From: LIA04 Hoc
Sent: Saturday, March 12, 2011 9:20 PM
To: LIA07 Hoc
Subject: RE: Paragraph on Radiological Montioring Capability at Nuclear Power Plants

Thanks much, Greg!

From: LIA07 Hoc
Sent: Saturday, March 12, 2011 9:18 PM
To: LIA04 Hoc
Subject: FW: Paragraph on Radiological Montioring Capability at Nuclear Power Plants

---

From: PMT07 Hoc
Sent: Saturday, March 12, 2011 8:43 PM
To: LIA07 Hoc
Cc: PMT07 Hoc
Subject: Paragraph on Radiological Montioring Capability at Nuclear Power Plants

Rosetta,

Please let me know how this reads to you. Although there are a few plants that have offsite environmental stations, we don't require it. If a specific State inquires about more detail about a specific plant, we might be able to research it, but don't have ready access to all sites. We sanity checked this among the PMT. Let me know if you need more. Tx greg

US nuclear power plants have sensitive equipment to monitor the status of radiological conditions, which are located within buildings and on ventilation systems. Some of this equipment is sensitive enough to record very slight changes in background radiation levels, and could possibly be an indication that radioactive material released from Japan (should a catastrophically large release of radioactive material occur). Additionally, personnel at nuclear power plants have specific knowledge in radiological field monitoring techniques and could assist State and Federal personnel in environmental sampling activities, should that be necessary to evaluate public health and safety concerns.

From: RST02 Hoc
Sent: Friday, April 29, 2011 12:33 AM
To: RST01 Hoc
Cc: FOIA Response.hoc Resource
Subject: FW: Correction: Lower Head Analysis

Follow Up Flag: Follow up
Flag Status: Flagged

From: Mitman, Jeffrey
Sent: Friday, April 29, 2011 12:21 AM
To: RST02 Hoc; Circle, Jeff
Cc: Garchow, Steve; Reynolds, Steven; Zoulis, Antonios; Bernhard, Rudolph; Harrison, Donnie; Gauntt, Randall O
Subject: RE: Correction: Lower Head Analysis

The time to additional fuel melt and RPV lower head melting (if it has not yet occurred) is the key assumption in the risk analysis. Before Randy left, we discussed his analysis. I was waiting for confirmation before adjusting the risk analysis. The major impact this has on the risk analysis is in the HRA analysis. Most of the HEPs assume a 10 hour time available (I assume that this qualifies as extra time in SPAR-H). If the actual time is significantly greater it would justify moving the time available from extra to extensive time.

Does anyone know of an analysis that would justify more time for operator actions given a loss of injection into the RPV?

Jeff Mitman

From: RST02 Hoc
Sent: Friday, April 29, 2011 6:27 AM
To: Mitman, Jeffrey; Circle, Jeff
Subject: FW: Correction: Lower Head Analysis

Dear Jeff and Jeff

FYI.

Would the revised interpretation affect the PRA study that you guys are doing?

Raj

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Thursday, April 28, 2011 4:36 PM
To: RST02 Hoc
Subject: FW: Correction: Lower Head Analysis

From: Gauntt, Randall O[SMTP:ROGAUNT@SANDIA.GOV]
Sent: Thursday, April 28, 2011 4:35:07 PM
To: Gauntt, Randall O; Casto, Chuck; Salay, Michael; Lee, Richard; RST01 Hoc
Cc: Garchow, Steve; Mitman, Jeffrey; Lachance, Jeffrey Lynn; Mark Leonard; Kelly, John E (NE)
Subject: Correction: Lower Head Analysis
Auto forwarded by a Rule

OK Folks,

I made a mistake in interpreting the lower head radiation heat loss calculation. I was incorrectly comparing lower head radiative heat rejection (MW) to the lower head thermal loading heat flux (MW/m^2). I should have compared MW to MW or heat flux to heat flux.

When comparing the right quantities: radiation heat loss = 0.176 MW to the lower head total heat load of 0.98 MW, one can see that the loss rate is only 20% of the downward directed total heat load, not enough to prevent head failure is cooling is lost.

Thanks to Mike Salay for checking m6y work and catching the error. The Mathcad sheet was correct, but my interpretation of the numbers was wrong.

I am sorry about the confusion.

Randy

From: Gauntt, Randall O
Sent: Monday, April 25, 2011 2:36 AM
To: chuck.casto@nrc.gov
Cc: Garchow, Steve; Mitman, Jeffrey; Lachance, Jeffrey Lynn; Mark Leonard; Kelly, John E (NE)
Subject: Lower Head Analysis and Timelines

Chuck,
Attached is an Excel file that has timelines developed for each plant as well as water injection history. The timelines focus mostly on the damage phases of the accidents and in some cases document what we think must have happened based on notes and annotations in the graphs we have received from TEPCO sources. The emphasis on the timelines we built are focused on the needs to drive analyses.

I am following up on the flood-up implications for in-vessel retention. There is a problem getting water to touch the vessel lower head because of the cylindrical skirt that supports the vessel on the concrete pedistal. It traps a bubble of non-condensible gas that prevents water from rising all the way up. I looked at conduction heat transfer from the head to the water through the CRD tubes - no chance there. However, radiation heat transfer from the head to the water looks not too bad.

The attached analysis estimates the decay heat load to the lower head accounting for:

a) current decay heat level in the reactor vessel ~2.5 MW
b) fraction of core material on lower head ~70%
c) fraction of decay heat still resident in fuel ~80% (20 percent released via Cs/I/Te and NG)
d) fraction of heat directed to lower head versus upper vessel region ~70%
e) contact area of debris with head

From this I come up with an estimated heat flux of 0.08 MW/square meter - getting managible.

If water could flood up into the skirt region, this level of heat rejection could be managed even for downward facing nucleate boiling. However, given that the water can only flood up to about 25 inches below the head, we can't count on nucleate boiling heat transfer.

I next looked at letting the head heat up a bit and radiate down to the water that is a couple of feet below. It looks to me like the head could get as hot as 600 C without failing the vessel and at this temperature, the head could radiate to water and reject something like 0.1 MW/square meter - that's more than the downward directed decay heat, so I think it might be hard to fail the head if we account for radiation heat transfer. Note, MELCOR does not treat this effect on the lower head in any analyses we have done to date.

It is also possible that some natural convection caused by steam circulation in the trapped air space as well as some heat rejection to the skirt wall, which is presumably externally cooled by the flooded containment water, could move some additional heat off of the vessel lower head and to to the drywell water.

One big assumption here is that the reactor vessel does not become pressurized to the extent that creep becomes excessive. I don't have a feel for creep failure under pressure under these conditions where the outer wall temperature is at 600C, but the dead load of the core materials is not significant.

So,
I am thinking that radiation heat rejection off the bottom head will accommodate the decay heat load even if water contact with the lower head cannot be attained by containment flooding.

Randy

Rough Analysis of Heat Load to Lower Head and Ability to Reject Heat to Water

R.O. Gauntt - Sandia National Laboratories

$Power := 2.5MW$ $Damage\_Fraction := 70\%$ fraction of core damaged on on bottom head

$FP\_fraction := 0.8$ fraction of decay heat still in fuel

$Downward\_fraction := .7$ Fraction of decay head focused on head

$D := 188in$ vessel diameter (approximate spherical head by circle)

$Area := \frac{2}{3}\cdot\pi\cdot\left(\frac{D^2}{4}\right)$ Assumed area of debris-head contact

$$Heat\_Flux := \frac{Power\cdot Damage\_Fraction\cdot FP\_fraction\cdot Downward\_fraction}{Area}$$

$Heat\_Flux = 0.082\,\frac{MW}{m^2}$ Estimate of heat load to lower head from relocated fuel debris

Heat Rejected by Radiation Heat Transfer

$\sigma := 5.67\cdot10^{-8}\,\frac{watt}{m^2\cdot K^4}$ $\varepsilon := 0.3$ Stefan-Boltzmann constant and vessel head emissivity

$Q_{rad} := \left(T_{wall}^{\ 4} - T_{water}^{\ 4}\right)\cdot\sigma\cdot\varepsilon\cdot Area$ $Q_{rad} = 0.176\,MW$

Estimation of conduction through CR Drive Tubes

$L_{crd} := 12in$ Conduction length $N_{crd} := 125$ Number of control rods

$D_{outer} := 5in$ CRD Diameter

$\delta_{wall} := \frac{3}{8}in$ CRD wall thickness

$D_{inner} := \left(D_{outer} - 2\cdot\delta_{wall}\right)$ CRD inner diameter

$A_{crd} := \frac{\pi}{4}\cdot\left(D_{outer}^{\ 2} - D_{inner}^{\ 2}\right)$ Area of conduction path

$k_{ss} := 16\,\frac{watt}{m\cdot K}$ Stainless steel thermal conductivity

$k_{cs} := 40 \frac{watt}{m \cdot K}$ Carbon steel thermal conductivity

$T_{wall} \equiv (700 + 273)K$ Assumed hot wall temperature $T_{wall} = 973\ K$

$T_{water} \equiv (150 + 273)K$ Assumed water temperature

$$Q_{conduction} := N_{crd} \cdot k_{ss} \cdot \left(\frac{T_{wall} - T_{water}}{L_{crd}} \right) \cdot A_{crd}$$

$Q_{conduction} = 0.013\ MW$

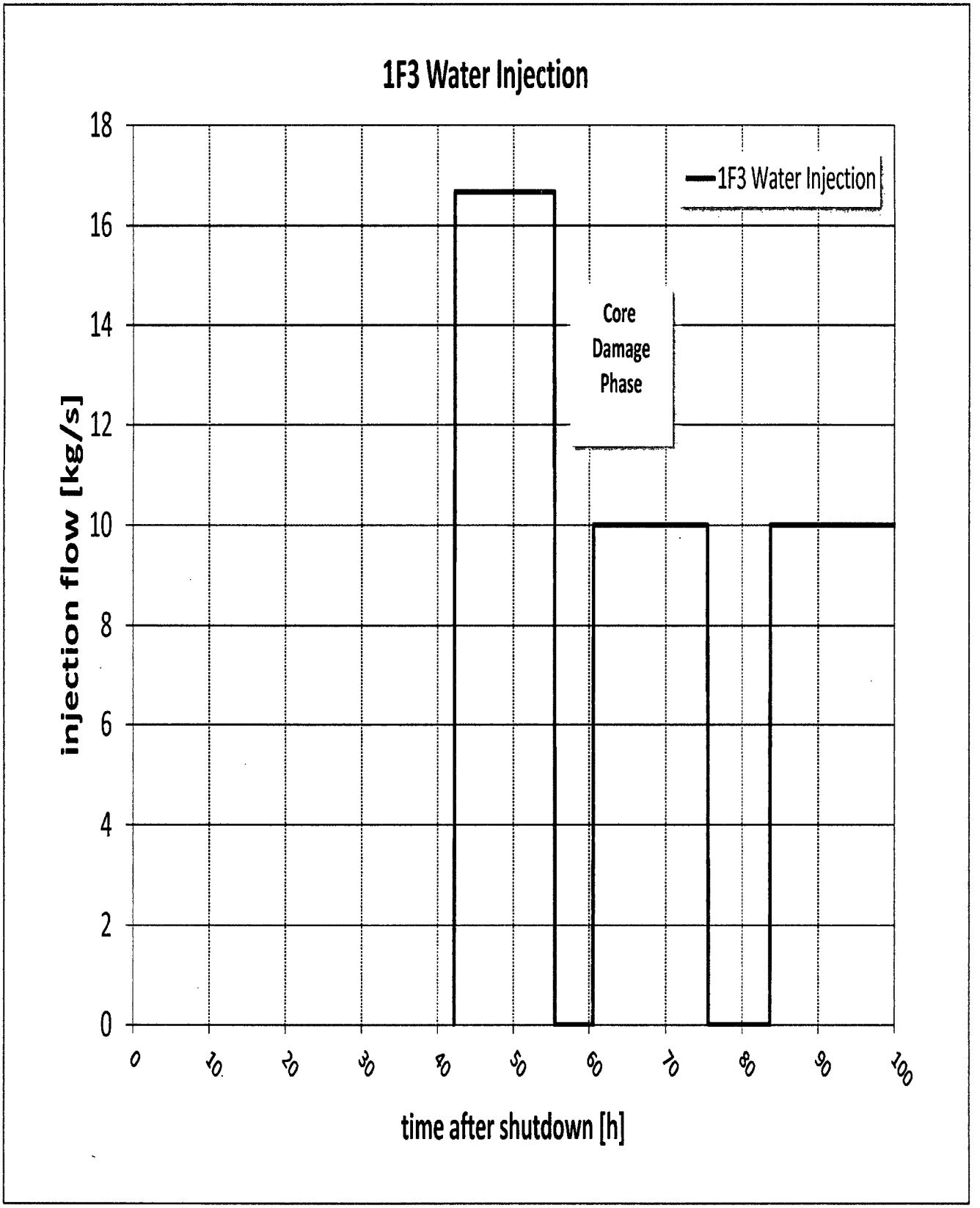
Vessel Watt Temperature Drop - Inner versus Outer

$\delta_v := 8in$ vessel wall thickness

$$\Delta T_{wall} := \frac{\delta_v}{k_{cs}} Heat\_Flux$$

$\Delta T_{wall} = 416.973\ K$

This means that the inner wall of the vessel will be below the melting temperature when the outer wall is at 973K.


1F3 Water Injection
1F3 Water Injection
Core Damage Phase
injection flow [kg/s]
time after shutdown [h]
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
70
80
90
100

Full Name:	ENERGY GEH ICC Engineering (GE Power & Water)
Last Name:	Engineering
First Name:	ENERGY
E-mail:	GEH.ICCEngineering@ge.com
E-mail Display As:	ENERGY GEH ICC Engineering (GE Power & Water)

From: RST01 Hoc
Sent: Tuesday, April 19, 2011 7:06 PM
To: (b)(6)
Subject: interest in Beaver Hill

Stephanie (b)(6)

Full Name:	Peko, Damian
Last Name:	Peko
First Name:	Damian
E-mail:	Damian.Peko@Nuclear.Energy.gov
E-mail Display As:	Peko, Damian

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Last Name:	Holahan
First Name:	Eugene
E-mail:	(b)(6)
E-mail Display As:	Holahan, Eugene V SES PACOM, J91

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Full Name:	GE.HitachiNuclearResponseTeam
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First Name:	GE.
E-mail:	GE.HitachiNuclearResponseTeam@ge.com
E-mail Display As:	'GE.HitachiNuclearResponseTeam@ge.com'

From: RST02 Hoc
Sent: Sunday, April 10, 2011 5:20 PM
To: RST01 Hoc
Subject: FW: 2011 04-10 global assessment document PMT input
Attachments: 2011 04-10 global assessment document PMT input.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Fyi...

From: Hoc, PMT12
Sent: Sunday, April 10, 2011 4:25 AM
To: RST02 Hoc
Subject: 2011 04-10 global assessment document PMT input

PMT input to Global Assessment Document attached.

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

April XX, 2011

SUBJECT: NRC RESPONSE TO FUKUSHIMA EVENT

(b)(5)

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(b)(5)

C:\FoiaProject\FoiaPDFExport\PSTs\RST01_HOC2\Emails\00035\00002.docx~~M:\PMT\Fukushima\2011-04-10 global assessment document PMT input.docx~~

Full Name:	Ulses, Anthony
Last Name:	Ulses
First Name:	Anthony
E-mail:	anthony.ulses@nrc.gov
E-mail Display As:	Ulses, Anthony

Contact Group Name: US AID Contacts (4-9-2011)

Members:

Disaster Assistance Response Team (DART)	DART_PACTSU@ofda.gov
main group email address for the RMP	RMT_PACTSU@ofda.gov
Response Manager and Admin Coordinator	RMTPACTSU_RM@ofda.gov

From: GE Hitachi Nuclear Response Team (GE Power & Water) <GE.HitachiNuclearResponseTeam@ge.com>
Sent: Friday, April 08, 2011 10:02 PM
To: RST01 Hoc
Subject: Q435 Estimate of Water Level Based on Press. Rate from GEH
Attachments: Q435 water level estimate based on press rate - FINAL RESPONSE.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Please find the attached response.

Thank you,
GEH Team

Q435 -

(b)(4)

(b)(4)

From: Berry, Rollie
Sent: Thursday, April 07, 2011 11:50 PM
To: RST01 Hoc; Alter, Peter; Hasselberg, Rick
Subject: Watchbill

Follow Up Flag: Follow up
Flag Status: Flagged

Rick and Peter,
If the watchbill gets extended, I would like to have either mids or swings (don't care, just would like a constant time) mon-thurs as either the communicator or coordinator.

Thanks,
Rollie

From: Salay, Michael
Sent: Thursday, April 07, 2011 8:37 PM
To: RST01 Hoc
Subject: RE: 04-07-11 2000 RST Assessment Spent Fuel Pool.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Thank you,
-Mike

From: RST01 Hoc
Sent: Thursday, April 07, 2011 8:27 PM
To: Salay, Michael
Subject: FW: 04-07-11 2000 RST Assessment Spent Fuel Pool.docx

FYI- This is still work in progress, but we got the go ahead to get you something.

Greg
RST Coordinator

From: RST07 Hoc
Sent: Thursday, April 07, 2011 8:25 PM
To: RST01 Hoc
Subject: 04-07-11 2000 RST Assessment Spent Fuel Pool.docx

Site team,

This is the in progress Fuel pool assessment. This has not been reviewed by the consortium.

Chuck Norton
BWR RST Analyst

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

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(b)(5)

From: Sheikh, Abdul
Sent: Thursday, April 07, 2011 4:45 PM
To: RST01 Hoc
Cc: FOIA Response.hoc Resource; Ali, Syed
Subject: Unit 4 Spent Fuel Pool Structural Assessment

Follow Up Flag: Follow up
Flag Status: Flagged

I have reviewed the information provided by TEPCO concerning the structural integrity of the Unit 4 spent fuel pool and have following observations.

(b)(5)

Based on the above, I suggest that:

(b)(5)

Abdul Sheikh
My cell number is (b)(6)

-----Original Message-----
From: RST01 Hoc
Sent: Thursday, April 07, 2011 1:52 AM
To: Sheikh, Abdul
Cc: FOIA Response.hoc Resource
Subject: FW: Fax from 81355105111

-----Original Message-----
From: OST02 HOC
Sent: Wednesday, April 06, 2011 5:48 PM
To: RST01 Hoc
Subject: FW: Fax from 81355105111

-----Original Message-----
From: HOO Hoc
Sent: Wednesday, April 06, 2011 5:47 PM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Fax from 81355105111

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

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Wednesday, April 06, 2011 5:44 PM
To: HOO Hoc
Subject: Fax from 81355105111

RECEIVE NOTIFICATION FOR JOB 00018101

Notice for: HOO1

Remote ID: 81355105111

Received at: 04/06/2011 17:43

Pages: 3

Routed by:

Routed at: 04/06/2011 17:43

To: RST (Attn: Abdul Sheikh)

From: Japan Team

Here is the structural analysis from TEPCO again. It was on a very large piece of paper so we copied it onto 2 pages that you will have to tape together

Regards

Rob

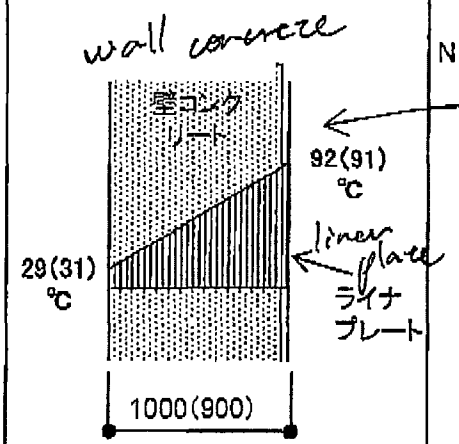
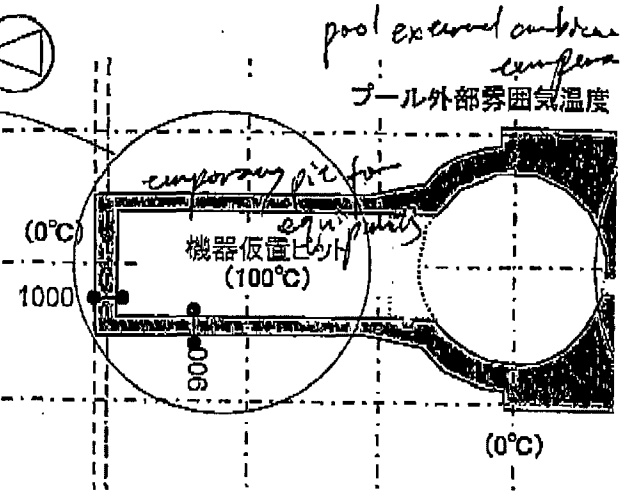
対する検討（燃料プール壁 追加検討）

1. 目的

損傷した4号機使用済燃料プール部の余震に対する検討を実施する。

2. 検討条件

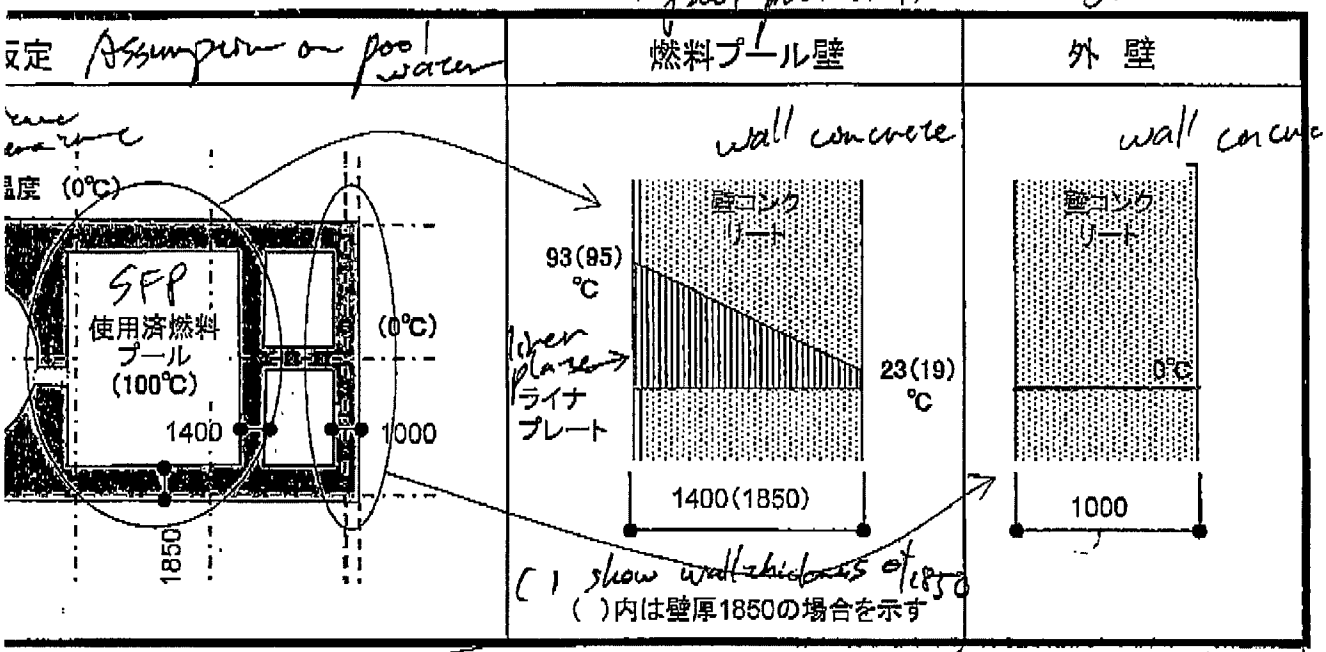
①4号機 使用済燃料プールおよび機器仮置ピットに
②最も厳しい状態として、100℃の水が満水状態に
③余震条件として、前回同様、基礎スラブ上端で20

	機器ピット壁	プール水の仮定
温度状態	 ( )内は壁厚900の場合を示す	

		機器ピット壁	
	壁厚T (mm)	T=1000	T=900
	壁の配筋	D32 @200	タテ 内 1.5-D25 @ 外 2-D25 @2 ヨコ 内・外 D25 @2
余震に対する検討	静水圧による鉄筋応力度	7	62
	温度応力による鉄筋応力度	64	96
	地震力による鉄筋応力度	130	80
	動水圧による鉄筋応力度	2	20
	鉄筋応力度 計 (A)	203	258
	短期許容応力度 (B)	345	345
	鉄筋裕度 (A/B)	0.59	0.75
	せん断応力度 計 (C)	0.22	0.39
	短期許容せん断応力度(D)	1.26	1.26
	せん断裕度 (C/D)	0.17	0.31

I equipm emporary pic are full of hot waters and when there is aftershocks

について、高温の水が満たされ、かつ余震が作用した場合の安全性を検討する。
ret (harshest condition) (outside temperature at 100C. Also considers hydrodynamic
にあると仮定する(外気温は0℃)。また、余震時の動水圧による影響も考慮する。pressure impact
the impairment of foundation slab, as before. at the time of aftershock,
200Gal程度を仮定する。



fuel pool wall

単位: N/mm²

outside	燃料プール壁		外 壁 outer wall
	T=1850	T=1400	T=1000
@200 @200 @200	タテ 内 D32 @120 外 D32 @240 ヨコ 内・外 D32 @250	タテ 内 D32 @120 外 D32 @240 ヨコ 内・外 D32 @250	D32 @200
	17	14	0
	143	179	25
	70	65	130
	5	4	0
	235	262	155
	345	345	345
	0.68	0.76	0.45
	0.45	0.31	0.03
	1.26	1.26	1.26
	0.36	0.25	0.02

From: Ulses, Anthony
Sent: Saturday, April 09, 2011 4:50 PM
To: 'moralesra@state.gov'; Way, Ralph
Cc: 'BenfellST@state.gov'
Subject: Re: ERC 1100 Daily Call 4-6-11.docx

(b)(5)

Tony

Sent from NRC BlackBerry
Anthony Ulses
(b)(6)

From: Morales, Russell A <MoralesRA@state.gov>
To: Ulses, Anthony; Way, Ralph
Cc: Benfell, Steven T <BenfellST@state.gov>
Sent: Sat Apr 09 03:25:25 2011
Subject: FW: ERC 1100 Daily Call 4-6-11.docx

Tony, Ralph,

Did you guys see this report?

(b)(5)

Also, what photos did they have to look at? Did they get the good side level photos that I sent you Ralph?

If you guys know who did this—We may can give them more data if they tell us specifically what they need. Let me know what you think.

Russ

SBU
This email is UNCLASSIFIED.

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Thursday, April 07, 2011 11:24 PM
To: (b)(6)

(b)(6)

Subject: FW: ERC 1100 Daily Call 4-6-11.docx

DOE has asked that the consortium be made aware of the attached analysis of possible causes of explosion for the Unit 4 SFP.

RST Coordinator

From: Caponiti, Alice [mailto:Alice.Caponiti@nuclear.energy.gov]
Sent: Wednesday, April 06, 2011 4:19 PM
To: RST01 Hoc
Cc: Versluis, Rob; Golub, Sal; Kelly, John E (NE); Larzelere, Alex
Subject: RE: ERC 1100 Daily Call 4-6-11.docx

Thank you for the opportunity to comment on documents.

(b)(4)

Finally, DOE does not have any specific analysis to provide on the topic of the 'fix-it' compound.

Thanks,

Alice

Alice Caponiti
DOE-NERT
(b)(6) cell

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Wednesday, April 06, 2011 1:48 PM
To: (b)(6)

(b)(6)

Subject: FW: ERC 1100 Daily Call 4-6-11.docx

From INPO this morning.

RST Coordinator

From: Reandeau, Michael A. (INPO) [mailto:ReandeauMA@inpo.org]
Sent: Wednesday, April 06, 2011 12:49 PM
To: RST01 Hoc
Cc: INPOERCTech
Subject: ERC 1100 Daily Call 4-6-11.docx

(b)(4)

Stu/Mike,

Attached is the 4/6 1100 Conference Call agenda along with the action items from the call for distribution.

Mike Reandeau

INPO ERC Technical

prohibited. If you are not the intended recipient of this e-mail, please notify the sender immediately by return e-mail and permanently delete the original and any copy or printout of this e-mail and any attachments.
Thank you.

The purpose of this document is to provide the NRC Reactor Safety Team's recommendations for the Fukushima-Daiichi reactors to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

(b)(5)

C:\FoiaProject\FoiaPDFExport\PSTs\RST01_HOC2\Emails\00048\00003.docxM:\RST\Japanese Earthquake & Tsunami Response\RST Assessment of Fukushima Daiichi\Determination of Stable Conditions for Fukushima\Criterion to Establish Stable Conditions - 0500 04-06.docx

The purpose of this document is to provide the NRC Reactor Safety Team's recommendations for the Fukushima-Daiichi reactors to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

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The purpose of this document is to provide the NRC Reactor Safety Team's recommendations for the Fukushima-Daiichi reactors to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

(b)(5)

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4/6/2011

1100 – Technical Refocus Meeting – Led by INPO Tech Lead

1. Review agenda for the call:
2. Discuss the Status of Open Actions
   a. Discussion of Stable Conditions Document to relax emergency response(INPO lead)
   b. "Additional measures" one-page document (basis for increasing injection to Unit 1 RPV and basis for flooding containment) (INPO lead)
   c. SFP Strategy Document (NRC RST lead)
   d. Hydrogen Assumptions (GEH lead)
   e. Discussion on structural integrity of U4 SFP (GEH lead)
3. Review new action items discussed during the call.
4. Adjourn

Action Items from 4/6/2011 1100 EST Conference Call:

1. NRC RST will send out the final **Stable Plant Conditions** document on 4/6 at 1600 EST. No comments expected.
2. NRC RST sent out the **Additional Measures** documents (MDRIR and MDSL) just prior to the 1100 call. Comments are due back to the NRC RST by 4/6 1600 EST.
3. NRC RST to incorporate comments on the **General Discussion of the Desired End State of all Spent Fuel Pools** and send out the revised version by 4/6 1600 EST. (b)(5)

   (b)(5)
   - INPO ERC Technical will attempt to obtain more detailed data on the statis of U1 and U3 SFPs and provide this information to NRC RST.
4. GEH to provide updated containment H2/O2 calculations to RST for inclusion in the **Additional Measures in Light of TEPCO Current Strategy** document by 4/6 2000 EST.
   - RST to distribute the updated document.
5. INPO ERC Technical to followup with GEH on when to be ready for discussion regarding U4 SFP structural integrity with TEPCO (tentatively scheduled for 4/7 0200 EST).
   - GEH/NRC RST to compare assessment information.
6. INPO ERC Technical to provided updated status on U1 containment N2 purge efforts and actions TEPCO will take following completion of the N2 purge effort.
7. GEH to take into account the U1 containment N2 purge on the updated H2/O2 calculations.

From: GE Hitachi Nuclear Response Team (GE Power & Water) <GE.HitachiNuclearResponseTeam@ge.com>
Sent: Wednesday, April 06, 2011 4:18 PM
To: RST01 Hoc
Subject: GEH comment to your document "04 05 2200 One Pagers RPV Injection Cntmt Fill.docx"
Attachments: Q 415R1 GEH comment on document 04-05 2200 One Pagers RPV Injection Cntmt Fil - FINAL RESPONSE.pdf; 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Please find the attached comment to your document "04 05 2200 One Pagers RPV Injection Cntmt Fill.docx".

Thank you,
Victor

Please provide comments to RST by 0200 April 6

(b)(4)

Considerations on Primary Containment Fill Possibilities

(b)(4)

Q 415R1

GEH comment on document "04-05 2200 One Pagers RPV Injection Cntmt Fill.docx" .

(b)(4)

From: Roberts, Thomas E CIV SEA 08 NR <(b)(6)>
Sent: Thursday, April 07, 2011 10:42 AM
To: Herman, David R CIV NAVSEA, 08; RST01 Hoc; RST09 Hoc; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc; Caponiti DOE; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen; EPRI Event Response Center; GE Hitachi NucResponseTeam; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent; INPO ERC; INPOERCTECH; (b)(6); Joel Pero (Bettis); Johne Kelly; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL); Richard Stark; Rob Versluis; Hoc, RST16; RST01B Hoc; RST03 Hoc; RST07 Hoc; Russell Morales; Sal Golub; Bell, Stephen T CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Subject: RE: Final SFP Assessment Document
Attachments: 04-06-11 1200 RST Assessment Spent Fuel Pool.nr04-07-11cmts.doc

Attached are Naval Reactors comments to the subject document. They are consistent with Dave Herman's comments from last night, as per the below email. Along these lines, the attached document includes the following overall comment:

"Two general comments:

(b)(5)

(b)(5)

-----Original Message-----
From: Herman, David R CIV NAVSEA, 08
Sent: Wednesday, April 06, 2011 10:09 PM
To: RST01 Hoc; RST09 Hoc; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc; Caponiti DOE; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen; EPRI Event Response Center; GE Hitachi NucResponseTeam; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent; INPO ERC; INPOERCTECH; (b)(6); Joel Pero (Bettis); Johne Kelly; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL); Richard Stark; Rob Versluis; Hoc, RST16; RST01B Hoc; RST03 Hoc; RST07 Hoc; Russell Morales; Sal Golub; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Cc: Herman, David R CIV NAVSEA, 08
Subject: RE: Final SFP Assessment Document

NR comments on the SFP strategy document draft provided by the RST email below:

(b)(5)

Dave Herman

Naval Reactors

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Wed 4/6/2011 5:32 PM
To: RST09 Hoc; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc; Caponiti DOE; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen; EPRI Event Response Center; GE Hitachi NucResponseTeam; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent; INPO ERC; INPOERCTECH; (b)(6) '; Joel Pero (Bettis); Johne Kelly; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL); Richard Stark; Rob Versluis; Hoc, RST16; RST01B Hoc; RST03 Hoc; RST07 Hoc; Russell Morales; Sal Golub; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Subject: FW: Final SFP Assessment Document

FYI

From: RST08 Hoc
Sent: Wednesday, April 06, 2011 3:33 PM
To: RST01 Hoc
Subject: Final SFP Assessment Document

For Final Review,

At this point we are only looking for technical errors, please have comments back to us by 1000 On 4/7/11.

Thanks,

Mike

Mike Brown

Reactor Safety Team

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

General Discussion of the Desired End State of all Spent Fuel Pools

(b)(5)

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

SPENT FUEL POOL STATUS (1400 April 6th)

Fukushima Daiichi Unit 1

(b)(5)

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Fukushima Daiichi Unit 2

(b)(5)

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Fukushima Daiichi Unit 3

(b)(5)

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Fukushima Daiichi Unit 4

(b)(5)

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

Fukushima Daiichi Unit 5

(b)(5)

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Fukushima Daiichi Unit 6

(b)(5)

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

Fukushima Daiichi Common SFP

(b)(5)

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

ENCLOSURE 1

(b)(5)

The purpose of this document is to provide the NRC Reactor Safety Team's assessment and recommendations for the Fukushima-Daiichi Spent Fuel Pools to the USNRC team in Japan. Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to change and refinement.

(b)(5)

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ENCLSOURE 2

(b)(5)

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(b)(5)

ENCLOSURE 3

(b)(5)

M:\RST\Japanese Earthquake & Tsunami Response\RST Assessment of Fukushima Daiichi\Industy Spent Fuel Pool Assessment\04-06-11 1200 RST Assessment Spent Fuel Pool.docx

From: RST03 Hoc
Sent: Wednesday, April 06, 2011 2:13 PM
To: RST01 Hoc
Subject: FW: Unit 2 Severe Accident Progression Scenario.doc
Attachments: Unit 2 Severe Accident Progression Scenario.doc

Follow Up Flag: Follow up
Flag Status: Flagged

RST assessment of unit 2

From: RST09 Hoc
Sent: Tuesday, March 29, 2011 11:55 PM
To: RST01 Hoc
Subject: Unit 2 Severe Accident Progression Scenario.doc

Full Name:	Morales, Russell A
Last Name:	Morales
First Name:	Russell
E-mail:	MoralesRA@state.gov
E-mail Display As:	Morales, Russell A

Supporting NRC team at Tokyo Embassy

Contact Group Name: NRC Japan Team (5/09)

Members:

Casto, Chuck	Chuck.Casto@nrc.gov
Freeman, Scott	Scott.Freeman@nrc.gov
Lynch, James	James.Lynch@nrc.gov
Miller, Mark	Mark.Miller@nrc.gov
Mitchell, Matthew	Matthew.Mitchell@nrc.gov
Peterson, Hironori	Hironori.Peterson@nrc.gov
Plasse, Richard	Richard.Plasse@nrc.gov
Temps, Robert	Robert.Temps@nrc.gov
US-AID Disaster Team	DART_PACTSU@ofda.gov
Young, Francis	Francis.Young@nrc.gov

From: RST01 Hoc
Sent: Saturday, April 02, 2011 8:52 AM
To: Hoc, RST16
Subject: FW: 2 Apr 2011 0830I Damage Report from USJF Japan
Attachments: 2 April 0830I Damage Report.pdf

-----Original Message-----
From: Mercer, Robert LCDR USN USFJ J3 [mailto:(b)(6)] On Behalf Of USFJ-CAT-RCMT
Sent: Saturday, April 02, 2011 6:29 AM
To: RST01 Hoc; RST02 Hoc
Subject: FW: 2 Apr 2011 0830I Damage Report

FYI,

Sincerely,
LCDR Rob Mercer

-----Original Message-----
From: Cox, David M Capt USAF USFJ J2 On Behalf Of USFJ-J2-INTEL-WATCH
Sent: Saturday, April 02, 2011 6:41 PM
To: USFJ_J2_Op_Tomodachi_DL; USFJ-CAT-CHIEF; USFJ-CAT-INTEL-DUTY-OFFICER
Cc: Zito, Hugh; 'Amos, Sakura D SN PACOM JIOC'; (b)(6); 'Pickel, Calantha U SSgt PACOM JIOC'; (b)(6); 'Minear, John Capt USAF PACAF 35 OG/OGI'; 'Rock, Amanda L TSgt USAF PACAF 13 AF/A2OR'; 'Parker, Michael L 1stLt USAF PACAF 35 OG/OGI'; 'Barnes, Joel R 2dLt USAF PACAF 35 OG/IN'; 'Shackelford, Yvette R 2dLt USAF PACAF 301st/IS'; C7F Tomodachi COPS Intel; (b)(6); Philip Baude; 'Dungca, Jan J Capt USAF PACAF 13 AF Det 1/A2'; 'jomn158@jrcip.osis.gov'; (b)(6); 'USAFJ A2'; Sligh, Robert B Civ USAF PACAF 5 AF /HO; 'Higginbotham, Paul M TSgt PACOM JIOC'; 'Deim, Joshua M Maj PACOM, J2'; 'Hayes, Brian P MAJ PACOM JIOC'; '13 AF/A2 Org Account'; 'Clark, Dwayne Capt USAF PACAF 13 AF/CSE'; 'Eberlein, Michael D LCDR PACOM, J2'; Veray, Larry S CTR PACOM, J2-NRO; '#PA_JIOC Northeast Asia Operations'; '#PA_JIOC Northeast Asia Watch'; Robbie Fisher; 'Higginbotham, Paul M TSgt PACOM JIOC'; Nathaniel Wooddell; 'Walter, Luke A 1Lt PACOM JIOC'; 'Pickel, Calantha U TSgt PACOM JIOC'; 'Brinser, Andrew W LT PACOM JIOC'; Nathan Albritton; Shibata, Yuzo CAPT JSDF; Tanaka, Akira CAPT JMSDF USFJ; Okimura, Yoshihiko COL FA; Hongo, Kazuhiro Lt Col JSDF; Fukuyama, Kazunori 1LT FA; Matsuo, Tomohiko CIV DOD; Davis, Dearcy P CDR USN; USFJ-J2-INTEL-WATCH
Subject: 2 Apr 2011 0830I Damage Report

All,

Attached are the 2 Apr 2011 0830I damage report slides. They are UNCLASSIFIED//~~FOUO~~.

VR,
Capt Dave Cox
JSF J2 Intel Duty Officer
DSN 225-9799

East Japan Great Earthquake Damage Report

2 APR 0830

Japan Defense Intelligence Headquarters

East Japan Great Earthquake

~~UNCLASSIFIED//FOUO~~

2 APR 2011 (Sat) 0830
JDIH

Earthquake Overview

- 11 MAR 1446, M9.0 Earthquake occurred off the coast of Sanriku Region, Intensity 7 (Japanese scale, Northern Miyagi)
- Aftershocks: 31 MAR Japan Meteorological Agency predicts a 10% chance of a intensity 5+ quake by 6 APR 1500
  31 MAR There will be an estimated 20-30 quakes higher than M5.0 before 6 APR
  1 APR 1949 M5.0 Earthquake at Northern Akita. Maximum intensity of 5+ (Odate City)

Damage overview (1 APR 2100)
(±compared to 1 APR 1550)

- Deaths: 11,734 (+202)
- Missing: 16,375 (-66)
- Injured: 2,877 (+4)
- Displaced : App. 166,300 (-6,200)
  Miyagi (App. 70,300)
  Fukushima (App. 28,700)
  Iwate (App. 42,000)

Damage to Lifeline (1 APR 2100)

- Electricity: Outage at 170,000 homes (-2,000) (Iwate: 31,000, Miyagi: 103,000, Fukushima: 36,000)
  Tokyo Electric Power Co has been conducting planned outages from 14 MAR; Tohoku Electric is able to avoid outages for now (3/28 to 4/3) .
- Water: Outage: 210,000 (-20,000)
- Gas: Outage: 254,000 (-22,000)

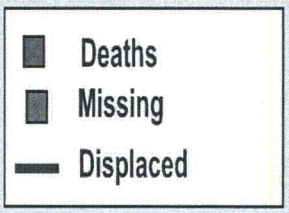
- Fukushima Daiichi Nuclear Power Plant
  11 MAR Nuclear Emergency Declared
  12 MAR Ordered the evacuation 20km radius
  15 MAR 20-30km residents asked to stay indoors
  27 MAR Water found in trenches outside of reactor 1-3
  The water near reactor 2 was 1,000mSv/h.
  31 MAR iodine detected at 4,385 times the standard in seawater near the south water discharge port
  1 APR U.S. Barge transfer water to Surge Tank
  1 APR 0828-1414 Kirin pumps water into R4 SFP
  1 APR 1456-1705 Water added to R2 Spent Fuel Pool
  1 APR 1600 Reactor 2 Spent Fuel Pool 73 ℃
  (Compared to 1 APR 0600: +25 ℃)
  1 APR 1700 Reactor Vessel #1 at 257.8 ℃ (+9.6 ℃)
- Fukushima Daini Nuclear Power Plant
  12 MAR Nuclear Emergency Declared; evacuation order for 10km radius
  15 MAR~ Cold Shutdown with all reactors

Damage to Infrastructure (1 APR 1800)

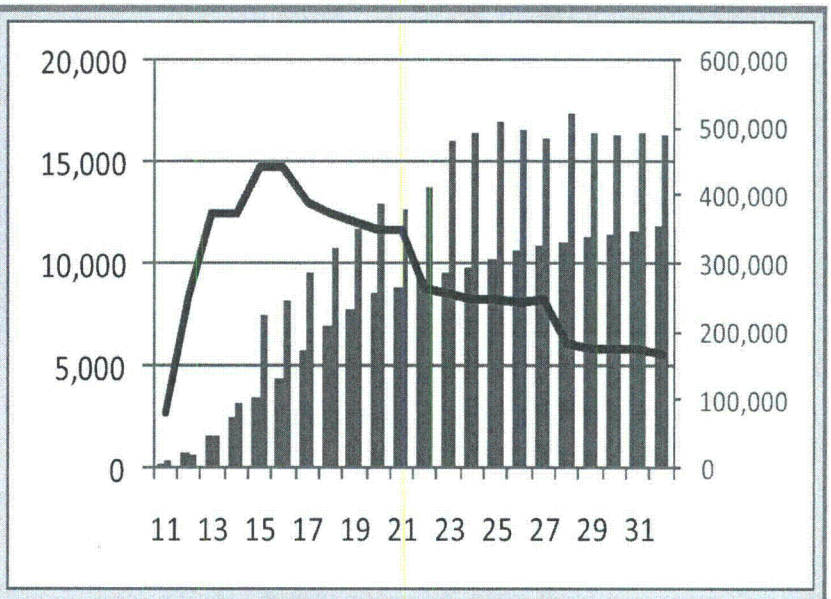
- Roads: 2,126 damaged areas (56 damaged bridges); 1 Expressway and 20 national highways blocked; other than a few restricted areas, all roads are open for private and commercial vehicles.
- Rail: Some JR and private lines in Tohoku region have been reopened. Due to planned power outages, Tokyo railway lines are reduced.
- Air: All airports operational
- Ports: All ports are partially operational

Human Loss

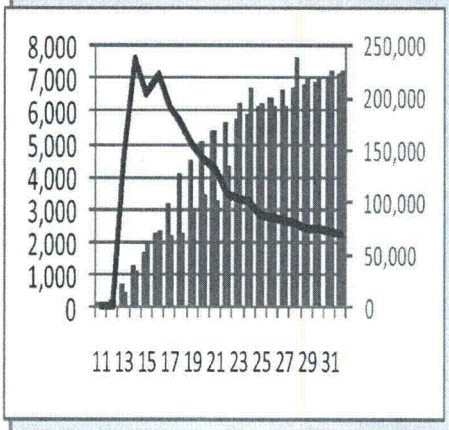
Totals (Includes Kanto)	
Deaths	11,734 (+202)
Missing	16,375 (-66)
Displaced	App. 166,300 (-6200)



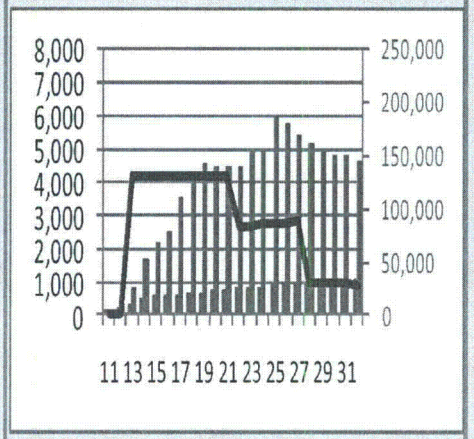
(Numbers in () show difference from 1 APR 1550)



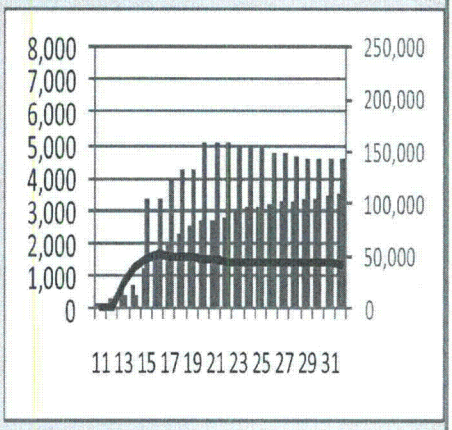
Miyagi	
Deaths	7,129(+117)
Missing	7,159(-18)
Displaced	App. 70,300 (-3,000)



Fukushima	
Deaths	1,089(+25)
Missing	4,666(-94)
Displaced	App. 28,700 (-1,100)

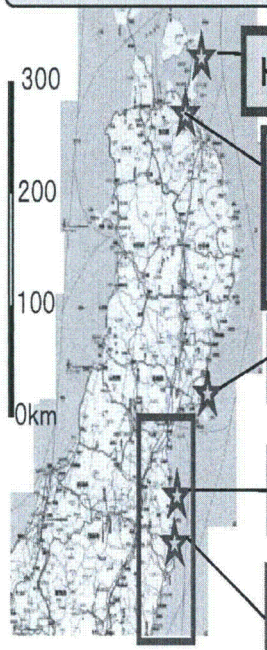


Iwate	
Deaths	3,456(+60)
Missing	4,546(-14)
Displaced	App. 42,000 (-1,300)



Source: NPA/Prefectural Govs 3

Nuclear Power Plants



- Higashi Dori NPP — Under Inspection
- Rokkasho Reprocessing Plant — Operational
- Onagawa NPP — Shutdown
- Fukushima Daiichi — Evacuation Orders
- Fukushima Daini — Evacuation Orders

Fukushima Daiichi Nuclear Power Plant

- ♦ 11 MAR 1903 Nuclear Emergency Declared
- ♦ 12 MAR 1825 20km radius evacuation order (180,000 affected)
- ♦ 15 MAR 1100 20km-30km residents asked to stay indoors
- ♦ 15 MAR 1410 30km radius no-fly zone declared (MLIT)
- ♦ 18 MAR INES provisional assessment of situation released
  - ◊ Reactor No. 1, 2, 3: Evaluation Level 5 (Accident with Widespread Consequences)
  - ◊ Reactor No. 4: Evaluation Level 3 (Serious Incident)
- ♦ 20 MAR Cooling systems restored to Reactors 5 and 6. Cold Shutdown
- ♦ 22 MAR Reactor 1-4: Connected to external power. Inspecting equipment.
- ♦ 24 MAR 1537 Power/Cooling to Spent Fuel Pool
- ♦ 25 MAR Freshwater to Reactor 1, 3 Cores, 26 MAR Reactor 2
- ♦ 27 MAR Radiation levels of turbine bldg basement water pool are 1000mSv/h for Reactor 2, and 750mSv/h for Reactor 3
- ♦ 27 MAR Found water in trenches outside of reactors 1-3. Radiation levels of water outside of Reactor 2 turbine bldg is 1000mSv/h
- ♦ 28 MAR TEPCO finds traces of Plutonium within facility
- ♦ 30 MAR In seawater near the southern water hose port, iodine that was 3,355 times the standard was detected
- ♦ 31 MAR iodine detected at 4,385 times the standard in seawater near the south discharge port
- ♦ 1 APR U.S. Barge Transfers Water to Surge Tank
- ♦ 1 APR 0828-1414 Water Ops to Reactor 4 using Kirin
- ♦ 1 APR 1456-1705 Add water to Spent Fuel Pool of Reactor 2

Fukushima Daini Nuclear Power Plant: Cooling suspended

- ◊ 12 MAR 0745 Evacuation Order 10km radius
- ◊ Radioactive Materials Released?: No
- ◊ Displaced Persons: 32,426 (10km radius)
- ◊ 30 MAR 1756 Smoke at Reactor 1, at 1915 FD determined that there was an equipment malfunction and that it wasn't a fire

Source: Emergency Disaster Relief Headquarters

Red: Updated Information Blue: Officially Unreleased New Information

Fukushima Nuclear Powerplant

Source: Nuclear Powerplant Disaster Response Headquarters

UNCLASSIFIED//FOUO

	Reactor 1	Reactor 2	Reactor 3	Reactor 4	Reactor 5 & 6
	INES Level 5			Level 3	
Major Incidents	11 MAR 1636 Cooling System Failure 12 MAR 1536 Hydrogen Explosion 22 MAR 1120 Reactor Vessel temp rises (383 ℃) 23 MAR~ Temperature in reactor vessel declining (146.3℃ as of 26 MAR 0930) 27 MAR Turbine Bldg Pool Water Radiation Levels: 60mSv/h	11 MAR 1636 Cooling System Failure 14 MAR 1325 Loss of Cooling Capability 15 MAR 0610 Explosive Sound heard. Suppression Pool Damaged? 27 MAR Turbine Bldg Pooled Water Radiation Levels: 1,000mSv/h 28 MAR Water outside Turbine bldg is 1,000mSv/h	13 MAR 0856 Cooling Failure 14 MAR 1101 Hydrogen Explosion 21 MAR 1555-1802 Grey smoke 23 MAR 1620 Black smoke (stopped 2330) 24 MAR radiation injury to 3 people at turbine bldg. 2 hospitalized 27 MAR Turbine Bldg Pooled Water Radiation Levels: 750mSv/h	14 MAR 0408 Temp rise in Spent Fuel Pool (Normally 40℃) 15 MAR 0938 Fire (extinguished 1225) 16 MAR 0545 Fire (extinguished 0726) 27 MAR Turbine Bldg Pooled Water Radiation Levels: 0.5mSv/h	15 MAR 1600 Temp rise in Spent Fuel Pool of Reactor 5 and 6 20 MAR Reactor 5 & 6 Cold Shutdown (Core under 100 ℃) 23 MAR 1724 Cooling Pump Failure (Repaired 3/24)
Damage	Roof of the outer structure damaged	East side of outer structure has a hole.	·Only the reinforced steel remain for the roof	·Only the reinforced steel remain for the roof	No visible damage
Electrical	Power from Reactor 2. Inspecting equipment 24 MAR Light in Cent Cont Rm	External Power Connected. Inspecting equipment 26 MAR Light in Cent Cont Rm	Power from Reactor 4. Inspecting equipment 22 MAR Light in Cent Cont Rm	External Power Connected. Inspecting equipment. 29 MAR 1150, Lights turned on in the central operating room	External Power Connected. Switched power sources.
Current Status	·Water level: A: -1,600mm (+0) B: -1,600mm (+0) (as of 1 APR 1700: Compared to 1 APR 0600) ·Reactor Core Damage 70%(15 MAR 1530) 245.9° C (1 APR 1700)	·Water Level: -1,500mm(+0mm) (as of 1 APR 1600: Compared to 1 APR 1600) ·Reactor Core Damage 33%(15 MAR 1530) 158.1° C (1 APR 0600)	·Water Level: A:-1,850mm (+50mm) B:-2,250mm (+0mm) (as of 1 APR 1530: Compared to 1 APR 0545) ·Reactor Core Damage 30%(14 MAR 0635) 90.0° C (1 APR 0545)	No fuel rods	Cold Shutdown
Spent Fuel Pool	Water temp: not measurable *Water temp: 10° C (31 MAR 0815: MOD measurement)	Water temp: 73℃ (+25℃) (as of 1 APR 1600: Compared to 31 MAR 0815)	Water temp: not measurable MOD measured temp: 45 ℃ (as of 31 MAR 0815)	Water temp: not measurable (thermometer damaged)	Water Temp: Reactor 5: 34.4℃(-2.2℃) Reactor 6: 22.5℃(+0.5℃) (as of 1APR 1800: Compared to 1 APR 0600)

Blue: Unreleased New Information Red: Updated Information

UNCLASSIFIED//FOUO

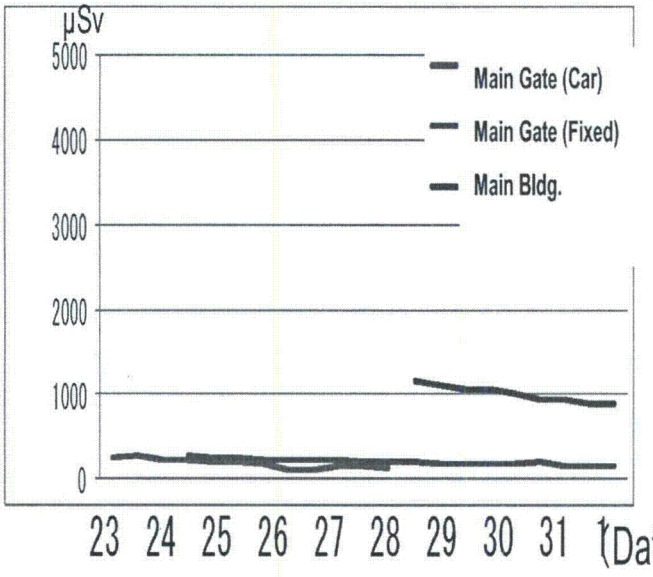
Detailed Report of the Fukushima Nuclear Powerplant

Source: Nuclear Powerplant Disaster Response Headquarters

	Reactor 1	Reactor 2	Reactor 3	Reactor 4	Reactor 5 & 6
Countermeasures	12 MAR 1430 Vent Reactor 12 MAR 2020 Seawater Pumped 19 MAR Power estimated to be restored ·Completed laying the cable from external power line to the power plant backup transformer. Currently connecting power to motor and other equipment. 23 MAR 0233 Pumped water into reactor using the built in pipes. 25 MAR 1537- Started Injecting freshwater into reactor vessel 27 MAR Pooled water is being transported to the condenser 31 MAR 0920 Moved the water from the trench 31 MAR 1303-1604 Injection of water into the used fuel pool by Concrete Pump truck	14 MAR 1634 Seawater Pumped 15 MAR 0000 Vented Reactor 17 MAR, Power Cable Restoration starts ·Completed laying the cable from external power line to the power plant backup transformer. Currently connecting power to motor and other equipment. 25 MAR 1930- Injected Seawater into reactor vessel 26 MAR 1010 Injection of fresh water into reactor vessel 27 MAR Preparations being made to transfer pooled water to the condenser 29 MAR 1630 Started adding freshwater to Spent Fuel Pool 29 MAR 1645 Started moving contaminated water from condenser tank to surge tank	13 MAR 0841 Vent Reactor 13 MAR 1312 Seawater/Boric Acid Pumped 21 MAR 1601 Workers evacuate from smoke 23 MAR 1620 black smoke. Workers temporarily evacuated, 25 MAR 1802- Inject Freshwater into reactor vessel 28 MAR 1740 Start Move of Basement Water to Surge Tank	17 MAR Power restoration effort) 22 MAR 0600-1000 Setup of the water truck "Kirin" 25 MAR 0605 Seawater added to Spent Fuel Pool 27 MAR Transfer of pooled water to the condenser is under consideration	18-19 MAR Release Hydrogen from ceiling 19 MAR 0500 Reactor 5 pump activated 19 MAR 0742 Generator activated for reactor 5/6 19 MAR Restarting cooling pump of the reactor 5/6 spent fuel pool. →Temperature Decline 22 MAR 1941 Reactors 5, 6 on External Power
	Spent Fuel Pool Hose Ops: 31 MAR 1303-1604	Spent Fuel Pool Hose Ops: 20 MAR 1505-1720 22 MAR 1619-1701 25 MAR 1030-1219 30 MAR 1905-2350 1 APR 1456-1705	Hose Ops of spent fuel pool: SDF: 17 MAR water disposal 18 MAR 1400-1438 FD: 19 MAR 1446-20th 0340 20 MAR 2130-21st 0358 22 MAR 1510-1600 25 MAR 1328-1600 TEPCO: 27 MAR 1234-1436 29 MAR 1417-1818 Spent Fuel Pool: 23 MAR 1103-1320 24 MAR 0530-1605 31 MAR 1630-1933	Hose of spent fuel pool: SDF: 20 MAR 0820-0943 20 MAR 1822-1943 21 MAR 0637-0841 TEPCO: 20 MAR 0820-0943 20 MAR 0820-0943 20 MAR 1822-1943 21 MAR 0637-0841 22 MAR 1717-2032 23 MAR 1000-1302 24 MAR 1436-1730 25 MAR: 1905-2207 27 MAR: 1655-1925 30 MAR: 1404-1833 1 APR 0828-1414 Spent Fuel Pool: 25 MAR 0605-1020	

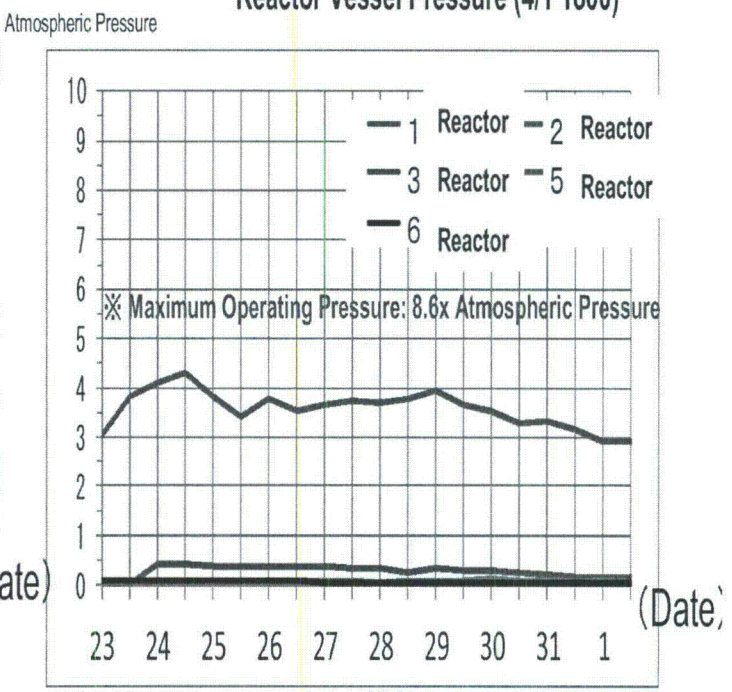
Fukushima Daiichi NPP Status (Radiation Levels) 4/2(Sat)

Radiation Levels (4/2 0300)

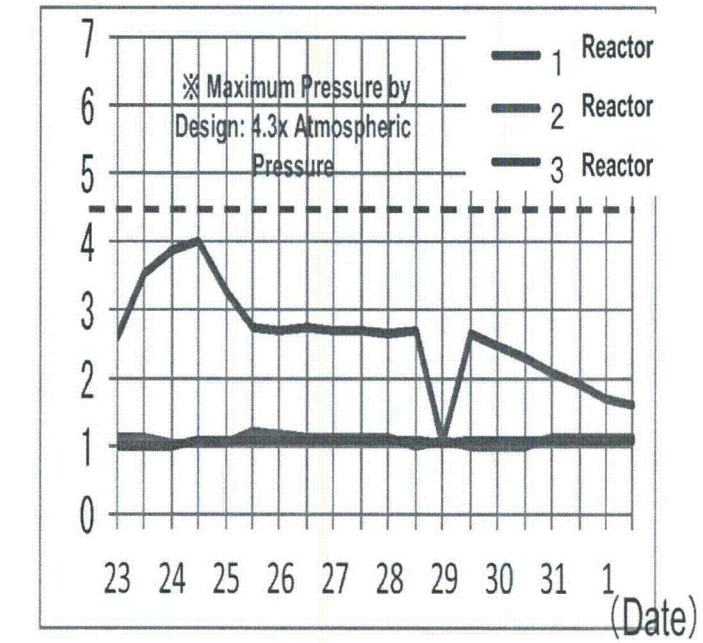


3/30 TEPCO HP: Only data from fixed sensor is listed.
Vehicle-based data is only a backup source.

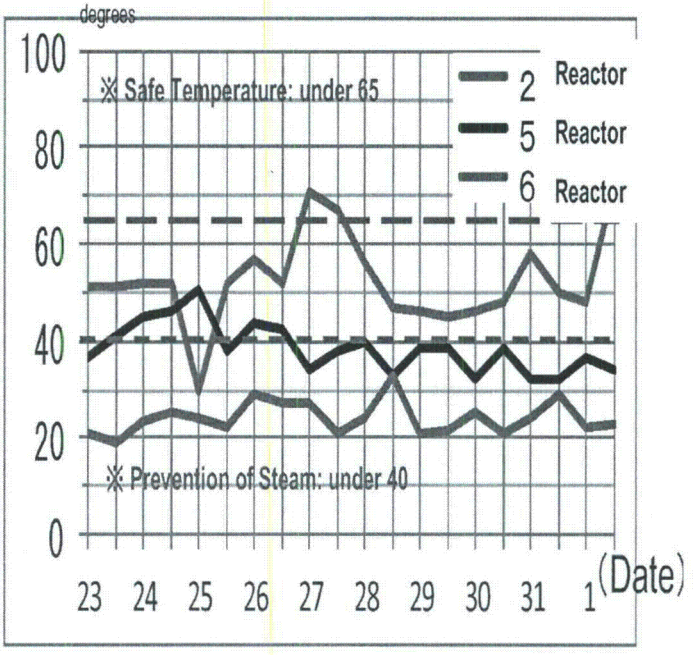
Reactor Vessel Pressure (4/1 1800)



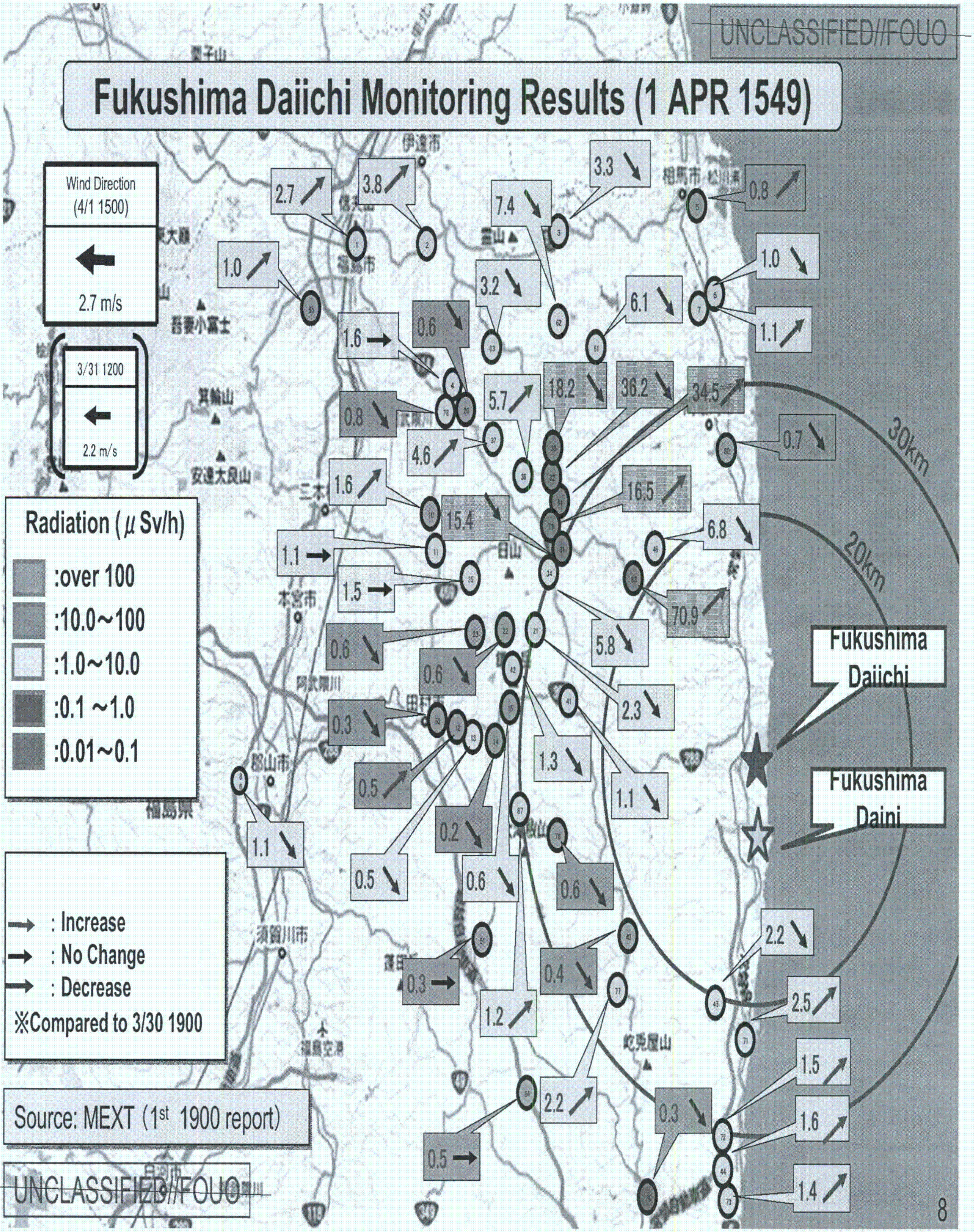
Containment Structure Pressure (4/1 1700)



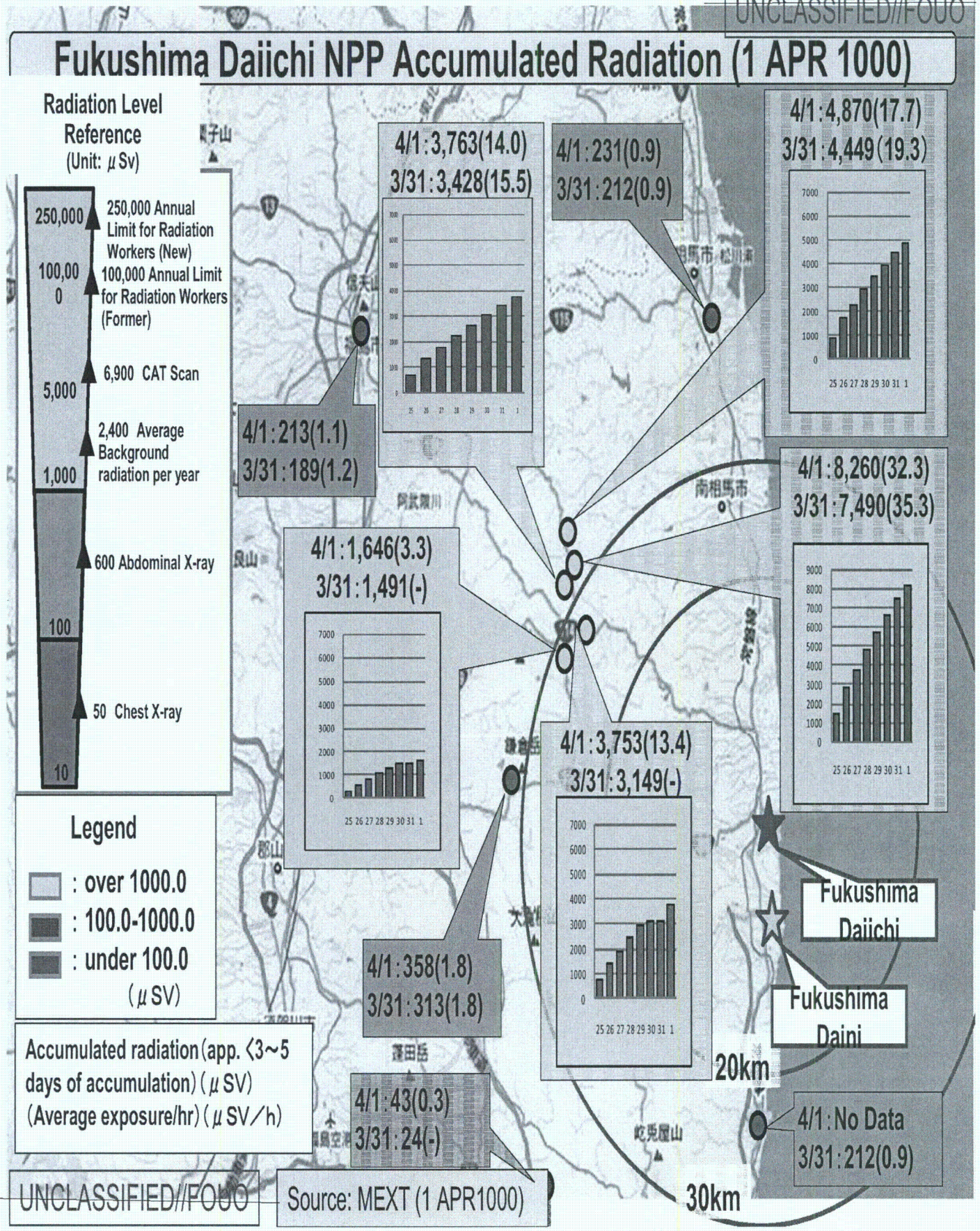
Spent Fuel Pool Temp (4/1 1800)



Source: MOD DR HQ

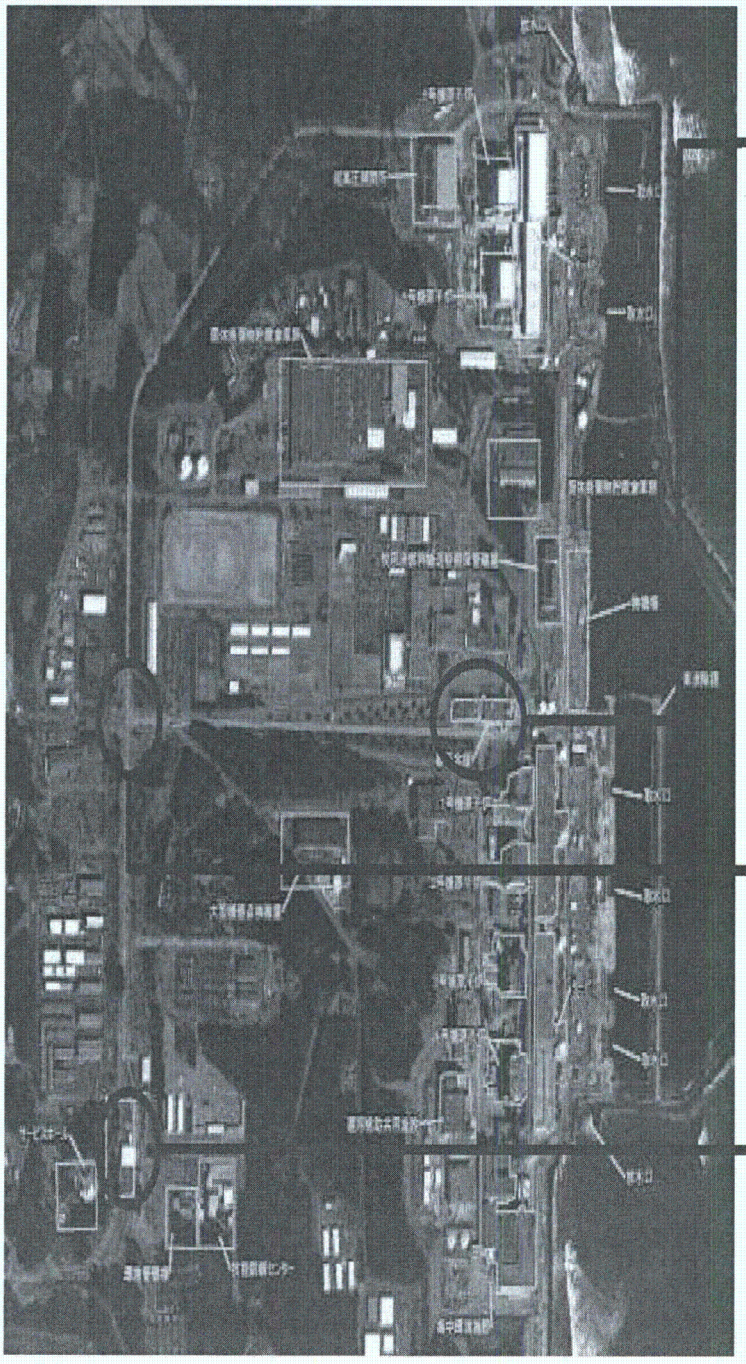

UNCLASSIFIED//FOUO
Fukushima Daiichi Monitoring Results (1 APR 1549)
Wind Direction
(4/1 1500)
2.7 m/s
3/31 1200
2.2 m/s
Radiation (μ Sv/h)
:over 100
:10.0~100
:1.0~10.0
:0.1 ~1.0
:0.01~0.1
: Increase
: No Change
: Decrease
※Compared to 3/30 1900
Source: MEXT (1st 1900 report)
30km
20km
Fukushima Daiichi
Fukushima Daini
2.7
3.8
3.3
7.4
0.8
1.0
3.2
1.0
6.1
1.1
1.6
0.6
0.8
5.7
18.2
36.2
34.5
0.7
4.6
1.6
16.5
15.4
6.8
1.1
1.5
70.9
5.8
0.6
0.6
2.3
0.3
1.3
0.5
1.1
1.1
0.2
0.5
0.6
0.6
2.2
0.3
0.4
2.5
1.2
1.5
2.2
0.3
1.6
0.5
1.4
UNCLASSIFIED//FOUO
8

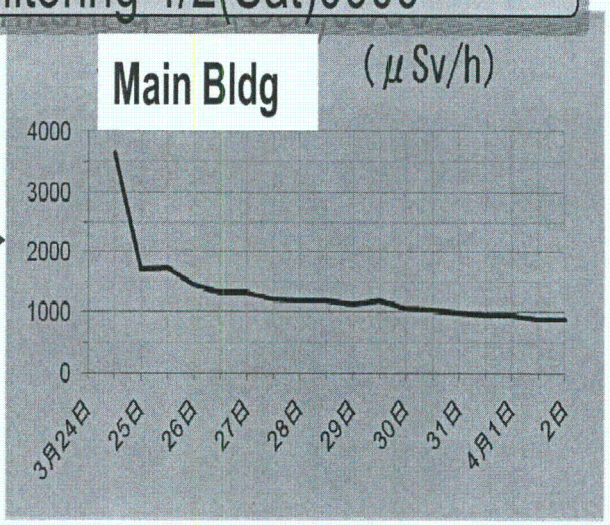
Fukushima Daiichi NPP Accumulated Radiation (1 APR 1000)

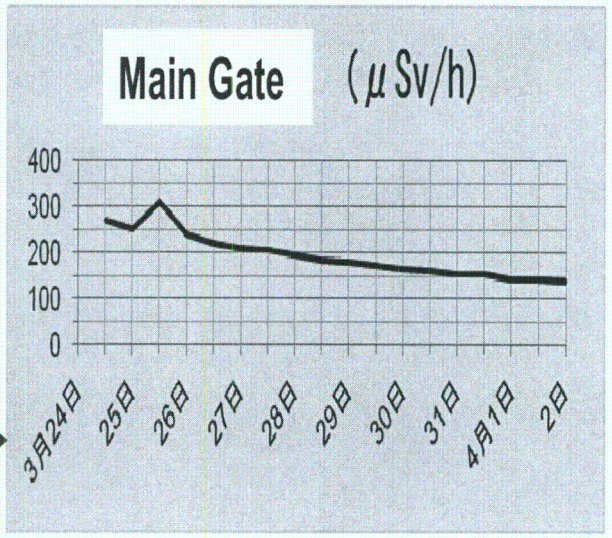


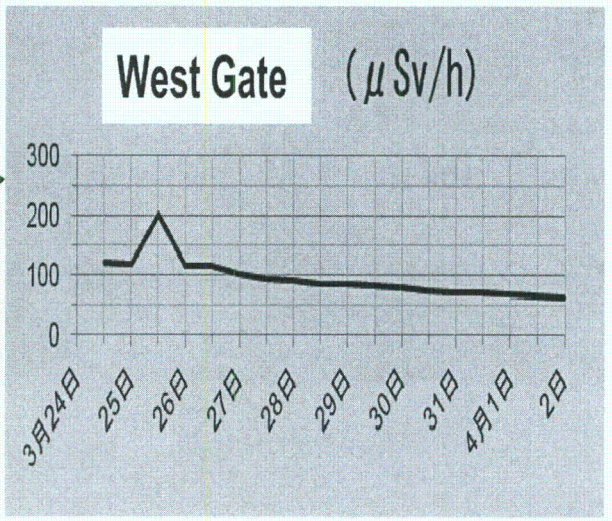
Source: MEXT (1 APR1000)

Fukushima Daiichi NPP Monitoring 4/2(Sat)0000





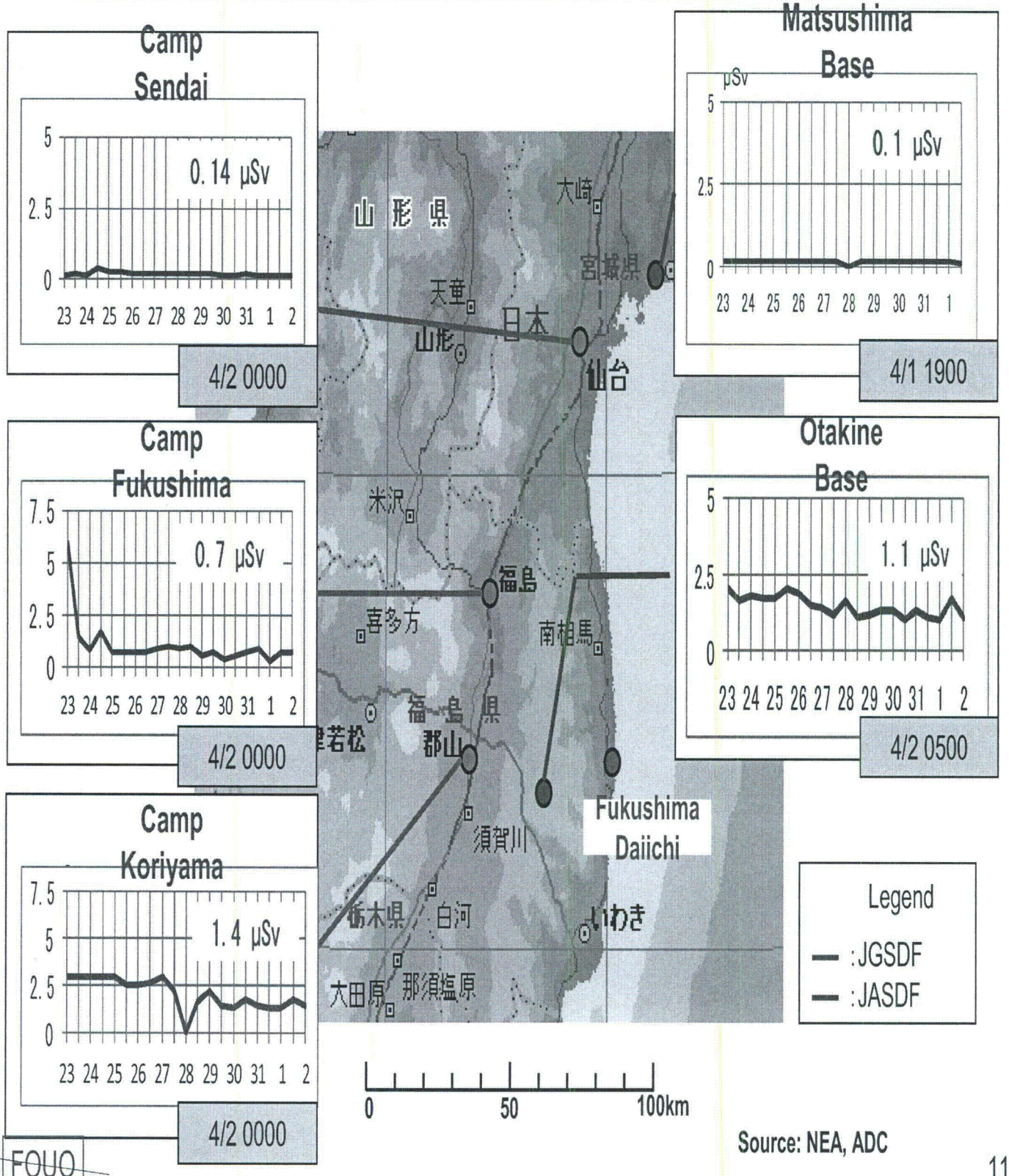




Source: MOD DR HQ

Fukushima Daiichi NPP Radiation of Nearby SDF Facilities 4/1(Fri)

FOUO



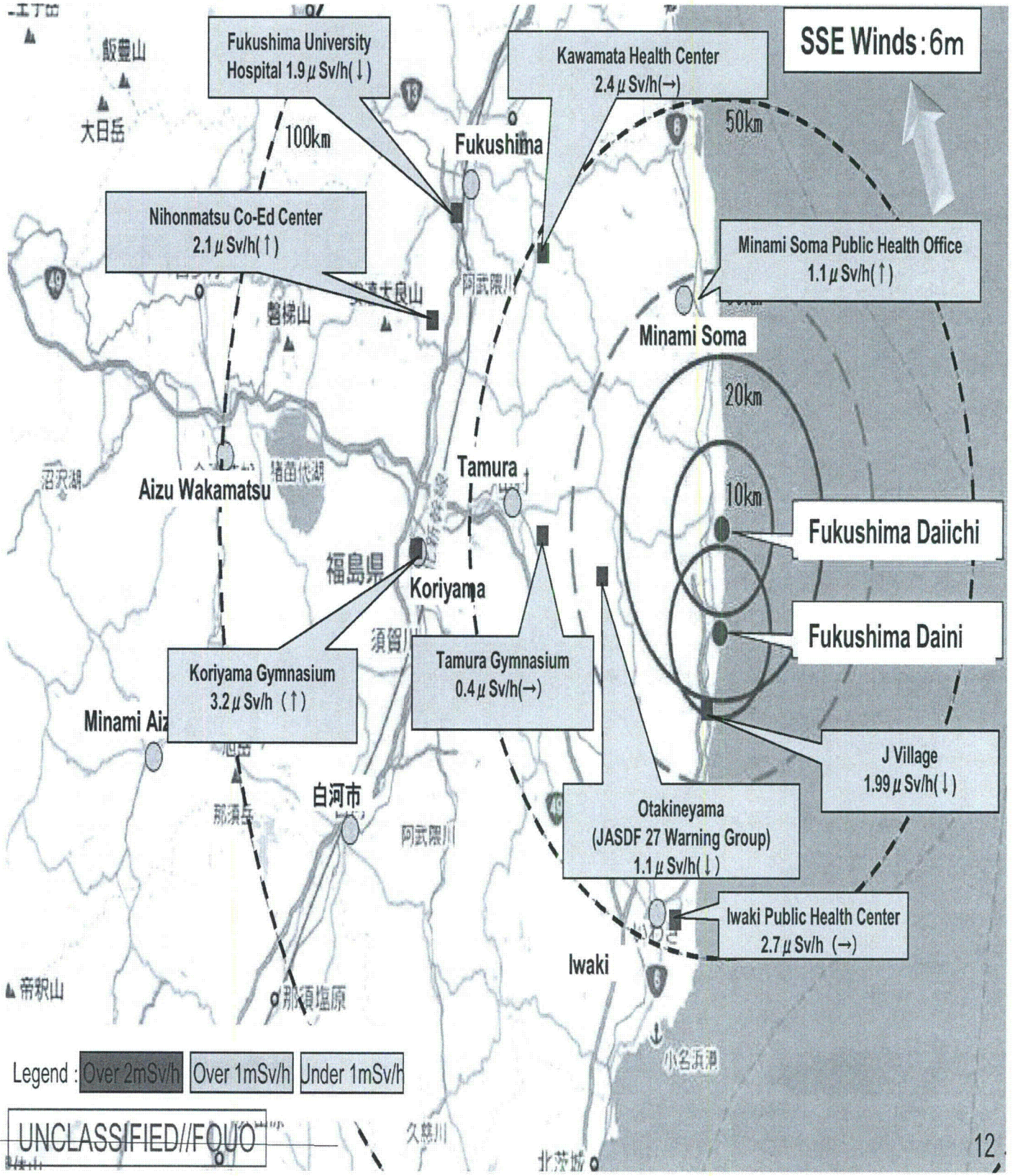
Source: NEA, ADC

FOUO

Fukushima DECON Center Radiological Measurements

~~UNCLASSIFIED//FOUO~~

4/1(Fri)1200



~~UNCLASSIFIED//FOUO~~

Fukushima Daiichi Sea Water Radiation Monitoring

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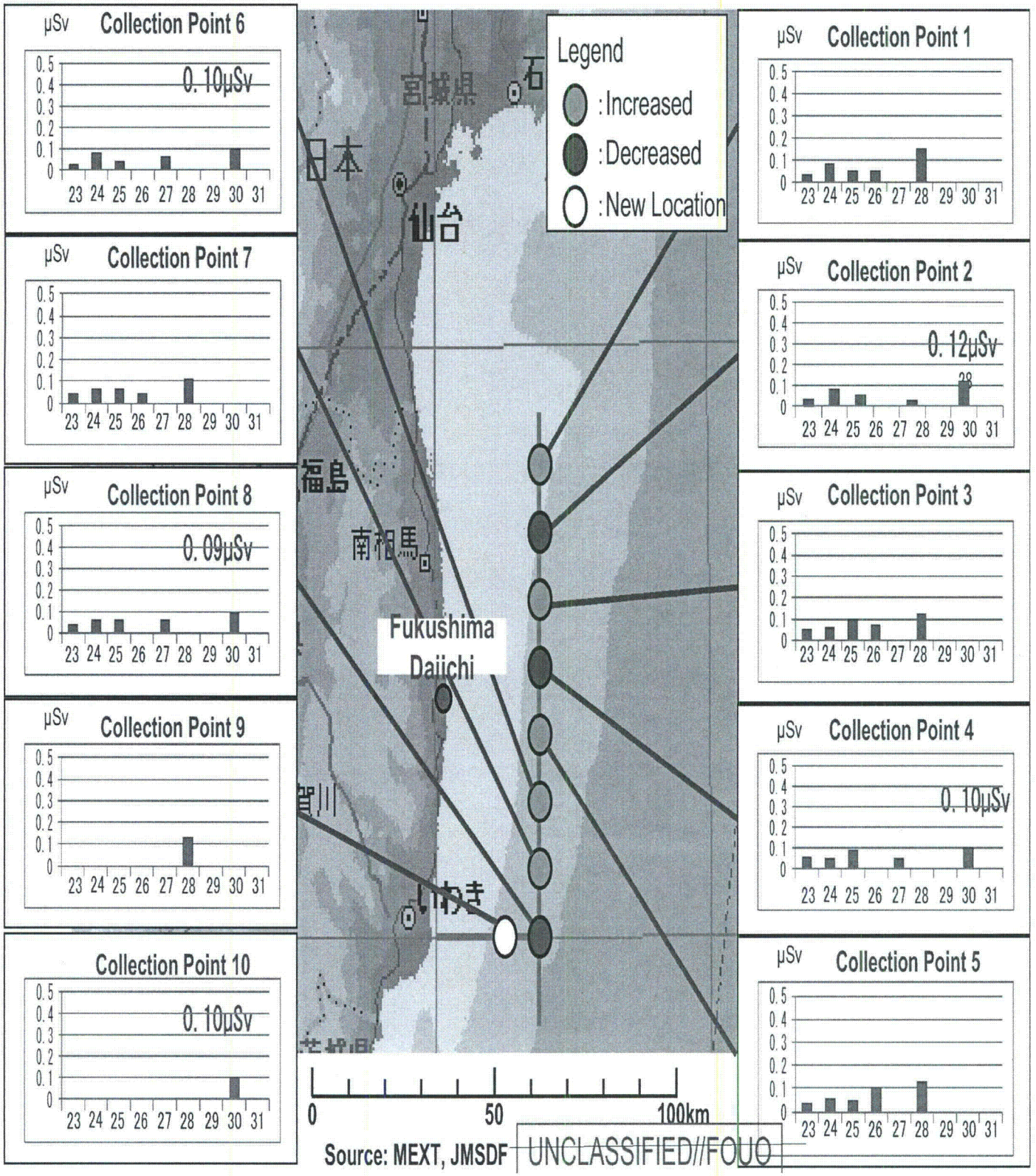
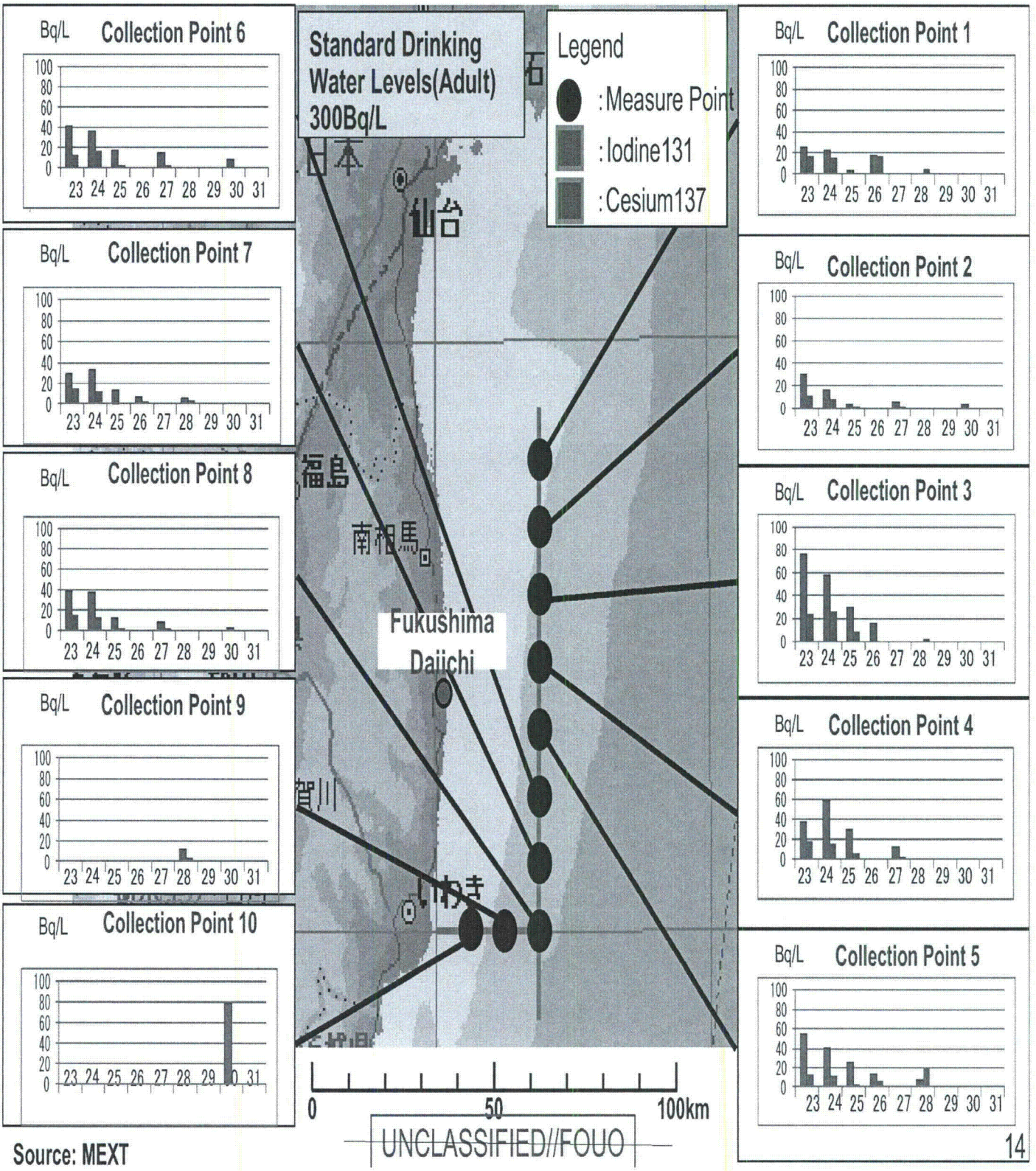
3/31



Source: MEXT, JMSDF

UNCLASSIFIED//FOUO

Fukushima Daiichi Monitoring Results (Materials Concentration) 3/31



Source: MEXT

Lifeline Status

#s in ( ) show difference from 1 APR 0200

Estimate of Restoration

◇ Respective local government and business entities are surveying the area and preparing estimates

Reference:

Hanshin-Awaji Great Earthquake Lifeline Restoration

Electricity: 7 days

Phone Services: app. 2 weeks

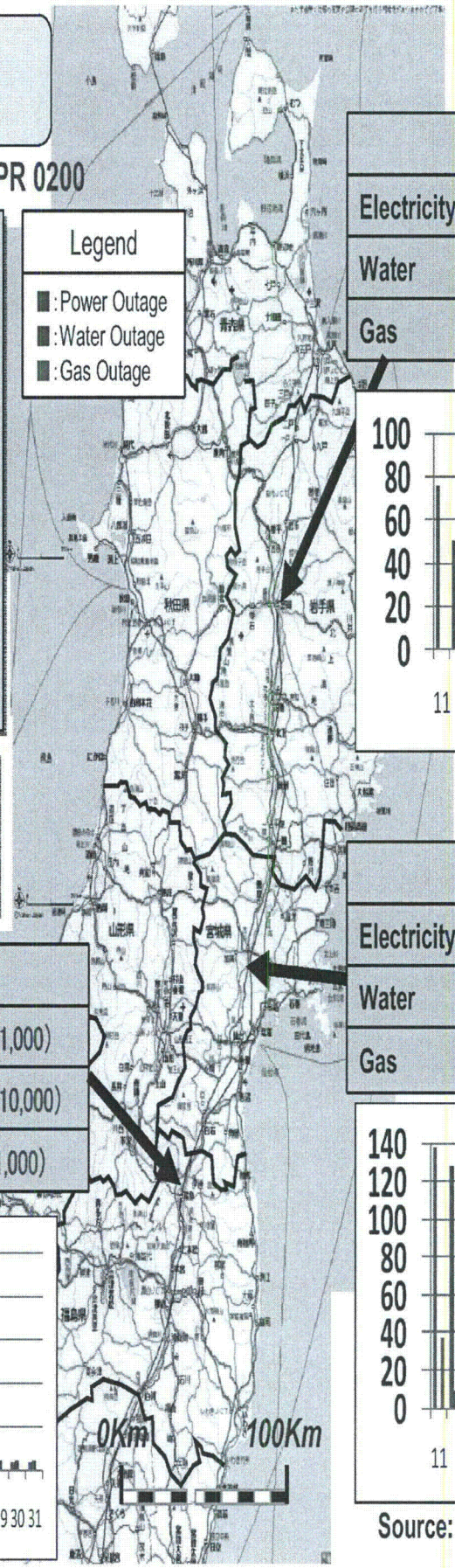
Gas, Sewage: app. 3 months

(Source: Hyogo Prefecture Archives)

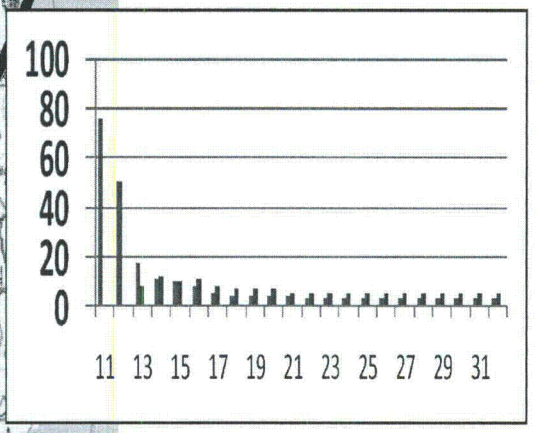
Communications

◇ Phone line: Mostly Restored

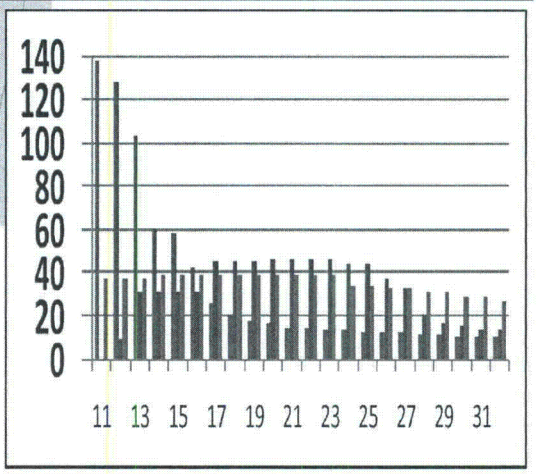
◇ Cell Phone: Mostly Restored



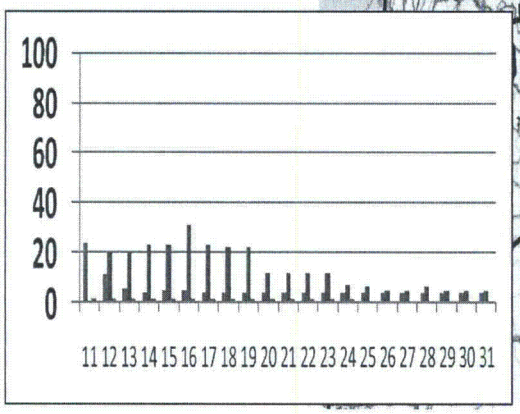
Iwate	
Electricity	Outage: 31,000 homes (+0)
Water	Outage: 40,000 homes (-10,000)
Gas	Outage: 5,000 homes (-1,000)



Miyagi	
Electricity	Outage: 103,000 homes (−1,000)
Water	Outage: 130,000 homes (+0)
Gas	Outage: 244,000 homes (−20,000)



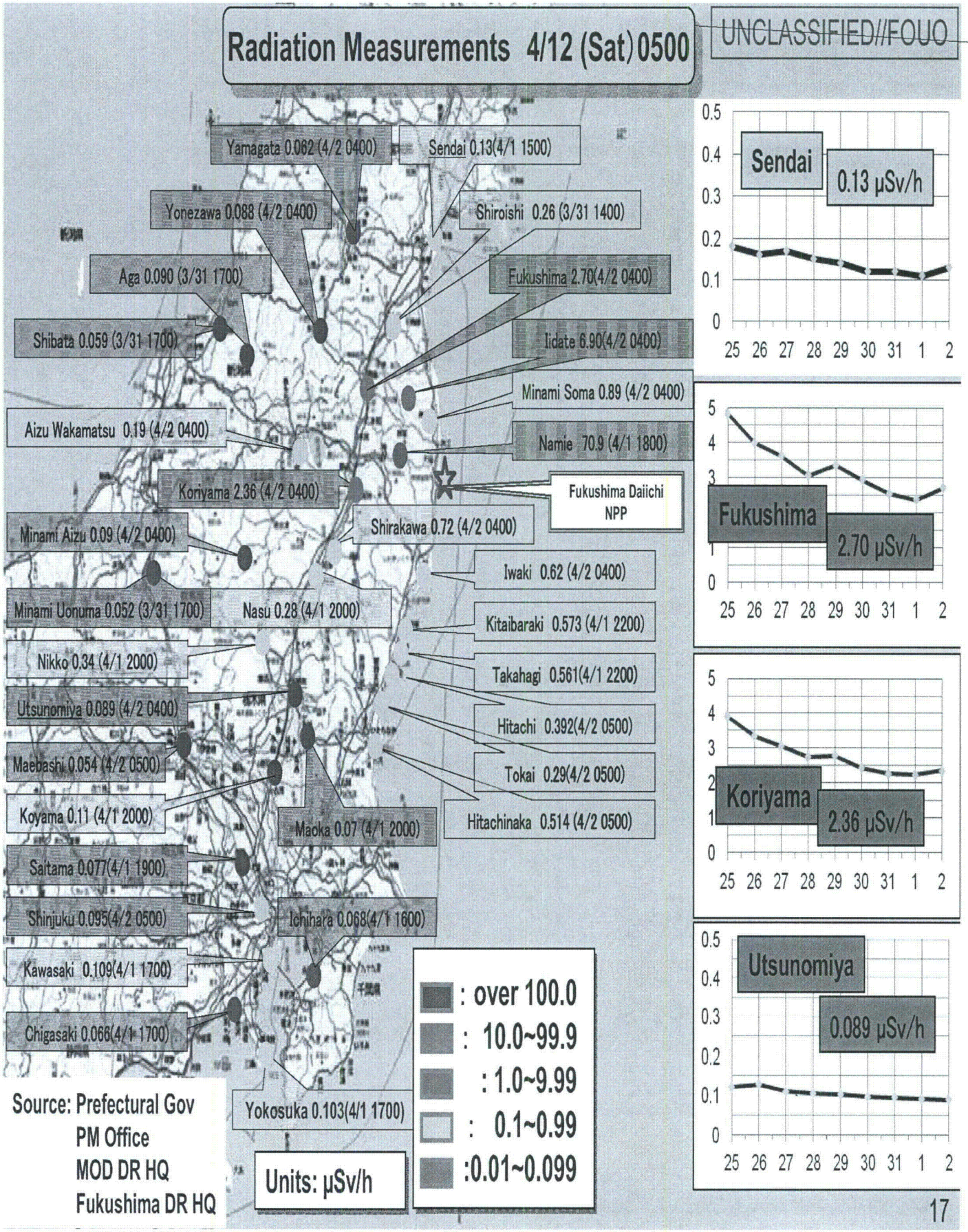
Fukushima	
Electricity	Outage: 36,000 homes (−1,000)
Water	Outage: 40,000 homes (−10,000)
Gas	Outage: 5,000 homes (−1,000)



Source: METI, MLHW, TEPCO, Gas Assoc. 7

Backup Slides

Radiation Measurements 4/12 (Sat) 0500



Source: Prefectural Gov
PM Office
MOD DR HQ
Fukushima DR HQ

Port Status (4/1, 0000)

Closed
Open
Red: New Info

Port	Berth			Waterway		Able to dock? (Confirmed)	Emergency Capable?	Notes
	Name of Berth	Depth(m)	Usable?	Survey	Clear?			
Hachinohe	Hachitaro A/B	7.5	O	O	O	O		
	Hachitaro C Berth	10.0	O	O	O	O		
	Hachitaro D･E Berth	13.0	O	O	O	O	※	Depth: 10m temporarily useable
	Hachitaro F･G Berth	10.0	O	O	O	O		Berth F-Depth: 7.4m, Berth G-Depth: 8.8m temporarily useable
	Hachitaro H･I Berth	7.5	O	O	O	O		Depth: 7.0m temporarily useable
	Hachitaro J Berth	13.0	O	O	O	O		Depth: 10m temporarily useable
	Hachitaro L･M Berth	7.5	O	O	O	O		Both L, M Berth has Depth: 6.0m temporarily useable
	Hachitaro N (ER)･O Berth	7.5	O	O	O	O	※Berth N	Both N, O Berth has Depth: 5.5m temporarily useable
	Hachitaro P Berth	12.0	O	O	O	O	※	Depth: 10m temporarily useable
	Hachitaro Ferry Berth	7.5	O	O	O	O		
	Kawaragi E Berth	5.0	O	O	O	O		
	Kawaragi Pier 2	7.5	Δ	O	O	O		Depth: 6.0m temporarily useable
	Kawaragi Pier 3	7.5	Δ	O	O	O		Depth: 6.4m temporarily useable
	Kawaragi Pier 4	7.5	Δ	O	O	O		Depth: 6.6m temporarily useable
	Kawaragi Pier 5	7.5	Δ	O	O	O		Depth: 6.0m temporarily useable
	Kawaragi Pier 6	6.5	Δ	O	O	O		Depth: 6.1m temporarily useable
	Kawaragi Petroleum Pier	7.5	O	O	O	O		Depth: 6.7m temporarily useable
	Kawaragi 1st Industrial Pier		O	O	O	O	※	Depth: 5.0m temporarily useable
Kuji	Suwashita Berth	10.0	O	O	O	x		140m of 185m Berth Length is useable
	Suwashita Berth 1	7.5	O	O	O	O		Depth: 7.0m temporarily useable
	Suwashita Berth 2	7.5	O	O	O	O		Depth: 7.0m temporarily useable
	Suwashita Berth 3	7.5	O	O	O	O		Depth: 7.0m temporarily useable
	Suwashita Pier 2 Berth	5.5	O	O	O	O		
	Suwashita Pier 2 Berth	5.5	O	O	O	O		
	Hanzaki Berth	5.0	O	Δ	x	x		
Miyako	Fujiwara Pier 1 Berth	12.0	O	O	O	O	※	
	Fujiwara Pier 1 Berth	7.5	O	O	O	O	※	
	Fujiwara Pier 2（×2 Berth)	10.0	O	O	O	O	※	Depth: 8.5m temporarily useable
	Fujiwara Pier 2 Berth	10.0	O	O	O	O	※	Depth: 9.0m temporarily useable
	Fujiwara Pier 2 Berth	7.5	O	O	O	O	※	
	Dezaki Area Dezaki Pier Berth	9.0	O	Δ	x	x		
	Kuwagasaki Area Berth	5.0	O	Δ	x	x		
Kamaishi	Suga Berth	11.0	O	O	O	O	※	
	Suga Berth (Earthquake Resistant)	7.5	O	O	O	O		
Ofunato	Nagahama Area Berth	13.0	Δ	O	O	Δ		
	Nonoda Area Pier	13.0	O	O	O	O		Depth: 10.0m temporarily useable
	Nonoda Area Pier	7.5	O	O	O	O		
	Chayamae area berth	9.0	O	O	O	Δ		

Port Status (4/2, 0400)

Closed
Open
Red: New Info

Port	Berth			Waterway		Able to dock? (Confirmed)	Emergency Capable?	Notes
	Name of Berth	Depth (m)	Usable ?	Survey	Clear?			
Kesennuma	Asahi Pier 1	4.5-7.0	O	O	O	O		Depth: 4.4m temporarily useable
	Asahi Pier 2	7.5	O	O	O	O		Depth: 4.4m temporarily useable
	Asahi Pier 3	4.5	O	O	O	O		Depth: 4.4m temporarily useable
Ishinomaki	Hibarino Area Berth	13.0	O	Δ	Δ	x		
	Gama Area Hiyori Pier Berth 6	9.0	O	O	O	O		
	Gama Area Hiyori Pier Berth 7	10.0	O	O	O	O		Depth: 8.5m temporarily useable
	Gama Area Nakajima Pier Berth 1	5.5	O	O	O	O		Depth: 4.9m temporarily useable
	Gama Area Nakajima Pier Berth 2	10.0	O	O	O	O		Depth: 8.1m temporarily useable
	Gama Area Nakajima Pier Berth 3	10.0	O	O	O	O		
	Gama Area Ote Pier Berth 1	7.5	O	O	O	O		Depth: 5.9m temporarily useable
	Gama Area Ote Pier Berth 2	7.5	O	O	O	O		Depth: 5.9m temporarily useable
	Gama Area Ote Pier Berth 3	5.5	O	O	O	O		
	Gama Area Ote Pier Berth 4	5.5	O	O	O	O		
	Hibarino Area Hibarino Chuo Pier Berth 1	13.0	O	O	O	O		Depth: 10.2m temporarily useable
	Hibarino Area Hibarino Chuo Pier Berth 2	13.0	O	O	O	O		Depth: 10.2m temporarily useable
	Hibarino Area Hibarino North Pier Berth	10.0	O	O	O	O		
Sendai ShioGama (Sendai Area)	Nakano Area Takamatsu Pier Berth (ER)	12.0	O	O	O	O	※	
	Nakano Area Raijin Pier Berth 1	7.5	O	O	O	O		Depth: 6.0m temporarily useable
	Nakano Area Raijin Pier Berth 2【Part ER】	9.0	O	O	O	O		Depth: 6.0m temporarily useable
	Nakano Area Ferry Pier 1	8.5	O	O	O	O		Depth: 7.4m temporarily useable
	Nakano Area Ferry Pier 2	8.0	O	O	Δ	x		
	Nakano Area Nakano Pier Berth 2	10.0	O	O	O	O		Depth: 9.1m temporarily useable
	Nakano Area Nakano Pier Berth 3	10.0	O	O	O	O		Depth: 8.5m temporarily useable
	Nakano Area Nakano Pier Berth 4	10.0	O	O	O	O		Depth: 8.5m temporarily useable
	Nakano Area Nakano Pier Berth 5	10.0	O	O	O	O		Depth: 7.8m temporarily useable
	Nakano Area Nakano Pier Berth 6	10.0	O	O	O	O		Depth: 7.8m temporarily useable
	Mukainada Area, Mukainada Pier Berth	12.0	O	x	x	x		
Sendai ShioGama (ShioGama Area)	Teizan Pier Berth 2	9.0	O	O	O	O		Depth: 4.9m temporarily useable
	Teizan Pier Berth 3	7.6	O	O	O	O		Depth: 4.9m temporarily useable
	Teizan Pier Berth 4	7.5	O	O	O	O		Depth: 4.9m temporarily useable
	Petrol Tank Front Dolphin (7 Berths)	5.5~7.5	O	O	O	O		Depth: 4.9m temporarily useable
Soma	Pier 1 Berth 1	7.5	O	O	O	O	※	Accessible only when cleared by port manager
	Pier 1 Berth 3	7.5	O	O	O	O	※	Accessible only when cleared by port manager
	Pier 2 Berth 4	12.0	O	O	O	O	※	Accessible only when cleared by port manager
Onahama	Fujiwara Pier - Berth	12.0	O	O	O	O		Accessible only when cleared by port manager
	Fujiwara Pier - Berth	10.0	O	O	O	O		Accessible only when cleared by port manager
	Otsurugi Pier Berth O-7/8	7.5	O	O	O	O		Accessible only when cleared by port manager
	Otsurugi Area Petroleum Pier 2 Berth B	6.5	O	O	O	O		Accessible only when cleared by port manager

O:Work Complete Δ:Work in Progress x:Untouched ※:Open only for emergency supply transport (ER): Earthquake Resistant

Collection Priorities

	JSO Focus	Details	JDIH Collection Priorities
Nuclear Power Plant	Support to Local Residents (Evacuation/Decontamination)	◇ Are there any residents near the NPP that needs JSDF support? What type of support is needed? ◇ What type of protection is needed for the SDF members during this task?	◇ Status of the Power Plant - Detailed Status - Accumulative Radiation of Area - Monitoring Results - Radiation of Nearby Bases - Radiation Measurements
		◇ Is the infrastructure in place to complete this task?	◇ Status of the Lifeline, MSRs, Airports, Seaports
	Nuclear Reactor Cooling Operations	◇ Does the SDF need to do freshwater hosing ops? How much assets will be needed to complete it? ◇ What type of protection is needed for the SDF members during this task?	◇ Status of the Power Plant - Detailed Status - Accumulutive Radiation of Area - Monitoring Results
		◇ Is the infrastructure in place to complete this task?	◇ Status of the Lifeline, MSRs, Airports, Seaports
HA/DR	Life Support Supplies Transport Reconstruction	◇ What is the estimated requirement?	◇Human Damage Levels
		◇ Is the infrastructure in place to complete this task?	◇Status of the Lifeline, MSRs, Airports, Seaports
	Search and Rescue/Recovery efforts	◇ What is the estimated requirement?	◇Human Damage Levels
		◇ Is the infrastructure in place to complete this task?	◇Status of MSRs, Airports, Seaports

From: RST01 Hoc
Sent: Saturday, April 02, 2011 3:46 PM
To: (b)(6)
Subject: FW: Q385 Rev. 6
Attachments: Q385 Final Rev 6.pdf

For review

From: GE Hitachi Nuclear Response Team (GE Power & Water) [mailto:GE.HitachiNuclearResponseTeam@ge.com]
Sent: Saturday, April 02, 2011 3:32 PM
To: RST01 Hoc
Cc: inpoerctech@inpo.org
Subject: Q385 Rev. 6

Rev 6 from GEH

From: GE Hitachi Nuclear Response Team (GE Power & Water)
Sent: Saturday, April 02, 2011 2:06 PM
To: 'RST01.Hoc@nrc.gov'
Cc: 'inpoerctech@inpo.org'
Subject: RE: Q385 Rev. 5 1245

Rev 5 from GEH

From: GE Hitachi Nuclear Response Team (GE Power & Water)
Sent: Saturday, April 02, 2011 7:50 AM
To: 'RST01.Hoc@nrc.gov'
Cc: 'inpoerctech@inpo.org'
Subject: Q385 Rev. 4 0400

GEH has reviewed the Supplemental Paper on Containment Venting dated 02 April 2011 (Q385 Rev. 4 0400 file) transmitted by the RST on 02 April 2011 at 5:22 AM EDT.

(b)(4)

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Saturday, April 02, 2011 5:22 AM
To: GE Hitachi Nuclear Response Team (GE Power & Water); INPO EmergencyResponseCtr (INPO); Modeen, David; RST03 Hoc; (b)(6); sal.golub@hq.doe.gov
Cc: FOIA Response.hoc Resource
Subject: Q385 Rev. 4 0400

Q385, Rev. 4, "Justification for recommended actions considering TECO desire to limit containment venting based on EPRI and BWROG Severe Accident Management Guideline Basis," is attached. This version addresses:

- Clarifications provided by EPRI
- Clarifications from NRC's Protective Measures Team (PMT)
- Sourcing information on H2/O2 graph
- Comments from the 4-2-11 0300 teleconference with the site team and the industry

Please provide formal concurrence of your organizations equivalent to the level indicated on the RST assessment concurrence officials attachment. Target for completion is 4/2/11, 10:00.

Q385

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~~Official Use Only~~

Key Agency/Organization Input to RST Assessment of Fukushima Dai-ichi (REV 1) Document

Table of Senior/Approving Officials

AGENCY/ ORGANIZATION	CONCURRENCE STATEMENT	SENIOR REVIEWING OFFICIAL	TITLE	AS REPORTED BY
Naval Reactors, KAPL & BETTIS	No Objection to RST Assessment	Admiral Kirkland Donald	Director, Naval Nuclear Propulsion	Tom Roberts Embedded w/ RST
GE Hitachi	Concur	Kevin Lagasse	General Manager-Services	Fran Bolger, GEH
INPO	Concur, based on best available information & assumptions noted in the assessment	David Garchow	Vice President, Plant Technical Support	George Manaski, INPO Emergency Center Director
DOE/NE	Endorse consensus recommendations	Sal Golub 301-903-1636 Cell (b)(6) Fax 301-903-0180 sal.golub@hq.doe.gov	Associate Deputy Assistant Secretary for Nuclear Reactor Technologies (NE-7)	Rob Versluis, Embedded with RST & E-mail from Sal Golub dated 3/31/2011 5:22pm EDT
EPRI	Concur	Neil Wilmshurst 704-595-2238 Cell (b)(6) nwilmshu@epri.com	Chief Nuclear Officer	Clay Perry, EPRI, Washington DC Office
USNRC	Concur	Brian Sheron	Director, Executive Team – NRC Incident Response Center	William Ruland Director, Reactor Safety Team

Full Name:	RMTPACTSU_ELNRC
First Name:	RMTPACTSU_ELNRC
E-mail:	RMTPACTSU_ELNRC@ofda.gov
E-mail Display As:	RMTPACTSU_ELNRC

Full Name:	Joel Pero (Bettis)
Last Name:	Pero
First Name:	Joel
E-mail:	joel.pero.contractor@unnpp.gov
E-mail Display As:	Joel Pero (Bettis)

From: Alter, Peter
Sent: Friday, April 01, 2011 7:11 AM
To: RST Communicator; RST01 Hoc
Subject: FW: conversion rates - why doesn't the IRC make these updates - more user friendly i.e. convert °C to °F

Follow Up Flag: Follow up
Flag Status: Flagged

Something for the communicators to think about.

From: Thorp, John
Sent: Wednesday, March 30, 2011 9:48 AM
To: Hasselberg, Rick; Alter, Peter
Cc: King, Mark
Subject: FW: conversion rates - why doesn't the IRC make these updates - more user friendly i.e. convert °C to °F

Rick/Peter,

Maybe we can have this be something the communicators & coordinators think about as we put together our status reports, to show both Metric and U.S. units (e.g. C and F for temperatures).

This could save a lot of staff (and other stakeholders) from having to take the time to do the conversion themselves, an overall efficiency positive.

Thanks,

John

From: King, Mark
Sent: Wednesday, March 30, 2011 8:15 AM
To: Thorp, John; Brown, Michael
Subject: RE: conversion rates - why doesn't the IRC make these updates - more user friendly i.e. convert °C to °F

The IRC can use this webpage link
http://www.metric-conversions.org/temperature/celsius-to-fahrenheit.htm
(it also provides links for other metric conversions]
Example - I did it for instance in today's status report - see attached/ and the info pasted below:

STATUS as of 0430 EDT, March 30, 2011 (1730 Japan, March 30)
Unit 1 – (NRC Priority: 1)
Core Status: Damaged, fuel partially or fully exposed (Source: JAIF, NISA, TEPCO).
The volume of sea water injected to cool the core has left enough salt to fill the lower plenum to the core plate (Source: GEH, US Industry).
Vessel temperatures 138°C **[280.4°F]** at bottom drain, 309°C **[588.2°F]** at FW nozzle (Source: NISA-3/29) 138=
RPV at 60.5 psig (Source: JAIF 3/29), DW and torus pressure at 26.6 psig (Source: NISA 3/29).
Unit 2 – (NRC Priority: 2)
Core Status: Damaged, fuel partially or fully exposed (Source: JAIF, NISA, TEPCO).

Bottom head temperature 120° C, **[248°F]** feed water nozzle temperature 153.7°C **[308.66° F]** (Source: NISA). RVP pressure -3.9 psig (Source: JAIF 3/29). DW pressure 0 psig (Source: NISA 3/29).
Spent Fuel Pool: Fuel covered, freshwater periodically injected via fuel pool cooling system (Source: TEPCO 3/29), fuel pool temperature 46°C **[114.8° F]**(Source: NISA 3/29); Pool may be overflowing based on observations of water in adjacent areas (Source: NRC Team); white smoke being emitted as of 1830 EDT on March 27 (Source: IAEA 3/28) – confirmed (Source: TEPCO 3/29)
Unit 3 – (NRC Priority: 3)
Core Status: Damaged, fuel partially or fully exposed (Source: JAIF, NISA, TEPCO).
Bottom head temperature 121°C **[249.8 °F],** FW nozzle temperature: 62°C **[143.6°F]** (Source: NISA 3/29).
RVP pressure -3.7 psig (Source: JAIF 3/29). RPV level ~2/3 TAF (Source: IAEA 3/28).
DW pressure 0.97 psig (Source: IAEA 3/28).
Unit 5 – (NRC Priority: 5)
Core Status: In vessel (Source: JAIF, NISA, TEPCO), temperature 35°C **[95°F]** (Source: JAIF 3/29)

Just a thought for the IRC's consideration.
Mark

From: King, Mark
Sent: Wednesday, March 30, 2011 7:12 AM
To: Brown, Michael
Subject: RE: a radiation dose chart - in sieverts that I ran across

Thanks for the conversion link -
Isn't it just divide by 10 the # of micro-sieverts and you get mrem OR multiply the micro-sieverts by 10 and you get rem. It really is a pretty easy conversion. I don't know why the US doesn't convert and use them and why we don't go metric!!??!! … the US and Burma are the only two countries left in the world on the old English measurement system. – And…you usually don't want your country to be singled out with the country of Burma (Myanmar) these days –– which is ruled by a brutal military junta. (Hey come to think of it we may be a lot like them than I like to admit … fire your weapons first… think about the consequences / ramifications second).

…Anyway…I just like that other chart because it gave you several real life data points that people can relate to like – airplane trip from NY to LA gives you ~ 40 uSV = ~ 4 mrem. And nobody worries about taking a coast-to-coast airplane trip - (at least not because of the radiation dose).

From: Brown, Michael
Sent: Tuesday, March 29, 2011 5:41 PM
To: King, Mark; Garry, Steven
Cc: Conatser, Richard; Giantelli, Joseph; Thorp, John
Subject: RE: a radiation dose chart - in sieverts that I ran across

Here's one I use

http://hptech.org/nuclear/convert/sievert.html

Although after awhile you realize that 1 rem = 10 m Sv, it's not that tough a conversion.

I still get confused with micro sieverts though.

Mike

From: King, Mark
Sent: Tuesday, March 29, 2011 5:09 PM
To: Garry, Steven
Cc: Conatser, Richard; Giantelli, Joseph; Brown, Michael; Thorp, John
Subject: FW: a radiation dose chart - in sieverts that I ran across

---

Subject: a radiation dose chart in sieverts that I ran across

SEE LINK - **http://xkcd.com/radiation/**

Note this prints out very small... easier to see on your computer
Use view zoom as necessary.
Just an FYI
Mark

From: RST01B Hoc
Sent: Monday, April 04, 2011 6:41 PM
To: Versluis, Rob
Subject: FW: Fax from Mike Scott regarding vendor description of anti-dispersant plans
Attachments: File1.PDF

Rob Versluis, PhD, DOE NE-71, 301-903-1890 (o) (b)(6) (m)
****

-----Original Message-----
From: RST01 Hoc
Sent: Monday, April 04, 2011 6:40 PM
To: RST09 Hoc; RST07 Hoc; RST08 Hoc; Hoc, RST16; RST01B Hoc; RST03 Hoc
Subject: FW: Fax from Mike Scott regarding vendor description of anti-dispersant plans

Fax from Mike Scott regarding spraying of anti-dispersant that came on March 31

-----Original Message-----
From: HOO Hoc
Sent: Thursday, March 31, 2011 4:53 AM
To: RST01 Hoc
Subject: FW: Fax from 81355105111

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

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Thursday, March 31, 2011 4:43 AM
To: HOO Hoc
Subject: Fax from 81355105111

RECEIVE NOTIFICATION FOR JOB 00018047

Notice for: HOO1

Remote ID: 81355105111

Received at: 03/31/2011 04:41

Pages: 7

Routed by:

Routed at: 03/31/2011 04:41

3/31/11

From: Mike Scott

Please pass to RST

Verbal description of plans
to apply fixative to site
to minimize spread of contamination.

Plan to spray fixative agent to prevent dispersion

1. Objective

Based on the current situation at the site, a plan is formulated to spray substance to prevent dispersion. (fixative)

2. Where to spray

Spraying is planned for the following areas

Area ① Ground arround buildings

" ② Outer wall of reactor buildings

" ③ Upper part of operation floor of reactor buildings.

" ④ Surface of the roof of terminal buildings

" ⑤ Surrounding area (common pool area prioritized.)

3 What to use

- Agent to prevent flying sand & dust to be used.
  By spraying this on the surface of raw soil of reclaimed and housing development, solid layer is formed and land prepared for ... Or takes about a day to solidify.
- Sprayed surface to be colored so as to confirm the certainty of spraying.
- In spraying outer wall, tests at different visosity to be conducted, before the actual sprayings, thereby confirming the status of adhesion.

- Selection will be done from the following commercially available, & currently procurable materials.

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4 How to spray.

area 1 Operation & Spraying done remotely from the operation room at 150 m distance. Because it is self-propelled, there is no need for an operator to go to high rad. area.

" 2 Spraying with both giraffe & crawler dump truck.

" 3 Spraying with both giraffe & helicopter. (Note from Translator. In oral presentation on 3/31, the speaker ask for the deletion of helicopter)

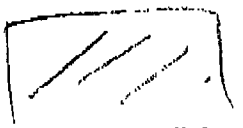
" 4 Spraying with both giraffe & helicopter - (Note: same as above)

" 5 Spraying with 4t water sprinkler vehicle (manually operated & crawler dump truck.

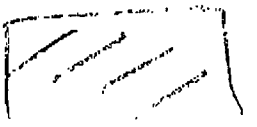
5 How to evaluate -

In areas where trial spraying is conducted (areas) & other areas, the following evaluation to be implemented.

<evaluation>	< Items to be judged >
method 1 Confirm uneven spraying	By visual inspection uniform/even spraying to be confirmed
" 2 Confirm status of solidifying	Trial holes pre- & post spraying are dug and surface solidification to be confirmed
" 3 Confirm dose	Change in the dose level pre & post sampling to be confirmed
" 4 Impact on electrical goods	No impact of Power source console & cables is to be confirmed.



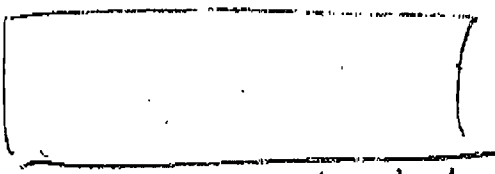
manual spraying



Confirming the state of solidification

Note: On areas ① & ②, amount of spray to be controlled so that the actual working conditions to spray to be the same as trial spray area (area 5).

6 Timeline



note: • Work schedule may change subject to dose level & weather at the work site -

• at this point in time, work areas & work schedule are not coordinated with other works -

7 Point requiring Attention

- Administrator with professional knowledge to measure radiation environment, and to provide radiation control regime, sharing information with people responsible for the work.
- Going forward, there is a need for coordination as to work areas & work schedule with other works. Since ability to prevent dispersal becomes effective after drying, coordination is necessary with water injection schedule to buildings in the vicinity. (Drying time, about a day)
- Operator(s) to be booked & exposure dose to be controlled, as operators who can handle remote operation are limited in number.
- At the time of spray, some protection may become necessary for temporary materials & equipment placed outdoor. (Power Console, pumps etc.)
- Radio to operate has small output. There is a need to confirm whether radio transmission functions well at the site where all kinds of communication is flying about.

5. 評価方法

試験施工エリア【エリア⑤】他において，下記の評価を実施する。

＜評価＞	＜判定項目＞
（手法1：撒きムラの確認）	・・・目視により均一に散布されていることを確認する。
（手法2：固化状態の確認）	・・・散布箇所を試掘し，表面が固化されていることを確認する。
（手法3：線量確認）	・・・散布前後の線量値の変化を確認する。
（手法4：電気品への影響）	・・・電源盤及びケーブルへの影響がないことを確認する。

人力による散布状況

固化状態の確認状況

なお，【エリア①～④】は，試験施工エリア【エリア⑤】と実際の散布作業条件が同じになるように散布量を管理する。

6. 工　期　（エリア別の工程）

Area エリア名	作業名	3月	4月	5月
【エリア①】建屋周辺地盤	準備作業		クローラーダンプ準備	モックアップ試験
			操作室準備	
	散布作業		現地準備	飛散防止剤散布
【エリア②】R/B外壁	散布作業		（キリン）	飛散防止剤散布
			（クローラダンプ）	飛散防止剤散布
【エリア③】R/Bオペフロ上部	散布作業			飛散防止剤散布
			（キリン）	
【エリア④】T/B屋根面	散布作業			飛散防止剤散布
				（キリン）
【エリア⑤】共用プールエリア	準備作業	機械準備		
	散布作業	飛散防止剤散布		
		評価		

注）・作業位置の線量，天候により，工程は変更の可能性がある。
・現時点では，他作業との作業エリア・工程は未調整である。

7. 留意点

- 放射線環境を専門的知識を有する管理者が測定し，作業責任者と情報を共有する放射線管理体制を整える。
- 今後，他作業との作業エリア，工程の調整が必要である。飛散防止効果は，乾燥後に発揮されるため，周辺建屋の注水スケジュールとの調整する。（乾燥まで1日程度）
- 遠隔操作のオペレータは限られているので，オペレータの確保と被ばく線量を管理する。
- 屋外に設置されている仮設資材（電源盤，ポンプ等）について，散布時には適宜，養生が必要となる。
- 操作無線は出力が小さく，種々の通信が飛び交う現地で機能するか確認が必要である。

飛散防止剤の散布計画

1. 目的

現時点での現場の状況を踏まえ，飛散防止剤の散布計画を立案する。

2. 散布場所

以下のエリアへの散布を計画する。

【エリア①】建屋周辺部地盤	約105,000m²
【エリア②】R/B外壁	約 25,000m²
【エリア③】R/Bオペフロ上部	約 6,300m²
【エリア④】T/B建屋屋根面	約 15,000m²
【エリア⑤】周辺敷地（先行して共用プールエリア）	約 30,000m²

3. 使用する材料

- 埋立地や造成地の裸地表面に散布することで固結層を形成する飛砂・粉塵防止剤を使用する。固結までは1日程度である。
- 確実に散布されていることを確認できるように，散布面が着色されるものとする。
- 外壁散布にあたっては，粘性を変えた試験を事前に行い，付着状況を確認する。
- 一般に流通しているもので，現時点で調達可能な材料として，以下から採用する。
  - -クリコートC-720グリーン（栗田工業㈱） ・・・合成樹脂エマルジョン，緑色
  - -フライネットR（不二サッシ㈱） ・・・天然高分子樹脂，乳白色→透明

4. 散布方法

	使用機材	散布方法
【エリア①】 建屋周辺地盤	クローラダンプ	運行・散布は，150m程度離れた操作室からの遠隔操作となる。自走式のため，線量が高いエリアにオペレータが行く必要がない。
【エリア②】 R/B外壁	キリン クローラダンプ	キリン及びクローラダンプを併用して散布
【エリア③】 R/Bオペフロ上部	キリン ヘリコプター	キリン及びヘリコプターを併用して散布
【エリア4】 T/B屋根	キリン ヘリコプター	キリン及びヘリコプターを併用して散布
【エリア⑤】 周辺敷地（共用プールエリア）	人力 クローラダンプ	4t積み散水車（人力）及びクローラダンプを併用して散布

From:	Larsen, Carl B. (INPO) <LarsenCB@INPO.org>
Sent:	Thursday, March 31, 2011 11:57 AM
To:	RST01 Hoc; GE.Hitachinuclearresponseteam@GE.com; ENERGY GEH ICC Engineering (GE Power & Water); Modeen, David
Cc:	Hawn, Randall S. (INPO); Zohner, Nathan L. (INPO); Bramblett, Jeff W.; Webster, Bill E (INPO)
Subject:	RST Assessment, Rev. 1 with Industry Comment
Attachments:	03-31-11 2200 RST Assessment Document REV 1 Updated.docx
Follow Up Flag:	Follow up
Flag Status:	Flagged

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For the purpose of response to the damage at the Fukushima Daiichi nuclear plant, INPO authorizes the Nuclear Regulatory Commission to release INPO Restricted Distribution document(s) related to the Fukushima event to other individuals or organizations also involved in the technical analysis of, or response to, the event. Any additional distribution or public release of this information is prohibited without the prior agreement of INPO. All other rights reserved.

The attached document contains the industry's comments on the new additions to the first page. Our comments are highlighted in green.

Thanks,
Carl Larsen
INPO ERC Technical Coordinator

From: RST01 Hoc
Sent: Friday, April 01, 2011 2:21 AM
To: RST07 Hoc; RST09 Hoc; RST03 Hoc
Cc: FOIA Response.hoc Resource
Subject: FW: Q355 NRC RST (b)(4)

From: GE Hitachi Nuclear Response Team (GE Power & Water) [mailto:GE.HitachiNuclearResponseTeam@ge.com]
Sent: Friday, April 01, 2011 12:08 AM
To: ENERGY GEH ICC Engineering (GE Power & Water)
Cc: RST01 Hoc; RST08 Hoc
Subject: Q355 NRC RST (b)(4)

Have entered question Q355 into system. Please evaluate and develop a response.

George Depta
Senior Services Project Manager
Plant Performance & Optimization
GE Hitachi Nuclear Energy

T 910.819.4876
F 910.819.7966
M (b)(6)
D *819-4876

george.depta@ge.com
www.ge-energy.com/nuclear

3901 Castle Hayne Road
PO Box 780, M/C F12
Wilmington, NC 28401
USA

From: RST08 Hoc [mailto:RST08.Hoc@nrc.gov]
Sent: Thursday, March 31, 2011 10:09 AM
To: GE Hitachi Nuclear Response Team (GE Power & Water); INPOERCAssistance
Subject: FW: Fwd: (b)(4)

FYI, we got this information from Dominion.

If you could get it to your chemistry guys and let us know your thoughts, I would appreciate it.

Mike

Mike Brown
Reactor Safety Team

From: RST01 Hoc
Sent: Thursday, March 31, 2011 10:04 AM

To: RST08 Hoc; RST09 Hoc
Subject: FW: Fwd: (b)(4)

From: Versluis, Rob [mailto:ROB.VERSLUIS@nuclear.energy.gov]
Sent: Thursday, March 31, 2011 8:10 AM
To: RST01 Hoc
Subject: Fw: Fwd: (b)(4)

Fyi
Rob Versluis +1-301-903-1890(o) (b)(6) (m)

From: Peterson, Per
To: Busby, Jeremy T. <busbyjt@ornl.gov>
Cc: Golub, Sal; Larzelere, Alex; Versluis, Rob; Kelly, John E (NE)
Sent: Thu Mar 31 00:38:52 2011
Subject: Fwd: (b)(4)

Jeremy,

Here is an idea from the Dominion staff who were at our meeting at Millstone on Monday, related to methods to remove scale in salt-water systems. The experience comes from the Navy, which operates salt-water evaporators and has had to deal with the issues of descaling them. (b)(5)

(b)(5)

(b)(5)

-Per

From: Jeff D Semancik <jeff.d.semancik@dom.com>
To: Jeff D Semancik <jeff.d.semancik@dom.com>, "Nowell, James R." <nowelljr@westinghouse.com>, "peterson@nuc.berkeley.edu" <peterson@nuc.berkeley.edu>, "steve.binkley@science.doe.gov" <steve.binkley@science.doe.gov>
CC: "Jain, Nirmal K." <jainnk@westinghouse.com>
Date: Wed, 30 Mar 2011 17:40:22 -0400
Subject: (b)(4)

Dr. Peterson,

(b)(4)

Our initial thoughts

(b)(4)

V/R,
Jeff Semancik

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--

Per F. Peterson
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Office: (510) 643-7749 Fax: (510) 643-9685
http://www.nuc.berkeley.edu/People/Per_Peterson

From: Sheron, Brian
Sent: Thursday, March 31, 2011 7:33 AM
To: RST01 Hoc; Case, Michael; Richards, Stuart
Cc: Uhle, Jennifer
Subject: FW: PDF of Lab Corrosion Document 3-30
Attachments: DOE perspective on corrossion330.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

FYI.

From: Binkley, Steve [mailto:Steve.Binkley@science.doe.gov]
Sent: Wednesday, March 30, 2011 6:26 PM
To: Adams, Ian; Aoki, Steven; Binkley, Steve; Bob Budnitz; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; Dick Garwin; Dick Garwin; Harold Denton; Harold McFarlane; Hurlbut, Brandon; JOE H. PAYER; John Grossenbacher; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; Owens, Missy; Per Peterson; Phil Finck; Poneman, Daniel; Lee, Richard; Rolando Szilard; SCHU; Steve Fetter
Subject: FW: PDF of Lab Corrosion Document 3-30

PDF version of 2nd document.

Steve Binkley

From: Elizabeth A Connell [mailto:Elizabeth.Connell@inl.gov]
Sent: Wednesday, March 30, 2011 6:25 PM
To: Binkley, Steve
Subject: PDF of Lab Corrosion Document 3-30

DOE Perspective on corrosion issues at Fukushima

Executive summary

- (b)(5)

DOE Frame of reference on activity to date: (b)(5)

Comparison with Millstone experience: On Sept. 1, 1972, the Millstone Unit 1 BWR was undergoing routine startup. Due to a leak in the main condenser tube, high conductivity sea-water was introduced into full flow demineralizers. The demineralizers failed very rapidly and led to high conductivity water in the reactor vessel via the condensate/feedwater system.

As noted in their report, the effects of this event introduced "maximum chloride content" were reduced somewhat because of the very low oxygen content in the water. However, some key corrosion effects were observed in a matter of hours.

- 116/120 of the local power range monitors (stainless steel) were damaged by cracking in a short time period. In part, this extensive damage was due to the very thin walls of the LPRM's.
- Stress corrosion cracking was observed in other reactor components such as stainless steel piping [composition assumed from other similar BWRs]. These cracks were predominantly in crevice areas of threaded components or tight joints and measured to be 0.75 to 1.25 mm in depth. Notably, these cracks were considered to be "superficial" and not expected to propagate during subsequent operation. Later analysis confirmed these results.

- Subsequent tests at GE found results more severe than in the actual incident. Cracks were found in highly stressed stainless steel and age-hardened alloys, but not in Inconel or carbon-steel.

Several implications are important when considering events in Fukushima.

- (b)(5)

Corrosion impacts on key components: As noted above for Millstone, salt water will clearly facilitate corrosion processes of reactor components. (b)(5)

(b)(5)

(b)(5)

- (b)(5)

- (b)(5)

(b)(5)

Evidence of corrosion in the system: (b)(5)

(b)(5)

(b)(5)

Long-term needs:

(b)(5)

(b)(5)

From: RST01 Hoc
Sent: Thursday, March 31, 2011 5:27 AM
To: GE Hitachi Nuclear Response Team (GE Power & Water); INPO EmergencyResponseCtr (INPO); Modeen, David; RST03 Hoc
Cc: FOIA Response.hoc Resource
Subject: FW: RST FD SFP Unit 4 Assessment
Attachments: image001.png

From: RST07 Hoc
Sent: Thursday, March 31, 2011 5:25 AM
To: RST01 Hoc
Subject: FW: RST FD SFP Unit 4 Assessment

Please Forward to the Consortium

From: RST07 Hoc
Sent: Wednesday, March 30, 2011 2:12 AM
To: RST01 Hoc; RST08 Hoc
Cc: RST07 Hoc
Subject: RE: RST FD SFP Unit 4 Assessment

(b)(5)

Give us a call to discuss further and clarify what you may need from the RST Team.

From: RST01 Hoc
Sent: Tuesday, March 29, 2011 11:26 PM

To: RST08 Hoc; RST07 Hoc
Subject: FW: RST FD SFP Unit 4 Assessment

From: RST03 Hoc
Sent: Tuesday, March 29, 2011 10:58 PM
To: RST01 Hoc; RST07 Hoc
Cc: Roberts, Thomas E CIV SEA 08 NR; (b)(6)
Subject: RE: RST FD SFP Unit 4 Assessment

There are aspects of the 6:16am assessment (below) that are not clear; provided for your consideration when answering this email:

(b)(5)

Thanks.

From: RST01 Hoc
Sent: Tuesday, March 29, 2011 8:42 PM
To: RST07 Hoc; RST03 Hoc
Subject: FW: RST FD SFP Unit 4 Assessment

From: Taylor, Robert
Sent: Tuesday, March 29, 2011 8:40 PM
To: RST01 Hoc
Cc: Scott, Michael; Brown, Frederick; Blamey, Alan; Giessner, John; Nakanishi, Tony; Sheikh, Abdul; Ali, Syed
Subject: RE: RST FD SFP Unit 4 Assessment

RST,

As discussed during the 0700 JST (1800 EDT) call, we greatly appreciate the information provided regarding the Unit 4 SFP assessment. We would provide the following feedback/considerations based on our discussion:

(b)(5)

We recognize that we are asking a lot but believe we need to be able to provide a sound written assessment to NISA and TEPCO to convince them to reassess their strategy going forward.

At your earliest convenience, please provide a timeline for when this can be accomplished.

Best Regards,
Rob Taylor
NRC Japan Team

From: RST01 Hoc
Sent: Tuesday, March 29, 2011 6:29 AM
To: Taylor, Robert
Subject: FW: RST FD SFP Unit 4 Assessment

From: RST07 Hoc
Sent: Tuesday, March 29, 2011 6:16 AM
To: RST01 Hoc
Cc: RST07 Hoc
Subject: RST FD SFP Unit 4 Assessment

3/29/2011 (1423 EDST)

NRC Reactor Safety Team Recommendations regarding the following Japan Team Request:

From: Taylor, Robert
Sent: Monday, March 28, 2011 8:49 PM
To: RST01 Hoc

Cc: Scott, Michael; Giessner, John; Blamey, Alan; Brown, Frederick; Nakanishi, Tony; Skeen, David
Subject: SFP Concerns

RST,

As discussed during our last call, here are the NRC Japan Team's concerns regarding the SFP at Unit 4 (and potentially Unit 3).

(b)(5)

Please let us know if you have any questions.

Regards,
Rob Taylor

(b)(5)

3/16/2011 (22:00 EDT)

Estimate time for boil-dry times for a typical spent fuel pool

Source: RTM Table D-1 (see figure below)

Assumptions: (1) Full core recently discharged (see red box in figure)
(2) 100 days after shutdown (full core unloaded)
(3) constant decay heat at 100 days on
(4) Neglect sensible heating from the table (~ 10 hr)
(5) No water loss from the pool thru leaks, water spillage, explosion, etc.

Time since accident = ~ 5 days
Time to boiloff (Table D-1) = 164 hr = 6.8 days
Assuming pool at 100% 5 days ago and it takes 6.8 days to boil off, after 5 days about 75% (5/6.8) of water has boiled off with 25% remaining.

Time to boil-off remaining 25% = 0.25 x 164 hr = 40 hrs => this is the maximum time left considering assumption 5 above.

Table D-1. Heatup and boil-dry times for a typical spent fuel pool

	One-third of core recently discharged + 20 years of accumulated discharges			Full core recently discharged + 20 years of accumulated discharges		
Days after shutdown[a]	Time to heat from 125°F to 212°F[b] (h)	Time to boil off water[c] (h)	Water to make up boil-off (gal/min)	Time to heat from 150°F to 212°F[b] (h)	Time to boil off water[c] (h)	Water to make up boil-off (gal/min)
5	11.2	125.0	31.9	3.1	49.3	81.0
10	13.9	154.9	25.8	4.1	63.8	62.6
30	19.0	212.2	18.8	6.1	95.8	41.7
45	21.8	242.8	16.4	7.4	115.5	34.5
65	24.3	270.4	14.8	8.6	135.2	29.5
100	27.5	306.5	13.0	10.5	164.2	24.3
150	32.0	357.1	11.2	13.6	212.6	18.8
200	35.1	391.2	10.2	16.1	251.9	15.8
250	37.2	414.5	9.6	18.1	282.6	14.1
300	38.4	428.3	9.3	19.5	302.4	13.2
350	39.2	437.5	9.1	20.2	316.6	12.6
365	39.3	438.6	9.1	20.4	318.4	12.5

[a] Days after shutdown of core recently discharged.
[b] 52°C to 100°C.
[c] To drain the pool.

Source: NUREG-1353.

3/18/2011 (1423 EDST)

NRC Reactor Safety Team Spent Fuel Pool Fukushima Daiichi Cooling Recommendations for mitigation of dose rates

All options assume addition of boron or other poison, if available and continuous. Water flow should be maintained until fuel is covered. Intermittent water addition should be minimized.

If Pool is Not Dry

Quench/ Deluge – whatever means possible

If Pool is Dry

1. If the temperature can be verified below <650 degrees Celsius (1200 degrees Fahrenheit) then Quench/ Deluge Fuel using whatever water source possible

2. If the temperature can be verified to be greater > than 650C (1200F) or if the temperature is unknown, perform either option as soon as possible based on available equipment and resources (the following is not listed in order of preference)

   - slurry of sand (preferred if fuel pool cannot hold water)
     - Benefit of sand is shielding; may assist with existing leaks.
     - Additional loading on the spent fuel pool structures should be considered (see attached analysis).
     - Stop sand when desired coverage is reached for dose concerns, but continue to add borated water to maintain cooling and shielding
     - Start filling the spent fuel pool by directing slurry to the bottom of the spent fuel pool (away from the stored fuel assemblies), if possible, or flood the refueling floor to get the same effect (i.e., to mitigate thermal shock to the stored spent fuel assemblies)
   - water
     - Fill by directing the flow of water to the bottom of the spent fuel pool is preferred or flood the refueling floor to achieve the same effect (i.e., fill the spent fuel pool to mitigate thermal shock to the stored spent fuel assemblies)
     - If Possible, misting can reduce airborne fission products and should be done in parallel with pool filling.

Additional Sand Loading Consideration:

The NRC has calculated spent fuel pool weight difference using san/gravel mix(wet) filled in the pool instead of water.

Assumption:

1) Quad City pool is same as Japan Unit 4
2) Unit 4 pool has 600 assemblies

Current volume at Quad city pool = 44,471 ft^3

Assume sand filled to the top of the pool (minus assembly volume) = 50216 ft^3

Weight of water = 50216 cu ft x 62.4 #/cu ft= 3,133,478 lbs

Weight of wet send/gravel mix =118 x50216 = 5,925,488 lbs

Spent fuel floor area 1683 sq ft

Therefore,

Weight increase on floor = (5925488-3133478)/ 1683 = 1659 #/sq ft this is significant load change on the floor. I am not sure what is the condition of SF pool floor at Japan's Units?
Note: We cannot determine impact loading of sand if it dumped from air. If SFP pool is intact (not Damaged) then we believe that the SFP can handle additional loads without impact loading(i.e. sand is pumped). Secondly, we don't have actual configuration of the SFP of each unit of Fukashima Nuclear Power Plant. The additional load expected for the sand option is 1659 lbs/ft^2.

Potential Criticality Information:

Criticality in the spent fuel pools is very unlikely under any configuration, particularly if boron is being added. If other information is correct, such as the water level in the pool at unit 4 is very low (or empty), the consequences of criticality in one of the spent fuel pools will not be significant in comparison to the consequences of the pool remaining empty/exposed.

From: RST01 Hoc
Sent: Wednesday, March 30, 2011 7:48 PM
To: (b)(6)
Subject: Facility Data (3/29) As Discussed During 1900 EDT Conference Call (NEEDS TRANSLATION)
Attachments: NRC.pdf

Importance: High

FYI

From: RST01 Hoc
Sent: Wednesday, March 30, 2011 7:42 PM
To: RST01 Hoc
Subject: FW: Attachment

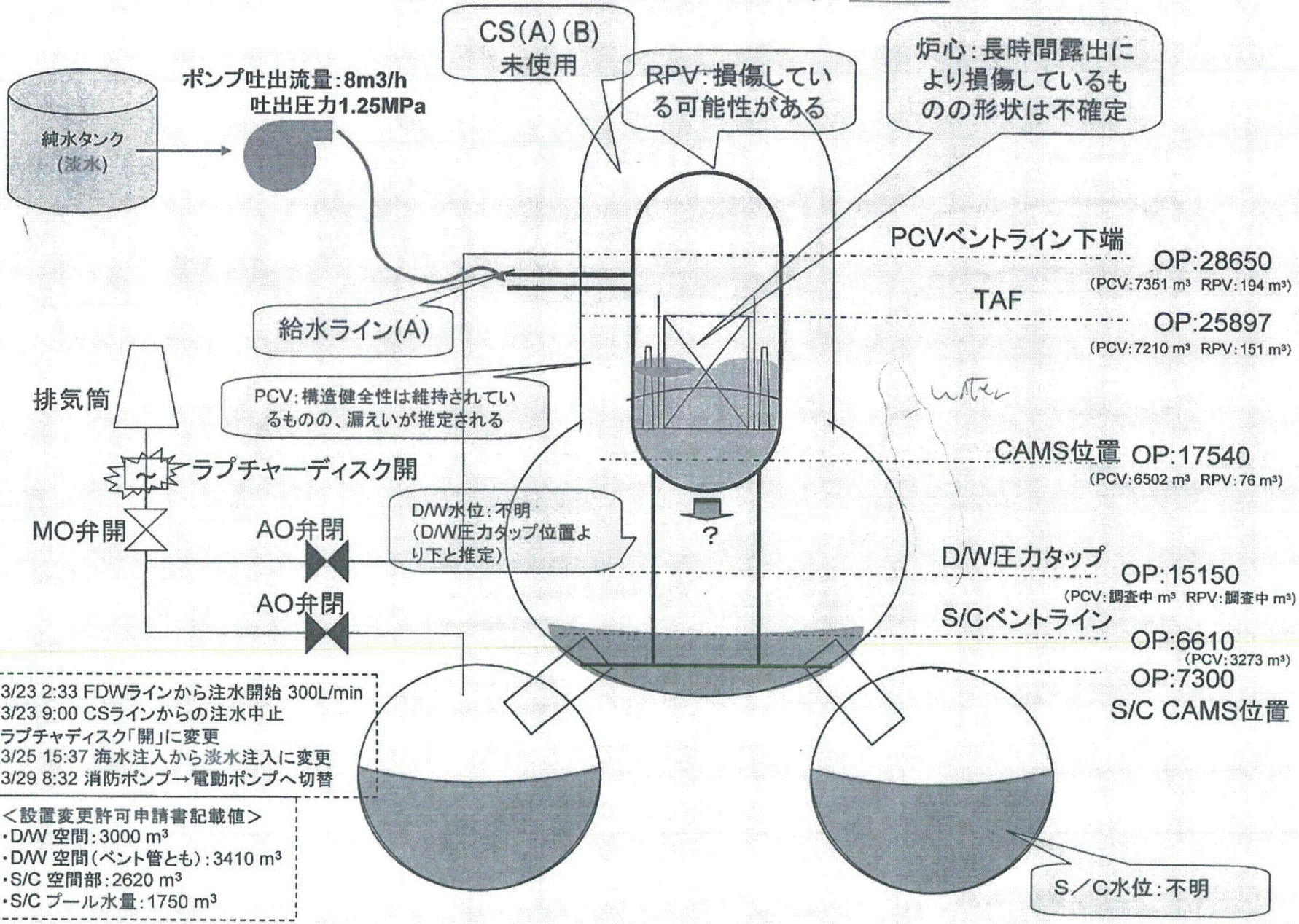
From: RST01 Hoc
Sent: Wednesday, March 30, 2011 2:43 AM
To: RST07 Hoc; RST09 Hoc
Subject: FW: Attachment

From: Giessner, John
Sent: Wednesday, March 30, 2011 2:40 AM
To: RST01 Hoc
Cc: Blamey, Alan; Nakanishi, Tony; Taylor, Robert
Subject: Fw: Attachment

(Sent from Blackberry)

From: Tamada, Yoshimi <TamadaYX@state.gov>
To: Giessner, John
Sent: Wed Mar 30 02:17:12 2011
Subject: Attachment

原子炉廻りの現状(3/29 8:32) 1F−1

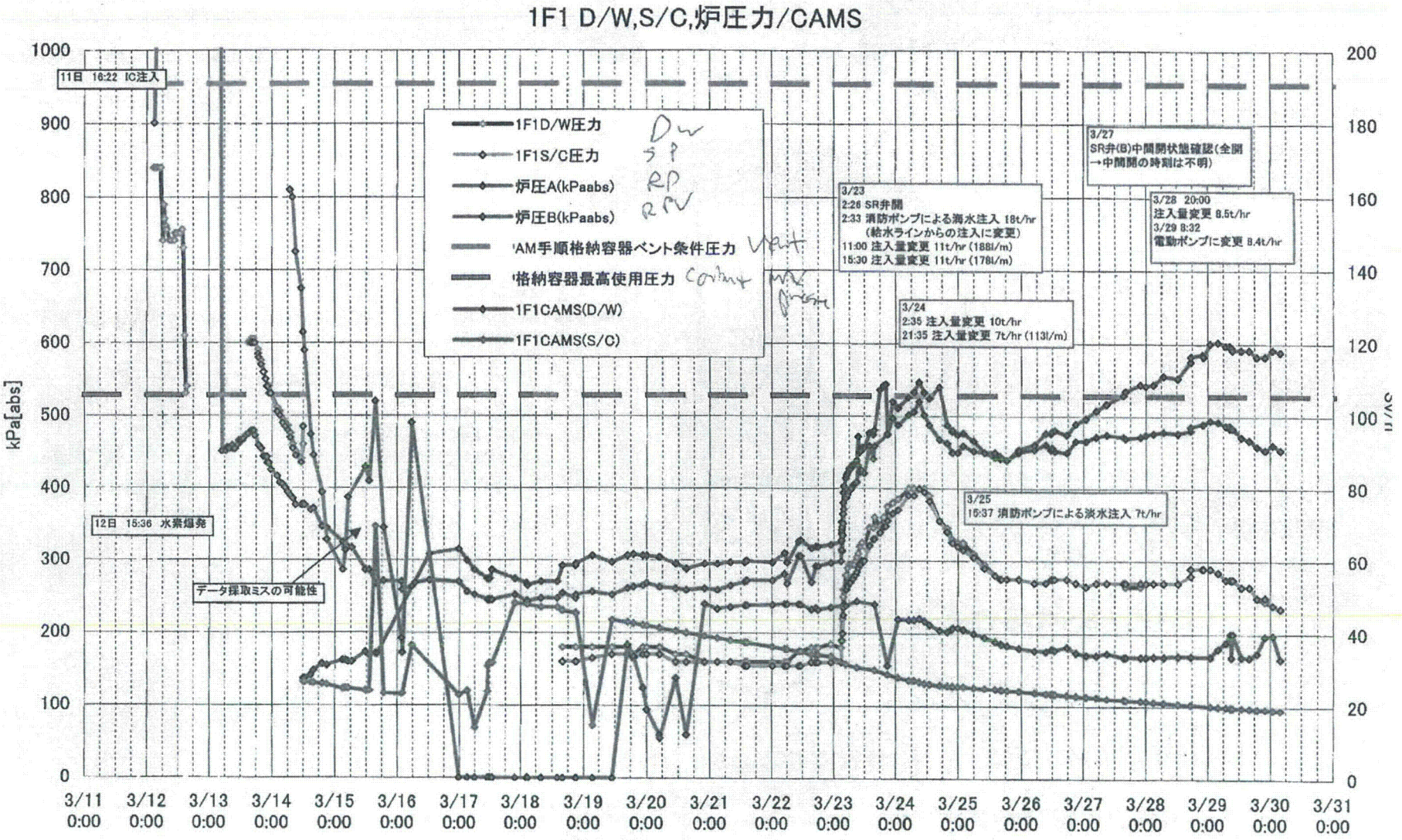


3/23 2:33 FDWラインから注水開始 300L/min
3/23 9:00 CSラインからの注水中止
ラプチャディスク「開」に変更
3/25 15:37 海水注入から淡水注入に変更
3/29 8:32 消防ポンプ→電動ポンプへ切替

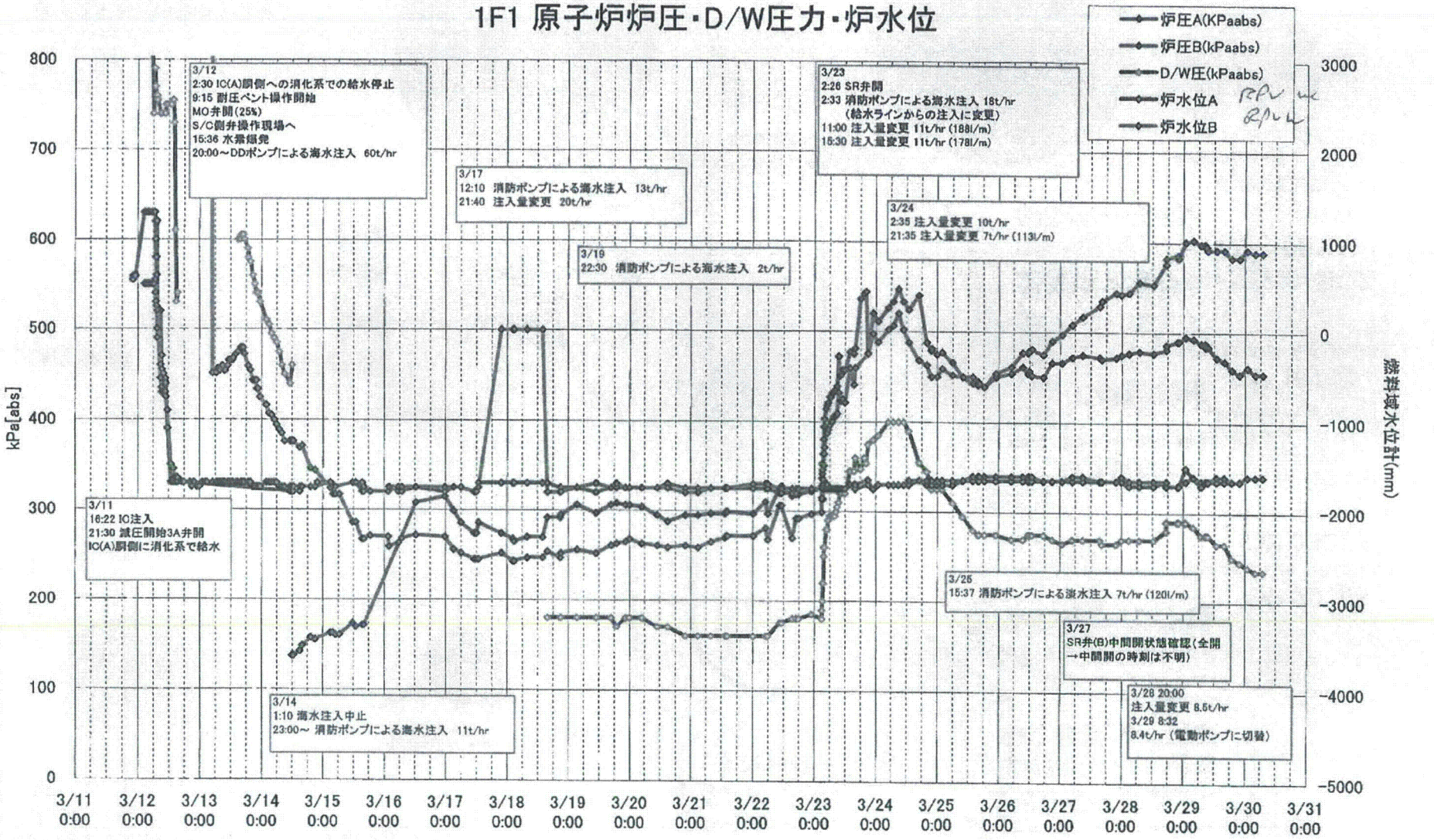
<設置変更許可申請書記載値>
・D/W 空間:3000 m³
・D/W 空間(ベント管とも):3410 m³
・S/C 空間部:2620 m³
・S/C プール水量:1750 m³

CK 3048 of 3114

3月30日最新共用1Fデータ(7時00分現在)



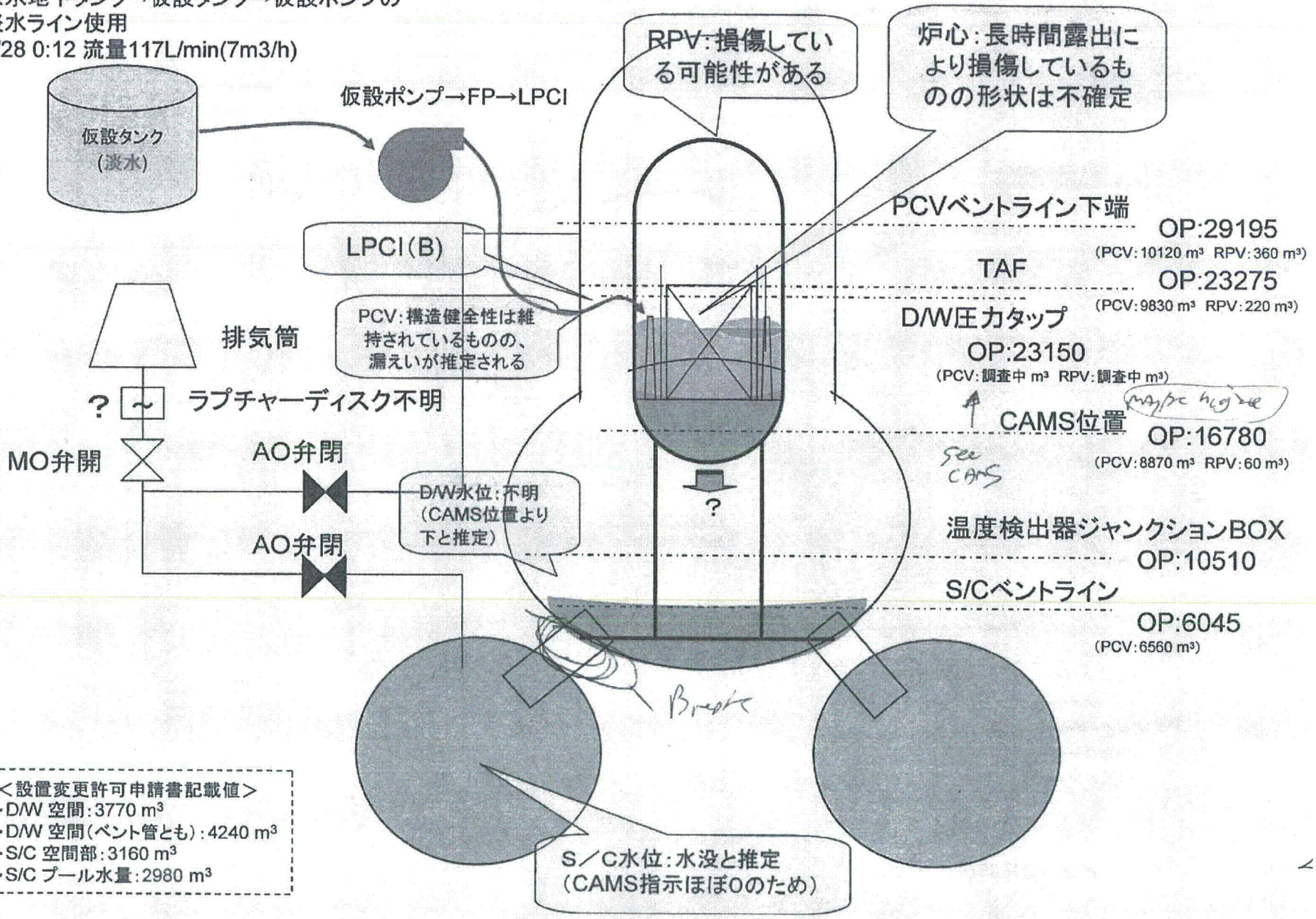
3月30日最新共用1Fデータ(7時00分現在).xls



CK 3050 of 3114

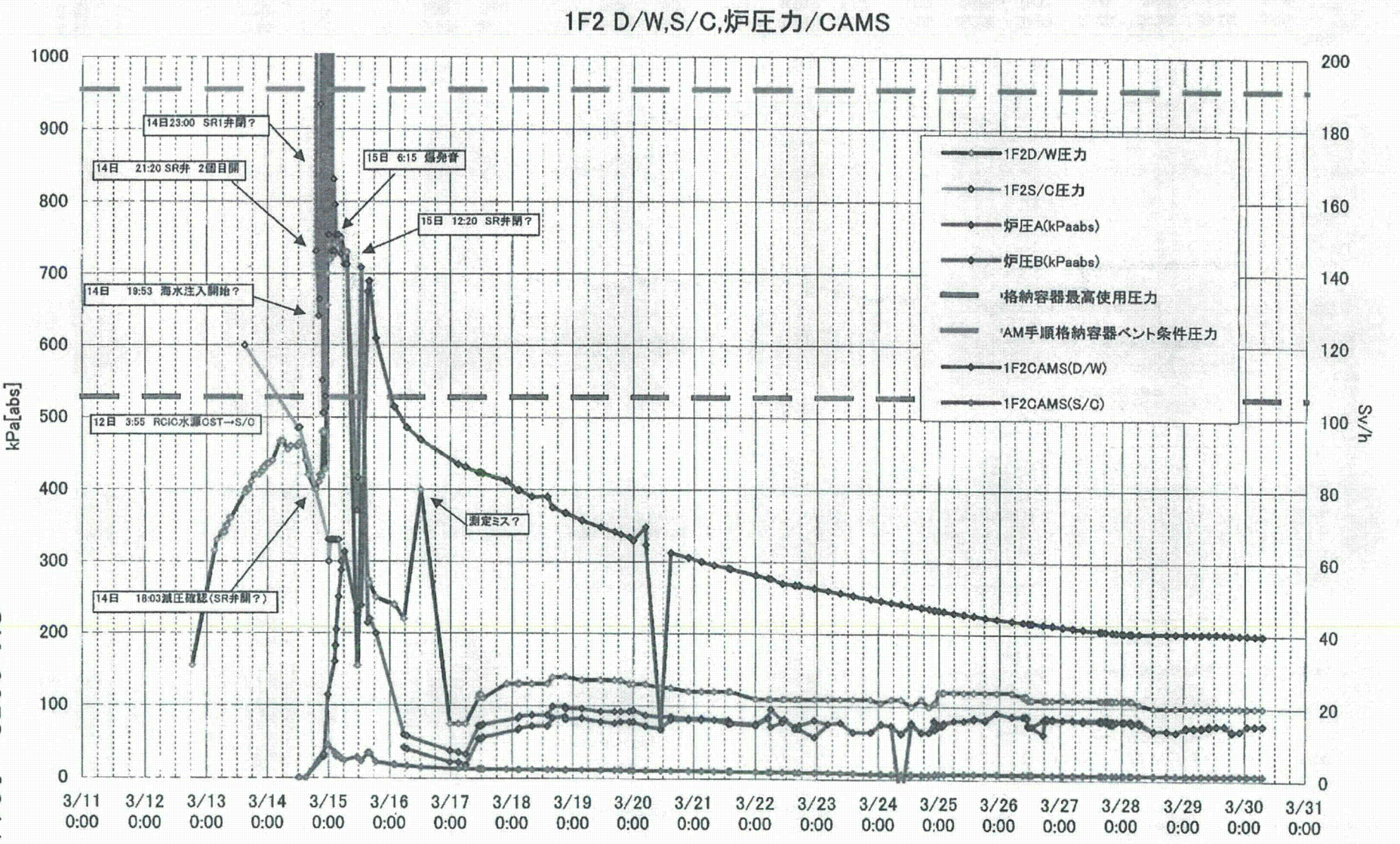
原子炉廻りの現状（3/28 0:12） 1F－2

※3/27 18:31
（ポンプ車→仮設ポンプに変更）
原水地下タンク→仮設タンク→仮設ポンプの
淡水ライン使用
3/28 0:12 流量117L/min(7m3/h)



＜設置変更許可申請書記載値＞
・D/W 空間：3770 m³
・D/W 空間（ベント管とも）：4240 m³
・S/C 空間部：3160 m³
・S/C プール水量：2980 m³

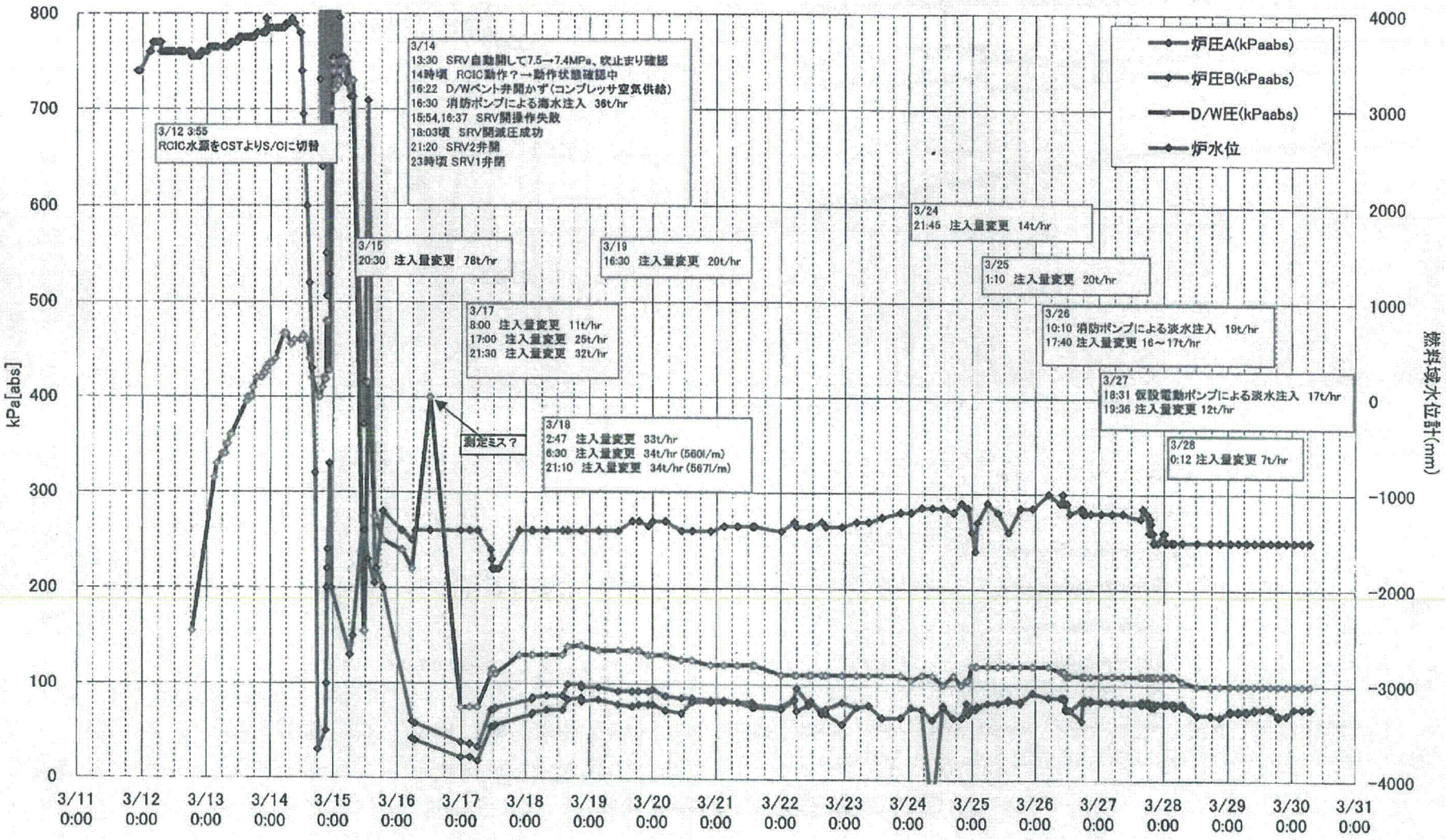
3月30日最新共用1Fデータ(7時00分現在).xls



5

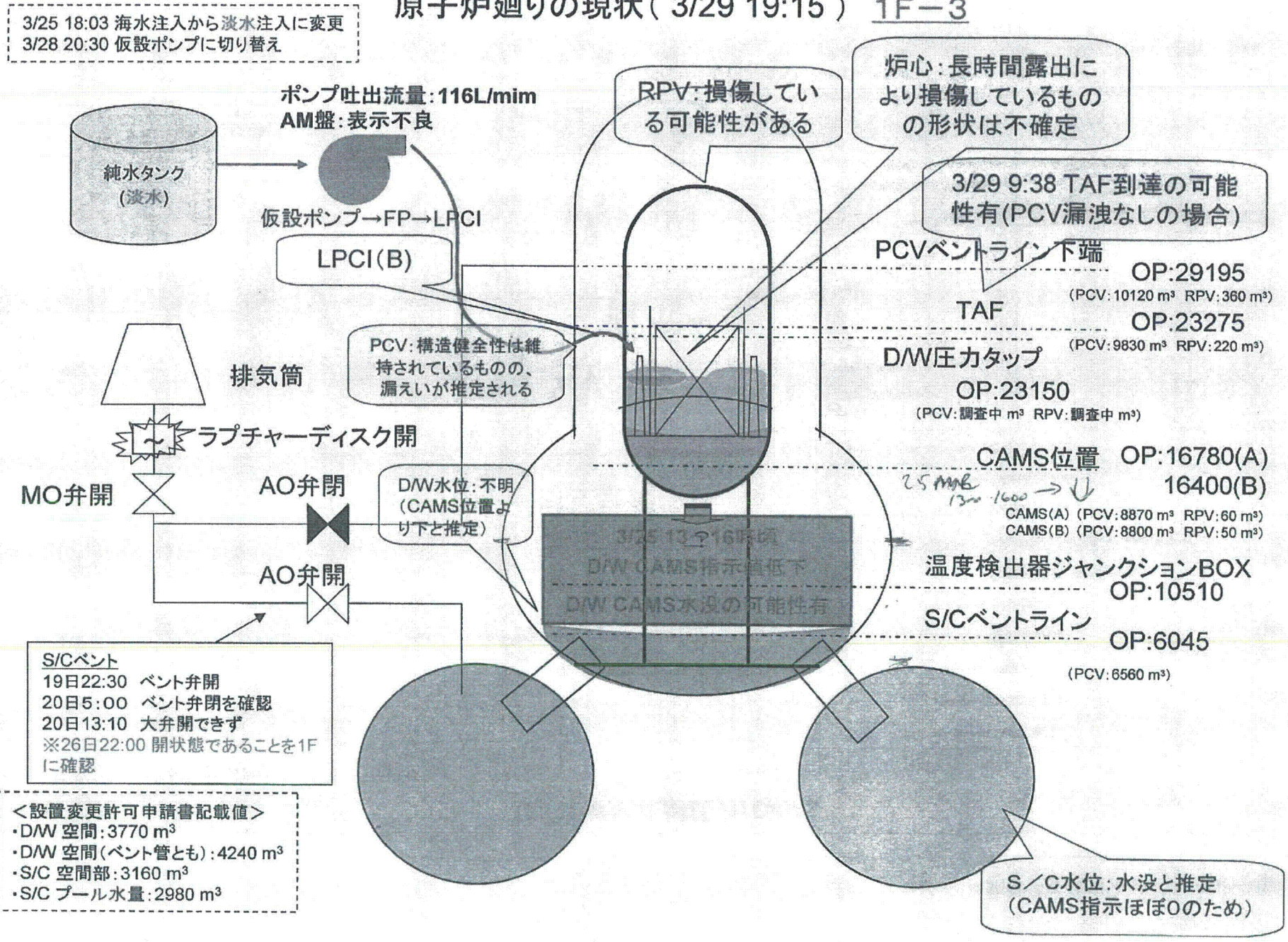
3月30日最新共用1Fデータ(7時00分現在)。

1F2 原子炉炉圧・D/W圧力・炉水位



原子炉廻りの現状（3/29 19:15） 1F－3

3/25 18:03 海水注入から淡水注入に変更
3/28 20:30 仮設ポンプに切り替え



S/Cベント
19日22:30 ベント弁開
20日5:00 ベント弁閉を確認
20日13:10 大弁開できず
※26日22:00 開状態であることを1Fに確認

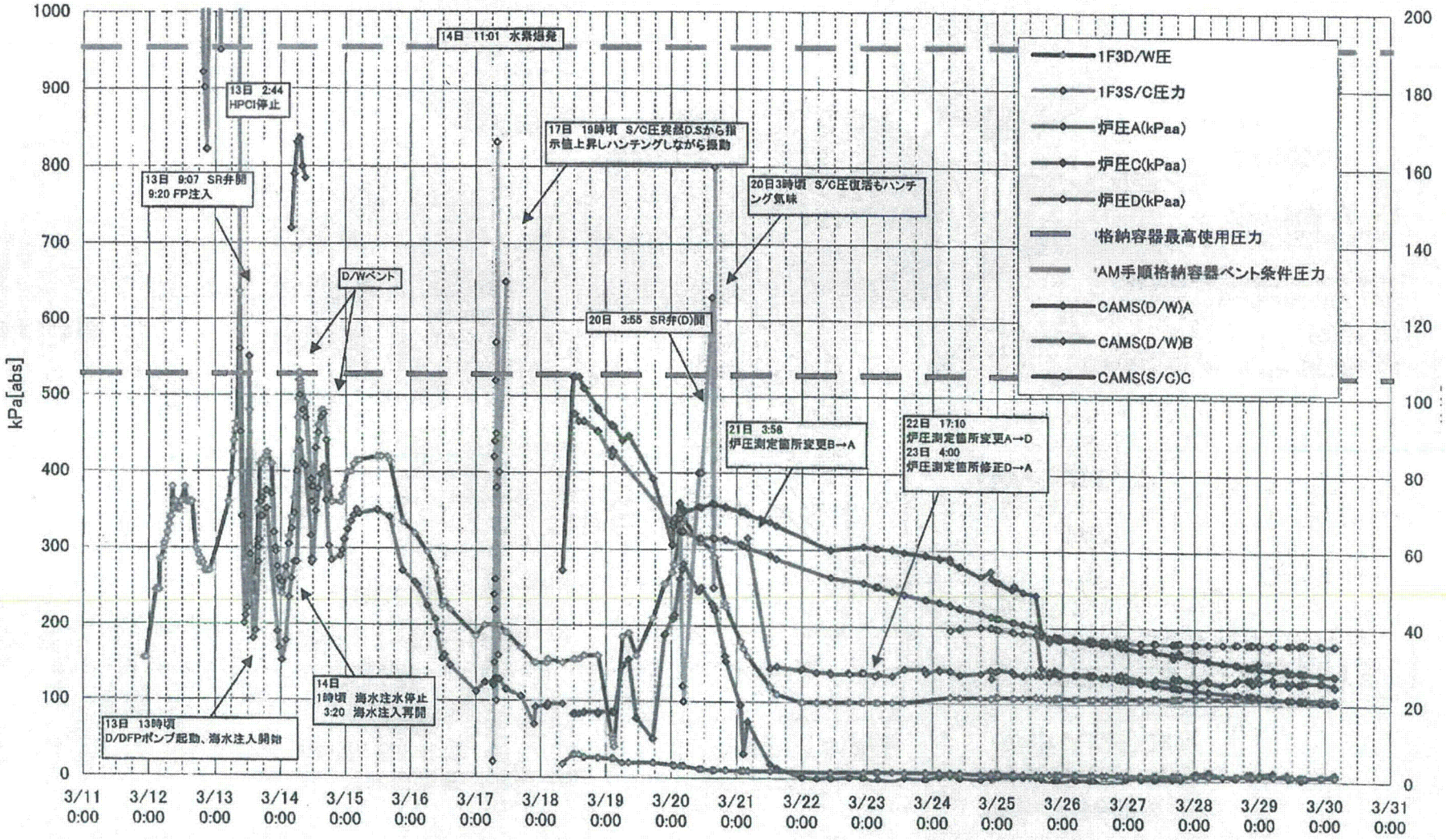
＜設置変更許可申請書記載値＞
・D/W 空間：3770 m³
・D/W 空間（ベント管とも）：4240 m³
・S/C 空間部：3160 m³
・S/C プール水量：2980 m³

CK 3054 of 3114

17

コピー3月30日最新共用1Fデータ(4時00分現在

1F3 D/W,S/C,炉圧力/CAMS



Contact Group Name: Industry List (Rev 4/20)

Members:

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RST07 Hoc	RST07.Hoc@nrc.gov
Russell Morales	MoralesRA@state.gov
Sal Golub	sal.golub@nuclear.energy.gov
(b)(6)	

From: Scott, Michael
Sent: Tuesday, March 29, 2011 5:47 AM
To: RST01 Hoc
Subject: FW: For tomorrow's 11 am NISA/TEPCO meeting
Attachments: 1F1 Status Assessment.pptx

Follow Up Flag: Follow up
Flag Status: Flagged

Also for discussion at next call. Thanks!

Mike

From: Nakanishi, Tony
Sent: Tuesday, March 29, 2011 5:05 AM
To: Liaison Japan
Subject: RE: For tomorrow's 11 am NISA/TEPCO meeting

Revised with qualifiers...

From: Nakanishi, Tony
Sent: Tuesday, March 29, 2011 4:17 AM
To: Liaison Japan
Subject: For tomorrow's 11 am NISA/TEPCO meeting

Mike,
Attached summarizes the NRC and NISA positions on the status of 1F1-1F4. Please let me know if anything in the attached needs to change.
Tony

From: Holahan, Patricia
Sent: Tuesday, March 29, 2011 7:27 AM
To: Whitney, James; Rutz, Wayne
Subject: FW: USNRC Earthquake-Tsunami Update.032911.0430EDT.docx

---

From: Holahan, Vincent
Sent: Tuesday, March 29, 2011 4:48 AM
To: LIA07 Hoc
Cc: Holahan, Patricia
Subject: Re: USNRC Earthquake-Tsunami Update.032911.0430EDT.docx

Please let the ET know that I have safely arrive in Hawaii and have checked into billeting on Pearl Harbor. I will be heading to PACOM tomorrow at 0615 hrs L (1215 hrs EST). Meetings and briefings begin at 0730 hrs.

Cheers
Vince

Sent from an NRC Blackberry
Vincent Holahan
(b)(6)

From: LIA07 Hoc
To: Liaison Japan
Cc: LIA07 Hoc
Sent: Tue Mar 29 04:23:11 2011
Subject: USNRC Earthquake-Tsunami Update.032911.0430EDT.docx

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

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

Thank you,

-Jim

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

Contact Group Name: Industry Consortium

From: Thorp, John
Sent: Wednesday, March 30, 2011 1:21 PM
To: Hasselberg, Rick
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th

Gracias, mi Amigo.

jet

From: Hasselberg, Rick
Sent: Wednesday, March 30, 2011 11:59 AM
To: Thorp, John
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th

Those times are confirmed. Thanks, John!

From: Thorp, John
Sent: Wednesday, March 30, 2011 9:27 AM
To: Hasselberg, Rick
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th
Importance: High

Thanks Rick. I'd like to confirm that I have Day Shift on 4/2 and Swingshift on 4/4, since I'm filling out my 145 form right now.

John

From: Hasselberg, Rick
Sent: Wednesday, March 30, 2011 7:33 AM
To: Thorp, John
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th

I thinks we're good for now.

From: Thorp, John
Sent: Wednesday, March 30, 2011 7:24 AM
To: Hasselberg, Rick
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th

No thanks. It's too tough to drive the (b)(6) after one night of mids. IF Rick is willing to take the mids, I'll take the swingshift.

From: Hasselberg, Rick
Sent: Tuesday, March 29, 2011 8:00 AM
To: Thorp, John
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th

Rick Jervey beat you to it, John. But mid shift (right after that) is still open...

From: Thorp, John
Sent: Monday, March 28, 2011 3:44 PM
To: Alter, Peter
Cc: Hasselberg, Rick
Subject: FW: RST Watch Bill Updated as of 1500 on Monday March 28th

FYI Peter.

John

From: Thorp, John
Sent: Monday, March 28, 2011 3:43 PM
To: Hasselberg, Rick
Subject: RE: RST Watch Bill Updated as of 1500 on Monday March 28th

I'll do Saturday 9 April 3pm to 11pm, if you can pencil me in.

Thanks Rick,

John

From: Hasselberg, Rick
Sent: Monday, March 28, 2011 3:23 PM
To: Brown, Eva; Brown, Frederick; Ruland, William; Holian, Brian; Hiland, Patrick; Skeen, David; Hackett, Edwin; Case, Michael; Howe, Allen; Dudes, Laura; Dozier, Jerry; Alter, Peter; RST01 Hoc; Hasselberg, Rick; Rini, Brett; Boyce, Tom (RES); Dion, Jeanne; Thomas, Eric; Collins, Frank; Orr, Mark; Morlang, Gary; Schoenebeck, Greg; Bukharin, Oleg; Circle, Jeff; Laur, Steven; Helton, Donald; Arndt, Steven; Skarda, Raymond; Mitman, Jeffrey; Gilmer, James; Ward, Leonard; Harrison, Donnie; Esmaili, Hossein; Fuller, Edward; Chung, Donald; Zoulis, Antonios; Gavrilas, Mirela; Gilmer, James; Mitman, Jeffrey; Alter, Peter; Norton, Charles; Summers, Robert; Brown, Michael; Shea, James; Shea, James; Thorp, John; Hart, Ken; Roggenbrodt, William; Williams, Donna; Solorio, Dave; Reeves, Rosemary; Bhachu, Ujagar; Gardocki, Stanley; McGovern, Denise; Padovan, Mark; Jervey, Richard; Horn, Brian; Kugler, Andrew; Bloom, Steven; Ramadan, Liliana; Dube, Donald
Cc: Gray, Kathy; Dozier, Jerry
Subject: RST Watch Bill Updated as of 1500 on Monday March 28th

RST Members,

Please accept our (my) apologies for the multiple screw-ups on the watch bill. We're learning from our mistakes and hope to better coordinate this in the immediate future. As a starter, I am off shift to concentrate on team management and staffing issues. Hopefully that will help.

Attached is the RST watch bill as of this time (1500) on Monday 3/28. You'll notice we have some holes yet to fill. If you need to change something or to offer yourself for an additional shift, please do the following:

For RST Directors, ***please contact Kathy Gray.*** Kathy oversees the RST Director watch standers. Kathy will pass her updates to me (Rick Hasselberg) and to Peter Alter.

For Accident Analysts/Severe Accident analysts – ***please contact Jerry Dozier.*** Jerry is overseeing the staffing of that position. Jerry will pass his updates to me and to Peter Alter.

For all other RST positions, please e-mail ***both*** me and Peter Alter. Peter and I will make all the changes on the watch bill and make sure that our changes get captured in the Master Roll-up document maintained by the OST/EST.

Please do not mark-up a watch bill sitting around the Ops Center. That doesn't help.

Please do not contact the OST/EST to make changes. That only leads to confusion. All changes have to reach either Peter Alter or me. We will get changes placed on the RST and master watch bills. Thanks!

And by the way, you folks are awesome! You're part of the history of this agency and most likely the history of the nuclear industry. For better or worse, we're all in this together.
God bless us all.

Rick

Rick Hasselberg
Sr. Emergency Response Coordinator
NRC Reactor Safety Team
Office of Nuclear Security and Incident Response
M/S T-4A43
Office - 301-415-6417

From: Rheaume, Cynthia
Sent: Thursday, March 24, 2011 12:50 PM
To: Wimbush, Andrea
Subject: FW: Ops Center Action Item for Ticketing
Attachments: Longer Term Actions; image001.gif

Andrea – is this something you think we could take on?

Cynthia Rheaume
Director, Program Management, Policy
Development and Analysis
Nuclear Security and Incident Response
(301)415-6538
Cynthia.Rheaume@nrc.gov

From: Evans, Michele
Sent: Thursday, March 24, 2011 12:34 PM
To: Rheaume, Cynthia; McDermott, Brian
Subject: FW: Ops Center Action Item for Ticketing

I need advice on how to best handle this question regarding tasking of items that come into the ops center, but shouldn't be worked by the ops center.

From: Muessle, Mary
Sent: Thursday, March 24, 2011 11:05 AM
To: Evans, Michele
Cc: Andersen, James; Landau, Mindy
Subject: FW: Ops Center Action Item for Ticketing

Here is the tasking that came in. I have also attached the message that we sent to Brian which is in question. We need to determine the best process to get actions to the right place. The two options mentioned are the EDO mailroom or the NSIR mailroom, but there may be a different way. Let's talk when you have time and have had a chance to speak with Brian.

Mary Muessle
Assistant for Operations - Acting
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-1703 office
301-415-2700 fax

From: RST01 Hoc
Sent: Wednesday, March 23, 2011 11:23 AM

To: Andersen, James; Muessle, Mary
Cc: Brown, Frederick
Subject: Ops Center Action Item for Ticketing

Jim and Mary,

Per Fred Brown, RST Director here in the Ops Center, Please ticket the following item to RES and FSME:

"Respond to Dan Dorman's email on long-term issue questions from Japan. Provide responses or estimates of when the responses can be expected to Dan by 18:00 EDT. If additional information is needed, let the site team know of any questions that can be brought back to NISA.

-Regarding the best type of enclosure for the plant, does NRC have any thoughts? Do we have any regulations applicable to this condition or thoughts on the role of the regulatory authority in this decision?

-What licensing requirements apply to decommissioning and regulatory review of the decommissioning plan?

-What should the Japanese be considering with respect to criticality prevention and decay heat removal during the entombment period?

-The NRC's TMI fact sheet notes that the first manned entry into the Unit 2 reactor building occurred after a venting of Krypton in July 1980 (16 months after the accident). WHat actions occurred during those 16 months that could inform their planning?"

Dan Dorman's email pasted below:

From: Dorman, Dan
Sent: Tuesday, March 22, 2011 3:05 AM
To: OST01 HOC; Casto, Greg; Monninger, John; ET07 Hoc
Subject: RE:

Additional tasks from meeting with NISA et al this morning. Lower prirority than the Cabinet level issues we just discussed on the phone, but any responses available by 1800 EDT on 3/22 would be greatly appreciated along with an estimate of when the remainder may be expected. If you need additional info, please identify any questions we can bring back to NISA (keeping in mind please that their plant data is also very limited, i.e., keep your data expectations modest).

1. Sea water injection continues to reactors 1-3. NISA is concerned about the radiolytic disassociation of H2 and O2. NISA would like NRC's perspective on the significance of this concern and how to treat this concern as they transition to freshwater injection.
2. At what point does salt deposits become a problem for flow during pending freshwater injection?
3. NISA is conducting simulations to project the extent of damage to fuel in the reactors. Has NRC developed any views on the extent of fuel damage?
4. NISA is interested to obtain any reference material regarding core-concrete interaction (not because they think they have a current issue but against that eventuality) including the conditions under which that occurs and any associated data.
5. In addition to the H2/O2 disassociation in item 1 above, they are concerned that there may be residual H2 in the containments and welcome NRC's thoughts on how to treat such a condition.

NISA is beginning to look at long term issues and has the following Qs in this area (note some of these may only apply to Japan's regulatory framework, but if we have insights from our post-TMI actions they would be greatly appreciated):
6. Regarding the best type of enclosure for the plant, does NRC have any thoughts? Do we have any regulations applicable to this condition or thoughts on the role of the regulatory authority in this deicision?
7. What licensing requirements apply to decommissioning and regulatory review of the decommissioning plan?
8. What should they be considering with respect to criticality prevention and decay heat removal during the entombment period?

9. The NRC's TMI Fact Sheet notes that the first manned entry into the Unit 2 reactor building occurred after a venting of Krypton in July 1980 (16 months after the accident). What actions occurred during those 16 months that could inform their planning?

Regarding the spent fuel pools, NISA asserted that the Unit 1 SFP is above TAF with over 20 days margin due to low decay heat. They are not injecting to the UNit 1 SFP. For Unit 2, they are injecting seawater to the SFP via installed piping. For Units 3 and 4, they are spraying from pumper trucks within the RBs to put water on the top of the pools (In response to a question, they indicated that these sprays were put in place after the explosive events in those buildings.) Based on this information, NISA is assuming that the SFPs are all below 100C. The team here has questions relative to the latter buildings and other information available, for example, lack of visual evidence of steaming on Unit 4. We would appreciate HQ's thoughts on the SFPs and apparent inconsistencies with the status provided by NISA.

Dan Dorman

Thanks,
Eric Thomas
RST Coordinator

From: Foster, Jack
Sent: Thursday, March 24, 2011 5:11 AM
To:
Cc: (b)(6) 'j3temp3@jso.mod.go.jp'; Dorman, Dan; RST01 Hoc; Cook, William
Subject: Re: Alternative cause for rise in temperature

Follow Up Flag: Follow up
Flag Status: Flagged

Major,

Thanks for the info. We will look thru your material and set up something tomorrow.

Jack Foster
US NRC
From an NRC Blackberry
Jack Foster
(b)(6)

From: Han, Chae Maj USMC <(b)(6)>
To: Foster, Jack
Cc: USFJ Chae Han <(b)(6)>; Simmers, Keith MAJ USA <(b)(6)>; MOD (Jin Lim) <j3temp3@jso.mod.go.jp>
Sent: Thu Mar 24 04:58:16 2011
Subject: Alternative cause for rise in temperature

Sir, I am working on the USFJ ISR plan and airborne transport modeling at the USFJ.
Based on the IR sensor data and the recently available TEPCO data of the pressure and water level, I thought of an alternative cause of high heat generation observed in the reactor 1 & 3.

(b)(5)

(b)(5)

Major Chae Han, USMC
RD-ISR, DTRA
Currently at USFJ RCMT, DSN 315-225-2303, 8638
(b)(6)

(b)(6)

chae.han@dtra.ic.gov
DSN 312-427-3166

DTRA CBRNE Technical Reachback
703-767-3445, 3446, 3448
DSN 312-427-3445
STE 703-767-2138
Fax 703-767-3335

(b)(6)

Reachback@dtra.ic.gov

From: RST03 Hoc
Sent: Wednesday, March 23, 2011 10:09 PM
To: RST01 Hoc
Subject: FW: TEPCO Question White Papers
Attachments: Plant Cooldown Ideas.docx; BMPC Physics_JointWhitePaperRev7.docx; Hydrogen Control Ideas rev2_03_23_11.docx; Issues Related to Sea Water in a BWR Plant Rev24_1355.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Here are electronic copies of the Bettis/KAPL laboratory inputs to the four questions asked in preparation for a 0100-0300 3/23/11 telephone conversation between NRC and Tepco/NISA.

From: Roberts, Thomas E CIV SEA 08 NR [mailto:(b)(6)]
Sent: Wednesday, March 23, 2011 7:41 PM
To: RST03 Hoc
Subject: Fw: TEPCO Question White Papers

From: Walters, Edward J (Contractor) <Edward.Walters.Contractor@unnpp.gov>
To: Vavoso, Thomas G CIV NAVSEA, 08; Roberts, Thomas E CIV SEA 08 NR; (b)(6) (b)(6)>; Herman, David R CIV NAVSEA, 08; Bell, Stephen T CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR; Steinhurst, Laurel A CIV SEA 08 NR; Kepple, Alan C CIV NAVSEA, 08; (b)(6) (b)(6)>; Bingman, Bruce M CIV SEA 08 NR; (b)(6)>; Dei, Donald E CIV SEA 08 NR
Sent: Wed Mar 23 19:21:52 2011
Subject: TEPCO Question White Papers

As requested, please find the Word versions of the latest Bettis/KAPL whitepapers on the four TEPCO questions asked earlier this week.

V/R,

Ed Walters

BMPC Physics Re-criticality Question Team

(b)(5)

(b)(5)

(b)(5)

(b)(5)

~~Official Use Only~~

Issues Related to Sea Water in a BWR Plant

Rev: March 23, 2011 – 16:00

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(b)(5)

Plant Cooldown Ideas
3/22/11 1715

(b)(5)

From: LIA08 Hoc
Sent: Wednesday, March 23, 2011 8:15 PM
To: HOO Hoc; RST01 Hoc; PMT01 Hoc; Hoc, PMT12; LIA06 Hoc
Subject: updated Reoccuring Daily Calls list
Attachments: Reoccurring Daily Calls Rev 6.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Attached is Revision 6 of the subject document. We added the 1230 NTAG (nuclear technical advisory group) call and the 1100 Technical Coordination with Industry Consortium call.

Please let me know if this document needs any additions or corrections.

Jeff Temple
Liaison Team

Reoccurring Daily Calls

-Time (EDT)	Description	Lead Team	Action/Purpose of the Call
0300	RST/PMT call with Japan Team	LT Arranged by the HOOs (b)(6)	Daily update for Site Team and HQ (convenient time for the Site Team)
0600	Status update & 2 pager/Sit Rep ***(BRIEFING ONLY-not a call)***	EBT	EBT developed agency briefing documents
0600	Pumping Rig discussions w/INPO& Bechtel	RST ** (arranged by HOO's) (b)(6)	Discussions regarding the pumping project
0715	Chairman's brief	ET (arranged by HOOs)	Update chairman and staff during turnover
0730	TAs & CAs briefing	ET ** (arranged by HOO's) (b)(6)	ET Director lead -briefed Commission TAs and ODs
0800	Deputy Secretaries	ET	White House lead (-***Chairman participates***) -Interagency discussion
0900	INPO call with RST	RST	Share technical information
0930	UK/Canada/France Call	RST ** (arranged by HOO's) Bridge (b)(6)	Information Exchange. Focused on Operational issues *(PMT call @ 1400 for Dose issues)*
1000	Call w/Industry (daily)	ET ** (arranged by HOO's)	ET led -Discussions with Industry
1100	ESF8-(Public Health & Medical Services)	LT (Conference number provided by HHS	HHS Secretarys Operations Center lead -Interagency discussion
1100	Technical Coordination with Industry Consortium	RST Arranged by HOOs (b)(6)	Technical discussion
1230	NTAG teleconference (chaired by NSS)		Nuclear Technical Advisory Group –email sent out daily with phone # and pass code
1400	UK/Canada/France Call	PMT ** (arranged by HOO's) Bridge (b)(6)	PMT led *(RST led call @ 0930 for Operational issues)* -Information sharing on current and projected dose
1400	USAID	LT/OCA	USAID lead -Interagency discussion
1400	NARAC	PMT ** (arranged by HOO's)	DOE lead -Interagency discussion of dose models

Reoccurring Daily Calls

1500	Congressional call	OCA & NRC *Go-To Team* *(Leeds, M.Johnson, Sherron, B.Boger, etc)* *800-593-7189 (* (b)(6)	OCA lead -Audience is Congressional staff who have or are near a plant; Oversight committees; House &Senate leadership
1515	Chairman's brief	ET Arranged by HOOs	
1700	HHS call with 50 states and federal partners	LT/State Liaison	Meeting occurs each Tuesday and Thursday evening, as organized by HHS (N.Natarajan). HHS provides bridge line day of call
1800	Status update & 2 pager/Sit Rep ***(BRIEFING ONLY-not a call)***	EBT	EBT developed agency briefing documents
2000	TAs & CAs briefing	ET ** (arranged by HOO's)	ET Director lead -briefed Commission TAs and ODs
2130	DOS	LT ** (arranged by HOO's)	DOS lead -Interagency discussion
2200	Chairman's brief by email	ET	Update chairman using one-pager

From: RST01 Hoc
Sent: Wednesday, March 23, 2011 3:46 PM
To: RST03 Hoc
Subject: FW: RFI water flow through reactors

FYI for comment.

-----Original Message-----
From: RST01 Hoc
Sent: Wednesday, March 23, 2011 3:20 PM
To: 'Young, Samuel E LCDR USN SJFHQ'
Cc: Capria, Frederick CAPT; Fallon, Russell J CDR USN USFJ Det 105; Galligher, Brian T LTJG USN USFJ J2; Mercer, Robert LCDR USN USFJ J3; Opfer, Matthew D LT USN USFJ J3; Poe, Timothy CDR USN; Casto, Chuck; Robinson, Alexis M CTR DTRA; Spencer, Julie A. CDR USN; Wright, Curry D Civ DTRA; Nakanishi, Tony; Devercelly, Richard; Foster, Jack; Cook, William
Subject: RE: RFI water flow through reactors

LCDR Young,

Answers to your specific questions are below. Additionally, I will offer the following and cc our NRC team in Japan to see what other information they can provide.

(b)(5)

I will also be forwarding this information to our industry partners to allow them to weigh in.

I hope this is the kind of feedback you are looking for.

Regards,
Eric Thomas
NRC Reactor Safety Team

-----Original Message-----
From: Young, Samuel E LCDR USN SJFHQ [mailto (b)(6)
Sent: Wednesday, March 23, 2011 2:35 PM
To: RST01 Hoc

Cc: Capria, Frederick CAPT; Fallon, Russell J CDR USN USFJ Det 105; Galligher, Brian T LTJG USN USFJ J2; Mercer, Robert LCDR USN USFJ J3; Opfer, Matthew D LT USN USFJ J3; Poe, Timothy CDR USN; Robinson, Alexis M CTR DTRA; Spencer, Julie A. CDR USN; Wright, Curry D Civ DTRA
Subject: RE: RFI water flow through reactors

Mr. Thomas,

Appreciate the assistance. Here are the plant parameters from 1200l Wed 23Mar. This shows a flow of 530 gal/hr for Rx 1 and 3200 gal/hr for Rx 2. We don't have a value for Rx 3.

(b)(5)

Very Respectfully,
LCDR Sam Young

-----Original Message-----
From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Thursday, March 24, 2011 2:34 AM
To: Young, Samuel E LCDR USN SJFHQ
Subject: RE: RFI water flow through reactors

LCDR Young.

(b)(5)

I hope this info is helpful. Contact me if you need more.

Regards,

Eric Thomas
NRC Reactor Safety Team

-----Original Message-----
From: Young, Samuel E LCDR USN SJFHQ [mailto (b)(6)
Sent: Wednesday, March 23, 2011 10:19 AM
To: (b)(6) ; RST01 Hoc; LIA01.Hoc@nrc.gov
Cc: Mercer, Robert LCDR USN USFJ J3; Aviles, Armando LT USN; Galligher, Brian T LTJG USN USFJ J2; Mercer, Andrew J Jr Maj USAF AFWA Det 1, 2 WS/CC; Opfer, Matthew D LT USN USFJ J3; Poe, Timothy CDR USN; Robinson, Alexis M CTR DTRA; Capria, Frederick CAPT; Fallon, Russell J CDR USN USFJ Det 105
Subject: RFI water flow through reactors

NRC RST, NACCC,

USFJ is working to provide the MOD with supplies of freshwater through barges and trucks. We need information to try to estimate how much freshwater the Japanese are going to need to flush through the reactors.
To help inform what kind of supply, please assist in answering the following questions.

(b)(5)

We are trying to provide freshwater by Friday so we will need these estimates as soon as possible.

Very Respectfully,
LCDR Sam Young
USFJ CAT RCMT
DSN: 315-225-7345/3397

Fukushima Daiichi Nuclear Power Plant Plant related Parameter

as of 23 Mar 2011 12:00

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Watering Condition	Sea water injected using water supply lines Flow Rate: 2 cubic meters/h (measured on 3/23 9:00am)	Sea water injected using fire hose lines Flow Rate: 12 cubic meters/h (measured on 3/23 9:00am)	Sea water injected using fire hose lines Flow Rate: hunting (measured on 3/23 9:10am)	suspended	suspended	suspended
Water Level in Reactor	Fuel area A: -1750mm Fuel area B: -1750mm (as of 3/23 12:00pm)	Fuel area A: -1300mm (as of 3/23 9:00am)	Fuel area A: -1800mm Fuel area B: -2300mm (as of 3/23 9:10am)	-	suspended area: 1744mm (as od 3/23 12:00pm)	suspended area: 2701mm (as od 3/23 12:00pm)
Pressure in Reactor	0.356MPag (A) 0.320MPag (B) (as of 3/23 12:00pm)	minus0.023MPag (A) minus0.023MPag (B) (as of 3/23 9:00am)	minus0.10MPag (A) 0.034MPag (B) (as of 3/23 9:10am)	-	0.007MPa g (as od 3/23 12:00pm)	0.008MPa g (as od 3/23 12:00pm)
Temperature of Water in Reactor	-			-	30.7 Celsius (as of 3/23 12:00pm)	64.6 Celsius (as of 3/23 12:00pm)
Temperature of Reactor Pressure Vessel	Water Supply Nozzle temp: 345 Celsius Pressure Container Bottom temp: 350 Celsius (as of 3/23 12:00pm)	Water Supply Nozzle temp: 105 Celsius Pressure Container Bottom temp: 105 Celsius (as of 3/23 9:00am)	Water Supply Nozzle temp: 304.8 Celsius Pressure Container Bottom temp: 225.5 Celsius (as of 3/23 9:10am)	No.4 plant: No heating element (fuel) in reactor No.5 and 6 plants: continuing monitoring		
D/W Pressure S/C Pressure	D/W 0.320MPa abs S/C 0.300MPa abs (as of 3/23 12:00pm)	D/W 0.11MPa abs S/C Down Scale (as of 3/23 9:00am)	D/W 0.100MPa abs S/C Down Scale (as of 3/23 9:10am)	-		
CAMS	D/W 4.88 x 10^{1} Sv/h S/C 3.06 x 10^{1} Sv/h (as of 3/23 9:00am)	D/W 5.14 x 10^{1} Sv/h S/C 1.76 x 10^{1} Sv/h (as of 3/23 9:00am)	D/W 6.02 x 10^{1} Sv/h S/C 1.74 x 10^{1} Sv/h (as of 3/23 9:10am)	-		
D/W Design Working Pressure	0.384MPa g	0.384MPa g	0.384MPa g	-		
D/W Maximum Design Pressure	0.427MPa g	0.427MPa g	0.427MPa g			
Water Temperature of Spent Fuel Pool	-	51 Celsius (as of 3/23 4:20am)	-	84 Celsius (as of 3/23 4:08am)	39.0 Celsius (as of 3/23 23:00pm)	20.0 Celsius (as of 3/23 23:00pm)
Power Source	External Power Source (P/C2C)		External Power Source (P/C4D)		External Power Source	
Other Info.						

From: Young, Samuel E LCDR USN SJFHQ <(b)(6)> on behalf of USFJ-CAT-RCMT <(b)(6)>
Sent: Monday, March 21, 2011 8:29 PM
To: (b)(6)
Subject: FW: Operation schedule regarding Fukushima 1st Nuclear Plant 22 Mar
Attachments: 0322Operation schedule regarding Fukushima 1st Nuclear Plant.ppt

Follow Up Flag: Follow up
Flag Status: Flagged

FYSA

-----Original Message-----
From: j3temp5@jso.mod.go.jp [mailto:j3temp5@jso.mod.go.jp]
Sent: Tuesday, March 22, 2011 9:07 AM
To: USFJ-CAT-CHIEF; USFJ-CAT-J5; USFJ-CAT-RCMT; USFJ-CAT-J3; Barker, Matthew LCDR USN; Clausen, John M CAPT USN; Reynolds, Douglas J. LTC USA; Parker, David COL SJFHQ; Rueschhoff, Jason M. Lt Col USAF; Merz, Andrew M MAJ USMC; Young, Samuel E LCDR USN SJFHQ
Subject: FW: Operation schedule regarding Fukushima 1st Nuclear Plant 22 Mar

Gentlemen,

Here is the Power Point of the schedule that I emailed out.

V/R,
MAJ Walker

-----Original Message-----
From: yoshiyuki urasawa [mailto:j3urasawa@jso.mod.go.jp]
Sent: Tuesday, March 22, 2011 8:59 AM
To: j3cat2nd@jso.mod.go.jp; j3temp5@jso.mod.go.jp; j3temp4@jso.mod.go.jp
Subject: Operation schedule regarding Fukushima 1st Nuclear Plant 22 Mar

Gentleman,

Please see attached file.

JJS J3 Bilateral Ops. Section

Tiger

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
LCDR Urasawa Bilateral Operation Section, JJS J3 DSN Phone: 224-7721 or 224-7786 ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

22 Mar 2011

Operation schedule regarding Fukushima 1st Nuclear Plant

0600i Surface the place for setting "KIRIN" Truck mounted concrete boom pump for #4 Reactor
0900i JASDF RF-4's RECON flight #1 from Hyakuri A/B (depend on weather condition)
0910i JASDF RF-4's RECON flight #2 from Hyakuri A/B (depend on weather condition)
1000i Site survey prior to setting "KIRIN"
1100i Setting up KIRIN
1200i Determine whether "KIRIN" operation should be conducted or not
1200i-1300i Setting the "KIRIN" to appropriate hit-point with the camera of "KIRIN".(OCA-1: Set "KIRIN" Successfully)
1200i-1300i Withdraw "KIRIN" (OCA-3: Fail to set "KIRIN")
---> after 1400i - +1hour SDF's water flashing(OCA-3)
---->Then Tokyo Fire-fighting Department water flashing for #3 Reactor(OCA-3)
1300i-1400i Test flushing water(OCA-1)
1400i Preparing for pumping sea water up(OCA-1)
1400i-1500i Withdraw "KIRIN"(OCA-2: Fain at "KIRIN"'s Water Flushing Test)
---> after 1500i - +1hour SDF's water flashing(OCA-2)
---->Then Tokyo Fire-fighting Department water flashing for #3 Reactor(OCA-2)
1400i-1500i Tokyo Fire-fighting Department for #3 Reactor(OCA-1)
1600i-1900i "KIRIN" conduct pumping sea water up(OCA-1)
1700i JASDF RF-4's RECON flight from Hyakuri A/B

*JGSDF Helo (12nd Battalion)
Standing by at JGSDF Camp Koriyama for urgent MEDIBAC with 10 JGSDF doctors.

*Remarks
JJS report USFJ/LO Col Town if we could know that TEPCO will conduct decompression a reactor

From: Brittingham, Martin (GE Power & Water) <martin.brittingham@ge.com>
Sent: Friday, March 25, 2011 1:54 PM
To: RST01 Hoc
Cc: Requard, Keith (GE Power & Water); Ginsberg, Robert (GE Power & Water); Rogers, Richard M (GE Power & Water); Bowman, Scott (GE Power & Water); Madronero, Hernando (GE Power & Water)
Subject: GEH Markup Regarding Review of Units 1-3 Cooling Methods (Draft) Markup
Attachments: DOC001.PDF

Follow Up Flag: Follow up
Flag Status: Flagged

Cooling Methods Review Team

Attached is subject document with GEH markup comments for afternoon 2pm telcon.

Regards

Martin Brittingham
GE-Hitachi Nuclear Energy

* - (910) 819-6655
D/C 819-6655
Cell (b)(6)
Fax - (910) 362-6655

* - e-mail:Martin.Brittingham@GE.com
www.ge-energy.com/nuclear

3901 Castle Hayne Road
PO Box 780 M/C L30
Wilmington, NC 28402 USA

(b)(4),(b)(5)

GEH: Markups shown 3-25-11

(b)(4),(b)(5)

GE H: NO Markups
CK 3096 of 3114

(b)(4),(b)(5)

GEH: Markup Shown

 5-11

(b)(4),(b)(5)

GEH: NO MARKUPS
3/25/11

Industry Tech Group Conference Call Outline
Standing Call 1100 EDT
Use NRC bridge line (b)(6), pass code (b)(6)

(b)(4),(b)(5)

GEH: No Markups
3-25-11

Industry Tech Group Conference Call Outline
Standing Call 1100 EDT
Use NRC bridge line (b)(6), pass code (b)(6)

Action Items

(b)(4),(b)(5)

GEH: No Markups
3/25/11

PTS ERC Issue Tracking Sheet

(b)(4),(b)(5)

GEH : NO Markups

3-25-11

PTS ERC Issue Tracking Sheet

(b)(4),(b)(5)

GEH : NO MarkUPS
3-25-16

(b)(4),(b)(5)

GEH: MarKups Shawn
3-25-11

(b)(4),(b)(5)

GEH: Markups shown
3-25-11

(b)(4),(b)(5)

GEH! NO Markups
3-25-11

(b)(4),(b)(5)

GEH: Markups shown
3-25-11

(b)(4),(b)(5)

BEH: No Mark Ups
3-25-11

(b)(4),(b)(5)

GEH: No Markups
3-25-11

(b)(4),(b)(5)

GEH: NO Markups
3/25/11

(b)(4),(b)(5)

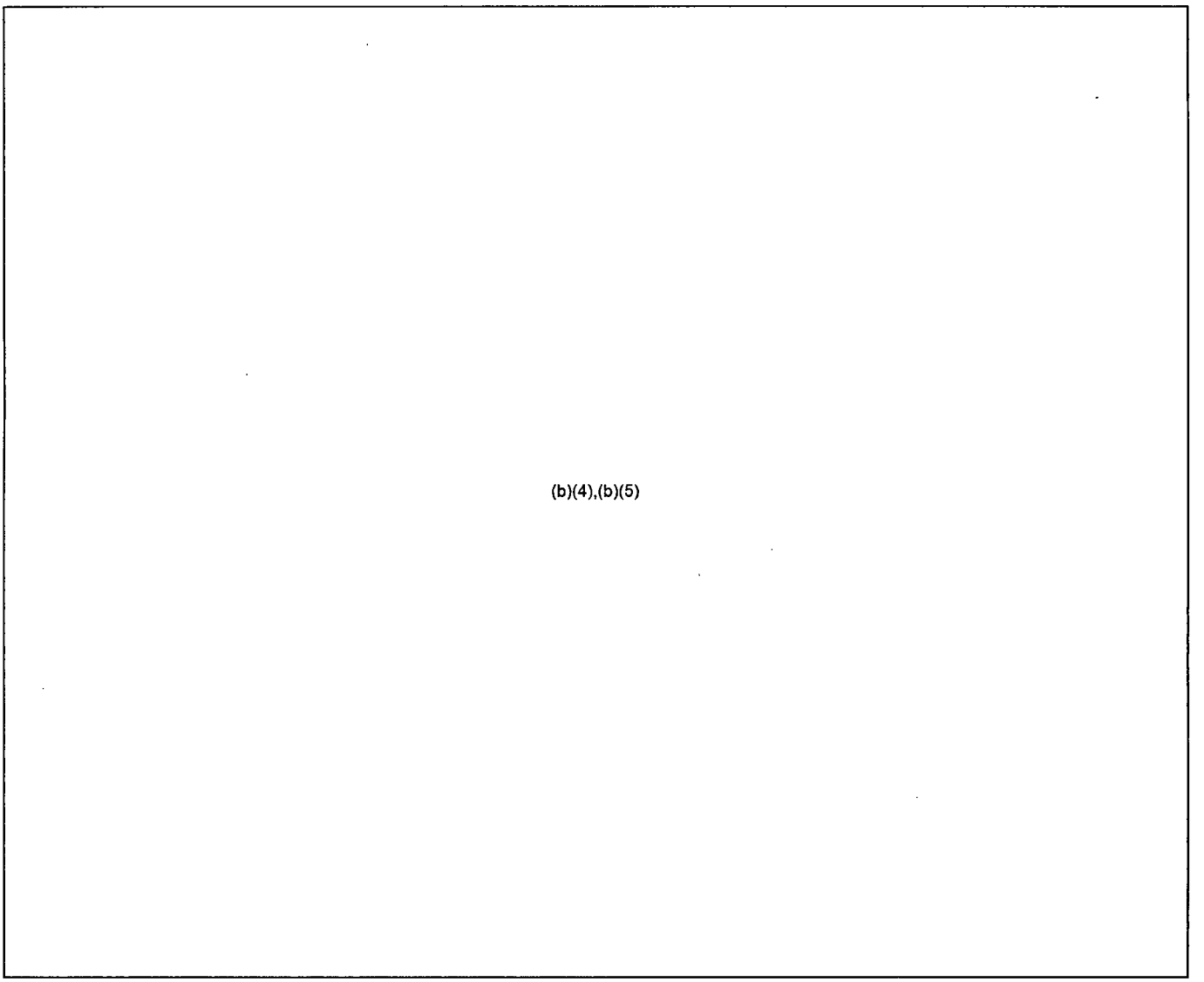
GEN: NO MARKUPS
3-25-11

(b)(4),(b)(5)

GEH: NO MARK-UPS
3-25-11

(b)(4),(b)(5)

GEH ! NI markups
3-25-11



GEH: NO MARKUPS
3-25-11

(b)(4),(b)(5)

GEH: NO Markups
3-25-11