hoc
Subject: FW: eWASH WH0149
Attachments: FW: eWASH WH0149

Rel

I noticed my staff did not include your email, I will inform them to include you.

From: Champ, Billie
Sent: Tuesday, March 29, 2011 12:05 PM
To: Jaczko, Gregory; Skeen, David
Cc: Batkin, Joshua; Coggins, Angela; Monninger, John; Brenner, Eliot; Hayden, Elizabeth; Borchardt, Bill; Virgilio, Martin; Weber, Michael; Svinicki, Kristine; Sharkey, Jeffry; Apostolakis, George; Sosa, Belkys; Bubar, Patrice; Magwood, William; Ostendorff, William; Nieh, Ho; Burns, Stephen; Rothschild, Trip; Doane, Margaret; Mamish, Nader; LIA02 Hoc; LIA06 Hoc; LIA03 Hoc; LIA08 Hoc; Bates, Andrew; Vietti-Cook, Annette
Subject: FW: eWASH WH0149

Rel

2000187

From: ET07 Hoc
Sent: Tuesday, March 29, 2011 11:20 PM
To: Wiggins, Jim; Morris, Scott
Subject: Turnover Procedure
Attachments: IRP063001-Turnover Proc.pdf

0001188

IRP 063001

STANDARD SHIFT TURNOVER PROCEDURE

APPROVED BY: Brian J. McDermott **EFFECTIVE DATE:** 04/24/2008

REVISION: 0

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	04/24/08	All	Initial Issue

TABLE OF CONTENTS

1.0 PURPOSE

The purpose of this procedure is to standardize the shift turnover process to enhance the exchange of information from one shift to another and to document the turnover process.

2.0 SCOPE

This procedure applies to all NRC personnel who are responding to an incident that is of sufficient duration that a transfer of responsibility from one shift to another is required. Recognizing that some response activities are less formal than others, this procedure is worded using general terms such as "supervisor / manager" and "incident responder" instead of listing specific response positions.

3.0 BACKGROUND

Incident response is typically a 24-hour operation. This implies the need for staffing multiple shifts. While different people staff different shifts, some work tasks span more than one shift. Thus, more than one person on more than one shift will be working on different parts of the same task. The transfer of task responsibility from one shift to another is known as "shift turnover". Shift turnover is frequently the locus of many problems and errors.

Conceptually, shift turnover can apply in three different situations. These are:

- when initially staffing a facility and an incoming shift of workers must assume all responsibilities as the facility is made operational,

- when operations are required on multiple shifts and an outgoing shift must turn over job and task responsibilities to an incoming shift, and

- when a worker's job responsibilities must be assumed by another person before the end of the first worker's shift such as a transfer of command or when an on-the-job illness, personal emergencies, etc., require a worker to leave before the scheduled quitting time.

This procedure will concentrate on the most common shift turnover condition -- an incoming shift must relieve an outgoing shift. Except for the shift turnover meeting, all of the components of the shift turnover process are applicable to other turnover situations as well.

Effective shift turnover depends on three basic elements:

- The outgoing worker's ability to understand and communicate important elements of the job or task being turned over to the incoming worker.

- The incoming worker's ability to understand and assimilate the information being provided by the outgoing worker.

- A formalized process for exchanging information between outgoing and incoming workers and a place for such an exchange to take place.

Two characteristics must be present for effective shift turnover to take place: ownership and formality. Individual workers must assume personal ownership and responsibility for the tasks they are performing during any response activity, including the conduct of a shift turnover.

Formality exists when shift turnover procedures are part of written operating rules and responders are committed to ensuring that cross-shift information is effectively delivered.

An effective shift turnover process is composed of at least four components:

- Turnover walk-down

- Turnover checklists

- Work status markers

- Shift turnover meetings

3.1 Walk-downs

Individual workers must exchange detailed information related to individual jobs and tasks. The most effective way to communicate this information is for the incoming and outgoing workers to go over task issues while examining the actual work location(s) and component(s). A mutual inspection and discussion of this nature is called a "walk-down".

An important aspect related to individual shift turnover is when it actually begins. The common perception is that shift turnover occurs only at the transition period between shifts. However, shift turnover should really begin as soon as the previous shift starts. Throughout their shift, workers should be thinking about what information should be included in their walk-down with their counterpart in the succeeding shift. Attachment 1 provides a reasonable topical outline with which to structure a turnover walk-down.

3.2 Checklists

Walk-down information exchange should be structured with a checklist. These checklists should be written documents, i.e., all turnover information should be written on a checklist form and the filled-out form should be passed from the outgoing to the incoming worker. Such written checklists can also be used to pass shift information to supervisors.

3.3 Work Status Markers

A serious type of shift turnover error can occur when an incoming worker assumes that the outgoing worker has completed a job when it has not, in fact, been completed. A simple way to address this potential error is to provide explicit work status markers that can be affixed to a work product.

This can be accomplished through the use of cover-sheets, file trays, binders, etc. that separate "work complete" and "work in progress" items. As an example, when a worker is assigned the task of performing steps in a procedure checklist, a cover-sheet indicating "work in progress" should be attached to the checklist. When the worker completes all the steps in a procedure checklist, he or she places the "work complete" cover-sheet on the procedure checklist. If a shift ends before the work is complete, then the "work in progress" cover-sheet is left on the checklist.

This technique will prevent an incoming worker from assuming that work on a particular procedure or task is complete, when, in fact, it is still in progress. This information should be transmitted during the walk-down discussion.

3.4 Shift Turnover Meetings

Outgoing and incoming supervisors should meet with the outgoing and incoming workers as a group. The purpose of this meeting is to summarize the progress of the outgoing shift and acquaint the incoming workers with any general considerations that might affect their tasks.

During response operations, some responders may have been dispatched to the scene of the event. If they are not part of a formal Site Team, they typically report to the regional office overseeing the response. When not part of a Site Team, these workers are to conduct turnover remotely with the Base Team.

During this combined shift turnover meeting, supervisors should make general announcements related to policies, work schedules, safety issues, etc. Both incoming and outgoing workers should raise issues they want addressed in a general forum.

4.0 INSTRUCTIONS

NOTE: Oncoming incident responders are expected to arrive at their assigned location in time to support shift turnover in a timely manner. Additional time should be given when reporting for a first shift to permit discussion of administrative issues / processes.

NOTE: The checklist in Attachment 1 is considered a guide. It can be modified as needed to address a specific response.

4.1 Incident responders are expected to arrive 30 minutes prior to the shift start time.

4.2 Conduct individual shift turnover using the checklist in Attachment 1 as a guide.

4.3 Attend shift turnover meeting conducted by the supervisor / manager.

4.4 Report shift turnover complete to supervisor / manager.

4.5 Provide shift turnover documents to the supervisor / manager.

4.6 At the start of a shift, incident responders should prepare a blank turnover checklist (Attachment 1) for the next shift.

4.7 Throughout the current shift, incident responders should routinely review and update the checklist (Attachment 1) for items to discuss during shift turnover.

5.0 DEFINITIONS

None.

6.0 REFERENCES

None.

END

Attachment 1 - Non-Supervisory Incident Responder Walk-down Checklist		Page ___ of ____
Shift Start Date:	Shift Start Time:	Response Title:
Off-going Individual (Printed Name):		Signature:
On-coming Individual (Printed Name):		Signature:
Tasks in Process:		
Checklists / Procedures in Process:		
Procedure:	Last Step Completed:	Next Step:
Problems Encountered:		
Outstanding Issues:	Status:	Solved?

Attachment 1 - Non-Supervisory Incident Responder Walk-down Checklist		Page ___ of ____
Shift Start Date:	Shift Start Time:	Response Title:
Off-going Individual (Printed Name):		Signature:
On-coming Individual (Printed Name):		Signature:
Unusual Occurrences:		
Resources Required / Available:		
Routine / On-going Communications:		
Other Turnover Items:		

Turnover Handshake:	
Initial Completion	Turnover Task
	Off-going Incident Responder Logged off of Computers
	On-coming Incident Responder Able to Log into Computers
	On-coming Shift Acknowledges Receipt of Keys, Combinations, Access Codes, Etc.
	Off-going Incident Responder Has Properly Transferred / Controlled / Secured Any Classified / Safeguards / Sensitive Information Used or Received During the Shift.

From: Hoc, PMT12
Sent: Tuesday, March 29, 2011 9:08 PM
To: PMT03 Hoc
Subject: FW: Info
Attachments: BG_IncidentResponseOPAedit.SKMedit.docx; th33.riccombinedpresentation.final.pptx

---

From: Mroz (Sahm), Sara
Sent: Tuesday, March 29, 2011 8:43 PM
To: Hoc, PMT12
Subject: Info

Here are the slides in electronic version. Also, the Incident Response backgrounder that I was telling you about earlier …
-Sara

Sara K. Mroz

Communications and Outreach
Office of Nuclear Security and Incident Response
US Nuclear Regulatory Commission
301-415-1692 (direct)
sara.mroz@nrc.gov

0002 189

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RIC 2011

US NRC and Federal Incident Response During Real World Events and Exercises

March 10, 2011

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RIC 2011
NRC Incident Response

Jason Kozal

Office of Nuclear Security and Incident Response

March 10, 2011

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Office of Nuclear Security & Incident Response (NSIR)

Mission Statement

- To prevent nuclear security incidents and respond to safety and security events

Vision Statement

- To be a valued partner in Homeland Security and Federal Emergency Response

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Response Plans

- National Response Framework
- Nuclear / Radiological Annex (of NRF)
- NRC Incident Response Plan (NUREG-0728)
- 24/7 Emergency Operations Center
- Exercises, training, and stakeholder outreach

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NRC Responsibilities

- Assess plant conditions
- Evaluate Protective Action Recommendations
- Support off-site officials
- Keep other agencies informed
- Keep news media informed

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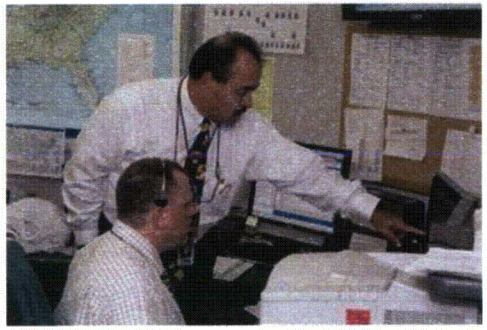
NRC's Response Organization



← HQ Operations Officers (HOO)

Executive Team →

← HQ and Regional Assessment Teams

Site Team →

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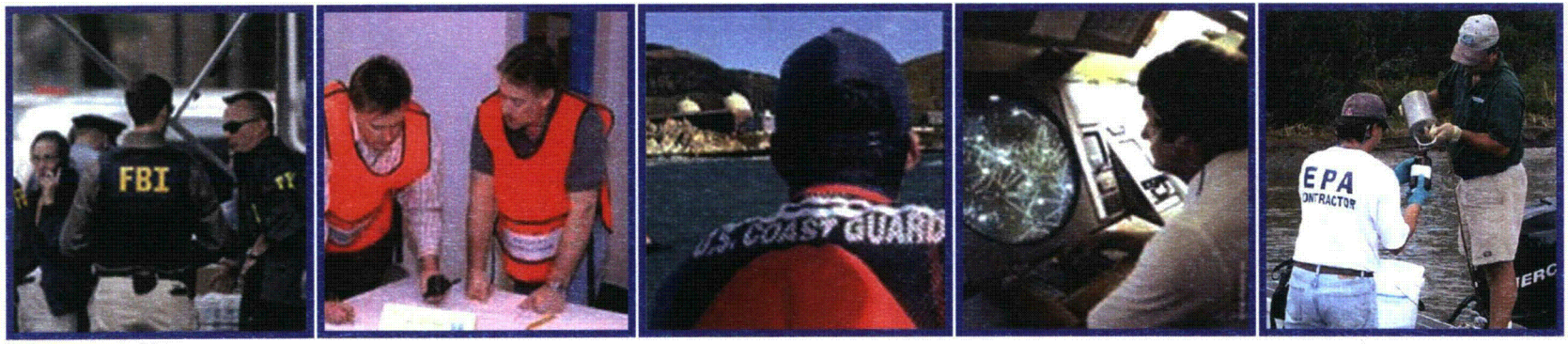
Coordination With Other Agencies

- Department of Defense
- Department of Justice
- Environmental Protection Agency
- Federal Emergency Management Agency
- Department of Energy
- Department of Homeland Security
- Federal Aviation Administration
- States / Locals



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Classification of Emergencies

- Notification of Unusual Event
  - An event that indicates potential degradation in the level of safety of the plant
- Alert
  - Loss of a vital system or barrier
- Site Area Emergency
  - Loss of a vital safety function
- General Emergency
  - Severe core damage accident

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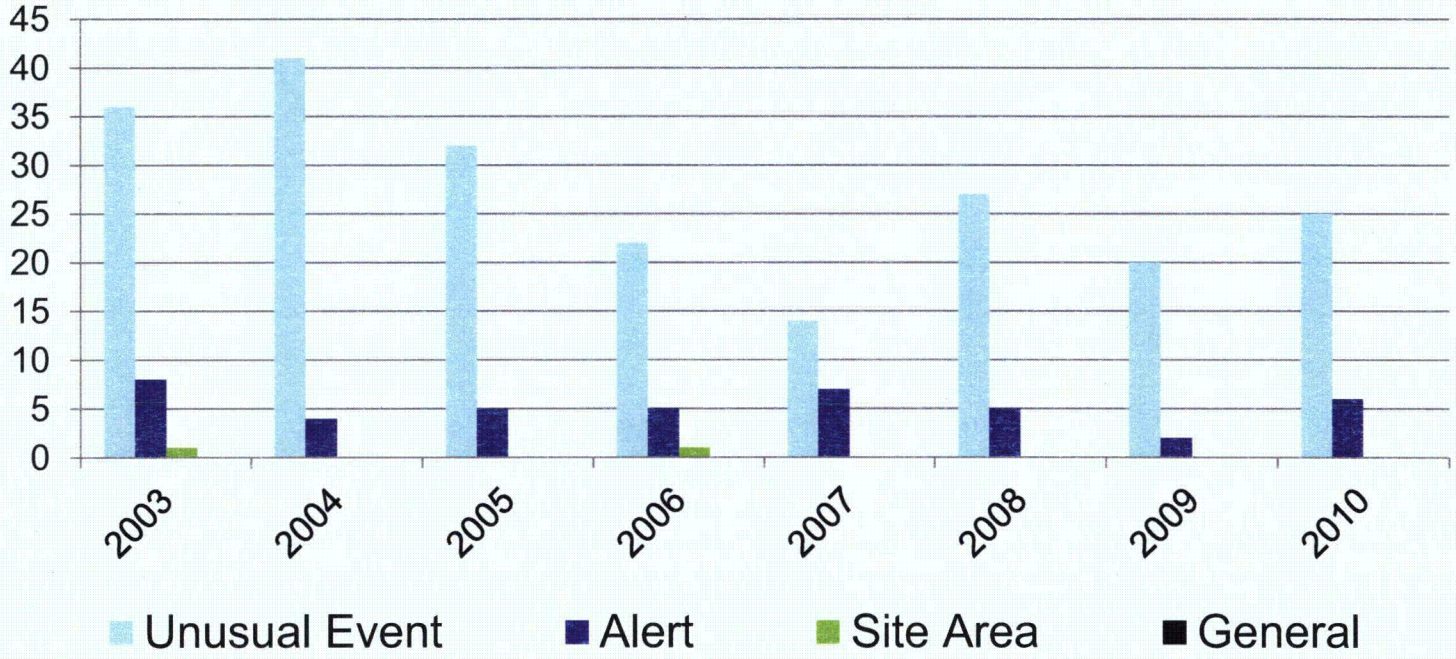
Declared Emergencies



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NRC Response Modes

- Based on NRC's independent assessment:
  - Normal Mode
  - Monitoring Mode
  - Activation Mode
  - Expanded Activation Mode

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Monitoring Mode

- Regional staff monitors event, communicates with licensee and resident inspectors as needed
- HQ supplies technical assistance and project management support as requested by region
- Commission and senior managers receive regular status briefings

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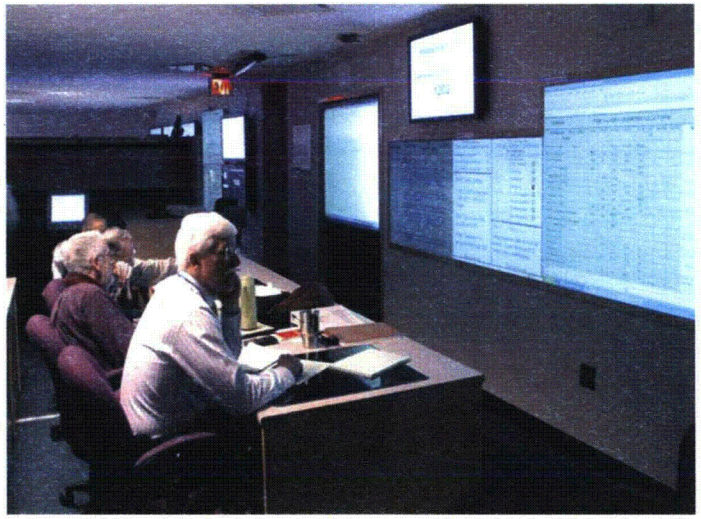
Activation Mode

- HQ musters necessary Reactor Safety, Protective Measures, and Liaison personnel led by Executive Team (ET)
- Region organizes and prepares to dispatch Site Team (should one be needed) and supports HQ
- Commission and senior NRC managers kept informed via regular status briefings from ET members



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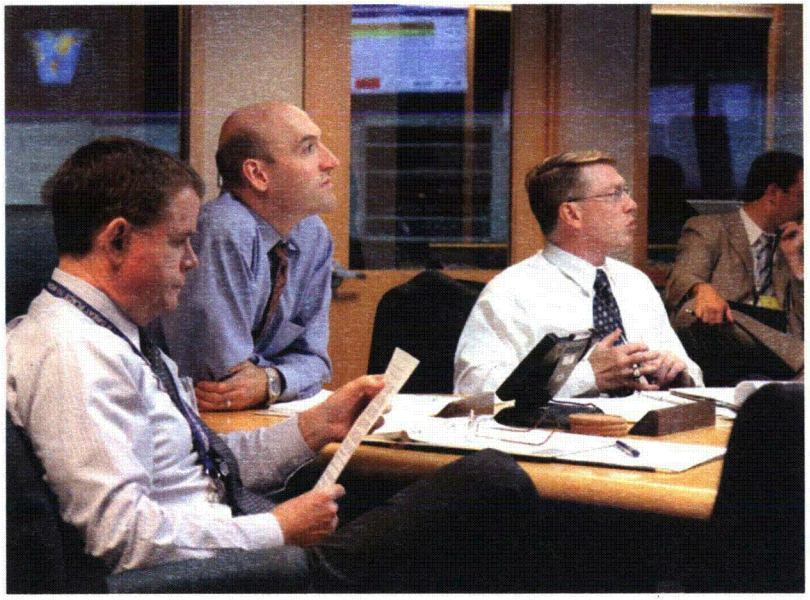
Expanded Activation Mode

- Full Incident Response Organization assembled
- Region may dispatch Site Team for on-site assessment and face-to-face coordination with licensee, state and Federal responders



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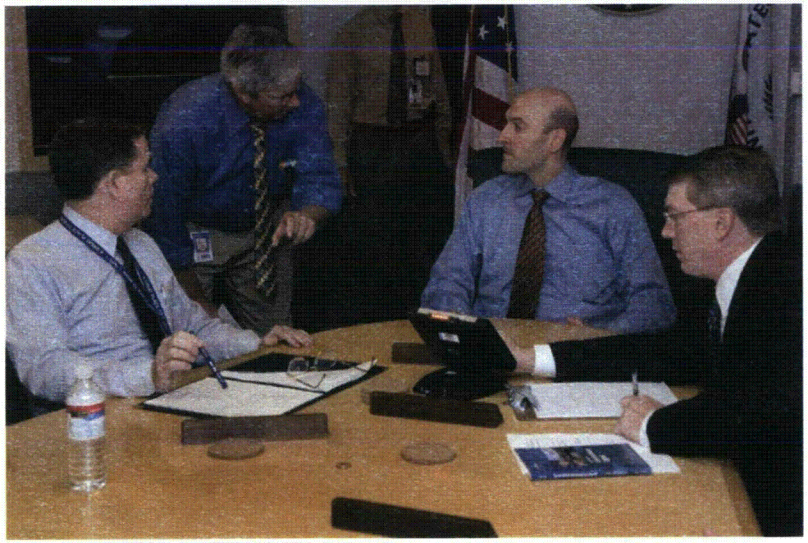
Expanded Activation Mode



- NRC Chairman may delegate specific authorities to the NRC Director of Site Operations
- Chairman retains overall lead for NRC response

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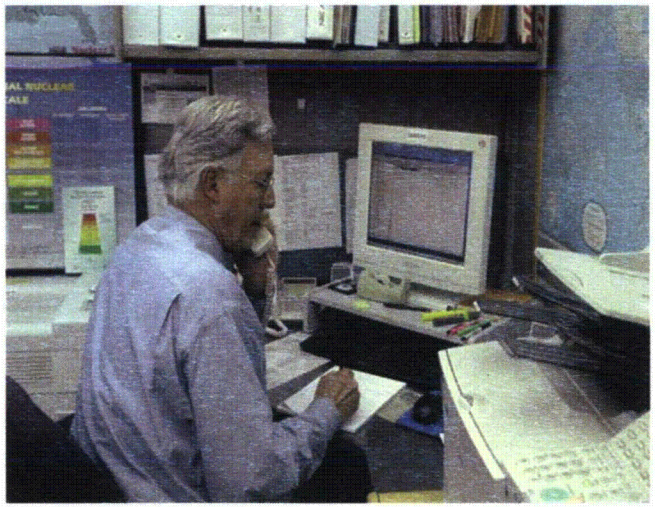
Operations Center Staffing

- HQ Operations Officers and Emergency Response Officers staff the HQ Operations Center 24/7 to receive and assess all incoming information, coordinate event-related communications, and facilitate fast startup of NRC incident response organization if conditions warrant



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NRC Executive Team

- Directed by NRC Chairman or another Commissioner
- Assisted by Executive Director for Operations and other senior managers

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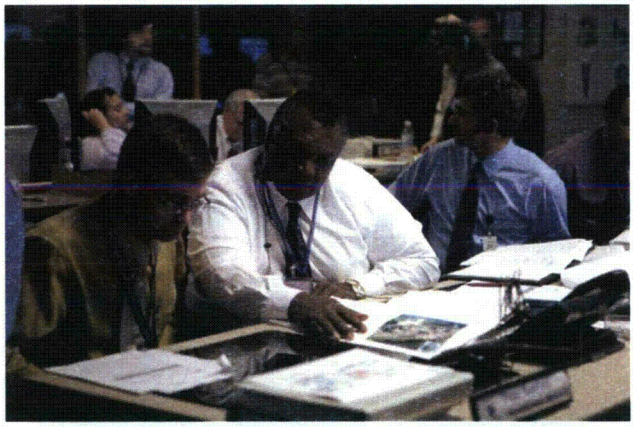
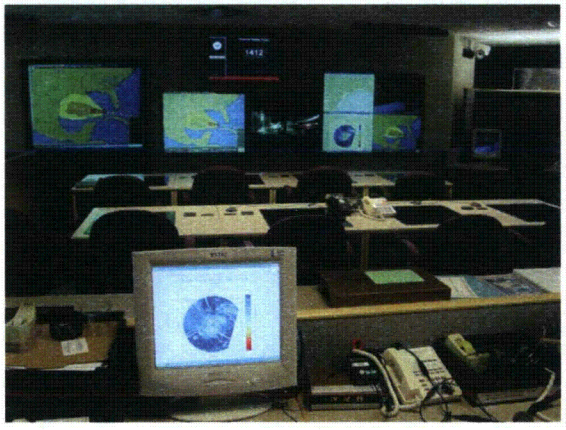
Assessment Teams

- Reactor Safety Team
- Fuel Cycle Safety Team
- Safeguards Team
- Protective Measures Team





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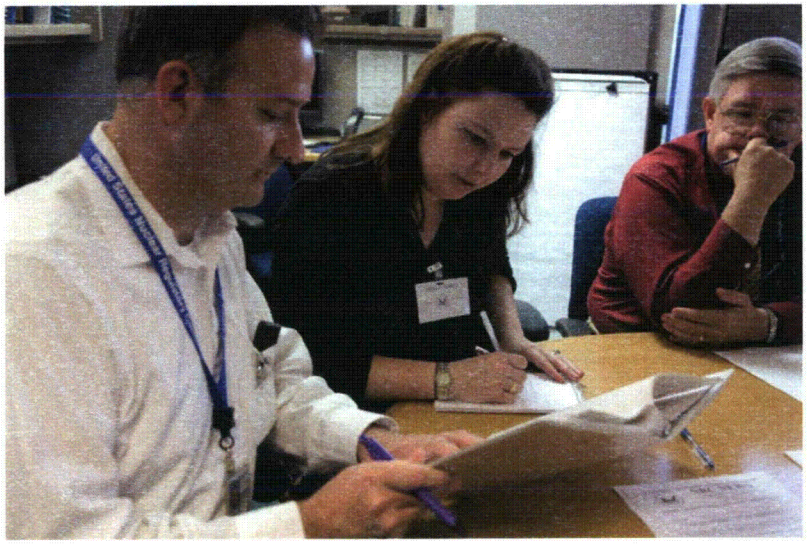
Support & Communications Teams



- Status Officer Team
- Liaison Team
- News Center Team
- Operations Support Team

Federal Emergency Response and Recovery

FEMA

Harry E. Sherwood
Branch Chief
Technological Hazards
FEMA Region IX

Authorities

- Robert T. Stafford Disaster Relief and Emergency Assistance Act (as amended)

FEMA

Emergency Response

- The National Response Framework
- Emergency Support Functions
- Incident-Specific Annexes
- Nuclear/Radiological Incident Annex

FEMA

Federal Response

- Support Teams
- Incident Management Assistance Teams
- State Liaisons
- Site Response

FEMA

Declarations

- Emergency Declaration
- Major Disaster Declaration

FEMA

Other Federal Authorities

- U.S. Small Business Administration
- U.S. Department of Agriculture
- U.S. Department of Transportation

FEMA

Stafford Act Declarations

- Governor's Request
- Preliminary Damage Assessment
- Recommendation by FEMA
- Presidential Declaration

FEMA

Disaster Officials

- Federal Coordinating Officer (FCO)
- State Coordinating Officer (SCO)
- Disaster Recovery Manager (DRM)
- Governor's Authorized Representative (GAR)

FEMA

Individual Assistance

- Temporary Housing
- Grants

FEMA

Public Assistance

- Emergency Debris Removal
- Emergency Protective Measures
- Repair/Restoration of Public Facilities

FEMA

Other Disaster Assistance

- Hazard Mitigation Grant Program
- Disaster Unemployment Assistance
- Crisis Counseling

FEMA

FEMA

Consequence Management (CM) Radiological Response

Federal Incident Response Panel, Regulatory Information Conference
March 10, 2011

Alan Remick

Emergency Response Manager
Office of Emergency Response, DOE/NNSA

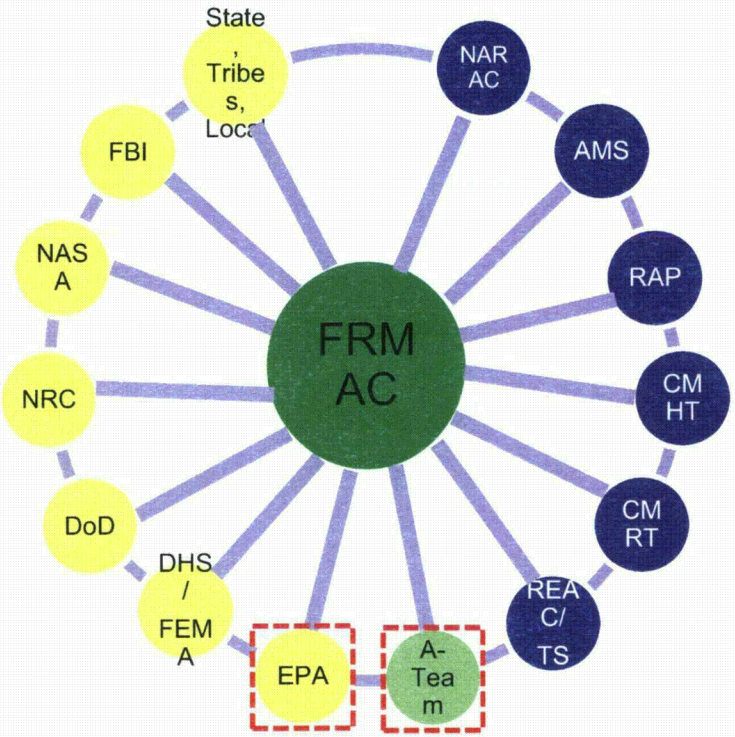
CM Mission

- Provide timely, high-quality predictions, measurements, analyses, and assessments to promote efficient and effective emergency response for the protection of the public from the consequences of nuclear or radiological incidents.
- Mission space includes any deliberate or accidental incident that results in a real, potential, or perceived release of radioactive material that exceeds the capacity of local responders (e.g. nuclear detonation, RDD, nuclear facility accident, weapon accident).

Basis of CM Response

- U.S. "National Response Framework, Nuclear/Radiological Response Annex" charges DOE with initial leadership.
- The Federal Radiological Monitoring and Assessment Center (FRMAC) is established in response to a request for assistance.
- FRMAC coordinates all federal off-site radiological monitoring and assessment efforts.
- FRMAC adheres to U.S. "National Incident Management System" principles.

FRMAC Integration



- DOE has initial lead. EPA leads later phases of response.
- A-Team not part of FRMAC, but closely tied to it. A-Team recommendations based on FRMAC products.

DOE CM Assets

- Modeling
  - National Atmospheric Release Advisory Center (NARAC)
- Radiation Monitoring (includes sampling & analysis)
  - Consequence Management Home Team (CMHT)
  - Aerial Measuring System (AMS)
  - Consequence Management Response Team (CMRT)
  - Radiological Assistance Program (RAP)
- Radiation Medicine
  - Radiation Emergency Assistance Center/Training Site (REAC/TS)

EPA Response Role

- Provide overall response coordination (NCP/ESF#10)
- Serve as the lead technical agency under the NRF's Nuclear/Radiological Incident Annex if unowned/unlicensed sources or foreign incidents with impacts on the U.S.
- Assist DOE (in the emergency and intermediate phase) and lead the Federal Radiological Monitoring and Assessment Center (FRMAC) in the long-term phase
- Perform and coordinate radiological monitoring and assessment using "Special Teams" with emergency response expertise to support environmental monitoring (ground and aerial), sampling, and lab analysis
- Develop Protective Action Guides (PAGs)

The Advisory Team for Environment, Food, and Health (A-Team)

- Comprised principally of EPA, USDA, CDC, FDA (*and other Federal agencies as needed*).
- Provides coordinated advice and recommendations to the State, Coordinating Agency, and DHS concerning environmental, food, and health matters.
- Does not make policy decisions or protective action decisions for States and locals, only recommendations
- Data and assessments are provided by FRMAC.

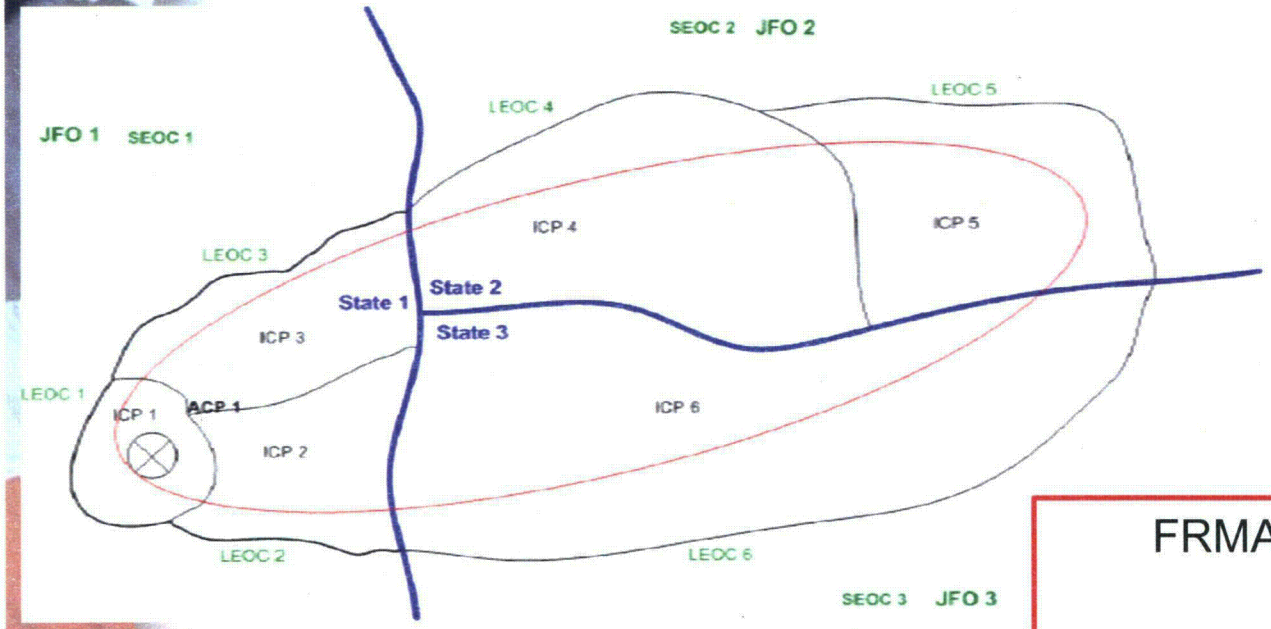
Other DOE Response Capabilities

- Operational Guidelines & Computer codes
  - Facilitate decisions on worker and public protective actions (e.g. re-occupation of buildings)
  - Piloted in Empire09 (DOE) and Liberty RadEx (EPA)
  - For more information: http://ogcms.energy.gov/
- Transportation Emergency Preparedness Program
  - Provides access to plans, training, and technical assistance to safely, efficiently, and effectively respond to a radiological transportation accident
  - For more information: http://www.em.doe.gov/otem

Effective Response is Based on Close Collaboration with Many Agencies

- Early Phase (~first days): protection of public from future exposures
- Initial modeling results (Federal)
- Initial field measurements from field teams (local)
- Initial protective action recommendations (local & state)
- Intermediate Phase (days-weeks): relocation considerations
- Models used to predict downwind impacts where data are not available to guide sampling (Federal)
- Updated model predictions refined based on additional field data (Federal, state, local))
- Characterization of contamination and relocation areas increasingly based on field measurements and need for modeling diminishes (Federal)
- Event-specific specialized plots (e.g. projection of potential food contamination areas to guide sampling of crops) (Federal)
- Advisory Team refines relocation area projections based on integrated data (Federal)
- Late Phase (weeks-years): recovery and restoration
- Advisory Team utilizes field sampling to determine whether interdiction of crops is necessary (Federal)
- Develop decontamination and restoration plans (Federal, state, local)
- Modeling support concludes

Complexity of Response Support



Deposition footprint
State boundary
SEOC: State Emergency Ops Center
LEOC: Local Emergency Ops Center
ACP: Area Command Post
ICP: Incident Command Post
JFO: Joint Field Office

FRMAC: One Plume - One Response

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RIC 2011
US NRC and Federal Incident Response During Real World Events and Exercises

Questions and Answers

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

BACKGROUNDER

Office of Public Affairs
Phone: 301-415-8200
Email: opa.resource@nrc.gov

Incident Response

NRC Response to Emergency Events

In the unlikely event of a serious emergency involving an NRC-license facility or material, the agency is prepared to respond immediately. Trained personnel continuously monitor licensee activities and are available to take information about a variety of threats from other federal agencies. In addition, specially trained responders in a variety of disciplines are always on call and able to respond quickly. Equipment, policies, and procedures for these response activities are regularly tested, re-evaluated, and updated so that the agency is ready at all times.

If a significant incident occurs, the NRC activates its Headquarters Operations Center (HOC) and one or more of its four Regional Incident Response Centers (IRCs). Specially trained and qualified personnel work in the HOC at all times. They take emergency information from a licensee and immediately notify key NRC managers and staff. These managers and staff are trained as responders in their areas of expertise and assemble in the HOC and IRC to support NRC response activities. The responders' activities are defined by the agency's incident response program.

Incident Response Program

The NRC incident response program uses a flexible system to tailor its response to the significance of an event. In the different modes of the system, NRC responders' activities change in order to best support the event. For example, in an event involving an NRC-licensed facility, the agency might decide to move from its "normal" response mode to "monitoring mode". In this level of response, key regional experts staff the appropriate IRC to respond to the event. If necessary, the NRC could then enter "activation mode". In this mode, the necessary safety, security, and preparedness specialists report to the HOC. The final emergency response mode is called "expanded activation". It is entered when an incident's severity or uncertainty warrants sending a team of NRC experts directly to the site of the event. Once the team arrives at the site and assesses the situation, oversight of the incident may be transferred from Headquarters to the Site Team.

When the NRC incident response program is activated to any mode beyond normal, the agency notifies skilled and trained responders who assemble and begin working directly with various counterparts. In the example of an event involving an NRC-licensed facility, some responders will work directly with the nuclear power plant operators to assess the condition of the plant and monitor their actions. Other NRC experts will evaluate protective action recommendations made by the licensee to state and local officials. These protective actions may include sheltering, evacuation, or the use of potassium iodide where appropriate. Other NRC responders will relay information about the incident to the media, states, local governments, tribal entities, other federal agencies, Congress, the White House, and international governments.

Although the licensee has primary responsibility to stabilize their facility or material and return it to a safe condition, the NRC Chairman has the authority to intervene and direct the licensee's on-site response if necessary to protect public health and safety and the environment.

Equipment, policies, and procedures for response activities are regularly tested, reevaluated, and updated so that the agency is ready at all times. The NRC tests itself many times each year with drills and exercises that mimic safety or security incidents and test the response plans of the agency and licensed facilities. In addition to full-scale exercises, the HOC and IRCs are periodically activated throughout the year for small emergencies or potential emergencies.

Licensee Response

NRC regulations require licensees to have plans for responding to incidents, protecting against radiological releases, and reducing the impacts of incidents. The NRC reviews these plans on a regular basis and tests them through exercises.

If a significant incident or emergency occurs, licensees are required to take immediate actions to ensure safety and security. They must also provide timely notifications to state and local government authorities, and recommend how to protect the public from potential consequences.

Based on NRC regulations, licensees classify incidents according to the plant conditions and the level of risk to the public. Nuclear power plants, for example, use four emergency classifications:

- **Notification of Unusual Event** - Under this category, events are in process or have occurred that indicate a potential decline in the level of safety of the plant. No release of radioactive material requiring offsite response or monitoring is expected at that time.

- **Alert** - If an alert is declared, events are in process or have occurred that involve an actual or potentially substantial decline in the level of plant safety. However, any release of radioactive material is expected to be only a small fraction of the Environmental Protection Agency (EPA) protective action guidelines.

- **Site Area Emergency** - A site area emergency involves events in process or which have occurred that result in actual or likely a major failure of the plant's ability to protect the public. Any releases of radioactive material are not expected to exceed the EPA guidelines except near the site boundary.

- **General Emergency** - A general emergency involves actual or imminent severe damage or melting of radioactive fuel in the reactor core with the potential for loss of containment integrity. Radioactive releases during a general emergency can be expected to exceed the EPA guidelines beyond the immediate site area.

State and Local Government Response

State governments, and in some locations, local and/or tribal governments, develop and implement emergency plans for incidents involving an NRC-licensed facility or material. Although the licensee is the primary party responsible for what occurs *onsite,* state and local governments are responsible for protecting life, property, and the environment *offsite.*

Through drills and exercises, state and local governments work closely with the Federal Emergency

Management Agency, and when appropriate, the NRC, to ensure that their plans and procedures will protect their community's health and safety.

During an emergency incident, the NRC communicates directly with state and local governments to share information. The NRC may also offer technical advice and assistance if requested.

Federal Response

The NRC works within the National Response Framework to respond to events. The framework guides the nation in how to respond to complex events that may involve a variety of agencies and hazards.

Under this framework, the NRC retains its independent authority and ability to respond to emergencies that involve NRC-licensed facilities or materials. The NRC coordinates the federal technical response to an incident that involves one of its licensees.

The NRC may request the support of the Department of Homeland Security (DHS) in responding to an emergency at an NRC-licensed facility or involving NRC-licensed materials. DHS may lead and manage the overall federal response to an event, according to Homeland Security Presidential Directive-5. In this case, the NRC would perform an important role in providing technical expertise and helping share information among the various organizations and licensees.

February 2011

From: Michael W. Chinworth <michael-chinworth@jnes-usa.org>
Sent: Wednesday, March 30, 2011 2:43 PM
To: Foggie, Kirk; Ramsey, Jack; Emche, Danielle; LIA01 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: NISA instructions for utility review of severe accident response measures
Attachments: 20110330004.pdf

All:

NISA has released special instructions to all utilities to carry out immediate steps in the aftermath of the problems at the Fukushima Daiichi units. In general, NISA calls for:

1) Inspections of mitigating measures in response to sever accidents such as the recent tsunami.
2) Review of emergency plans and drills/practice procedures for responding to a station blackout, loss of spent fuel pool cooling capability and backup seawater cooling capability.
3) Assurance of backup power in response to a station blackout.
4) Review of measures for restoring residual heat removal in the event of a severe accident.
5) Review of capabilities for assuring spent fuel pool water supplies in response to failure of normal supply systems.
6) Other site-specific measures.

Utilities have been instructed to submit written evaluations in these areas to NISA as soon as possible. NISA will review these reports by the end of April.

The NISA press release and summary of steps to be taken is attached. The original can be found at:

http://www.meti.go.jp/press/20110330004/20110330004.pdf

We will send METI's official English language translation as soon as it is available.

--
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202-223-9585 (fax)

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平成２３年３月３０日
原子力安全・保安院

福島第一・第二原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施について

原子力安全・保安院は、今般の福島第一原子力発電所事故に引き続き全力で対応しつつ、今後、今般の津波の発生メカニズムなどを含め、当該事故の全体像を把握、解明し、抜本的な対策を講じることとします。

一方、現在、稼働中または起動を予定する原子力発電所がある中で、福島第一原子力発電所では津波の影響により全交流電源を喪失し、冷却機能が失われたことなど、現在判明している知見に基づき、放射性物質の放出をできる限り回避しつつ冷却機能を回復することを可能とするため、別紙１のとおり緊急安全対策を講じることとします。

このため、福島第一原子力発電所において、緊急時の電源が確保できなかったことや、使用済燃料プールへの冷却水を機動的に供給することができなかったことなどを踏まえ、同様な事態の発生を防止する具体的な緊急安全対策について、別紙２のとおり、経済産業大臣から指示するとともに、緊急安全対策の実効性を担保するために省令改正を行いました。

今後、速やかに事業者からの実施状況の報告を求め、検査等により厳格に確認することとします。

別紙１：福島第一原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施について

別紙２：平成２３年福島第一・第二原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施について（指示）

（本発表資料のお問い合わせ先）
原子力発電検査課長　山本　哲也
担当者：野口、熊谷、忠内
電　話：０３－３５０１－１５１１（内線）４８７１
０３－３５０１－９５４７（直通）

（別紙１）

福島第一原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施について

平成２３年３月３０日
原子力安全・保安院

今般の東北地方太平洋沖地震に起因する福島第一原子力発電所事故は、我が国において未曾有の原子力災害をもたらしており、現在、施設において、事業者である東京電力は勿論のこと、国、地方自治体、事業者等の関係機関が一体となって、この災害規模を押さえるべく懸命に努力しているところ。

原子力安全・保安院においては、当該事故対策に引き続き全力で対応しつつ、今後、今般の津波の発生メカニズムを含め、事故の全体像を把握し、分析・評価を行い、これらに対応した抜本的な対策を講じる。

一方、今回のような巨大地震に付随した極めて大きな津波は、その発生頻度は相当に小さいもののそれによる原子力発電所への影響が甚大となる可能性があることに鑑み、福島第一、第二原子力発電所以外の原子力発電所について、先ず、現在判明している知見に基づき、放射性物質の放出をできる限り回避しつつ、冷却機能を回復することを可能とするための緊急安全対策を講じることとする。緊急安全対策に電気事業者等が適切に取り組み、原子力安全・保安院がこれを検査等により確認することにより、津波による全交流電源喪失等から発生する炉心損傷等を防止し、原子力災害の発生を防止する。なお、原子力安全・保安院は、検査等により継続的に実施状況を確認し、事業者に対し必要な改善を促すことにより、緊急安全対策の信頼性向上について継続的に取り組む。

１．緊急安全対策の内容

福島第一原子力発電所事故は、巨大地震に付随した津波により、

１）所外電源の喪失とともに緊急時の電源が確保できなかったこと、

２）原子炉停止後の炉心からの熱を最終的に海中に放出する海水系施設、若しくはその機能が喪失したこと、

３）使用済み燃料貯蔵プールの冷却やプールへの通常の所内水供給が停止した際に、機動的に冷却水の供給ができなかったこと、

が事故の拡大をもたらし、原子力災害に至らせ、若しくは災害規模を大きくした直接的要因と考えられる。

このため、直ちに省令改正（保安規定における要求事項）等を行い、全ての原子力発電所（福島第一、第二原子力発電所を除く。）に対して、以下の安全対策の強化を求める。

●規制上の要求

津波により３つの機能（全交流電源、海水冷却機能、使用済み燃料貯蔵プールの冷却機能）を全て喪失したとしても、炉心損傷や使用済み燃料の損傷を防止し、放射性物質の放出を抑制しつつ冷却機能の回復を図ること。

●具体的要求事項

① 緊急点検の実施

津波に起因する緊急時対応のための機器、設備の緊急点検の実施

② 緊急時対応計画の点検と訓練の実施

全交流電源喪失、海水冷却機能喪失及び使用済み燃料貯蔵プールの冷却機能喪失を想定した緊急時対応計画の点検と訓練の実施

③ 緊急時の電源確保

所内電源が喪失し、緊急時電源が確保できない場合に、必要な電力を機動的に供給する代替電源の確保

④ 緊急時の最終的な除熱機能の確保

海水系施設、若しくはその機能が喪失した場合を想定した、機動的な除熱機能の復旧対策の準備

⑤ 緊急時の使用済み燃料貯蔵プールの冷却確保

使用済み燃料貯蔵プールの冷却やプールへの通常の所内水供給が停止した際に、機動的に冷却水を供給する対策の実施

⑥ 各サイトにおける構造等を踏まえた当面必要となる対応策の実施

２．緊急安全対策の実施

全ての原子力発電所を対象に、電気事業者等に対して上記の緊急安全対策に直ちに取り組むよう求める。

これらの緊急安全対策の実施状況（今後取り組む計画を含む。）を原子力安全・保安院に早急に提出するよう求める。

３．原子力安全・保安院による確認等

原子力安全・保安院においては、電気事業者等から提出される緊急安全対策の実施状況の妥当性を厳格に確認する。

このため、緊急安全対策を盛り込んだ保安規定の認可申請を受け、その妥当性を厳格に審査し認可するとともに、各発電所毎の緊急安全対策の実施状況を検査等により厳格に確認する。

原子力安全・保安院における緊急安全対策の実施状況の確認は、事業者からの緊急安全対策が提出された後、概ね１ヶ月（４月中）を目途に完了させる。

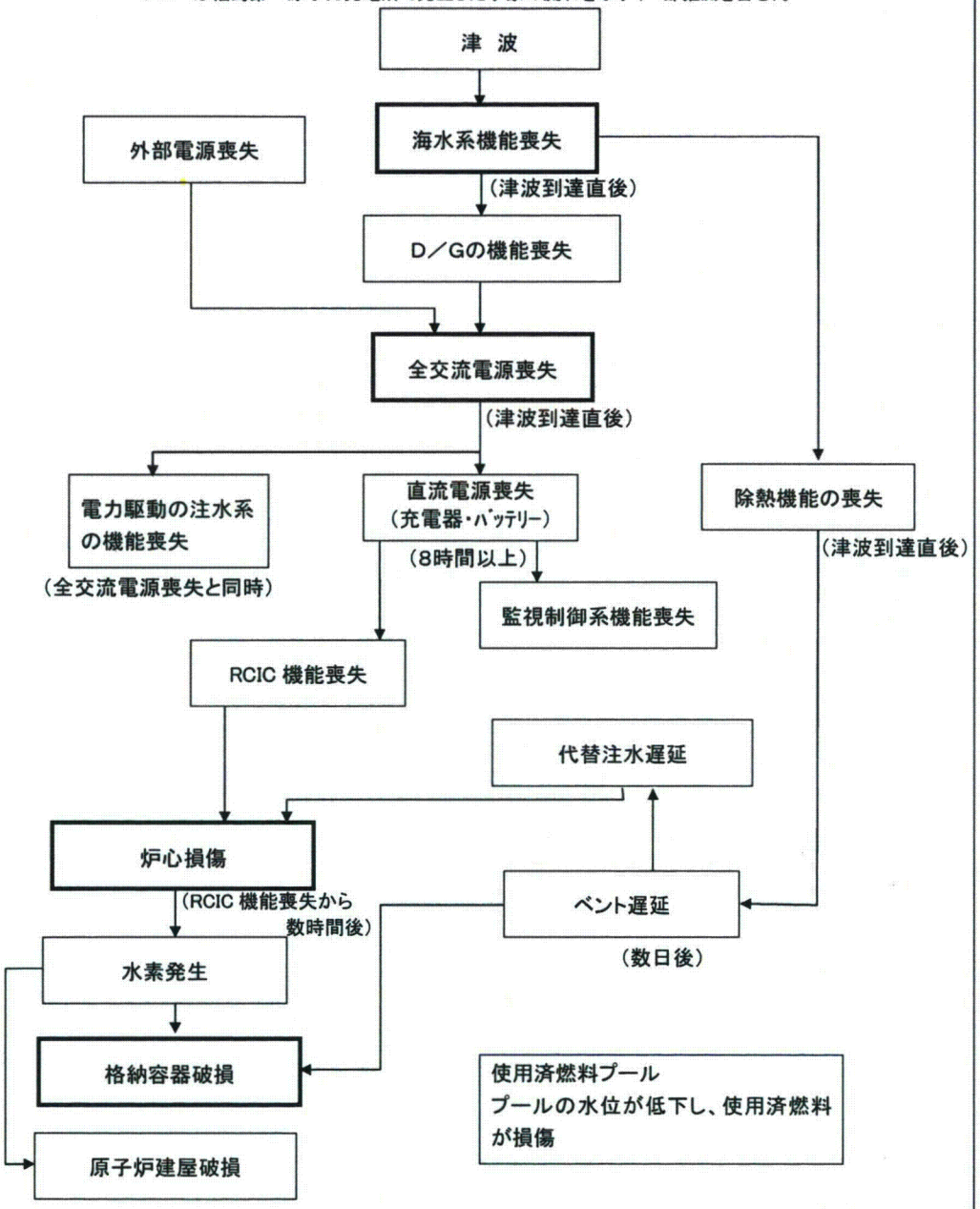
福島第一原子力発電所事故を踏まえた対策

フェーズ	緊急安全対策	抜本対策
	短　　期	中　　長　　期
完了見込み時期	1ヶ月目途 （4月中旬頃）	事故調査委員会等の議論に応じて決定
目　標 （要求水準）	津波により①全交流電源、②海水冷却機能、③使用済燃料貯蔵プール冷却機能を喪失したとしても炉心損傷、使用済み燃料損傷の発生を防止	今回の災害をもたらした津波を踏まえて設定される「想定すべき津波高さ」を考慮した災害の発生を防止
具体的対策の例	【設備の確保】 ・電源車の配備　（原子炉や使用済み燃料プールの冷却用） ・消防車の配備　（冷却水を供給するためのもの） ・消火ホースの配備　（淡水タンクまたは海水ピット等からの給水経路を確保するためのもの） 等 【手順書等の整備】 ・上記の設備を利用した緊急対応の実施手順を整備 【対応する訓練】 ・実施手順書に基づいた緊急対策の訓練を実施	【設備の確保】 ・防潮堤の設置 ・水密扉の設置 ・その他必要な設備面での対応 ※以下順次設備面での改善を実施すること（例：空冷式ディーゼル発電機、海水ポンプ電動機予備品の確保等） 【手順書の整備】 【対応する訓練】
保安院の確認等	・緊急安全対策の実効性を担保する省令の改正、同対策を盛り込んだ保安規定の認可 ・緊急安全対策の実施状況に対して検査等で厳格に確認	
事業者の対応	・設備については、現在、鋭意調達中。（配置場所も確保中） ・今回の事故を踏まえて手順書を新規に作成し、訓練を実施。 ・緊急安全対策確認後も継続的な改善に取り組み、その信頼性向上を図る。	

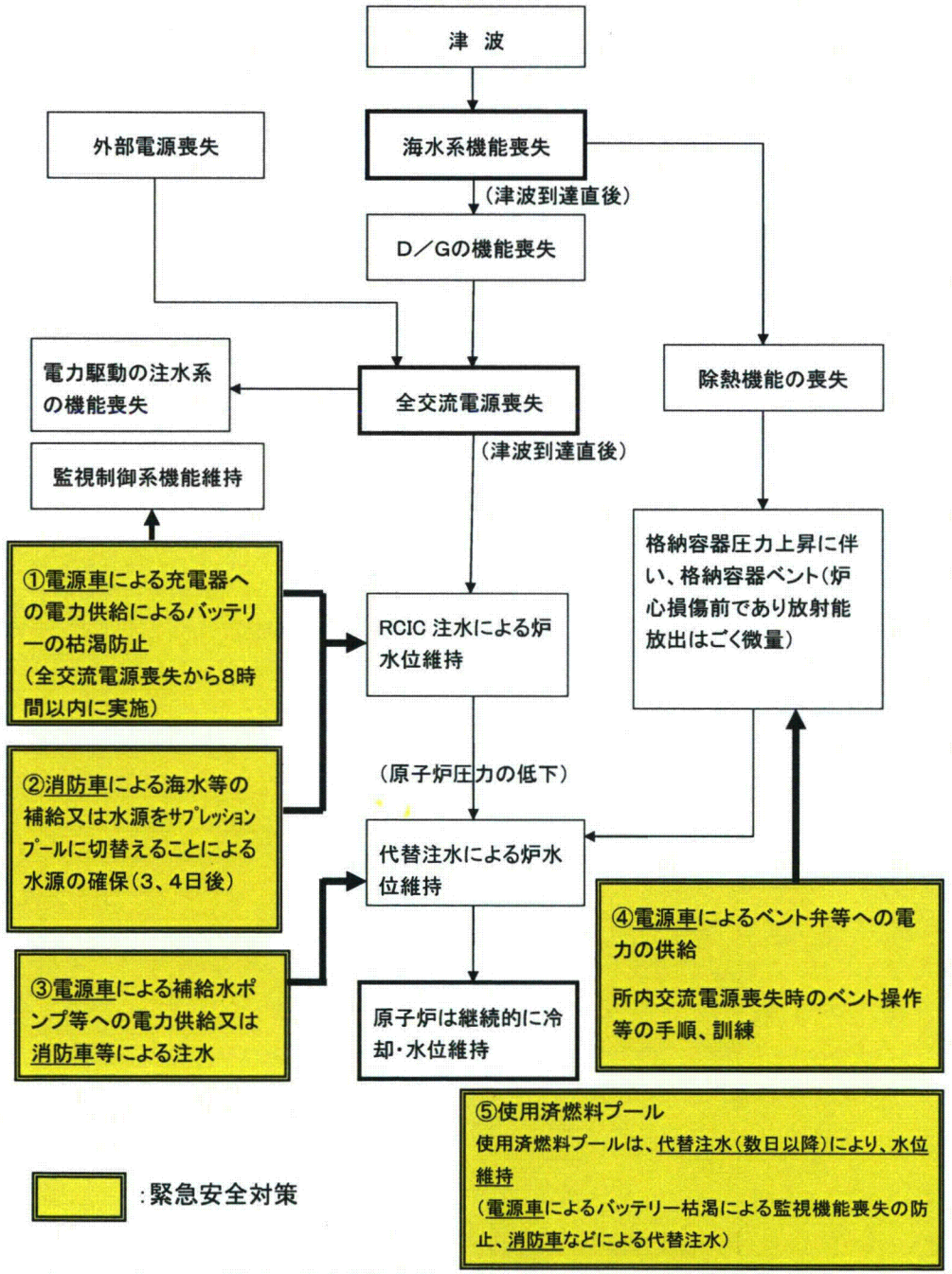
BWRにおける津波発生時の事象と対応策

【緊急安全対策実施前】

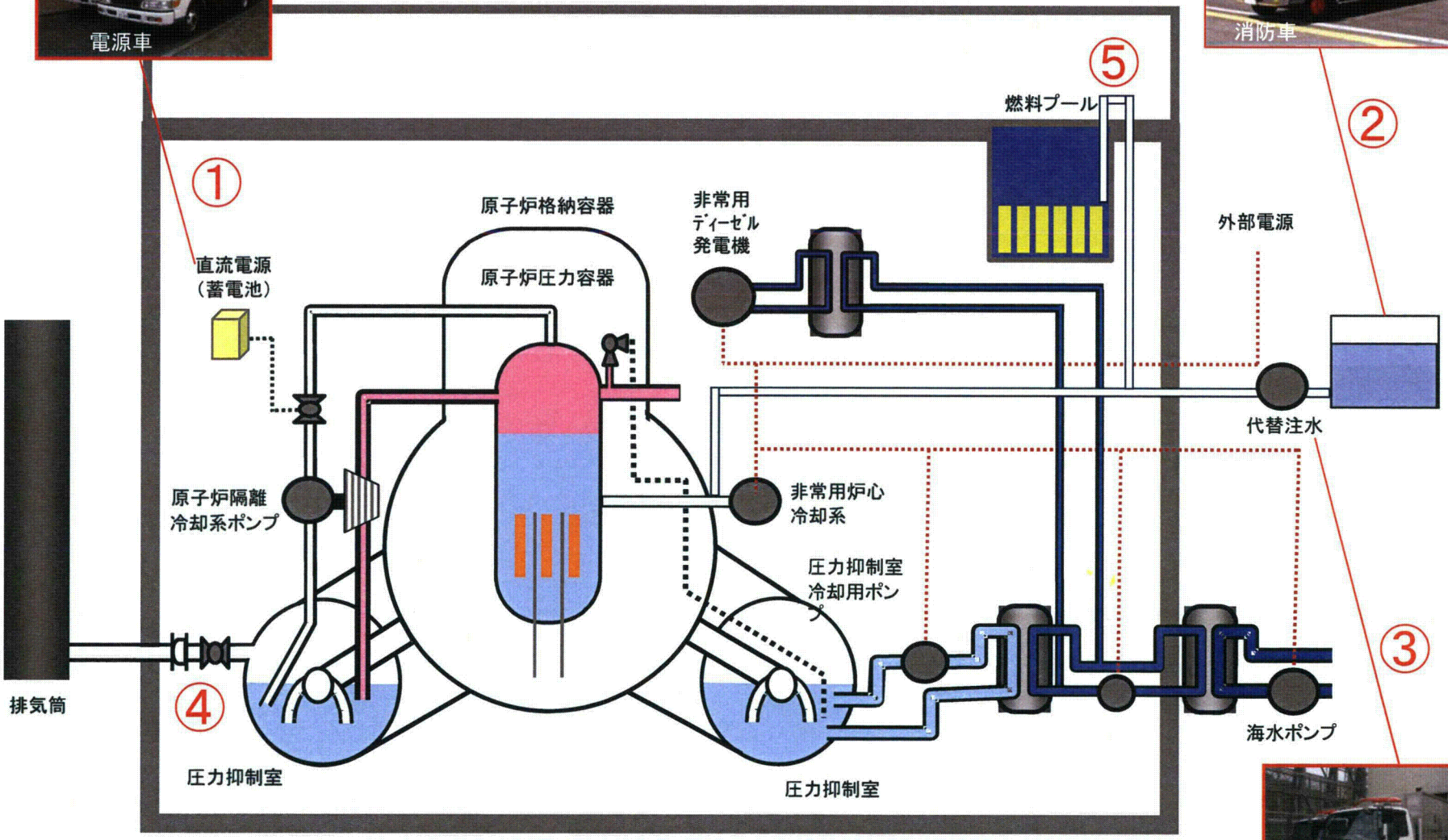
フローは福島第一原子力発電所で発生した事象の流れを示す（一部推測を含む）。



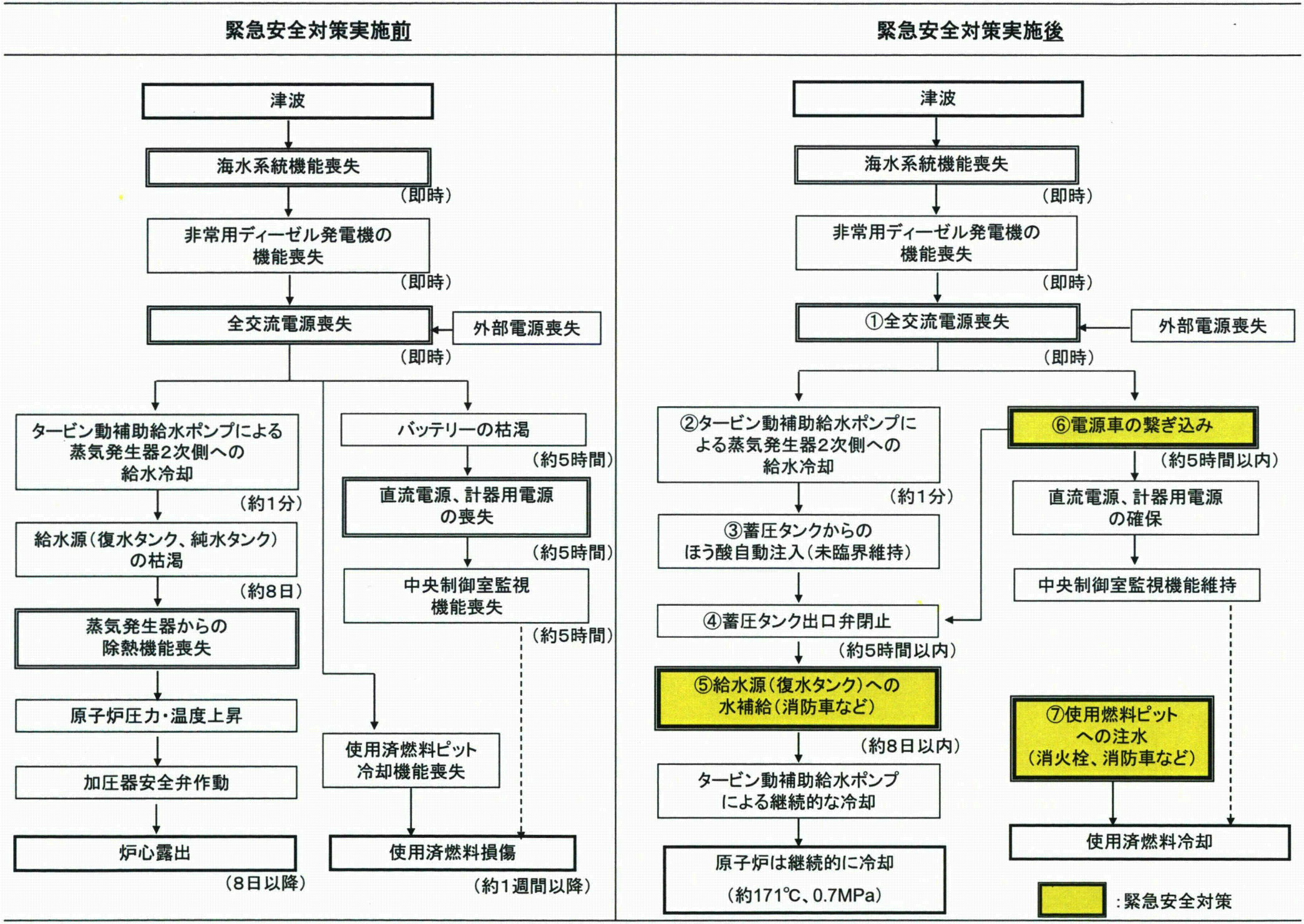
【緊急安全対策実施後】



BWRにおける津波発生時の事象と対応策

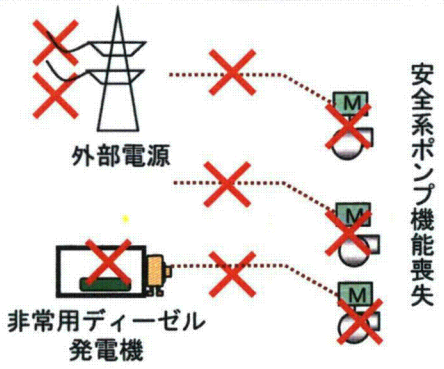


PWRにおける津波発生時の事象と対応策

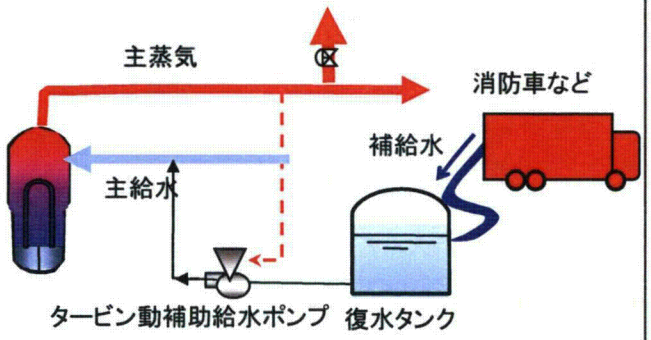


PWRにおける津波発生時の事象と対応策

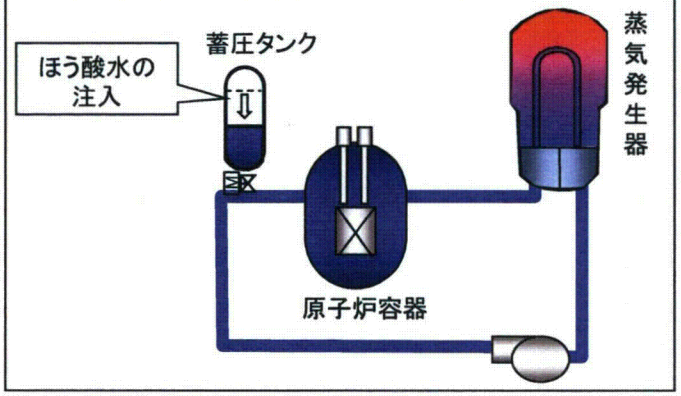
①外部電源喪失



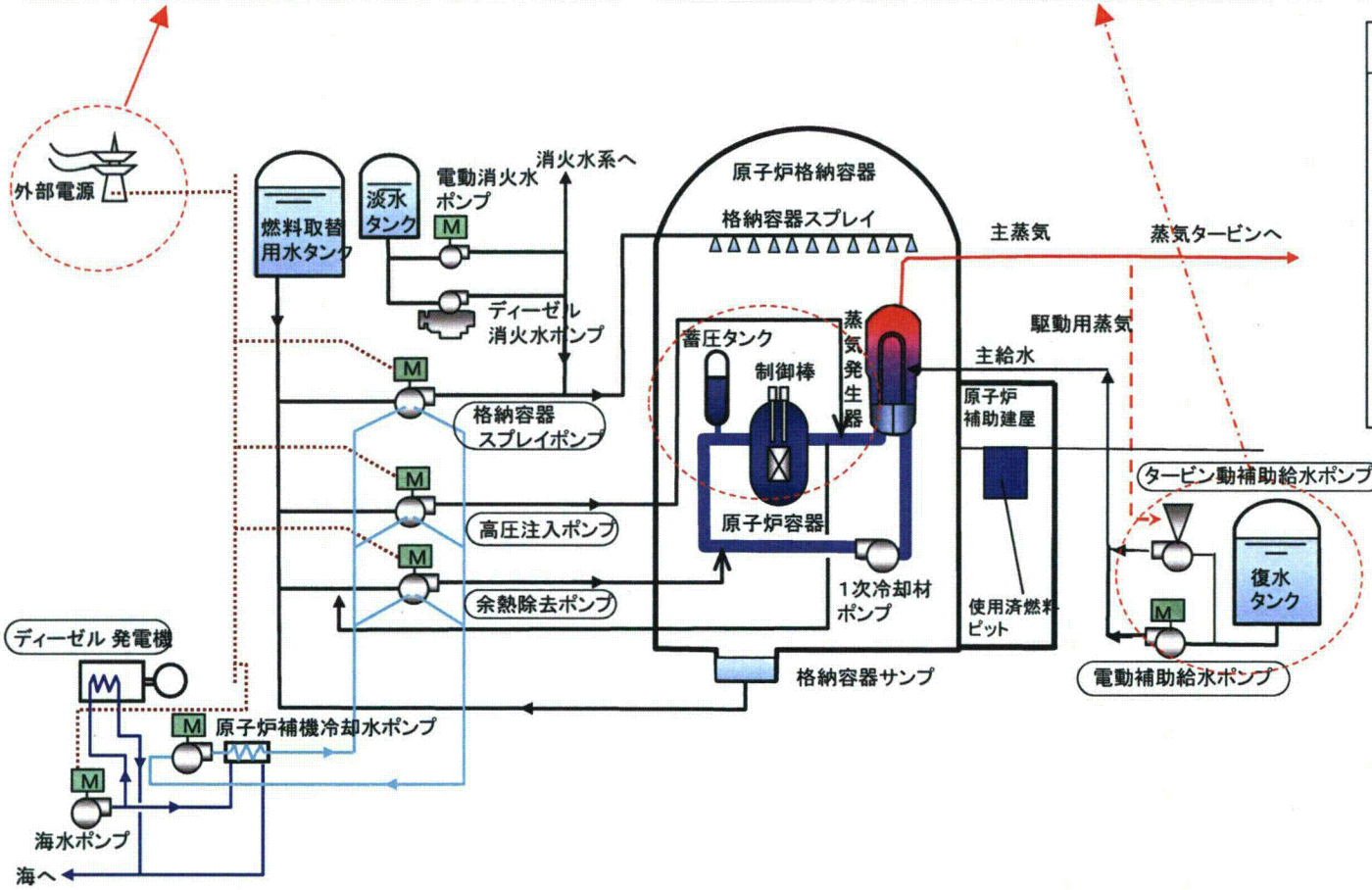
②、⑤蒸気発生器への給水、復水タンクの水補給



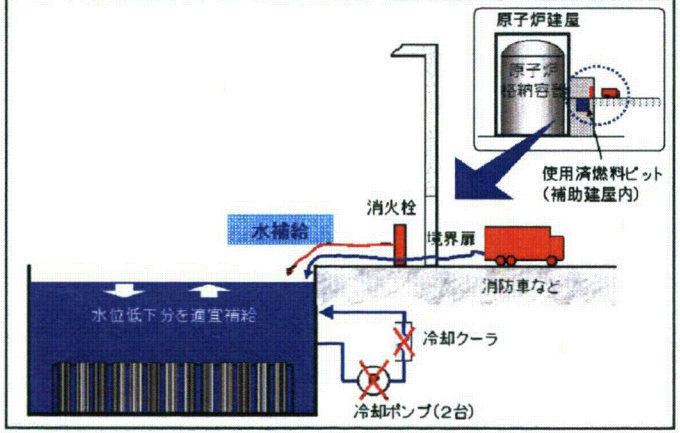
③、④蓄圧タンクからのほう酸水注入、弁閉止



⑥電源車繋ぎこみ



⑦使用済燃料ピットへの注水



（別紙２）

経済産業省

平成23・03・28原第7号
平成２３年３月３０日

別記　宛て（各通）

経済産業大臣　海江田　万里

平成２３年福島第一・第二原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施について（指示）

今般の平成２３年東北地方太平洋沖地震による津波に起因する福島第一原子力発電所事故は、我が国において未曾有の原子力災害をもたらしており、現在、同発電所等において、事業者である東京電力株式会社はもちろんのこと、国、地方公共団体等の関係機関が一体となって、この原子力災害の拡大の防止及び復旧のために懸命に努力しているところである。

原子力安全・保安院においては、当該事故対策に引き続き全力で対応しつつ、今後、今般の津波の発生メカニズムを含め、当該事故の全体像の把握及びその分析・評価を行い、当該事故に係る原因究明及び抜本的な対策を講じることとする。

他方、今回のような巨大地震による極めて大きな津波については、その発生頻度は相当に小さいと考えられるものの、それによる原子力発電所への被害は極めて甚大となる可能性がある。これに鑑み、福島第一原子力発電所及び福島第二原子力発電所以外の原子力発電所に対して、まずは現在判明している知見に基づき、津波による電源機能等喪失時においても放射性物質の放出を抑制しつつ原子炉施設の冷却機能を回復することを可能とするための緊急安全対策を講じることとし、緊急安全対策に電気事業者等が適切に取り組み、原子力安全・保安院がこれを検査等により確認することにより、津波による電源機能等喪失時における炉心損傷等を防止し、原子力災害の発生を防止することとする。

ついては、津波が発生した場合における原子炉施設の保全のための活動を行う体制の整備及びこれに伴う保安規定の整備を要求事項とする改正後の実用発電用原子炉の設置、運転等に関する規則等に従い、下記の緊急安全対策に直ちに取り

組むとともに、これらの緊急安全対策の実施状況を早急に報告することを求める。

記

津波により３つの機能（交流電源を供給する全ての設備の機能、海水を使用して原子炉施設を冷却する全ての設備の機能及び使用済燃料貯蔵槽を冷却する全ての設備の機能）を喪失したとしても、炉心損傷及び使用済燃料の損傷を防止し、放射性物質の放出を抑制しつつ原子炉施設の冷却機能の回復を図るために、緊急安全対策として、以下の対策を講じるとともに、今般の実用発電用原子炉の設置、運転等に関する規則等の改正に従い保安規定を整備し、保安規定の変更の認可を申請すること。

① 緊急点検の実施
津波に起因する緊急時対応のための機器及び設備の緊急点検の実施

② 緊急時対応計画の点検及び訓練の実施
交流電源を供給する全ての設備の機能、海水により原子炉施設を冷却する全ての設備の機能及び使用済燃料貯蔵槽を冷却する全ての設備の機能の喪失を想定した緊急時対応計画の点検及び訓練の実施

③ 緊急時の電源確保
原子力発電所内の電源が喪失し、緊急時の電源が確保できない場合に、必要な電力を機動的に供給する代替電源の確保

④ 緊急時の最終的な除熱機能の確保
海水系施設又はその機能が喪失した場合を想定した機動的な除熱機能の復旧対策の準備

⑤ 緊急時の使用済燃料貯蔵槽の冷却確保
使用済燃料貯蔵槽の冷却及び使用済燃料貯蔵槽への通常の原子力発電所内の水供給が停止した際に、機動的に冷却水を供給する対策の実施

⑥ 各原子力発電所における構造等を踏まえた当面必要となる対応策の実施

（別記）

北海道電力株式会社　取締役社長　佐藤　佳孝
東北電力株式会社　取締役社長　海輪　誠
東京電力株式会社　取締役社長　清水　正孝
中部電力株式会社　代表取締役社長　社長執行役員　水野　明久
北陸電力株式会社　取締役社長　久和　進
関西電力株式会社　取締役社長　八木　誠
中国電力株式会社　取締役社長　山下　隆
四国電力株式会社　取締役社長　千葉　昭
九州電力株式会社　代表取締役社長　眞部　利應
日本原子力発電株式会社　取締役社長　森本　浩志
独立行政法人日本原子力研究開発機構　理事長　鈴木　篤之

Rivera-Lugo, Richard

From: RidsResPmdaMail Resource
Sent: Wednesday, March 30, 2011 7:09 AM
To: Rini, Brett; Ramirez, Annie; Ibarra, Jose; Rivera-Lugo, Richard
Subject: FW: ACTION: G20110209
Attachments: ACTION: G20110209

Categories: Green Category

Good Morning!

Subject: Possible Solutions to the Japan Nuclear Crisis

Special Instructions: For Appropriate Action

Brett please confirm the course of action.

Thanks

Kevin

One Team/One Goal

Kevin D. Johnson
Research Information Specialist
Office of Nuclear Regulatory Research
RES/PMDA/HCCB
Email: Kevin.Johnson@nrc.gov
O6AO6a
Office: 301-251-7665

-----Original Message-----
From: Jaegers, Cathy
Sent: Wednesday, March 30, 2011 6:57 AM
To: RidsResPmdaMail Resource; Johnson, Kevin
Cc: RidsNrrMailCenter Resource; RidsNsirMailCenter Resource; Wimbush, Andrea; Merzke, Daniel
Subject: ACTION: G20110209

Attached is the action green ticket for NSIR. The ADAMS version will be sent after DPC processes.

ADM 191

EDO Principal Correspondence Control

FROM: DUE: / / EDO CONTROL: G20110209
DOC DT: 03/21/11
FINAL REPLY:

Robert Caron
Energy Technologies Company

TO:

Chairman Jaczko

FOR SIGNATURE OF : ** GRN ** CRC NO: 11-0156

DESC:

Possible Solutions to the Japan Nuclear Crisis
(EDATS: SECY-2011-0171)

ROUTING:

Borchardt
Weber
Virgilio
Ash
Muessle
OGC/GC
Leeds, NRR
Wiggins, NSIR
Merzke, OEDO

DATE: 03/29/11

ASSIGNED TO: CONTACT:

RES Sheron

SPECIAL INSTRUCTIONS OR REMARKS:

For Appropriate Action.

EDATS

Electronic Document and Action Tracking System

EDATS Number: SECY-2011-0171 **Source:** SECY

General Information

Assigned To: RES
OEDO Due Date: NONE
Other Assignees:
SECY Due Date: NONE
Subject: Possible Solutions to Japan Nuclear Crisis
Description:

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OEDO Monthly Report Item: NO

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Originator Name: Robert Caron
Date of Incoming: 3/21/2011
Originating Organization: Energy Technologies Company
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Addressee: Chairman Jaczko, et al.,
Date Response Requested by Originator: NONE
Incoming Task Received: Letter

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Mar 25, 2011 09:21

PAPER NUMBER: LTR-11-0156 **LOGGING DATE:** 03/25/2011
ACTION OFFICE: EDO

AUTHOR: Robert Caron
AFFILIATION: FL
ADDRESSEE: Gregory Jaczko
SUBJECT: Possible solutions to the Japan nuclear crisis

ACTION: Information
DISTRIBUTION: Chairman, Comrs

LETTER DATE: 03/21/2011
ACKNOWLEDGED No
SPECIAL HANDLING:
NOTES:
FILE LOCATION: ADAMS

DATE DUE: **DATE SIGNED:**

EDO --G20110209

March 21, 2011

President Barack Obama
White House
1600 Pennsylvania Avenue NW
Washington D. C. 20500

U.S. Department of State
2201 C Street NW
Washington D.C. 20520

U.S. Nuclear Regulatory Commission
Washington D.C. 20555 0001

United States Agency for
International Development
Ronald Reagan Building
Washington, D. C. 20523 1000

To Whom This Concerns,

Please see copy of my March 14, 2011 letter pertaining to ideas about solutions to the Japan nuclear crisis. Parties from our company ETC have conferred concerning our collective knowledge and a process reported to have been used to resolve Three Mile Island, which John Meckling shared with Eric Blanchard years ago.

From historical data and scientific reasoning, there could be much greater issues to deal with shortly if this problem is not immediately resolved. The possibility of a thermo nuclear explosion of course is a concern or the possibility of a meltdown to ground water, the contamination thereof, and the possibility of a radioactive steam burst into the atmosphere unleashing a series of radioactive clouds.

I am hoping the proper agencies and science minds are seriously looking into introducing liquid helium into the cooling system or directly into the rod chambers and reactor which I am told due to the hyper cooling potential would eliminate the prolonged process and danger of attempting to splash water on the danger areas.

Once the catalytic reactions of liquid helium mixed with other present elements are investigated for each of the plutonium and uranium reactors, then the objective is to transport liquid helium into the danger areas requiring cooling. We have some ideas on this:

Preconstruct a flume in sections which could be place at a safer distance at the proper elevation to either air drop into the plume collector or truck in and pump the liquid helium.

Utilize robotic drones to inject liquid helium into the existing main or auxiliary cooling systems or construct makeshift ports and channels to provide piping.

The radioactive water and environment that would remain could be contained with proven methods used at Three Mile Island and Chernobyl. We discussed pouring in sand and concrete mixed with lead then systematically layer lead over, around and underneath contaminated areas rather than just pouring the sand concrete mixture

but first and foremost each danger area, including the cooling pools, should be hyper cooled if possible which liquid helium could probably achieve once the variables are scrutinized by qualified parties.

A waterproof cylinder may be able to be placed over each contaminated area below the point where radioactive material has seeped. This containment chamber could then be maintained through the years to guard against deterioration. An insulating sleeve could be pushed many feet below the lowest point of the contaminated material to prevent leakage from underneath.

I am not going to go into detail at this moment but our company ETC has technologies we feel certain can increase the power input to electrical output ratio thus providing significantly more electrical power generation with the existing energy resources Japan presently has available, which could assist in making up for the closure of the particular nuclear plants. We believe the technology we have can be used for mobile on demand power generation too.

I am assuming there are parties who have data on Three Mile Island from Babcock & Wilcox or John Meckling or Harold Denton in addition to whatever U.S. Government data was gathered at the time. From what I have been told there should be ample data on the liquid helium solution. That information coupled with what our scientists are exploring could provide an immediate solution instead of having to reinvent the wheel with quantities and relationships of present elements. Otherwise the resources would have to be put forth to multiply efforts to go through the variables for the following at first glance:

1. The availability and accessibility of liquid helium;
2. Transport logistics to site;
3. Delivery system to administer liquid helium at every problem area including anticipated problem areas;
4. Any potential interaction with elements such as plutonium and uranium and the resulting effect if any on the volume concentration of liquid helium when mixed with radioactive material or other elements – in other words because a critical mass of liquid helium has to be present to efficiently hyper cool the materials then along the way of reaching that critical mass what happens when insufficient volume of liquid helium mixes with these elements, based on the speed of delivery, can that cause any type of catalytic reaction with any of the elements present or resulting elements and compounds being produced, that could cause further breaches in the building containment structure or in any way exacerbate the situation including temperature flux;
5. Physical characteristics of the entire environment: building structure such as the materials and thickness of the walls and geophysical variables such as water table proximity and volume if a geophysical map of the region is available;
6. Availability of robotic nuclear vehicle to perform exact functions;
7. Safety equipment required, to facilitate liquid helium delivery.

If we could receive corroborated data on the Three Mile Island solution, such as the time period the hyper cooling process required correlating with the exact set of variables at Three Mile Island, that would be useful. The type and volume of materials being cooled and exposure conditions would assist.

I would think that the NRC, the State Government of Pennsylvania, Babcock & Wilcox, Harold Denton or the people who were employed to facilitate the administering of liquid helium at Three Mile Island would have information. Hopefully no one is holding out in order to attempt to take credit or for financial motives or because they have a political bias against the Obama Administration. This methodology supposedly worked at Three Mile Island so I am puzzled as to why there has not been mention of this through the media. Our scientists with our company Energy Technologies Company, have extrapolated on science factors for the particular types of reactors and we have explored what may be viable delivery systems to infuse the liquid helium but having reference points is useful.

From what I can glean, President Obama along with Secretary of Defense Gates have been proactive to eliminate extra bureaucracy but while proceeding in a careful and thought out fashion concerning our National Security, so accordingly I am copying President Obama and various U.S. Departments and Agencies, besides just the NRC so as not to pressure just one Agency and to increase the opportunity to provide this data to the right people.

I know how bureaucracy can slow important actions, which may not be the fault of any one person but rather the checks and balances system gone wild, and the inundation of communications. Please do not take offense to my comments, as I am just trying to deliver this possible set of solutions to the right parties to expedite and provide an explanation as to why I am copying so many U.S. Government and private entities. In the event anyone receiving this has a political bias and does not want the Obama Administration to receive credit or has a financial motive, then this puts the pressure on them to be forthcoming, because there now are many parties who have received this communication along with documented dates of when the information herein was delivered to these various parties. The Obama Administration and our Nation will deservedly benefit from the U.S. providing a viable solution so hopefully anyone receiving this acts on the information quickly.

If any clerk receives this letter please prioritize delivering to the Department head and follow up to make sure the information herein has been reviewed by the right people. Appropriate decision makers in the Obama Administration should be immediately informed so as to be on the same page if Japan does run with any of these ideas plus the source of these ideas should be confirmed as coming from the United States and the Obama Administration.

I am copying the preceding six paragraphs and this seventh paragraph to President Obama and certain U.S. Government Departments and Agencies but I am not copying

these comments to any outside parties such as Japan or commercial entities. Only the content suggesting ideas on solutions are being sent to them, however, there are many moving parts of course, which have to be addressed and require extensive examination and follow up.

President Obama has been a leader in fact gathering, encouraging the citizens of the United States to participate with problem solving and organizing information in order to make informed decisions. Accordingly I humbly offer that Agencies should be proactively seeking ideas and have an Internet site equipped to marshal such information, store in categorical interactive sequence, then through a qualified panel disseminate the data and distribute to the proper parties. Then screen and rescreen. I have implemented this type of a system and matrix to sort through much data quickly and to expeditiously utilize in enterprises of which I have been involved and that seems to be effective in establishing a structure to categorize with pertinent variables per vertical subject matter, cross reference and quickly analyze technologies and their potential outcomes.

Please respond as to the status so we confirm these ideas are in review by parties. Please respond with any instructions of how we can put this data in the proper forum for detailed review and be of further assistance.

God Bless,

Robert Caron
CEO
Energy Technologies Company
Mobile: (202) 713 0788
Executive Message Center: (239) 431 7525
robert@infohwy.us

March 14, 2011

President Barack Obama
White House
1600 Pennsylvania Avenue NW
Washington D. C. 20500

U.S. Nuclear Regulatory Commission
Washington D.C. 20555 0001

U.S. Department of State
2201 C Street NW
Washington D.C. 20520

Embassy of Japan in the United States
2520 Massachusetts Avenue NW
Washington D. C. 20008 2869

Consulate General of Japan
In San Francisco
50 Fremont Street, Suite 2300
San Francisco, CA 94105

To Whom This Concerns,

My name is Robert Caron. This is a follow up to my previous communications. I am one of the founders of Energy Technologies Company, the purpose of which is to search out, produce and sell viable alternative green energy technologies. We are diligent in our research and have assembled some brilliant minds.

One of those brilliant minds is Eric Blanchard. Besides the knowledge Eric has contributed to ETC concerning alternative energy resources, Eric had an association with John Meckling who had worked on the Three Mile Island solution with Babcock & Wilcox and Harold Denton. John Meckling who passed several years ago shared his contribution to the Three Mile Island cooling solution with Eric. Eric is not a nuclear physicist but he does have some sound insight on this subject matter. Eric submitted the following information to me gleaned from John Meckling years ago:

Liquid helium was infused into the cooling flow. The volume was high as many trucks were used to transport enough liquid helium. This supposedly caused a hyper cooling state and halted the neutron flux but shattered the core thus destroying the reactor, however, averting disaster. From the recollection of Eric, they may have had to pipe in the liquid helium through an auxiliary system. The wife of John Meckling is Helga Meckling who is currently in Alaska and may have some information. Babcock & Wilcox was the company in charge. Harold Denton also may have some information and he is supposed to reside in Knoxville Tennessee. There was mention that other parties may have capitalized on the ideas of John Meckling so this is something to consider when investigating. Eric is trying to reach Helga Meckling. Any questions please email robert@infohwy.us or call 202 713 0788 or 239 431 7525.

Robert Caron
CEO, Energy Technologies Company

From: ET07 Hoc
Sent: Wednesday, March 30, 2011 12:51 PM
To: OST02 HOC
Subject: status officer schedule updates - starting Friday April 1

Grant 11-7 (Friday night to Saturday morning)
Jolicoeur 7-3 (Saturday)
Gott 3-11 (Saturday)
Grant 11-7 (Saturday-Sunday)
Jolicoeur 7-3 (Sunday)
Gott 3-11 (Sunday)
No changes for Monday
Erlanger Tuesday 3-11
Erlanger Wednesday 3-11

There's still some trading going on, but these shifts are firm.

0001193

From: Marshall, Michael
Sent: Wednesday, March 30, 2011 4:30 PM
To: ET07 Hoc
Cc: McDermott, Brian; HOO Hoc; Orders, William; Castleman, Patrick; Franovich, Mike; Snodderly, Michael; Hart, Ken; Hipschman, Thomas; Laufer, Richard; Andersen, James; Bates, Andrew; Bradford, Anna; Batkin, Joshua; Coggins, Angela
Subject: RE: CA Calls
Attachments: image001.jpg

Sally,

Thanks for the information on the new time. Works for the Chairman's office.

Michael L. Marshall, Jr.
Policy Advisor for Reactors
Office of the Chairman
U.S. Nuclear Regulatory Commission

Phone: 301-415-1750
Email: michael.marshall@nrc.gov

From: ET07 Hoc
Sent: Wednesday, March 30, 2011 4:05 PM
To: Orders, William; Castleman, Patrick; Franovich, Mike; Snodderly, Michael; Marshall, Michael; Hipschman, Thomas; Hart, Ken; Laufer, Richard; Andersen, James; Bates, Andrew
Cc: McDermott, Brian; HOO Hoc
Subject: RE: CA Calls

All,

Due to conflicts with the Deputies Call at 0900 and with the briefing call from Chuck Casto/Site Team at ~0930, the ET set the morning CA briefing calls for 1000.

Sally Billings
ET Status Officer

From: HOO Hoc
Sent: Wednesday, March 30, 2011 2:28 PM
To: ET07 Hoc; LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: CA Calls

Jayne—Com. Asst Brief e-mail string below.

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

RED

0002/193

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From: Andersen, James
Sent: Wednesday, March 30, 2011 2:26 PM
To: HOO Hoc
Cc: Laufer, Richard; Evans, Michele; Weber, Michael; Borchardt, Bill; Virgilio, Martin; Muessle, Mary
Subject: FW: CA Calls

As discussed. See discussion below concerning the number of CA call per day.

Jim Andersen
Deputy AO. TBPM, OEDO
415-1725

From: Laufer, Richard
Sent: Wednesday, March 30, 2011 1:49 PM
To: Andersen, James
Cc: Hart, Ken; Bates, Andrew
Subject: FW: CA Calls

Jim –

Can you pass this to the ET and see what proposed time below works best for them?

Thanks,
Rich

From: Orders, William
Sent: Wednesday, March 30, 2011 1:47 PM
To: Hart, Ken; Laufer, Richard
Cc: Castleman, Patrick; Franovich, Mike; Snodderly, Michael; Marshall, Michael; Hipschman, Thomas
Subject: CA Calls

Ken
I have spoken with Commissioner Magwood and Pat has spoken with Commissioner Svinicki re the number of CA calls required from the ET re Japan.

Both Commissioner Magwood and Commissioner Svinicki approve reducing the number to 1/day. I have also discussed the issue with Mike Marshall, Michael Snodderly and Mike Franovich who all support 1/day.

Path forward: 1) We do not need a call tonight. 2) We propose a daily call each morning at either 9:00 or 9:30. Of course if something significant occurs, we would expect a call.

Please communicate with ET and let us know the time.

Thanks

Bill

William T. Orders
Reactors Technical Assistant

Staff of Commissioner William D. Magwood IV
310-415-8430
William.Orders@nrc.gov

From: LIA07 Hoc
Sent: Wednesday, March 30, 2011 6:52 PM
To: Borchardt, Bill; Bradford, Anna; Cohen, Shari; Collins, Elmo; Cooper, LaToya; Dyer, Jim; ET07 Hoc; Flory, Shirley; Gibbs, Catina; Haney, Catherine; Hudson, Sharon; Jaczko, Gregory; Johnson, Michael; Leeds, Eric; Loyd, Susan; Pace, Patti; Schwarz, Sherry; Sheron, Brian; Speiser, Herald; Sprogeris, Patricia; Taylor, Renee; Virgilio, Martin; Walker, Dwight; Walls, Lorena; Weber, Michael
Subject: Go Book Update - 1800 EDT, March 30, 2011
Attachments: TEPCO Press Release 223.pdf; TEPCO Press Release 212.pdf; TEPCO Press Release 213.pdf; TEPCO Press Release 214.pdf; TEPCO Press Release 215.pdf; TEPCO Press Release 216.pdf; TEPCO Press Release 217.pdf; TEPCO Press Release 218.pdf; TEPCO Press Release 219.pdf; TEPCO Press Release 220.pdf; TEPCO Press Release 221.pdf; TEPCO Press Release 222.pdf; USNRC Earthquake-Tsunami Update.033011.1800EDT.pdf; March 30 1500 EDT one pager.docx; ET Chronology 3-30-11 1900.pdf

Attached, please find updated information for the "Go Books".

The updates include:

- The 1800 EDT, 03/30/11 Status Update
- The latest ET Chronology
- The latest "One Pager" (1500 EDT, 03/30/11)
- TEPCO Press Releases (212-223)

Please let me know if you have any questions or concerns.

-Sara

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

0001 194

Press Releases

Press Release (Mar 30,2011)
Status of TEPCO's Facilities and its services after the Tohoku-Taiheiyou-Oki Earthquake (as of 9:00AM)

Due to the Tohoku-Taiheiyou-Oki Earthquake which occurred on March 11th 2011, TEPCO's facilities including our nuclear power stations have been severely damaged. We deeply apologize for the anxiety and inconvenience caused.

Below is the status of TEPCO's major facilities.
*new items are underlined

[Nuclear Power Station]
Fukushima Daiichi Nuclear Power Station:
Units 1 to 3: shutdown due to the earthquake
(Units 4 to 6: outage due to regular inspections)

* The national government has instructed the public to evacuate for those local residents within 20km radius of the site periphery and to evacuate voluntarily for those local residents between 20km and 30km radius of the site periphery.

* Off-site power was connected to Unit 1 to 6.

* Unit 1
- The explosive sound and white smoke was confirmed near Unit 1 when the big quake occurred at 3:36pm, March 12th.
- We started injection of sea water at 8:20 pm, March 12th, and then boric acid which absorbs neutron into the reactor afterwards.
- At approximately 2:30 am, March 23rd, we started the injection of sea water into the reactor from feed water system. After that, the injection of freshwater was started from 3:37 pm on March 25th (switched from the seawater injection). At 8:32 am, Mar 29th, transfer from the fire fighting pump to a temporary motor driven pump was made.
- At approximately 10:50 am on March 24th, white smoke was confirmed arising from the top of the reactor building.
- At approximately 11:30 am, March 24th, lights in the main control room were restored.

* Unit 2
- At 1:25 pm, March 14th, since the Reactor Core Isolation Cooling System has failed, it was determined that a specific incident stipulated in Clause 1, Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness occurred (failure of reactor cooling function). At 5:17 pm, March 14th, while the water level in the reactor reached the top of the fuel rod, we have restarted the water injection with the valve operation.
- At approximately 6:14 am, March 15th, the abnormal sound was confirmed near the suppression chamber and the pressure inside the chamber decreased afterwards. It was determined that there is a possibility that something happened in the suppression chamber. While sea water injection to the reactor continued, TEPCO employees and workers from other companies not in charge of injection work started tentative evacuation to a safe location.
  Sea water injection to the reactor continued.
- On March 18th, power was delivered up to substation for backup power through offsite transmission line. We completed laying cable further to unit receiving facility in the building, and at 3:46 pm, March 20th the load-side power panel of the receiving facility started to be energized.
- From 3:05 pm to 5:20 pm on March 20th, about 40 tons of seawater was injected into Unit 2 by TEPCO employees.
- At approximately 6:20 pm on March 21st, white smoke was confirmed arising from the top of the reactor building. As of 7:11 am on March 22nd, smoke decreased to the level where we could hardly confirm.
- From around 4 pm to 5 pm on March 22nd, approximately 18 tons of sea water was injected into the spent fuel pool by TEPCO employees.

- From 10:30 am on March 25th, seawater injection through Fuel Pool Cooling and Filtering System was initiated. The work was finished at 0:19 pm on March 25th. From 4:30 PM, March 29th, freshwater injection through Fuel Pool Cooling and Filtering System was initiated. (We switched from seawater to freshwater). The work was finished at 6:25 pm on March 29th.
- From 10:10 am on March 26th, freshwater (with boric acid) injection was initiated. (switched from the seawater injection) At 06:31pm, Mar 27th, transfer from the fire fighting pump to a temporary motor driven pump was made.
- At approximately 4:46 pm, March 26th, lights in the main control room were restored.

* Unit 3
- At 6:50 am, March 14th, while water injection to the reactor was under operation (injection of boric acid was done on Mar 13th), the pressure in the reactor containment vessel increased to 530 kPa. As a result, at 7:44 am, it was determined that a specific incident stipulated in article 15, clause 1 occurred (abnormal increase of the pressure of reactor containment vessel). Afterwards, the pressure gradually decreased (as of 9:05 am, 490 kPa).
- At approximately 11:01 am, March 14th, an explosion followed by white smoke occurred near Unit 3. 4 TEPCO employees and 3 workers from other companies (all of them were conscious) sustained injuries and were taken to the hospital by ambulances.
- As the temperature of water in the spent fuel pool rose, spraying water by helicopters with the support of the Self Defense Force was considered. However the operation on March 16th was cancelled.
- At 6:15 am, March 17th, the pressure of the Suppression Chamber temporarily increased, but currently it is stable within a certain range. On March 20th, we were preparing to implement measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive material to outside) in order to fully secure safety. However, at present, it is not a situation to immediately implement measures and discharge air containing radioactive material to outside. We will continue to monitor the status of the pressure of the reactor containment vessel.
- In order to cool spent fuel pool, water was sprayed by helicopters on March 17th with the cooperation of Self-Defense Forces.
- At approximately past 7:00 pm, March 17th, Self-Defense Forces and the police started spraying water by water cannon trucks upon our request for the cooperation. At 8:09 pm, March 17th, they finished the operation.
- At 2:00 pm, March 18th, spraying water by fire engines was started with the cooperation of Self-Defense Forces and the United States Armed Forces. At 2:45 pm, March 18th, the operation was finished.
- At approximately 12:30 am, March 19th, spraying water was started with the cooperation of Fire Rescue Task Forces of Tokyo Fire Department. At approximately 1:10 am, March 19th, the operation was finished. They resumed spraying water at 2:10 pm and finished at approximately 3:40 am, March 20th.
- At approximately 9:30 pm, March 20th, spraying water was started with the cooperation of Fire Rescue Task Forces of Tokyo Fire Department. At approximately 3:58 am, March 21th, they the operation was finished.
- At approximately 3:55 pm, March 21st, light gray smoke was confirmed arising from the southeast side of the 5th floor roof of the Unit 3 building. The situation was reported to the fire department at approximately 4:21 pm. The parameters of reactor pressure vessel, reactor containment vessel, and monitored environmental data remained stable without significant change. However, employees working around Unit 3 evacuated to a safe location. On March 22nd, the color of smoke changed to somewhat white and it is slowly dissipating.
- At approximately 3:10 pm on March 22nd, spraying water to Unit 3 by Tokyo Fire Department's Hyper Rescue and Osaka City Fire Department was conducted, and completed at approximately 4:00 PM on the same day.
- At approximately 10:45 pm on March 22nd, lights in the main control room were restored.
- At 11:00 am on March 23rd, the injection of sea water to spent fuel pool was conducted, and finished approximately at 1:20 pm on the same day.
- At 4:20 pm on March 23rd, light gray smoke was observed belching from Unit 3 building. The situation was reported to the fire department at 4:25 pm on March 23rd. The parameters of the reactor, the reactor containment vessel of Unit 3, and monitored figures around the site's immediate surroundings remained stable without significant change. To be safe, workers in the main control room of Unit 3 and around Unit 3 evacuated to a safe location. At approximately 11:30 pm on March 23rd and 4:50 am on March 24th, TEPCO employees confirmed the smoke has disappeared. Accordingly, workers evacuation was lifted.
- From approximately 5:35 am on March 24th, sea water injection through Fuel Pool Cooling and Filtering System was initiated, and finished at approximately 4:05 pm on the same day.
- From 1:28 pm on March 25th, Hyper Rescue team started water spray. The work finished at 4:00 pm on March 25th.
- From 6:02 pm on March 25th, the injection of freshwater to the reactor was started (switched from the seawater injection). At 8:30 pm on March 28th, the injection of fresh water is switched to temporary electricity pumps from the fire engine pumps.
- At approximately 12:34pm March 27th , the injection of water by the concrete pump truck was started. At approximately 2:36 pm, March 27th,

the operation was finished.
- At approximately 2:17pm March 29th, the injection of fresh water by the concrete pump truck was started. (Sea water had been injected so far and transfer from seawater to freshwater was made). The water injection was finished at 6:18 PM, March 29th.

* Unit 4
- At approximately 6:00 am, March 15th, an explosive sound was heard and the damage in the 5th floor roof of Unit 4 reactor building was confirmed. At 9:38 am, the fire near the north-west part of 4th floor of Unit 4 reactor building was confirmed. At approximately 11:00 am, TEPCO employees confirmed that the fire was out.
- At approximately 5:45 am on March 16th, a TEPCO employee discovered a fire at the northwest corner of the Nuclear Reactor Building. TEPCO immediately reported this incident to the fire department and the local government and proceeded with the extinction of fire. At approximately 6:15 am, TEPCO staff confirmed at the site that there are no signs of fire.
- At approximately 8:21 am on March 20th, spraying water by fire engines was started with the cooperation of Self-Defense Forces and they finished the operation at approximately 9:40 am. At approximately 6:45 pm spraying water was started by Self-Defenses' water cannon trucks and finished at approximately 7:45 pm.
- At approximately 6:30 am, March 21st, spraying water by fire engines was started with the cooperation of Self-Defense Forces and the United States Armed Forces. At approximately 8:40 am, March 21, they had finished the operation.
- On March 21st, cabling has been completed from temporary substation to the main power center.
- From approximately 5:20 pm on March 22nd, spraying water from the concrete pumping vehicle was conducted and ended at approximately 8:30 pm on the same day.
- From approximately 10:00 am on March 23rd, spraying water from the concrete pumping vehicle was conducted and ended at approximately 1:00 pm on the same day.
- From approximately 2:35 pm on March 24th, spraying water by the concrete pumping vehicle was conducted and ended at approximately 5:30 pm on the same day.
- From 6:05 am on March 25th, seawater injection through Fuel Pool Cooling and Filtering System was initiated and finished at approximately 10:20 am on the same day.
- From 7:05 pm on March 25th, water spray by the concrete pumping vehicle was started and finished at 10:07 pm on March 25th.
- From 4:55 pm on March 27th, water spray by the concrete pumping vehicle was started and finished at 7:25 pm on March 27th.
- At approximately 11:50 am on March 29th, lights in the main control room were restored.

* Unit 5 and 6
- At 5 am on March 19th, we started the Residual Heat Removal System Pump (C) of Unit 5 in order to cool the spent fuel pool. At 10:14 pm, we started the Residual Heat Removal System Pump (B) of Unit 6 in order to cool the spent fuel pool.
- Unit 5 has been in reactor cold shutdown since 2:30 pm on March 20th. Unit 6 has been in reactor cold shutdown since 7:27 pm on March 20th.
- At Units 5 and 6, in order to prevent hydrogen gas from accumulating within the buildings, we have made three holes on the roof of the reactor building for each unit.
- At approximately 5:24 pm on March 23rd, the temporary Residual Heat Removal System Seawater Pump automatically stopped when its power source was switched. We restarted the pump at around 4:14 pm, March 24th, and resumed cooling of reactor at around 4:35 pm.

* On March 18th, regarding the spent fuel in the common spent fuel pool, we have confirmed that the water level of the pool is secured. At around 10:37 am March 21st, water spraying to common spent fuel pool and finished at 3:30 pm. At around 6:05 pm, fuel pool cooling pump was started to cool the pool.
  * common spent fuel pool: a spent fuel pool for common use set in a separate building in a plant site in order to preserve spent fuel which are transferred from the spent fuel pool in each Unit building.

* On March 17th, we patrolled buildings for dry casks and found no signs of abnormal situation for the casks by visual observation. A detailed inspection is under preparation.
  * dry cask: a measure to store spent fuel in a dry storage casks in storages. Fukushima Daiichi Nuclear Power Station started to utilize the measure from August 1995.

* In total 13 fire engines are lent for spraying water to the spent fuel pools and water injection to the nuclear reactors by various regional fire departments* as well as Tokyo Fire Department. Also, instruction regarding the setting and operation of large scale decontamination system was provided.

* On March 21st, 23rd to 28th, we detected technetium, cobalt, iodine, cesium, tellurium, barium, lanthanum and molybdenum from the seawater

around discharge canal of Unit 1, 2, 3 and 4.

* On March 20th, 21st, 23rd to 28th, we detected iodine, cesium, tellurium and ruthenium in the air collected at the site of Fukushima Daiichi Nuclear Power Station.

* Plutonium has detected from the sample of soil at the site of Fukushima Daiichi Nuclear Power Station collected on 21st and 22nd of March, Concentration level of Plutonium detected was same as that of under usual environment and it is thought not to be harmful to human health. We will strengthen environmental monitoring of power station and surrounding environment.

* On March 28th, we detected radioactive materials contained in the puddles found in the turbine building of Unit 1 to 4.

* At approximately 3:30 pm, March 27th, we found water pooling in the vertical shaft of the trench outside of the turbine buildings for Units 1 to 3. The radiation dose at the surface of the water amounted 0.4 mSv/h in Unit 1 and over 1,000 mSv/h in Unit 2. We could not confirm the amount of the radiation dose in Unit 3. We will keep observing the condition of the water in the vertical shaft.

* At 12:03 pm, March 29th, when taking off the flange of the pipe to remove the residual heat in the seawater system, 3 workers from other companies received water in the pipe. Mopping up water, we confirmed no radioactive material had adhered to their bodies.

* We will continuously endeavor to securing safety, and monitoring of the surrounding environment.

Fukushima Daini Nuclear Power Station:
Units 1 to 4: shutdown due to the earthquake
* The national government has instructed evacuation for those local residents within 10km radius of the periphery.

* In order to achieve cold shutdown, reactor cooling function was restored and cooling of reactors was conducted. As a result, all reactors achieved cold shutdown: Unit 1 at 5:00 pm, March 14th, Unit 2 at 6:00 pm, March 14th, Unit 3 at 0:15 pm, March 12th, Unit 4 at 7:15 am, March 16th.

* Since March 12th, we had been preparing measures for reducing the pressure of reactor containment vessels (partial discharge of air containing radioactive materials to outside), but on March 17th, we stopped such preparation in all Units.

* (Unit 1)
As it is confirmed that the temperature of the Emergency Equipment Cooling Water System *1 has increased, at 3:20 pm, March 15th, we stopped the Residual Heat Removal System (B) for the inspection. Subsequently, failure was detected in the power supply facility associated with the pumps of the Emergency Equipment Cooling Water System. At 4:25 pm, March 15th, after replacing the power facility, the pumps and the Residual Heat Removal System (B) have been reactivated.

* (Unit 4)
As it is confirmed that the pressure at the outlet of the pumps of the Emergency Equipment Cooling Water System*1 has been decreased, at 8:05 pm, March 15th, we stopped the Residual Heat Removal System (B) for the inspection. Subsequently, failure was detected in the power supply facility associated with the pumps of the Emergency Equipment Cooling Water System. At 9:25 pm, March 15th, after replacing the relevant facility, the pumps and the Residual Heat Removal System (B) have been reactivated.

*1:emergency water system in which cooling water (pure water) circulates which exchanged the heat with sea water in order to cool down bearing pumps and/or heat exchangers etc.

Kashiwazaki Kariwa Nuclear Power Station:
Units 1, 5, 6, 7: normal operation
(Units 2 to 4: outage due to regular inspection)

[Thermal Power Station]
- Hirono Thermal Power Station Units 2 and 4: shutdown due to the earthquake
- Hitachinaka Thermal Power Station Unit 1: shutdown due to the earthquake
- Kashima Thermal Power Station Units 2, 3, 5, 6: shutdown due to the earthquake

[Hydro Power Station]
- All the stations have been restored.
(Facilities damaged by the earthquake are now being repaired in a timely manner.)

[Transmission System, etc.]
- All substation failed due to the earthquake have been restored.
(Facilities damaged by the earthquake are now being repaired in a timely manner.)

[Power Supply to TEPCO's Service Areas]
- Except in case of planned rolling blackouts, we can supply electricity to our all service areas.

[Supply and Demand Status within TEPCO's Service Area to Secure Stable Power Supply]
- Considering the critical balance of our power supply capacity and expected power demand forward, in order to avoid unexpected blackout, TEPCO has been implementing rolling blackout (planned blackout alternates from one area to another) since Mar 14th. We will make our utmost to secure the stable power supply as early as possible. For customers who will be subject to rolling blackout, please be prepared for the announced blackout periods. Also for customers who are not subject to blackouts, TEPCO appreciates your continuous cooperation in reducing electricity usage by avoiding using unnecessary lighting and electrical equipment.

[Others]
- Please do NOT touch cut-off electric wires.
- In order to prevent fire, please make sure to switch off the electric appliances such as hair driers when you leave your house.
- For the customer who has in-house power generation, please secure fuel for generator.

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March 30, 2011 1500 EDT

Briefing Sheet
Fukushima Daiichi

TEPCO injecting fresh water into Units 1, 2 and 3; and is using temporary electric pumps for injection (all three units). Actions are underway to pump water from flooded turbine building basements into condensers/other tanks. TEPCO plans to inject water into U-1 SFP from Cement Pumper truck on 30 March. Lighting returned to U-4 control room, however dose rates are preventing access. TEPCO is considering spraying Zeolite on the outside and interior of the Rx Bldgs in an effort to minimize re-suspension of fission products in the air but having difficulty planning application due to high dose rates.

Highly radioactive water (approx 100 R/hr) found in a "trench" (pipe and cable chase) outside Unit 2; source of water unclear. TEPCO stated that this water is not flowing into the ocean, though the water will overflow this trench if it rises about 1 meter (trench is 4 meters deep). There is water in the trenches outside of Units 1 and 3 as well. Actions have been taken, or are in progress, to preclude contaminated water in trenches from reaching the ocean (e.g., sandbags, etc.).

TEPCO is planning to install equipment to inert Unit 1 by 31 March.

One train of the Bechtel pumping system is being deployed to the site. Both barges are being moved to the site (10 hr cruise), intending to arrive 30 March (some reports indicate that barges have arrived). Resupply water ship anchored at sea. The GOJ has requested help with shielding, removal of spent fuel, and robotics. The NRC Site Team indicates that TEPCO has contracted with the Shaw Company for decay heat removal systems and debris removal.

NEI is collecting U.S. nuclear plant environmental monitoring sample data and has made an online database available for viewing by NRC and other agencies.

The RST has provided coordinated (GEH, EPRI, INPO, NR, DOE) recommendations pertaining to severe accident management strategies to the NRC team in Japan. Revisions are being considered in light of suspected Unit 2 and Unit 3 core and containment conditions, and environmental release concerns. NRC continues to recommend inerting containment and controlled flooding of containment. On 30 March the RST plans to assemble experts to assess what possible means for an energetic release of fission products might remain, given the extent of damage suspected to have already occurred.

Deputies Committee meeting at 08:00hrs 30 March EST, *Chairman updated all regarding his visit to Japan. Identified US continues to support recommendation to follow SAMGs. TEPCO working level priorities consistent with recommendations. A single dose modeling has been requested to minimize confusion. NRC working with NARAC to provide.*

Vince Holahan arrived in Hawaii to support PACOM, working out of a SCIF. Routine call-in time to NRC HQ is being established since Vince can't have his BlackBerry in the SCIF. *Vince has contacted PMT but still no "permanent" comm link.*

The daily calls will be at 20:00hrs EDT to support having a Site Team member participates. Still working to get another entity to lead this effort (i.e., vice NRC). The list will be shared with the stakeholders. This discussion is anticipated to be led/facilitated by the ET Director.

IAEA Director General is convening a meeting of the member states regarding the events at Fukushima. Seeking additional insight regarding the date, purpose and expected outcomes from Mark Schaeffer.

Chuck Casto is attempting to sort out some roles & responsibilities issues with other agency representatives that have recently arrived in Japan (e.g, DOE/Sandia NL, Naval Reactors).

March 30, 2011 1500 EDT

PMT has discussed the U.S. Ambassador in Japan request for a forward looking pessimistic scenario calculation with DOE/NIT and with NARAC. We have forwarded the request to White House for action agreement. Source term will be developed with RES staff to more accurately reflect changes for decay and events since the beginning of event.

Continued review of DOE measurements (aerial and ground based) in areas around site shows downward trend in exposures.

Press Releases

Press Release (Mar 30,2011)
Plant Status of Fukushima Daini Nuclear Power Station (as of 9:00 am March 30th)

[No update from the last release issued at 9:00 pm, March 29th]

Unit	Status
1	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
2	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
3	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
4	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
Other	N.A.

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Press Releases

Press Release (Mar 30,2011)
Implementation Plan of Rolling Blackouts on and after March 31, 2011

Due to the tight power supply-demand balance, TEPCO has been implementing rolling blackouts since Monday, March 14. We sincerely regret causing anxiety and inconvenience to our customers and the society. We appreciate your cooperation in conserving electricity consumption.
For customers who will be subject to rolling blackouts, please be prepared for the announced blackout periods. Also, for the customers who are not subject to blackouts, we would appreciate your continuous cooperation in reducing electricity usage by turning off unnecessary lightings and electrical appliances.
We will inform the implementation plan of rolling blackouts on and after March 30, 2011 as follows:

o Implementation plan of rolling blackout on March 31 (Thu.)
On March 31, Thursday, no rolling blackout will be implemented in any time periods based on the today's power demand, the weather forecast on March 31 and the trend of the power supply. Because of your cooperation in conserving electricity, we can avoid the rolling blackout for tomorrow.
We appreciate your continuous cooperation

o Implementation plan of rolling blackouts on April 1 (Fri)-
April 6 (Wed)
Please refer to the appendix for details.

- The actual blackout period for each Group is planned to be maximum about 3 hours during the relevant scheduled time period.
- Each blackout period for each Group differs every day and starting and ending time of blackout periods may slightly differ.
- Depending on the supply-demand balance of the day, planned blackouts may not be carried out. In case the electricity supply-demand balance becomes tighter than expected, we will reconsider the rolling blackout plan and inform you accordingly before we implement the revised plan.
- A blackout may occur in the adjacent areas where the planned blackouts are carried out

[Others]
- In order to prevent fires, please make sure to switch off electric appliances such as hair driers when you leaving home.
- Please carefully pay attention to the traffic at the crossings in case the traffic lights are suddenly turned off.
- As for the buildings and apartments, please be aware that equipments and facilities such as elevators, automatic doors, automatic locks, and multilevel parking lots will not function. In particular, please avoid using elevators during the scheduled blackouts.

‹Reference›
oPrediction of demand and supply on March 30
Estimated Demand 34,000 MW (18:00-19:00)
Supply Capacity 38,000 MW

oPrediction of demand and supply on March 31
Estimated Demand 34,000 MW (18:00-19:00)
Supply Capacity 38,000 MW

*Prediction of demand
According to the weather forecast, the temperature tomorrow on March 31 will be normal. We assume the estimated peak demand on March 31 will be 34,000MW, equal to the estimated demand today on March 30.
*Estimated demand and supply capacity may change depending on the situation of the day.

Appendix:Weekly Rolling Blackout Tentative Plan from Mar 31(Thu)

to April 6(Wed)(PDF 17.3KB)

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Press Releases

Press Release (Mar 30,2011)
Smoke generation from the turbine building at Fukushima Daiichi Nuclear Power Station Unit 2 (2nd Release)

On approximately 5:56 pm, March 30th 2011, TEPCO employee discovered smoke generation from power panel (*)at the turbine building Unit 1 (Reactor cold shoutdown). On 5:57 pm, March 30th 2011, TEPCO immediately reported this incident to the fire department.

Subsequently the fire department consisting of TEPCO employee inspected the area. On approximately 6:13 pm, March 30th 2011,we confirmed the smoke generation stopped after interrupt electrical supply to the power panel.

From now, the fire department will conduct inspection around the area.

TEPCO will also conduct an investigation into a cause in detail.
This incident will not cause any effect of radiation externally.
(Previously announced on March 30th, 2011)

On 7:15 pm, March 30th 2011, the fire department made a judgmental decision that this incident was caused fault of the power panel, they found no signs of fire.

(*) power panel: power supply board to supply electricity to the motor of a drawing water pump to the outdoor duct.

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Press Releases

Press Release (Mar 30,2011)
Plant Status of Fukushima Daiichi Nuclear Power Station (as of 4:00 PM Mar 30th)

*Updates are underlined

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down.

Unit 1 (Shut down)
- Explosive sound and white smoke were confirmed after the big quake occurred at 3:36 pm Mar 12th. It was assumed to be hydrogen explosion.
- At approximately 2:30 am on March 23rd, seawater injection to the nuclear reactor through the feed water system was initiated.
- At approximately 10:50 am on March 24th, white fog-like steam arising from the roof part of the reactor building was observed.
- At approximately 11:30 am on March 24th, lights in the main control room was restored.
- We had been injecting seawater into the reactor, but from 3:37 pm on March 25th, we started injecting freshwater.
- At 8:20 am on March 29th, we switched injection of fresh water from using fire engine to temporary electrical pump.

Unit 2 (Shut down)
- At approximately 6:00 am on March 15th, an abnormal noise began emanating from nearby Pressure Suppression Chamber and the pressure within the chamber decreased.
- At 6:20 pm on March 21st, white smoke was confirmed arising from the top of the reactor building. As of 7:11 am on March 22nd, smoke decreased to the level to nearly non-existent.
- We have been injecting seawater into the reactor, but from 10:10 am on March 26th, we started injecting fresh water (with boric acid).
- At approximately 4:46 pm on March 26th, the light in the main control room was restored.
- We had been injecting fresh water in to the reactor utilizing fire pump, however, we switched over to utilizing temporary electrical pump from 6:31 pm on March 27th.

Unit 3 (Shut down)
- Explosive sound and white smoke were confirmed at 11:01am March 4th. It was assumed to be hydrogen explosion.
- At 8:30am on March 16th, fog like steam was confirmed arising from the reactor building.
- At approximately 6:15 am on March 17th the pressure of the Suppression Chamber has temporarily increased. We were preparing to implement measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive material to outside) in order to fully secure safety. However, at present, it is not a situation to immediately implement measures and discharge air containing radioactive material to outside. We will continue to monitor the status of the pressure of the reactor containment vessel.
- At approximately 4:00 pm, March 21st, light gray smoke was confirmed arising from the floor roof of the Unit 3 building. On March 22nd, the color of smoke changed to somewhat white and it is slowly dissipating.
- At around 4:20 pm on March 23rd, our staff confirmed light black smoke belching from the Unit 3 building. At approximately 11:30 pm on March 23rd and 4:50 am on March 24th, our employee found no signs of smoke.
- We had been injecting sea water into the reactor pressure vessel, but from 6:02 pm on March 25th, we started injecting freshwater.
- We had been injecting fresh water in to the reactor utilizing fire pump, however, we switched over to utilizing temporary electrical pump from 8:30 pm on March 28th.

Unit 4 (outage due to regular inspection)
- At approximately 6 am on March 15th, we confirmed the explosive sound and the sustained damage around the 5th floor rooftop area of the Nuclear Reactor Building.
- On March 15th and 16th, we respectively confirmed the outbreak of fire

at the 4th floor of the northwestern part of the Nuclear Reactor Building. We immediately reported this matter to the fire department and the related authorities. TEPCO employees confirmed that each fire had already died down by itself.
- At this moment, we do not consider any reactor coolant leakage inside the reactor happened.

Unit 5 (outage due to regular inspection)
- Sufficient level of reactor coolant to ensure safety is maintained.
- At 5 am, March 19th, we started the Residual Heat Removal System Pump (C) in order to cool the spent fuel pool.
- At 2:30 pm, March 20th, the reactor achieved reactor cold shutdown. At around 5:24 pm on March 23rd, when we switched the temporary Residual Heat Removal System Seawater Pump, it has stopped automatically. At around 4:14 pm, March 24th we replaced the pump, and restarted cooling of reactor at around 4:35 pm.
- At this moment, we do not consider any reactor coolant leakage inside the reactor happened.

Unit 6 (outage due to regular inspection)
- Sufficient level of reactor coolant to ensure safety is maintained.
- We completed the repair work on the emergency diesel generator (A).
- At 10:14 pm, March 19th, we started the Residual Heat Removal System Pump (B) of Unit 6 in order to cool the spent fuel pool.
- At 7:27 pm, March 20th, the reactor achieved reactor cold shutdown.
- In relation to the two seawater side pumps of the Residual Heat Removal System, we switched the power source from temporary to permanent at 3:38 PM and 3:42PM, Mar 25 respectively.
- At this moment, we do not consider any reactor coolant leakage inside the reactor happened.

Today's work for cooling the spent fuel pools
- From 9:25 am, freshwater injection to Unit 2 was conducted by a temporary motor driven pump. But, because of the malfunction of that pump at 9:45 am, we decided to switch to the fire fighting pump. At 0:30 pm, we switched to use the fire pump. At 0:47 pm and 1:10 pm, because we find tear in a par of hose we prepare to restart freshwater injection.
- At 2:04 pm, we conducted spray water to Unit 4 by a concrete pumping vehicle.
- We are considering further spraying subject to the conditions of spent fuel pools.

Casualty
- Presence of 2 TEPCO employees at the site is not confirmed on March 11th.
- On March 24th, it was confirmed that 3 workers from cooperative companies who were in charge of cable laying work in the 1st floor and the underground floor of turbine building were exposed to the radiation dose of more than 170 mSv. 2 of them were confirmed that their skins on legs were contaminated. After they were decontaminated, since there was a possibility of beta ray burn injury, they were transferred to Fukushima Medical University Hospital. The third worker was also transferred to Fukushima Medical University Hospital on March 25th. Later, the 3 workers were transferred to National Institute of Radiological Sciences in Chiba Prefecture. They all left the hospital on March 28th.
  Regarding this event, TEPCO has reported to the related government ministries and agencies on measures to be taken to assure appropriate radiation dose control and radiation exposure related operations.
  We will inform the related parties of countermeasures and continue to take all possible measures to future management.

Others
- We measured radioactive materials (iodine etc.) inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is getting higher than ordinary level. As listed below, we have determined that specific incidents stipulated in article 15, clause 1 of Act on Special Measures Concerning Nuclear Emergency Preparedness (Abnormal increase in radiation dose measured at site boundary) have occurred.
  · Determined at 4:17 pm Mar 12th (Around Monitoring Post 4)
  · Determined at 8:56 am Mar 13th (Around Monitoring Post 4)
  · Determined at 2:15 pm Mar 13th (Around Monitoring Post 4)
  · Determined at 3:50 am Mar 14th (Around Monitoring Post 6)
  · Determined at 4:15 am Mar 14th (Around Monitoring Post 2)
  · Determined at 9:27 am Mar 14th (Around Monitoring Post 3)
  · Determined at 9:37 pm Mar 14th (Around main entrance)
  · Determined at 6:51 am Mar 15th (Around main entrance)
  · Determined at 8:11 am Mar 15th (Around main entrance)
  · Determined at 4:17 pm Mar 15th (Around main entrance)
  · Determined at 11:05 pm Mar 15th (Around main entrance)
  · Determined at 8:58 am Mar 19th (Around MP5)
  From now on, if the measured figure fluctuates and goes above and below 500 micro Sv/h, we deem that as the continuous same event and will not regard that as a new specific incidents stipulated in article 15, clause 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness (Abnormal increase in radiation dose measured at site boundary) has occurred. In the interim, if we measure a manifestly abnormal figure and it is evident that the event is not the continuous

same event, we will determine and notify.

- The national government has instructed evacuation for those local residents within 20km radius of the periphery and evacuation to inside for those residents from 20km to 30km radius of the periphery, because it is possible that radioactive materials are discharged.
- At around 10:37 am March 21st, water spraying to common spent fuel pool and finished at 3:30 pm (conducted by TEPCO).
- At around 3:37 pm, March 24th, electricity supply to common spent fuel pool has started from external power source. At around 6:05 pm, fuel pool cooling pump was started to cool the pool.
- We found no signs of abnormal situation for the casks by visual observation during the patrol activity. A detailed inspection is under preparation.
- At Units 5 and 6, in order to prevent hydrogen gas from accumulating within the buildings, we have made three holes on the roof of the reactor building for each unit.
- In total 12 fire engines are lent for the water spraying to the spent fuel pools and water injection to the nuclear reactors by various regional fire departments* as well as Tokyo Fire Department. Also, instruction regarding the setting and operation of large scale decontamination system was provided by Niigata City Fire Headquarter and Hamamatsu City Fire Headquarter.
  *: Koriyama Fire Department, Iwaki Fire Brigade Headquarters, Fire Headquarters of Sukagawa District Wide Area Fire-fighting Association, Yonezawa City Fire Headquarters, Utsunomiya City Fire Headquarters, Fire Headquarters of Aizu-Wakamatsu wide area municipal association, Saitama City Fire Bureau, and Niigata City Fire Bureau.
- By March 22nd, Units 1 through 6 were started to be energized from the external power source.
- At 3:30PM, March 27th, we found that there was water in the trenches of Units 1 to 3. The radioactive emission at the surface of the water was 0.4mSv/h for Unit 1 and over 1,000mSv/h for Unit 2. As for Unit 3, we couldn't have access to the surface because of debris. We will continue to monitor water in the trenches.
- At 12:03 pm, March 29th, when taking off the flange of the pipe of the seawater piping of the Residual Heat Removal System, 3 workers from our subcontractor were soaked with water in the pipe. After wiping the water off, we confirmed that there was no radioactive contamination to their bodies.
- We will continue to take all measures to ensure the safety and to continue monitoring the surrounding environment around the Power Station.

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Press Releases

Press Release (Mar 30,2011)
Fuel Cost Adjustment in Electricity Fees for May 2011

Due to the publication of fuel prices from December 2010 to February 2011 (trade statistics prices for crude oil, liquefied natural gas (LNG) and coal published by Ministry of Finance Japan), a fuel cost adjusted unit price for May 2011 is fixed as per enclosure.

Fuel cost adjustment system:
"Fuel cost adjustment system" is a system designed to automatically adjust monthly electricity fees based on fluctuations in (actual recorded) fuel prices for crude oil, LNG and coal.

http://www.tepco.co.jp/en/customer/guide/fuelcost-e.html

Appendix: Fuel Cost Adjustment in Electricity Fees for May 2011
(PDF 15.5KB)

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Press Releases

Press Release (Mar 30,2011)
Plant Status of Fukushima Daini Nuclear Power Station (as of 3:00 pm March 30th)

[No update from the last release issued at 9:00 am, March 30th]

Unit	Status
1	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
2	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
3	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
4	· Reactor cold shutdown, stable water level, offsite power is available. · No reactor coolant is leaked to the reactor containment vessel. · Maintain average water temperature below 100°C in the Pressure Suppression Chamber.
Other	N.A.

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Press Releases

Press Release (Mar 30,2011)
Plant Status of Fukushima Daiichi Nuclear Power Station (as of 12:00 AM Mar 30th)

*Updates are underline

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down.

Unit 1 (Shut down)
- Explosive sound and white smoke were confirmed after the big quake occurred at 3:36 pm Mar 12th. It was assumed to be hydrogen explosion.
- At approximately 2:30 am on March 23rd, seawater injection to the nuclear reactor through the feed water system was initiated.
- At approximately 10:50 am on March 24th, white fog-like steam arising from the roof part of the reactor building was observed.
- At approximately 11:30 am on March 24th, lights in the main control room was restored.
- We had been injecting seawater into the reactor, but from 3:37 pm on March 25th, we started injecting freshwater.
- At 8:20 am on March 29th, we switched injection of fresh water from using fire engine to temporary electrical pump.

Unit 2 (Shut down)
- At approximately 6:00 am on March 15th, an abnormal noise began emanating from nearby Pressure Suppression Chamber and the pressure within the chamber decreased.
- At 6:20 pm on March 21st, white smoke was confirmed arising from the top of the reactor building. As of 7:11 am on March 22nd, smoke decreased to the level to nearly non-existent.
- We have been injecting seawater into the reactor, but from 10:10 am on March 26th, we started injecting fresh water (with boric acid).
- At approximately 4:46 pm on March 26th, the light in the main control room was restored.
- We had been injecting fresh water in to the reactor utilizing fire pump, however, we switched over to utilizing temporary electrical pump from 6:31 pm on March 27th.

Unit 3 (Shut down)
- Explosive sound and white smoke were confirmed at 11:01am March 4th. It was assumed to be hydrogen explosion.
- At 8:30am on March 16th, fog like steam was confirmed arising from the reactor building.
- At approximately 6:15 am on March 17th the pressure of the Suppression Chamber has temporarily increased. We were preparing to implement measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive material to outside) in order to fully secure safety. However, at present, it is not a

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Press Releases

Press Release (Mar 30,2011)
The results of nuclide analyses of radioactive materials in the air at the site of Fukushima Daiichi Nuclear Power Station (9th release)

On March 22nd 2011, as part of monitoring activity of the surrounding environment, we conducted nuclide analysis of radioactive materials contained in the air which were collected on March 20th and 21st 2011 at the site of Fukushima Daiichi Nuclear Power Station, which was damaged by Tohoku-Chihou-Taiheiyo-Oki Earthquake. As a result, radioactive materials were detected as shown in the attachment. Therefore, we summarized the results and reported them to Nuclear and Industry Safety Agency as well as to the government of Fukushima Prefecture today. (previously announced)

On March 28th, 2011, we conducted nuclide analysis of radioactive materials contained in the air which were collected on the same date at the site of Fukushima Daiichi Nuclear Power Station. As a result, radioactive materials were detected as shown in the attachment. Therefore, we summarized the results and reported them to Nuclear and Industry Safety Agency as well as to the government of Fukushima Prefecture today.

We will continue the sampling survey the same as this one.

attachment1:The result of the nuclide analysis of radioactive materials in the air at the site of Fukushima Daiichi Nuclear Power Station(PDF 12.6KB)
attachment2:The result of the nuclide analysis of radioactive materials in the air at the site of Fukushima Daini Nuclear Power Station(PDF 12.6KB)
attachment3:Nuclide analysis of radioactive materials in the air Fukushima Daiichi Nuclear Power Station (Western Gate)(PDF 16.4KB)
attachment4:Nuclide analysis of radioactive materials in the air Fukushima Daini Nuclear Power Station(PDF 20.0KB)

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Press Releases

Press Release (Mar 30,2011)
Smoke generation from the turbine building at Fukushima Daiichi Nuclear Power Station Unit 2

On approximately 5:56 pm, March 30th 2011, TEPCO employee discovered smoke generation from power panel (*)at the turbine building Unit 1 (Reactor cold shoutdown). On 5:57 pm, March 30th 2011, TEPCO immediately reported this incident to the fire department.

Subsequently the fire department consisting of TEPCO employee inspected the area. On approximately 6:13 pm, March 30th 2011,we confirmed the smoke generation stopped after interrupt electrical supply to the power panel.

From now, the fire department will conduct inspection around the area.

TEPCO will also conduct an investigation into a cause in detail.
This incident will not cause any effect of radiation externally.

(*) power panel: power supply board to supply electricity to the motor of a drawing water pump to the outdoor duct.

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Press Releases

Press Release (Mar 30,2011)
Detection of radioactive materials from the seawater around the discharge canal of Fukushima Daiichi Nuclear Power Station (10th release)

On March 21st 2011, radioactive materials were detected from the seawater around the discharge canal (south) of Fukushima Daiichi Nuclear Power Station which was damaged by the 2011 Tohoku-Taiheiyou-Oki Earthquake. This is the result of the sampling survey of radioactive materials in the seawater which was implemented as a part of monitoring activity of surrounding environment. We had informed the result to Nuclear and Industrial Safety Agency (NISA) and Fukushima prefecture.
(previously announced)

On March 29th 2011, we had conducted re-sampling survey to examine the effect of radioactive materials in the seawater. Today, we had informed the result to Nuclear and Industrial Safety Agency (NISA) and the government of Fukushima Prefecture, because radioactive materials were detected as shown in the attachment.

We will continue to conduct same kind of sampling survey.

attachment1: The result of the nuclide analysis of the seawater (Around the discharge canal (north) of Unit 5 and 6 Fukushima Daiichi Nuclear Power Station) 8:40 (PDF 7.64KB)
attachment2: The result of the nuclide analysis of the seawater (Around the discharge canal (north) of Unit 5 and 6 Fukushima Daiichi Nuclear Power Station) 14:10 (PDF 7.64KB)
attachment3: The result of the nuclide analysis of the seawater (Around the discharge canal (south) of Fukushima Daiichi Nuclear Power Station) 8:20 (PDF 7.64KB)
attachment4: The result of the nuclide analysis of the seawater (Around the discharge canal (south) of Fukushima Daiichi Nuclear Power Station) 13:55 (PDF 7.59KB)
attachment5: The result of the nuclide analysis of the seawater (Around the north water discharge canal of Fukushima Daini Nuclear Power Station 10:15) (PDF 7.59KB)
attachment6: The result of the nuclide analysis of the seawater (Around Iwasawa shore at Fukushima Daini Nuclear Power Station) 9:20 (PDF 7.59KB)
attachment7: Radioactivity Density of Seawater (PDF 24.1KB)

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Press Releases

Press Release (Mar 30,2011)
The status of water analysis in the trench of Fukushima Daiichi Nuclear Power Station

As to the water found in the trench of Unit 1, Fukushima Daiichi Nuclear Power Station, we conducted the sampling on Mar 29th. Today, we informed NISA and Fukushima prefecture of the result of the nuclide analysis attached as the appendix.

We intend to conduct the sampling and analysis for Units 2 to 4 on the same part. As soon as we have the result, we will inform you.

Appendix:The result of the nuclide analysis of water in the trench of Unit 1, Fukushima Daiichi Nuclear Power Station

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From: LIA07 Hoc
Sent: Wednesday, March 30, 2011 11:28 AM
To: OST04 Hoc
Subject: FW: Fax from Via Fax
Attachments: File1.PDF

Save in folder: Radiological Reading.
File Name: RSMC NOAA 03302011 1228UTC

-----Original Message-----
From: HOO Hoc
Sent: Wednesday, March 30, 2011 10:31 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Fax from Via Fax

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

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Wednesday, March 30, 2011 9:03 AM
To: HOO Hoc
Subject: Fax from Via Fax

RECEIVE NOTIFICATION FOR JOB 00017894

Notice for: HOO1

Remote ID: Via Fax

Received at: 03/30/2011 09:02

Pages: 6

Routed by:

Routed at: 03/30/2011 09:02

0001 195

U.S. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

RSMC Washington (NOAA ARL, NOAA NCEP)

Room 410 - W/NMC33
World Weather Building
5200 Auth Road
Camp Springs, Maryland USA

Tel (24 hrs - NCEP): 301-763-8298
Tel (Backup - ARL): 301-713-2614

Fax (24 hrs - NCEP): 301-763-8592
Fax (Backup - ARL): 301-713-4592

RSMC products created Wed Mar 30 12:28 UTC 2011

The following charts will follow:
- trajectory map
- several time-itegrated concentration maps
- total (dry + wet) deposition map

Please contact us if any problems arise with these products.

Source term and dispersion model details

RSMC Washington - NOAA ARL / NCEP

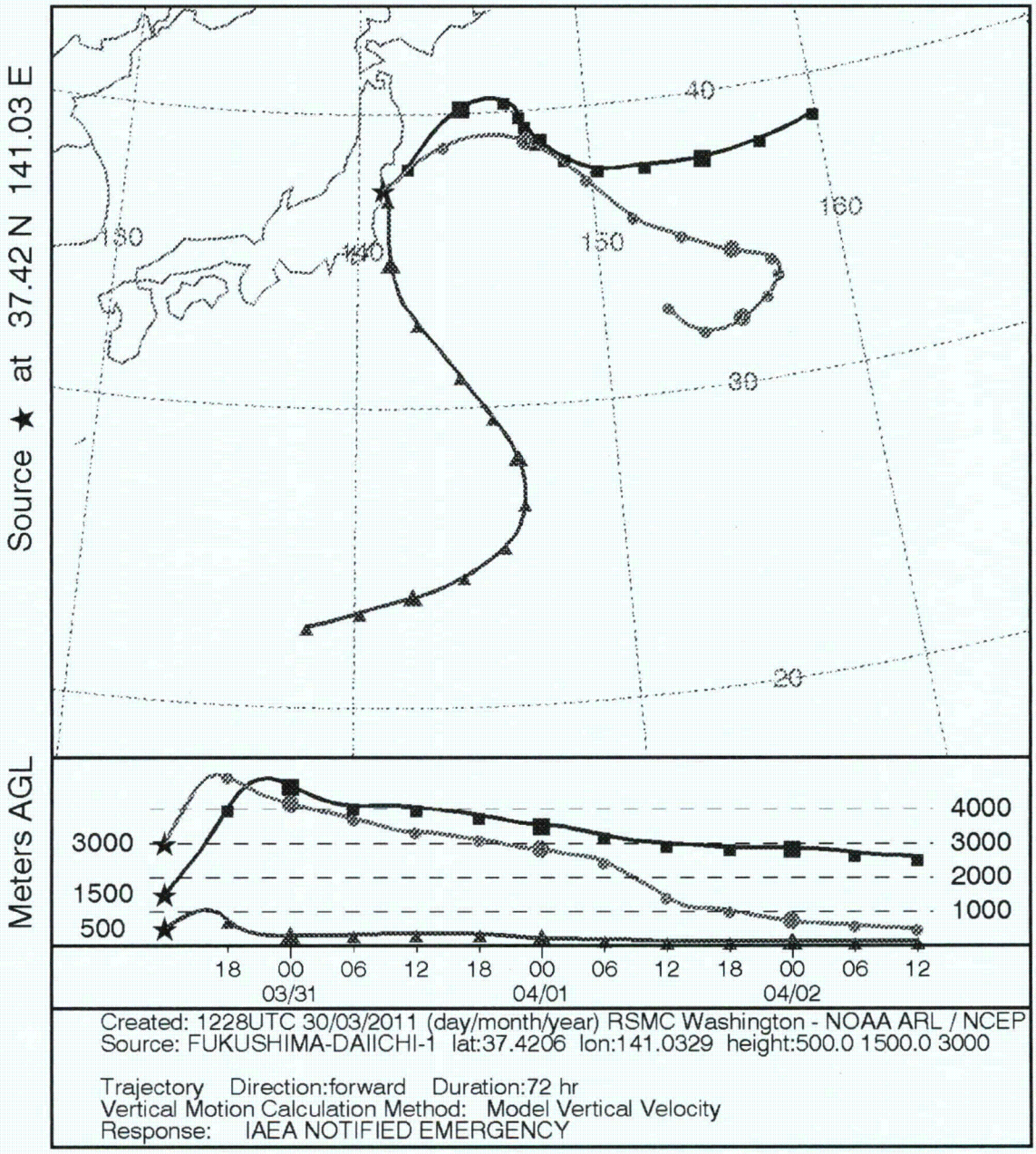
Response: IAEA NOTIFIED EMERGENCY

Location:FUKUSHIMA-DAIICHI-1 lat:37.4206 lon:141.0329
Release Start (YYYY MM DD HH MM):2011 03 30 12 00
Meteorology: 0600 UTC 30 Mar 2011 GFS
Trajectories: 500.0, 1500.0, 3000.0 m AGL
Release ID:I131 Rate: .0138 Bq/hr Duration: 72 hr Particles: 5000
Distribution: Uniform between 20 and 500 m AGL
Dry Deposition Rate:0.02 m/s Wet Removal (below/in-cloud):1.00E-04/3.20
Note: Contour values may change from chart to chart

NOAA HYSPLIT MODEL

Forward trajectories starting at 12 UTC 30 Mar 11

06 UTC 30 Mar GFSG Forecast Initialization

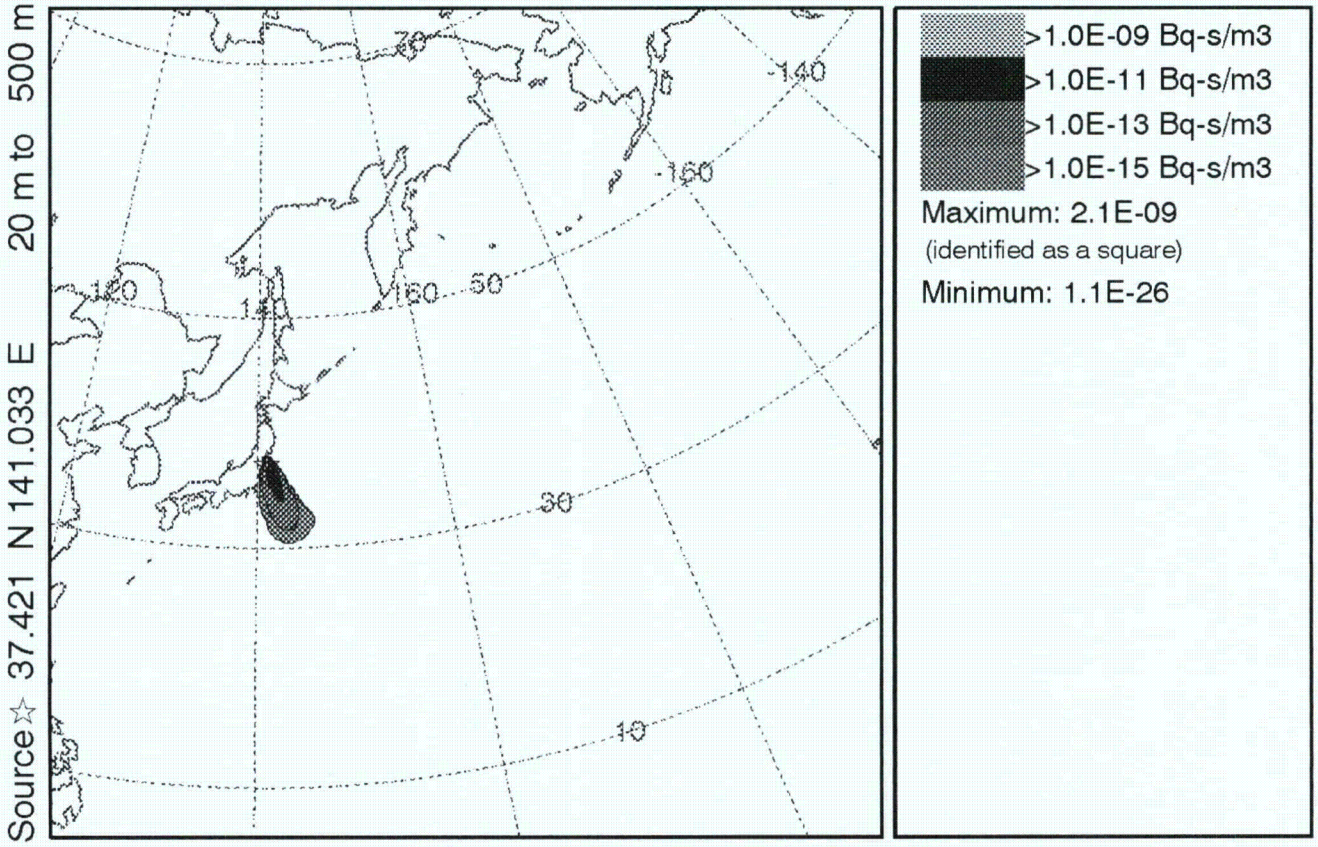


Created: 1228UTC 30/03/2011 (day/month/year) RSMC Washington - NOAA ARL / NCEP
Source: FUKUSHIMA-DAIICHI-1 lat:37.4206 lon:141.0329 height:500.0 1500.0 3000

Trajectory Direction:forward Duration:72 hr
Vertical Motion Calculation Method: Model Vertical Velocity
Response: IAEA NOTIFIED EMERGENCY

NOAA HYSPLIT MODEL

Exposure (Bq-s/m3) averaged between 0 m and 500 m
Integrated from 1200 30 Mar to 1200 31 Mar 11 (UTC)
I131 Release started at 1200 30 Mar 11 (UTC)



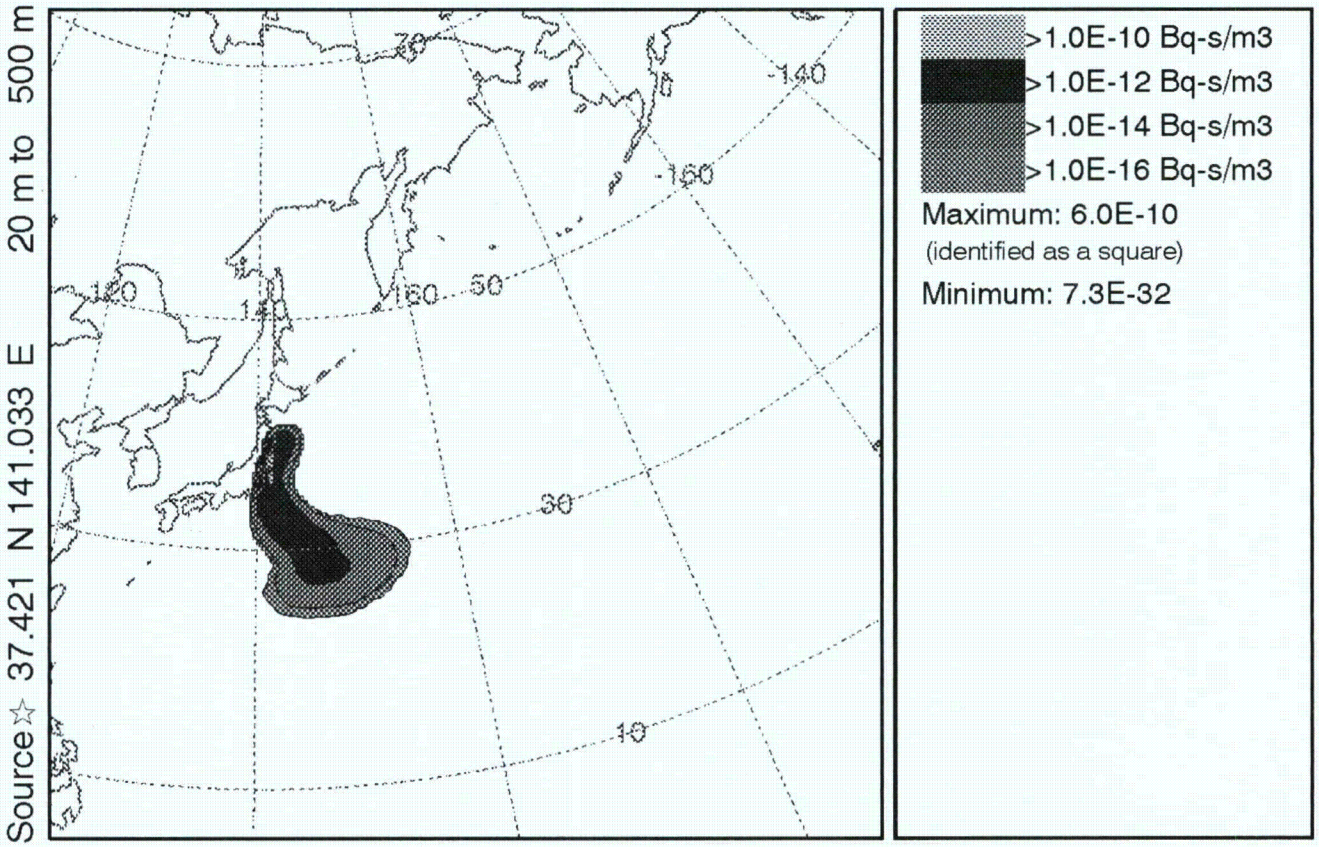
0600 30 Mar 11 GFSG FORECAST INITIALIZATION

Created: 1228UTC 30/03/2011 (day/month/year) RSMC Washington - NOAA ARL / NCEP
Source:FUKUSHIMA-DAIICHI-1 lat:37.4206 lon:141.0329 hgt:20 to 500 m
Release ID:I131 Rate: .0138 Bq/hr Duration: 72 hr Particles: 5000
Distribution: Uniform between 20 and 500 m AGL
Dry Deposition Rate:0.02 m/s Wet Removal (below/in-cloud):1.00E-04/3.20E+05
Meteorology: 0600 UTC 30 Mar 2011 GFS
Note: Contour values may change from chart to chart

Response: IAEA NOTIFIED EMERGENCY

NOAA HYSPLIT MODEL

Exposure (Bq-s/m3) averaged between 0 m and 500 m
Integrated from 1200 31 Mar to 1200 01 Apr 11 (UTC)
I131 Release started at 1200 30 Mar 11 (UTC)



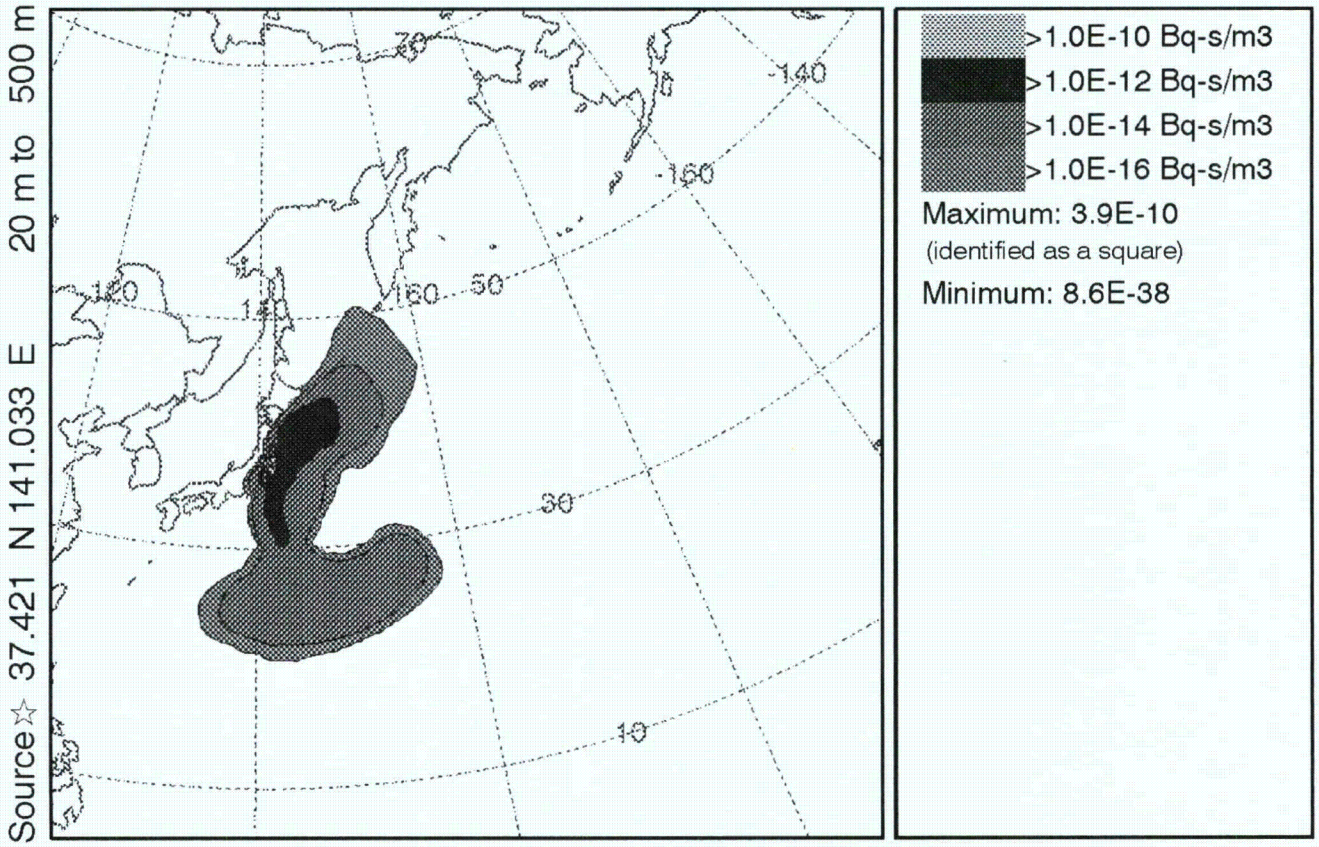
0600 30 Mar 11 GFSG FORECAST INITIALIZATION

Created: 1228UTC 30/03/2011 (day/month/year) RSMC Washington - NOAA ARL / NCEP
Source:FUKUSHIMA-DAIICHI-1 lat:37.4206 lon:141.0329 hgt:20 to 500 m
Release ID:I131 Rate: .0138 Bq/hr Duration: 72 hr Particles: 5000
Distribution: Uniform between 20 and 500 m AGL
Dry Deposition Rate:0.02 m/s Wet Removal (below/in-cloud):1.00E-04/3.20E+05
Meteorology: 0600 UTC 30 Mar 2011 GFS
Note: Contour values may change from chart to chart

Response: IAEA NOTIFIED EMERGENCY

NOAA HYSPLIT MODEL

Exposure (Bq-s/m3) averaged between 0 m and 500 m
Integrated from 1200 01 Apr to 1200 02 Apr 11 (UTC)
I131 Release started at 1200 30 Mar 11 (UTC)

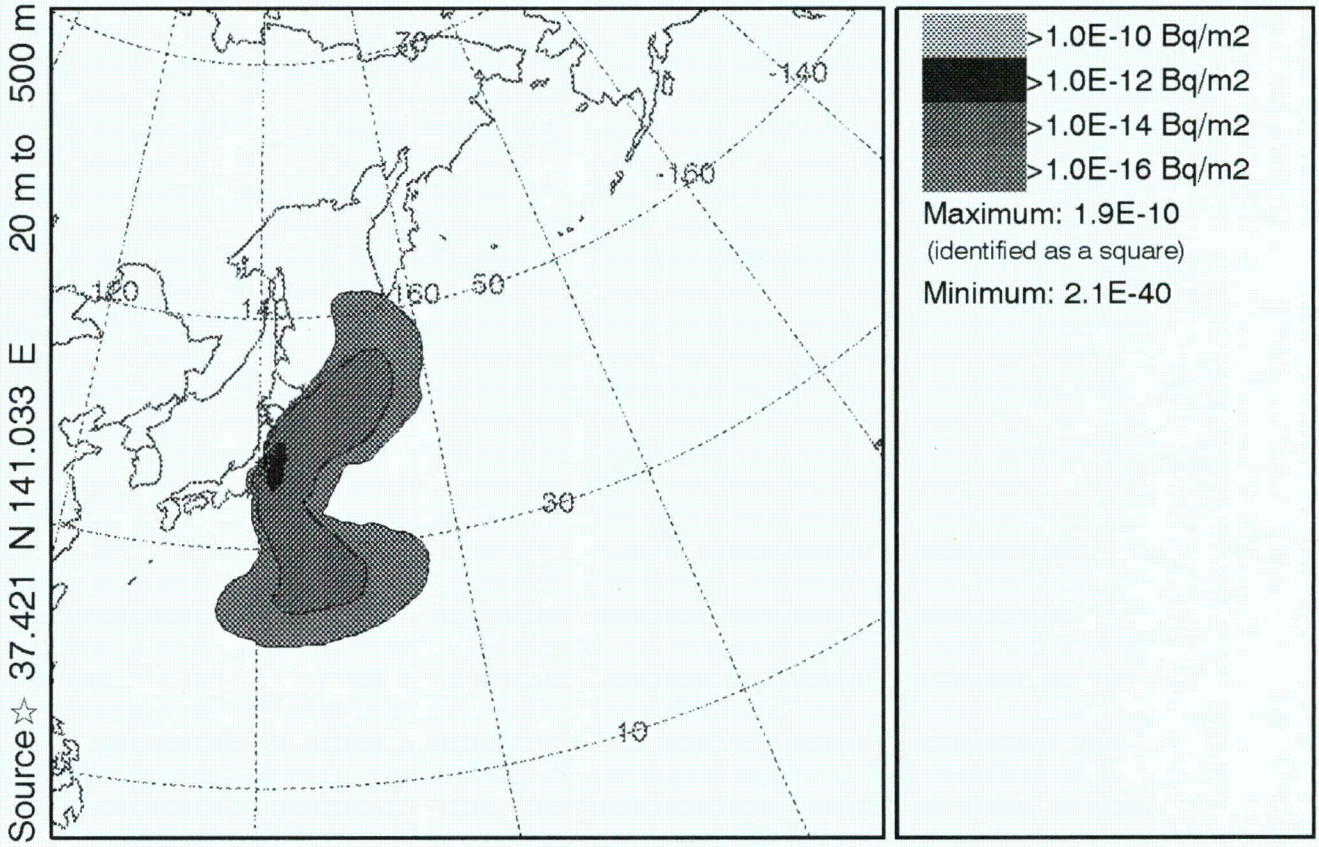


0600 30 Mar 11 GFSG FORECAST INITIALIZATION

Created: 1228UTC 30/03/2011 (day/month/year) RSMC Washington - NOAA ARL / NCEP
Source:FUKUSHIMA-DAIICHI-1 lat:37.4206 lon:141.0329 hgt:20 to 500 m
Release ID:I131 Rate: .0138 Bq/hr Duration: 72 hr Particles: 5000
Distribution: Uniform between 20 and 500 m AGL
Dry Deposition Rate:0.02 m/s Wet Removal (below/in-cloud):1.00E-04/3.20E+05
Meteorology: 0600 UTC 30 Mar 2011 GFS
Note: Contour values may change from chart to chart

Response: IAEA NOTIFIED EMERGENCY

NOAA HYSPLIT MODEL
Deposition (Bq/m2) at ground-level
Integrated from 1200 30 Mar to 1200 02 Apr 11 (UTC)
I131 Release started at 1200 30 Mar 11 (UTC)



0600 30 Mar 11 GFSG FORECAST INITIALIZATION

Created: 1228UTC 30/03/2011 (day/month/year) RSMC Washington - NOAA ARL / NCEP
Source:FUKUSHIMA-DAIICHI-1 lat:37.4206 lon:141.0329 hgt:20 to 500 m
Release ID:I131 Rate: .0138 Bq/hr Duration: 72 hr Particles: 5000
Distribution: Uniform between 20 and 500 m AGL
Dry Deposition Rate:0.02 m/s Wet Removal (below/in-cloud):1.00E-04/3.20E+05
Meteorology: 0600 UTC 30 Mar 2011 GFS
Note: Contour values may change from chart to chart

Response: IAEA NOTIFIED EMERGENCY

From: LIA07 Hoc
Sent: Wednesday, March 30, 2011 11:29 AM
To: OST04 Hoc
Subject: FW: Fax from +61386166600
Attachments: File1.PDF

Save in folder: Radiological Reading
File Name: RSMC Australia 03302011 1301UTC

-----Original Message-----
From: HOO Hoc
Sent: Wednesday, March 30, 2011 10:31 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Fax from +61386166600

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

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Wednesday, March 30, 2011 9:28 AM
To: HOO Hoc
Subject: Fax from +61386166600

RECEIVE NOTIFICATION FOR JOB 00017897

Notice for: HOO1

Remote ID: +61386166600

Received at: 03/30/2011 09:27

Pages: 6

Routed by:

000196

Routed at: 03/30/2011 09:27

Bureau of Meteorology
National Meteorological and Oceanographic Centre
Melbourne Australia
RSMC for Environmental Emergency Response
FAX: 61 3 9662 1222 or 61 3 9662 1223
Telephone (24 hours) Shift Supervisor 61 3 9669 4035
Email: rto@bom.gov.au

EMERGENCY EMERGENCY

RSMC Melbourne EER Products

Issued at : 1301 UTC 30:Mar:2011

The following charts will follow:
- trajectory map
- several time-integrated concentration map
- total (dry + wet) deposition map

Please contact us if any problems arise with these products.

Source term and dispersion model details

Location name: Fukushima Daiichi Japan
Release Location(decimal degrees): 37.4206 N 141.0329 E
Release Time/Date: 1200 UTC 30 MAR 2011
Emission duration: 72
Emission (per hour): 1.39E-02
Substance released: I131 (Halflife: 8.04398E+0
Vertical distribution: UNIFORM
Meteorological Model: Access G (~80km/29 sigma lvls)
Dispersion Model: HYSPLIT 4.9

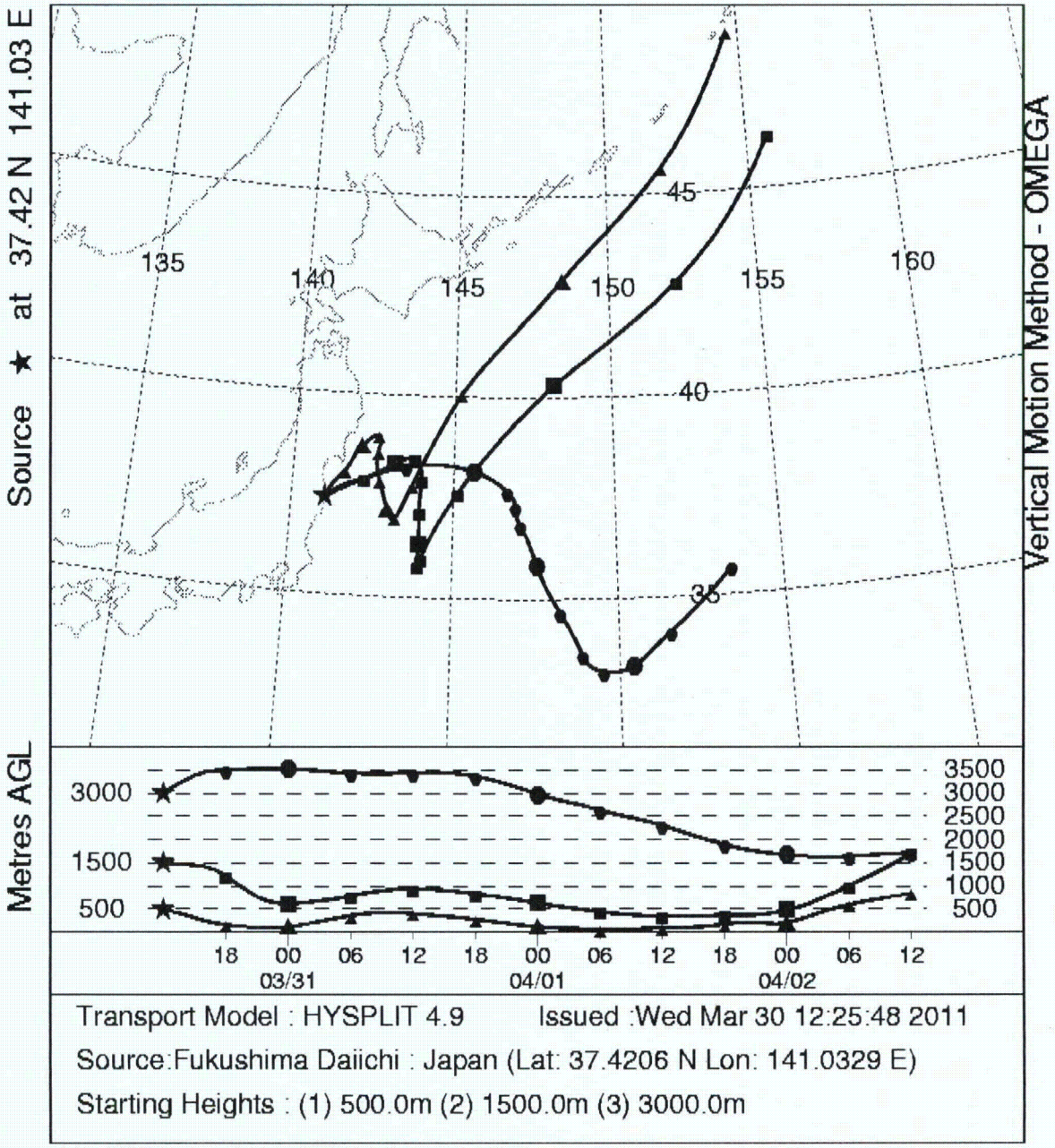
Number of Pages (incl cover sheet) = 6

RSMC Melbourne : Environmental Emergency Response Centre

Forward trajectories starting at 1200 UTC 30 Mar 2011

Meteorological Data : ACCESS-G : base time 0000 UTC 30 Mar

OPERATIONAL EVENT OPERATIONAL EVENT



Transport Model : HYSPLIT 4.9 Issued :Wed Mar 30 12:25:48 2011

Source:Fukushima Daiichi : Japan (Lat: 37.4206 N Lon: 141.0329 E)

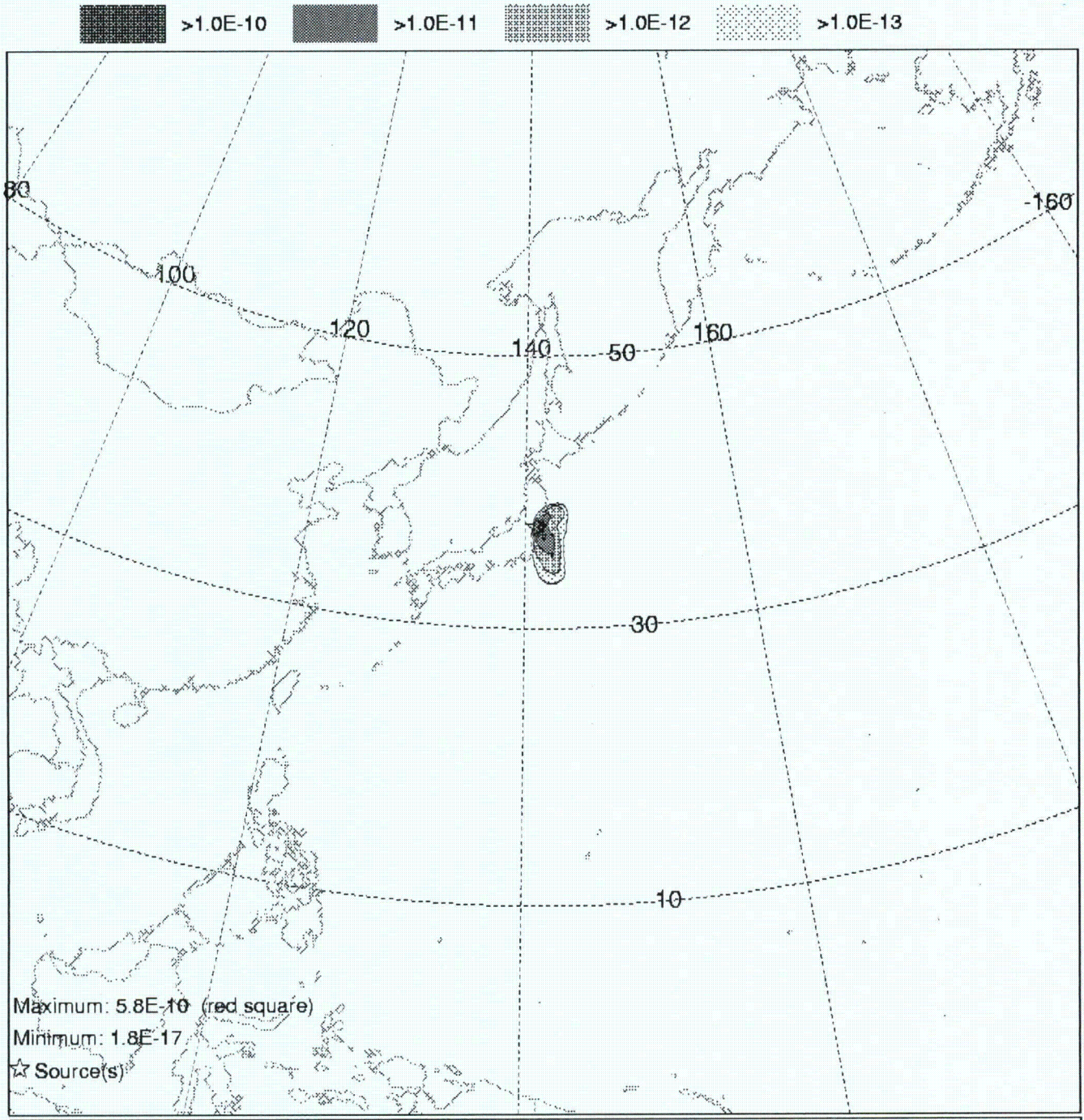
Starting Heights : (1) 500.0m (2) 1500.0m (3) 3000.0m

RSMC Melbourne : Environmental Emergency Response Centre

OPERATIONAL EVENT

Integrated from 1200 30 Mar to 1200 31 Mar 11 (UTC)

Exposure (Bq-s/m3) averaged between 0 m and 500 m



NRAD RELEASE STARTED AT 1200 UTC30 MAR 2011

Source:Fukushima Daiichi : Japan (Lat: 37.4206 N Lon: 141.0329 E)

Isotope : I131 (Halflife: 8.04398E+00 days) Rate:1.39E-02 Bq/hr

Duration:72 hrs Particles: 500

DryDep Rate 0.001 WetRem (in/below-cloud) 3.20E+05 5.0E-05

Distribution: UNIFORM between 20.0m and 500.0m

Meteorological Data : ACCESS-G : base time 0000 UTC 30 Mar

Note: "Contours may change from Chart to Chart"

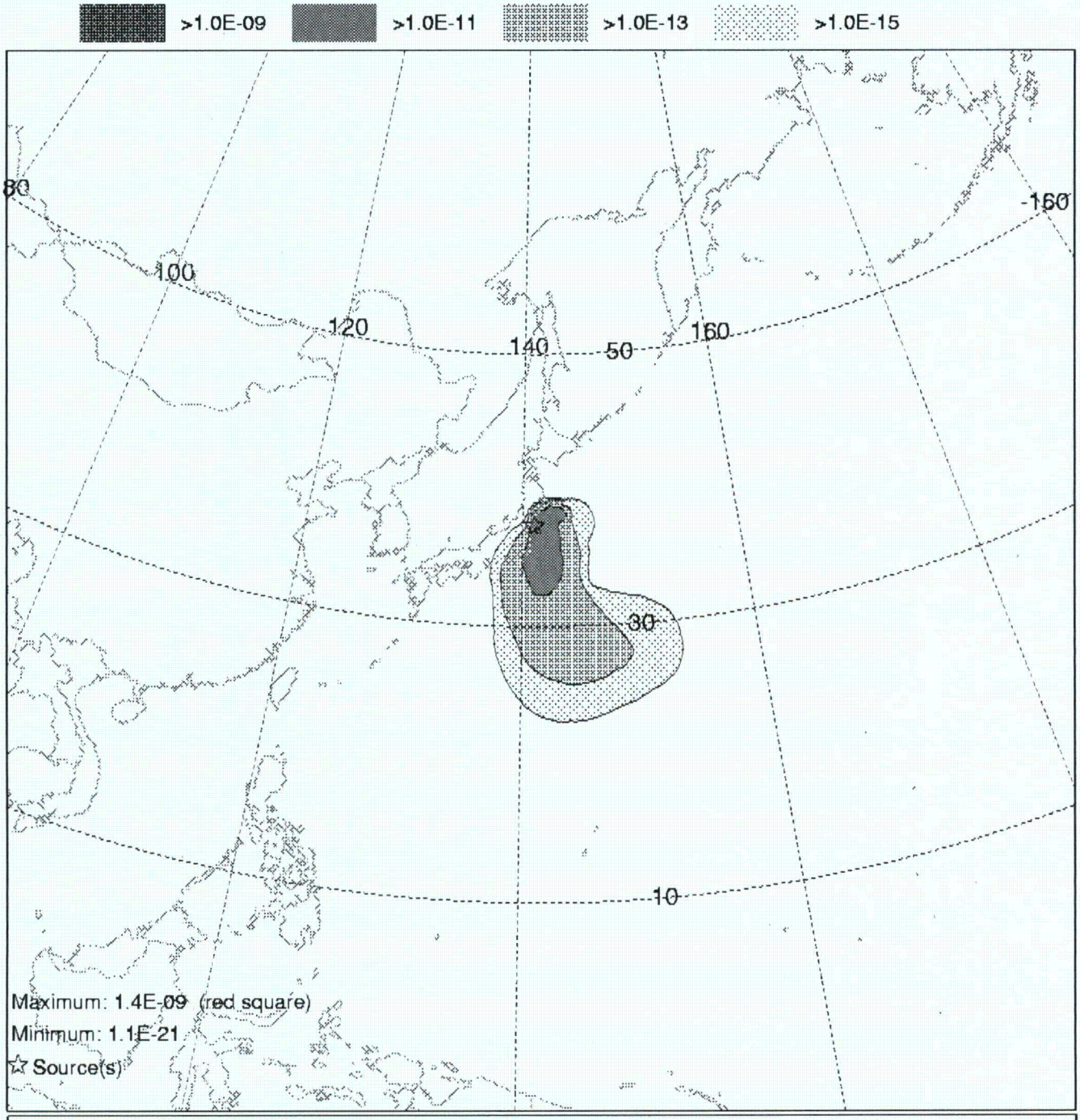
Issued :Wed Mar 30 12:25:48 2011

RSMC Melbourne : Environmental Emergency Response Centre

OPERATIONAL EVENT

Integrated from 1200 31 Mar to 1200 01 Apr 11 (UTC)

Exposure (Bq-s/m3) averaged between 0 m and 500 m



NRAD RELEASE STARTED AT 1200 UTC30 MAR 2011

Source:Fukushima Daiichi : Japan (Lat: 37.4206 N Lon: 141.0329 E)

Isotope : I131 (Halflife: 8.04398E+00 days) Rate:1.39E-02 Bq/hr

Duration:72 hrs Particles: 500

DryDep Rate 0.001 WetRem (in/below-cloud) 3.20E+05 5.0E-05

Distribution: UNIFORM between 20.0m and 500.0m

Meteorological Data : ACCESS-G : base time 0000 UTC 30 Mar

Note: "Contours may change from Chart to Chart"

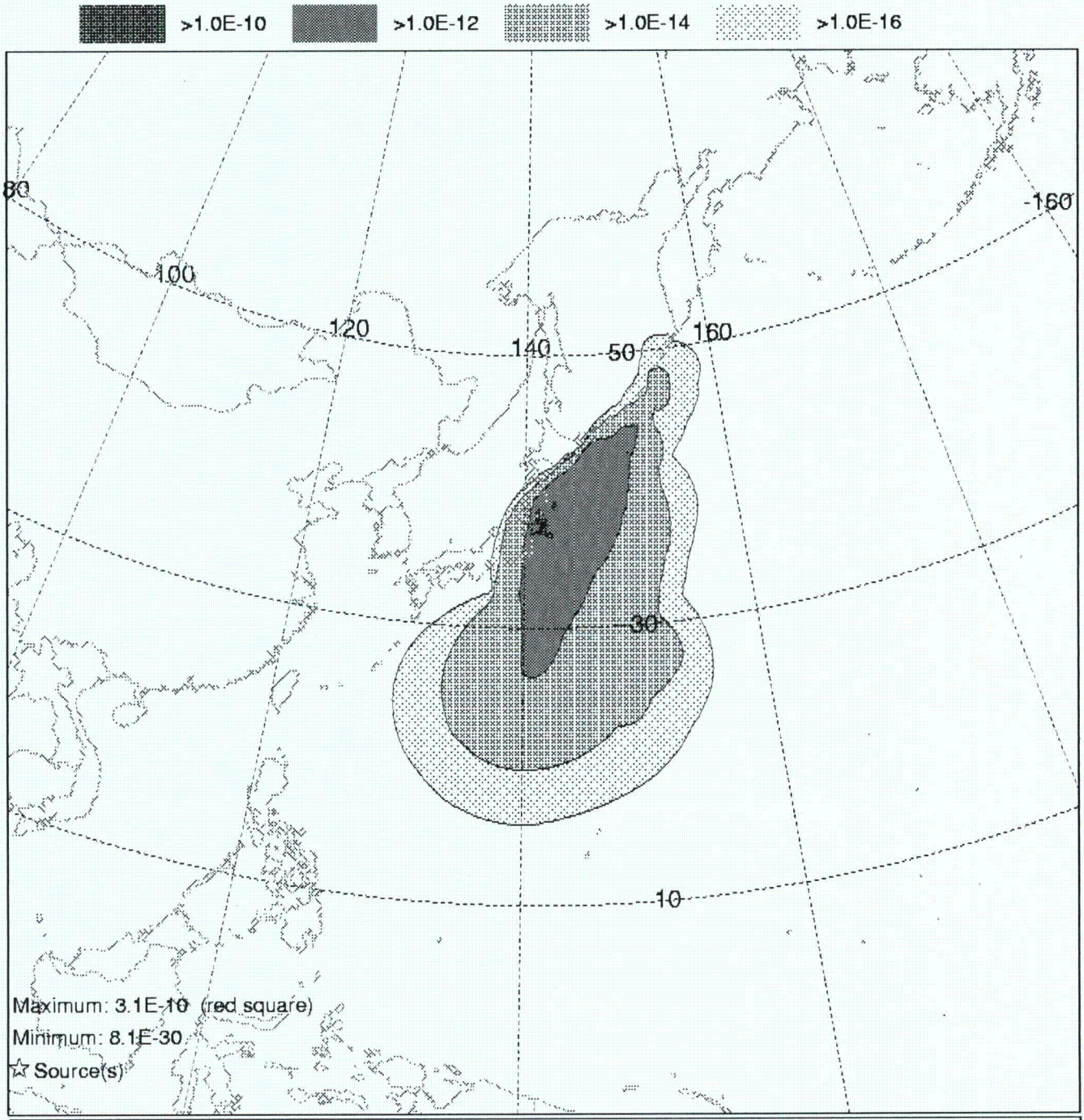
Issued :Wed Mar 30 12:25:48 2011

RSMC Melbourne : Environmental Emergency Response Centre

OPERATIONAL EVENT

Integrated from 1200 01 Apr to 1200 02 Apr 11 (UTC)

Exposure (Bq-s/m3) averaged between 0 m and 500 m



NRAD RELEASE STARTED AT 1200 UTC30 MAR 2011

Source:Fukushima Daiichi : Japan (Lat: 37.4206 N Lon: 141.0329 E)

Isotope : I131 (Halflife: 8.04398E+00 days) Rate:1.39E-02 Bq/hr

Duration:72 hrs Particles: 500

DryDep Rate 0.001 WetRem (in/below-cloud) 3.20E+05 5.0E-05

Distribution: UNIFORM between 20.0m and 500.0m

Meteorological Data : ACCESS-G : base time 0000 UTC 30 Mar

Note: "Contours may change from Chart to Chart"

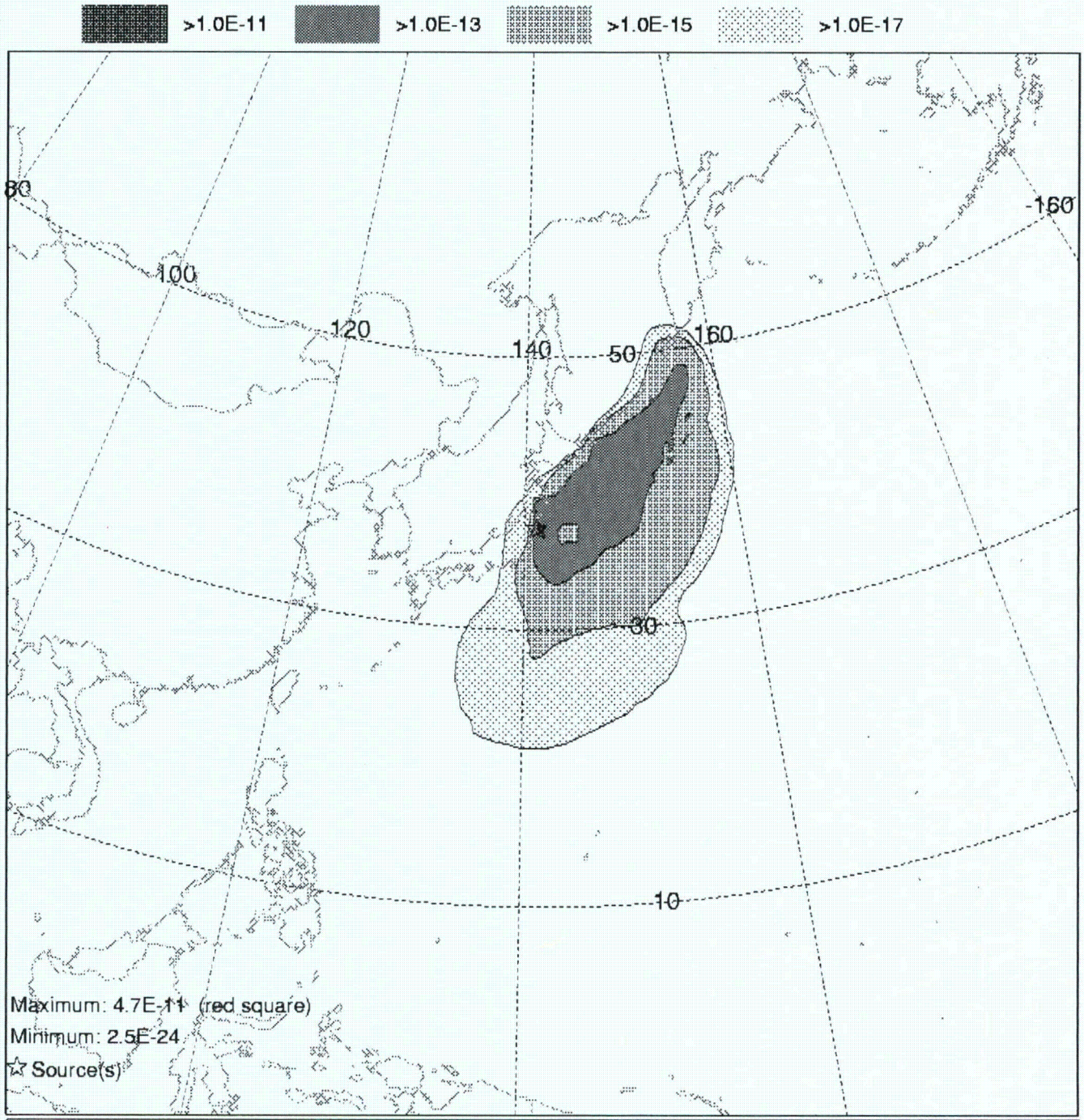
Issued :Wed Mar 30 12:25:48 2011

RSMC Melbourne : Environmental Emergency Response Centre

OPERATIONAL EVENT

Integrated from 1200 30 Mar to 1200 02 Apr 11 (UTC)

Deposition (Bq/m2) at ground-level



NRAD RELEASE STARTED AT 1200 UTC30 MAR 2011

Source:Fukushima Daiichi : Japan (Lat: 37.4206 N Lon: 141.0329 E)

Isotope : I131 (Halflife: 8.04398E+00 days) Rate:1.39E-02 Bq/hr

Duration:72 hrs Particles: 500

DryDep Rate 0.001 WetRem (in/below-cloud) 3.20E+05 5.0E-05

Distribution: UNIFORM between 20.0m and 500.0m

Meteorological Data : ACCESS-G : base time 0000 UTC 30 Mar

Note: "Contours may change from Chart to Chart"

Issued :Wed Mar 30 12:25:48 2011