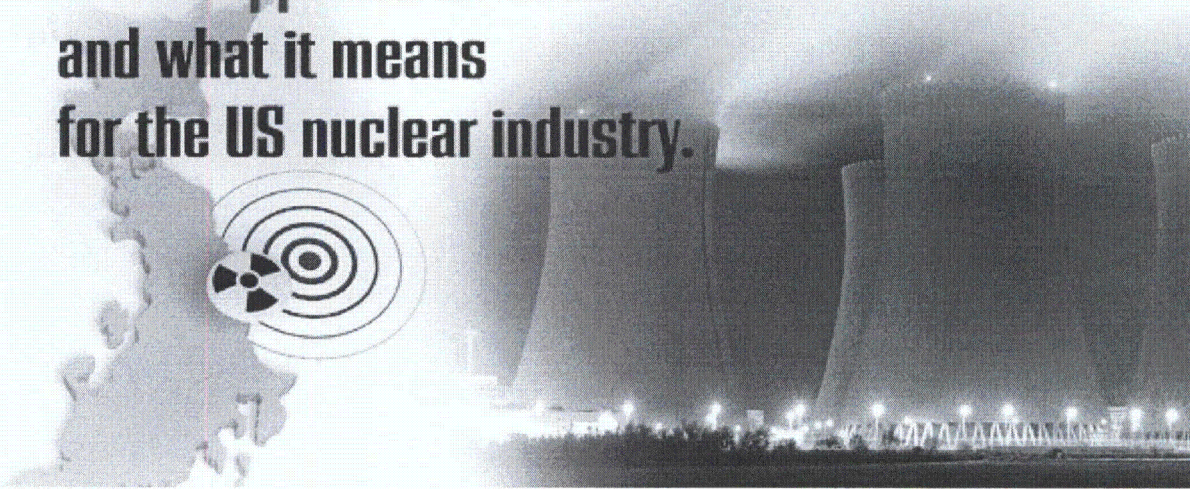


Norato, Michael

From: AICHE [customerservice@aiche.org]  
Sent: Wednesday, April 06, 2011 3:53 PM  
To: Norato, Michael  
Subject: FREE Webinar: Fukushima Daiichi Nuclear Plant--What Happened and What it Means

[View our online version here or mobile](#)

## What Happened at Fukushima Daiichi... and what it means for the US nuclear industry.



Almost a month ago, on March 11, 2011, **Japan** suffered a catastrophic earthquake. The resulting tsunami damaged and disrupted Japan's economy, society and tragically took the lives of thousands.

The nuclear power plant at **Fukushima Daiichi** was not spared in this event. The power plant has experienced massive damage to its reactor containment housings and the spent fuel rod holding pools resulting in the release of radioactive materials.

To help our members and the chemical engineering community understand what happened at Fukushima Daiichi, AICHE has enlisted **Dr. Stuart T. Arm** of EnergySolutions to host a **FREE Webinar** next **Tuesday, April 12, 2011 between 3:00 and 4:00 PM EST.**

Dr. Arm has a long history in the nuclear sciences starting in the United Kingdom where he earned his PhD and worked for the **United Kingdom Atomic Energy Authority at Harwell**, developing and evaluating process technologies for reprocessing spent nuclear fuel. Dr. Arm has lived in the USA since 1994 and he has been a member of the American Nuclear Society since 2004 and was the American Institute of Chemical Engineers Nuclear Engineering Division chair for 2009.

The purpose of this webinar is to provide the **AICHE** members and non-members with information on what happened and the current status at **Fukushima Daiichi** based on the most credible technical sources; provide comment on the potential implications for the US nuclear industry based on recent comments by the **US Nuclear Regulatory**

**Commission**; and provide members with resources to allow them to follow future events at **Fukushima Daiichi**.

For updates please visit the *International Atomic Energy Agency's* Website where there is an ongoing log of the developments at Fukushima Daiichi.

**Register now for this timely and important Webinar.**

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American Institute of Chemical Engineers  
3 Park Avenue  
New York, NY 10016

Click [here](#) to unsubscribe

3 Park Avenue, New York, NY 10016-5991



**Hughey, John**

---

**From:** Chernoff, Harold *inlf*  
**Sent:** Wednesday, April 06, 2011 2:46 PM  
**To:** NRR\_DORL\_LPL1-2 Distribution  
**Subject:** UPDATE 2-Democrats raise concern about Penn. nuclear plant | Reuters

<http://www.reuters.com/article/2011/04/06/japan-markey-idUSN0621681520110406>

## Hughey, John

---

**From:** Hughey, John *in reply*  
**Sent:** Wednesday, April 06, 2011 3:05 PM  
**To:** Krohn, Paul; Bower, Fred; Lafferty, Nathan; Rosebrook, Andrew; Torres, Edgardo  
**Subject:** FW: UPDATE 2-Democrats raise concern about Penn. nuclear plant | Reuters

Please see link to article below regarding Peach Bottom

John Hughey  
Peach Bottom & Millstone Project Manager NRR / Division of Operating Reactor Licensing  
Phone: 301-415-3204  
e-mail: [John.Hughey@nrc.gov](mailto:John.Hughey@nrc.gov)

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

**From:** Chernoff, Harold  
**Sent:** Wednesday, April 06, 2011 2:46 PM  
**To:** NRR\_DORL\_LPL1-2 Distribution  
**Subject:** UPDATE 2-Democrats raise concern about Penn. nuclear plant | Reuters

<http://www.reuters.com/article/2011/04/06/japan-markey-idUSN0621681520110406>



**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 1:28 PM  
**To:** Markley, Michael  
**Subject:** RE: FYI: Kudos from Marty Virgilio

I didn't ask.

NELSON

---

**From:** Markley, Michael *NR*  
**Sent:** Wednesday, April 06, 2011 1:27 PM  
**To:** Nelson, Robert  
**Subject:** RE: FYI: Kudos from Marty Virgilio

So, he didn't have anything good to say about the testimony that we readied? Oh, bother.

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 1:11 PM  
**To:** Orf, Tracy; Burkhardt, Janet; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric; Wertz, Trent  
**Cc:** Glitter, Joseph; Boger, Bruce; Leeds, Eric  
**Subject:** FYI: Kudos from Marty Virgilio

I bumped into Marty during lunch. He was very appreciative of the Q&A database and said that it prevented several look-ups/take-aways during his testimony today.

Again – great job!

NELSON

**Nelson, Robert**

---

**From:** Nelson, Robert *NRK*  
**Sent:** Wednesday, April 06, 2011 11:06 AM  
**To:** Markley, Michael  
**Subject:** RE: G20110196 Gundersen Status

OK. Should have checked with you first. Lesson learned.

NELSON

---

**From:** Markley, Michael *NRK*  
**Sent:** Wednesday, April 06, 2011 11:05 AM  
**To:** Nelson, Robert  
**Subject:** FW: G20110196 Gundersen Status

Nelson,

We have been working this. It has a green ticket and is in process. We are handling it as normal correspondence.

Mike

---

**From:** Lyon, Fred *NRK*  
**Sent:** Wednesday, April 06, 2011 7:46 AM  
**To:** Markley, Michael  
**Subject:** G20110196 Gundersen Status

Letter is to Bob Dennig for concurrence (then OGC - you - Glitter - Leeds). Attached fyi.



**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 10:58 AM  
**To:** Astwood, Heather  
**Subject:** RE: article

We are aware & OPA is working it.

Thanks!

NELSON

---

**From:** Astwood, Heather *NR*  
**Sent:** Wednesday, April 06, 2011 10:53 AM  
**To:** Nelson, Robert; Boger, Bruce  
**Subject:** FW: article

OIP sent this to us to give us a heads up.

**Heather Astwood**  
International Team Leader  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1075

---

**From:** Schwartzman, Jennifer *OIP*  
**Sent:** Wednesday, April 06, 2011 10:50 AM  
**To:** Astwood, Heather  
**Subject:** article

<http://www.nytimes.com/2011/04/06/world/asia/06nuclear.html?hp>

Jennifer Schwartzman Holzman  
Office of International Programs  
U.S. Nuclear Regulatory Commission  
+1-301-415-2317  
jennifer.schwartzman@nrc.gov

\*\*\*NOTE: Please note new email address above. My old email address, jks1@nrc.gov, will no longer work on this system. Please update your contact lists accordingly.\*\*\*

**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 8:53 AM  
**To:** Ruland, William  
**Cc:** Boger, Bruce; Leeds, Eric; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric; Wertz, Trent  
**Subject:** RE: FAQ repository in NRR

My Comm Team is OK with this. It will mean some additional work for us but we'll insist that any Qs & As forwarded to us be prior-approved by originating office management and OPA with the search categories identified. Then it's simply a matter of loading the database which is done by a licensing assistant.

The pitfall is that we'll get comments and Qs on the Qs & As (e.g., requesting more info, disagreeing with the A). It is difficult to assess whether this public access will answer more Qs than it generates.

NELSON

---

**From:** Ruland, William *NR*  
**Sent:** Wednesday, April 06, 2011 8:38 AM  
**To:** Nelson, Robert  
**Cc:** Boger, Bruce; Leeds, Eric  
**Subject:** RE: FAQ repository in NRR

And your opinion of this approach? Pitfalls?

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 7:52 AM  
**To:** Boger, Bruce; LIA06 Hoc; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Croteau, Rick; Steger (Tucci), Christine; Burnell, Scott; Meighan, Sean; Nguyen, Quynh; Wertz, Trent; Thomas, Eric; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry  
**Cc:** Shear, Gary; West, Steven  
**Subject:** FYI: FAQ repository in NRR

Note the plan to make our FAQ site accessible to the public.

NELSON

---

**From:** Muessle, Mary *MD*  
**Sent:** Tuesday, April 05, 2011 6:47 PM  
**To:** RidsNmssOd Resource; RidsResOd Resource; RidsFsmeOd Resource; RidsNroOd Resource; RidsNsirOd Resource  
**Cc:** Schum, Constance; Pulliam, Timothy; Valentin, Andrea; Webber, Robert; Brenner, Eliot; Hayden, Elizabeth; Rothschild, Trip; Leeds, Eric; Nelson, Robert; Markley, Michael; Oesterle, Eric; Rihm, Roger; Ellmers, Glenn; Andersen, James; Landau, Mindy; Frazier, Alan; Sealing, Donna; Ficks, Ben; Holonich, Joseph; Bowman, Gregory; Rheume, Cynthia  
**Subject:** FAQ repository in NRR

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Our goal is to make the site available over the course of the next week or so and then incorporate any additional OPA-vetted FAQs on to the site as soon as practicable.

Please let Mindy Landau or I know if you have any questions and thank you for your assistance and thank to NRR for this outstanding initiative!

Mary

**Nelson, Robert**

---

**From:** Nelson, Robert *in*  
**Sent:** Wednesday, April 06, 2011 8:07 AM  
**To:** Kulesa, Gloria  
**Subject:** RE: Query: Near term Task Group requests

Thanks

NELSON

---

**From:** Kulesa, Gloria *in*  
**Sent:** Wednesday, April 06, 2011 8:05 AM  
**To:** Nelson, Robert  
**Subject:** RE: Query: Near term Task Group requests

Nelson,

Bob Martin offered the following names:

H2 – Bob Dennig, Rich Lobel. He said there is another individual that he highly recommends, but he cannot recall the last name. Will forward once recalled.

SAMG – Don Johnson NSIR, Joe Anderson NSIR, Donnie Harrison

---

**From:** Nelson, Robert *in*  
**Sent:** Tuesday, April 05, 2011 3:02 PM  
**To:** DiFrancesco, Nicholas; Pickett, Douglas; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott  
**Cc:** Howe, Allen; Glitter, Joseph  
**Subject:** Query: Near term Task Group requests

See below. Any suggestions??

NELSON

---

**From:** Westreich, Barry *in*  
**Sent:** Tuesday, April 05, 2011 2:57 PM  
**To:** Hiland, Patrick; Brown, Frederick; McGinty, Tim; Blount, Tom; Holian, Brian; Galloway, Melanie; Glitter, Joseph; Howe, Allen; Nelson, Robert; Bahadur, Sher; Lubinski, John; Thomas, Brian; Skeen, David; Cheok, Michael; Lee, Samson  
**Cc:** Ruland, William; Boger, Bruce; Collins, Timothy; Leeds, Eric  
**Subject:** Near term Task Group requests

I have been speaking with the Task Force conducting a near term evaluation for Agency Actions following the events in Japan. They are beginning their efforts to understand the current status of a number of areas that may be require additional review. We are speaking with them today on the Temporary Inspection Instruction being conducted as a follow-up to Fukushima events.

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- SAMGs. Currently scheduled for Tuesday, April 12, 2011 9:30 AM-11:30 AM.



In order to support the Task Group effort, I would appreciate your identification of any knowledgeable staff that you feel can discuss the current status of requirements, or other voluntary activities, that have been implemented to address these areas. These are being conducted as informal discussions and no additional presentation material is being requested to support these activities.

**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 7:57 AM  
**To:** Burkhardt, Janet  
**Subject:** RE: Action: Add Q&As to database

Thanks!

NELSON

---

**From:** Burkhardt, Janet *NR*  
**Sent:** Wednesday, April 06, 2011 7:47 AM  
**To:** Oesterle, Eric  
**Cc:** Nelson, Robert; Markley, Michael  
**Subject:** Action: Add Q&As to database

SBO Q&As entered are #118 - #120; Yahoo graph Q&As entered as #121-122.

---

**From:** Oesterle, Eric *NR*  
**Sent:** Tuesday, April 05, 2011 3:43 PM  
**To:** Burkhardt, Janet  
**Cc:** Markley, Michael; Nelson, Robert  
**Subject:** Action: Add Q&As to database

Janet,

Please add the attached Q&As to the database. Thanks!

*Eric*

Eric R. Oesterle  
NRR Communications Team  
Senior Policy Analyst (NRO/DNRL)  
U.S. Nuclear Regulatory Commission  
301-415-1365

## Nelson, Robert

---

**From:** Nelson, Robert *NRK*  
**Sent:** Wednesday, April 06, 2011 7:52 AM  
**To:** Boger, Bruce; LIA06 Hoc; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Croteau, Rick; Steger (Tucci), Christine; Burnell, Scott; Meighan, Sean; Nguyen, Quynh; Wertz, Trent; Thomas, Eric; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Glitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry  
**Cc:** Shear, Gary; West, Steven  
**Subject:** FYI: FAQ repository in NRR

Note the plan to make our FAQ site accessible to the public.

NELSON

---

**From:** Muessle, Mary *MD*  
**Sent:** Tuesday, April 05, 2011 6:47 PM  
**To:** RidsNmssOd Resource; RidsResOd Resource; RidsFsmeOd Resource; RidsNroOd Resource; RidsNsirOd Resource  
**Cc:** Schum, Constance; Pulliam, Timothy; Valentin, Andrea; Webber, Robert; Brenner, Eliot; Hayden, Elizabeth; Rothschild, Trip; Leeds, Eric; Nelson, Robert; Markley, Michael; Oesterle, Eric; Rihm, Roger; Ellmers, Glenn; Andersen, James; Landau, Mindy; Frazier, Alan; Sealing, Donna; Ficks, Ben; Holonich, Joseph; Bowman, Gregory; Rheume, Cynthia  
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Please let Mindy Landau or I know if you have any questions and thank you for your assistance and thank to NRR for this outstanding initiative!

Mary

**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Wednesday, April 06, 2011 7:38 AM  
**To:** Boska, John  
**Subject:** RE: Query: Near term Task Group requests

Thanks. I'll let you know.

NELSON

---

**From:** Boska, John *NR*  
**Sent:** Tuesday, April 05, 2011 4:32 PM  
**To:** Nelson, Robert  
**Cc:** Pickett, Douglas; Salgado, Nancy  
**Subject:** FW: Query: Near term Task Group requests

Nelson, I can discuss the history and implementation of SAMGs on April 12<sup>th</sup> if you need someone.

John Boska  
Indian Point Project Manager, NRR/DORL  
U.S. Nuclear Regulatory Commission  
301-415-2901  
email: [john.boska@nrc.gov](mailto:john.boska@nrc.gov)

---

**From:** Pickett, Douglas *NR*  
**Sent:** Tuesday, April 05, 2011 4:23 PM  
**To:** Boska, John; Guzman, Richard; Kim, James; Vaidya, Bhalchandra; Morgan, Nadiyah  
**Subject:** FW: Query: Near term Task Group requests

As indicated below, if you have the requisite expertise and are willing to volunteer, contact Nelson.

---

**From:** Nelson, Robert *NR*  
**Sent:** Tuesday, April 05, 2011 3:02 PM  
**To:** DiFrancesco, Nicholas; Pickett, Douglas; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott  
**Cc:** Howe, Allen; Glitter, Joseph  
**Subject:** Query: Near term Task Group requests

See below. Any suggestions??

NELSON

---

**From:** Westreich, Barry *NR*  
**Sent:** Tuesday, April 05, 2011 2:57 PM  
**To:** Hiland, Patrick; Brown, Frederick; McGinty, Tim; Blount, Tom; Holian, Brian; Galloway, Melanie; Glitter, Joseph; Howe, Allen; Nelson, Robert; Bahadur, Sher; Lubinski, John; Thomas, Brian; Skeen, David; Cheok, Michael; Lee, Samson  
**Cc:** Ruland, William; Boger, Bruce; Collins, Timothy; Leeds, Eric  
**Subject:** Near term Task Group requests

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## Weaver, Tonna

---

**From:** Bahadur, Sher *inrr*  
**Sent:** Wednesday, April 06, 2011 9:43 AM  
**To:** Titus, Brett; Bailey, Stewart; Dennig, Robert; Casto, Greg; Mendiola, Anthony; Ulses, Anthony; Clifford, Paul; Collins, Timothy  
**Subject:** FW: FAQ repository in NRR

Please note.

---

**SHER BAHADUR**; DIRECTOR (ACTING)  
NRR/DIVISION OF SAFETY SYSTEMS  
301-415-3283  
[sher.bahadur@nrc.gov](mailto:sher.bahadur@nrc.gov)

---

**From:** Nelson, Robert *inrr*  
**Sent:** Wednesday, April 06, 2011 7:52 AM  
**To:** Boger, Bruce; LIA06 Hoc; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Croteau, Rick; Steger (Tucci), Christine; Burnell, Scott; Meighan, Sean; Nguyen, Quynh; Wertz, Trent; Thomas, Eric; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry  
**Cc:** Shear, Gary; West, Steven  
**Subject:** FYI: FAQ repository in NRR

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NELSON

---

**From:** Muessele, Mary *900*  
**Sent:** Tuesday, April 05, 2011 6:47 PM  
**To:** RidsNmssOd Resource; RidsResOd Resource; RidsFsmeOd Resource; RidsNroOd Resource; RidsNsirOd Resource  
**Cc:** Schum, Constance; Pulliam, Timothy; Valentin, Andrea; Webber, Robert; Brenner, Eliot; Hayden, Elizabeth; Rothschild, Trip; Leeds, Eric; Nelson, Robert; Markley, Michael; Oesterle, Eric; Rihm, Roger; Ellmers, Glenn; Andersen, James; Landau, Mindy; Frazier, Alan; Sealing, Donna; Ficks, Ben; Holonich, Joseph; Bowman, Gregory; Rheaume, Cynthia  
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Mary



## Weaver, Tonna

---

**From:** Purciarello, Gerard *MPK*  
**Sent:** Wednesday, April 06, 2011 9:21 AM  
**To:** Bahadur, Sher; Dennig, Robert  
**Cc:** Jones, Steve  
**Subject:** RE: Near term Task Group requests

Sher,

Steve Jones is the lead for GI-189, which addresses hydrogen control for BWR Mk III and PWR ice condensers in station blackout situations. He can address those specific plants. Otherwise, hydrogen control and hardened vents should be an SCVB review area. Per Steve Jones, Tim Collins was heavily involved in the generic issue that required the BWR MK I hardened vents, so he is another contact.

Jerry Purciarello  
Senior Reactor Systems Engineer  
Balance of Plant  
NRR, Division of Safety Systems  
301-415-1105

---

**From:** Bahadur, Sher *MPK*  
**Sent:** Tuesday, April 05, 2011 4:25 PM  
**To:** Dennig, Robert; Purciarello, Gerard  
**Subject:** FW: Near term Task Group requests

Gerry/Bob – Do you have anyone in your branch to speak on Hydrogen Control and/or BWR hardened vents (see request below).

---

**SHER BAHADUR;** DIRECTOR (ACTING)  
NRR/DIVISION OF SAFETY SYSTEMS  
301-415-3283  
[sher.bahadur@nrc.gov](mailto:sher.bahadur@nrc.gov)

---

**From:** Westreich, Barry *MPK*  
**Sent:** Tuesday, April 05, 2011 2:57 PM  
**To:** Hiland, Patrick; Brown, Frederick; McGinty, Tim; Blount, Tom; Holian, Brian; Galloway, Melanie; Giitter, Joseph; Howe, Allen; Nelson, Robert; Bahadur, Sher; Lubinski, John; Thomas, Brian; Skeen, David; Cheok, Michael; Lee, Samson  
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**Weaver, Tonna**

---

**From:** PMDAInfoNotice Resource  
**Sent:** Wednesday, April 06, 2011 11:52 AM  
**To:** NRR Distribution  
**Subject:** SUPPORT FOR JAPAN - CRANE FOLDING SESSIONS

**- PMDA INFORMATION NOTICE -**  
**Wednesday, April 6, 2011**

**IN NUMBER: 11-039**

**CONTACT: Lisa Regner ([Lisa.Regner@nrc.gov](mailto:Lisa.Regner@nrc.gov)), Ext. 1906**

As a gesture of condolence, support, and hope from the U.S. Nuclear Regulatory Commission's (NRC) employees to the people of Japan, NRC's Asian Pacific American Advisory Committee is sponsoring the efforts of a group of NRC employees who are making traditional Japanese origami (folded paper) cranes. To the Japanese, the crane is a symbol of good fortune and longevity because of its fabled life span of a thousand years. It also represents fidelity or steadfastness, as Japanese cranes are known to mate for life. According to tradition, if you make 1000 cranes, your wish will be granted.

The goal is to have enough cranes so that every NRC employee who wants to participate will be able to sign a crane and, if they wish, write words of encouragement. The cranes will be presented to the Japanese Nuclear and Industrial Safety Agency representatives within the next few months, with the understanding that they will present the cranes at a public commemoration or observance that they think would be appropriate.

This is not a fundraising effort. It is simply a gesture of good will.

If you are interested in folding cranes, learning how to do it, teaching others, or willing to help in organizing this endeavor, please contact the individuals listed below.

**Contacts:**

Beth Mizuno, OWFN, OGC, 301-415-3122; Lisa Regner, OWFN, NRR, 301-415-1906; Max Smith, OWFN, OGC, 301-415-1246; Stacy Schumann, Twinbrook, 301-492-3500; Hironori Peterson, Region III, 630-829-9707

**Crane Folding Sessions**

- **Wednesday, April 6**, noon to 1 pm, in OWFN 7B4, Lisa London and Richard Harper are leading this session
- **Wednesday, April 6**, 11:30 am to 1 pm, at Church Street, Beth Mizuno is leading this session
- **Thursday, April 7**, noon to 1 pm, in TWFN T-10C2, David Terao is leading this session
- **Friday, April 8**, noon to 1 pm, in OWFN 7B4, Christine Jochim Boote is leading this session
- **Friday, April 8**, noon to 1 pm, at Twinbrook, Beth Mizuno is leading this session

Kimberly Ferrell, Deputy Director  
Program Management, Policy Development  
and Analysis Staff  
Office of Nuclear Reactor Regulation

2/486

**Weaver, Tonna**

---

**From:** Carter, Rozier *OIS*  
**Sent:** Wednesday, April 06, 2011 5:01 PM  
**To:** Trapp, James; Ulses, Anthony; Monninger, John; Nakanishi, Tony; Kolb, Timothy; Foster, Jack; Cook, William; Devercelly, Richard; Foggie, Kirk; Smith, Brooke; Ali, Syed; Sheikh, Abdul; Way, Ralph; Blamey, Alan; Scott, Michael; Jackson, Todd  
**Subject:** Outlook Mailbox Size

Good Afternoon,

In order to support the Operations Center and the Japan travelers, OIS doubled the size of your Outlook mailbox from 1 GB to 2 GB.

According to our records, you have returned to your normal duty station. If so, please let me know if and when we can lower your mailbox back down to the agency standard 1 GB limit.

If this information is incorrect, or you anticipate being deployed to Japan again, please disregard this message.

Your cooperation in this matter is greatly appreciated.

Rozier Carter  
OIS/ICOD/NOCSB  
301-415-6330

**Weaver, Tonna**

---

**From:** Wood, Kent *IN 10/22*  
**Sent:** Wednesday, April 06, 2011 5:24 PM  
**To:** Balarabe, Sarah  
**Cc:** Ulises, Anthony  
**Subject:** FW: INFORMATION REGARDING TAC NUMBER, WORK SCHEDULES, AND PREMIUM PAY FOR EMPLOYEE ACTIVITIES RELATED TO THE RESPONSE TO THE EVENTS IN JAPAN

Sarah,

I spent 11 hours on April 1<sup>st</sup> providing support to the RST regarding the potential a spent fuel pool criticality at Fukushima Daiichi.

I spent 2 hours on April 6<sup>th</sup> preparing for an ACRS briefing on the Fukushima Daiichi event.

I'll spent 3 hours on April 7<sup>th</sup> supporting the ACRS briefing on the Fukushima Daiichi event.

Please forward these dates and times to Doris Twigg in accordance with the guidance below.

Thanks,

Kent

---

**From:** PMDAInfoNotice Resource  
**Sent:** Thursday, March 31, 2011 10:26 PM  
**To:** NRR Distribution  
**Subject:** INFORMATION REGARDING TAC NUMBER, WORK SCHEDULES, AND PREMIUM PAY FOR EMPLOYEE ACTIVITIES RELATED TO THE RESPONSE TO THE EVENTS IN JAPAN

**- PMDA INFORMATION NOTICE -**  
**Thursday, March 31, 2011**

**IN NUMBER: 11-036**

**CONTACT: Doris Twigg ([Doris.Twigg@nrc.gov](mailto:Doris.Twigg@nrc.gov)), 415-1947**

**TAC Number**

A new agency wide "Z" code has been established for the Japan earthquake and tsunami. It is: ZG0061 – Japan Earthquake and Tsunami. The Planned Accomplishment number will be: 111180 - Response Program – Event/Response - Operating RX.

For those employees that charged hours to D92374 in pay period 6 please do a corrected card and charge your hours to ZG0061 under PA 111180 – Response Program – Event/Response-Operating RX.

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

TAC (ZG0061) was established to track activity related to staff that are supporting the recent events in Japan. Note the following:

- Managers that are performing managerial functions relating to the events in Japan should continue to use the TAC (ZM0000).
- Managers required to perform duties relating to the events in Japan which would be considered different than routine managerial responsibilities should record their time under the new TAC (ZG0061).
- Administrative support staff required to perform duties relating to the events in Japan that would be considered different than routine administrative support responsibilities should record their time under the new TAC (ZG0061).
- All other staff required to perform duties relating to the events in Japan that would be considered different than their normal responsibilities should record their time under the new TAC (ZG0061).

### **Work Schedule and Premium Pay Guidance for Response to Events in Japan**

NRC has implemented various work schedule and premium pay flexibilities as it strives to accommodate the challenging and often unpredictable work schedules and premium pay needs of employees responding to the events in Japan. The Office of Human Resources (HR) has distributed information to managers, supervisors, responders, and timekeepers to summarize the options and guidelines for determining work schedules and premium pay for employees serving in and supporting the Operations Center, or working in Japan. The guidance applies to employees whose offices/regions determine that the employees directly support response efforts in the Operations Center and Japan even if the employees do not physically work in the Operations Center.

HR has posted the Work Schedule and Premium Pay Guidance on its intranet page and expects to add frequently asked questions. Based on questions received so far, HR notes that:

- For employees on a NEWFlex schedule, HRMS will not accept more than 11.25 hours of regular work per day. Any amount worked beyond that on a single workday must be entered as overtime or compensatory time worked rather than regular time. (Employees on Expanded Compressed schedules may work more than 11.25 regular hours per day.)
- The maximum number of credit hours that an employee may carry over from one pay period to the next remains 24 credit hours. This is restricted by a government wide rule.
- Although the guidance applies to Senior Executive Service members (executives), executives remain ineligible for premium pay or credit hours as a matter of government wide law.

OCFO requests that the names of employees who perform emergency-related premium work related to the events in Japan as well as the dates of such work be submitted to them. The T&L Clerks should provide the names to Doris Twigg, NRR T&L Coordinator. Doris will ensure that the names are submitted to OCFO in a timely manner. It is important that this information is provided as soon as possible after the work begins to avoid difficulties processing time and labor at the end of the pay period.

If you have any questions please contact Doris Twigg, NRR T&L Coordinator.

TaJuan C. Gorham, Chief  
Infrastructure Services Branch  
Program Management, Policy Development  
and Analysis Staff  
Office of Nuclear Reactor Regulation



Jenkins, Ronaldo

**From:** Jenkins, Ronaldo  
**Sent:** Thursday, April 07, 2011 1:44 PM  
**To:** Mathew, Roy; Koshy, Thomas; Chopra, Om; Fitzpatrick, Robert; Kang, Peter; Martinez-Navedo, Tania; Pal, Amar  
**Subject:** FYI: IEEE Article (Japan)

## Why Japan's Fragmented Grid Can't Cope

Bridging Japan's east-west frequency divide to stoke power flows will require real engineering hustle

By PETER FAIRLEY / APRIL 2011

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Page 12 // View All

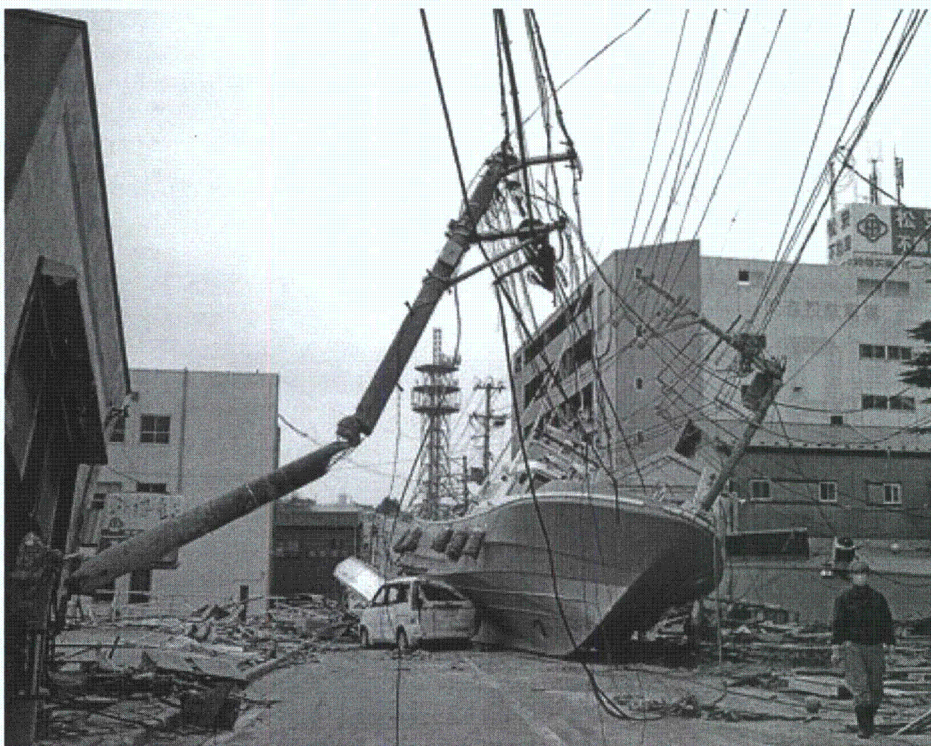


Photo: Philippe Lopez/AFP/Getty Images

*Editor's Note: John Boyd is an IEEE Spectrum contributor reporting from Kawasaki, Japan. This is part of IEEE Spectrum's ongoing coverage of [Japan's earthquake and nuclear emergency](#). For more details on how Fukushima Dai-1's nuclear reactors work and what has gone wrong so far, [see our explainer](#) and [our timeline](#).*

6 April 2011—The [earthquake and tsunami that destabilized Japan's Fukushima Dai-1 nuclear power plant](#) last month also blew a large hole in the country's power supply. Eleven nuclear reactors in eastern Japan shut down, including three that were running at Fukushima Dai-1 and four at the nearby Fukushima Dai-2 plant. In all, more than 27 gigawatts of power generation were out of commission, forcing Tokyo Electric Power Co. (TEPCO)—operator of the Fukushima reactors and power supplier to greater Tokyo—to ration power by instituting [rolling blackouts](#).

TEPCO's supply situation would look less grim were it not for a quirky split that divides Japan's power grids in half: While Tokyo and the rest of eastern Japan run on 50-hertz electricity, the big cities southwest of Tokyo and the rest of the country run on alternating current that cycles at 60 Hz. It's a historical accident from the 19th century, when Tokyo's electrical entrepreneurs installed 50-Hz generators mainly from Germany, while their counterparts in Osaka selected 60-Hz equipment from the United States. The result is a national grid whose two halves cannot directly exchange AC power, which limits TEPCO's ability to seek help from the 56 percent of Japan's power-generating capacity that lies to the west.

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"It's a shame. The western grids can supply a lot. I think they could cover [TEPCO's] peak demand," says Kent Hora, executive vice president for Mitsubishi Electric Power Products, the U.S. arm of Japanese power-engineering giant Mitsubishi Electric.

As it stands, just three small installations can squeeze power across Japan's AC frequency frontier. These are converter stations that use high-voltage electronics to pull alternating current off one grid, convert the power to high-voltage direct current (HVDC), and then synthesize a novel AC wave to add the power to the other grid. Together these three facilities can push up to 1.2 GW of power east or west. TEPCO is using them at full capacity, says Junichi Ogasawara, a senior researcher at the Institute of Energy Economics, Japan (IEEJ), a Tokyo-based think tank.

Analysis by Ogasawara's group, however, shows how short that leaves the utility. TEPCO has mapped out a plan to boost power output from less than its present level of 40 GW to at least 50 GW this summer, largely by reactivating idle coal-fired power plants, including roughly 900 megawatts of generating capacity at steel mills operated by Nippon Steel and Mittal. That leaves TEPCO projecting an 8 to 9 GW shortfall under a summer peak load of up to 60 GW.

The embattled utility hopes to make up some of the gap before the July-to-September peak season with the express installation of extra gas-fired turbines at existing TEPCO plant sites. But IEEJ is betting on more rolling blackouts. "TEPCO is making utmost efforts to expand its supply capacity. Still, a considerable power shortage is expected," according to a report issued last week by Ogasawara's group [PDF].

The prospect of ongoing generation shortfalls has Japan's Ministry of Economy, Trade and Industry and its grid managers hatching plans to beef up its west-to-east power flow capabilities. The government is looking to have additional capacity in place in two years, according to a ministry official quoted by Bloomberg last week.

Some independent experts are more bullish, arguing that new converters could be moving power in the summer of 2012. "Under normal conditions, these kinds of systems would take 18 to 24 months. Could we get one installed and in service in less than 12 [months] in an emergency situation like this? Absolutely," says Gregory Reed, a power engineering professor at the University of Pittsburgh and director of its Power & Energy Initiative.

One way to move faster is to use systems more advanced than the traditional HVDC technology employed in Japan's three operating converter stations. (Some of these stations were leaders in their day. When it started up in 1965, the 300-MW Sakuma station was the first example of back-to-back use of HVDC converters to synchronize AC grids. And the 600-MW Shin-Shinano station pioneered the use of photo-triggered thyristors when its original power switches were replaced in 1992.)

The best way forward, according to Reed, is voltage source converter (VSC) technology. VSC-based HVDC uses relatively advanced switches, such as insulated-gate bipolar transistors, to simultaneously transmit DC power and regulate the voltage of neighboring AC lines. This flexibility has made VSC increasingly popular for use in merchant power lines and links to offshore wind farms, as well as in the advanced flexible AC transmission systems, or FACTS, that moderate power flows on AC networks.

VSC was introduced commercially in the early 1990s, and Mitsubishi Electric demonstrated its use for frequency conversion in 1999, when the company installed a 35-MW system at Shin-Shinano. Nevertheless, Japanese utility Chubu Electric Power went back to traditional HVDC for the country's third converter, the 300-MW Higashi Shimizu station that powered up in 2006.

VSC technology costs about 25 percent more on average than traditional HVDC—a premium worth paying in Japan's situation in exchange for what Reed and others predict would be faster installation.

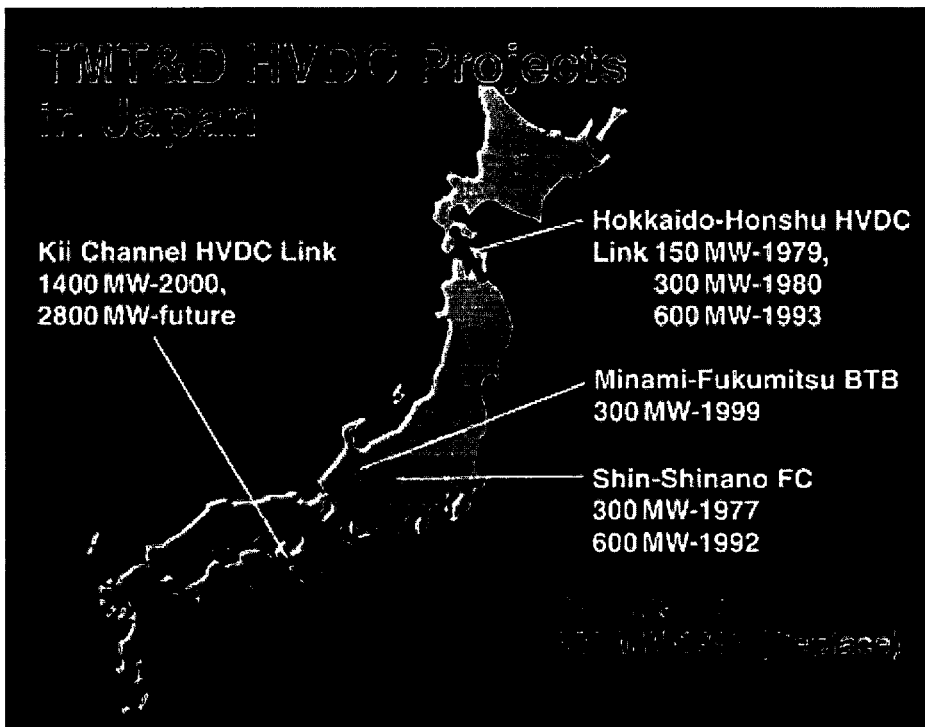


Illustration: TMT&D



Photo: TMT&D

[Click on the image for a larger view.](#)

One reason VSC might get up and running more quickly in Japan is that it requires less space than HVDC systems. That's because VSC produces a cleaner synthetic AC wave and therefore requires less filtering equipment. "You can take about 35 percent out of the footprint of a conventional installation," says Reed. That smaller footprint would help squeeze converters into sites adjacent to the three existing converter stations. It would also simplify any required expansion of the AC lines feeding the stations; new lines could run along the existing transmission rights-of-way.

Jan Johansson, an HVDC expert with European engineering firm ABB, stresses another VSC advantage—the fact that VSC-based converters do not require the extensive grid modeling studies that go into siting and integrating traditional HVDC stations. Japan's present HVDC needs the AC grid to be stabilized in order to avoid voltage fluctuations, but VSC systems actively stabilize the grid on their own. "It is very much less sensitive to different properties of the AC networks," says Johansson.

How much converter capacity should TEPCO install? Mitsubishi's Hora advocates a major expansion to make Japan's grids more flexible to respond to future emergencies. These potential calamities might otherwise be out of reach of the added generating capacity TEPCO is installing on the eastern grid. "It may happen on the western side in the future. We have to prepare for that," says Hora.

In contrast, power systems expert Akihiko Yokoyama, an electrical engineering professor at the University of Tokyo's department of advanced energy, says Japan must take into account cost-effectiveness—even in the current urgent situation. Yokoyama endorsed the suggestion last week by officials at the Electric Power System Council of Japan, a grid-management body, to add a modest 300 MW of additional east-west exchange capacity. More-ambitious proposals to double the exchange capacity, he says, are both excessively expensive and impractical.

Yokoyama says adding 1 GW of capacity could require an additional high-voltage line on a new right-of-way, regardless of the HVDC technology employed, thus pushing the total price tag to US \$2 billion or more (roughly \$600 million for the converter station and \$1.4 billion to \$2 billion for 200 kilometers of 500 000-volt transmission). That may be more expensive than called for if, as he suggests, such a large loss of power generation "occurs once [every] several hundred years."

The question may be moot, anyway, bets Yokoyama. While Japanese citizens suffering in the wake of last month's natural disasters appear stoic, Yokoyama nevertheless expects any new transmission lines to confront "NIMBY" (not-in-my-backyard) opposition. If a new line is required and protests erupt, Yokoyama says the project could take a decade to complete. "It is very difficult to find the right-of-way for transmission lines and to get agreement from the residents near the lines," says Yokoyama.

Johansson says HVDC technology offers an answer to that, albeit one that will further increase cost. "It doesn't have to be through a back-to-back station," he says. "There can be a transmission link in between." Imagine HVDC converter stations at shore points on the east and west grids, pumping DC power through a well-hidden subsea line that snakes its way around the island. According to Johansson, ABB delivered one such subsea line using VSC technology, linking Estonia and Finland. The installation took less than 20 months—including laying the cables.

At that pace, two summers would pass in Japan before the extra capacity kicked in. But eastern Japan may still need the power then. TEPCO has already announced that it will scrap at least four of the six reactors at Fukushima Dai-1. It took two years for TEPCO to gain approval to restart its Kashiwazaki-Kariwa nuclear plant, which suffered comparatively minor damage in a 2007 earthquake. In fact, given rising protests against nuclear power, and the contamination of surrounding communities, it is an open question whether any of Fukushima's reactors will ever be allowed to run again.

#### **About the Author**

Peter Fairley is a contributing editor at *IEEE Spectrum* and to the *Spectrum* blog [Energywise](#). In the April 2011 issue, he tackled the topic of [earthquakes triggered by green power projects](#).

**Bazin, Sunny**

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**From:** Franovich, Mike  
**Sent:** Thursday, April 07, 2011 12:23 PM  
**To:** Ostendorff, William  
**Cc:** Nieh, Ho; Kock, Andrea; Zorn, Jason  
**Subject:** AWARENESS - Prepare for a new nuclear industry

## **Prepare for a new nuclear industry**

06 April 2011 (WNN)

**The nuclear power industry will change in the years after the Fukushima accident but the need for the technology will not, said industry leaders today in Chicago at the first major conference since the crisis began.**

Opening statements at the World Nuclear Fuel Cycle 2011 conference included grave warnings of the hard road ahead for nuclear power. "We must admit that we represent a technology that has frightened a great many people," said Richard Myers, vice president of policy development at the US trade group the Nuclear Energy Institute. "But the industry can explain the unfounded nature of this fear, and provide the data to prove it is so."

Immediate political and regulatory responses to the accident have varied and it still remains to be seen how safety requirements may be revised. Despite this uncertainty, World Nuclear Association director general John Ritch noted: "In the years preceding Fukushima, most major nations in the world reviewed their energy and environment policies and, with few exceptions, came inexorably to the same conclusion: that, for reasons of energy independence and environmental responsibility, nuclear power must play a central role in their energy strategies for the 21st Century."

Most nations have announced the intention to review safety arrangements on the basis of the facts of the Fukushima accident as they become known. For some this means new build projects could be delayed for several months and engineering costs could rise.

Only one country seems to have embarked on a route truly damaging to its nuclear sector: Germany. One delegate spoke of personal doubts that the eight units shut down by Chancellor Angela Merkel will ever restart while politicians compete to be seen as the most green.

- On a technical level the industry must meet safety challenges on a new plateau: to survive combinations of extraordinary events beyond their design basis, including natural disasters, terrorist attack and as-yet unimagined disasters and difficulties in their locality. The limits of legally required preparation and response are to be rewritten.

Furthermore, regulators will focus on the ability of a single company to tackle a nuclear emergency at a time when the infrastructure of its nation has been compromised. Commercial cooperation with government will be one aspect of that. Operation during extended plant blackouts and under difficult radiological conditions will be studied and it is sure that emergency power arrangements are to be hardened in many countries.

Separate from the considerations of governments, industry mechanisms exist to address the challenges in the form of the US Institute of Nuclear Power Operations and its global sister organisation the World Association of Nuclear Operators. These are already offering top technical assistance to Tokyo Electric Power Company based on the combined operational experience of the global industry.

Ritch underlined the fortification these institutions will now undergo and that they must be combined with clear international messaging to the general public worldwide: "In the aftermath of Fukushima we must meet the further and compelling challenge of explaining just what happened at the Daiichi plant and presenting, in accurate and persuasive terms, the measures by which the industry is acting on a broad front to fortify all needed barriers against the recurrence of any such accident, anywhere."

## Zorn, Jason

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**From:** Zorn, Jason  
**Sent:** Thursday, April 07, 2011 11:04 AM  
**To:** Nieh, Ho; Kock, Andrea; Ostendorff, William; Franovich, Mike; Bozin, Sunny; Herr, Linda  
**Subject:** Latest FOIA

All

We received a FOIA request today requesting the following:

*Copies of any emails, letters, faxes, memoranda, or other written or electronic communications sent or received by anyone in the Chairman's office or the Commission offices, OCA, OPA, and ACRS regarding the situation at the Fukushima nuclear power plants in Japan. Dates of the request are **March 11, 2011, to April 4, 2011.***

I will circulate an original copy of the FOIA, but this appears to be an expansion of earlier requests that had only extended to March 16 with one major exception. Since this request does not appear to include the NRC staff (e.g. EDO's office), I believe that this would include emails that you have received from the staff that include daily updates from the Ops Center, EDO, etc. As far as other documents such as internal emails, most of you have already provided me your documents from those dates, so your search for this request would only have to include from **March 17 to April 4.**

I recognize that these continuing requests are creating a significant burden on all of us and I thank you for your cooperation. Please let me know if you have any questions.

Jason

**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Thursday, April 07, 2011 9:14 AM  
**To:** Oesterle, Eric  
**Subject:** RE: Action: Anticipating a question ahead of the End of Cycle Meeting

Thanks!

NELSON

---

**From:** Oesterle, Eric *ERO*  
**Sent:** Thursday, April 07, 2011 9:04 AM  
**To:** Nelson, Robert; Markley, Michael  
**Cc:** Virgilio, Martin; Leeds, Eric; Harrington, Holly; Logaras, Harral; LIA04 Hoc  
**Subject:** RE: Action: Anticipating a question ahead of the End of Cycle Meeting

I confirm that that we already have this one in the database, it is Q130.

*Eric*

Eric R. Oesterle  
NRR Communications Team  
Senior Policy Analyst (NRO/DNRL)  
U.S. Nuclear Regulatory Commission  
301-415-1365

---

**From:** Nelson, Robert *NR*  
**Sent:** Thursday, April 07, 2011 8:37 AM  
**To:** Oesterle, Eric; Markley, Michael  
**Subject:** Action: Anticipating a question ahead of the End of Cycle Meeting

I think we already have this one. If not, please add.

NELSON

---

**From:** Virgilio, Martin *MD*  
**Sent:** Wednesday, April 06, 2011 6:32 PM  
**To:** Leeds, Eric; Nelson, Robert  
**Subject:** FW: Anticipating a question ahead of the End of Cycle Meeting

FYI

---

**From:** Harrington, Holly *HOA*  
**Sent:** Wednesday, April 06, 2011 2:52 PM  
**To:** LIA04 Hoc; Logaras, Harral  
**Subject:** RE: Anticipating a question ahead of the End of Cycle Meeting

Below is our "talking point" relevant to license renewal. Each regional public affairs officer is also aware of the verbiage.

*2/492*

Q. "How will the events in Japan affect license renewal for U.S. plants?"

A. The NRC's recently initiated review of U.S. plants will examine current practice at operating reactors to ensure proper actions will be taken if a severe event occurs – this covers plants regardless of where they are in their license lifetime. The events in Japan, based on what's known at this time, appear to be unrelated to issues examined in license renewal. The NRC's long-term review of its regulations will determine whether any revisions to license renewal reviews are called for.

---

**From:** LIA04 Hoc *INSIR*  
**Sent:** Wednesday, April 06, 2011 3:41 PM  
**To:** Logaras, Harral  
**Subject:** RE: Anticipating a question ahead of the End of Cycle Meeting

Harral,

Just to close the loop with you on this question, the NRC does not currently have a developed response for the question you have below. However, OPA is working on one.

Regards,  
Stuart Easson  
State Liaison – Liaison Team  
Incident Response Center  
301-816-5193  
[LIA04.HOC@nrc.gov](mailto:LIA04.HOC@nrc.gov)

---

**From:** Logaras, Harral *ELL*  
**Sent:** Monday, April 04, 2011 3:16 PM  
**To:** LIA04 Hoc  
**Cc:** Plasse, Richard; Wrona, David; Keegan, Elaine; Zurawski, Paul; Barker, Allan; Heck, Jared  
**Subject:** Anticipating a question ahead of the End of Cycle Meeting

Dear State Liaison,

Between April 4, 2011 and April 14, 2011 we are holding four End of Cycle public meetings and next week we are holding one for the Prairie Island Nuclear Generating Plant. In preparation for that activity, I would like to ask if we have developed a response to a line of questioning such as the following.

Will (or How will) the events in Japan affect license renewal for Prairie Island?

Thank you for your attention.

Sincerely,

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

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



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

**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Thursday, April 07, 2011 1:56 PM  
**To:** Oesterle, Eric  
**Subject:** RE: FYI: Easy links to Q&A Database

Great. Thanks!

NELSON

---

**From:** Oesterle, Eric *NR*  
**Sent:** Thursday, April 07, 2011 1:34 PM  
**To:** Nelson, Robert  
**Cc:** Markley, Michael; Nguyen, Quynh; Virgilio, Martin  
**Subject:** FYI: Easy links to Q&A Database  
**Importance:** High

Nelson,

Based on a short conversation I had with Marty Virgilio this AM on the Q&As, I took the initiative and worked with Quynh to make navigation to the NRR Q&A Database much easier. Just go the NRR Homepage and the rest is hopefully obvious. Try it, you'll like it!

*Eric*

Eric R. Oesterle  
NRR Communications Team  
Senior Policy Analyst (NRO/DNRL)  
U.S. Nuclear Regulatory Commission  
301-415-1365

## Nelson, Robert

---

**From:** Nelson, Robert *NR*  
**Sent:** Thursday, April 07, 2011 3:57 PM  
**To:** Oesterle, Eric; Boger, Bruce; LIA06 Hoc; Steger (Tucci), Christine; Landau, Mindy; Croteau, Rick; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry  
**Cc:** Shear, Gary; West, Steven; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott; Guzman, Richard; Lyon, Fred; Meighan, Sean; Nguyen, Quynh; Polickoski, James; Tam, Peter; Thomas, Eric; Wertz, Trent  
**Subject:** FYI: Comm Team SitRep 4/7

1. Based on a suggestion by Marty Virgilio, Eric Oesterle and Quynh Nguyen worked to get the internal NRR home page modified to provide a direct link to Japan Event Info & the Q&A SharePoint site. Just go the NRR Homepage and the rest is hopefully obvious. Try it; you'll like it.
2. Worked with RI on a short turnaround green ticket (response to a NY state assemblywoman) and with OEDO on Qs & As posed by Senator Boxer.
3. Screened two potentially sensitive licensing actions (2 TACs) resulting in normal processing.
4. Designed changes to the Q&A database to make it accessible for public access because of SharePoint limitations.
5. The staff of the Technical Library have compiled a list of information resources about the recent Japan events. It covers general NRC information, links to other USG sites, international organizations, international news and local (Japan) information, and some material in the Technical Library. You may find something useful here:

[http://www.internal.nrc.gov/TICS/news/20110405\\_japan.html](http://www.internal.nrc.gov/TICS/news/20110405_japan.html)

NELSON

King, Mark

---

**From:** USGS ENS [ens@usgs.gov]  
**Sent:** Thursday, April 07, 2011 10:58 AM  
**To:** King, Mark  
**Subject:** 2011-04-07 14:32:41 (Mw 7.4) NEAR EAST COAST OF HONSHU, JAPAN 38.3 141.6 (29af8)

## 7.4 Mw - NEAR EAST COAST OF HONSHU, JAPAN



### Preliminary Earthquake Report

Magnitude 7.4 Mw

Date-Time 7 Apr 2011 14:32:41 UTC  
7 Apr 2011 23:32:41 near epicenter  
7 Apr 2011 09:32:41 standard time in your  
timezone

Location 38.253N 141.639E

Depth 25 km

Distances 66 km (41 miles) E (90 degrees) of Sendai,  
Honshu, Japan  
118 km (73 miles) ENE (60 degrees) of  
Fukushima, Honshu, Japan  
147 km (91 miles) NNE (26 degrees) of Iwaki,  
Honshu, Japan  
333 km (207 miles) NNE (30 degrees) of TOKYO,  
Japan

Location Horizontal: 13.1 km; Vertical 7.2 km

Uncertainty

Parameters Nph = 427; Dmin = 358.4 km; Rmss = 0.75  
seconds; Gp = 32°  
M-type = Mw; Version = B

Event ID US c0002ksa

For updates, maps, and technical information, see:

Event Page

or

USGS Earthquake Hazards Program

## Disclaimer

This email was sent to [Mark.King@nrc.gov](mailto:Mark.King@nrc.gov) You requested mail for events between -90.0/90.0 latitude and 180.0/-180.0 longitude for M6.0 between 08:00 and 20:00 and M6.5 other times. To change your parameters or unsubscribe, go to: <https://sslearthquake.usgs.gov/ens/>

King, Mark

---

From: Wegner, Mary *1/12/11*  
Sent: Thursday, April 07, 2011 12:11 PM  
To: King, Mark  
Subject: No tsunami

## Japan lifts new tsunami warning after 7.4 quake

**King, Mark**

---

**From:** Wegner, Mary *11/25*  
**Sent:** Thursday, April 07, 2011 12:56 PM  
**To:** King, Mark  
**Subject:** Japan Quake

NEIC has changed the report to one R7.1 quake. No info from NISA, TEPCO, or Japanese news yet. No tsunami is expected.

**Pedersen, Roger**

---

**From:** Garry, Steven *nrk*  
**Sent:** Thursday, April 07, 2011 1:07 PM  
**To:** Conatser, Richard; Jimenez, Manuel; Pedersen, Roger; Clemons-Webb, Candace; Franklin, Carmen; Boggi, Michael; Martin, Kamishan; Keefe, Molly  
**Subject:** FW: Link to FAQs related to Fukushima

---

**From:** Wertz, Trent *nrk*  
**Sent:** Wednesday, April 06, 2011 1:05 PM  
**To:** Bowman, Eric; Kobetz, Timothy; Wilson, George; Thorp, John; Shoop, Undine; Ali, Syed; Roche, Robert; Westreich, Barry; Lewin, Aron; Easton, Earl; Garry, Steven; McDermott, Brian; Garmon, David; Sullivan, Randy  
**Cc:** Ruland, William  
**Subject:** Link to FAQs

All,  
  
Here is the link. If you think there are any holes that should be addressed please let me know.

<http://portal.nrc.gov/edo/nrr/default.aspx>

There are 2 documents, "FAQ on Japan Event" and "Q&As Approved by OPA".

Let me know if you have any questions.

Thanks,

Trent L. Wertz  
Technical Assistant  
Office of Nuclear Reactor Regulation  
301-415-1568  
[trent.wertz@nrc.gov](mailto:trent.wertz@nrc.gov)

*2/495*



## King, Mark

---

**From:** King, Mark  
**Sent:** Thursday, April 07, 2011 10:15 AM  
**To:** Burnell, Scott  
**Cc:** Thorp, John; Haskell, Russell  
**Subject:** FW: Dairy results from Duke Energy sites - 1-131 found in dairy samples nearby - (apparently this I-131 is from the Japan events)

FYI

---

**From:** Bernardo, Robert *MR*  
**Sent:** Thursday, April 07, 2011 9:46 AM  
**To:** Conatser, Richard  
**Cc:** King, Mark; Robles, Jesse  
**Subject:** Dairy results from Duke Energy sites

Richard,

Region II reported this morning that McGuire, Oconee and Catawba have found I-131 in dairy samples. Apparently, Oconee is required to report this to the state, so there will be a 50.72 Event Notice report (should see it tomorrow) reporting the results. I don't know why McGuire and Catawba don't need to report to the state, but the region did say that Oconee was different and did need to report it. Region also said that they don't know about any broadleaf vegetable results.

Wanted to give you a head's up on this, so you're not caught short when the 50.72 shows up. I'm going to try and get some more information from region 2, but with what I've got, I don't intend to put anything in the screening summary because the details are just too sketchy. I'll let you know if I get more information.

*Bob Bernardo*  
Reactor Systems Engineer  
US Nuclear Regulatory Commission  
NRR/DIRS/IOEB  
Mail Stop: O-7C02A  
301-415-2621  
[Robert.Bernardo@nrc.gov](mailto:Robert.Bernardo@nrc.gov)

**From:** Miranda, Samuel *MS*  
**Sent:** Thursday, April 07, 2011 8:00 AM  
**To:** Mendiola, Anthony; Ulses, Anthony; Parks, Benjamin  
**Subject:** Nuclear Agency Tests Pennsylvania Plant

**THE WALL STREET JOURNAL.**  
WSJ.com

- POLITICS
- APRIL 7, 2011

## **Nuclear Agency Tests Pennsylvania Plant**

By **TENNILLE TRACY**

WASHINGTON—An analysis of hypothetical U.S. nuclear accidents shows that a reactor in Pennsylvania comes close to suffering core damage when all power is lost at the plant, but regulators told a House panel Wednesday the exercise represented a "very unrealistic event."

The study, known as State-of-the-Art Reactor Consequence Analyses and conducted by the U.S. Nuclear Regulatory Commission, analyzed the effects of severe accidents at two nuclear reactors: Pennsylvania's Peach Bottom plant, which has a design similar to the damaged Fukushima Daiichi plant in Japan, and the Surry reactor in Virginia, lawmakers said.

Under one scenario, in which a severe station blackout takes out all power, the simulation analysis showed that the Peach Bottom reactor "came within one hour of core damage," according to a memo House Democrats released Wednesday.

"A simulated meltdown was narrowly averted through the manual turning of steam valves" to activate cooling systems, the memo said.

In a less-severe scenario, in which the plant has access to backup battery power for four hours, the operator was able to prevent core damage.

In a House hearing Wednesday, a top nuclear official said the analysis of nuclear accidents looked at "very unrealistic events."

"We ignore all probabilities" of the events actually taking place, said Martin Virgilio, deputy executive director for reactor and preparedness programs at the Nuclear Regulatory Commission. "We're testing the envelope."

In conducting its simulations, the NRC assumed the Peach Bottom nuclear plant used new equipment and procedures introduced since the Sept. 11 terrorist attacks, the memo said. Without that equipment, the simulation showed the plant would suffer core damage and would release radioactive contamination in two days.

There appeared to be disagreement among U.S. nuclear officials regarding the effectiveness of the new equipment and procedures. According to a July 28 email referenced in the memo, senior NRC analysts said the new equipment and procedures "have really not been reviewed to ensure that they will work to mitigate severe accidents."

The email identified specific concerns about operating the reactor core isolation cooling system without battery power, the Democrats said in the memo. This is the same system that allowed the plant to avert core damage in the simulations.

The NRC's Mr. Virgilio said the email reflects the "healthy debate" that occurs among commission staff.

"Our staff is encouraged to challenge various issues as they're being evaluated," he said.

The purpose of Wednesday's hearing, held by a House Energy and Commerce subcommittee, was to analyze events at Tokyo Electric Power Co.'s Fukushima Daiichi plant in Japan. Following a March 11 earthquake and tsunami, the plant lost cooling systems, causing damage that has led to leaked radiation.

Rep. Ed Markey (D., Mass.), a critic of nuclear power, said in a statement that the NRC believes the core of Unit 2 at the Fukushima plant has "gotten so hot that part of it has probably melted through the reactor pressure vessel." Mr. Markey also said that at least one other reactor core has been severely damaged.

Speaking to reporters Wednesday, Mr. Virgilio said the NRC didn't have evidence that the core at Fukushima's Unit Two had melted through the reactor vessel.

"That's not in the situation report that we have from the team in Japan, and that's as of this morning," he said.

The NRC, he said, believes there was significant fuel damage in three reactors and four spent-fuel pools, "but we don't believe at this point in time that that core has left the vessel."

The Peach Bottom Atomic Power Station plant is jointly owned by Exelon Corp. and Public Service Enterprise Group Inc. and operated by Exelon. The Surrey Power Station is owned by Dominion Resources Inc.

**Write to** Tennille Tracy at [tennille.tracy@dowjones.com](mailto:tennille.tracy@dowjones.com)

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**Weaver, Tonna**

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**From:** Miranda, Samuel *mir*  
**Sent:** Thursday, April 07, 2011 8:14 AM  
**To:** Ulses, Anthony; Mendiola, Anthony  
**Subject:** WSJ(4/7) Simulated Meltdown Reignites US Battle

## **WSJ(4/7) Simulated Meltdown Reignites US Battle**

07/04/2011 00:36 | Exelon Corporation  
(From THE WALL STREET JOURNAL)  
By Rebecca Smith and Tennille Tracy

WASHINGTON -- A nuclear-power plant located some 40 miles from Baltimore would come dangerously close to meltdown if it lost all electricity for two days, according to a government-run disaster simulation model disclosed Wednesday during a congressional hearing.

Researchers with the Nuclear Regulatory Commission last year simulated a two-day blackout at the Peach Bottom plant in Lancaster, Pa., determining the plant would be on the verge of a meltdown two days after losing all power. In a less-severe scenario, in which the plant has access to backup battery power for four hours, the operator was able to prevent core damage.

The hearing showcased the extent to which the disaster at Japan's Fukushima Daiichi nuclear complex has reanimated Washington's long-running political sparring over nuclear power.

Peach Bottom has General Electric-designed boiling water reactors with an older style of containment structure -- designs similar to those at Fukushima Daiichi, which began leaking radiation after it lost cooling systems in the earthquake and tsunami on March 11.

The NRC's findings, described in a November 2010 report, were disclosed Wednesday by Democratic members of the House Energy and Commerce Committee, and by representatives of the Union of Concerned Scientists, a nonprofit group critical of nuclear power safety standards.

California Democratic Rep. Henry Waxman said the NRC report "raises questions about whether our reactors may be as vulnerable as those in Fukushima."

Some Republican lawmakers countered at the hearing that Democrats were exaggerating the significance of the NRC's findings. "Most people I talk to in Nebraska are fearful this [accident] is going to be used to shut down nuclear power across the United States," said Rep. Lee Terry, a Nebraska Republican.

In another sign of partisan tensions, the top Republican on a Senate panel with jurisdiction over the NRC released a letter accusing commission chairman Gregory Jaczko of failing to consult fellow commissioners before declaring the agency was operating in a state of emergency.

Sen. James Inhofe (R., Okla.), citing communications between his aides and an NRC staffer, said in a letter to Mr. Jaczko that the NRC has been in emergency operations since Japan's earthquake. Mr. Inhofe wrote that NRC staffers "indicated that you invoked these powers when the NRC operations entered 'monitoring mode' at 9:46 a.m. on March 11 in reaction to the Tohoku Earthquake."

Mr. Inhofe asked Mr. Jaczko to explain his "rationale for continuing to exercise emergency authority" given his public statements of confidence in U.S. plants' safety. The senator said he was concerned those actions "may have reduced the contributions of your experienced colleagues in monitoring the event and in decision-making."

A spokesman for Mr. Jaczko, who was named NRC chairman in 2009 by President Barack Obama, didn't immediately respond to a request for comment.

Martin Virgilio, a senior NRC official, cautioned that the Peach Bottom simulation results portrayed "very unrealistic events."

Peach Bottom is jointly owned by Illinois-based Exelon Corp. and New Jersey-based Public Service Enterprise Group Inc.

Exelon spokesman Craig Nesbit said the scenario is intended to present a sort of doomsday analysis so that the industry can address any deficiencies. He said it failed to capture all the protective measures that are available to that particular plant.

For example, the Peach Bottom plant has a dedicated transmission line, buried for added security, that could bring electricity to the plant from the Conowingo hydroelectric dam on the Susquehanna River.

Peach Bottom's diesel generators are behind submarine doors, Mr. Nesbit said. Tsunami waves destroyed diesel generators and fuel tanks at Fukushima Daiichi.

(END) Dow Jones Newswires

April 06, 2011 19:36 ET (23:36 GMT)

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**From:** EUCI Events [events@eucievents.com]  
**Sent:** Thursday, April 07, 2011 11:20 AM  
**To:** Miranda, Samuel  
**Subject:** The Lessons of Fukushima Daiichi: An In-Depth Technical Analysis Webinar



## The Lessons of Fukushima Daiichi: An In-Depth Technical Analysis

April 26, 2011 :: 12:00 - 1:30 PM Eastern Time

As the events at the Fukushima Daiichi Nuclear Power Plant continue to unfold, this webinar will address:

- The design of the plant, including its safety systems
- Damage to the plant caused by the earthquake and tsunami
- What it means to safely shut down a nuclear reactor
- How hydrogen gas is generated and the resulting explosions
- A timeline of events that occurred at Fukushima
- How different countries and agencies have responded to these events, including the U.S. NRC
- How the Fukushima event will impact the nuclear power industry in the U.S. and worldwide

As this is an ongoing event, the latest information and detail available will be incorporated into the webinar.

[PDF Brochure](#) | [Pricing and Registration](#)

### Topics Include

- The water-steam relation inside the BWR reactor
- What it means when the heat sink is lost by a combination of tripping the turbine and the loss of both normal and emergency core cooling capability
- The steam-pressure build-up inside the reactor vessel, resulting in uncovering the nuclear fuel
- The subsequent oxidation of the zircalloy fuel cladding
- The attempts to relieve the pressure, which also released explosive hydrogen gas
- Release of volatile radioactive fission products
- The design of the spent fuel pool and why it became another challenge to maintain it within its design basis

### [Full Agenda](#)

### Instructed By

Howard L. Sobel, PE, Nuclear Consultant

### [Instructor Bio](#)

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## Weaver, Tonna

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**From:** Alter, Peter *INSIR*  
**Sent:** Thursday, April 07, 2011 12:20 PM  
**To:** Hiland, Patrick; Brown, Frederick; Skeen, David; Dudes, Laura; Ruland, William; Case, Michael; Uhle, Jennifer; Holian, Brian; Hackett, Edwin; Howe, Allen; Richards, Stuart; Kotzalas, Margie; Rini, Brett; Alter, Peter; Bukharin, Oleg; Thomas, Eric; Berry, Rollie; Belen, Aixa; Williams, Joseph; Boyce, Tom (RES); Flanagan, Michelle; Starefos, Joelle; Kavanagh, Kerri; Hasselberg, Rick; Orr, Mark; Collins, Frank; Schoenebeck, Greg; Morlang, Gary; Dion, Jeanne; Sloan, Scott; McGovern, Denise; Circle, Jeff; Esmaili, Hossein; Cheok, Michael; Ward, Leonard; Laur, Steven; Salay, Michael; Schaperow, Jason; Fuller, Edward; Marksberry, Don; Lane, John; Gilmer, James; Dube, Donald; Miranda, Samuel; Arndt, Steven; Helton, Donald; Dozier, Jerry; Skarda, Raymond; Howe, Andrew; Mitman, Jeffrey; Harrison, Donnie; Chung, Donald; Koshy, Thomas; Zoulis, Antonios; Gavrilas, Mirela; Wong, See-Meng; Beasley, Benjamin; Marshall, Donald; Velazquez-Lozada, Alexander; Iyengar, Raj; Criscione, Lawrence; Caruso, John; Phan, Hanh; Ghosh, Anita; Brown, Eva; Brown, Michael; Norton, Charles; Cranston, Gregory; Kolb, Timothy; Vick, Lawrence; Shea, James; Summers, Robert; Gulla, Gerald; Kauffman, John; Hart, Ken; Bloom, Steven; Padovan, Mark; Williams, Donna; Isom, James; Thorp, John; Kugler, Andrew; Roggenbrodt, William; Gardocki, Stanley; Jervey, Richard; Horn, Brian; Ramadan, Liliana; Thompson, Jon; Solorio, Dave; Reeves, Rosemary  
**Cc:** Dozier, Jerry; Gray, Kathy; Hasselberg, Rick; Alter, Peter  
**Subject:** RST Watch Bill as of 1100 Thursday April 7th  
**Attachments:** 04-06 to 04-15 RST Watch Bill as of 1100 on 04-07-11.pdf

All,

As it stands right now we've been asked to have a five person Watch Bill through April 15 th.

There are three holes:

RST Director Days Monday 11 th  
RST Director Days Tuesday 12 th  
and  
**BWR Analyst (Expert) Sunday Mids 10th**

Please contact Rick Hasselberg  
*Peter*



## 03-13 to 04-15 Complete RST Watch Bill.xlsx

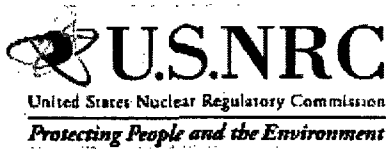
<u>Date</u>	<u>Day</u>	<u>Time</u>	<u>Shift</u>	<u>RST Director</u>	<u>RST Coordinator</u>	<u>Accident Analyst</u>	<u>BWR Expert</u>	<u>RST Communicator</u>
4/6/2011	Wednesday	1500 - 2300	Swing	Ed Hackett	G Schoenebeck	Tom Koshy	Chuck Norton	Mark Padovan
4/6/2011	Wednesday	2300 - 0700	Midnight	Laura Dudes	Frank Collins	Ben Beasley	Eva Brown	Rollie Berry
4/7/2011	Thursday	0700 - 1500	Day	Stu Richards	Tom Boyce	Mirela Gavrilas	Mike Brown	Rick Jervey
4/7/2011	Thursday	1500 - 2300	Swing	B Holian	G Schoenebeck	Hossein Esmaili	Chuck Norton	John Thorp
4/7/2011	Thursday	2300 - 0700	Midnight	Fred Brown	Rick Hasselberg	Ben Beasley	Eva Brown	Rollie Berry
4/8/2011	Friday	0700 - 1500	Day	Mike Case	Mark Orr	Mirela Gavrilas	Mike Brown	Mark Padovan
4/8/2011	Friday	1500 - 2300	Swing	Pat Hiland	Joelle Starefos	Ray Skarda	Chuck Norton	Rosemary Reeves
4/8/2011	Friday	2300 - 0700	Midnight	Fred Brown	Frank Collins	Shawn Marshall	Eva Brown	Jon Thompson
4/9/2011	Saturday	0700 - 1500	Day	Mike Case	Mark Orr	S M Wong	Mike Brown	Mark Padovan
4/9/2011	Saturday	1500 - 2300	Swing	Pat Hiland	Kerri Kavanagh	Jeff Mitman	Chuck Norton	Rick Jervey
4/9/2011	Saturday	2300 - 0700	Midnight	Fred Brown	Oleg Bukharin	Velazquez-Lozada	Greg Cranston	Liliana Ramadan
4/10/2011	Sunday	0700 - 1500	Day	Ed Hackett	Rick Hasselberg	S M Wong	Larry Vick	Jim Isom
4/10/2011	Sunday	1500 - 2300	Swing	Allen Howe	Kerri Kavanagh	Raj Iyengar	Tim Kolb	Bill Roggenbrodt
4/10/2011	Sunday	2300- 0700	Midnight	Fred Brown	Joelle Starefos	Larry Criscione		Margie Kotzalas
4/11/2011	Monday	0700 - 1500	Day		Michelle Falagan	Len Ward	Mike Brown	Jim Isom
4/11/2011	Monday	1500 - 2300	Swing	Allen Howe	Tom Boyce	Mark Caruso	Tim Kolb	Andy Kugler
4/11/2011	Monday	2300- 0700	Midnight	Pat Hiland	Rollie Berry	Larry Criscione	Eva Brown	Margie Kotzalas
4/12/2011	Tuesday	0700 - 1500	Day		Peter Alter	Ben Beasley	Mike Brown	Jim Isom
4/12/2011	Tuesday	1500 - 2300	Swing	Bill Ruland	Aixa Belen	Antonios Zoulis	Tim Kolb	Andy Kugler
4/12/2011	Tuesday	2300- 0700	Midnight	Brian Holian	Rollie Berry	Larry Criscione	Eva Brown	Margie Kotzalas
4/13/2011	Wednesday	0700 - 1500	Day	Stu Richards	Joe Williams	Mark Caruso	Mike Brown	Jim Isom
4/13/2011	Wednesday	1500 - 2300	Swing	Laura Dudes	Aixa Belen	Antonios Zoulis	Tim Kolb	Bill Roggenbrodt
4/13/2011	Wednesday	2300- 0700	Midnight	Brian Holian	Rollie Berry	Hanh Phan	Eva Brown	Joelle Starefos
4/14/2011	Thursday	0700 - 1500	Day	Stu Richards	Eric Thomas	Tina Ghosh	Mike Brown	Jim Isom
4/14/2011	Thursday	1500 - 2300	Swing	Laura Dudes	Brett Rini	Antonios Zoulis	Chuck Norton	Andy Kugler
4/14/2011	Thursday	2300- 0700	Midnight	Pat Hiland	Oleg Bukharin	Ben Beasley	Eva Brown	Joelle Starefos
4/15/2011	Friday	0700 - 1500	Day	Fred Brown	Peter Alter	Raj Iyengar	Greg Cranston	Jim Isom
4/15/2011	Friday	1500 - 2300	Swing	Stu Richards	Brett Rini	Antonios Zoulis	Chuck Norton	Andy Kugler
4/15/2011	Friday	2300- 0700	Midnight	Ed Hackett	Margie Kotzalas	Larry Criscione	Eva Brown	Joelle Starefos

as of 4/07/11 1100

Weaver, Tonna

---

From: EDO Update [nrc.announcement@nrc.gov]  
Sent: Thursday, April 07, 2011 2:21 PM  
To: Taylor, Renee  
Subject: EDO Update



EDO

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Thursday, April 7, 2011



Most likely you are aware of the ongoing budget negotiations in Congress for the federal government through this Friday, April 8<sup>th</sup>. In the event of a "government available funds. So even if some federal civilian employees are furloughed next staff would be paid as usual on the April 19<sup>th</sup> pay date. In other words, if you we do so. We may need to reschedule some of your planned activities, such as trav part it would be business as usual until our existing funds are exhausted. The Of in advance of any NRC furloughs that may be necessary.

We continue to respond to the emergency at the Fukushima Daiichi site through that there is a shutdown that outruns our existing funds, and the situation in Jap with additional emergency "excepted employees" who will be exempt from the fu to report for work. You will be notified beforehand if you are an excepted employ

The NRC has been updating our Frequently Asked Questions page related to a po <http://portal.nrc.gov/edo/staff/Lists/Announcements/DispForm.aspx?ID=16&So>

In addition, the Office of Personnel Management has an information page, which

I will keep you informed about any new developments.

---

*Bill*

Bill Borchardt, EDO

L/501

## Weaver, Tonna

---

**From:** Gardocki, Stanley *in yr*  
**Sent:** Friday, April 08, 2011 8:40 AM  
**To:** Purciarello, Gerard  
**Cc:** Levine, Michael  
**Subject:** how nitrogen used in Japan

Today news

A total of 6,000 cubic meters of the inert gas will be pumped into the No. 1 reactor and TEPCO will repeat the process for reactors No.2 and No. 3, in a bid to make the six-reactor complex more stable, officials said.

6,000 cubic meters equates to 211,887 cubic feet.

One cubic meter equals 35.3 cubic feet

At Peach Bottom the new TS is 124,000 cubic feet.

Not quite enough comparing to Japan. But hey every little bit helps, hope they keep it higher like they say they will. Right!

Ref today's news

[http://news.xinhuanet.com/english2010/world/2011-04/07/c\\_13817258\\_2.htm](http://news.xinhuanet.com/english2010/world/2011-04/07/c_13817258_2.htm)

## Weaver, Tonna

---

**From:** World Nuclear News [wnn=world-nuclear-news.org@mail4.us2.mcsv.net] on behalf of World Nuclear News [wnn@world-nuclear-news.org]  
**Sent:** Friday, April 08, 2011 11:42 AM  
**To:** Panicker, Mathew  
**Subject:** WNN Daily: Tsunami countermeasures for Kashiwazaki Kariwa

[View the WNN Daily in your browser.](#)



**Today's top stories**

**8 April 2011**

**REGULATION & SAFETY: Tsunami defences for Kashiwazaki Kariwa**  
Tokyo Electric Power Company has released details of steps it is taking to protect the seven-unit Kashiwazaki Kariwa nuclear power station from future tsunamis. The company has also lifted a program of rolling power blackouts.

**REGULATION & SAFETY: New Earthquake disrupts grid power**  
Another powerful off shore earthquake has hit Japan's northeast. Diesel generators have replaced grid power at Higashidori and Onagawa nuclear power plants as well as the Rokkasho reprocessing facility but there has been no effect on safety at Fukushima Daiichi.

**INDUSTRY TALK: Fuel loading begins again at Bushehr**  
The reloading of fuel assemblies into Iran's Bushehr nuclear power plant has begun, Russia's AtomStroyExport has announced. Reactor internals and main circulation pipeline station have now been flushed through and inspected.

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**Weaver, Tonna**

---

**From:** Gardocki, Stanley *in rrr*  
**Sent:** Friday, April 08, 2011 1:50 PM  
**To:** Purciarello, Gerard  
**Subject:** not sure if you are aware of this

[PPTX] Temporary Instruction 2515/183, "Followup to the Fukushima ...

Temporary **Instruction** 2515/183, "Follow-up to the Fukushima ... [http://portal.nrc.gov/edo/nrr/dirs/irib/Fukushima ...](http://portal.nrc.gov/edo/nrr/dirs/irib/Fukushima...) 51,54, 55, 70, 72, 73, and **100** and appendices ...  
r4.nrc.gov/KMKT/Video/ti-183/Overall%20Presentation.pptx - 2011-03-28 - Text Version

**Nelson, Robert**

---

**From:** Nelson, Robert *NRK*  
**Sent:** Friday, April 08, 2011 8:40 AM  
**To:** Chernoff, Harold  
**Cc:** Glitter, Joseph; Ennis, Rick  
**Subject:** Query: Chuck Casto has requested PM Support

**Importance:** High

Is Peter Bamford a candidate for the PM spot??

NELSON

---

**From:** Glitter, Joseph *NRK*  
**Sent:** Thursday, April 07, 2011 8:22 PM  
**To:** Holian, Brian; Galloway, Melanie; McGinty, Tim; Blount, Tom; Howe, Allen; Nelson, Robert; Brown, Frederick; Westreich, Barry  
**Cc:** Ruland, William; Bahadur, Sher; Lubinski, John; Thomas, Brian; Evans, Michele; Hiland, Patrick; Skeen, David; Cheok, Michael; Lee, Samson  
**Subject:** Heads up: Chuck Casto has requested PM Support

In the call with Chairman tonight, Chuck Casto made a plea for a PM to join the 4<sup>th</sup> wave of the Japan Team. Ideally, the PM would have a BWR background and operations experience. I know we have a list of candidates that we can refer back to.

Chuck is also looking for someone with a health physics background that could assist in briefings and can effectively communicate radiation exposure and contamination to a lay audience. The 4<sup>th</sup> team will probably be asked to support a 3-week (rather than a 2-week) period.

**Nelson, Robert**

---

**From:** Nelson, Robert *NR*  
**Sent:** Friday, April 08, 2011 9:25 AM  
**To:** Roberts, Darrell  
**Subject:** RE: FAQ repository in NRR

Thanks. I'll be on the 10:30 call.

NELSON

---

**From:** Roberts, Darrell *DR*  
**Sent:** Friday, April 08, 2011 9:22 AM  
**To:** Nelson, Robert  
**Subject:** RE: FAQ repository in NRR

Thanks, Nelson. That appears consistent w/ my msg below (except I said "*may* not have been added...", should've been "*would* not have been added").

I'll let you know if I get any responses.

DJR

---

**From:** Nelson, Robert *NR*  
**Sent:** Friday, April 08, 2011 9:19 AM  
**To:** Roberts, Darrell  
**Cc:** Markley, Michael; Oesterle, Eric  
**Subject:** RE: FAQ repository in NRR

Only my Comm Team has update access to the SharePoint site and all Qs & As loaded in the site have been approved by OPA. We welcome additional Qs & As and will shepherd them thru OPA if needed. The spent fuel Qs have been added.

NELSON

---

**From:** Roberts, Darrell *DR*  
**Sent:** Friday, April 08, 2011 9:13 AM  
**To:** Lew, David; Dean, Bill; Wilson, Peter; McNamara, Nancy; Tifft, Doug; Screnci, Diane; Sheehan, Neil  
**Cc:** Clifford, James; Nelson, Robert; Lorson, Raymond; Collins, Daniel  
**Subject:** FW: FAQ repository in NRR

Folks,

Note the below plan to make our FAQ Sharepoint site (for Japanese event related Q&As) available to the public. Since many (if not all) of the Q&As on the Sharepoint site have been vetted through OPA, I don't anticipate that a major scrubbing effort will be needed before this is publicly posted. I'm sharing this with you for your awareness, but also to confirm that there are no stray Japanese event-related FAQs (stored in our files here in the region) that were OPA-approved but not included in the Sharepoint database. For example, last week's spent fuel related questions were coordinated through Bob Nelson's team, so they would've (should've) been added to the Sharepoint site (I'm confirming). However, if any of our staff worked questions that were not coordinated through Bob's team, they may not have been added to the site. Please let me know by Monday noon so I can forward this information to Bob Nelson.

Thx,  
DJR


---

**From:** Nelson, Robert  
**Sent:** Wednesday, April 06, 2011 7:52 AM  
**To:** Boger, Bruce; LIA06 Hoc; Roberts, Darrell; Kennedy, Kriss; Lara, Julio; Croteau, Rick; Steger (Tucci), Christine; Burnell, Scott; Meighan, Sean; Nguyen, Quynh; Wertz, Trent; Thomas, Eric; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Ruland, William; Skeen, David; Thomas, Brian; Westreich, Barry  
**Cc:** Shear, Gary; West, Steven  
**Subject:** FYI: FAQ repository in NRR

Note the plan to make our FAQ site accessible to the public.

NELSON

---

**From:** Muessele, Mary   
**Sent:** Tuesday, April 05, 2011 6:47 PM  
**To:** RidsNmssOd Resource; RidsResOd Resource; RidsFsmeOd Resource; RidsNroOd Resource; RidsNsirOd Resource  
**Cc:** Schum, Constance; Pulliam, Timothy; Valentin, Andrea; Webber, Robert; Brenner, Eliot; Hayden, Elizabeth; Rothschild, Trip; Leeds, Eric; Nelson, Robert; Markley, Michael; Oesterle, Eric; Rihm, Roger; Ellmers, Glenn; Andersen, James; Landau, Mindy; Frazier, Alan; Sealing, Donna; Ficks, Ben; Holonich, Joseph; Bowman, Gregory; Rheame, Cynthia  
**Subject:** FAQ repository in NRR

As you may know, NRR has established a very comprehensive SharePoint site for Frequently Asked Questions regarding the Japan event. These questions were initially intended to be used internally so that all staff responding to questions from stakeholders could provide a consistent response and so that similar questions would not have to be researched several times over. The site is located at: <http://portal.nrc.gov/edo/nrr/dorl/japan/Shared%20Documents/Questions%20and%20Answers.aspx>

We would like to make this FAQ site available to the public as the primary consolidated site for all FAQs related to the event. To this end, I am asking your assistance by notifying us as to whether FAQs have been gathered in your office and would be appropriate for the public site. The FAQs should be sufficiently "high-level" so that they would typically be asked by a member of the public. We are not seeking very technical, detailed FAQs. They should also be FAQs that do not already appear on the SharePoint site. If your office has developed such FAQs, please send them to Beth Hayden, in OPA, who has agreed to review them to ensure they are appropriate for public release. You should then forward the OPA-approved FAQs to NRR (Eric Oesterle) for incorporation on to the SharePoint site.

Our goal is to make the site available over the course of the next week or so and then incorporate any additional OPA-vetted FAQs on to the site as soon as practicable.

Please let Mindy Landau or I know if you have any questions and thank you for your assistance and thank to NRR for this outstanding initiative!

Mary



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LIFE & CULTURE | APRIL 9, 2011

## The Man Who Predicted the Tsunami

*After studying ancient rocks, a Japanese geologist warned that a disaster was imminent—to no avail*

By PETER LANDERS

The giant tsunami that assaulted northern Japan's coast surprised just about everyone. But Masanobu Shishikura was expecting it. The thought that came to mind, he says, was "yappari," a Japanese word meaning roughly, "Sure enough, it happened."

"It was the phenomenon just as I had envisioned it," says the 41-year-old geologist, who has now become the Japanese Cassandra.



Peter Landers/The Wall Street Journal

Masanobu Shishikura wrote in August about a likely tsunami.

Dr. Shishikura's studies of ancient earth layers persuaded him that every 450 to 800 years, colliding plates in the Pacific triggered waves that devastated areas around the modern city of Sendai, in Miyagi Prefecture, as well as in Fukushima Prefecture.

One early tsunami was known to historians. Caused by the 869 Jogan quake, its waves, according to one chronicle, killed 1,000 people. Dr. Shishikura had found strong evidence of a later tsunami in the same region, which probably took place between 1300 and 1600.

"We cannot deny the possibility that [such a tsunami] will occur again in the near future," he and colleagues wrote in August 2010. That article appeared in a journal published by the Active Fault and Earthquake Research Center in Tsukuba, the government-funded institute where Dr. Shishikura works.

He was beginning to spread the word. Plans were under way at his center to hand out maps so people would understand which areas were at risk. Dr. Shishikura had an appointment on March 23 to explain his research to officials in Fukushima.

Dr. Shishikura's boss at the center, Yukinobu Okamura, had even mentioned the results at a 2009 meeting of an official committee discussing the safety of nuclear-power plants. Dr. Okamura says the idea of beefing up tsunami preparedness didn't go anywhere.

At Dr. Shishikura's eighth-floor office, bookshelves and televisions crashed to the floor during the quake on March 11. He has found temporary

office quarters one story below, where he discussed his unheeded warning. "It's unfortunate that it wasn't in time," he said. But he also felt vindicated after past slights, remembering the local official who didn't want to help him dig holes in the earth for research and who called the endeavor a "nuisance."

His work is part of a young field called paleoseismology. Kerry Sieh, a pioneer in the specialty, says that the few dozen people who do this kind of work are usually doomed to be ignored. Humans are made to trust what they have seen themselves, or what someone they know has seen. They aren't designed "to deal with these once-in-500-year events," says Dr. Sieh, formerly of the California Institute of Technology and now head of the Earth Observatory of Singapore.

From his youth, Dr. Shishikura liked to collect fossils in the hills outside Tokyo. He says he realized in high school how geology could answer questions about the past.

His method is fairly simple. Miyagi Prefecture has rich soil, but sandwiched in it are layers of sand and pebbles that Dr. Shishikura says must have been carried from the shore by tsunamis. Looking at the layers allowed his group to estimate the rough dates of waves that struck as far back as 3,500 years ago.

Many lives could have been saved, at relatively little cost, by spreading awareness of the danger. People in Miyagi and Fukushima prefectures were used to strong quakes, but the location and magnitude of these seismic events didn't generate tsunamis. Further north on the eastern coast, tsunamis were well-known from quakes in 1896 and 1933. Those were of yet another, weaker variety that affected mainly low-lying areas along the coast.

During the magnitude 9.0 quake on March 11, some people well inland, thinking themselves safe, took time to change clothes or to make phone calls. Others watched the disaster unfold instead of running to high ground. They proved what Dr. Shishikura's group wrote last year about local tsunamis: "It appears to be almost completely unknown among the general public that in the past great tsunamis have inundated areas as far as 3-4 kilometers inland as the result of earthquakes exceeding magnitude 8."

Now, Dr. Shishikura's team is looking at the Nankai trough to the south, which could trigger tsunamis hitting the island of Shikoku and the Kii Peninsula. Dr. Shishikura says large tsunamis appear to hit there every 400 to 600 years, with the most recent in 1707.

Those rough calculations suggest the danger is at least a century away. Still, Dr. Shishikura says, "we had better be on the lookout."

**Write to** Peter Landers at [peter.land@wsj.com](mailto:peter.land@wsj.com)

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Powered By:

Bozin, Sunny

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**From:** Ostendorff, William  
**Sent:** Saturday, April 09, 2011 11:03 AM  
**To:** Franovich, Mike  
**Cc:** Nieh, Ho; Kock, Andrea; Zorn, Jason  
**Subject:** Re: UPDATE from 08:30 Telecon on Fukushima Daiichi Events

Thanks Mike.

---

**From:** Franovich, Mike  
**To:** Ostendorff, William  
**Cc:** Nieh, Ho; Kock, Andrea; Zorn, Jason  
**Sent:** Sat Apr 09 09:19:08 2011  
**Subject:** UPDATE from 08:30 Telecon on Fukushima Daiichi Events

Michele Evans led the call:

- ☐ No change in status of Unit 1, 2, or 3 or the SFPs.
- ☐ Three documents noted in the sit report are being refined; criteria to reduce 50 mile evac zone, limited reentry, and plant stability criteria.
- ☐ Meeting at the W.H. delayed from 4/11 to possibly 4/15. The documents noted above may be discussed at a lower level instead of at deputies meeting. May be discussed at the interagency working group.
- ☐ The Chairman approved a plan to reduced staffing in the NRC ops centers. No reduction in number of NRC personnel working in US Embassy for the "foreseeable future." More NRC personnel will be cycled to relieve team members (at this stage, it is not clear what all 11 staff members are doing given the plant conditions have stabilized).
- ☐ I have attached a document we received from the ET after the telecom this morning. This document was generated out of DoS/Embassy. Notes that Sandia National Laboratories personnel based at the Embassy performed additional analysis this week. "The current source term appears to be a small fraction of the "supercore" the source term the NRC used to determine the 50 mile evacuation zone, Based on this, they assess that any future event at the plant would have minimal if any impact on Tokyo."
- ☐ Secretary Clinton will visit Tokyo on or about April 18. Casto will brief her at the Embassy.
- ☐ I have attached the latest DOE sit reports.

**Pruett, Troy**

---

**From:** Maier, Bill  
**Sent:** Saturday, April 09, 2011 1:11 PM  
**To:** Pruett, Troy; Dricks, Victor  
**Subject:** HUGE FILE ATTACHED - FUKUSHIMA STATUS ON 4-6  
**Attachments:** Fukushima status 4-6-11.pdf

Troy/Victor,

Don't know if you think this will help for bkgnd info if asked on Thursday, but it might be of some use. It is a NISA update that was generated on April 6<sup>th</sup>, so it's fairly current and excellently presented. It's just a 4MB sized file.

Bill

# **The 2011 off the Pacific coast of Tohoku Pacific Earthquake and the seismic damage to the NPPs**

4<sup>th</sup> April, 2011

Nuclear and Industrial Safety Agency (NISA)  
Japan Nuclear Energy Safety Organization (JNES)

Japan

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Note: Some date in this material may be incorrect. Especially, all the plant parameters were lost during some period in the accident and some parameters are apparently inconsistent among them.



# 1. Outline of earthquake and nuclear reactors





## 1-1. 2011 off Tohoku Pacific Earthquake

Fukushima Dai-ichi NPP



- Occurred 14:46 March 11, 2011
- Magnitude: 9.0 Mw
- Epicenter location:  $38^{\circ} 6''\text{N}$  and  $142^{\circ} 51''\text{E}$ , and 24km in depth
- It is said that the height of tsunami attacked Fukushima NPP was more than 14m

Fukushima Dai-ni NPP





## 1-2. Tsunami after the earthquake

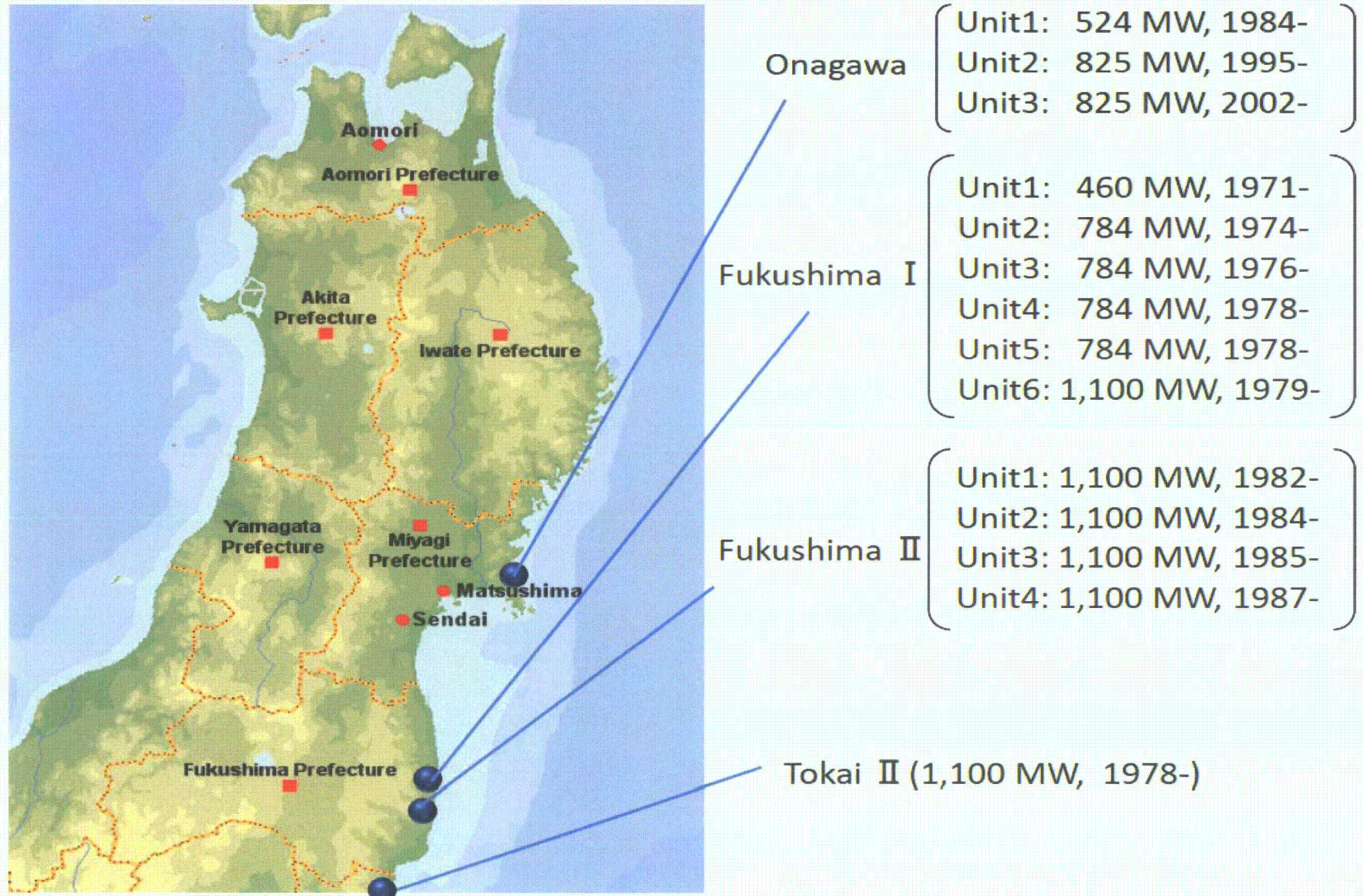
- East coast of northern area in the main island of Japan is seriously damaged
- As of April 4, 12,175 people are dead and 15,489 people are missing





## 1-3. Nuclear reactors near epicenter of the earthquake

### Location of the Nuclear Installations





## 1-4. Automatic shut-down of nuclear reactors

### ●11 reactors were automatically shut-down

- Onagawa Unit 1,2,3
- Fukushima Dai-ichi (I) Unit 1,2,3
- Fukushima-Dai-ni (II) Unit 1,2,3,4
- Tokai Dai-ni (II)

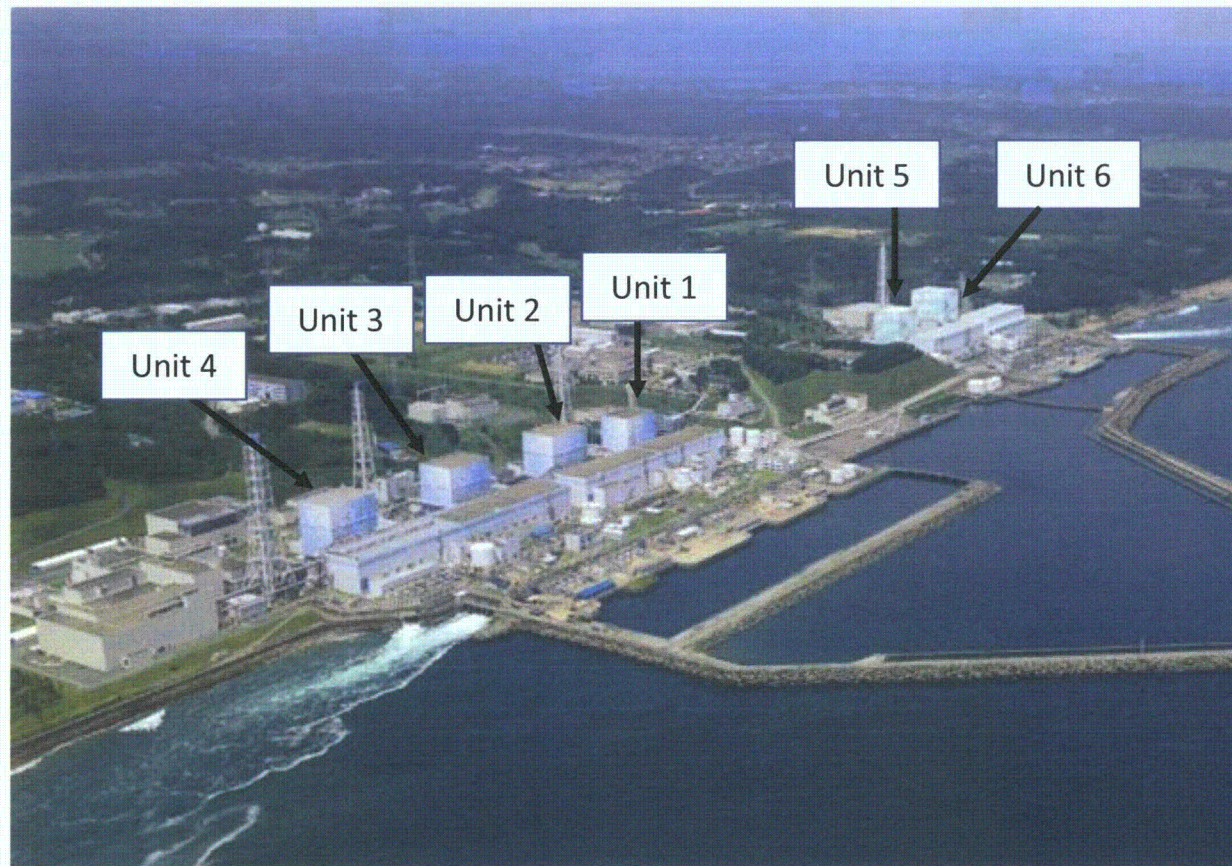
### ●3 reactors were under periodic inspection

- Fukushima Dai-ichi (I) Unit 4,5,6

-After the automatic shut-down, the Unit 1-3 at Onagawa Nuclear Power Station, the Unit 3 at Fukushima II Nuclear Power Station, and the Unit at Tokai II Nuclear Power Station have been cold shut down safely.

-As for the unit 1,2,4 at Fukushima II Nuclear Power Station, the operator of the station reported NISA nuclear emergency situation because the temperature of the suppression pools became more than 100 °C, but afterward the three units have been cold shut down.

## 2. Outline of Fukushima Dai-ichi NPS



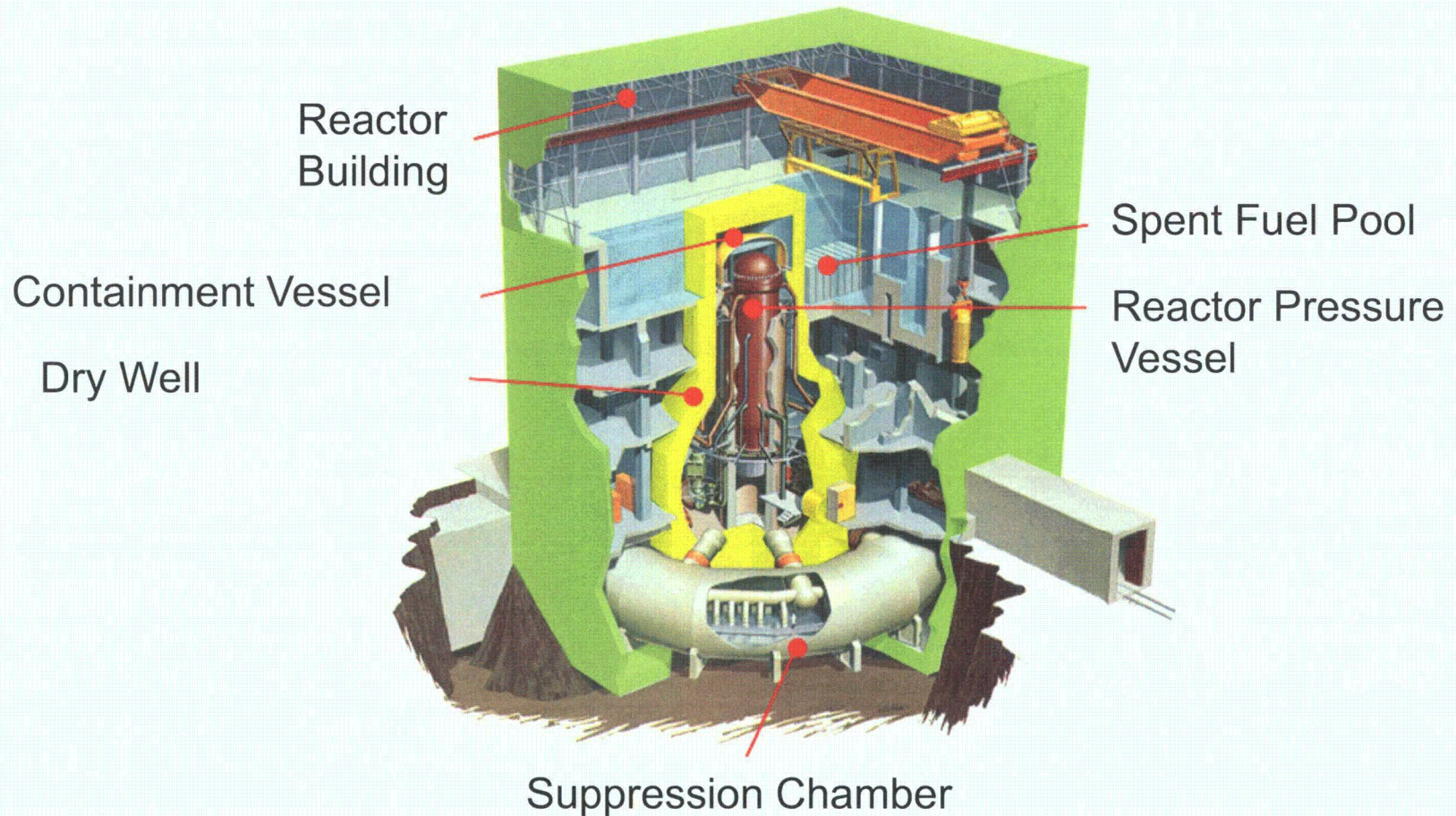
## 2-1. Summary of Fukushima Dai-ichi NPS

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
	BWR-3	BWR-4	BWR-4	BWR-4	BWR-4	BWR-5
PCV Model	Mark-1	Mark-1	Mark-1	Mark-1	Mark-1	Mark-2
Electric Output (MWe)	460	784	784	784	784	1100
Max. pressure of RPV	8.24MPa	8.24MPa	8.24MPa	8.24MPa	8.62MPa	8.62MPa
Max. Temp of the RPV	300°C	300°C	300°C	300°C	302°C	302°C
Max. Pressure of the CV	0.43MPa	0.38MPa	0.38MPa	0.38MPa	0.38MPa	0.28MPa
Max. Temp of the CV	140°C	140°C	140°C	140°C	138°C	171°C(D/W) 105°C(S/C)
Commercial Operation	1971,3	1974,7	1976,3	1978,10	1978,4	1979,10
Emergency DG	2	2	2	2	2	3*
Electric Grid	275kV × 4				500kV × 2	
Plant Status on Mar. 11	In Operation	In Operation	In Operation	Refueling Outage	Refueling Outage	Refueling Outage

\* One Emergency DG is Air-Cooled



## 2-2. Overview of Mark-1 Type BWR (Unit 1,2,3 and 4)



出典 : [http://nei.cachefly.net/static/images/BWR\\_illustration.jpg](http://nei.cachefly.net/static/images/BWR_illustration.jpg)

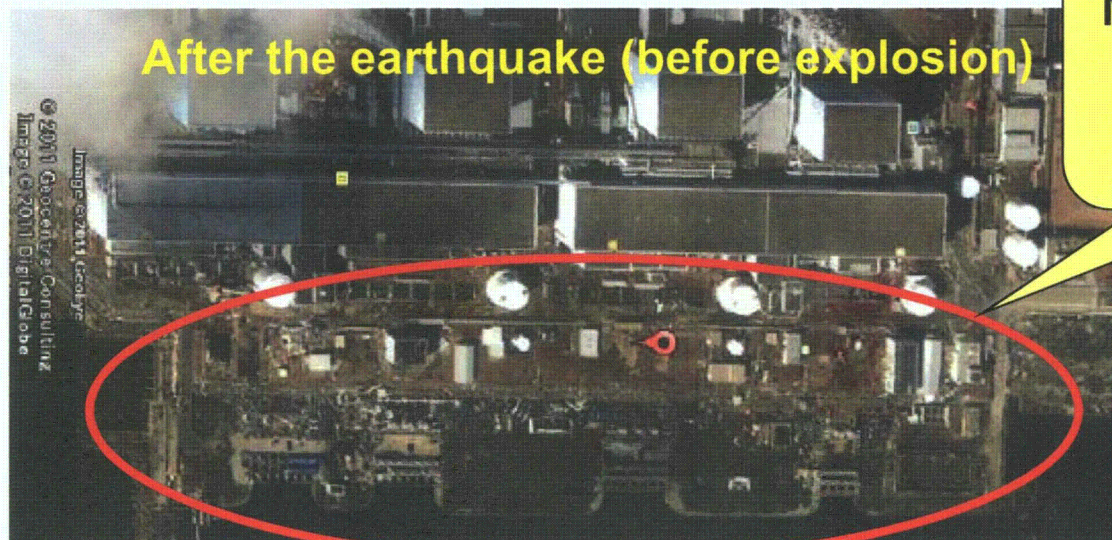
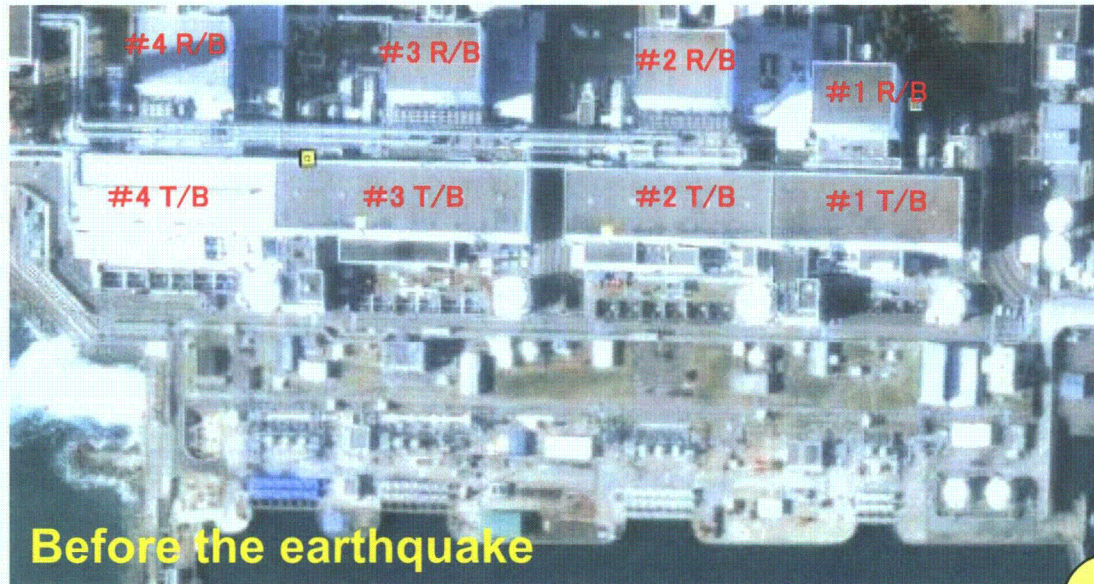


### **3. Report concerning incidents at Unit 1 through 6 in the Fukushima Dai-ichi NPS**





### 3-1. Satellite view of Fukushima Dai-ichi NPP



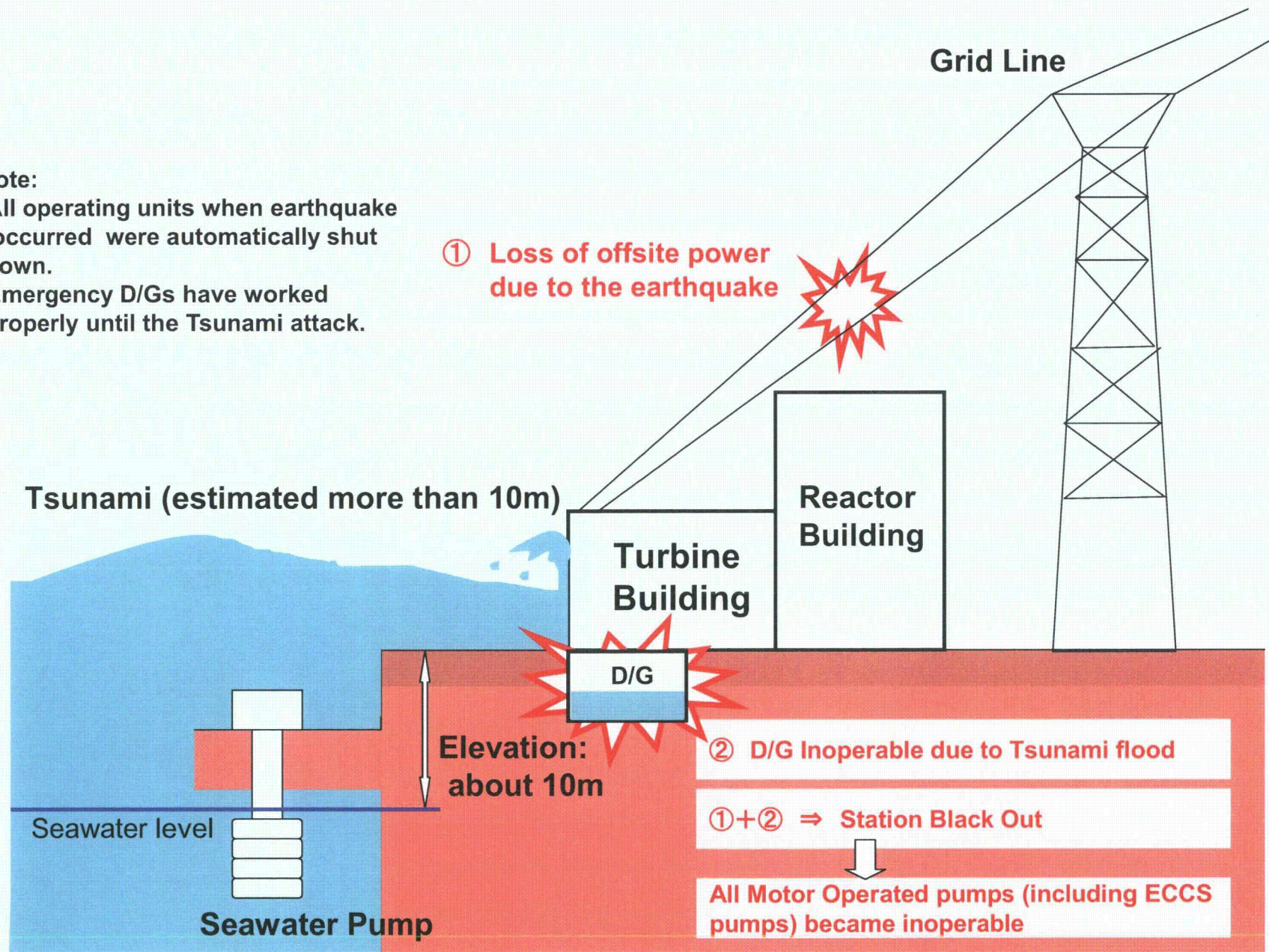
Many structures facing the bay are destroyed



## 3-2. Major root cause of the damage

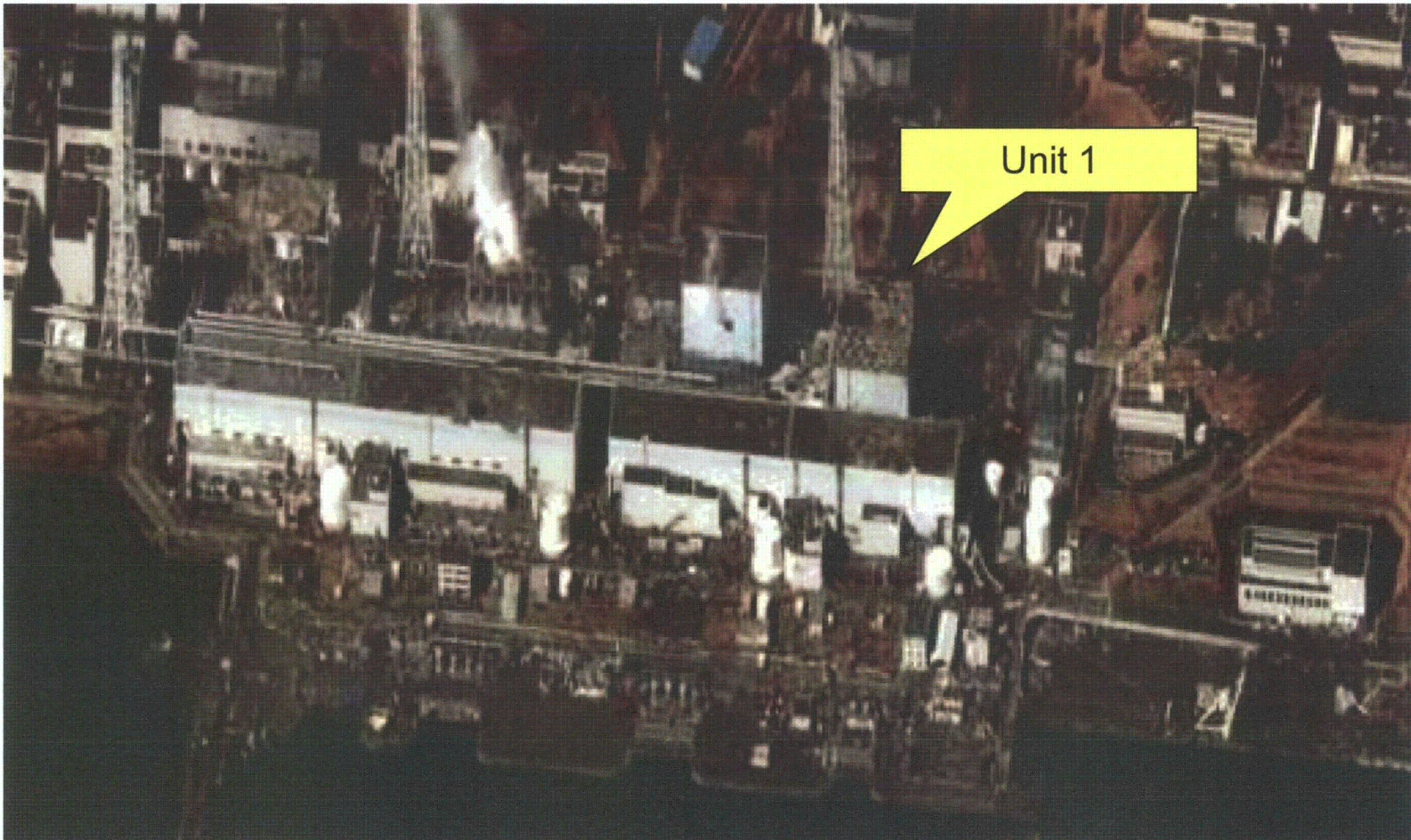
Note:

- All operating units when earthquake occurred were automatically shut down.
- Emergency D/Gs have worked properly until the Tsunami attack.





### 3-3. Accident Progression at Unit 1 Reactor



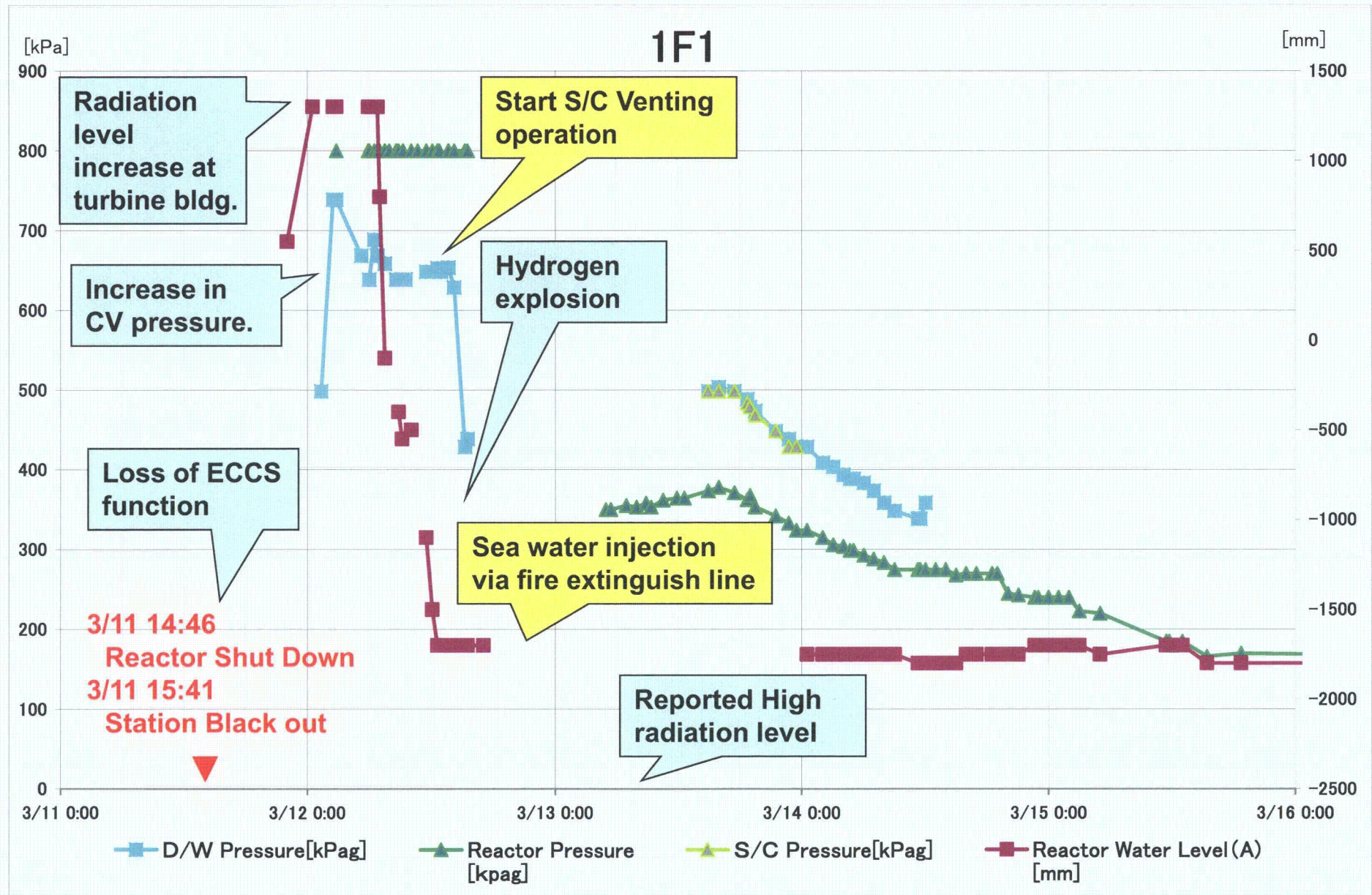
## 3-4. Chronology of Unit 1 after the earthquake

### ● **Unit 1**

- 11<sup>th</sup>    ● Under operation, Automatic shutdown by the earthquake
  - Loss of A/C power
  - Loss of water injection function
- 12<sup>th</sup>    ● Unusual increase of PCV pressure
  - Started to vent
  - Sound of explosion
  - Started of injection of seawater and borated water to the core
- 22<sup>nd</sup>    ● Rise of reactor temperature (383°C) → Drop (26th 05:00 144.3°C)
- 23<sup>rd</sup>    ● Water supply line in addition to the Fire Extinguish line. Switched to water supply line only.(Flow rate: 7m<sup>3</sup>/h)
- 24<sup>th</sup>    ● Lighting in the Central Control Room was recovered.
- 25<sup>th</sup>    ● Started fresh water injection
- 29<sup>th</sup>    ● Switched to the water injection to the core using a temporary motor operated pump.
- 31<sup>st</sup>    ● White smoke was confirmed to generate continuously
  - Freshwater is being injected into the RPV

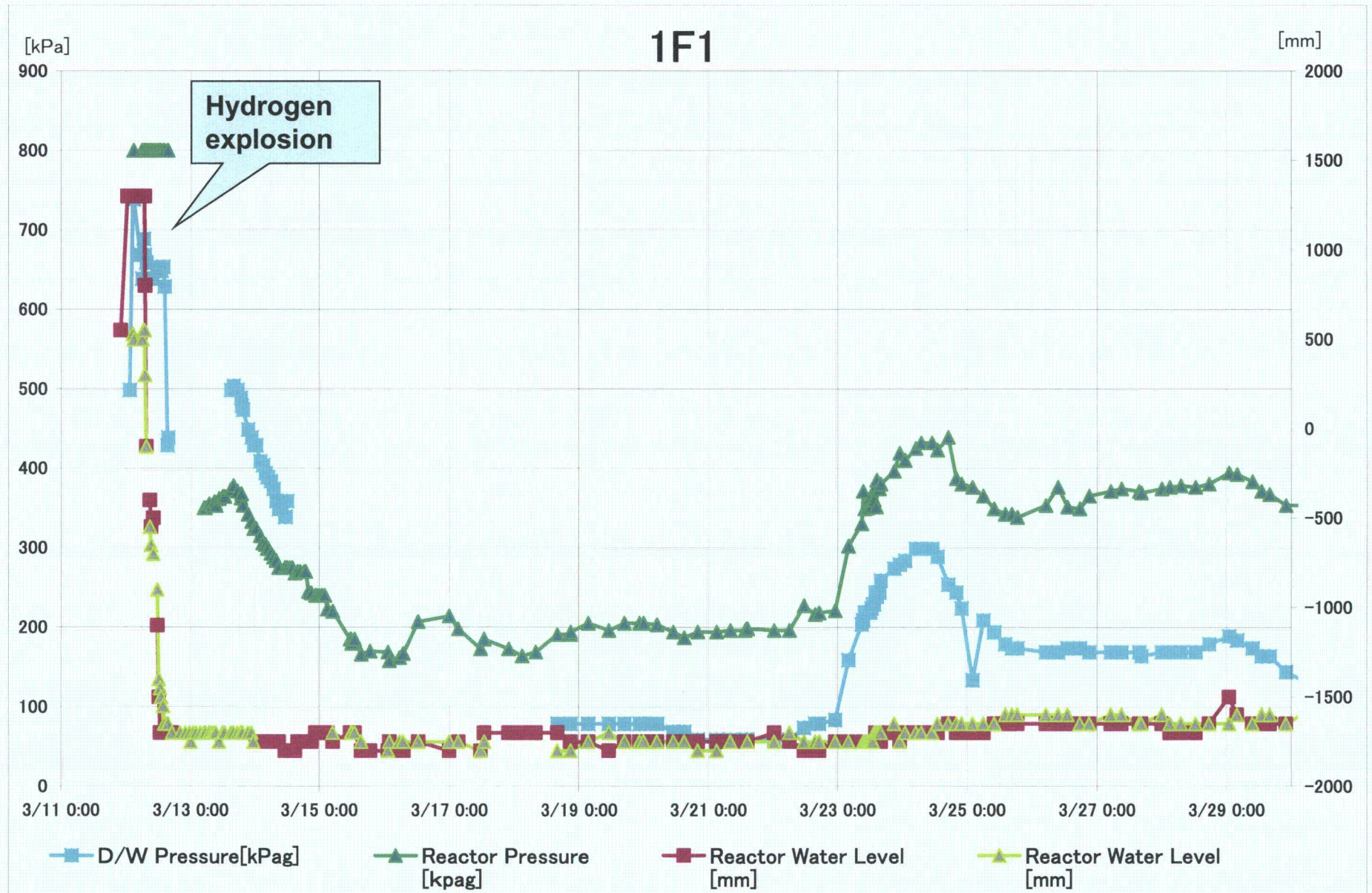


## 3-5. Trend data of Unit 1 until March 15





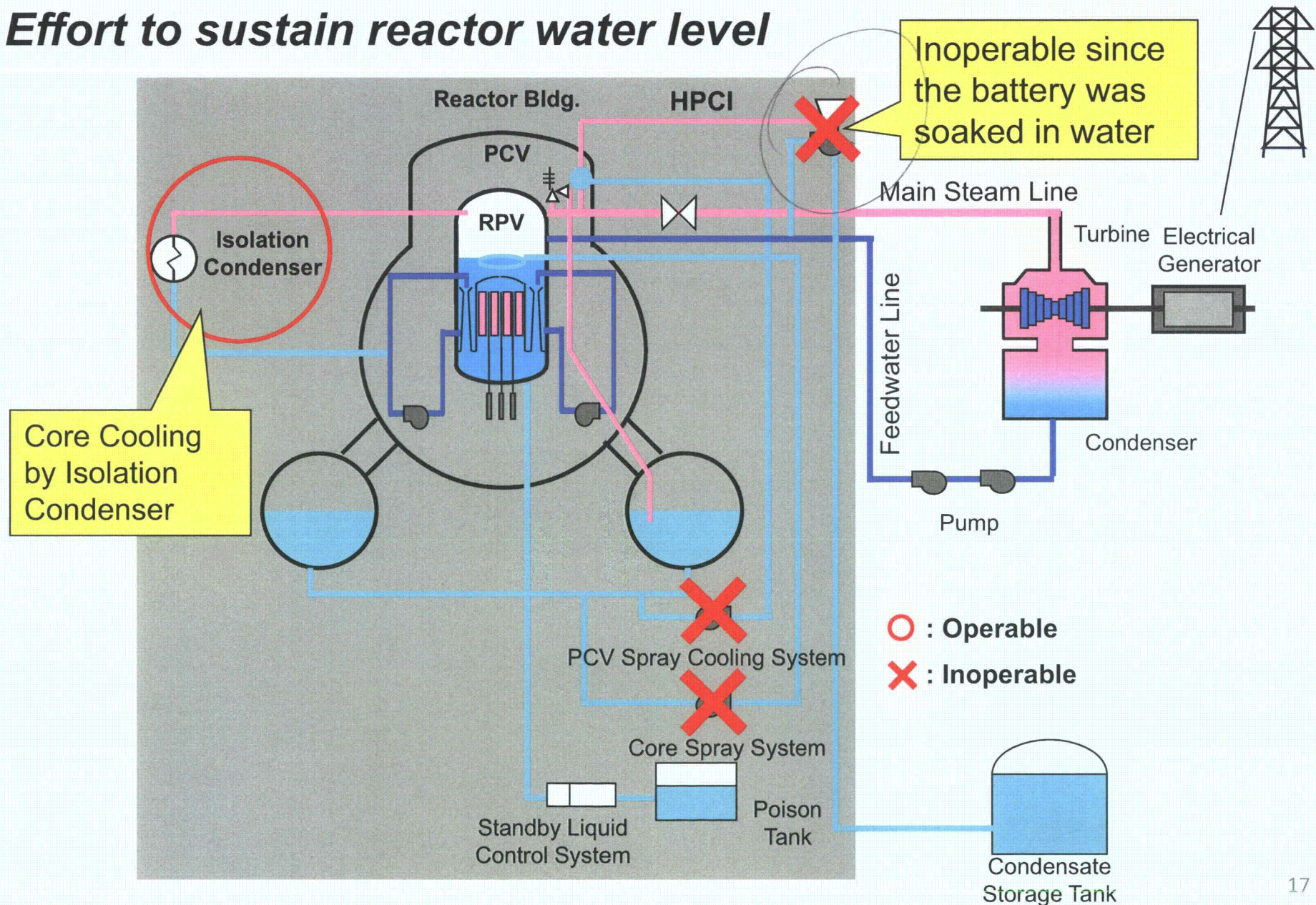
### 3-6. Trend data of Unit 1 until March 30





### 3-7. Major event progression at Unit 1 (1/4)

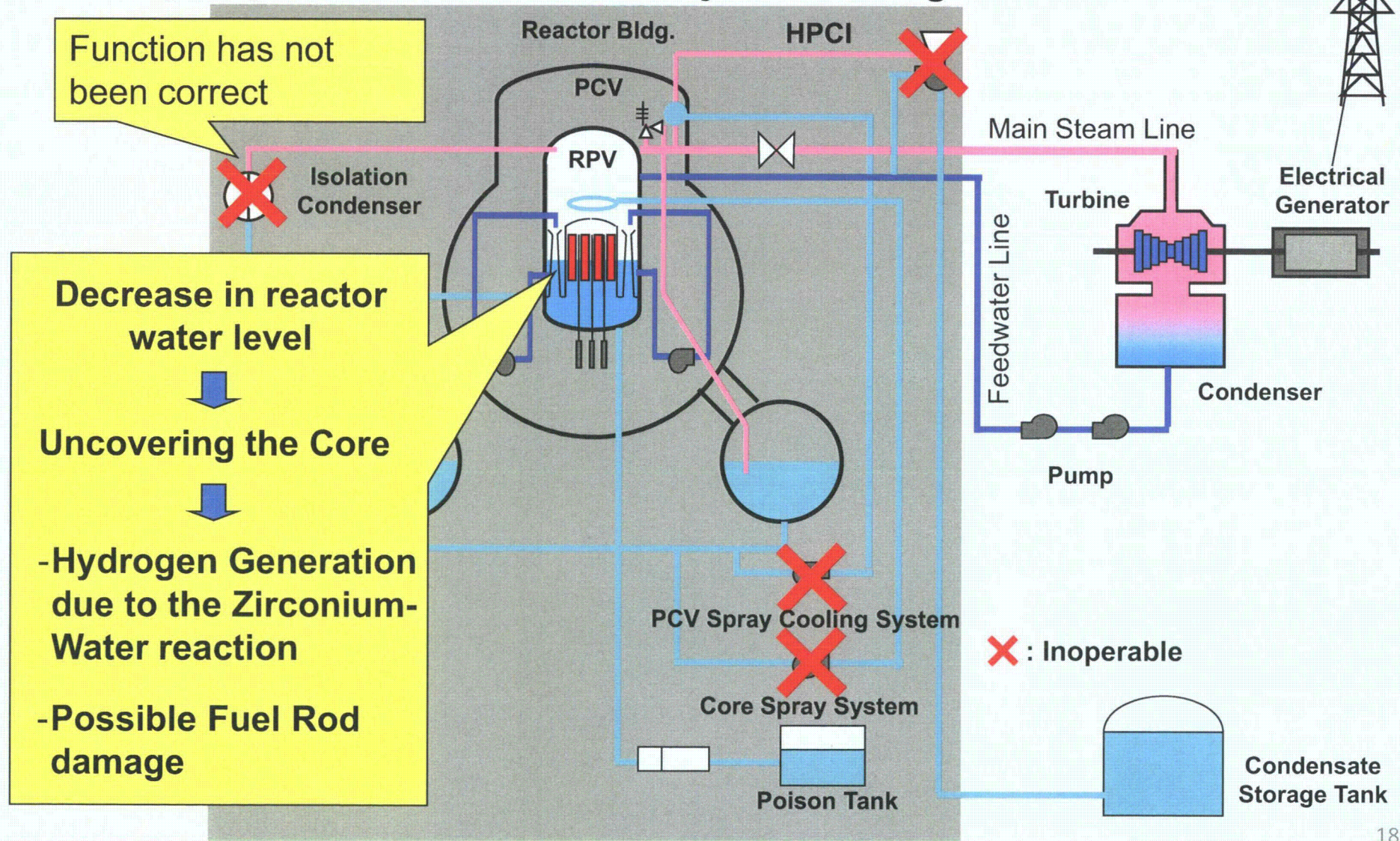
### ***Effort to sustain reactor water level***





### 3-7. Major event progression at Unit 1 (2/4)

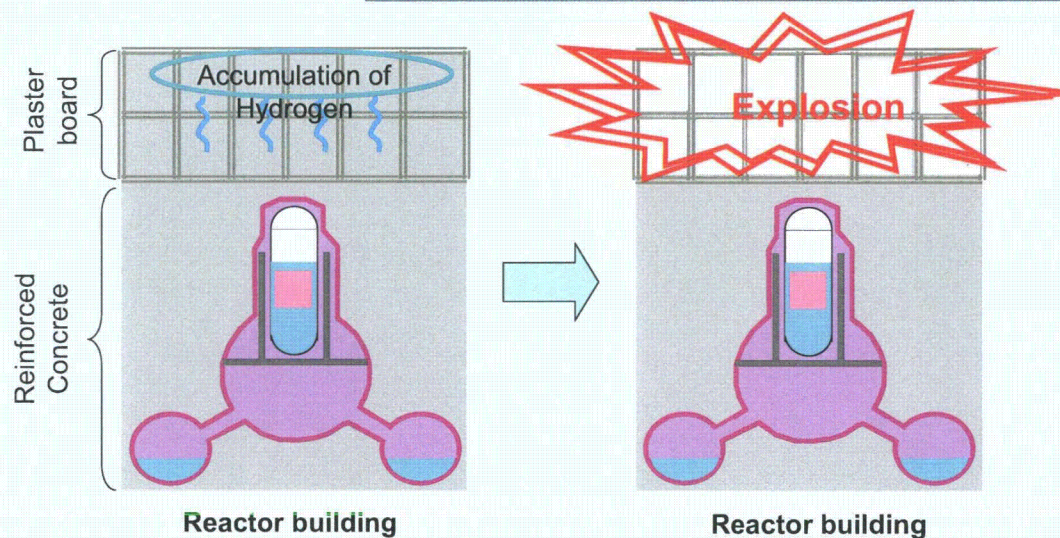
***Decrease in reactor water level due to loss of cooling capability of emergency condenser, followed by uncovering the core***





## 3-7. Major event progression at Unit 1 (3/4)

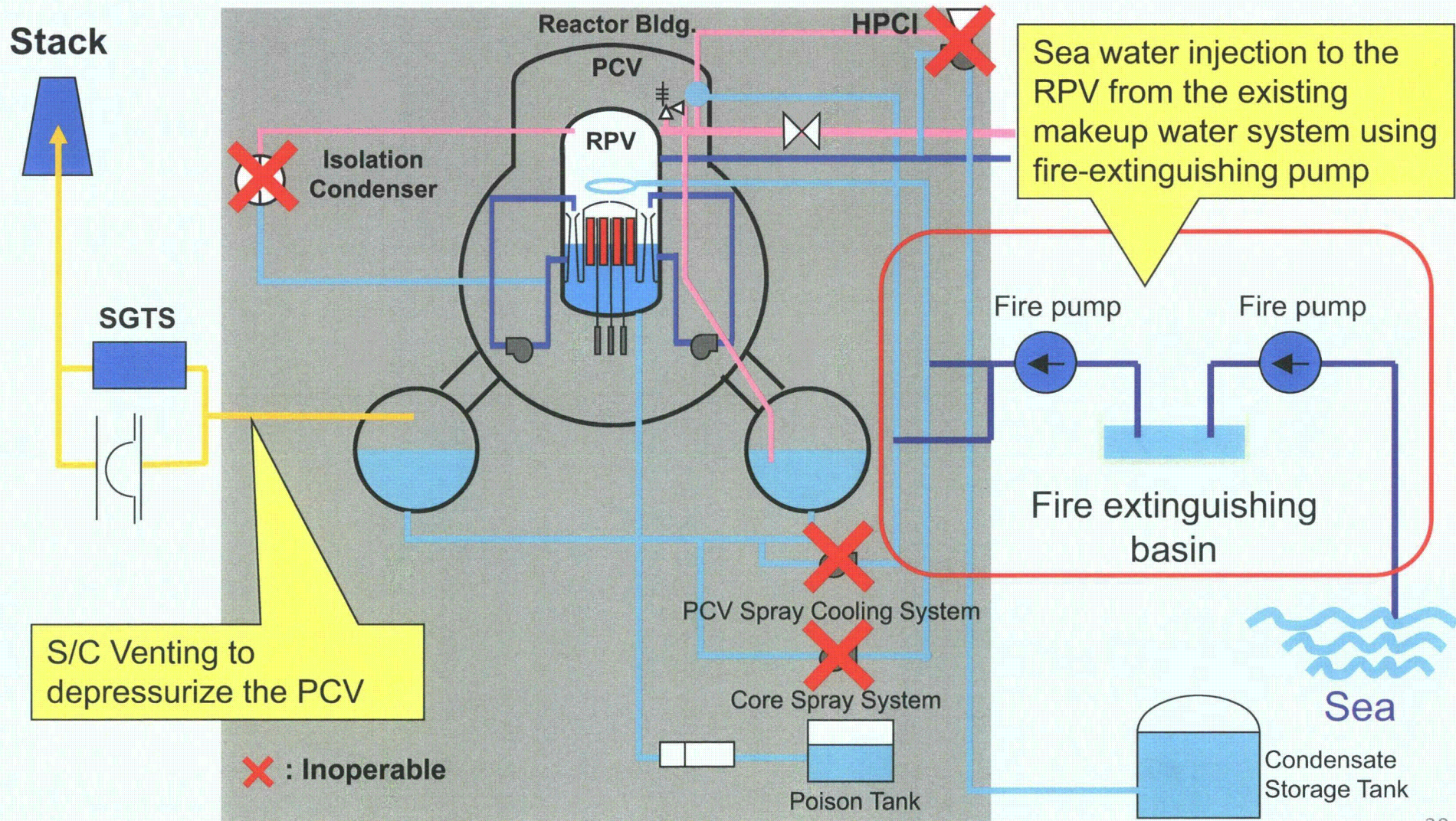
### *Hydrogen explosion in the operation floor*





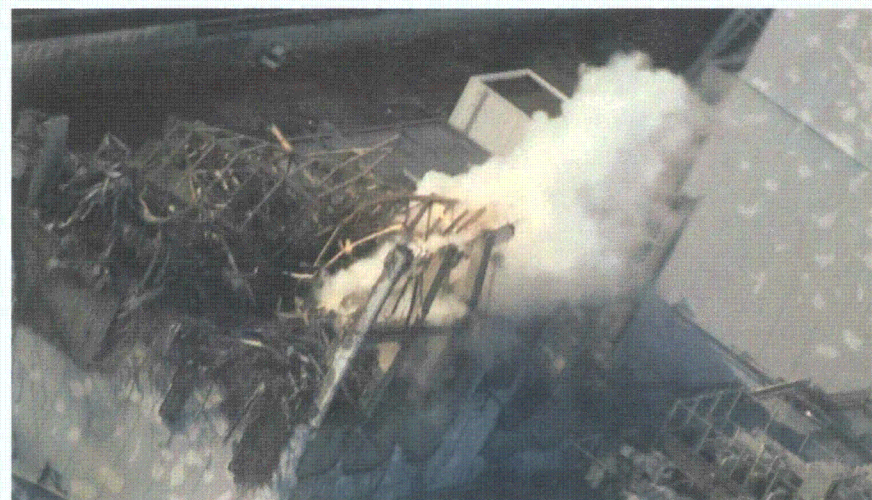
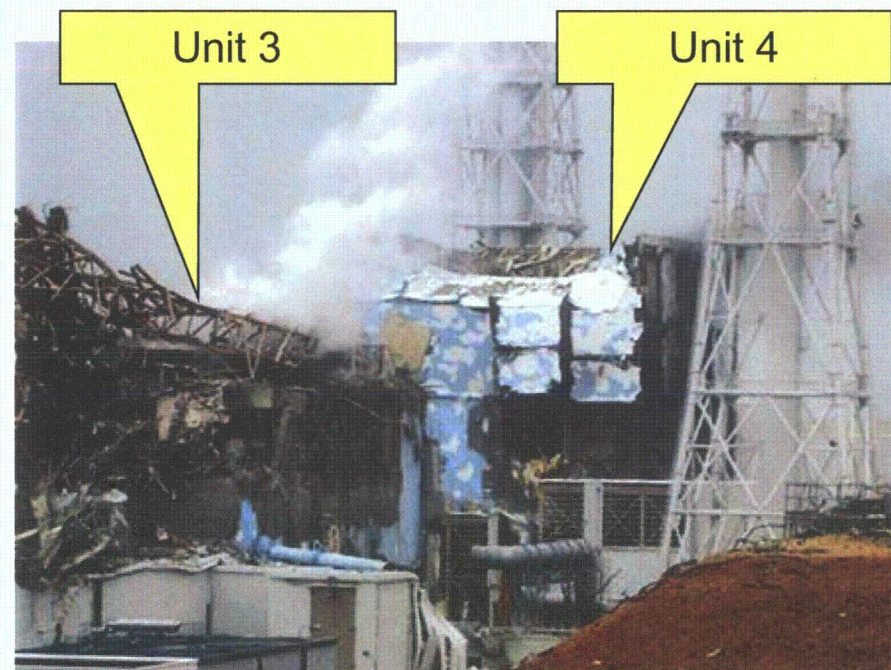
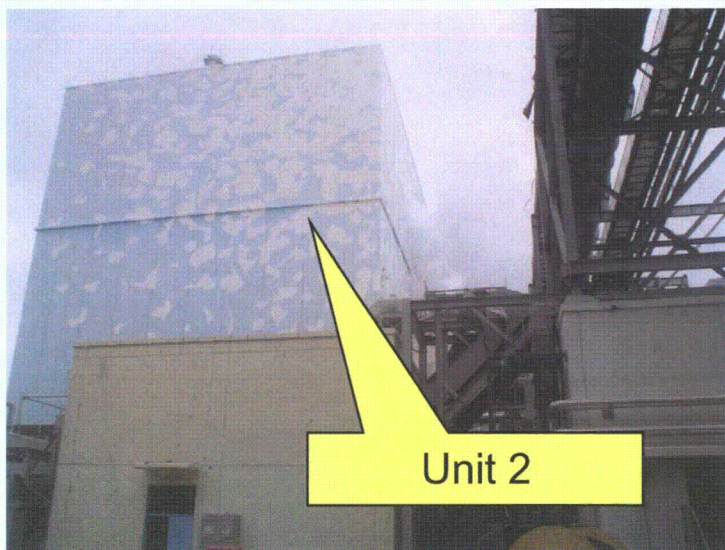
### 3-7. Major event progression at Unit 1 (4/4)

- **Sea water injection using fire water pump**
- **S/C Venting to depressurize the PCV**





### 3-8. Accident Progression at Unit 2 through 4 reactors





## 3-9. Chronology of Unit 2 after the earthquake (1/2)

### ● **Unit 2**

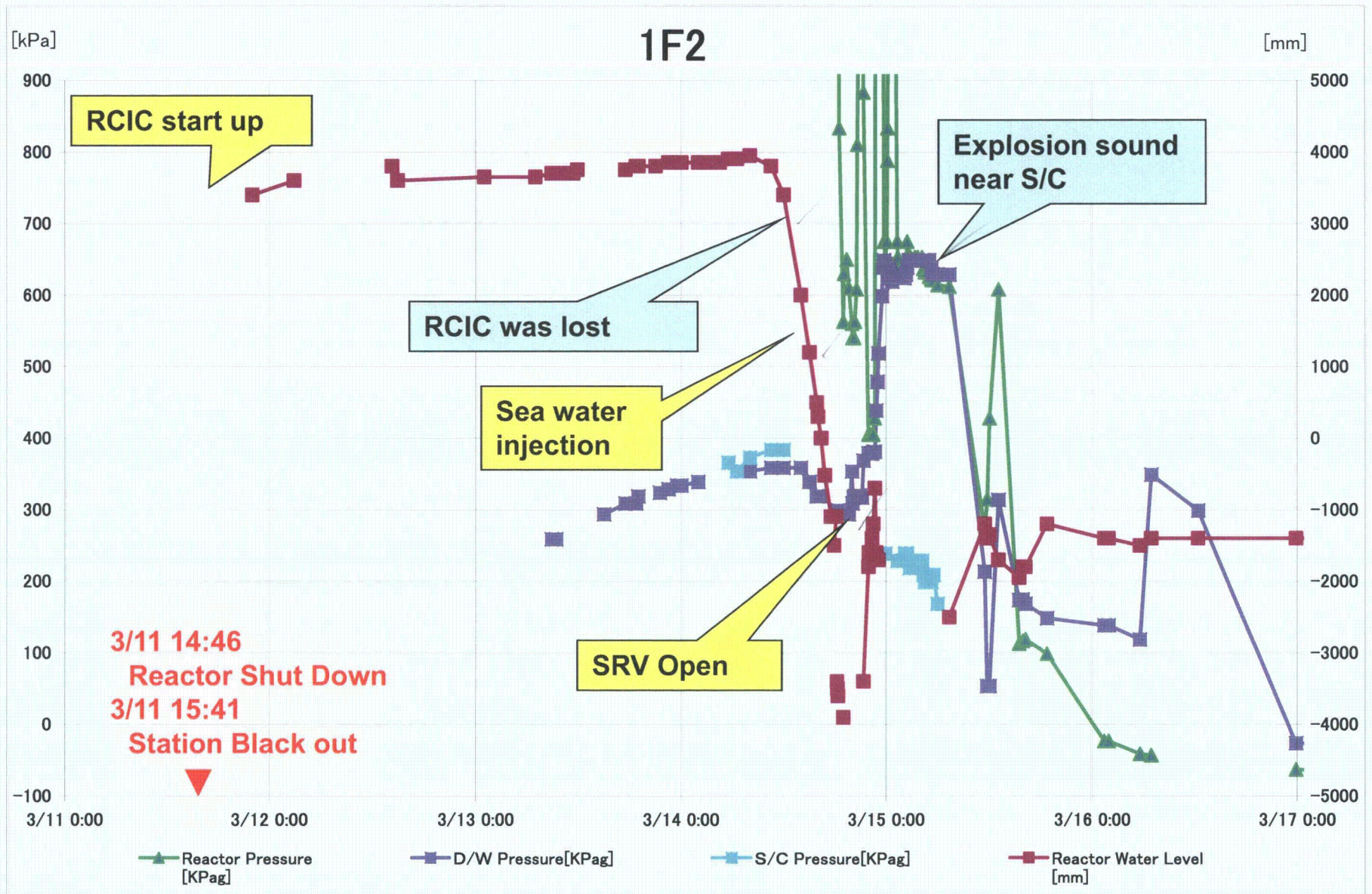
- 11<sup>th</sup> ● Under operation, Automatic shutdown by the earthquake
  - Loss of A/C power
  - Loss of water injection function
- 14<sup>th</sup> ● Loss of water cooling function
  - Unusual increase in PCV pressure
- 15<sup>th</sup> ● Sound of explosion
  - Possible damage of the suppression chamber
- 20<sup>th</sup> ● Injection of about 40 tons of seawater into SFP through fire extinguishing system.
  - Injection of seawater to the Spent Fuel Pool (SFP)
- 21<sup>st</sup> ● White smoke generated
- 22<sup>nd</sup> ● Injection of seawater to the Spent Fuel Pool (SFP)
- 25<sup>th</sup> ● Injection of seawater to SFP

## 3-9. Chronology of Unit 2 after the earthquake (2/2)

### ● **Unit 2(Continued)**

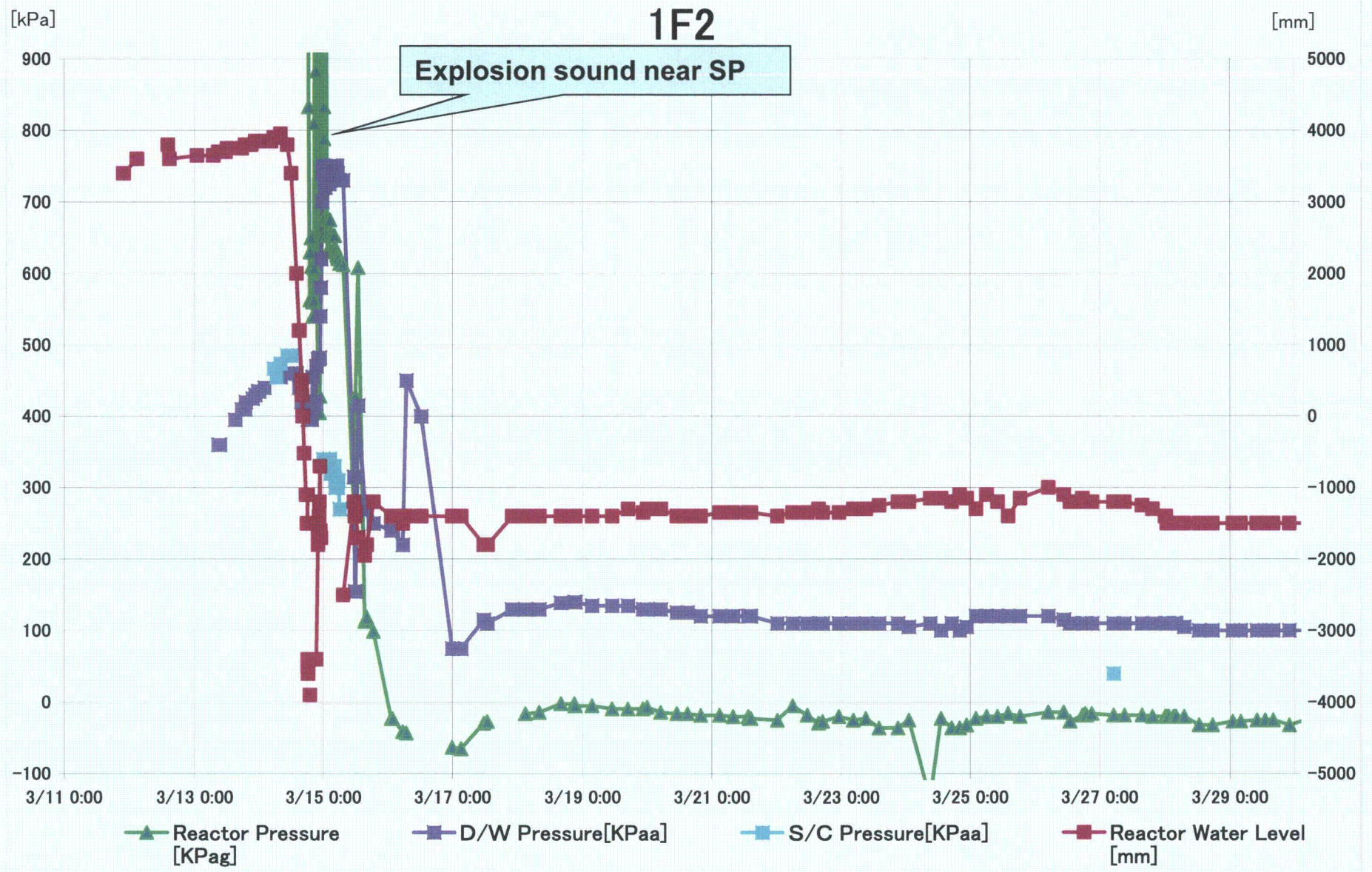
- 26<sup>th</sup> ● Lighting in the Central Control Room was recovered
- 27<sup>th</sup> ● Switched to the water injection to the core using a temporary motor-driven pump.
- 29<sup>th</sup> ● The Seawater injection to the Spent Fuel Pool using the Fire Pump Truck was switched to the fresh water injection using the temporary motor-driven pump  
● In order to prepare for transferring the stagnant water on the basement floor of turbine building to the Condenser, the water in the Condensate Storage Tank is being transferred to the Surge Tank of Suppression Pool Water.
- 30<sup>th</sup> ● The injection pump was switched to the Fire Pump Truck. However, because cracks were confirmed in the hose (12:47 and 13:10 March 30th), the injection was suspended. The injection of fresh water resumed at 19:05 March 30th.
- 31<sup>st</sup> ● White smoke was confirmed to generate continuously.  
● Fresh water is being injected to the spent fuel pool and the RPV

## 3-10. Trend data of Unit 2 until March 17





## 3-11. Trend data of Unit 2 until March 30



### 3-12. Chronology of Unit 3 after the earthquake (1/2)

## ● Unit 3

- |                  |   |
|------------------|---|
| 11 <sup>th</sup> | <ul style="list-style-type: none"> <li>● Under operation, Automatic shutdown by the earthquake</li> <li>● Loss of A/C power</li> </ul>  |
| 13 <sup>th</sup> | <ul style="list-style-type: none"> <li>● Loss of water injection function</li> <li>● Started to vent</li> </ul>   |
| 14 <sup>th</sup> | <ul style="list-style-type: none"> <li>● Unusual increase in PCV pressure</li> <li>● Sound of explosion</li> </ul>  |
| 16 <sup>th</sup> | <ul style="list-style-type: none"> <li>● White smoke generated</li> </ul>   |
| 17 <sup>th</sup> | <ul style="list-style-type: none"> <li>● Water discharge by the helicopters of Self-Defense Force(4 times)</li> <li>● Water spray from the ground by High pressure water-cannon trucks<br/>(Police: once, Self-Defense Force: 5 times)</li> </ul> |
| 18 <sup>th</sup> | <ul style="list-style-type: none"> <li>● Water spray from the ground by same trucks (Self-Defense Force: 6 times)</li> <li>Water spray from the ground by US water-cannon trucks<br/>(US armed force:1 time)</li> </ul>                           |
| 19 <sup>th</sup> | <ul style="list-style-type: none"> <li>● Water spray from the ground by High pressure water-cannon trucks by Hyper Rescue Unit of Tokyo Fire Department.</li> </ul>   |

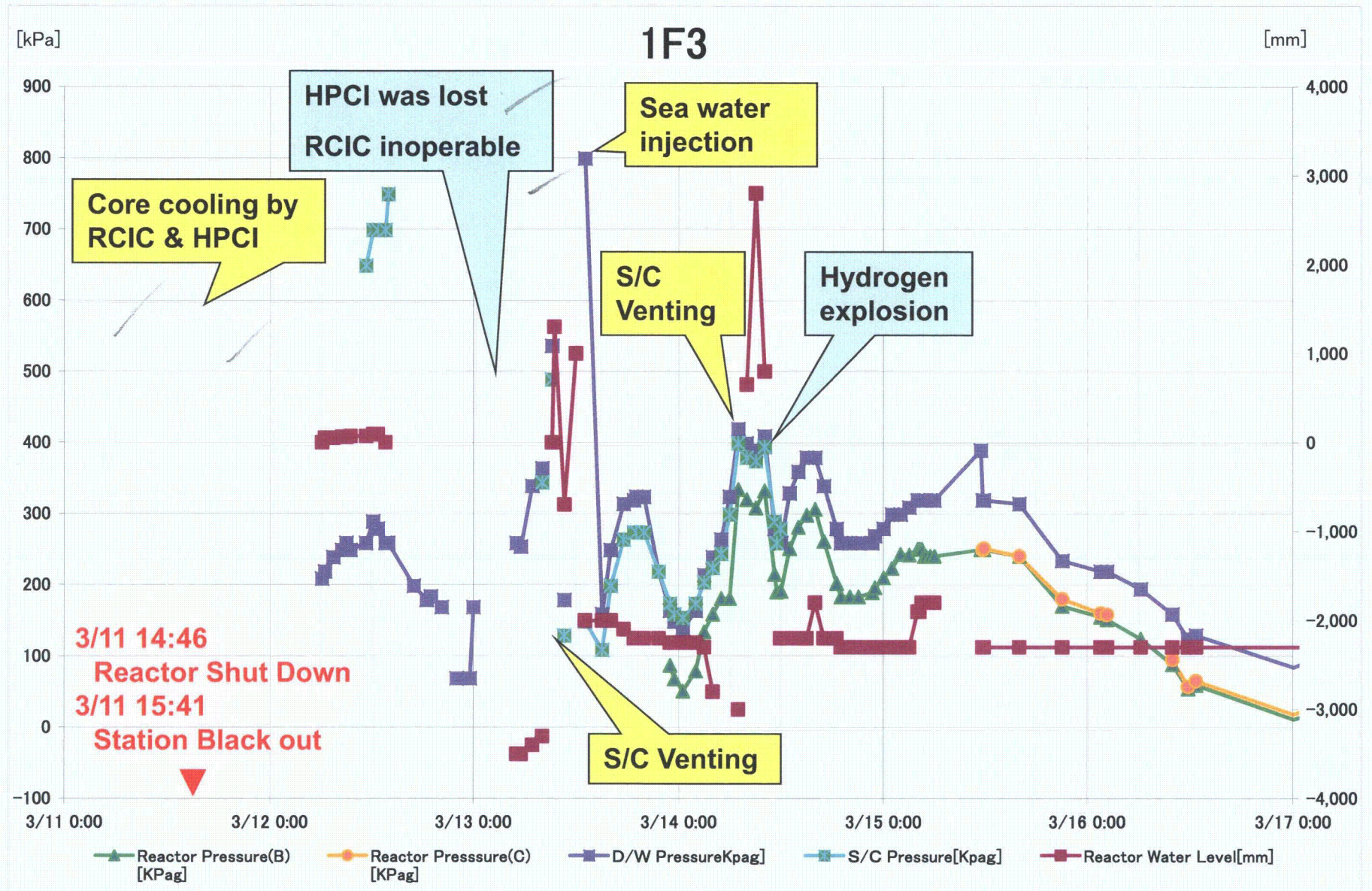
## 3-12. Chronology of Unit 3 after the earthquake (2/2)

### ● **Unit 3(Continued)**

- 20<sup>th</sup> ● Sprayed by Hyper Rescue Unit of Tokyo Fire Department
- 22<sup>nd</sup> ● Lighting in the Central Control Room was recovered.
- 23<sup>rd</sup> ● Injection of seawater to the SFP
- 24<sup>th</sup> ● Injection of seawater to the SFP
- 25<sup>th</sup> ● Water spray (Emergency fire support team)  
● Started fresh water injection
- 27<sup>th</sup> ● Water spray by Concrete Pump Truck
- 28<sup>th</sup> ● Switched to the water injection to the core using a temporary motor-driven pump  
● In order to prepare for transfer the stagnant water on the basement floor of turbine building to the Condenser, the water in the Condensate Storage Tank is being transferred to the Surge Tank of Suppression Pool Water
- 29<sup>th</sup> ● Started to spray freshwater by Concrete Pump Truck
- 31<sup>st</sup> ● White smoke was confirmed to generate continuously  
● Fresh water is being injected to the spent fuel pool and the RPV

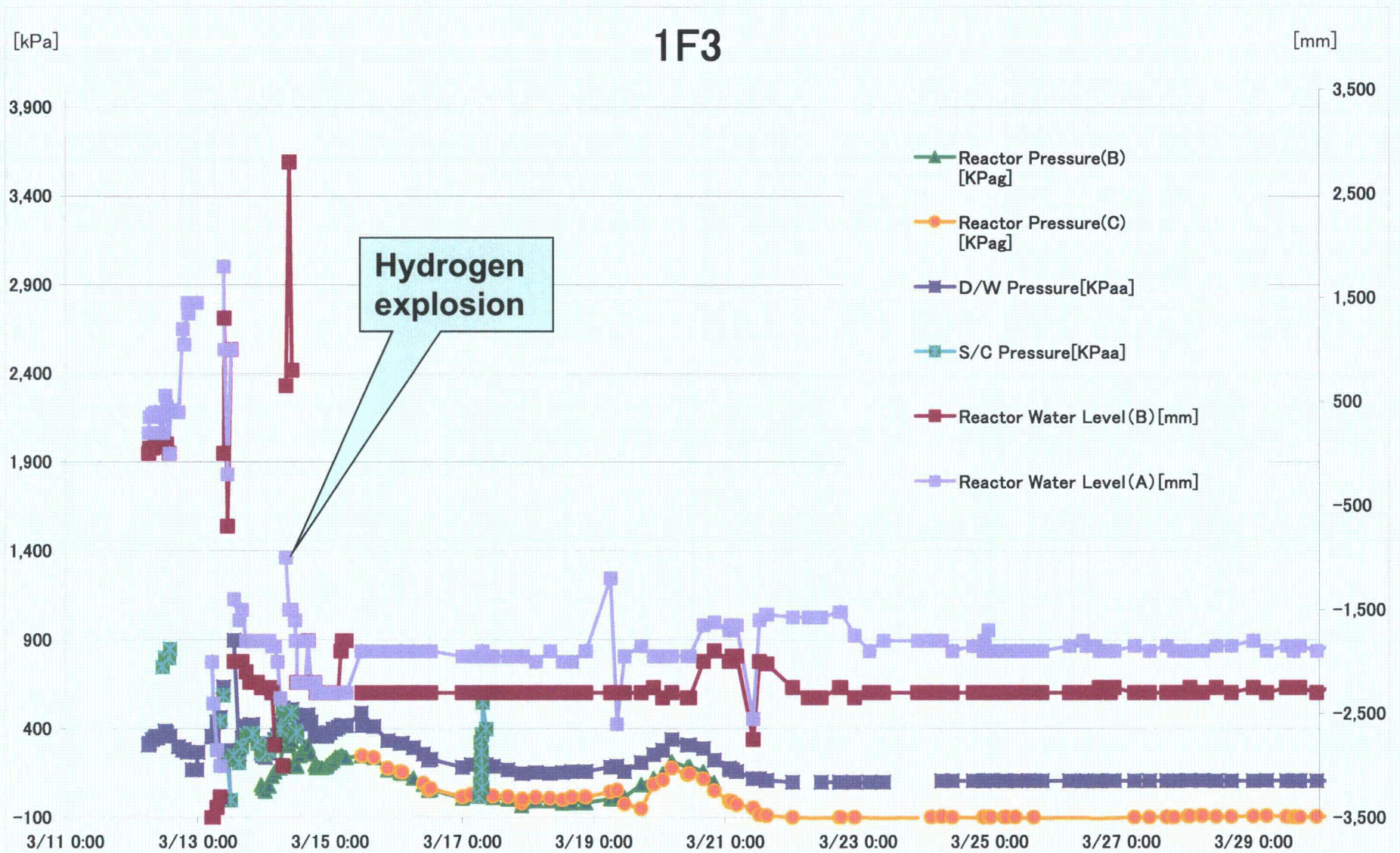


## 3-13. Trend data of Unit 3 until March 17





## 3-14. Trend data of Unit 3 until March 30





### 3-15. Hydrogen explosion at Unit 1 & 3



Unit 1

Unit 3



## 3-16. Chronology of Unit 4 after the earthquake

### ● **Unit 4**

- 14<sup>th</sup> ● Water temperature in the Spent Fuel Pool, 84°C
- 15<sup>th</sup> ● Damage of wall in the 4<sup>th</sup> floor confirmed  
● Fire occurred in the 3<sup>rd</sup> floor (12:25 extinguished)
- 16<sup>th</sup> ● Fire occurred. TEPCO couldn't confirm any fire on the ground.
- 20<sup>th</sup> ● Water spray over the spent fuel pool by Self Defense Force
- 21<sup>st</sup> ● Water spray over the spent fuel pool by Self Defense Force
- 22<sup>nd</sup>-24<sup>th</sup> ● Water spray (Concrete Pump Truck (3 times)
- 25<sup>th</sup> ● Injection of seawater to SFP via the Fuel Pool Cooling Line (FPC)  
● Water spray (Concrete Pump Truck)
- 27<sup>th</sup> ● Water spray (Concrete Pump Truck)
- 29<sup>th</sup> ● Lighting in the Central Control Room was recovered.
- 30<sup>th</sup> ● White smoke was confirmed to generate continuously.  
● Spray of fresh water (Around 140t) over the Spent Fuel Pool using Concrete Pump Truck (50t/h) was carried out.  
● Fresh water is being injected to the spent fuel pool

## 3-17. Chronology of Unit 5 & 6 after the earthquake

### ● **Unit 5&6**

- 20<sup>th</sup>     ●Unit 5 under cold shutdown (Water temperature of reactor water is less than 100°C)  
          ●Unit 6 under cold shutdown (Water temperature of reactor water is less than 100°C)
- 21<sup>st</sup>     ●Water spray over the Common Spent Fuel Pool started
- 22<sup>nd</sup>     ●Recovering power supply of unit 5 and 6 is completed.
- 24<sup>th</sup>     ●The power was started to be supplied. Cooling also started
- 30<sup>th</sup>     ●Back up power of Unit 6 is in working condition and external power was supplied to Unit 5 as of March 30<sup>th</sup>

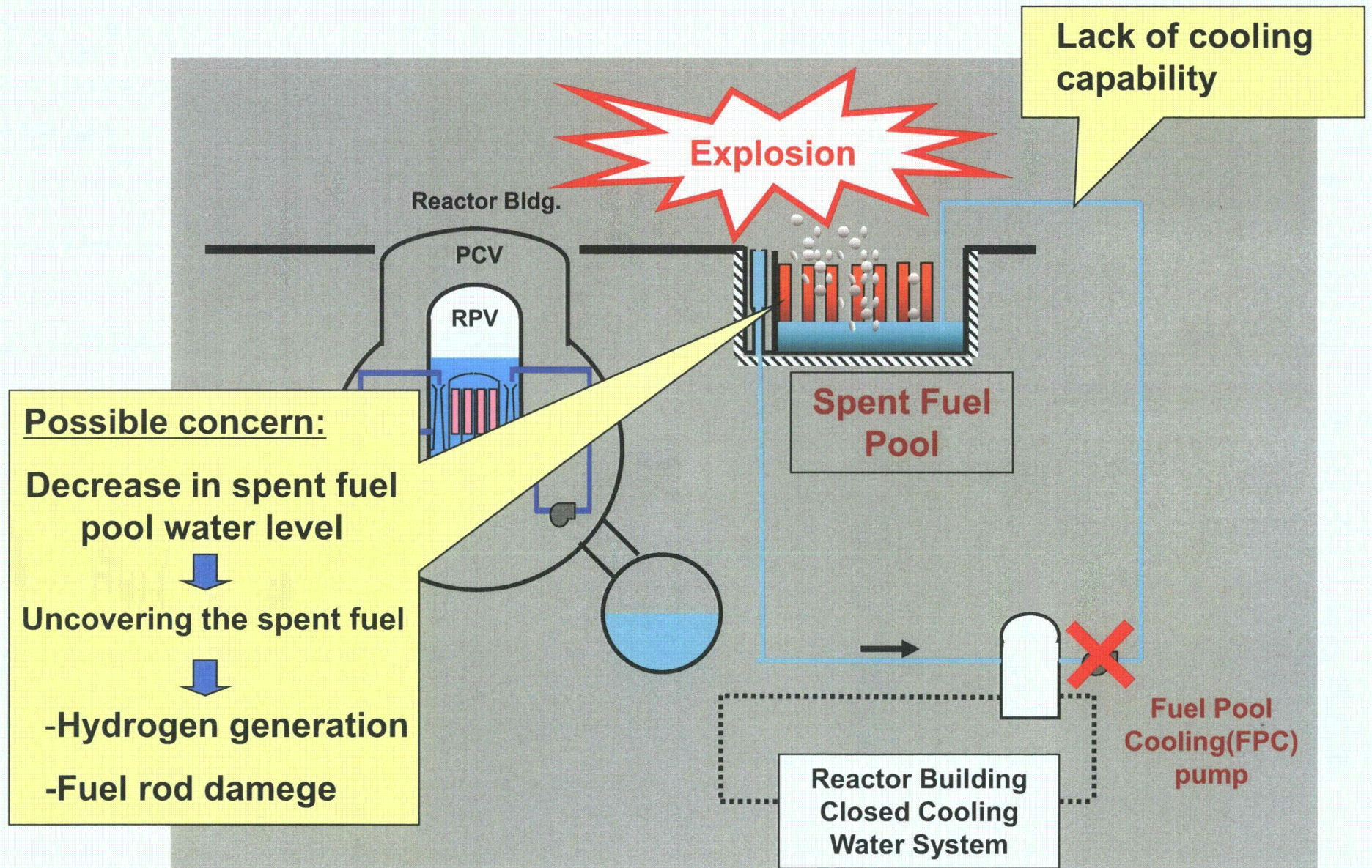
#### 4. Report concerning incidents at spent fuel pools in the Fukushima Dai-ichi NPS



Photo: Water spray into the SFP in Unit 4 using concrete pump truck



## 4-1. Possible concerns about Spent Fuel Pool





## 4-2. Status of the Fuel as of March 11, 2011

Unit	1	2	3	4	5	6
Number of Fuel Assembly in the Core	400	548	548	-	548	764
Number of Spent Fuel Assembly in the Spent Fuel Pool	292	587	514	1,331	946	876
Number of New Fuel Assembly in the Spent Fuel Pool	100	28	52	204	48	64
Water Volume (m <sup>3</sup> )	1,020	1,425	1,425	1,425	1,425	1,497

### Condition of the fuel in the Spent Fuel Pool

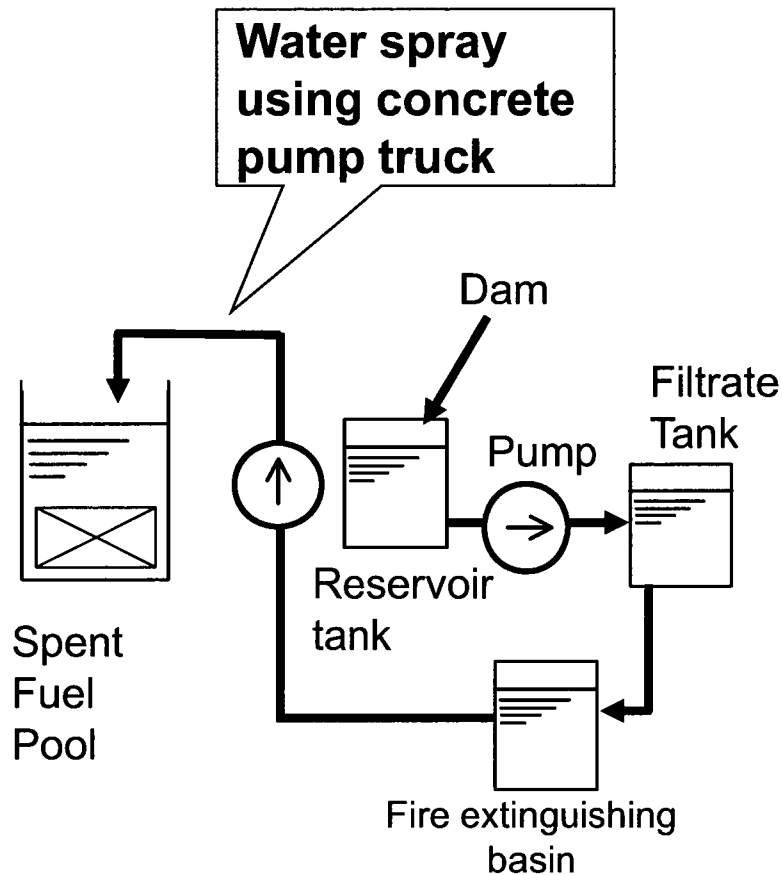
Unit 1	Unit 2	Unit 3	Unit 4
-Most recent shut down was on Sep.27,2010	- Most recent shut down was on Nov.18,2010	- Most recent shut down was on Sep.23,2010	-Most recent shut down was on Nov.29,2010 -All fuel assembly was removed from the core and located in the pool due to the core shroud replacement



## 4-3. Measures taken to cool the Spent Fuel Pool (1/4)

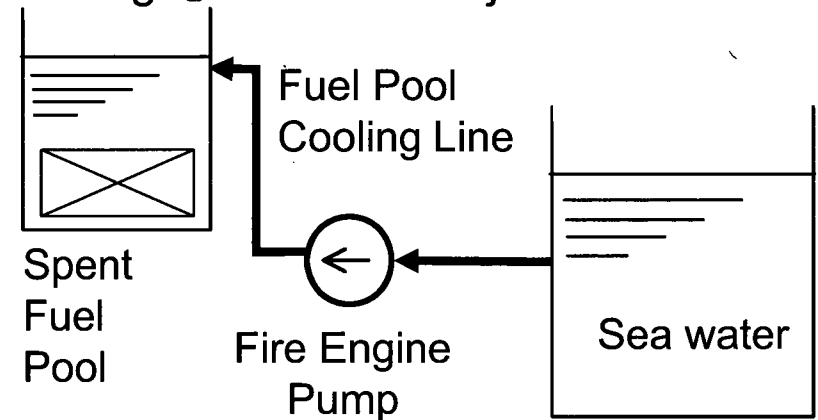
### Unit 1

Fresh water injection

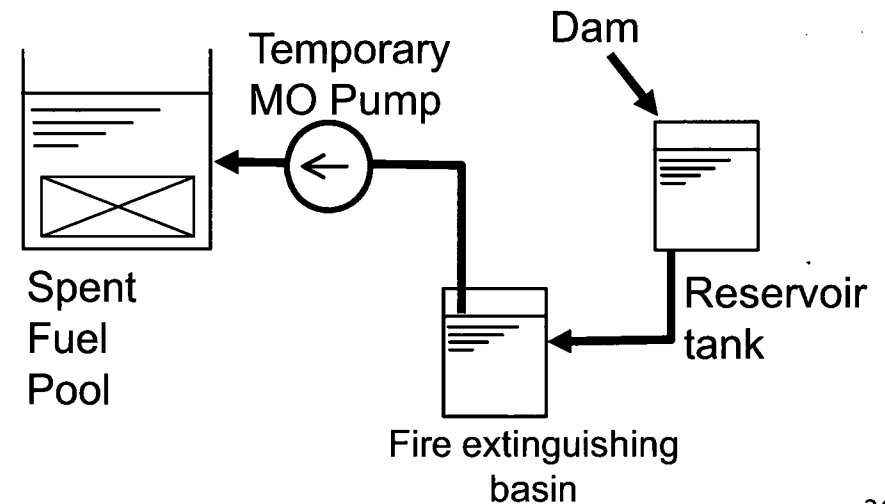


### Unit 2

【1st Stage】 Sea water injection



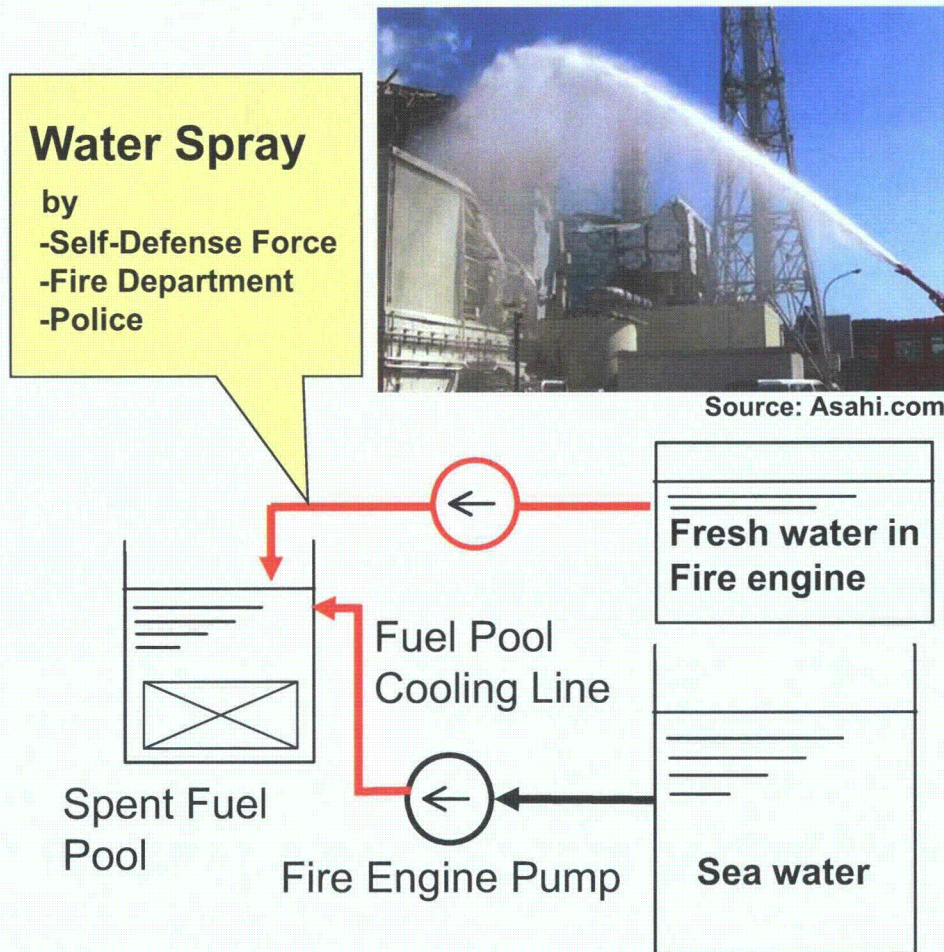
【2nd Stage】 Fresh water injection



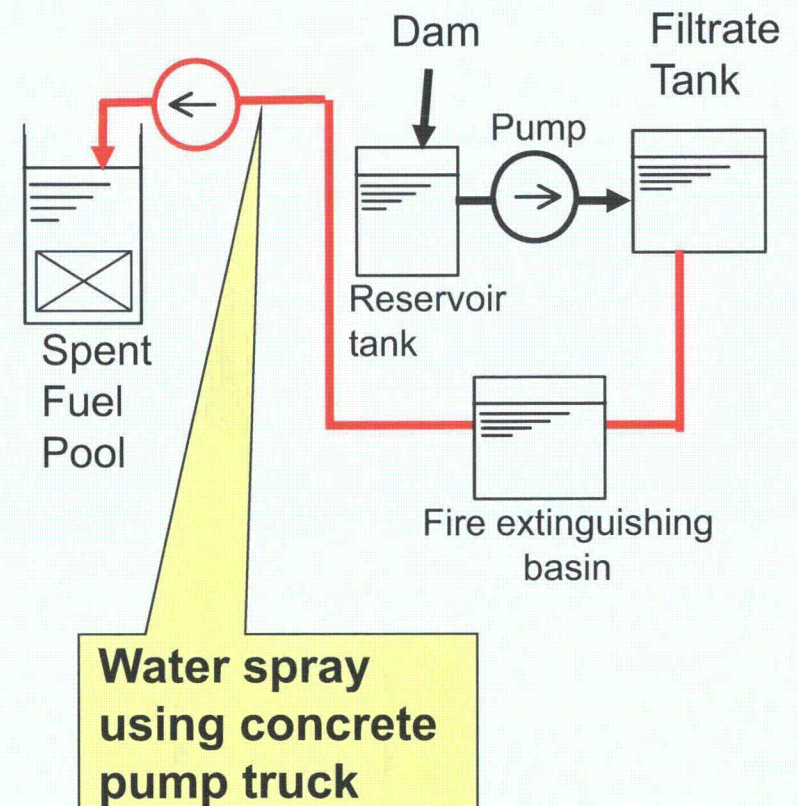
## 4-3. Measures taken to cool the Spent Fuel Pool (2/4)

### Unit 3

#### 【1st Stage】 Sea water injection



#### 【2nd Stage】 Fresh water injection

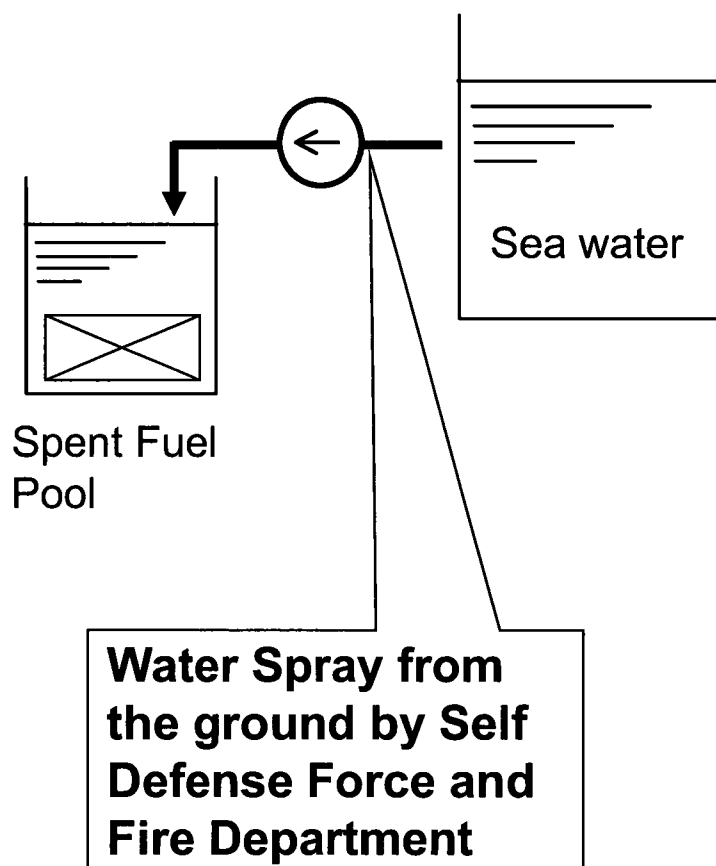


\* Sea water discharge by helicopters  
of the Self Defense Force

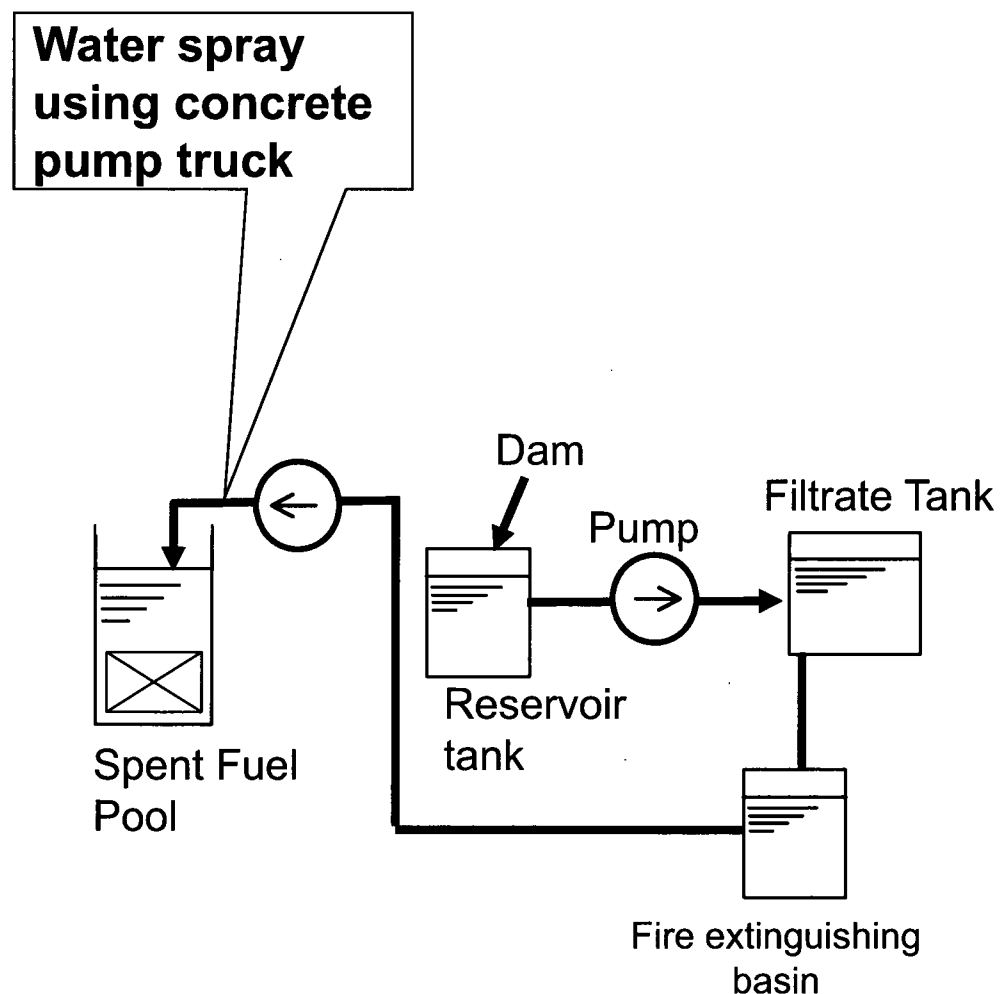
## 4-3. Measures taken to cool the Spent Fuel Pool (3/4)

### Unit 4

【1st Stage】 Sea water injection

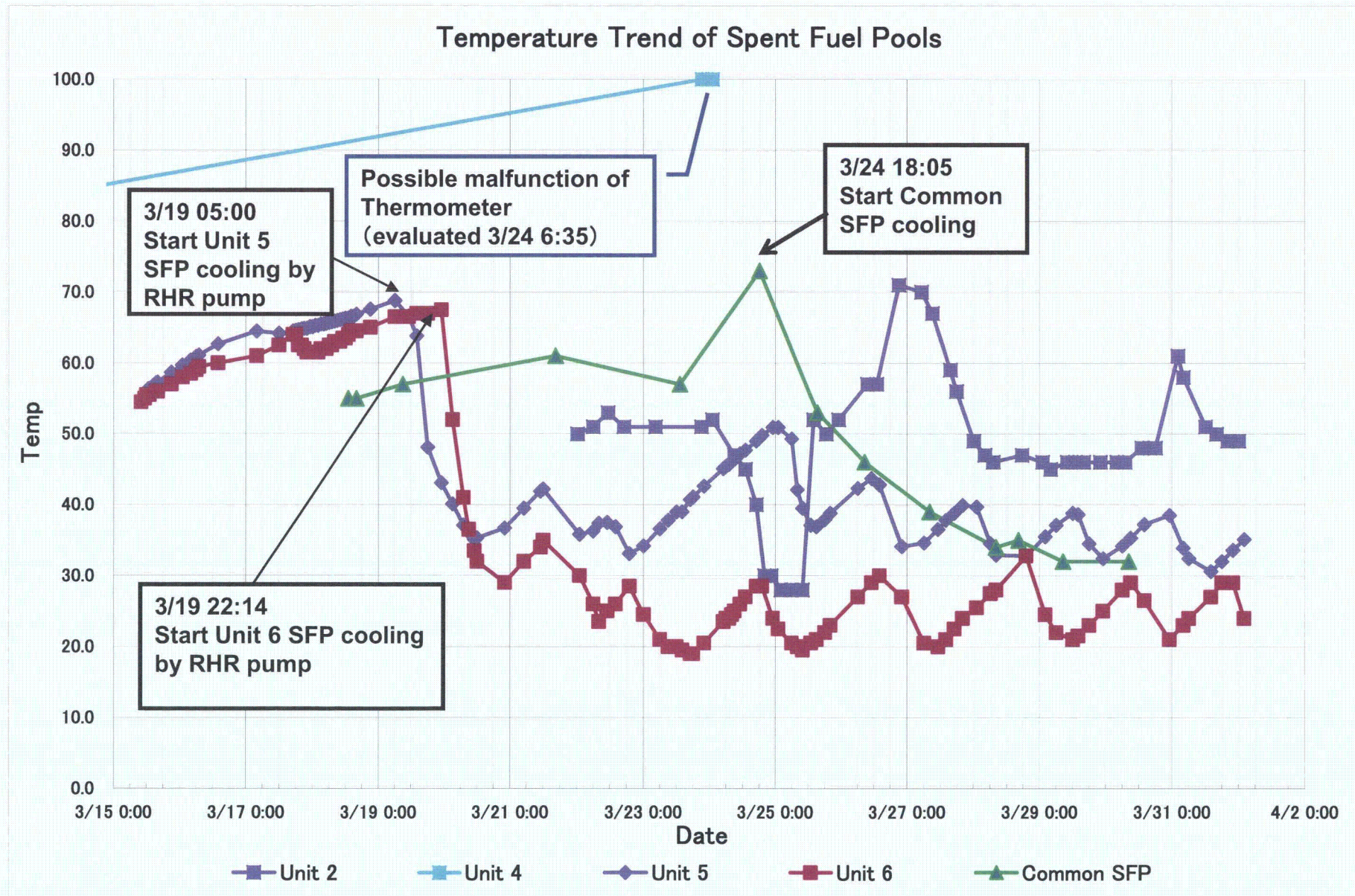


【2nd Stage】 Fresh water injection





## 4-3. Measures taken to cool the Spent Fuel Pool (4/4)



## 4-4. INES Rating

- NISA issued temporary INES ratings 3 times. Those provisional ratings are provided based on “What is known” at the time.
- The first temporary rating was issued at 0:30 on March 12 (About 10 hours later from the earthquake attack)  
At that moment, Following units were rated as Level 3 since all heat removal function became inoperable based on “Defense in Depth” criteria.
  - Fukushima dai-ichi unit 1, 2 and 3
  - Fukushima dai-ni Unit 1, 2 and 4
- In the evening on March 12, the rating of Fukushima dai-ichi Unit 1 was re-evaluated to Level 4 base on the “Radiological Barriers and Control” criteria, since the radiation level in the site increased.
- On March 18, re-evaluation was carried out. The rating of Fukushima dai-ichi Unit 1, 2 and 3 were re-rated to Level 5 based on “Radiological Barriers and Control” criteria because the fuel damage was highly possible. Fukushima dai-ichi Unit 4 was evaluated to Level 3 based on the “Defense in Depth” criteria.

## **5. Action taken by the government**



## 5. Action Taken by the Government(1/5)

### March 11<sup>th</sup>, 2011

- 14:46 ●Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake
- 19:03 ●Government declared the state of nuclear emergency. (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 21:23 ●Directives from Prime Minister to the Governor of Fukushima Prefecture and heads of towns were issued regarding the event occurred at Fukushima Daiichi NPS, TEPCO, in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
  - Direction for the residents within 3km radius from Unit 1 to evacuate ✓
  - Direction for the residents within 10km radius from Unit 1 to stay in-house ✓
- 24:00 ●Vice Minister of Economy, Trade and Industry, Ikeda arrived at the Local Emergency Response Headquarters

## 5. Action Taken by the Government(2/5)

**March 12<sup>nd</sup>, 2011**

- 05:44 ●Residents within 10km radius from Unit 1 of Fukushima Dai-ichi NPS shall ✓  
evacuate by the Prime Minister Direction
- 07:45 ●Directives from Prime Minister to the Governor of Fukushima Prefecture and  
heads of towns were issued regarding the event occurred at Fukushima Dai-ni  
NPS, TEPCO, pursuant to Act on Special Measures Concerning Nuclear  
Emergency Preparedness as follows:  
- Direction for the residents within 3km radius from Fukushima Dai-ni NPS to  
evacuate  
- Direction for the residents within 10km radius from Fukushima Dai-ni NPS to  
stay in-house
- 17:39 ●Prime Minister directed evacuation of the residents within the 10 km radius  
from Fukushima-Dai-ni NPS
- 18:25 ●Prime Minister directed evacuation of the residents within the 20km radius 12.4m  
from Fukushima Dai-ichi NPS
- 20:05 ●Considering the Directives from Prime Minister and pursuant to the Nuclear  
Regulation Act, the order was issued to inject seawater to Unit 1 of Fukushima  
Dai-ichi NPS and so on.

## 5. Action Taken by the Government(3/5)

### **March 13<sup>th</sup>, 2011**

- 09:30 ● Directive was issued for the Governor of Fukushima Prefecture and heads of towns in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness on the contents of radioactivity decontamination screening.

### **March 15<sup>th</sup>, 2011**

- 05:30 ● Prime Minister, Kan expressed to establish The Joint Headquarters to Fukushima Dai-ichi NPS accident
- 10:30 ● According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the directions as follows.
- For Unit 4: To extinguish fire and to prevent the occurrence of re-criticality ✓
  - For Unit 2: To inject water to reactor vessel promptly and to vent Drywell ✓
- 11:00 ● Prime Minister directed the in-house stay area. - In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering reactor situation
- 22:00 ● According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the following direction.
- For Unit 4: To implement the injection of water to the Spent Fuel Pool.

### **March 20<sup>th</sup>, 2011**

- 23:30 ● Directive from Local Emergency Response Headquarters to the Prefectural Governor and the heads of cities, towns and villages was issued regarding the change of the reference value for the screening level for decontamination of radioactivity



## 5. Action Taken by the Government(4/5)

### March 21<sup>st</sup>, 2011

- 07:45 ● Directive titled as “Administration of the stable Iodine” was issued from Local Emergency Response Headquarters to the Prefectural Governor and the heads of cities, towns and villages.
- 16:45 ● Directive titled as “Ventilation for using heating equipments within the in-house evacuation zone” was issued from the Head of Local Emergency Response Headquarters to the Prefectural Governor and the heads of cities, towns and villages.
- 17:50 ● Directive from the Head of Government Nuclear Emergency Response Headquarters to the Prefectural Governors of Fukushima, Ibaraki, Tochigi and Gunma was issued, which directs the above-mentioned governors to issue a request to relevant businesses and people to suspend shipment of spinach, Kakina (a green vegetable) and raw milk for the time being.

### March 25<sup>th</sup>, 2011

- NISA directed orally to the TEPCO regarding the exposure of workers at the turbine building of Unit 3 of Fukushima Dai-ichi Nuclear Power Station occurred on March 24th, to review immediately and to improve its radiation control measures from the viewpoint of preventing a recurrence.

## 5. Action Taken by the Government(5/5)

### **March 25<sup>th</sup>, 2011**

- Since there was a mistake in the evaluation regarding the concentration measurement of radioactive materials, NISA directed TEPCO orally to prevent the recurrence of such a mistake
- 13:50
- Receiving the suggestion by the special meeting of Nuclear Safety Commission, NISA directed TEPCO orally to add the sea water monitoring points and carry out the groundwater monitoring.
  - Regarding the delay in the reporting of the water confirmed outside of the turbine buildings, NISA directed TEPCO to accomplish the communication in the company on significant information in a timely manner and to report it in a timely and appropriate manner.

### **March 29<sup>th</sup>, 2011**

- In order to strengthen the system to assist the nuclear accident sufferers, the “Team to Assist the Lives of the Nuclear Accident Sufferer” headed by the Minister of Economy, Trade and Industry was established

### **March 30<sup>th</sup>, 2011**

- Directions as to implement the emergency safety measures for the other power stations considering the accident of Fukushima Dai-ichi and Dai-ni NPSs in 2011 was issued and handed to each electric power company and the relevant organization.

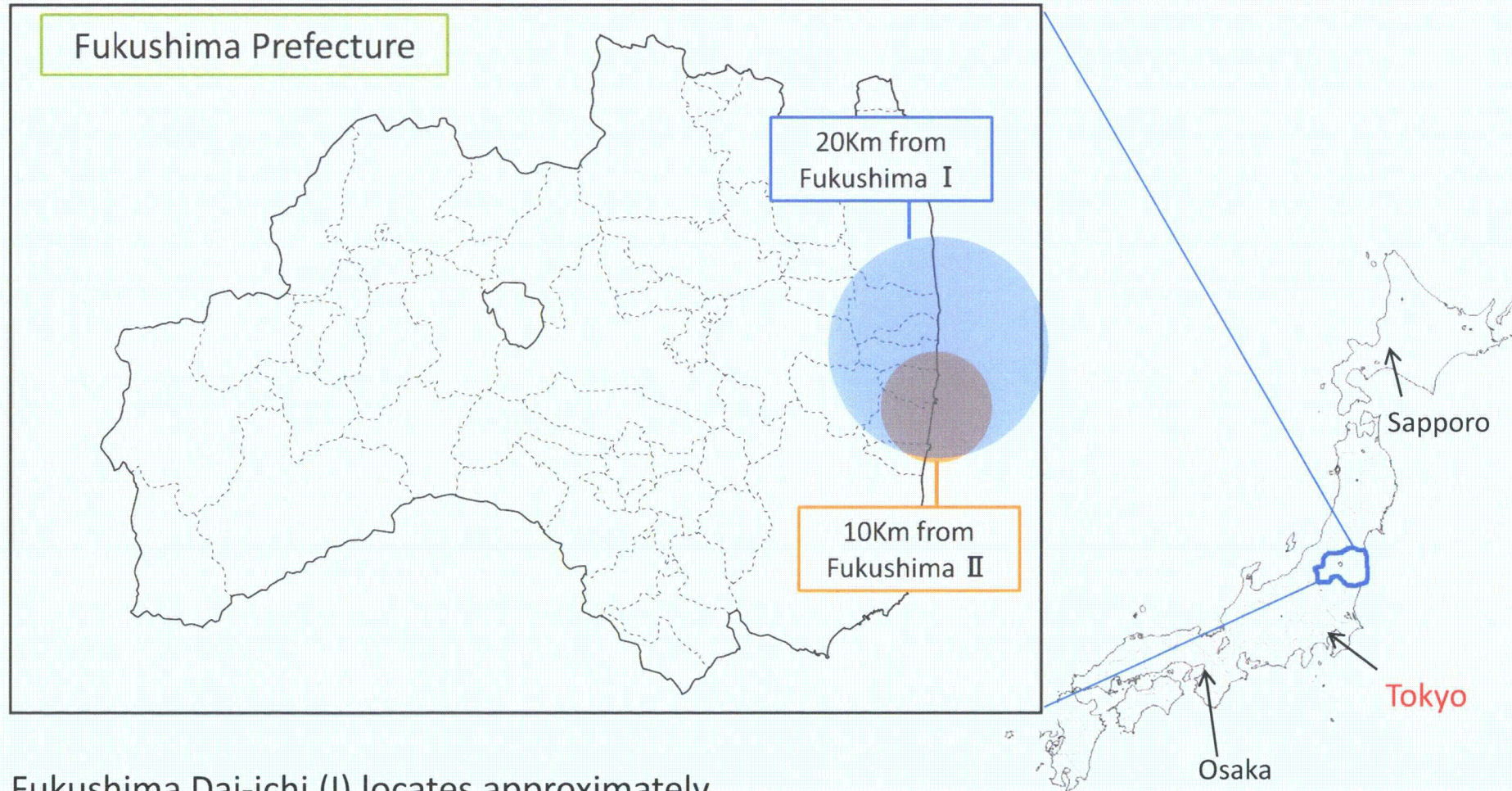
## **6. Current situation on resident evacuation and radiation exposure, etc**



## 6-1. Current Situation on Resident Evacuation(1/2)

- At 5:44 on March 12, residents within 10km radius from Unit1 of Fukushima Dai-ichi NPS shall evacuate by the Prime Minister Directive.
- At 18:25 on March 12, Prime Minister directed evacuation of the residents within the 20 km radius from Fukushima Dai-ichi NPS.
- On March 15th, the Local Emergency Response Headquarter issued “the direction to administer the stable Iodine during evacuation from the evacuation area (20 km radius)” to the Prefecture Governors and the heads of cities, towns and villages.
- Regarding the evacuation as far as 20 km from Fukushima Dai-ichi NPS and 10 km from Fukushima Dai-ni NPS, necessary measures have already been taken.
  - The sheltering stay in the area from 20km to 30km from Fukushima Dai-ichi NPS is made fully known to the residents concerned.
  - Cooperating with Fukushima Prefecture, livelihood support to the residents in the sheltering area are implemented.
- On March 25th, Chief Cabinet Secretary, Edano promoted voluntary evacuations for the residents within the area from 20 km to 30 km from Fukushima Dai-ichi NPS in a press conference.

## 6-1. Current Situation on Resident Evacuation(2/2)



Fukushima Dai-ichi (I) locates approximately

- 230 km from Tokyo
- 580 km from Osaka
- 600 km from Sapporo



## 6-2. Major Possibility on radiation exposure to residents (As of 15:30 April 1st)

- 95 patients of Futaba Welfare Hospital transferred by JSDF helicopters and commercial buses. If explosion occurred while 60 patients to be transferred by JSDF helicopters were standing by on Futaba High School playground. No exposure suspected. (19:00, March 16)
- Screening started at Off-site Center on Sat. March 12. 162 screened as of March 15. Against initially-set decontamination threshold of 6,000cpm, 110 patients registered below the threshold, 41 above it. Of 162 screened patients, 5 were given decontamination measures and transferred to hospital.
- Fukushima Prefecture conducted screening at 4 locations in the prefecture. Some 30 people registered above 13,000cpm. After measuring for the second time following decontamination they showed low values, therefore they were returned to shelters without examination.
- 3 women who lived around 10km radius of Fukushima Dai-ichi until March 14 were examined at Iwate Medical University Hospital. Simple decontamination procedure was given without surveying. They were hospitalized for follow-up.



## 6-3. Major exposure of workers (As of 15:30 April 1st)

- To date a total of 21 people have registered exposure dose above 100mSv. Following measures were taken.
  - 17 people had facial contamination on March 12 (9 TEPCO employees, 8 support company employees). Exposure identified upon their measurement after returning from Controlled Area. However, the level of exposure would not affect their health.
  - At the time of ventilation operation at Unit 1 on March 12, one TEPCO employee registered above 100mSv (106.30mSv/h). As the level was below acute exposure he conducted work after self-air setting. As he afterwards complained of headache and other symptoms, he was transferred to hospital and placed at rest. He now has returned home.
  - On March 24, dosage above approx. 170mSv was confirmed on 3 workers who were laying cables on 1st floor and basement of Unit 3 Turbine Bldg. Attachment of radioactive substances on the skin of both legs was confirmed on two of them. Examination showed that none of the 3 had any major systemic risk. Exposure dose on the legs of the 2 was estimated to be 2~3Sv. While the level of leg and internal exposure did not require treatment, they were hospitalized. They were discharged on March 28.
- On April 1st, a worker fell into the sea when he got into a barge of US. He was rescued by workers, and was not injured etc. However, he was confirmed surface contamination and decontaminated by the shower. He was confirmed the non-contamination by nasal smears.



## 6-4. Major Situation of the injured (As of 15:00 April 3rd)

### <Death due to earthquake(Found on March 30)>

- Two employees found in the turbine building of Unit 4)

### <Injury due to earthquake(March11)>

- Two employees (slightly)
- Two subcontract employees (one fracture in both legs)

### <Injury due to the explosion of Unit 1 of Fukushima Dai-ichi NPS(March12)>

- Four employees were injured at the explosion and smoke of Unit 1 around turbine building (non-controlled area of radiation) and were examined by Kawauchi Clinic.

### <Injury due to the explosion of Unit 3 of Fukushima Dai-ichi NPS(March14)>

- Four TEPCO's employees
- Three subcontractor employees
- Four members of Self-Defence Force (The member was discharged from the institute on March 17th.)

### <Other injuries>

- Two subcontractor's employees were injured during working at temporary control panel of power source in the Common Spent Fuel Pool(March22,23)



## 6-5. Directive regarding foods and drinks

### (1) Agricultural Goods

- Ministry of Health, Labor and Welfare (MHLW) set provisional regulatory standards for foods detected with radioactive substances and notified prefectures, etc. as “Handling of food contaminated by radioactivity”.
- MHLW notified prefectures, etc. regarding points to be mindful of in examining foods detected with radioactive substances.
- Prime Minister instructed local governments concerned to restrict distribution and/or consumption of foods concerned in accordance with Special Law of Nuclear Emergency Preparedness.
  - Fukushima Pref. (Distribution restricted→spinach, kakina, raw milk, etc.)
  - Ibaraki, Tochigi, Gunma Prefs. (Distribution restricted→spinach, kakina)

### (2) Drinking Water

- MHLW notified water suppliers in prefectures concerned the followings regarding response to radioactive substances in tap water caused by the nuclear accident.
  - Refrain from drinking tap water exceeding index values (300Bq/kg for radioactive Iodine, 200Bq/kg for radioactive Cesium) .
  - In case radioactive Iodine exceeds 100Bq/kg, refrain from giving tap water to infants, including preparing infant formula.
  - There is no problem in using tap water for other domestic uses.
  - Lack of substitute drinking water.



## **7. Implementation Status of Radiation Monitoring**

## **7-1. Implementation Status of Radiation Monitoring(1/2)**

### **(1) On-site monitoring (1F) (conducted by TEPCO)**

#### **① Measurement of air dose rates**

- On site, air dose rates were measured at 1 point using monitoring car and at 3 points using portable dosimeter.

#### **② Analysis of soil samples**

- Soils were sampled at 5 on-site points and analyzed.

#### **③ Measurement of water in Turbine Bldg basement and Trench**

- Measured concentration of radioactive substances in Turbine Bldg basement and Trench.

#### **④ Sampling of seawater**

- Measured concentration of radioactivity around South Flood Gate.

## 7-1. Implementation Status of Radiation Monitoring(2/2)

### (2) Off-site Monitoring (conducted by MEXT and local nuclear emergency response HQ)

#### ① Measurement of air dose rate

Measurement by monitoring car

- MEXT measured air dose rate beyond 20km from 1F using monitoring cars in cooperation with Fukushima Pref., National Police Agency, Defense Ministry, Electric Utility and others concerned.
- local nuclear emergency response HQs measured air dose rate beyond 30km from 1F.

#### ② Measurement of cumulative dose

- MEXT measured cumulative dose rates by installing simplified dosimeters at 10 points.
- local nuclear emergency response HQs measured it by setting equipment 20~50km from 1F.

#### ③ Measurement of radioactive substance concentration in soil, etc.

- MEXT collected dust and soils beyond 20km from 1F and analyzed radioactive substance concentrations in the air and soils.
- local nuclear emergency response HQs measured concentrations in tap water, leaf vegetables, soil and dust in Fukushima Pref.

#### ④ Off-shore monitoring

- MEXT sampled seawater from surface water (1m from the sea surface) and sub-surface (10m above the sea bottom) around 30km off-shore Fukushima Pref. and measured radioactive substance concentrations and also measured air dose rates.

#### ⑤ Aerial monitoring

- MEXT measured radioactive substance concentrations and dose rates in the air using aircrafts.

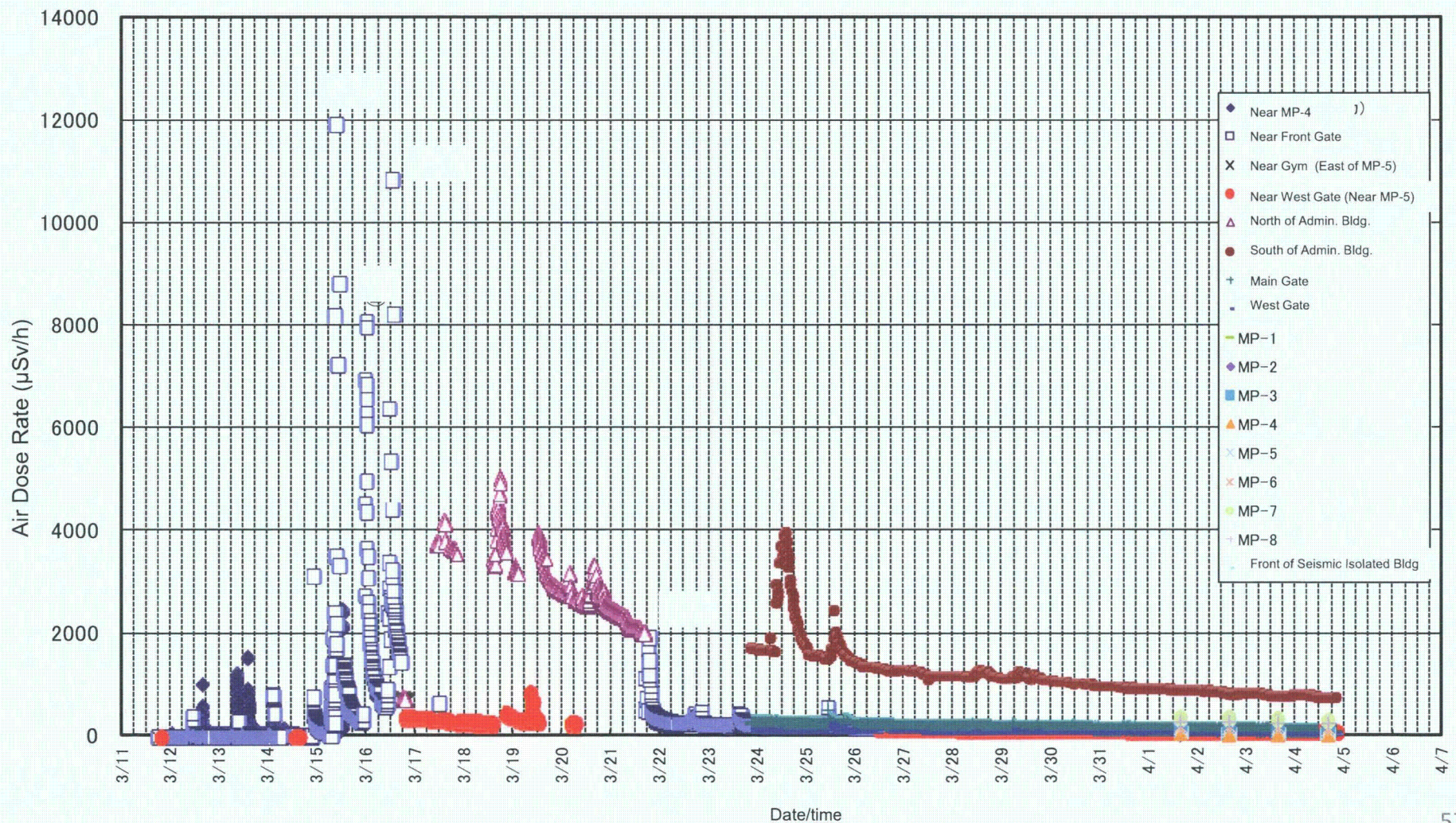


## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(1/7)

### ① Measurement of air dose rate

○Registered 11930 $\mu$ Sv/h around Front Gate on March 15.

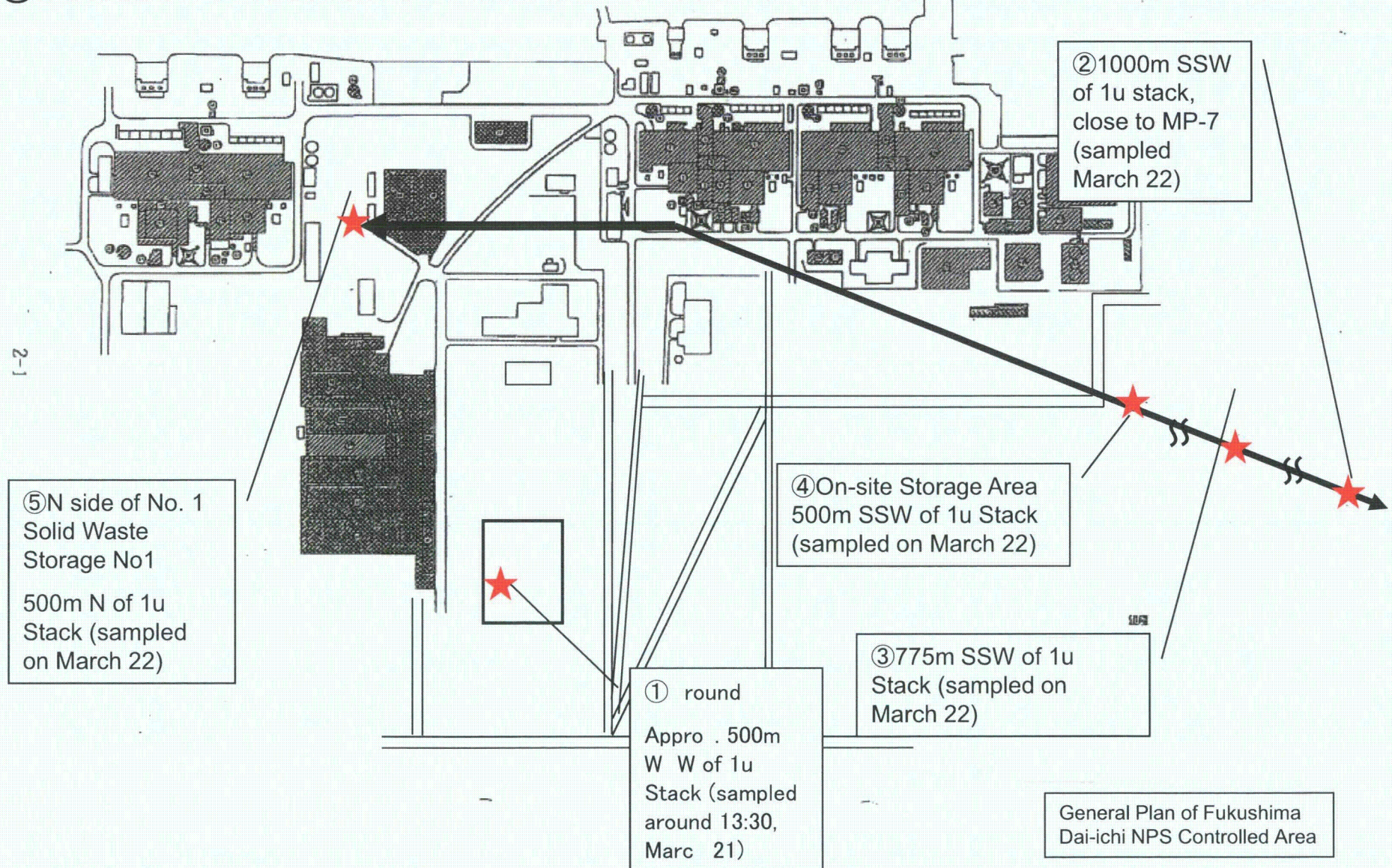
1F Monitoring Trend





## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(2/7)

### ② Detection of radioactive material in the soil on the site of Fukushima Dai-ichi NPS





## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(3/7)

### ② Detection of radioactive materials in the soils on the site of Fukushima Dai-ichi

- Density of detected Pu-238, Pu-239 and Pu-240 are within the same level of the fallout observed in Japan after the atmospheric nuclear test in the past.
- Activity ratio of Pu-238 detected at the site field and solid waste storage against Pu-239 and Pu-240 are 2.0 and 0.94 respectively. Those Pus are considered to come from the recent incident.

(Unit: Bq/km<sup>2</sup>•dry soil)

Sampling Spot	Time of sampling	Pu-238	Pu-239, Pu-240
① Site field	13:30, March 21	$(5.4 \quad 0.62) \times 10^{-1}$	$(2.7 \quad 0.42) \times 10^{-1}$
② 1km away from Unit 1/2 exhaust stack	7:00, March 22	N.D	$(2.6 \quad 0.58) \times 10^{-1}$
③ 0.75km away from Unit 1/2 exhaust stack	7:10, March 22	N.D	1.2    0.12
④ 0.5 km away from unit 1/2 exhaust stack	7:18 March 22	N.D	1.2    0.11
⑤ Solid waste storage	7:45 March 11	$(1.8 \quad 0.33) \times 10^{-1}$	$(1.9 \quad 0.34) \times 10^{-1}$
Ordinary domestic soil		N.D ~ $1.5 \times 10^{-1}$	N.D ~ 4.5



## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(4/7)

### ③ Water in Turbine Bldg Basement (Results of nuclide analysis in the stagnant water in turbine building basement of each Unit)

- There is pool of water with high radioactive substance concentration in turbine bldg basement of Units 1~4. Above 1,000mSv/h dose has been measured at water surface in Unit 2.
- Water with approx. 100,000 times normal radioactivity concentration in reactor water was confirmed in turbine bldg basement of Unit 2.

	Concentration of Radioactivity (Bq/cm <sup>3</sup> )			
	Unit 1 (2nd time) Sampled on March 26	Unit 2 Sampled on March 26	Unit 3 (2nd time) Sampled on March 26	Unit 4 Sampled on March 24
	Water level 195mm	Water level 1,000mm	Water level 1,500mm	Water level 940mm
	Dose rate on the surface of the water 60 mSv/h	Dose rate on the surface of the water >1,000 mSv/h	Dose rate on the surface of the water 750 mSv/h	Dose rate on the surface of the water 0.50 mSv/h
Nuclide (half- life time)				
Co-56 (about 77 days)	N.D	N.D	N.D	N.D
Co-58 (about 71 days)	N.D	N.D	N.D	$2.7 \times 10^{-1}$
Co-60 (about 5 years)	N.D	N.D	$2.7 \times 10^2$	N.D
Mo-99 (about 66 hours)	N.D	N.D	N.D	$1.0 \times 10^0$
Tc-99m (about 6 hours)	N.D	$8.7 \times 10^4$	$2.2 \times 10^3$	$6.5 \times 10^{-1}$
Ru-106 (about 370 days)	N.D	N.D	N.D	$3.3 \times 10^0$
Ag-108m (about 418 years)	N.D	N.D	N.D	N.D
Te-129 (about 70 minutes)	N.D	N.D	N.D	$2.6 \times 10^1$
Te-129m (about 34 days)	N.D	N.D	N.D	$1.3 \times 10^1$
Te-132 (about 3 days)	N.D	N.D	N.D	$1.4 \times 10^1$
I-131 (about 8 days)	$1.5 \times 10^5$	$1.3 \times 10^7$	$3.2 \times 10^5$	$3.6 \times 10^2$
I-132 (about 2 hours)	N.D	N.D	N.D	$1.3 \times 10^1$
I-134 (about 53 minutes)	N.D	N.D	N.D	N.D
Cs-134 (about 2 years)	$1.2 \times 10^5$	$2.3 \times 10^6$	$5.5 \times 10^4$	$3.1 \times 10^1$
Cs-136 (about 13 days)	$1.1 \times 10^4$	$2.5 \times 10^5$	$6.5 \times 10^3$	$3.7 \times 10^0$
Cs-137 (about 30 years)	$1.3 \times 10^5$	$2.3 \times 10^6$	$5.6 \times 10^4$	$3.2 \times 10^1$
Ba-140 (about 13 days)	N.D	$4.9 \times 10^5$	$1.9 \times 10^4$	N.D
La-140 (about 2 days)	N.D	$1.9 \times 10^5$	$3.1 \times 10^3$	$7.4 \times 10^{-1}$

## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(5/7)

### ③ Stagnant Water in Trench

- High level of radiation dose was measured at the surface of water in the vertical pit of the tunnel called “trench” which extends from turbine bldg towards the sea.
- In particular, at Unit 2 ambient dosage around the vertical pit is 100~300mSv/h and dosage in surface water 1,000mSv/h, which are far greater than in Units 1 and 3.

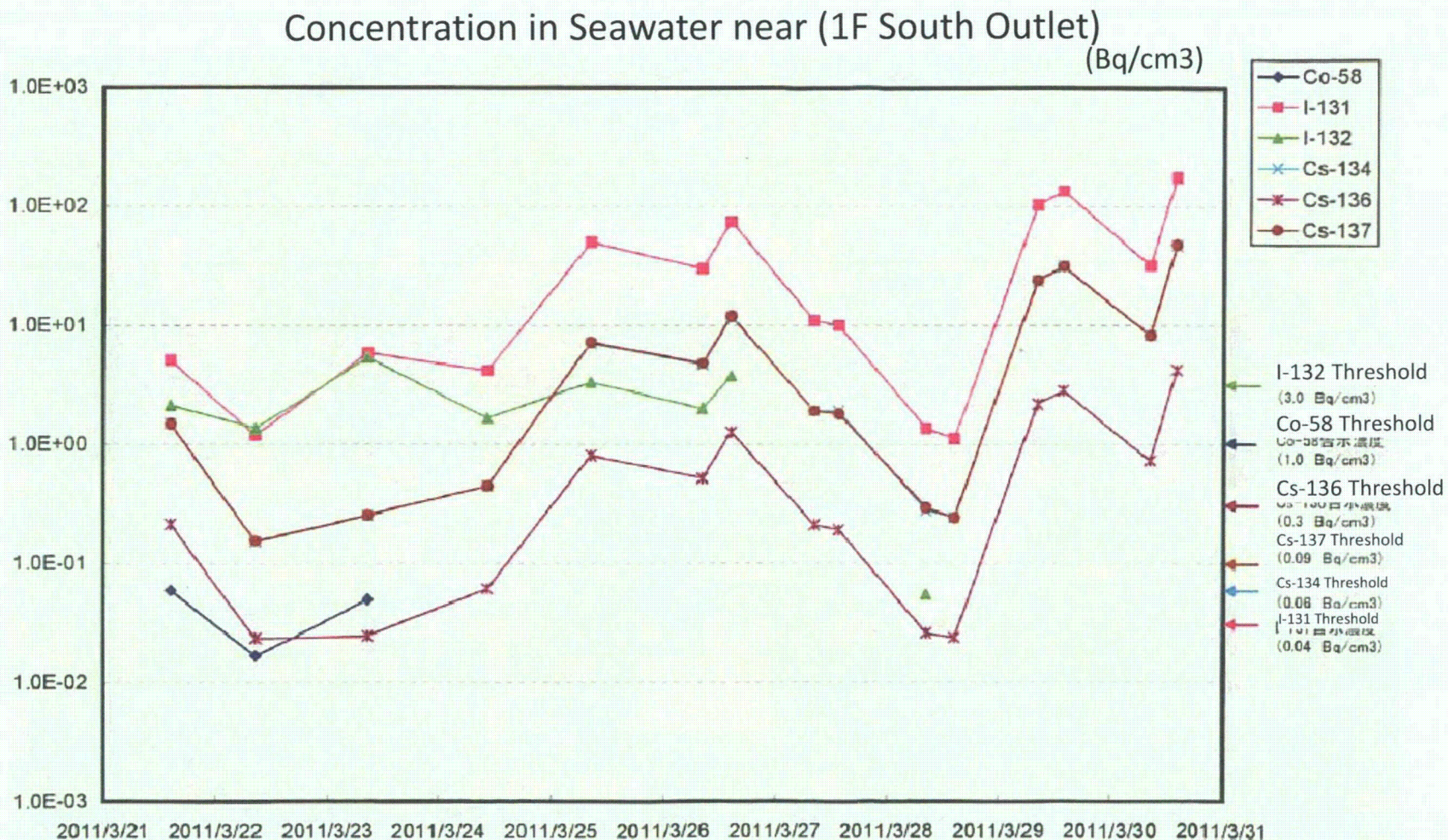
	Unit 1	Unit 2	Unit 3
Location of trench	○Approx. 56m to sea ○162m from turbine bldg (length of trench)	○Approx. 55m to sea ○76m from turbine bldg (length of trench)	○Approx. 69m to sea ○74m from turbine bldg (length of trench)
Trench volume (incl. vertical pit)	3,100m <sup>3</sup>	6,000m <sup>3</sup>	4,200m <sup>3</sup>
Depth of vertical pit	16.9m	16.3m	21.7m
Depth of water in vertical pit	16.8m	15.3m	20.2m
Dosage at water surface	0.4~1.9mSv/h	Above 1000mSv/h	Impossible to measure due to debris
Ambient dosage in vertical pit	0.4~1.0mSv/h	100~300mSv/h	0.8mSv/h



## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(6/7)

### ④ Radioactivity Concentration of Seawater Samples Near 1F South Outlet

- Concentration of radioactive iodine 131 recorded on March 31<sup>st</sup> was approx. 4385 times the limit set for water outside the environmental monitoring area.



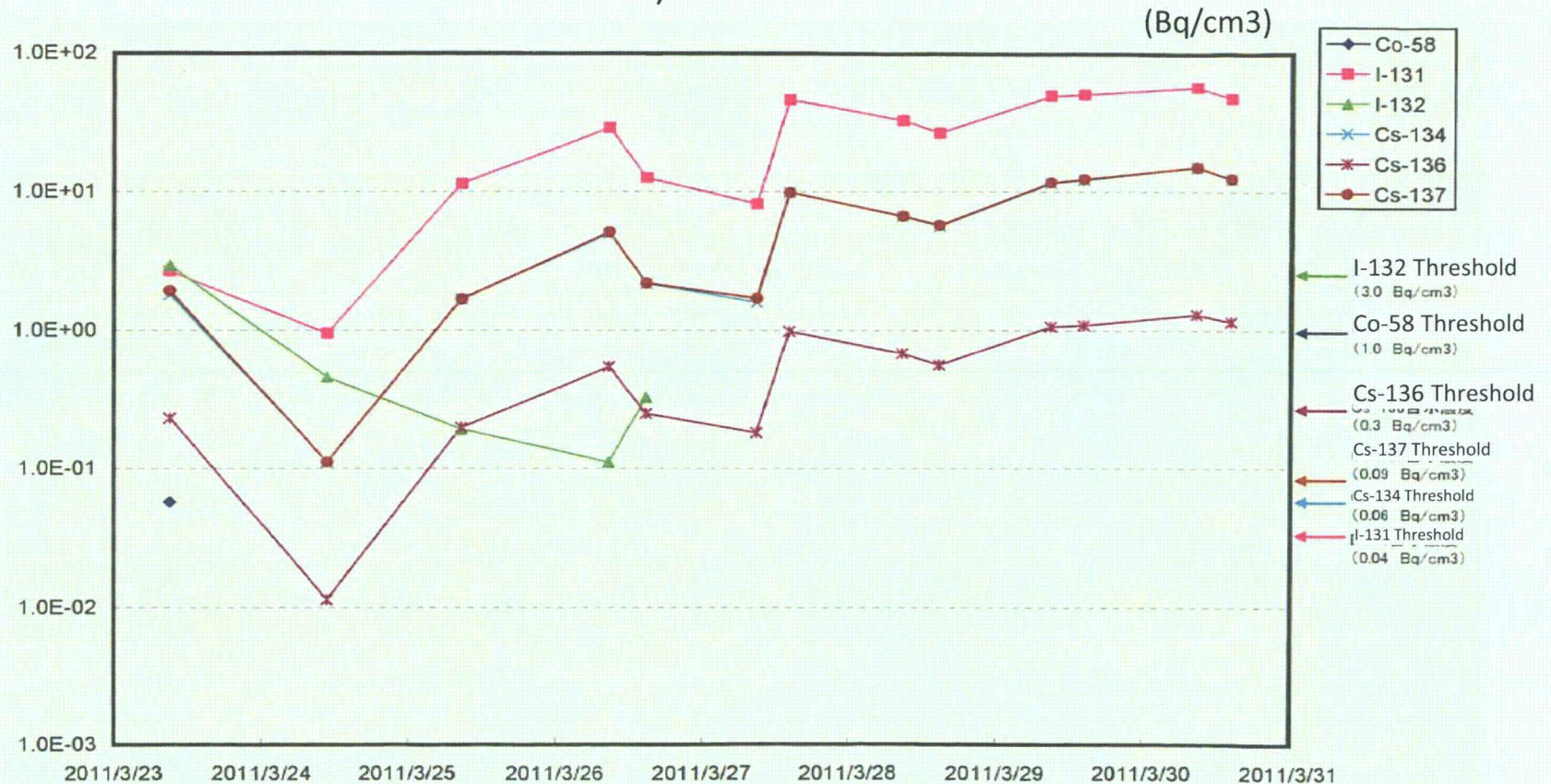


## 7-2. Monitoring On-site(1F) (conducted by TEPCO)(7/7)

### ⑤ Radioactivity Concentration of Seawater Samples Near Unit 5 and 6 of 1F in North Outlet

- Concentration of radioactive iodine 131 recorded on March 31<sup>st</sup> was approx. 1425 times the limit set for water outside the environmental monitoring area.

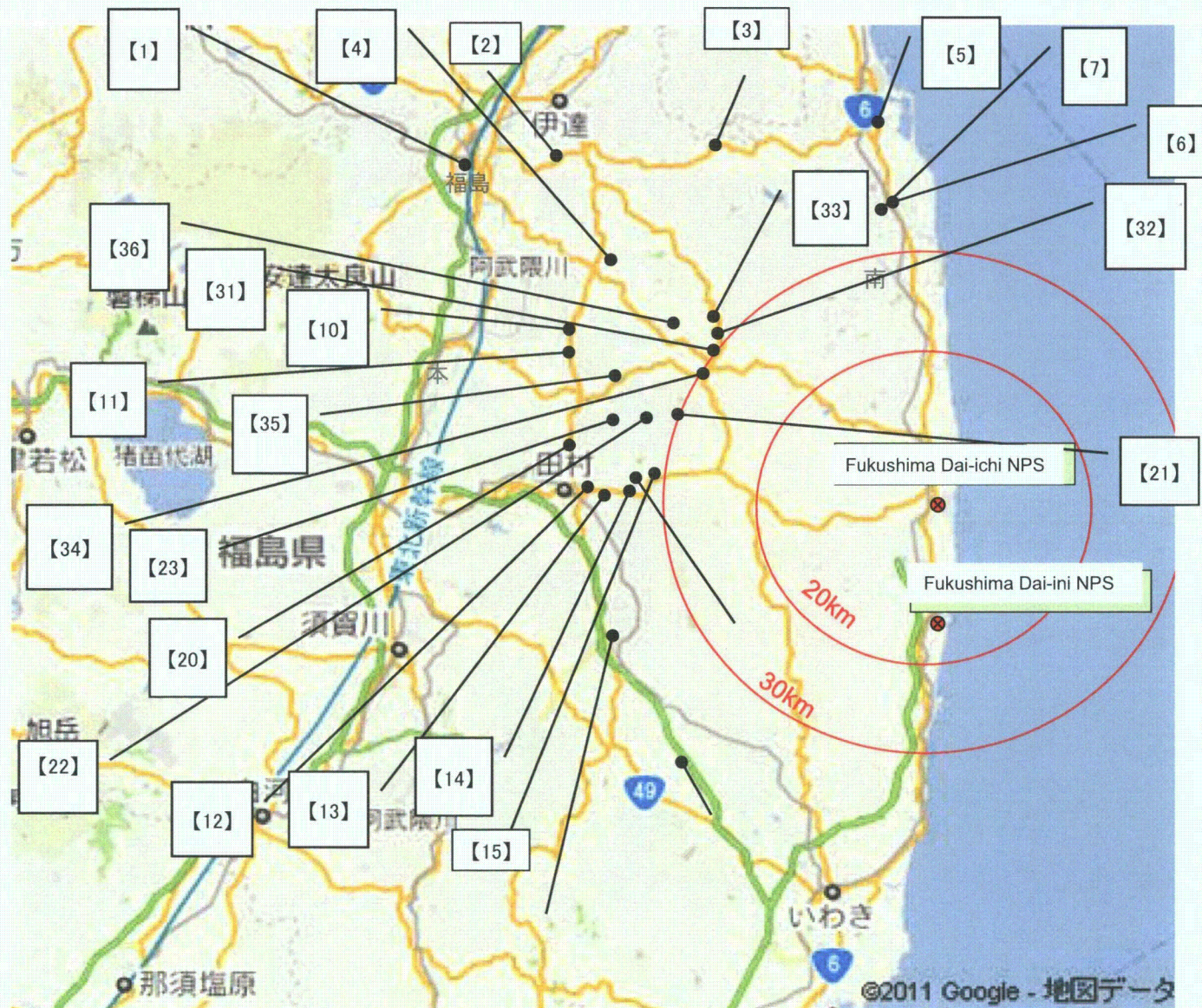
1F 5-6 Northern Water Discharge Canal (Around 30 m north of The 5-6u canal) Radioactive concentration





7-3. Monitoring by MEXT and local nuclear emergency response HQ(1/6)

### ① Air Dose Rate Measuring Locations Using Monitoring Vehicles



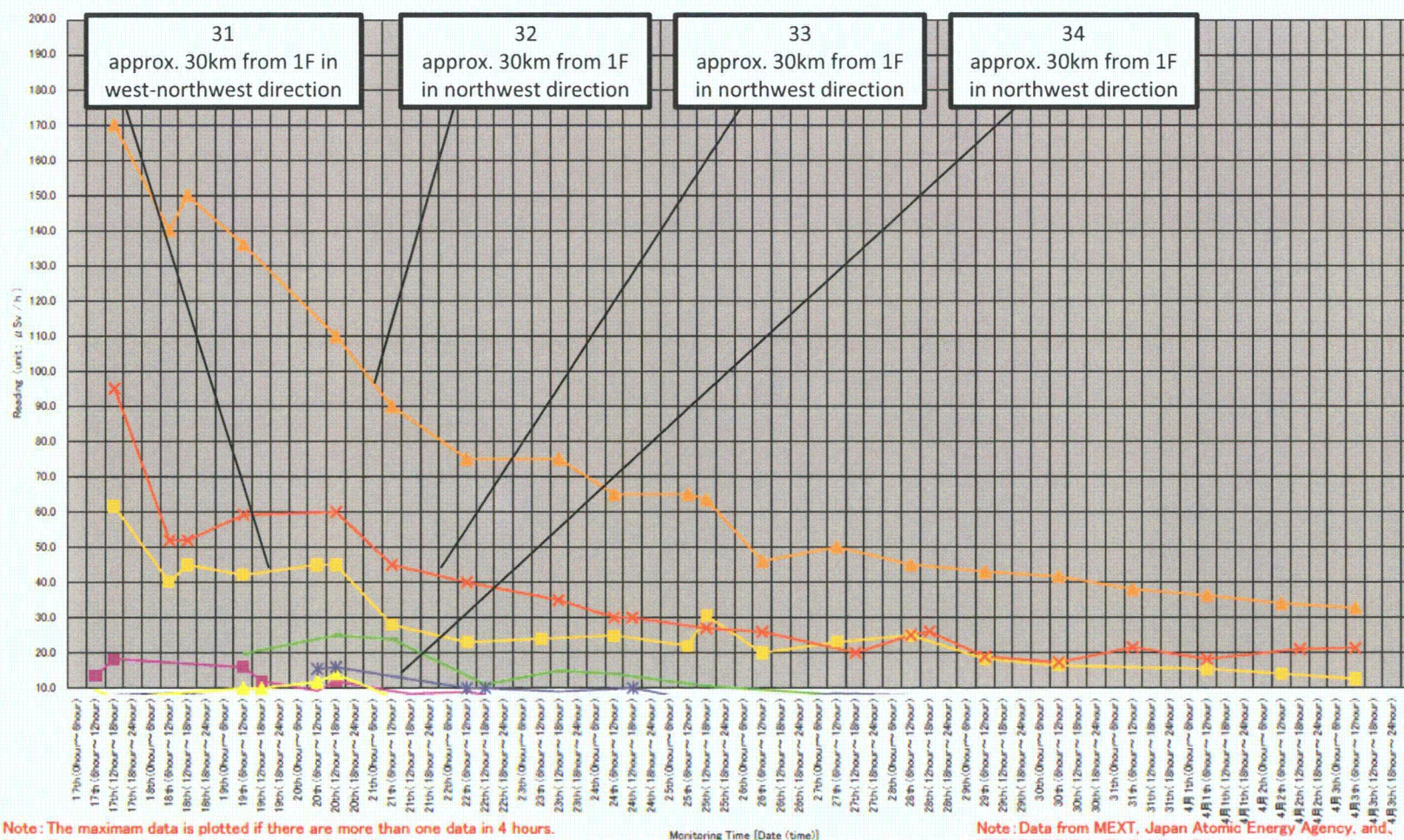


## 7-3. Monitoring by MEXT and local nuclear emergency response HQ(2/6)

### ① Air Dose Rate Measured Using Monitoring Vehicles

- Overall dose rate trending down since March 17<sup>th</sup>.
- E.g. The highest value recorded at Monitoring Point #32 has peaked out at approx. 170 $\mu$ Sv/h and has been declining since, rendering no immediate health hazard.

Readings at Monitoring Post out of 20 Km Zone of Fukushima Dai-ichi NPP





## 7-3. Monitoring by MEXT and local nuclear emergency response HQ(3/6)

### ②Cumulative Doses Measured

- Air dose rate cumulatively measured since April 3 topped 10,340 $\mu$ Sv at #32, approximately 30km North West from 1F.

Readings of Integrated Dose at Monitoring Post out of Fukushima Dai-ichi NPP



Monitoring Time

- March 23th ~ April 3rd  
(Monitoring Post: 7, 31 ~ 34, 79)
- March 23 th ~ 28th, April 3rd  
(Monitoring Post: 71)
- March 24 th ~ April 3rd  
(Monitoring Post: 1, 15)
- March 25 th ~ April 1st, April 3rd  
(Monitoring Post: 84)
- March 31 th ~ April 1 st, April 3rd  
(Monitoring Post: 38)
- April 1 th ~ April 3rd  
(Monitoring Post: 39)
- April 2 th ~ April 3rd  
(Monitoring Post: 76)
- Monitoring Post

(explanatory note)

【 Monitoring Post number】  
Readings of Integrated Dose ※  
<increment from the last monitoring>  
(average dose per hour)

Readings of Integrated Dose  
indicate that accumulation of  
dose from each starting date till  
April 2nd, for 1 day to 10days.

Unit:  $\mu$  Sv per hour



## 7-3. Monitoring by MEXT and local nuclear emergency response HQ(4/6)

### ③Concentration of Radioactive Materials

#### ●Soil Samples

Sampling Point	Address of Sampling Point	Sample	Sort or Region	Sampling Time and Date	Radioactivity Concentration (Bq/kg)	
					$^{131}\text{I}$	$^{137}\text{Cs}$
[2-1] (About 40km North West)	Iitate Village	Land Soil	Soil	2011/3/19 11:40	300,000	28,100
	Iitate Village	Land Soil	Soil	2011/3/20 12:40	1,170,000	163,000
	Iitate Village	Land Soil	Soil	2011/3/21 12:32	207,000	39,900
	Iitate Village	Land Soil	Soil	2011/3/22 12:00	256,000	57,400
	Iitate Village	Land Soil	Soil	2011/3/23 12:25	135,000	32,200
	Iitate Village	Land Soil	Soil	2011/3/24 13:05	45,500	1,870
	Iitate Village	Land Soil	Soil	2011/3/25 13:05	265,000	27,900
	Iitate Village	Land Soil	Soil	2011/3/26 12:00	564,000	227,000
	Iitate Village	Land Soil	Soil	2011/3/26 15:20	82,000	28,000
	Iitate Village	Land Soil	Soil	2011/3/27 11:40	169,000	29,100
	Iitate Village	Land Soil	Soil	2011/3/27 12:00	60,800	20,800
	Iitate Village	Land Soil	Soil	2011/3/28 11:50	14,000	2,040
	Iitate Village	Land Soil	Soil	2011/3/28 12:10	23,100	860
	Iitate Village	Land Soil	Soil	2011/3/29 11:50	53,700	5,650
	Iitate Village	Land Soil	Soil	2011/3/29 12:10	58,400	25,100
	Iitate Village	Land Soil	Soil	2011/3/30 12:25	60,000	32,300
	Iitate Village	Land Soil	Soil	2011/3/30 12:45	11,900	408
	Iitate Village	Land Soil	Soil	2011/3/31 11:30	149,000	27,600
	Iitate Village	Land Soil	Soil	2011/3/31 11:45	60,800	26,500
	Iitate Village	Land Soil	Soil	2011/4/1 11:30	146,000	43,700
	Iitate Village	Land Soil	Soil	2011/4/1 12:05	21,400	1,410
	Iitate Village	Land Soil	Soil	2011/4/2 11:24	55,500	8,140
	Iitate Village	Land Soil	Soil	2011/4/2 11:48	61,900	30,800

## 7-3. Monitoring by MEXT and local nuclear emergency response HQ(4/6)

### ③ Concentration of Radioactive Materials

#### ● Dust Samples

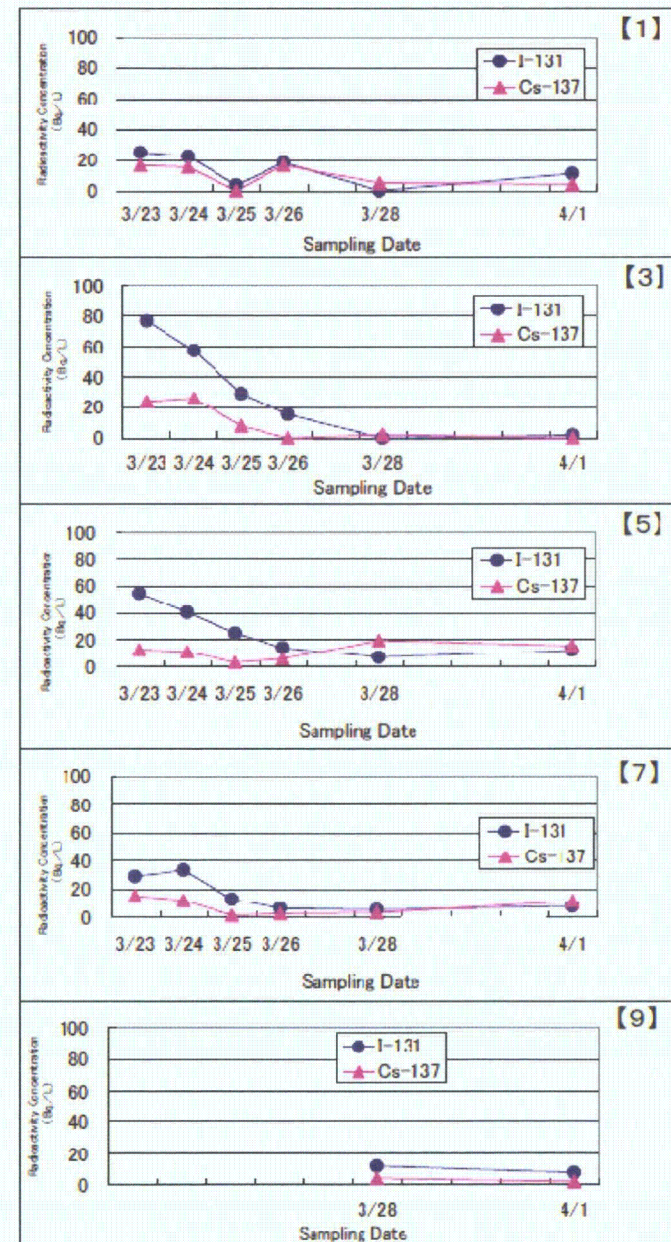
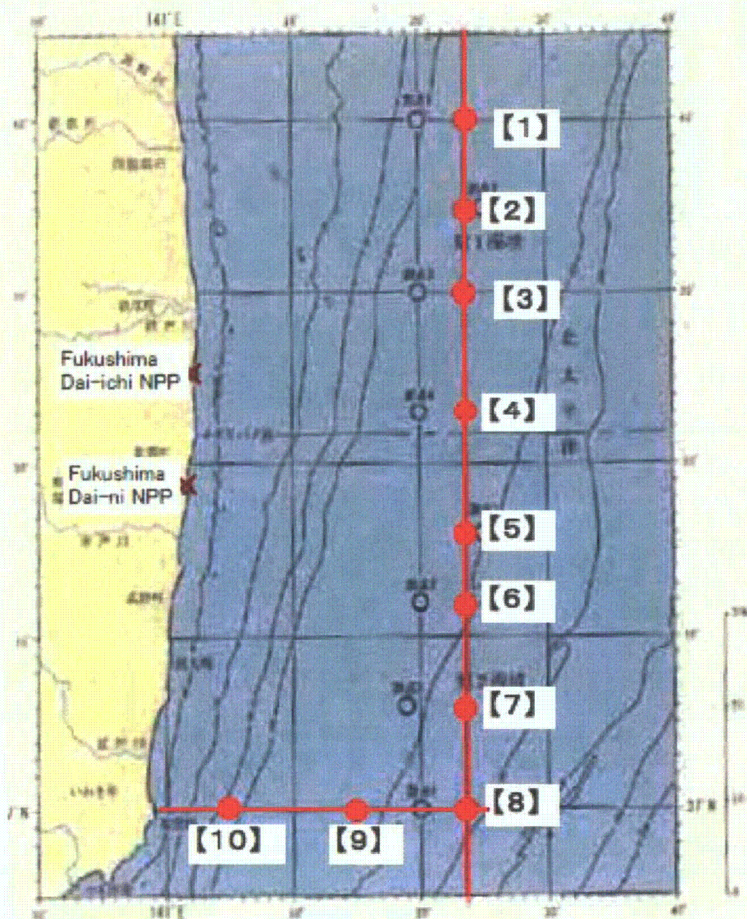
Sampling Point	Sampling Time and Date	Radioactivity Concentration (Bq/m <sup>3</sup> )		Reading (μSv/h)
		<sup>131</sup> I	<sup>137</sup> Cs	
[2-1] (About 40 km North West)	3/21 13:00~13:20	12.80	2.37	4.1
	3/22 12:26~12:46	5.87	ND	4.2
	3/23 12:50~13:10	2.99	ND	16.8
	3/24 13:30~13:50	5.80	1.51	10.0
	3/25 12:45~13:05	5.87	ND	12.3
	3/26 12:26~12:46	5.39	1.33	7.8
	3/27 12:06~12:26	2.22	ND	11.2
	3/28 12:05~12:25	1.66	ND	9.6
	3/29 12:07~12:27	2.42	6.79	9.2
	3/30 13:22~13:42	3.47	LTD	8.5
	3/31 11:50~12:10	1.74	LTD	8.0
	4/1 12:00~12:20	1.78	1.69	7.7
	4/2 11:46~12:06	0.84	ND	8.6



## 7-3. Monitoring by MEXT and local nuclear emergency response HQ(5/6)

### ④ Sea Water Monitoring Around Fukushima Dai-ichi NPS

● Concentration of radioactive materials at location #3 peaked at 76.8Bq/L, exceeding the limit for the environmental monitoring area.



Note: "Not Detectable" is illustrated as 0Bq/L.



## 7-3. Monitoring by MEXT and local nuclear emergency response HQ(6/6)

### ⑤Aerial Monitoring

- Flight Details : April 1<sup>st</sup>, from 11:02 to 13:45, cloudless skies with S winds  
Average altitude 1070 meters above sea, average speed 220km/h

Main Reading Point	City	Latitude longitude	Altitude above sea level [ above ground level] (m)	Monitoring Time	Readings( $\mu$ Sv/h)
【 1 】	Shirakawa (Fukushima Prefecture)	37° 03. 39 ´ N 140° 17. 38 ´ E	1193 [851]	11:45	0. 0409
【 2 】	Iwaki (Fukushima Prefecture)	36° 32. 19 ´ N 140° 53. 19 ´ E	1209 [1203]	11:57	0. 0261
【 3 】	Tamura (Fukushima Prefecture)	37° 27. 16 ´ N 140° 34. 19 ´ E	1267 [844]	12:13	0. 0281
【 4 】	Shinchi-cho (Fukushima Prefecture)	37° 46. 46 ´ N 140° 52. 50 ´ E	1182 [1117]	12:23	0. 0275
【 5 】	Fukushima (Fukushima Prefecture)	37° 47. 12 ´ N 140° 29. 47 ´ E	900 [842]	12:37	0. 0234
【 6 】	Kooriyama (Fukushima Prefecture)	37° 26. 33 ´ N 140° 22. 46 ´ E	933 [691]	12:47	0. 0402
【 7 】	Shirakawa (Fukushima Prefecture )	37° 09. 40 ´ N 140° 12. 59 ´ E	898 [502]	12:56	0. 0402
【 8 】	Utunomiya (TochigiPrefecture)	36° 35. 02 ´ N 140° 00. 49 ´ E	888 [737]	13:14	0. 0147

## **8. Provision of Relevant Information Overseas**



## 8. Provision of relevant information overseas(1/2)

### 1. Communication to IAEA and its Member States

#### (1) ENAC Website

NISA has constantly been providing facility-related and other relevant information on the Emergency Notification and Assistance Convention Website, designed for member states to exchange information on nuclear accidents.

#### (2) IEC (IAEA)

NISA has constantly been providing the Incident and Emergency Centre of IAEA with press releases and other relevant information, as well as responses to questions on such communication.

#### (3) Others

##### -March 21<sup>st</sup> Technical Briefing

Following the special meeting of the IAEA Board of Governors, NISA officials briefed the member state representatives on the overview of the earthquake itself as well as the status of and ongoing measures to address the Fukushima NPS accident.

##### -IAEA Expert Missions

The Government of Japan has been receiving IAEA expert missions to Japan.

## 8. Provision of relevant information overseas(2/2)

### 2. To International Media in Japan

#### (1) Foreign Media Briefing

- NISA joins relevant government agencies in daily foreign media briefings at the PM's official residence on March 14, 17 and every day afterwards.
- NISA officials give account to damages suffered at Fukushima NPSs and respond to questions.
- English documents distributed include updates on earthquake-related damage, status of F1 NPSs and monitoring results in the vicinity.

#### (2) Briefings for Diplomatic Representatives in Tokyo

- NISA joined the Ministry of Foreign Affairs in briefing sessions for Diplomatic representatives in Tokyo.
- Distributed press releases (English), provided explanations and answered questions.

#### (3) English information on the Web

- Nuclear and Industrial Safety Agency: <http://www.nisa.meti.go.jp/english/index.html>
- Office of Prime Minister <http://www.kantei.go.jp/foreign/index-e.html>

## 9. Remarks



## 9. Remarks

- Continue to make every possible efforts to bring the situation under control
- Will identify the cause of the accident completely and review safety assurance measures
- Offer the information as much as possible and share the experience and knowledge of the accident with the international community

## Bozin, Sunny

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**From:** Ostendorff, William  
**Sent:** Sunday, April 10, 2011 11:52 AM  
**To:** Franovich, Mike  
**Cc:** Nieh, Ho; Kock, Andrea; Zorn, Jason  
**Subject:** Re: UPDATE from 08:30 Telecon on Fukushima Daiichi Events

Thanks Mike.

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**From:** Franovich, Mike  
**To:** Ostendorff, William  
**Cc:** Nieh, Ho; Kock, Andrea; Zorn, Jason  
**Sent:** Sun Apr 10 09:39:32 2011  
**Subject:** UPDATE from 08:30 Telecon on Fukushima Daiichi Events

### Jim Dyer led the call:

- ☐ No change in status of Unit 1, 2, or 3 or the SFPs.
- ☐ numerous document are noted below in this summary and the TAs have requested copies of them when available in final.
- ☐ Three ET is working to finish several analyses/document; criteria to reduce 50 mile evac zone, limited reentry, and plant stability criteria.
- ☐ The ET received a draft document to review and request from the in-country team for a quick turnaround for comments. The document is an all inclusive assessment of what has happened and assessment of plant conditions. This document may be used as a background document to brief Secretary Clinton.
- ☐ Revision 2 of the SAMGs being worked and ETA no earlier than 4/11 c.o.b.
- ☐ The Chairman approved plan to reduced staffing in the NRC ops centers will also included less frequently issue sit reports (once a day) after the involved agencies/organizations were consulted. The Commissioners' TAs were informed during this telecon that we will received only two briefings a week now to be done at 10 am on Tuesdays and Thursdays. The TAs were not asked for input before the announced change.
- ☐ Latest available DOE reports are attached.