From: RST06 Hoc
Sent: Sunday, April 10, 2011 4:54 AM
To: Hoc, PMT12
Cc: RST01 Hoc
Subject: PARs for Deputies Meeting Rev11.docx
Attachments: PARs for Deputies Meeting Rev11.docx

Revised items 1 through 10 under Phase 1 technical stability section to reflect most recent changes.

B 6/70

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From: Hoc, PMT12
Sent: Sunday, April 10, 2011 1:40 AM
To: RST06 Hoc
Subject: PARs for Deputies Meeting Rev11
Attachments: PARs for Deputies Meeting Rev11.docx

B6/71

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From: LIA06 Hoc
Sent: Sunday, April 10, 2011 6:18 PM
To: LIA08 Hoc
Subject: FW: Latest Composite Paper
Attachments: PARs for Deputies Meeting Rev14 Trish Milligan and RST input 04-10-11.docx

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

From: Hoc, PMT12
Sent: Sunday, April 10, 2011 6:17 PM
To: LIA06 Hoc
Cc: LIA06 Hoc
Subject: Latest Composite Paper

B6/72

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From: Hoc, PMT12
Sent: Sunday, April 10, 2011 1:39 AM
To: RST06 Hoc
Subject: FW: Integrated document from Trish Milligan
Attachments: PARs for Deputies Meeting Rev0 (3).docx

From: PMT01 Hoc
Sent: Sunday, April 10, 2011 12:43 AM
To: Hoc, PMT12
Subject: FW: Integrated document from Trish Milligan

From: McDermott, Brian
Sent: Friday, April 08, 2011 4:02 PM
To: PMT09 Hoc; PMT01 Hoc; Cool, Donald; Zimmerman, Roy; Blount, Tom; Hiland, Patrick
Subject: Integrated document from Trish Milligan

Attached is the document that Trish was working to integrate today, based on direction from last night.

(b)(5)

Once clarity is gained regarding the desired product, I recommend using the Task Tracker to document the conclusions such that subsequent shifts will be able to clearly understand the deliverables. I also recommend that all parties present for the alignment discussion review the Task Tracker language, to ensure the best possible description of the deliverables is provided for the oncoming shift.

Brian

B6/73

Contact Group Name: Industry Consortium

From: Hoc, PMT12
Sent: Monday, April 11, 2011 12:46 AM
To: RST06 Hoc
Subject: Red line and clean copies of the Permanent Re-Entry latest rev.
Attachments: PARs for Deputies Meeting Rev14 clean copy Trish Milligan and RST input 04-10-11.docx; PARs for Deputies Meeting Rev14 Trish Milligan and RST input 04-10-11.docx

Attached. This is located in M/Fukushima/Papers. Tx greg

B6/74

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Formatted: Font: (Default) Arial, 11 pt, Do not check spelling or grammar

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Wittick, Brian

From: Wittick, Brian
Sent: Tuesday, April 12, 2011 9:42 AM
To: Emche, Danielle
Subject: Re: Read out from 4/11 and 4/12

If it is OUO it should not be shared outside US channels.

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: Emche, Danielle
To: Wittick, Brian; Doane, Margaret; Mamish, Nader; Foggie, Kirk
Cc: Abrams, Charlotte; Bloom, Steven
Sent: Tue Apr 12 09:38:15 2011
Subject: Re: Read out from 4/11 and 4/12

(b)(5)

Danielle
Sent from an NRC BlackBerry.

From: Wittick, Brian
To: Doane, Margaret; Emche, Danielle; Mamish, Nader; Foggie, Kirk
Cc: Abrams, Charlotte; Bloom, Steven
Sent: Tue Apr 12 09:03:59 2011
Subject: Re: Read out from 4/11 and 4/12

It should probably be marked OUO and controlled accordingly.

VR

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: Doane, Margaret
To: Emche, Danielle; Mamish, Nader; Foggie, Kirk
Cc: Abrams, Charlotte; Bloom, Steven; Wittick, Brian
Sent: Tue Apr 12 08:28:56 2011
Subject: Re: Read out from 4/11 and 4/12

B6/75

Danielle and Brian
There is going to be a meeting at the IAEA with the US, on Japan invoking the assistance convention. Any concern with me sending this note to them. The assistance discussion would help.
Margie

Sent from an NRC Blackberry
Margaret Doane

From: Emche, Danielle
To: Doane, Margaret; Mamish, Nader; Foggie, Kirk
Cc: Abrams, Charlotte; Bloom, Steven; Wittick, Brian
Sent: Tue Apr 12 07:15:30 2011
Subject: Read out from 4/11 and 4/12

Email your questions. It is 8:15 and we haven't had dinner or lunch! You better read the whole thing ☺

Danielle

From: Harrington, Holly
To: McIntyre, David; Brenner, Eliot
Subject: RE: U.S. Nuclear-Disaster Preparedness Hobbled by Uncertain Chain of Command
Date: Tuesday, April 12, 2011 8:42:29 AM

(b)(5)

Eliot – I can send to Brian McDermott and ask them to review. We may want to come up with a blog post to address the general issue.

Holly

From: McIntyre, David
Sent: Tuesday, April 12, 2011 8:24 AM
To: Brenner, Eliot; Harrington, Holly
Subject: FW: U.S. Nuclear-Disaster Preparedness Hobbled by Uncertain Chain of Command

Not sure this ProPublica piece would make it into our clips. Discusses potential chaos as locals, feds do power struggles during an emergency.

From: Dave McIntyre [mailto (b)(6)
Sent: Tuesday, April 12, 2011 6:42 AM
To: McIntyre, David
Subject: U.S. Nuclear-Disaster Preparedness Hobbled by Uncertain Chain of Command

I would like to share this link with you:

http://www.propublica.org/article/u.s.-nuclear-disaster-preparedness-hobbled-by-uncertain-chain-of-command

From ProPublica - journalism in the public interest. Sent using the ProPublica iOS app.

Dave

86/76

From: RST01 Hoc
Sent: Wednesday, April 13, 2011 3:23 PM
To: ET02 Hoc
Subject: FW: Daiichi Electrical Injection Status.docx
Attachments: Daiichi Electrical Injection Status.docx

From: DiRito, Paul J (WANO) [mailto:DiRitoPJ@INPO.org]
Sent: Wednesday, April 13, 2011 12:38 PM
To: RST01 Hoc
Subject: Daiichi Electrical Injection Status.docx

B6/77

(b)(4)

April 10, 2011

From:	LIA01 Hoc
Sent:	Wednesday, April 13, 2011 5:47 PM
To:	Aaron Leong; Al Hochevar; Aleshia Duncan; Alice Caponiti; (b)(6) Blake Crowe; Blamey, Alan; Blount, Tom; Boger, Bruce; Bruce Howard; Casto, Chuck; Christensen, Harold; Christopher Green; Claire Berger; Craig Gaddis; Daniel Piccuta; Daniel Piccuta; Daniel Russel; DORLCAL Resource; Dorman, Dan; DprNrrCal Resource; Emche, Danielle; ET05 Hoc; ET07 Hoc; FOIA Response.hoc Resource; Geoffrey Wiggin; Giitter, Joseph; Glenn Southern; Heather Dresser; Holahan, Vincent; HOO Hoc; INPO; INPO; INPO; INPO; INPO; INPO; INPO; INPO; James White; James Zumwalt; (b)(4) Jay Tilden; Jeffrey Bader; Jeffrey Miller; Jeremy Mears; John Peters; Joseph Donovan; Joseph Young; (b)(4) Justin Cooper; Kenneth Spurlock; (b)(4); LCDR Daryn Moorman (USN); Lee A Gard, (INPO); LIA01 Hoc; LIA06 Hoc; LIA08 Hoc; LIA11 Hoc; Lt Trevor Conger (USN); Mark Wall; McDermott, Brian; McGinty, Tim; Michael Schiffer; Miller, Chris; Monninger, John; Morris, Scott; NRC Liaison at USAID; OST02 HOC; PACOM Watch Officer; Pentagon Japan Crisis Team J-4 Desk; Peter Lyons; Hoc, PMT12; Raymond Greene; Riaz Awan; (b)(4); Rick Nielsen; Robert Gambone; Robert Luke; Robert Mercer; Ron Cherry, DOE-Japan Embassy; Ross-Lee, MaryJane; RST01 Hoc; RST01B Hoc; Russell Morales; Rust Deming; Sal Golub; Sal Golub; Samuel Young; Simon Schuchat; Stahl, Eric; Stephen Gabri; Stephen Town; Steve Aoki; Suzanne Basalla; Tim Cipullo; Tom (b)(4) Virgilio, Martin; Weber, Michael; Wiggins, Jim; William Berger; William Webster; Wittick, Brian; Zimmerman, Roy
Cc:	Blamey, Alan; Wittick, Brian; OST01 HOC
Subject:	CANCELLED: Consortium Call for Wednesday April 13th

The next Consortium Call will be held on **THURSDAY April 14th** at 2000hrs. to better align with the new schedule of Cabinet meetings in Japan.

Thank you
Lisa

Lisa Gibney Wright
Liaison Team Coordinator
US Nuclear Regulatory Commission
Email to: LIA08.hoc@nrc.gov
Desk Ph: 301-816-5185

B6/78

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From: ET02 Hoc
Sent: Wednesday, April 13, 2011 3:36 PM
To: OST01 HOC
Cc: RST01 Hoc
Subject: FW: Daiichi Electrical Injection Status.docx
Attachments: Daiichi Electrical Injection Status.docx

EST Support (OST01.hoc):
Here's something that I assume is for the ET Director.

RST01:
Please send all e-mails to OST01.hoc if you want information to be given to the ET Director.

Thanks....karen Jackson, est response ops sys mgr

From: RST01 Hoc
Sent: Wednesday, April 13, 2011 3:23 PM
To: ET02 Hoc
Subject: FW: Daiichi Electrical Injection Status.docx

From: DiRito, Paul J (WANO) [mailto:DiRitoPJ@INPO.org]
Sent: Wednesday, April 13, 2011 12:38 PM
To: RST01 Hoc
Subject: Daiichi Electrical Injection Status.docx

B69/79

(b)(4)

April 10, 2011

From: OST01 HOC
Sent: Wednesday, April 13, 2011 7:49 AM
To: Weber, Michael
Subject: RE: RESPONSE - IAEA Technical Briefing Summary for April 12, 2011

Mr. Weber,

You are correct about the round-about way that this gets to the EST Coordinator. I have added you to the Distribution List for the IAEA documents we receive.

V/r,
Rebecca Stone
EST Coordinator

From: Weber, Michael
Sent: Wednesday, April 13, 2011 7:41 AM
To: OST01 HOC
Subject: RESPONSE - IAEA Technical Briefing Summary for April 12, 2011

Thanks, Rebecca. From the email string below, it appears that LIA02 is on Mark Shaffer's distribution list. Note the document we are discussing is not a product of the State Department and the HOO is not on Mark's distribution. I would like to receive Mark's daily report.

From: OST01 HOC
Sent: Wednesday, April 13, 2011 7:21 AM
To: Weber, Michael
Subject: RE: RESPONSE - IAEA Technical Briefing Summary for April 12, 2011

Mr. Weber,

The HOOs are on State's distribution list for the IAEA documents. Any emails sent to the HOOs get forwarded to the EST Coordinator. From there, we forward them to the current ET Director. If you would like to be added to our distribution list or have any additional questions, please notify the EST Coordinator on shift at ost01.hoc@nrc.gov.

V/r,
Rebecca Stone
EST Coordinator

From: Wiggins, Jim
Sent: Wednesday, April 13, 2011 7:02 AM
To: Weber, Michael
Cc: OST01 HOC
Subject: RE: RESPONSE - IAEA Technical Briefing Summary for April 12, 2011

Don't know the author. It's a report that supported a press opportunity that occurred 4/12. NHK ran a story on it overnight. I got it from OST01. OST01 – do you have a source for the IAEA report?

From: Weber, Michael
Sent: Wednesday, April 13, 2011 6:54 AM

B61/80

To: Wiggins, Jim
Cc: Virgilio, Martin; Doane, Margaret; Mamish, Nader; Golder, Jennifer; Shaffer, Mark R; ET05 Hoc; ET01 Hoc; OST02 HOC; Dyer, Jim
Subject: RESPONSE - IAEA Technical Briefing Summary for April 12, 2011

Thanks, Jim. Is the document that you attached from the IAEA Technical Briefing a product prepared by Mark in Vienna based on the Technical Briefing? I found the summary to be useful and informative.

From: Wiggins, Jim
Sent: Wednesday, April 13, 2011 5:32 AM
To: Virgilio, Martin; Weber, Michael; Dyer, Jim; Carpenter, Cynthia; Boger, Bruce; Johnson, Michael; Zimmerman, Roy
Subject: FW: IAEA Technical Briefing Summary for April 12, 2011

Se the attached FYI

Also, heard overnight that a remote visual check of the U4 SFP indicated water over the top of the fuel bundles (5-10 ft)

From: LIA08 Hoc
Sent: Wednesday, April 13, 2011 5:23 AM
To: RST07 Hoc; Hoc, PMT12; Wiggins, Jim
Subject: FW: IAEA Technical Briefing Summary for April 12, 2011

For your info. Jeff Temple

From: LIA02 Hoc
Sent: Wednesday, April 13, 2011 4:19 AM
To: LIA08 Hoc
Subject: FW: IAEA Technical Briefing Summary for April 12, 2011

From: Shaffer, Mark R [mailto:ShafferMr@state.gov]
Sent: Wednesday, April 13, 2011 4:19 AM
To: Shaffer, Mark R; Scheland, Mark DL; IAEA Vienna; Davies, Glyn T
Cc: (b)(6)

(b)(6)

Subject: IAEA Technical Briefing Summary for April 12, 2011

IAEA Technical Briefing on Fukushima Accident - April 12, 2011

The IAEA Technical Briefing on April 12 was led by Deputy Director General Denis Flory, and supported by Mr. Miro Lipar, from the Division of Nuclear Installation Safety; Ms. Elena Buglova, Acting Director for the Incident & Emergency Center; and Ms. **Maria Betti, Director of** IAEA's Marine Environmental Laboratories in Monaco.

Current Situation
Overall, the situation at the Fukushima Daiichi plant remains very serious, but there are early signs of recovery in some functions such as electrical power and instrumentation.

Provisional INES Level 7 Rating

IAEA confirmed that the Nuclear and Industrial Safety Agency (NISA) has submitted a provisional International Nuclear and Radiological Event Scale (INES) Level 7 rating for the accident at the Fukushima Daiichi nuclear

power plant. <u>This new provisional rating considers the accidents that occurred at **Units 1, 2 and 3** as a single event</u> on INES and uses estimated total release to the atmosphere as a justification.
Previously, separate provisional INES Level 5 ratings had been applied for **Units 1, 2 and 3**.
The provisional rating was determined by NISA after it received the results of the analysis conducted by the Japan Nuclear Energy Safety Organization (JNES). NISA then applied the INES assessment methodology to calculate the total estimated release in terms of radiological equivalence to I-131.

Based on this provisional assessment, NISA concluded that the accident would be provisionally rated INES Level 7 as per the definition in the 2008 Edition of the INES Manual, which identifies a level & accident as "*An event resulting in an environmental release corresponding to a quantity of radioactivity radiologically equivalent to a release to the atmosphere of more than several tens of thousands of terabequerels of I-131.*"
NISA estimates that the release of radioactive material to the atmosphere is approximately 10% of the Chernobyl accident, which is the only other accident to have an INES Level 7 rating.

Protective Measures

"On April 11, the Government of Japan announced that they had concluded to establish 'Planned Evacuation Areas' and 'Evacuation prepared Area' in the areas beyond the 20km radius from the Fukushima Daiichi nuclear power plant. The review was conducted because the Government considered the safety of residents its first priority. The Government of Japan considered the standards recommended by the International Commission on Radiological Protection (ICRP) and the International Atomic Energy Agency (IAEA) as part of the review.

With regard to the 'Planned Evacuation Areas', the Japanese authorities have found that the areas beyond 20 km radius could be exposed to over 20mSv during the course of the next one year, approximately until next March. Therefore the Government of Japan will be consulting with the local communities in terms of planned evacuations, ant at this juncture they are hoping that this planned evacuation will be carried out during the next month to come. The Planned Evacuation Areas that have been newly designated for evacuation include Kutsurao village, Namie town, Iitate village, a part of Kawamata town and a part of Minami Souma City.

The Government also defined a second new area called the <u>'Evacuation Prepared Area'</u>. This area includes the area previously defined as the 'Indoor Evacuation Area' between 20 and 30 km from Fukushima Daiichi, but excludes those areas designated above as 'Planned Evacuation Areas'.
Within the 'Evacuation Prepared Area' people living in this area should be prepared for indoor evacuation or evacuation (outside of this area) in case of emergency. Voluntary evacuation is recommended within this area. Children, pregnant women, people who require nursing care and those who are hospitalized should not enter this area. Kindergartens, pre-schools, elementary schools, junior-high schools and high school will be closed within this area."

Earthquake of 11 April
With regard to earthquake that occurred in Japan at 08:16 UTC, on April11, the IAEA International Seismic Safety Centre rated it as a 6.6 magnitude, revised from an initial 7.1 magnitude. The epicenter of the earthquake was in Fukushima Prefecture, 68 km from the Daiichi nuclear power plant. The epicenter was inland at a depth of 13.1 km. The IAEA contacted NISA who confirmed the following regarding the status of the Fukushima Daiichi nuclear power plant:

- No changes were observed on the readings at the on-site radiation monitoring posts;
- Workers were temporarily evacuated to the seismic evacuation shelter;
- Off-site power was lost and water injection pumps for **Units 1, 2 and 3** stopped but were restarted 50 minutes after the earthquake; and
- The injection of nitrogen into **Unit 1** stopped and resumed later.

Fukushima Daiichi Plant Status

In **Unit 1** fresh water is being continuously injected into the RPV through the feed-water line at an indicated flow rate of 6 m^3/h using a temporary electric pump with off-site power. In **Units 2 and 3** fresh water is being continuously injected through the fire extinguisher lines at an indicated rate of 7 m^3/h using temporary electric pumps with off-site power.

Nitrogen gas is being injected into the **Unit 1** containment vessel to reduce the possibility of hydrogen combustion within the containment vessel. The pressure in this containment vessel is increasing due to the addition of nitrogen. The pressure in the RPV is increasing as indicated on both channels of instrumentation. In **Units 2 and 3** Reactor Pressure Vessel and Drywell pressures remain at atmospheric pressure.

RPV temperatures remain above cold shutdown conditions in all Units, (typically less than 95 °C). In **Unit 1** temperature at the feed water nozzle of the RPV is 221 °C and at the bottom of the RPV is 120 °C. In **Unit 2** the temperature at the feed water nozzle of the RPV is 155 °C. The temperature at the bottom of the RPV was not reported. In **Unit 3** the temperature at the feed water nozzle of the RPV is 97 °C and at the bottom of the RPV is 111 °C.

There has been no change in status in **Units 4, 5 and 6** and the Common Spent Fuel Storage Facility.

Radiation Monitoring
On April 11, deposition of both iodine-131 and cesium-137 was detected in 6 and 8 prefectures respectively. The values reported for iodine-131 ranged from 2.1 to 35 Bq/m^2 and for cesium-137 from 5.2 to 41 Bq/m^2.

Gamma dose rates are measured daily in all 47 prefectures, the values tend to decrease. For Fukushima, on April 11 a dose rate of 2.1 µSv/h, for the Ibaraki prefecture a gamma dose rate of 0.15 µSv/h was reported. The gamma dose rates in all other prefectures were below 0.1 µSv/h.
Dose rates are also reported specifically for the Eastern part of the Fukushima prefecture, for distances of more than 30 km to Fukushima-Daiichi. On April 11, the values in this area ranged from 0.2 to 25 µSv/h.

In an additional MEXT monitoring program, on April 11 measurements were reported for 25 cities in 13 prefectures. In Fukushima City, a value of 0.42 µSv/h was observed. In all other cities, gamma dose rates ranged from 0.04 to 0.13 µSv/h. Typical normal background levels are in the range of 0.05 to 0.10 µSv/h. Also on April 11, the IAEA Team made measurements at 9 different locations in the Fukushima area at distances of 30 to 58 km, West to Northwest from the Fukushima nuclear power plant. At these locations, the dose rates ranged from 0.1 to 2.2 µSv/h. At the same locations, results of beta-gamma contamination measurements ranged from 0.01 to 0.28 Megabecquerel/m^2.

Analytical results related to food contamination were reported by the Japanese Ministry of Health, Labor and Welfare on 11 April, and covered a total of 21 samples taken on 8 April and 10 to 11 April. Analytical results for all of the samples of various vegetables, spinach and other leafy vegetables, fruit (strawberries), various meats (chicken, beef and pork), seafood and unprocessed raw milk in eight prefectures (Fukushima, Gunma, Hyogo, Ibaraki, Miyagi, Niigata, Saitama and Yamagata) indicated that I-131, Cs-134 and/or Cs-137 were either not detected or were below the regulation values set by the Japanese authorities.

Marine Monitoring
TEPCO is conducting a program for seawater (surface sampling) at a number of near-shore and off-shore monitoring locations. Up until April 3, a general decreasing trend was observed at the sampling points TEPCO 1 to TEPCO 4. After the discharge of contaminated water on April 4, a temporary increase has been reported. As of April 12, no new data for TEPCO 1 - 10 sampling points have been reported.

MEXT Off-shore Monitoring Program
As reported in previous briefings, MEXT initiated the off-shore monitoring program on March 23 and subsequently points 9 and 10 were added to the off-shore sampling scheme. On April 4, MEXT added two sampling points to the north and west of sampling point 1. These are referred to as points A and B. As of April 12, no new data for all MEXT sampling points have been reported.

Questions from Member States

Member States asking questions today included Japan, Singapore, Korea, Russia and France.
Nearly all questions centered on more detail regarding the INES 7 rating. Singapore and Korea in particular wanted to know what member states "should be doing differently in response to the new rating." Despite DDG Flory's best efforts to explain that INES is meant to relay information based on scientific findings, not to describe conditions on the ground or real effects on human health or the environment, the member states continued to probe for what actions they should take in response to this "new" decision. Russia was also vocal in this discussion, stating that it is "not appropriate to compare accidents like Chernobyl and others, because this is not what the INES system is for." Russia also (correctly) pointed out that the accident at Fukushima is still ongoing and it is premature to speculate how much radioactivity will be released, in compassion to other accidents. Seemly, Russia was concerned with Japan's announced that the radioactive releases from Fukushima so far are only 10% of what Chernobyl released.
Russia also asked several questions about Japan's plans for "storing and/or containing" the massive amount of contaminated water that continues to be accumulated on site. DDG reminded member states that storage tanks, trenches and other means of containment are currently being completed on site, in hope that there will be adequate storage capacity to meet this need.

Closing Remarks
DDG Flory closed the meeting by stating that Philippines and the Republic of Korea have also now provided IAEA with monitoring data and/or links to their websites. Although not specifically mentioned by DDG Flory, the USG provided IAEA with monitoring data (from the Environmental Protection Agency) on April 9.
Lastly, DDG Flory stated that the next technical briefing will be conducted on April19.

This email is UNCLASSIFIED.

Merzke, Daniel

From: Merzke, Daniel
Sent: Wednesday, April 13, 2011 8:43 AM
To: Bradford, Anna; Warren, Roberta; Thoma, John; Baggett, Steven; Tadesse, Rebecca; Kock, Andrea
Cc: Vietti-Cook, Annette; Muessle, Mary; Andersen, James
Subject: FW: FYI - PARs for Deputies Meeting Rev 19a (2).docx
Attachments: PARs for Deputies Meeting Rev 19a (2).docx

Please find attached the latest **draft** document with the criteria for short-term re-entry of U.S. citizens inside the 50 mile zone around Fukushima, and the long-term re-entry criteria. I would like to stress this is still a draft document at this time. I'm still working on locating a copy of the Global Assessment, and will forward that when I find it.

Dan

From: Dudek, Michael
Sent: Wednesday, April 13, 2011 7:42 AM
To: Merzke, Daniel
Subject: FYI - PARs for Deputies Meeting Rev 19a (2).docx

Dan,

Here is one of the documents for distribution, as appropriate. OUO at this time.

Michael I. Dudek

Michael Dudek | Technical Assistant | NSIR/Division of Preparedness & Response | U.S. NRC
11555 Rockville Pike, Rockville, MD 20852 | ☎ (301) 415-6500 | ✉: Michael.Dudek@nrc.gov

B6/81

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From: RST01 Hoc
Sent: Thursday, April 14, 2011 1:57 PM
To: (b)(6)
Subject: FW: 1100 am call notes/ questions

1100 Call Notes

Decision made to change the format of the meeting from being run by INPO to being run by the RST. Call changing from discussing RST Assessment to discussing plant conditions and items of concern among consortium members.

On Tuesdays and Thursday s, call will also address changes to the RST Assessment document.

INPO and EPRI indicated that they will still support the Tuesday and Thursday calls but will not listen in on the other calls.

Questions/Comments from the 1100 Call

1. What size Tsunami was the plant designed to withstand?
    a. What size earthquake was the plant designed to withstand.
    b. GEH indicated that design of earthquake was in ground motion and not on Richter scale
2. Does anybody have a copy of the paper that was previously generated on potential interactions between boron and seawater?
3. Any thoughts on how high radiation levels should be in SFP with water level 2.5 m above TAF? Currently reading 8 rem/hr
4. Any thoughts on having TEPCO getting a better flow path that could handle higher pressures? Recommendations
5. Any word on when they might stop inerting Unit 1?
6. Any concerns that may have more instrument failures due to operating in a high radiation / high temperature environment?
7. Received report today that TEPCO thinks they have 4' of water in DW, I thought we believed they had 10-12' any effort to reconcile differences?

Comments

1. Concern about Alternate Vent methods of venting Unit 1 RPV
    a. Method of venting all RPV's
    b. Concern about covering up the SRV's if they flood up DW
        i. Do we have that concern?
        ii. SRV may close and lose all injection and vent capability
2. Appears no damage to #4 SFP fuel – may not have had a fire
    a. Radiation levels appear to be high 8 rem/hr for level of 2.5 m over top of stored fuel
3. RST Assessment is being farmed out to NRR, all comments and changes will still go through RST

B6/82

4. Unit 2 trench pumped down – refilled again
5. DOE indicated that they would send out information copies of documents that they had been working on.
    a. Want feedback/comments by Close of business on Monday.
6. [redacted] (b)(5)

[redacted] (b)(5)

Lee, Richard

From: Aoki, Steven [Steven.Aoki@nnsa.doe.gov]
Sent: Thursday, April 14, 2011 9:33 AM
To: Gauntt, Randal; Kelly, John E (NE); Binkley, Steve
Cc: Lee, Richard; Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; Tinkler, Charles
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

From: Gauntt, Randal
Sent: Thursday, April 14, 2011 4:53 AM
To: Kelly, John E (NE); Aoki, Steven
Cc: Lee, Richard (NRC); Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.c... charles.tinkler@nrc.gov
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

Randy

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Thursday, April 14, 2011 2:35 AM
To: alan.blamey@nrc.gov; Brian Wittick; Carl Moore; Chuck Casto; elmo.collins@nrc.gov; Gauntt, Randall O; Jeff Mitman; michael.call@nrc.gov; michael.hay@nrc.gov; Miller, Marie; richard.kondo@crbard.com; rudolph.bernhard@nrc.gov; Salay, Michael; Steve Garchow; Steve Reynolds
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(4)

Lee Gard
INPO
Cell (b)(6)
gardla@inpo.org

B6/83

Lee, Richard

From: Gauntt, Randall O [rogaunt@sandia.gov]
Sent: Thursday, April 14, 2011 10:31 AM
To: Aoki, Steven; Kelly, John E (NE); Binkley, Steve
Cc: Lee, Richard; Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; Tinkler, Charles
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

Randy

From: Gauntt, Randall O
Sent: Thursday, April 14, 2011 8:09 AM
To: Aoki, Steven; Kelly, John E (NE); Binkley, Steve
Cc: Lee, Richard (NRC); Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; charles.tinkler@nrc.gov
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

Good suggestion.

(b)(5)

randy

From: Aoki, Steven [Steven.Aoki@nnsa.doe.gov]
Sent: Thursday, April 14, 2011 7:32 AM
To: Gauntt, Randall O; Kelly, John E (NE); Binkley, Steve
Cc: Lee, Richard (NRC); Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; charles.tinkler@nrc.gov
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

From: Gauntt, Randal
Sent: Thursday, April 14, 2011 4:53 AM
To: Kelly, John E (NE); Aoki, Steven
Cc: Lee, Richard (NRC); Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; charles.tinkler@nrc.gov
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

B6/84

(b)(5)

Randy

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Thursday, April 14, 2011 2:35 AM
To: alan.blamey@nrc.gov; Brian Wittick; Carl Moore; Chuck Casto; elmo.collins@nrc.gov; Gauntt, Randall O; Jeff Mitman; michael.call@nrc.gov; michael.hay@nrc.gov; Miller, Marie; richard.kondo@crbard.com; rudolph.bernhard@nrc.gov; Salay, Michael; Steve Garchow; Steve Reynolds
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(4)

Lee Gard
INPO
cell (b)(6)
gardla@inpo.org

Lee, Richard

From: Gauntt, Randall O [rogaunt@sandia.gov]
Sent: Thursday, April 14, 2011 8:58 AM
To: 'JohnE.Kelly@Nuclear.Energy.Gov'; Lee, Richard
Cc: Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; 'kcw@dycoda.com'; Tinkler, Charles; 'Steven.Aoki@nnsa.doe.gov'
Subject: Re: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Thursday, April 14, 2011 06:32 AM
To: Lee, Richard (NRC) <Richard.Lee@nrc.gov>; Gauntt, Randall O
Cc: Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com <kcw@dycoda.com>; Tinkler, Charles <Charles.Tinkler@nrc.gov>; Aoki, Steven <Steven.Aoki@nnsa.doe.gov>
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

From: Lee, Richard (NRC)
Sent: Thursday, April 14, 2011 8:04 AM
To: Gauntt, Randal
Cc: Orrell, Stanley A; Pickering, Susan Y; Kelly, John E (NE); Burns, Shawn; kcw@dycoda.com; Tinkler, Charles; Aoki, Steven
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

Randy:

(b)(5)

Richard

From: Gauntt, Randall O [mailto:rogaunt@sandia.gov]
Sent: Thursday, April 14, 2011 4:53 AM
To: Kelly, John E (NE); Aoki, Steven
Cc: Lee, Richard; Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; Tinkler, Charles
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

Randy

B6/85

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Thursday, April 14, 2011 2:35 AM
To: alan.blamey@nrc.gov; Brian Wittick; Carl Moore; Chuck Casto; elmo.collins@nrc.gov; Gauntt, Randall O; Jeff Mitman; michael.call@nrc.gov; michael.hay@nrc.gov; Miller, Marie; richard.kondo@crbard.com; rudolph.bernhard@nrc.gov; Salay, Michael; Steve Garchow; Steve Reynolds
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(4)

Lee Gard
INPO
Cell (b)(6)
gardla@inpo.org

Lee, Richard

From: Lee, Richard
Sent: Thursday, April 14, 2011 8:43 AM
To: 'Gauntt, Randall O'
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

From: Gauntt, Randall O [mailto:rogaunt@sandia.gov]
Sent: Thursday, April 14, 2011 8:29 AM
To: Lee, Richard
Subject: Re: Unit 4 Spent Fuel Pool Isotopic Analysis

Well,

(b)(5)

From: Lee, Richard [mailto:Richard.Lee@nrc.gov]
Sent: Thursday, April 14, 2011 06:04 AM
To: Gauntt, Randall O
Cc: Orrell, Stanley A; Pickering, Susan Y; Kelly, John E (NE) <JohnE.Kelly@Nuclear.Energy.Gov>; Burns, Shawn; kcw@dycoda.com <kcw@dycoda.com>; Tinkler, Charles <Charles.Tinkler@nrc.gov>; Aoki, Steven <Steven.Aoki@nnsa.doe.gov>
Subject: RE: Unit 4 Spent Fuel Pool Isotopic Analysis

Randy:

(b)(5)

Richard

From: Gauntt, Randall O [mailto:rogaunt@sandia.gov]
Sent: Thursday, April 14, 2011 4:53 AM
To: Kelly, John E (NE); Aoki, Steven
Cc: Lee, Richard; Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn; kcw@dycoda.com; Tinkler, Charles
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(5)

Randy

BG/86

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Thursday, April 14, 2011 2:35 AM
To: alan.blamey@nrc.gov; Brian Wittick; Carl Moore; Chuck Casto; elmo.collins@nrc.gov; Gauntt, Randall O; Jeff Mitman; michael.call@nrc.gov; michael.hay@nrc.gov; Miller, Marie; richard.kondo@crbard.com; rudolph.bernhard@nrc.gov; Salay, Michael; Steve Garchow; Steve Reynolds
Subject: FW: Unit 4 Spent Fuel Pool Isotopic Analysis

(b)(4)

Lee Gard
INPO
cell (b)(6)
gardla@inpo.org

From: HOO Hoc
Sent: Thursday, April 14, 2011 8:28 PM
To: LIA07 Hoc; LIA08 Hoc; OST01 HOC
Subject: FW: Official notice (14/04/2011) Documents of the briefing
Attachments: image001.jpg

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

U.S.NRC
Protecting People and the Environment

From: Hinds, Lynda J [mailto:HindsLJ@state.gov] **On Behalf Of** Tokyo Staff Assistant
Sent: Thursday, April 14, 2011 8:25 PM
To (b)(6)

(b)(6)

Subject: FW: Official notice (14/04/2011) Documents of the briefing

Lynda Hinds
Staff Assistant
(03) 3224- 5370

From: PROTOCOLOFFICE-EM [mailto:protocoloffice-em@mofa.go.jp]
Sent: Friday, April 15, 2011 4:49 AM

B6/87

To: PROTOCOLOFFICE-EM
Subject: Official notice (14/04/2011) Documents of the briefing

—Urgent—

Official Notice

(15th April 2011 04:00 revised)

To All Missions (Embassies, Consular posts and International Organizations in Japan)

The Ministry of Foreign Affairs has the honour to send for the perusal of Missions documents which were distributed at the briefing on 14th April, 2011 at 16:00 for your reference.

< p class=MsoNormal style='text-indent:7.0pt'>

Also, the Ministry would like to inform the missions that the Chief Cabinet Secretary announced at the press conference the removal of shipment restriction of kakina, leafy vegetable, originated from Tochigi Prefecture.

Furthermore, the Ministry would like to correct the data provided by NISA colleague at the briefing regarding sampling data of water from the Unit4 spent fuel pool. The corrected data is the following:

^{131}I 2.2 x 102 Bq/cm^3 (=220 Bq/cm^3)
(note: the usual data is less than 0.01Bq/cm^3)

^{134}Cs 8.8 x10 Bq/cm^3 (=88 Bq/cm^3)
(note: the usual data is less than 0.01Bq/cm^3)

^{137}Cs 9.3 x10 Bq/cm^3 (=93 Bq/cm^3)
(note: the usual data is the order of 0.1Bq/cm^3)

List of attachments

1. List of briefers from Ministries other than the MOFA (14th April)
2. Levels of radioactive contaminants in foods (data reported on 13 April 2011) (Ministry of Health, Labour and Welfare)
3. Current situation for water supply works(14th April 2011)and Press release on detection of radioactive materials in tap water(33th announcement)(Ministry of Health, Labour and Welfare)
4. Results of the inspection on radioactive materials in fisheries products (Ministry of Agriculture, Forestry and Fisheries)

5. Reading of Environmental Radiation Level by emergency monitoring (Ministry of Education, Culture, Sports, Science and Technology)
6. Press Release (Evaluation of Environmental Radiation Monitoring Results (16:45 on April 13, 2011) (Nuclear Safety Commission, Cabinet Office)
7. District-based Assessment of Vulnerability to Earthquake Disaster (2008), issued by Tokyo Metropolitan Government (MOFA)
8. Tokyo Metropolitan Government Disaster Prevention Homepage (MOFA)
9. Information for those who are interested in the volunteer work for the Great East Japan Earthquake) (MOFA)
10. Excerpts from the press conference by Executive Vice President Muto (TEPCO)
11. Seismic Damage Information (the 91st and 92nd Release) (Nuclear and Industrial Safety Agency)
12. Conditions of Fukushima Dai-ichi Nuclear Power Station Unit1-6 (As of 6:00 April 14th, 2011) (Nuclear and Industrial Safety Agency)

(END)

From: OST01 HOC
Sent: Thursday, April 14, 2011 2:59 PM
To: Franovich, Mike; Hipschman, Thomas; Snodderly, Michael; Orders, William; Castleman, Patrick; Weber, Michael; Virgilio, Martin; Boger, Bruce; Zimmerman, Roy; Bowman, Gregory
Subject: Draft Chuck Casto Slides
Attachments: JapanGlobalAssessment.pptx

Please see attached **DRAFT** slides from Chuck Casto, as requested. Staff comments have not been incorporated yet. After receipt of planned final, we can resend that version tomorrow, hopefully.

Executive Support Team
(for the ET Director, Roy Z.)

B6/88

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Westreich, Barry

From: Holahan, Patricia
Sent: Friday, April 15, 2011 11:10 AM
To: Westreich, Barry; Holahan, Vincent
Subject: Fw: OUO- Japan

FYI.

From: Zimmerman, Roy
To: Monninger, John; Virgilio, Martin
Cc: Merzke, Daniel; Wiggins, Jim; Holahan, Patricia; Evans, Michele; Weber, Michael
Sent: Fri Apr 15 10:17:32 2011
Subject: OUO- Japan

Just got off the phone call briefing with Chuck Casto and the Chairman. Chuck indicated that based on the TEPCO isotopic analysis of the Unit 4 SFP, TEPCO currently believes the spent fuel is undamaged. This is a more positive view than yesterday's statement that damage occurred to some fuel rods.

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Regarding the composite assessment, NSIR has the lead and it is being worked by Trish Milligan We are contacting Trish and will get back to you.

SoS briefing slides: Received from Chuck and provided to various folk, including you and I

B6/89

From: Hoc, PMT12
Sent: Friday, April 15, 2011 9:23 AM
To: PMT10 Hoc
Subject: Latest version of Composite document
Attachments: PARs for Deputies Meeting Rev 21with tracked changes (3).docx

Sam

There doesn't appear to be a new version since the meeting with Marty on Wednesday, (b)(5)
(b)(5)

Sandi

B6/190

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From: Hoc, PMT12
Sent: Friday, April 15, 2011 11:43 AM
To: PMT10 Hoc
Attachments: Composite Document Rev 1 - formerly called PARs for Dep Mtg V21.docx

Sam

Here's the latest draft.

Sandi

B6/91

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Wittick, Brian

From: Wittick, Brian
Sent: Saturday, April 16, 2011 2:03 AM
To: Huffert, Anthony; Gepford, Heather; Meighan, Sean
Subject: FW: April 15 briefing notes, excel spreadsheet and radiation survey map
Attachments: April 14 1600 Facility Area Survey Data[1].pdf; April 15 Ryan 6 pm briefing notes.doc; TEPCO Summary Rev.87 Final April 15.xls

FYI

From: Gard, Lee A (INPO) [mailto:GardLA@INPO.org]
Sent: Friday, April 15, 2011 5:21 AM
To: Blamey, Alan; Wittick, Brian; Moore, Carl; Casto, Chuck; Collins, Elmo; Gauntt, Randall O; Mitman, Jeffrey; michael.call@nrc.gov; Hay, Michael; Miller, Marie; richard.kondo@crbard.com; Bernhard, Rudolph; Salay, Michael; Garchow, Steve; Steve Reynolds
Subject: FW: April 15 briefing notes, excel spreadsheet and radiation survey map

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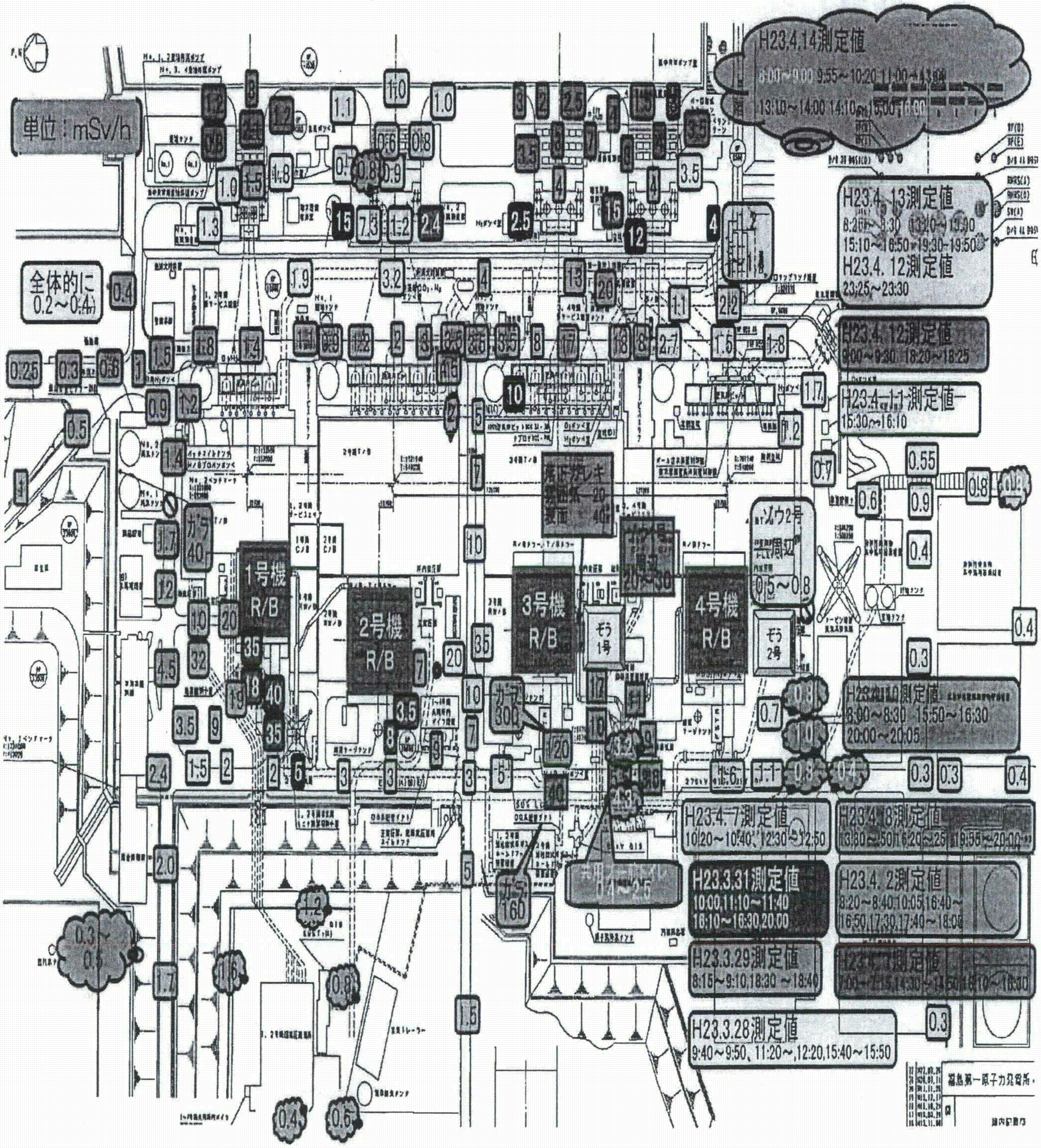
B6/92

福島第一サーベイマップ（平成23年4月14日 16:00現在）



FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 15, 2011- TC Briefing. (All times JST)

All information may be shared

The priorities remain as follows:

- Ensuring fresh water injection and cooling capabilities to the reactors and spent fuel pools. Goal is to reduce and maintain temperature in the reactors and spent fuel pools below 100 degrees centigrade.
- Draining water from the turbine buildings and trenches to reduce the radiation levels so that work can continue.
- Containing the spread of radioactive materials.

Highlights for today include the following:

- N2 purging of Unit 1 continues. Drywell pressure has been steady or slightly decreasing over the past several days.
- The transfer of radioactive water from the Unit 2 trench to the Unit 2 hotwell was completed last night. After an initial decrease, trench level has been increasing.
- Leak checks and seal inspections / repairs are in progress in the Radioactive Waste building in preparation for water transfers from the units.
- To support waste water cleanup TEPCO announced they will install multiple temporary tanks of 27,000 tons capacity by the end of May. They will also deploy a megafloat of 10,000 tons capacity by mid-May.
- 25 tons of water was added to the Unit 3 SFP. Spray of 140 tons into the Unit 4 pool is planned for today.
- Silt screens are in the process of being installed around intake / discharge areas. They are also placing sandbags filled with zeolite in the water around the intake structures to aid in the absorption of cesium.
- The unmanned helicopter is scheduled to fly again today. Videos from previous test flights have not yet been released.
- Debris removal and dust / particle scatter preventive actions are continuing.
- To strengthen electrical power reliability the Tohoku transmission line used as the Unit 1 & 2 power source and the TEPCO power source for Unit 3 & 4 will be cross connected and switchable. The emergency diesel generators for powering injection will be relocated to higher ground (April 15).

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line continues at 6 cubic meters/hr. Comments on parameters:
  - Reactor pressure indicator A increased slightly to .428 MPa g, (62 psig). Indicator B is considered to be unreliable.
  - Feedwater nozzle temperature continues to decrease and is reading 197 C (387F). This parameter remains suspect.
  - Reactor vessel lower temperature has remained steady at 119 C (246 F)
  - Drywell and torus pressure remains relatively steady at .185 MPa abs (27.6 psia) and .165 MPa abs (23 psia) respectively.
  - Dose rates in the Torus continue to decrease slightly to 9.7 Sv/hr (970 Rem/hr.)
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection continues at 7 cubic meters/hr, (= to the goal and equivalent to the decay heat rate 14 days after shutdown.) Comments on parameters:
  - Unit 2 reactor pressures remain fairly stable. TEPCO now considers these measurements to be suspect.
  - Feedwater nozzle temperature continues to decrease slowly to 150 C (302 F)
  - Reactor vessel lower temperature is believed unreliable.
  - Drywell pressure is stable at .090 MPa abs (13.8 psi)
  - Dose rates in the U2 Drywell and Torus continue to decrease. The drywell dose rates are at 27.1 Sv/hr or (2,710 Rem/hr) and the dose rate in the Torus has decreased to .629 Sv/hr or (62.9 Rem/hr.)
- In Unit 3, injection of non-borated fresh water using the low pressure coolant injection line continues at 7 cubic meters/hr (= to the goal and equivalent to the decay heat rate 14 days after shutdown.). Comments on parameters:
  - Unit 3 reactor pressures indicate stable but are considered suspect.
  - Feedwater nozzle temperature is fluctuating day-to-day and is considered to be unreliable.
  - Reactor vessel lower temperature has been steady two days at at 121 C (248 F)
  - Drywell pressure was steady at .104 MPa abs (15 psi). Torus pressure decreased slightly to .166 MPa abs (24 psi).
  - Dose rates in the U3 Drywell and Torus continue to decrease. The drywell is at 16.5 Sv/hr (1,650 Rem/hr) and the dose rate in the Torus is .634 Sv/hr or (63.4 Rem/hr.)

Dose and Dose Rates

- Radioactivity level in underground water around Unit 1 and 2 has increased compared to samples taken last week. Increases observed ranged from 6 to 38 times higher depending on the isotope. Radioactivity levels of groundwater around Units 3 and 4 remained the same or decreased slightly.

- The number of workers who have received greater that 100 mSv (10 Rem) has increased to 28. The highest received was 198 mSv (19.8 Rem). The maximum emergency dose is temporarily set at 250 mSv.

- Overall site dose rates are decreasing. For example:

  - The last reading reported at the main gate was 72 μSv /hr or (7.2 millirem/hour).

  - The side of the administration building facing the units is at 545 μSv/hr or 55 mrem/hr.

  - The dose rate at the west gate is reported to be 37 μSv /hr or (3.7 millirem/hour).

rent Status and Planned Work

15 April at 08:00 (Rev-87)

	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (For core shroud replacement work during outage)	■Core was loaded with bundles for the start of the next operation cycle ■RPV bolted up (Earthquake occurred after completion of RPV hydrauric test just before the startup) ■Maintaining cold shutdown	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
re				
ow en of		■Ordinary operation in SHC mode of RHR (14 April 18:57-)	■Ordinary operation in SHC mode of RHR (14 April 18:19-)	
l)		■RPV Dome Pressure (at 06:00 on 15 April) 0.003 MPa-g ■Reactor Water Level (at 06:00 on 15 April) TAF+1701 mm (Shut Down Range Gauge) ■Coolant Temprature (at 06:00 on 15 April) 33.9℃	■RPV Dome Pressure (at 06:00 on 15 April) 0.010 MPa-g ■Reactor Water Level (at 06:00 on 15 April) TAF+2315mm ■Coolant Temprature (at 06:00 on 15 April) 47.1℃	

mp igh on is ys er ed				
ine)		■Negative pressure kept by SGTS	■Negative pressure kept by SGTS	
of .on) 1)	■SFP water level : Uncertain ■SFP water temperature; gauge out of order (at 11:10 on 24 March and later) ■Skimmer suge tank level 4350 mm (at 06:00 on 15 April) ■No roof due to explosion at the operational floor ■Installation alternation pump for RHRS ■Watering by concrete pumping vehicle (called as Giraffe) ・30 March 14:04-18:33 (Fresh water) ・1 April 08:28-14:15 (Fresh Water) ・3 April 17:14-22:16 (Fresh Water) ■ Check the condition of FPC lines ・No abnormal condition on the strainer ・Piping seems to be stuffed (on 4 April) ■The Elephant was moved from Unit 1 to Unit 4 ■Watering with the Elephant ・5 April 17:35-18:22 ・7 April 18:23-19:40 ・9 April 17:07-19:24 ・13 April 0:30- 6:57 (195 ton) ■Preparation for water feeding with electric motor pumps was completed. (on 9	■Inventory securing * CST -> MUWC -> FPC -> SFP ■Heat removal * FPC (Surge Tank) -> RHR -> S/C * Heat removal in S/C cooling mode of RHR ■SFP Water level; uncertain (Water level alarms were not activated.) ■SFP Water temp; 35.8℃ (at 06:00 on 15 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April)	■Inventory securing * CST -> MUWC -> FPC -> SFP ■Heat removal * FPC (Surge Tank) -> RHR -> S/C * Heat removal in S/C cooling mode of RHR ■SFP Water level; uncertain(Water level alarms were not activated.) ■SFP Water temp; 24.5℃ (at 06:00 on 15 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April)	■SFP water temperature 26 ℃ at 07:20 on 14 April ■Cooling function achieved by air fin coolers (at 16:26 on 24th March) ■Water supply to the common SFP by MUW system (24 March 16:15-18:04) ■FPC(A) started at 18:05 on 24th March
	□Water spray with the Elephant #2 (15 April 14:00 - 19:00)			

n er s	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:50 on 29 March	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L, 2L) ■Non-safety grade buses of 5A and 5B are unavailable ■Temporary pump (RHRS) was installed and connected to the water supply line on 24th March ■Emergency administration building was powered on 24th March ■Water Purification Facility was powered at 9:10 on 24th March ■Investigating cable laying work for monitoring posts (MP-1/2/3/4) on 26 March. ■T/B MCC 5D-2 has been powered on 31 March	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L, 2L) ■Non-safety grade buses of 6A and 6B are unavailable ■Temporary pump (works as a subsutitute of RHRS) was installed and put in-service (Powered by P/C) ■Test run od installed cable was conducted on 20 March ■Monitoring posts (MP1-4) were restored.	■Temporary power for common pool was restored at 15:30 on 24th March
/B		□Laying temporary power cable for SLC (B)	□Investigating cable laying work for monitoring posts	□Investigating the power restoration work for I & C and illumination
y)	■Part of I & C equipments were powered by temporary battety to monitor plant status	■Part of I & C equipments were powered by temporary battety to monitor plant status ■DC 24 Charger 5B-1has been powered on 31 March	■Part of I & C equipments were powered by temporary battety to monitor plant status	
)		■3 holes(3~7.5 cm) were drilled on the celling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion	■3 holes(3~7.5 cm) were drilled on the celling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion	

nk ed in in	■Draining water ・Water level in T/B OP +2800mm (at 07:00 on 15 April) ; same as 14 April 11:00 ・Water transfer (Concentrated RW → T/B) (2 April 14:25 - 4 April 09:22; suspended) ・Water transfer pumps were added (1 → 5 pumps; 3 Apr. 10:00 - 4 Apr. 09:22, suspended due to high water level in the trench) ■Work for shutting off the leak in pit ・Concrete was poured (25m³) to clog cracks	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ■Discharging water in sub-drain of Unit 5 to the sea; 950 m3 (4 April 21:00 - 8 April 12:14)	■Draining water ・Water transfer (RW base floor → H/W) (1 April 13:40 - 2 April 10:00) ・ Suspended by large amount of water; considering draining water ■Discharging water in sub-drain of Unit 6 to the sea; 372.6 m3 (4 April 21:00 - 9 April 18:52)	■Draining water ・Concentrated RW → sea: 9070 m3 (4 April 19:03 - 10 April 17:40) ■Draining water from main process building was completed. ■Draining water from incinerator building was started (on 6 April) ■Being repaired of boundary / Prevention of leaks from boundary of buildings before storing highly contaminated water in concentrated RW
r	□Work for shutting off the leak in pit			□ Camera for level monitoring is planned.

RCIC :Reactor Core Isolation Cooling

RHR :Residual Heat Removal

RPV :Reactor Pressure Vessel

S/C :Suppression Chamber

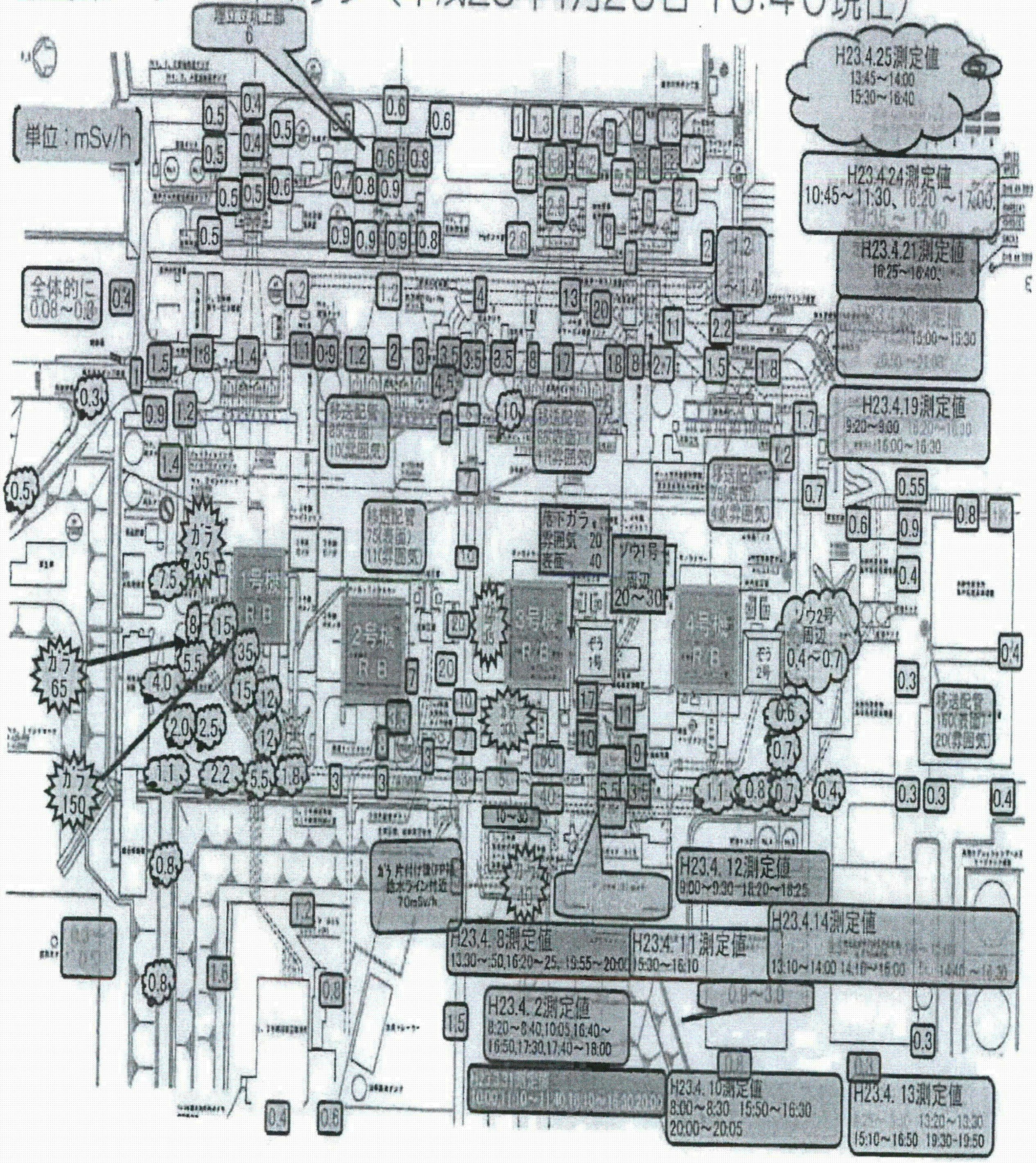
SDF :Self Defense Force

SFP :Spent Fuel Pool

SGTS :Stabd by Gas Treatment System

SHC :Shut Down Cooling

福島第一サーベイマップ（平成23年4月25日 16:40現在）



FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 26, 2011- TC Briefing.

Information that is in italics should not be shared as it has not yet been released by TEPCO.

The priorities remain as follows:

- Ensuring fresh water injection and cooling capabilities to the reactors and spent fuel pools. Goal is to reduce and maintain temperature in the reactors and spent fuel pools below 100 degrees centigrade.
- Draining water from the turbine buildings and trenches to reduce the radiation levels so that work can continue.
- Containing the spread of radioactive materials.

Highlights for today include the following:

- N2 purging of the Unit 1 Drywell was stopped yesterday for approximately five hours while power supply lines from Unit 5/6 were connected to a Unit 1/2 load center to improve reliability of Units 1 and 2. During that time, Drywell pressure decay and decay rate was monitored and used to estimate free space and water level in the Drywell. It is now believed that Drywell water level is .5 m below the bottom of the reactor vessel.
- The robot entered the Unit 1 reactor building on Tuesday to check for possible leakage from an electrical penetration or other areas on the reactor building first floor. *No leakage was observed. TEPCO is considering increasing injection flow up to 14 m3/hr to increase the flooding rate of the Drywell.*
- Transfer of highly radioactive water from Unit 2 to the Centralized Radioactive Waste Treatment Facility continues at a rate of 250 tons/day. Level in the Radioactive Waste Facility has risen 840 mm since the start of transfer.
- Unit 2 trench level decrease has slowed dropping only 10 mm since yesterday. It is now 890 mm below the trench top. Unit 3 trench level has increased an additional 20 mm and is now 980 mm from the top.
- After four days of stability, Unit 4 turbine building water level increased 50 mm and is now 3050 mm (1.5 m above floor level) which is slightly higher than the Unit 3 turbine building water level of 3000 mm.
- Two hundred ten tons of water were added to the Unit 4 Spent Fuel Pool (SFP) yesterday. Another 160 ton addition is scheduled for today to fill the pool. The structural integrity of the Unit 4 SFP is considered sufficient to support a full SFP. Calculations and observations indicate that approximately 82 tons of water is needed to be added to the Unit 4 SFP daily to maintain level.
- Thirty-eight tons of water was added Unit 2 SFP yesterday. Fifty tons of water is scheduled to be added to the Unit 3 SFP today. Boil off rates are 21 tons/day and 17 tons/day respectively.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line continues at 6.1 m3/hr. Comments on parameters:
  - Reactor pressure indicator A is increased slightly to .450 MPa abs (65 psig). Indicator B continues to be suspect.
  - Feedwater nozzle temperature continues to be suspect.
  - Reactor vessel lower temperature decreased slightly to 111 C (232 F)
  - Drywell and Torus pressure remained at .150 MPa abs (22 psia).
  - Drywell and Torus dose rates are considered to be suspect.
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection continues at 7 m3/hr. Comments on parameters:
  - Unit 2 reactor pressures remain suspect.
  - Feedwater nozzle temperature decreased slightly to 122 C (252 F)
  - Reactor vessel lower temperature is believed unreliable.
  - Drywell pressure was stable near atmospheric.
  - Dose rate in the U2 Drywell continues to decrease. The drywell dose rate is 2.31Sv/hr or (2,310 Rem/hr). The Torus dose rate reading is considered suspect.
- In Unit 3, of non-borated fresh water using the low pressure coolant injection continues at 6.8 m3/hr. Comments on parameters:
  - Unit 3 reactor pressures are considered suspect.
  - Feedwater nozzle temperature is considered to be suspect.
  - Reactor vessel lower temperature decreased slightly to 110 C (230 F)
  - Drywell pressure was steady at .104 MPa abs (15 psi). Torus pressure is also steady at .178 MPa abs (26 psi).
  - Dose rate in the U3 Drywell continues to decrease and is at 14.6 Sv/hr (1,460 Rem/hr). Dose rate in the Torus is considered to be suspect.

Dose Rates

- Overall site dose rates are stabilizing or only varying slightly. For example:
  - ➢ The last reading reported at the main gate was 52 μSv /hr (5.2 mrem/hour) and be 23 μSv /hr (2.3 mrem/hour) at the west gate.
  - ➢ The side of the administration building facing the units decreased slightly to .450 μSv/hr or 45 mrem/hr. The same as yesterday.

Not for Release

Fukushima-Daiichi Current Status and Planned Work

26 April at 01:00 & 09:00 (Rev-100)

		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Reactivity Control (Halt Reactor)	Current Status	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (for core shroud replacement work during outage)	■Core was loaded with bundles for the start of the next operation cycle ■RPV bolted up (Earthquake occurred after completion of RPV hydraulic test just before the startup) ■Maintaining cold shutdown	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
		CAMS (at 05:00 on 26 April): D/W: (A) & (B) No measurement S/C: (A) 1.11×10^{0} SV/h (watching trend continuously) (B) 1.74×10^{0} SV/h (watching trend continuously)	CAMS (at 05:00 on 26 April): D/W: (A) 2.30×10^{1} SV/h, (B) 2.59×10^{1} SV/h S/C: (A) 4.80×10^{-1} SV/h (watching trend continuously) (B) 1.04×10^{0} SV/h (watching trend continuously)	CAMS (at 05:00 on 26 April): D/W: (A) 1.46×10^{1} SV/h, (B) 1.10×10^{1} SV/h S/C: (A) 5.50×10^{-1} SV/h (watching trend continuously) (B) 6.11×10^{-1} SV/h (watching				
	Next Works Planned (TEPCO Headquarters' Activities)	(Long term measure) □To add boric acid to fresh coolant before achieving cold shut down (After restoring power) □Operating SLC	□Borated fresh water injection started (at 10:10 on 26 March) (Long term measure) □To add boric acid to fresh coolant before achieving cold shut down (After restoring power) □ Operating SLC	(Long term measure) □To add boric acid to fresh coolant before achieving cold shut down (After restoring power) □Operating SLC				
Coolant Supply & Residual Heat Removal (Core cooling)	Current Status	■Fresh water injection through FDW line (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6 m³/h by interim instrumentation at 05:00 on 26 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installing temporary replacement pump for CCSW ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 7 m³/h by interim instrumentation at 05:00 on 26 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (29 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.8 m³/h by interim instrumentation at 05:00 on 26 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Instalation of the alternate pump for RHRS (29 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)		■Ordinary operation in SHC mode of RHR (25 April 22:58-) (SHC mode: Cooling mode with heat-exchanger)	■Ordinary operation in SHC mode of RHR (25 April 10:19-) ■One out of two temporary RHRS pumps tripped (at 18:00 on 25 April: unknown origin)	
		■RPV Dome Pressure (at 05:00 on 26 April) 0.415 MPa-g (Gauge A) 1.165 MPa-g (Gauge B) (watching trend continuously) ■Reactor Water Level (at 05:00 on 26 April) TAF-1650 mm (Fuel Range: Gauge A) TAF-1650 mm (Fuel Range: Gauge B) ■RPV Temperature (at 05:00 on 26 April) Feed water nozzle: 134.7℃ (watching trend continuously) Bottom of RPV : 110.9℃	■RPV Dome Pressure (at 05:00 on 26 April) -0.020 MPa-g (Gauge A) (watching trend continuously) -0.025 MPa-g (Gauge D) (watching trend continuously) ■Reactor Water Level (at 05:00 on 26 April) TAF -1500 mm (Fuel Range: Gauge A) TAF -2100 mm (Fuel Range: Gauge B) ■RPV Temperature (at 05:00 on 26 April) Feed water nozzle: 121.2℃ Bottom of RPV : No measurement	■RPV Dome Pressure (at 05:00 on 26 April) -0.025 MPa-g (Gauge A) (watching trend continuously) -0.097 MPa-g (Gauge C) (watching trend continuously) ■Reactor Water Level (at 05:00 on 26 April) TAF-1650 mm (Fuel Range: Gauge A) TAF-2250 mm (Fuel Range: Gauge C) ■RPV Temperature (at 05:00 on 26 April) Feed water nozzle : 67.9 ℃ (watching trend continuously due to suspected indication problem) Bottom of RPV : 110.4 ℃		■RPV Dome Pressure (at 06:00 on 26 April) 0.002 MPa-g ■Reactor Water Level (at 06:00 on 26 April) TAF+1745 mm (Shut Down Range Gauge) ■Coolant Temprature (at 06:00 on 26 April) 41.1 ℃	■RPV Dome Pressure (at 06:00 on 26 April) 0.013 MPa-g ■Reactor Water Level (at 06:00 on 26 April) TAF+2124mm ■Coolant Temprature (at 06:00 on 26 April) 25.4 ℃	
	Next Works Planned (Activities of Cooling Water Supply Force)	□Switch the temporary motor driven pump to MUWP pump (The work was suspended due to high radiation environment around MUWP in the turbine building). (Long Term Cooling Measure) □SHC ordinary operation in SHC mode after restoring off-site power & related equipments □For PCV flooding	□Switch the temporary motor driven pump to MUWP pump (The work was suspended due to high radiation environment around MUWP in the turbine building). (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the motor driven pump to MUWP pump (The work was suspended because of high radiation environment around MUWP in the turbine building). Preparing to drain the high radiation water (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments			□Restoration of temporary RHRS pump / determine cause of trip	

Containment Function (Cooling and Confinement)	Current Status	■Pressure (at 05:00 on 26 April) D/W: 0.150 MPa-abs S/C: 0.150 MPa-abs ■Temperature (at 05:00 on 26 April) D/W: RPV bellow seal: 112.4 ℃ HVH return: 96.9 ℃ S/C: (A) 51.3℃, (B) 51.9℃ ■Started ventilation through hardened line (at 14:30 on 12 March) • PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310 kPa	■Pressure (at 05:00 on 26 April) D/W: 0.050 MPa-abs S/C: Down Scale (Examining) ■Temperature (at 05:00 on 26 April) D/W: RPV bellow seal: No measurement HVH return: 113 ℃ S/C: (A) 70.8 ℃, (B) 70.9 ℃ ■Ready to start ventilation through hardened line (Not executed so far) . PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 325 kPa	■Pressure (at 05:00 on 26 April) D/W : 0.1043 MPa-abs S/C: 0.1794 MPa-abs ■Temperature (at 05:00 on 26 April) D/W: RPV bellow seal: 117.9 ℃ (watching trend continuously) HVH return: 67.3 ℃ S/C: (A) 41.4 ℃, (B) 41.4 ℃ ■Started ventilation through hardened line (at 9:20 on 13 March) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310 kPa		■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	
	Next Works Planned (TEPCO Headquarters' Activities)	□Hydrogen countermeasure first • Fill PCV and ventilation line with nitrogen • Reinforced monitoring of PCV pressure • Continue to secure ventilation line <After securing off-site power> □Restoring PCV spray function • MUWC system, FP system <After restration of equipments> □RHR operation in S/C mode □Restoring D/W cooling coil □Alternative heat removal by CUW	Same as unit 1	Same as unit 1				
Spent Fuel Pool (SFP) (Decay Heat Removal) & Water Supply)	Current State	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of no power supply) ■Skimmer surge tank level 4550 mm (at 05:00 on 26 April) ■Watering by concrete pumping vehicle (Fresh Water) (called the Elephant) • 31 March 13:03-13:57 • 31 March 14:29-16:04 • 2 April 17:16-17:19 The nickname of concrete pumping vehicle for Unit 1 was changed from "large Giraffe" to "Elephant" to prevent confusion on 3 April. ■Preparation for water feeding with electric motor pumps was completed. (on 9 April)	■SFP water level uncertain (No water level meter) ■SFP temperature 71.0℃ (at 05:00 on 26 April) ■Skimmer surge tank level 6100mm (at 05:00 on 26 April) ■Fresh water injection to SFP trough the existing FPC line and temprary line • 19 April 16:08-17:23 • 22 April 15:55-17:40 • 25 April 10:12-11:18 (38 ton) ■Removal of the existing strainer in FPC line was completed (31 March). (Scheduled for 31 March)	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of lack of power supply) ■Skimmer surge tank level No measurement ■Water spray with new special pumping vehicle (call Zebra-improved) • 7 April 06:53 08:53 (Fresh Water) • 8 April 17:06- 20:00 (Fresh Water) • 10 April 17:15-19:15 (Fresh Water) ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Zebra-improved was moved for replacement and The Elephant was moved: Unit 4→Unit 3 (on 11 April) ■Water spray with the Elephant #1 • 18 April 14:18 ~ 15:02 (30t) • 22 April 14:19 - 15:40 (50t) (monitoring SFP by camera) ■Confirmation of injection line to the pool through FPC line • 22 April 13:40 - 14:00 (10t)	■SFP water level : Uncertain ■SFP water temperature: gauge out of order (at 11:10 on 24 March and later) ■Skimmer surge tank level 4250 mm (at 05:00 on 26 April) ■Installation alternation pump for RHRS ■Watering with the Elephant • 5 April 17:35-18:22 • 7 April 18:23-19:40 • 9 April 17:07-19:24 ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant was moved: Unit 4 → Unit 3 (on 11 April) ■Water sampling from SFP by the Elephant #2 was completed. (12 April) Most of the fuel is believed to be undamaged. ■Attaching measuring instruments (level gage etc.) on the Elephant #2 and measuring temperature, water level and radiation dose. (on 22, 23 and 24 April) ■Watering with the Elephant #2 • 24 April 12:25-17:07 (165ton)	■Inventory securing • CST -> MUWC -> FPC -> SFP ■Heat removal • FPC (Surge Tank) -> RHR -> S/C • Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp: 39.5℃ (at 06:00 on 26 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■SHC mode (25 April 22:50 -)	■Inventory securing • CST -> MUWC -> FPC -> SFP ■Heat removal • FPC (Surge Tank) -> RHR -> S/C • Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain(Water level alarms were not activated.) ■SFP Water temp: 35.5℃ (at 06:00 on 26 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■SHC mode (25 April 10:19 -)	■SFP water temperature 31℃ at 05:00 on 25 April ■Cooling function achieved by air fin coolers (at 16:26 on 24th March) ■Water supply to the common SFP by MUW system (24 March 16:15-18:04) ■FPC(A) started at 18:05 on 24th March
	planned work (Next Activities of FPC Team)		□Water injection to SFP through FPC line (60 t) (scheduled on 10:00 - 12:00 26 April)	□Confirmation of injection line to the pool through FPC line (scheduled on 26 April: 40ton) □Transfer the Elephant #1 to Unit 1	□Water spray with the Elephant #2 (scheduled on 26 April 17:00 - : 160 ton) □Reinforcement work of fuel pool support structure			

High Voltage AC Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■Equipments of MCT tested for short circuit and ground but in fall on 21 March ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:30 on 24 March ■Monitoring posts (MP5-8) were restored. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Ohkuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■MCC 2A-1 in the turbine building was powered at 16:40 on 25 March ■Illumination is restored in main control room at 15:46 on 27 March ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Ohkuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line ・Trial electric charge of the motor Center vehicle for Unit3 and Unit4 was completed at 14:21 on 18 March ・Instalation of multi circuit breakers and power cables were completed on 19 March ・Inspection of cable from the breakers and loads was conducted on 20 March ・Instalation of cables were completed on 21 March. ■T/B MCC 3C-2 has been powered at 22:10 on 22 March. ■T/B MCC 3C-1 has been powered at 22:23 on 22 March ■120V I & C main bus powered at 22:26 on 22 March ■Illumination is restored in main control room at 22:43 on 23 March. ■T/B MCC 3D-1 has been powered on 29 March. ■T/B MCC 3A-1 has been powered on 30 March ■Tie line between Unit1&2 and Unit3&4 was	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:50 on 29 March ■Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Ohkuma line has been available) (on 19 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L, 2L) ■Non-safety grade buses of 5A and 5B are unavailable ■Temporary pump (RHRS) was installed and connected to the water supply line on 24th March ■Emergency administration building was powered on 24th March ■Water Purification Facility was powered at 9:10 on 24th March ■Investigating cable laying work for monitoring posts (MP-1/2/3/4) on 26 March. ■T/B MCC 5D-2 has been powered on 31 March ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L, 2L) ■Non-safety grade buses of 6A and 6B are unavailable ■Temporary pump (works as a substitute of RHRS) was installed and put in service (Powered by P/C) ■Test run od installed cable was conducted on 20 March ■Monitoring posts (MP1-4) were restored. ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power for common pool was restored at 15:30 on 24th March ■Temporary power for common pool was tripped due to short circuit during practice of disconnecting switch operation (17 April 11:36-11:30) restored at 17:44 on 17 April
	planned work (Next Activities of Electric Power Supply Team)	□Restration work of electricity will be restarted after completing water transfer from T/B	□Restration of power for instrumentation	□Restration work of electricity will be restarted after completing water transfer from T/B		□laying temporary power cable for SLC (B)		
DC Power Supply	Current Status	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■Common DC125V has been powered at 16:30 on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status ・Batteries for reactor level gages were replaced by fresh ones at 12:15 on 21st March ■Restration of DC 125V Charge center (B) (30 March)	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■DC 24 Charger 5B-1has been powered on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status	
	Next Works Planned (Activities of Electric Power							
Miscellaneous Measures against Hydrogen	Current Status	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas ■Injection of N2 gas is in progress ・(Flow rate: $28m^3/h$, degree of purity: 98%) 7 April 01:31- 9 April 03:29 (suspended due to switch to high degree of purity N2 gas) ・Injection of high degree of purity N2 gas (Flow rate: 28m3/h, degree of purity: 99.98%) 9 April 04:10 - ・Injection of N2 gas was stopped due to an earthquake (11 April 17:16 - 23:19)	■Considering the injection of N2 gas into PCV ■Generation of hydrogen gas at the top part of the reactor building is of concerned ・White smoke observed on 21st March was supposed to be the steam from SFP that was leaked through the rain drainage duct. It is hoped that this mitigates the concentrated of Hydrogen gas.	■Considering the injection of N2 gas into PCV		■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 19 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	
	Next Works Planned (Next Activities)		□Water jet pump is ready at off-site stock yard, however lifting machine is not available					

Not for Release

Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water level in T/B OP +5050mm (at 07:00 on 26 April) : same as 25 April 07:00 ・Water transfer H/W → CST (3 April 13:55- 10 April 09:30) ■Draining water in Trench ・Radiation level of the water surface in the trench: 0.4 mSv/h on 28 March ・Water level (from top edge of grating to water surface) 1530 mm (at 7:00 on 26 April) : same as 25 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B ・Water level in T/B OP +3100mm (at 07:00 on 26 April) : same as 25 April 07:00 ・Water transfer (H/W → CST) (2 April 17:10 - 9 April 13:10) ・Monitoring camera for water level was installed (on 2 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: higher than 1000 mSv/h (on 28 Mar.) ・Water level (from top edge of grating to water surface) 850 mm (at 7:00 on 26 April) : 10 mm lower than 25 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation "Bruster" ・A rubber board was placed over the crack. (at 13:15 on 6 April) ・Injection of liquid chemical to prevent leaks (conducted on 7 April) ■ Water transfer (trench→H/W) (660 ton) ・April 12 19:35 - April 13 11:00 ・April 13 15:02 - 17:04	■Draining water in T/B ・Water level in T/B OP +3300mm (at 07:00 on 26 April) : same as 25 April 07:00 ・Water transfer (CST → SPT surge tank) (28 March 17:40 - 31 March 08:37) ・H/W is full. Leak from vacuum breaker was confirmed (on 7 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: (No measurement due to difficulty in approach by debris) ・Water level (from top edge of grating to water surface) 560 mm (at 07:00 on 26 April) : 30 mm higher than 25 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water level in T/B OP +3050mm (at 07:00 on 26 April) : 50 mm higher than 25 April 07:00 : Water transfer (Concentrated RW → T/B) (2 April 14:25 - 4 April 09:22: suspended) ・Water transfer pumps were added (1 → 5 pumps: 3 Apr. 10:00 - 4 Apr. 09:22, suspended due to high water level in the trench) ■Work for shutting off the leak in pit ・Concrete was poured (25m3) to clog cracks	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ■Discharging water in sub-drain of Unit 5 to the sea: 950 m3 (4 April 21:00 - 8 April 12:14) ■Draining water in R/B ・CS area →Torus (on 13 April)	■Draining water ・Water transfer (RW base floor → H/W) (1 April 13:40 - 2 April 10:00) ・Suspended by large amount of water: considering draining water ■Discharging water in sub-drain of Unit 6 to the sea: 372.6 m3 (4 April 21:00 - 9 April 19:32)	■Draining water ・Concentrated RW → sea: 9070 m3 (4 April 19:03 - 10 April 17:40) ■Draining water from main process building was completed. ■Draining water from incinerator building to the sea was completed. ■Concrete pouring for stopping groundwater inundation is in progress (15 April - 19 April) ■Work for shutting off the leak of process building (on 16 April) ■High contaminated water transfer from Unit 2 to RW facilities (19 April 10:08 -) ・Amount of increase at RW (at 07:00 on 26 April) 810 mm higher than the initial value
	Next Works Planned	□Draining water in T/B basement ・Preparing for transfer draining water in T/B basement to RW facilities		□Draining water in T/B basement ・Preparing for transfer water in T/B basement from the trench to RW facilities	□Work for shutting off the leak in pit			
Others	Current Status	■Barge ・Water transfer: Barge No.1 → Filtered water tank (on 1 & 2 April) ・Water transfer: Barge No.2 → Barge No.1: (on 2 & 3 April) ・Barge No.2 arrived at dock (on 4 April) ■Air Borne Contamination Control ・In progress (Conducted on 1, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 24 and 25 April) ■Removal of debris ・In progress (Conducted on 18, 19, 20, 21, 22, 23, 24 and 25 April: around R/B equipment hatch in Unit 2, R/B west side in Unit 3, 3 container boxes) 50 boxes in total ■Additional grout was poured (on 19 April: 7 m^3 into intake power supply pit) ■Silt fence: (on 11 April two fences were installed to the south), (on 13 April Unit 3&4: in front of Screen facilities), (on 14 April Unit 1&2: in front of Screen facilities, Unit 1-4: north of Intake) ■Iron plate in front of bar screen facilities. ■Nitrogen gas bubbling in Filtered water tank (12 April -) ■T Hawk project (wireless-controlled helicopter) (on 10, 14, 15 and 21April) ■Placing of sandbags of zeolite around intake structure (at 3 locations on 15 April, at 7 locations on 17 April, pulled 2 up for radiation dose measurement on 19 April) ■Operation (open/close) of double door with robot in Unit 1 & Unit 3 on 17 April, in Unit 2 on 18 April) ■Fire engine was moved from Fukushima Daiichi to Fukushima Daini (for assisting 2 D/G for 1Unit) ■Convoy Drill (Fukushima Daiichi site →J-village →Prefectural medical college) (on 21 April)						
	Next Works Planned	□Field investigation with robot before changing amount of core cooling water injection in Unit 1 (scheduled on 26 April) □Removal of debris (scheduled on 26 April) □Air Borne Contamination Control (scheduled on 26 April) □Installation of Wimax (Wireless LAN) (scheduled on 25 &26 April)						

Abbreviations:

CAMS :Containment Area radiation Monitor System	RCIC :Reactor Core Isolation Cooling
CST :Condensate Storage Tank	RHR :Residual Heat Removal
CUW :(Reactor Water) Clean Up Water (System)	RPV :Reactor Pressure Vessel
D/W :Dry Well	S/C :Suppression Chamber
ECCS :Emergency Core Cooling System	SDF :Self Defense Force
FP :Fire Protection	SFP :Spent Fuel Pool
MS :Main Steam	SGTS :Stand by Gas Treatment System
M/C :Motor Power Center	SHC :Shut Down Cooling
MUWC :Make Up Water Condensate (system)	SLC :Stand by Liquid Control
P/C :Power Distribution Center	

Huffert, Anthony

From: Huffert, Anthony
Sent: Sunday, April 17, 2011 10:54 PM
To: 'rogaunt@sandia.gov'
Subject: FW: GEH Nuclear Response Team Response
Attachments: Q466 NRC_Postulated_Core_breach_1F2 - FINAL.pdf

Importance: High

From: Mitman, Jeffrey
Sent: Sunday, April 17, 2011 5:45 AM
To: Liaison Japan
Subject: FW: GEH Nuclear Response Team Response
Importance: High

(b)(4)

From: RST01 Hoc
Sent: Saturday, April 16, 2011 9:22 AM
To: Mitman, Jeffrey
Subject: FW: GEH Nuclear Response Team Response

From: RST09 Hoc
Sent: Friday, April 15, 2011 8:20 PM
To: RST01 Hoc
Subject: FW: GEH Nuclear Response Team Response

Please forward to site team.

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Friday, April 15, 2011 6:51 PM
To: RST09 Hoc; RST07 Hoc; RST08 Hoc
Subject: FW: GEH Nuclear Response Team Response

From: GE Hitachi Nuclear Response Team (GE Power & Water)[SMTP:GE.HITACHINUCLEARRESPONSETEAM@GE.COM]
Sent: Friday, April 15, 2011 6:50:50 PM
To: RST01 Hoc
Subject: GEH Nuclear Response Team Response
Auto forwarded by a Rule

B6/93

April 15, 2011
Confidential - GE Hitachi Nuclear Energy LLC
Withhold Pursuant to FOIA Exemption 4
Information is Unverified

Ex4
all

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April 15, 2011
Confidential - GE Hitachi Nuclear Energy LLC
Withhold Pursuant to FOIA Exemption 4
Information is Unverified

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April 15, 2011
Confidential - GE Hitachi Nuclear Energy LLC
Withhold Pursuant to FOIA Exemption 4
Information is Unverified

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April 15, 2011
Confidential - GE Hitachi Nuclear Energy LLC
Withhold Pursuant to FOIA Exemption 4
Information is Unverified

(b)(4)

Attached please find our NRC Postulated Core Breach 1F2 Review.

<<Q466 NRC_Postulated_Core_breach_1F2 - FINAL.pdf>>

Rich Rusin

Technical Services

GE Hitachi Nuclear Response Team

From:	OST01 HOC
Sent:	Sunday, April 17, 2011 1:51 PM
To:	RST01 Hoc
Subject:	FW: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process
Attachments:	guideline comments.docx

Doug sent this to Trish already.

From: Weaver, Doug
Sent: Sunday, April 17, 2011 1:46 PM
To: OST01 HOC; Deegan, George; Lewis, Robert; Hiland, Patrick; Skeen, David; Dudek, Michael; Milligan, Patricia; Gibson, Kathy; Case, Michael; Anderson, James; Tracy, Glenn
Cc: Rahimi, Meraj; Kinneman, John; Haney, Catherine; Ordaz, Vonna
Subject: RE: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

Trish,

Please see attached comments for you consideration.

Doug

From: OST01 HOC
Sent: Sunday, April 17, 2011 3:54 AM
To: Deegan, George; Lewis, Robert; Weaver, Doug; Hiland, Patrick; Skeen, David; Dudek, Michael; Milligan, Patricia; Gibson, Kathy; Case, Michael; Anderson, James; Tracy, Glenn
Subject: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

******~~Please note: All attachments are Official Use Only~~**********

The Operations Center has identified a task that falls in the purview of the Line Organization. You were provided as a POC for NRR/NSIR/RES/FSME/NMSS.

NSIR: Please provide the latest version of the composite document to Marty Virgilio by 0900 Monday morning 4/18.

NRR/FSME/NMSS/RES: Please review and provide comments to Trish Milligan, NSIR and OST 01 HOC by 4/17/2011, 1500 EDT

This ticket is being tracked in the Japan SharePoint page (http://nsir-ops.nrc.gov/Lists/HOC%20Red%20Tickets/AllItems.aspx) under ticket number **4771**.

Please provide a response to this email to confirm receipt. Thank you,

Executive Support Team

******Please note: All attachments are Official Use Only**********

B6/94

Ex5

(b)(5)

From:	PMT10 Hoc
Sent:	Sunday, April 17, 2011 9:29 AM
To:	RST01 Hoc; pmt12.hoc@nrc.gov
Subject:	Composite document comments on definitions and a reentry parameter
Attachments:	Composite Document Rev 1 - formerly called PARs for Dep Mtg V21.docx

Larry and Casper,

(b)(5)

Sam Keith
CDC Liaison

From: PMT10 Hoc
Sent: Friday, April 15, 2011 10:14 PM
To: Hoc, PMT12
Cc: PMT10 Hoc
Subject: FW:

(b)(5)

Thanks,
Sam Keith
CDC Liaison
404-277-0016

From: Hoc, PMT12
Sent: Friday, April 15, 2011 11:43 AM
To: PMT10 Hoc
Subject:

Sam

Here's the latest draft.

Sandi

B6195

Andersen, James

From: Andersen, James
Sent: Sunday, April 17, 2011 12:22 PM
To: OST01 HOC
Subject: Re: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

No that is okay. Just let me know if you need assistance fron the EDO's office. Thanks.

Sent from an NRC Blackberry
James Andersen
(b)(6)

From: OST01 HOC
To: Andersen, James
Sent: Sun Apr 17 11:53:34 2011
Subject: RE: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

Do you want me to send and make sure your name is listed? I have only gotten 1 reply so far.

From: Andersen, James
Sent: Sunday, April 17, 2011 11:52 AM
To: OST01 HOC
Subject: Re: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

I probably will not see the responses for reply to all, please let me know if you do not hear back from the lead offices. Thanks.

Sent from an NRC Blackberry
James Andersen
(b)(6)

From: OST01 HOC
To: Andersen, James
Sent: Sun Apr 17 09:44:03 2011
Subject: FW: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

Here you go.

From: OST01 HOC
Sent: Sunday, April 17, 2011 3:54 AM
To: Deegan, George; Lewis, Robert; Weaver, Doug; Hiland, Patrick; Skeen, David; Dudek, Michael; Milligan, Patricia; Gibson, Kathy; Case, Michael; Anderson, James; Tracy, Glenn
Subject: ACTION - New Ticket for Japanese Event Task Tracking (JETT) Process

******Please note: All attachments are ~~Official Use Only~~**********

The Operations Center has identified a task that falls in the purview of the Line Organization. You were provided as a POC for NRR/NSIR/RES/FSME/NMSS.

NSIR: Please provide the latest version of the composite document to Marty Virgilio by 0900 Monday morning 4/18.

B6/96

NRR/FSME/NMSS/RES: Please review and provide comments to Trish Milligan, NSIR and OST 01 HOC by 4/17/2011, 1500 EDT

This ticket is being tracked in the Japan SharePoint page (http://nsir-ops.nrc.gov/Lists/HOC%20Red%20Tickets/AllItems.aspx) under ticket number **4771**.

Please provide a response to this email to confirm receipt. Thank you,

Executive Support Team

******Please note: All attachments are ~~Official Use Only~~**********

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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From: Tracy, Glenn
Sent: Sunday, April 17, 2011 5:20 AM
To: OST01 HOC
Subject: FW: Composite document rev 2

From: RST08 Hoc
Sent: Sunday, April 17, 2011 3:51 AM
To: Hiland, Patrick; Ruland, William; Collins, Timothy; Skeen, David
Cc: RST01 Hoc; Norton, Charles; FOIA Response.hoc Resource; Garchow, Steve; Hoc, PMT12; Tracy, Glenn
Subject: RE: Composite document rev 2

All,

A thought related to the Composite Document:

(b)(5)

Eva Brown, BWR Systems and Ops Analyst
Reactor Safety Team
Nuclear Regulatory Commission

B6/97

From: RST01 Hoc
Sent: Saturday, April 16, 2011 9:58 PM
To: RST08 Hoc
Subject: FW: Composite document rev 2

From: RST01 Hoc
Sent: Saturday, April 16, 2011 7:04 PM
To: Hiland, Patrick; Ruland, William; Collins, Timothy; Skeen, David
Cc: RST07 Hoc
Subject: FW: Composite document rev 2

All,

Attached is the Composite Document. The purpose of this document is to provide guidance for return and re-entry of US citizens to areas around Fukushima Daiichi NPP.

The RST is responsible for enclosure 2.

(b)(5)

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Chuck Norton
RST BWR Analyst

From: Hoc, PMT12
Sent: Saturday, April 16, 2011 5:50 PM
To: RST01 Hoc
Subject: Composite document rev 2

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From: Hoc, PMT12
Sent: Sunday, April 17, 2011 10:02 AM
To: PMT10 Hoc
Subject: rev2
Attachments: Composite document rev 2.docx

BG/98

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Wittick, Brian

From: Wittick, Brian
Sent: Monday, April 18, 2011 5:01 PM
To: Schwartzman, Jennifer
Subject: Re: Japan Nuclear Assistance Meeting (04/15)

Thanks

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: Schwartzman, Jennifer
To: Wittick, Brian
Sent: Mon Apr 18 16:57:30 2011
Subject: FW: Japan Nuclear Assistance Meeting (04/15)

Item 2 of 2

From: Suttenberg, Jeremy
Sent: Monday, April 18, 2011 4:17 PM
To: Schwartzman, Jennifer
Subject: FW: Japan Nuclear Assistance Meeting (04/15)

Here's my write-up. Let me know if you have any other questions.

- Jeremy.

From: Burns, Stephen
Sent: Monday, April 18, 2011 9:55 AM
To: Clark, Lisa; Bupp, Margaret; Reddick, Darani; Davis, Roger; Zorn, Jason; Coggins, Angela
Cc: Hirsch, Patricia; Suttenberg, Jeremy
Subject: FW: Japan Nuclear Assistance Meeting (04/15)

Below is FYI regarding a meeting we covered Friday.

From: Suttenberg, Jeremy
Sent: Friday, April 15, 2011 5:08 PM
To: Rothschild, Trip; Hirsch, Patricia; Kim, Grace; Burns, Stephen; Dyer, Jim; Virgilio, Martin; Weber, Michael; Doane, Margaret
Subject: Japan Nuclear Assistance Meeting (04/15)

Attorney-Client Information

Today, I participated in an inter-agency meeting to discuss some legal issues involved with U.S. government assistance to Japan. Attorneys from State and DOE are flying to Tokyo on Tuesday to meet with their Japanese counterparts, and this was sort of a pre-meeting briefing. In attendance were lawyers from State, DOD, DOE, DOJ, and the NSC (a full attendance list is attached).

B6/99

(b)(5)

(b)(5)

- Jeremy

Jeremy Suttenberg
Attorney
Office of the General Counsel
U.S. Nuclear Regulatory Commission
(301) 415-2842
Jeremy.Suttenberg@nrc.gov

From:	Hoc, PMT12
Sent:	Monday, April 18, 2011 7:16 AM
To:	PMT10 Hoc
Subject:	FW:
Attachments:	Composite rev 3.docx; Composite rev 3 clean copy.docx; composite alternative recommendations.docx

---

From: Milligan, Patricia
Sent: Monday, April 18, 2011 3:05 AM
To: Hoc, PMT12; Wiggins, Jim; McDermott, Brian; Martin.Virgillio@nrc.gov; Zimmerman, Roy
Subject:

I have attached three versions of the composite document.. one with tracked changes, one that is "clean" and one that is a bit of a departure from the others.

I have several concerns about the composite document that were shared by some reviewers of the document in the comments provided to me.

(b)(5)

I can be reached at (b)(6) for discussion. I am currently on travel - feel free to call anytime

Patricia Milligan, CHP, RPh
Senior Technical Advisor for Preparedness & Response
Office of Nuclear Security and Incident Response
US NRC

BG/100

MS T B46M
Washington, DC 20555
301-415-2223
Blackberry (b)(6)

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ALL

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1.

From: RST01 Hoc
Sent: Tuesday, April 19, 2011 3:39 PM
To: (b)(6)
Subject: 11:00am Technical Consortium Summary
Attachments: April 19 1100 Summary.docx

All,

Attached is the 11:00am Technical Consortium Summary.

RST

BG/101

Summary of Technical Consortium 11:00 a.m. Call of 4/19/2011

NRC – D. Skeen, L. Criscione, L. Vick

Consortium - Representatives from GEH, INPO, EPRI, AFRI, BETIS, and Naval Reactors

Regarding N2 injection into a containment with a high steam generation rate

It was pointed out by one Consortium member that Unit 1 is generating approximately 266 cubic feet of O2 per day which would take some time to build up a significant concentration. Overall, TEPCO's Unit 1 approach appears to mitigate any H2 concerns at this time. However, source of coolant leak remain unknown to-date and is contributing to uncertainties for re-flooding the vessel/containment.

Recommendations/comments regarding N2 strategy/discussion for Unit 2 and 3 continues.

TEPCO Road Map

Overall, Consortium is reviewing the roadmap for comment feedback. Generally, the time line should be shorter rather than longer. More detail is needed for practical implementation.

Site Team Feedback (Casto)

Site team reported that TEPCO is transferring about 480 TONS per day of water to Radwaste – it will take about 26 days to complete the task.

Robot information regarding Unit 2 indicates that Unit 2 reactor building is full of steam, 40 Degrees C. TEPCO is looking for a way to entomb the reactor building basement. Site team suspects that bellows may be ruptured/failed.

Mr. Casto mentioned 4 long term issues: 1) Stopping the leak from the suppression pool; 2) water getting into turbine building trenches may be coming from Unit cross-connect piping associated with the radioactive waste system; 3) TEPCO need help with high level waste processing – Maybe DOE labs has suggestions; 4) Unit 3 reactor building is inaccessible due a lot of debris and equipment damage in the N2 piping area plus very high radiation areas – TEPCO is looking for alternate ways of injecting Nitrogen; 5) Unit 2 precludes N2 due to inability to maintain pressure in the drywell.

The following was sent to the Japan Site Team:

1. Ask TEPCO what is the strategy once unit 1 is at TAF. Is there a way to recirc and cool containment/torus? Are they going to continue to inject at a low rate to make up for boiling and vent steam? What affect will this have on salt/boron etc.?
2. What is the current pump head/max RPV injection rate for all units (1, 2, 3)?

3. Send basis as to why TEPCO believes unit 1 is only at 4 ft in containment?
4. Please see email concerning data which used to be supplied from TEPCO

Kock, Andrea

From: Kock, Andrea
Sent: Tuesday, April 19, 2011 5:36 PM
To: Bubar, Patrice; Merzke, Daniel; Milligan, Patricia
Cc: Tadesse, Rebecca
Subject: RE: EPA guidance on reentry and return

Thanks, Patty for framing those questions! It would be helpful to discuss those. The only other questions I would have would be:

(b)(5)

Thanks to all for meeting with us if you can!

Andrea Kock
United States Nuclear Regulatory Commission
Technical Assistant for Materials
Office of Commissioner Ostendorff
301-415-2896

From: Bubar, Patrice
Sent: Tuesday, April 19, 2011 4:55 PM
To: Merzke, Daniel; Milligan, Patricia; Kock, Andrea
Cc: Tadesse, Rebecca
Subject: RE: EPA guidance on reentry and return

(b)(5)

Trish – I know you are just getting back into the country so you may not even know what time zone you are in. But if we could find some time tomorrow for me and Andrea Kock to meet with you – that would be quite helpful.

I was trying to arrange time through Sandra Cianci to have us meet with Marty but that is not going to be possible tomorrow. I have asked Sandra to find some time with Marty early Thursday – if possible – before the meeting with the other federal agencies on the PAGs.

If we can find some time to meet – here is a sampling of the topics I would like to discuss:

(b)(5)

BG/102

(b)(5)

Andrea may have other questions to discuss.

Thank you for your consideration. Dan – thank you for assisting us with this also.

Patty Bubar
Chief of Staff
Office of Commissioner William D. Magwood
U.S. Nuclear Regulatory Commission
301-415-1895

From: Merzke, Daniel
Sent: Tuesday, April 19, 2011 3:40 PM
To: Batkin, Joshua; Bradford, Anna; Sharkey, Jeffry; Castleman, Patrick; Thoma, John; Monninger, John; Sosa, Belkys; Baggett, Steven; Bubar, Patrice; Tadesse, Rebecca; Nieh, Ho; Kock, Andrea
Cc: Virgilio, Martin; Weber, Michael; Milligan, Patricia; Vietti-Cook, Annette
Subject: RE: EPA guidance on reentry and return

(b)(5)

I hope this clears up the question. If you have further questions, please let me know.

Dan

From: Kock, Andrea
Sent: Tuesday, April 19, 2011 2:59 PM
To: Milligan, Patricia; Merzke, Daniel
Subject: FW: EPA guidance on reentry and return
Importance: High

(b)(5)

Thanks

Andrea Kock
United States Nuclear Regulatory Commission
Technical Assistant for Materials
Office of Commissioner Ostendorff
301-415-2896

From: Vietti-Cook, Annette
Sent: Tuesday, April 19, 2011 12:37 PM
To: Kock, Andrea
Subject: FW: EPA guidance on reentry and return
Importance: High

From: Vietti-Cook, Annette
Sent: Tuesday, April 19, 2011 12:34 PM
To: Batkin, Joshua; Monninger, John; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar, Patrice; Orders, William; Nieh, Ho; Franovich, Mike
Subject: FW: EPA guidance on reentry and return
Importance: High

(b)(5)

From: Zimmerman, Roy
Sent: Tuesday, April 19, 2011 12:23 PM
To: Virgilio, Martin; Vietti-Cook, Annette; Milligan, Patricia
Cc: Hoc, PMT12
Subject: FW: EPA guidance on reentry and return
Importance: High

(b)(5)

From: Keith, Sam (ATSDR/DTEM/ATB) [mailto:ldk4@cdc.gov]
Sent: Tuesday, April 19, 2011 12:05 PM
To: Hoc, PMT12; RST01 Hoc
Cc: Zimmerman, Roy; LIA08 Hoc
Subject: EPA guidance on reentry and return
Importance: High

Sandy,

(b)(5)

I would appreciate you sharing this message and attachment with Trish at the earliest. I am copying ET and LIA on this.

Thanks,
Sam Keith
CDC Liaison

From: OST01 HOC
Sent: Tuesday, April 19, 2011 2:40 PM
To: RST01 Hoc
Subject: RE: Task No 4847 "ASSIGN A ITEM JOINTLY TO NSIR AND NRR"

Please advise OST01 if this e-mail effectively closes task 4847.

Thank you,

EST Support

From: Hiland, Patrick
Sent: Tuesday, April 19, 2011 2:33 PM
To: Dudek, Michael; RST01 Hoc; OST01 HOC
Cc: Skeen, David; Brown, Frederick
Subject: Task No 4847 "ASSIGN A ITEM JOINTLY TO NSIR AND NRR"
Importance: High

The below was sent to ET yesterday. NRR assumes that this closes Task No. 4847.

From: Brown, Frederick
Sent: Monday, April 18, 2011 4:45 PM
To: Virgilio, Martin; Zimmerman, Roy; Wiggins, Jim; Uhle, Jennifer; Boger, Bruce; Dyer, Jim
Cc: Skeen, David; Hiland, Patrick; Milligan, Patricia; Reynolds, Steven; Casto, Chuck; OST01 HOC; RST01 Hoc
Subject: RE: ACTION: ASSIGN A ITEM JOINTLY TO NSIR AND NRR
Importance: High

(b)(5)

Fred

B6/103

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From: PMT10 Hoc
Sent: Tuesday, April 19, 2011 6:58 PM
To: skeith@cdc.gov
Subject: FW: composite paper OFFICIAL USE ONLY
Attachments: Composite rev 5.doc; composite rev 5 with tracked changes.doc

For ability to work remotely with NRC on this document

From: Hoc, PMT12
Sent: Tuesday, April 19, 2011 8:36 AM
To: PMT10 Hoc
Subject: FW: composite paper

From: Milligan, Patricia
Sent: Tuesday, April 19, 2011 8:27 AM
To: Hoc, PMT12
Subject:

Here is the paper. the internet was down at the hotel this am until now. who does upgrades at 6 am??

Patricia Milligan, CHP, RPh
Senior Technical Advisor for Preparedness & Response
Office of Nuclear Security and Incident Response
US NRC
MS T B46M
Washington, DC 20555
301-415-2223
Blackberry (b)(6)

BG/104

From: Dudek, Michael
Sent: Tuesday, April 19, 2011 3:55 PM
To: OST01 HOC; Hoc, PMT12
Cc: Milligan, Patricia; Williams, Kevin; Holahan, Patricia; McDermott, Brian; Norris, Michael
Subject: CLOSURE OF ACTION #4906. - Review of EPA vs. NRC re-entry guidance documents
Attachments: EPAs Version Reentry-Return_4-13-2011.docx; Composite rev 6.doc

Operations Center,

(b)(5)

Please close action #4906 for NSIR.

Thanks,
Michael I. Dudek

Michael Dudek | Technical Assistant | NSIR/Division of Preparedness & Response | U.S. NRC
11555 Rockville Pike, Rockville, MD 20852 | ☎ (301) 415-6500 | ✉: Michael.Dudek@nrc.gov

From: Dudek, Michael
Sent: Tuesday, April 19, 2011 2:50 PM
To: OST01 HOC; Hoc, PMT12
Cc: Merzke, Daniel; Milligan, Patricia; Williams, Kevin
Subject: RE: ACTION: Review of EPA vs. NRC re-entry guidance documents

Operations Center,

(b)(5)

Please advise.

Michael Dudek | Technical Assistant | NSIR/Division of Preparedness & Response | U.S. NRC
11555 Rockville Pike, Rockville, MD 20852 | ☎ (301) 415-6500 | ✉: Michael.Dudek@nrc.gov

From: OST01 HOC
Sent: Tuesday, April 19, 2011 2:00 PM
To: Hoc, PMT12; Dudek, Michael
Subject: RE: ACTION: Review of EPA vs. NRC re-entry guidance documents

This ticket was sent out of process. Please refer all questions to PMT. Due date is ASAP for meeting at the White House tomorrow.

The Operations Center has identified a task that falls in the purview of the Line Organization. You were provided as a POC for NRR

Question to be answered by NSIR:

B6/105

(b)(5)

This ticket is being tracked in the Japan SharePoint page (http://nsir-ops.nrc.gov/Lists/HOC%20Red%20Tickets/AllItems.aspx) under ticket number **4906.**

Please provide a response to this email to confirm receipt. Thank you,

Executive Support Team

******Please note: All attachments are Official Use Only**********

From: Dudek, Michael
Sent: Tuesday, April 19, 2011 1:41 PM
To: Hoc, PMT12
Subject: RE: ACTION: Review of EPA vs. NRC re-entry guidance documents

When is this due? What is the Tasking? Concurrence?

Michael Dudek | Technical Assistant | NSIR/Division of Preparedness & Response | U.S. NRC
11555 Rockville Pike, Rockville, MD 20852 | ☎ (301) 415-6500 | ✉: Michael.Dudek@nrc.gov

---

From: Hoc, PMT12
Sent: Tuesday, April 19, 2011 1:10 PM
To: Dudek, Michael
Subject: ACTION: Review of EPA vs. NRC re-entry guidance documents
Importance: High

Michael,

(b)(5)

Please be diligent in assigning this task.

V/r,

Kimberly Gambone
PMT12

From:	Hoc, PMT12
Sent:	Tuesday, April 19, 2011 8:37 AM
To:	LIA08 Hoc; OST01 HOC; RST01 Hoc; Zimmerman, Roy
Subject:	FW:
Attachments:	Composite rev 5.doc; composite rev 5 with tracked changes.doc

---

From: Milligan, Patricia
Sent: Tuesday, April 19, 2011 8:27 AM
To: Hoc, PMT12
Subject:

Here is the paper. the internet was down at the hotel this am until now. who does upgrades at 6 am??

Patricia Milligan, CHP, RPh
Senior Technical Advisor for Preparedness & Response
Office of Nuclear Security and Incident Response
US NRC
MS T B46M
Washington, DC 20555
301-415-2223
Blackberry (b)(6)

B6/106

Lee, Richard

From: Salay, Michael
Sent: Wednesday, April 20, 2011 7:50 AM
To: Lee, Richard
Cc: Marksberry, Don; Esmaili, Hossein
Subject: RE: NRR ANSWER ON NITROGEN PURGE

Richard,

We did not send this writeup. HQ RST had already provided their comments to the Japan Team (Jeff Mitman is on the RST in Japan). What we were saying was mostly consistent with what contributed by NRR. The two sentences that I sent Jeff more concisely state the differences.

-Mike
-----Original Message-----
From: Lee, Richard
Sent: Tuesday, April 19, 2011 8:39 PM
To: Salay, Michael; Marksberry, Don; Esmaili, Hossein
Subject: RE: NRR ANSWER ON NITROGEN PURGE

Mike:

Have RES provided the writeup you sent yesterday on nitrogen inerting to RST?

Richard

From: Salay, Michael
Sent: Tuesday, April 19, 2011 12:11 PM
To: Marksberry, Don; Esmaili, Hossein
Cc: Lee, Richard
Subject: FW: NRR ANSWER ON NITROGEN PURGE

From: Salay, Michael
Sent: Tuesday, April 19, 2011 8:20 AM
To: Mitman, Jeffrey
Subject: RE: NRR ANSWER ON NITROGEN PURGE

Jeff,

It seemed to me that the argument that was being made that they are steam purging (flushing combustible gases out of DW with steam), not that they are steam inerting (making a combustible mixture non-combustible by increasing the steam concentration). Do we know for sure, however, that they are flushing through leaks in the DW and not through the SP thus potentially leaving the DW atmosphere mostly unchanged?

-Mike

From: Mitman, Jeffrey
Sent: Tuesday, April 19, 2011 12:01 AM
To: Liaison Japan
Subject: FW: NRR ANSWER ON NITROGEN PURGE

From: RST01 Hoc

B6/107

Sent: Tuesday, April 19, 2011 9:44 AM
To: Mitman, Jeffrey; PMT_japan Resource
Subject: FW: NRR ANSWER ON NITROGEN PURGE

From: Harrison, Donnie
Sent: Monday, April 18, 2011 4:25 PM
To: Hiland, Patrick; RST01 Hoc; OST01 HOC
Cc: Skeen, David; Ruland, William; Brown, Frederick
Subject: RE: NRR ANSWER ON NITROGEN PURGE

(b)(5)

From: Hiland, Patrick
Sent: Monday, April 18, 2011 3:57 PM
To: RST01 Hoc; OST01 HOC
Cc: Skeen, David; Ruland, William; Brown, Frederick; Harrison, Donnie
Subject: NRR ANSWER ON NITROGEN PURGE
Importance: High

The evaluation of Nitrogen purge vs. steam has been reviewed by NRR. The comments below incorporates GEH's review and our own assessment. FYI, the contributors are noted in parens.

(Fred Brown)
"I believe that GEH has discussed this on our calls.

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

From: RST01 Hoc
Sent: Monday, April 18, 2011 4:59 AM
To: Hiland, Patrick; OST01 HOC
Cc: RST01 Hoc; Skeen, David; Ruland, William
Subject: ACTION: ASSIGN A ITEM TO NRR

Please assign the following action thru task tracker:

As a result of discussion with the Site team at the 0300, 18 April 2011 call the issues associated with the nitrogen inerting were clarified. (b)(5) [redacted] (b)(5)

If possible provide input to RST before 1100 18 April 2011. If this is not possible please provide RST with estimated completion time.

From: Gambone, Kimberly
Sent: Friday, April 22, 2011 7:40 PM
To: Milligan, Patricia
Cc: Kokajko, Lawrence; Hoc, PMT12; RST01 Hoc; LIA08 Hoc; OST01 HOC
Subject: RE: revised guidelines

Thanks Trish. I'll get this routed for review.

Kimberly

From: Milligan, Patricia
Sent: Friday, April 22, 2011 6:54 PM
To: Gambone, Kimberly
Subject: Fw: revised guidelines

Sent from my NRC Blackberry
Patricia A Milligan, CHP RPh

(b)(6)

From: Milligan, Patricia
To: Hoc, PMT12
Sent: Fri Apr 22 18:18:30 2011
Subject: revised guidelines

(b)(5)

I am home all night .. if you need to talk. have the HOOs patch you thru.

Thanks

BG/108

Patricia Milligan, CHP, RPh
Senior Technical Advisor for Preparedness & Response
Office of Nuclear Security and Incident Response
US NRC
MS T B46M
Washington, DC 20555
301-415-2223
Blackberry (b)(6)

From: OST01 HOC
Sent: Friday, April 22, 2011 2:54 PM
To: FOIA Response.hoc Resource
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu
Attachments: NA-40 Markey Letter Draft Response 4-21.docx

-----Original Message-----
From: LIA08 Hoc
Sent: Friday, April 22, 2011 2:49 PM
To: McGinty, Tim; Giitter, Joseph
Cc: Kokajko, Lawrence; Droggitis, Spiros; RST01 Hoc; Hoc, PMT12; OST01 HOC
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu

Mr. McGinty and Mr. Gitter:

NRC has been asked to review and comment on the attached draft letter from DOE to Rep Markey. Per ET Director direction, I am sending it to DORP and DPR for review. Please send any comments back to Spiros Droggitis and to LIA08. Thank you.

V/R,

Clyde Ragland

Liaison Team Coordinator
US Nuclear Regulatory Commission
email: lia08.hoc@nrc.gov
Desk Ph: 301-816-5185

-----Original Message-----
From: LIA08 Hoc
Sent: Friday, April 22, 2011 1:51 PM
To: RST01 Hoc; Hoc, PMT12; OST01 HOC; Kokajko, Lawrence
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu

I have reviewed the attached, and do not see any problems with this draft, but I assume others will need to review before getting back to Spiros. Does anyone else need to review/have comments? Does anyone k now if this differs from what we have told Rep. Markey?

Please respond before end of shift. Thanks!

Clyde Ragland

Liaison Team Coordinator
US Nuclear Regulatory Commission
email: lia08.hoc@nrc.gov

B61/109

Desk Ph: 301-816-5185

-----Original Message-----
From: Stransky, Robert
Sent: Friday, April 22, 2011 1:38 PM
To: LIA08 Hoc
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu

-----Original Message-----
From: Droggitis, Spiros
Sent: Friday, April 22, 2011 8:41 AM
To: Stransky, Robert
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu

Robert: FYI, in Bill and Scott's absence. Could you please have someone take a look at this draft DOE response and provide comments to DOE? Thanks, Spiros

-----Original Message-----
From: Droggitis, Spiros
Sent: Friday, April 22, 2011 8:38 AM
To: Gott, William
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu

Bill: FYI in Scott's absence. Could you have someone take a look at this draft DOE response and provide comments to DOE? Thanks, Spiros

-----Original Message-----
From: Droggitis, Spiros
Sent: Friday, April 22, 2011 8:36 AM
To: Morris, Scott; Benowitz, Howard
Subject: FW: Response to Letter from Rep. Markey to Sec. Chu

Scott/Howard: I am out today. I received this proposed response from DOE
to Congressman Markey's March 13 letter to the President. Would you mind taking a look at it and getting back to Carl Pavetto, as appropriate?
Thanks, Spiros

-----Original Message-----
From: Pavetto, Carl [mailto:Carl.Pavetto@nnsa.doe.gov]
Sent: Friday, April 22, 2011 8:21 AM
To: Droggitis, Spiros
Subject: Response to Letter from Rep. Markey to Sec. Chu

Hi Spiros

The Secretary received a letter from Congressman Markey asking questions
about the federal government's response to a crisis like the crisis in
Japan.

The letter was originally sent to the President and it was referred to DOE even though the substantive answers to most of the questions would not be a DOE lead.

We have prepared a response that I attach. If you could be so kind as to review the draft response or forward it to whomever else in NRC might have input, I would appreciate it.

Thanks!

CSP

(b)(5)

(b)(5)

(b)(5)

(b)(5)

Sincerely,

Steven Chu

From:	RST01 Hoc
Sent:	Friday, April 22, 2011 10:35 AM
To:	RST01A Hoc
Subject:	FW: Some layout drawings and P&IDs for 1F1
Attachments:	1F1, RWCU (729E466).pdf; 1F1, Shutdown reactor Cooling System (729E484).pdf; 1F1, SLC (161F259).pdf; 1F4 RFF Laydown.pdf; 1F4_FPC_PID.pdf; 1FX, CRD Hydraulic (104R944).pdf; 1FX, Reactor Internal Data (729E257_0).pdf; 1FX, Reactor Vessel and Reculation Loop Data (729E523).pdf; 730E427C STD Plant Containment Drawing 1F1 Type[1].pdf; 1F1, 1F2, 1F3, Assorted Reactor Building Elevations.pdf; 1F1, Atmospheric Control System (161F278).pdf; 1F1, Containment Spray Cooling System (148F709).pdf; 1F1, Core Spray System (919D677).pdf; 1F1, Fuel Pool Cooling (729E483r5).pdf; 1F1, HPCI (729E465 sh1).pdf; 1F1, HPCI (729E465 sh2).pdf; 1F1, Isolation Condenser System (729E503).pdf

---

From: Marksberry, Don
Sent: Thursday, April 21, 2011 1:42 PM
To: RST01 Hoc
Subject: Some layout drawings and P&IDs for 1F1

BG/110

(b)(4)

(b)(4)

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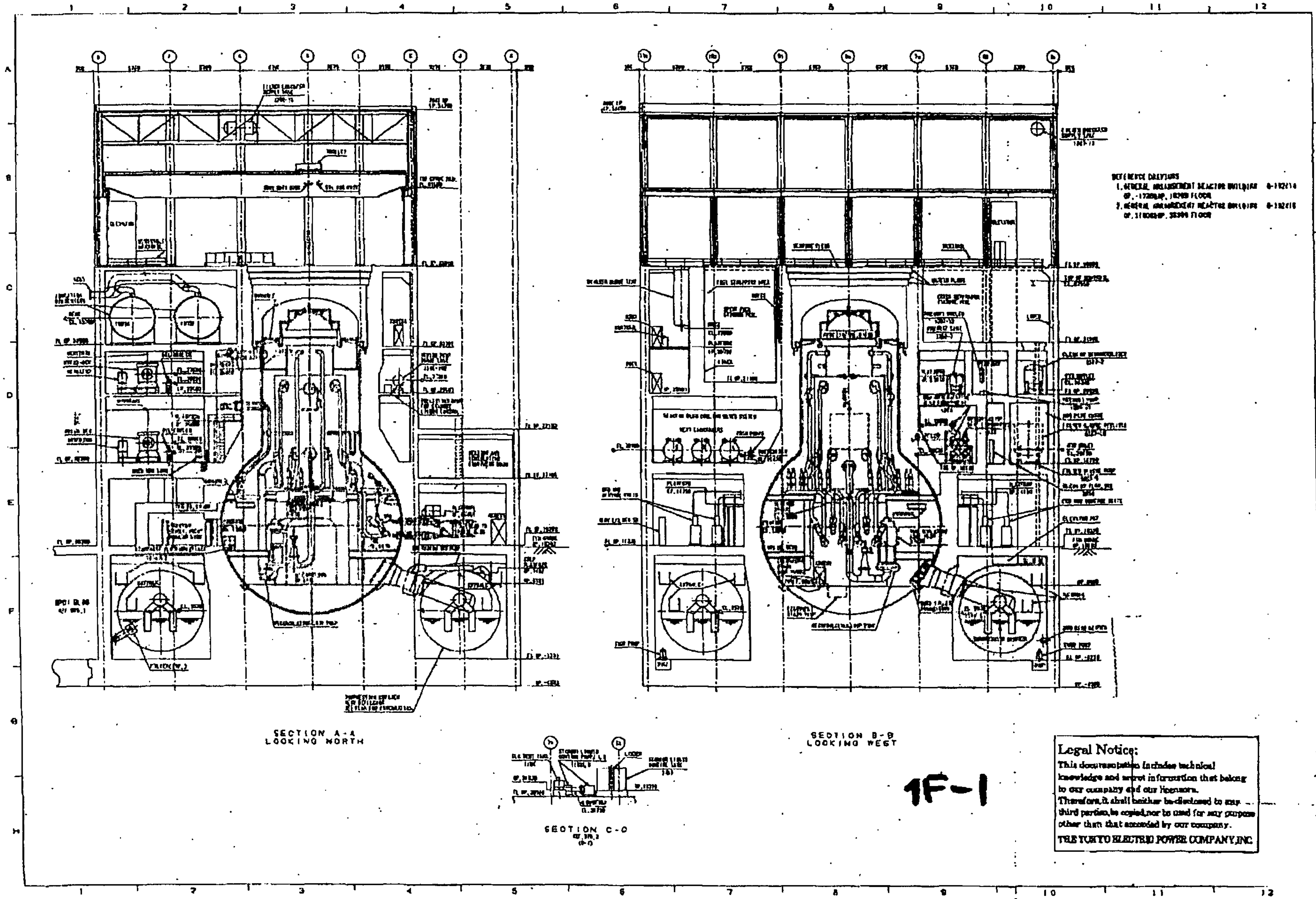
SECTION A-A
LOOKING NORTH
SECTION B-B
LOOKING WEST
SECTION C-C
1F-1

(b)(4)

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From: RST02 Hoc
Sent: Friday, April 22, 2011 3:43 PM
To: OST01 HOC
Subject: April 22 roadmap assessmentRev.1.docx
Attachments: April 22 roadmap assessmentRev.1.docx

B6/111

April 22, 2011

(b)(4)

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(b)(4)

From:	Norwood, Donald
Sent:	Sunday, April 24, 2011 2:31 AM
To:	RST01 Hoc
Cc:	Mitman, Jeffrey; Garchow, Steve; Lupold, Timothy; 'cipullotl@state.gov'; Norwood, Donald
Subject:	Fukushima Plant Drawings
Attachments:	Rx Bldg a.pdf; Rx Bldg b.pdf; Rx Bldg c.pdf; Rx Bldg d.pdf; Atmosphere Control.pdf; Cntmt Data.pdf; Core Spray.pdf; HPCI.pdf; Iso Condenser.pdf; RPV Internals.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

For your review.

Norwood

B67/112

(b)(4)

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(b)(4)

From:	Garchow, Steve
Sent:	Monday, April 25, 2011 2:18 AM
To:	Mitman, Jeffrey; Moore, Carl; Lupold, Timothy; Norwood, Donald
Cc:	RST01 Hoc
Subject:	FW: Bellows drawing for Reactor well seal and vent line.
Attachments:	NX-7831-3 Reactor bellows.pdf; NX-7865-2 Reactor well seal.pdf; NX-8291-97[89' bellow for vent line.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

fyi

-----Original Message-----
From: Reynolds, Steven
Sent: Monday, April 25, 2011 2:16 AM
To: Garchow, Steve
Subject: Fw: Bellows drawing for Reactor well seal and vent line.

----- Original Message -----
From: Foster, Dirk L CAPT USN < (b)(6)
To: Reynolds, Steven; Casto, Chuck; Gard, Lee A (INPO) <GardLA@INPO.org>
Sent: Mon Apr 25 02:12:26 2011
Subject: FW: Bellows drawing for Reactor well seal and vent line.

Attached are unsolicited engineering drawings forwarded to me by the Monticello PC system engineer. He thought these might be useful. I have no idea if they are similar to Fukushima or not.

Let me know if there is any other information from Monticello that you might be interested in.

Dirk

-----Original Message-----
From: Foster, Dirk L. [mailto:Dirk.Foster@xenuclear.com]
Sent: Monday, April 25, 2011 11:49 AM
To: Foster, Dirk L CAPT USN
Subject: FW: Bellows drawing for Reactor well seal and vent line.

From: Bush, Devin
Sent: Friday, April 22, 2011 2:34 PM
To: Wojchouski, Alan V.
Cc (b)(6) Foster, Dirk L.
Subject: FW: Bellows drawing for Reactor well seal and vent line.

BG/113

Thanks Al!

I'll forward these to Dirk also. He is in Japan assisting with the Fukushima crisis.

From: Wojchouski, Alan V.
Sent: Wednesday, April 20, 2011 11:19 PM
To: Bush, Devin
Subject: Bellows drawing for Reactor well seal and vent line.

Devin

Attached are the drawing for the reactor seal bellow and it's arrangement.
Also the drawing for the vent line bellows.

Hope these help.

Alan W.

(b)(4)

(b)(4)

(b)(4)

From:	Hoc, PMT12
Sent:	Monday, April 25, 2011 6:52 PM
To:	PMT10 Hoc
Attachments:	Composite rev 8.docx

B61/114

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)

(b)(5)

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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(b)(5)

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)

From: PMT10 Hoc
Sent: Monday, April 25, 2011 8:39 PM
To: Hoc, PMT12
Subject: CDC comments on Composite document rev 8
Attachments: Composite document rev 8 CDC cmts 2011-04-25.docx

Stacy, my comments on the Composite document are attached for Trish's consideration. Please let me know if you have any questions.

Thanks,
Sam Keith
CDC Liaison

From: Hoc, PMT12
Sent: Monday, April 25, 2011 6:52 PM
To: PMT10 Hoc
Subject:

BG/115

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)

Our assessments and recommendations are based on the best available technical information. We acknowledge that the information is subject to

(b)(5)

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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(b)(5)

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)

From: OST01 HOC
Sent: Monday, April 25, 2011 5:13 PM
To: FOIA Response.hoc Resource
Subject: FW: REPLY: revised guidelines - CJ comments
Attachments: Composite rev 8 cj edits.docx

From: Jones, Cynthia
Sent: Monday, April 25, 2011 4:16 PM
To: Milligan, Patricia; McDermott, Brian; Williams, Kevin
Cc: Merzke, Daniel; Bush-Goddard, Stephanie; Andersen, James; Bowman, Gregory; Virgilio, Martin; Gambone, Kimberly; Dudek, Michael; MorganButler, Kimyata; Jackson, Deborah; Weaver, Doug; Hiland, Patrick; Skeen, David; Ciocco, Jeff; Kevern, Thomas; Wiggins, Jim; Evans, Michele; Holahan, Patricia; Tracy, Glenn; Uhle, Jennifer; Carpenter, Cynthia; Johnson, Michael; Kokajko, Lawrence; Weber, Michael; RST01 Hoc; LIA08 Hoc; OST01 HOC; Reynolds, Steven; Holonich, Joseph; Casto, Chuck; PMT_japan Resource; Holahan, Vincent; Zimmerman, Roy; Boger, Bruce; Layton, Michael; Lewis, Robert
Subject: RE: REPLY: revised guidelines - CJ comments

My comments to Trish's revised edits from this PM are attached.

(b)(5)

Thank for the opportunity to comment
Cyndi

Sent: Monday, April 25, 2011 9:25 AM
To: Virgilio, Martin; Gambone, Kimberly; Dudek, Michael; MorganButler, Kimyata; Jackson, Deborah; Weaver, Doug; Hiland, Patrick; Skeen, David; Ciocco, Jeff; Kevern, Thomas; Wiggins, Jim; Evans, Michele; Holahan, Patricia; Tracy, Glenn; Uhle, Jennifer; Carpenter, Cynthia; Johnson, Michael; Kokajko, Lawrence; Weber, Michael; RST01 Hoc; LIA08 Hoc; OST01 HOC; Reynolds, Steven; Holonich, Joseph; Casto, Chuck; PMT_japan Resource; Holahan, Vincent; Zimmerman, Roy; Jones, Cynthia; Boger, Bruce; Layton, Michael; Lewis, Robert; McDermott, Brian; Williams, Kevin

B6/116

Cc: Merzke, Daniel; Bush-Goddard, Stephanie; Andersen, James; Bowman, Gregory
Subject: RE: REPLY: revised guidelines

(b)(5)

Please review and comment.

thank you.
Trish

Patricia Milligan, CHP, RPh
Senior Technical Advisor for Preparedness & Response
Office of Nuclear Security and Incident Response
US NRC
MS T B46M
Washington, DC 20555
301-415-2223
Blackberry (b)(6)

From: Virgilio, Martin
Sent: Sunday, April 24, 2011 12:24 PM
To: Gambone, Kimberly; Dudek, Michael; MorganButler, Kimyata; Jackson, Deborah; Weaver, Doug; Hiland, Patrick; Skeen, David; Ciocco, Jeff; Kevern, Thomas; Wiggins, Jim; Evans, Michele; Holahan, Patricia; Tracy, Glenn; Uhle, Jennifer; Carpenter, Cynthia; Johnson, Michael; Kokajko, Lawrence; Weber, Michael; Holahan, Patricia; RST01 Hoc; LIA08 Hoc; OST01 HOC; Skeen, David; Hiland, Patrick; Reynolds, Steven; Holonich, Joseph; Casto, Chuck; PMT_japan Resource; Holahan, Vincent; Tracy, Glenn; Zimmerman, Roy; Holahan, Patricia; Jones, Cynthia; Boger, Bruce; Wiggins, Jim; Kokajko, Lawrence; Uhle, Jennifer; Layton, Michael; Carpenter, Cynthia; Johnson, Michael; Lewis, Robert; Milligan, Patricia
Cc: Merzke, Daniel; Bush-Goddard, Stephanie; Andersen, James; Bowman, Gregory
Subject: REPLY: revised guidelines

All

(b)(5)

Please set of goal at COB Monday for resolving these differences. NSIR lead.

Marty

From: Gambone, Kimberly
Sent: Friday, April 22, 2011 8:02 PM
To: Virgilio, Martin; Dudek, Michael; MorganButler, Kimyata; Jackson, Deborah; Weaver, Doug; Hiland, Patrick; Skeen, David; Ciocco, Jeff; Kevern, Thomas
Cc: Holahan, Vincent; PMT_japan Resource; Tracy, Glenn; Zimmerman, Roy; Boger, Bruce; Wiggins, Jim; Uhle, Jennifer; Layton, Michael; Holonich, Joseph; Kokajko, Lawrence; Carpenter, Cynthia; Johnson, Michael; Lewis, Robert; Holahan, Patricia; Jones, Cynthia
Subject: FW: revised guidelines

All,

Attached is the latest revision of the Composite Paper, i.e., "Recommendations for US citizens on relaxation of the 50 mile evacuation recommendation and re-entry to evacuate areas around Fukushima Daiichi NPP. " NRC Operations Center PMT requests that all line organizations review and provide comment. We strive to release the document to the federal family middle of next week.

Provide comments by COB Tuesday, April 26th to PMT12.hoc@nrc.gov , Cc: Patricia Milligan.

Task Tracker #4969.

Please contact me if you have questions.

Thank you.

V/r,

Kimberly Gambone

PMT/PAAD

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)

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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(b)(5)

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(b)(5)

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)

Meighan, Sean

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Tuesday, April 26, 2011 1:14 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; (b)(6)
Subject: FW: April 26 plant Updates
Attachments: 20110426 0100 Plant Parameters[1].pdf; 20110426 0500 Unit 1 Drywell Pressure[1].pdf; 20110426 0700 Water Levels.pdf

Attached is the latest information on N2 purge, building water levels and temperature / pressure graphs.

B6/117

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）

4月26日 01:00 現在

号機	1号機	2号機	3号機	4号機	5号機	6号機
原子炉注水状況	給水ラインを用いた淡水注入中。 流量 6.1m³/h (4/25 23:00 現在)	消火系ラインを用いた淡水注入中。 流量 7.0m³/h (4/25 23:00 現在)	消火系ラインを用いた淡水注入中。 流量 6.8m³/h (4/25 23:00 現在)	※2 （全燃料取出中につき監視対象外）	※2 （原子炉の除熱機能が維持されており、注水不要）	
原子炉水位	燃料域A：−1650mm 燃料域B：−1650mm (4/25 23:00 現在)	燃料域A：−1500mm 燃料域B：−2100mm (4/25 23:00 現在)	燃料域A：−1800mm 燃料域B：−2250mm (4/25 23:00 現在)		停止域 1845mm (4/26 01:00 現在)	停止域 2140mm (4/26 01:00 現在
原子炉圧力	A系 0.450MPa g (A) B系 1.173MPa g (B) ※3 (4/25 23:00 現在)	A系−0.020MPa g (A) ※3 B系−0.025MPa g (D) ※3 (4/25 23:00 現在)	A系−0.055MPa g (A) ※3 B系−0.091MPa g (C) ※3 (4/25 23:00 現在)		0.003MPa g (4/26 01:00 現在)	0.013MPa g (4/26 01:00 現在
原子炉水温度	（系統流量がないため採取不可）				50.5℃ (4/26 01:00 現在)	26.3℃ (4/26 01:00 現在
原子炉圧力容器まわり温度	給水ノズル温度：133.3℃ ※3 圧力容器下部温度：111.3℃ (4/25 23:00 現在)	給水ノズル温度：121.9℃ 圧力容器下部温度：※1 (4/25 23:00 現在)	給水ノズル温度：84.9℃ ※3 圧力容器下部温度：109.8℃ (4/25 23:00 現在)		※2（原子炉水温度にて監視中）	
D/W・S/C圧力	D/W 0.150MPa abs S/C 0.150MPa abs (4/25 23:00 現在)	D/W 0.080MPa abs S/C ※1 (4/25 23:00 現在)	D/W 0.1041MPa abs S/C 0.1792MPa abs (4/25 23:00 現在)		※2 （原子炉の除熱機能が維持されているため監視対象外）	
D/W雰囲気温度	RPVベローシール：113.7℃ HVH戻り：97.0℃ (4/25 23:00 現在)	RPVベローシール：※1 HVH戻り：114℃ (4/25 23:00 現在)	RPVベローシール：103.1℃※3 HVH戻り：64.5℃ (4/25 23:00 現在)			
CAMS放射線モニタ	D/W (A) ※1 (B) ※1 S/C (A) 1.10×10^{0}Sv/h ※3 (B) 1.75×10^{0}Sv/h ※3 (4/25 23:00 現在)	D/W (A) 2.31×10^{1}Sv/h (B) 2.60×10^{1}Sv/h S/C (A) 4.83×10^{-1}Sv/h ※3 (B) 1.05×10^{2}Sv/h ※3 (4/25 23:00 現在)	D/W (A) 1.46×10^{1}Sv/h (B) 1.10×10^{1}Sv/h S/C (A) 5.51×10^{-1}Sv/h ※3 (B) 5.15×10^{-1}Sv/h ※3 (4/25 23:00 現在)			
S/C温度	A系：51.3℃ B系：51.2℃ (4/25 23:00 現在)	A系：70.9℃ B系：71.1℃ (4/25 23:00 現在)	A系：41.4℃ B系：41.4℃ (4/25 23:00 現在)			
D/W設計使用圧力	0.384MPa g (0.485MPa abs)	0.384MPa g (0.485MPa abs)	0.384MPa g (0.485MPa abs)	-	-	
D/W最高使用圧力	0.427MPa g (0.528MPa abs)	0.427MPa g (0.528MPa abs)	0.427MPa g (0.528MPa abs)			
使用済燃料プール温度	※1	71.0℃ (4/25 23:00 現在)	※1	※1	37.8℃ (4/26 01:00 現在)	32.0℃ (4/26 01:00 現在
FPCスキマーサージタンクレベル	4550mm (4/25 23:00 現在)	6100mm (4/25 23:00 現在)	※1	4250mm (4/25 23:00 現在)	※2	
電源	外部電源受電中 (P/C2C)		外部電源受電中 (P/C4D)		外部電源受電中	
その他情報				共用プール： 31℃ (4/25 6:00)	5u：SHCモード (4/25 22:58～)	6u：SHCモード (4/25 10:19～)

圧力換算　ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

※1：計器不良
※2：データ採取対象外
※3：状況推移を継続確認中

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）に関する補足説明

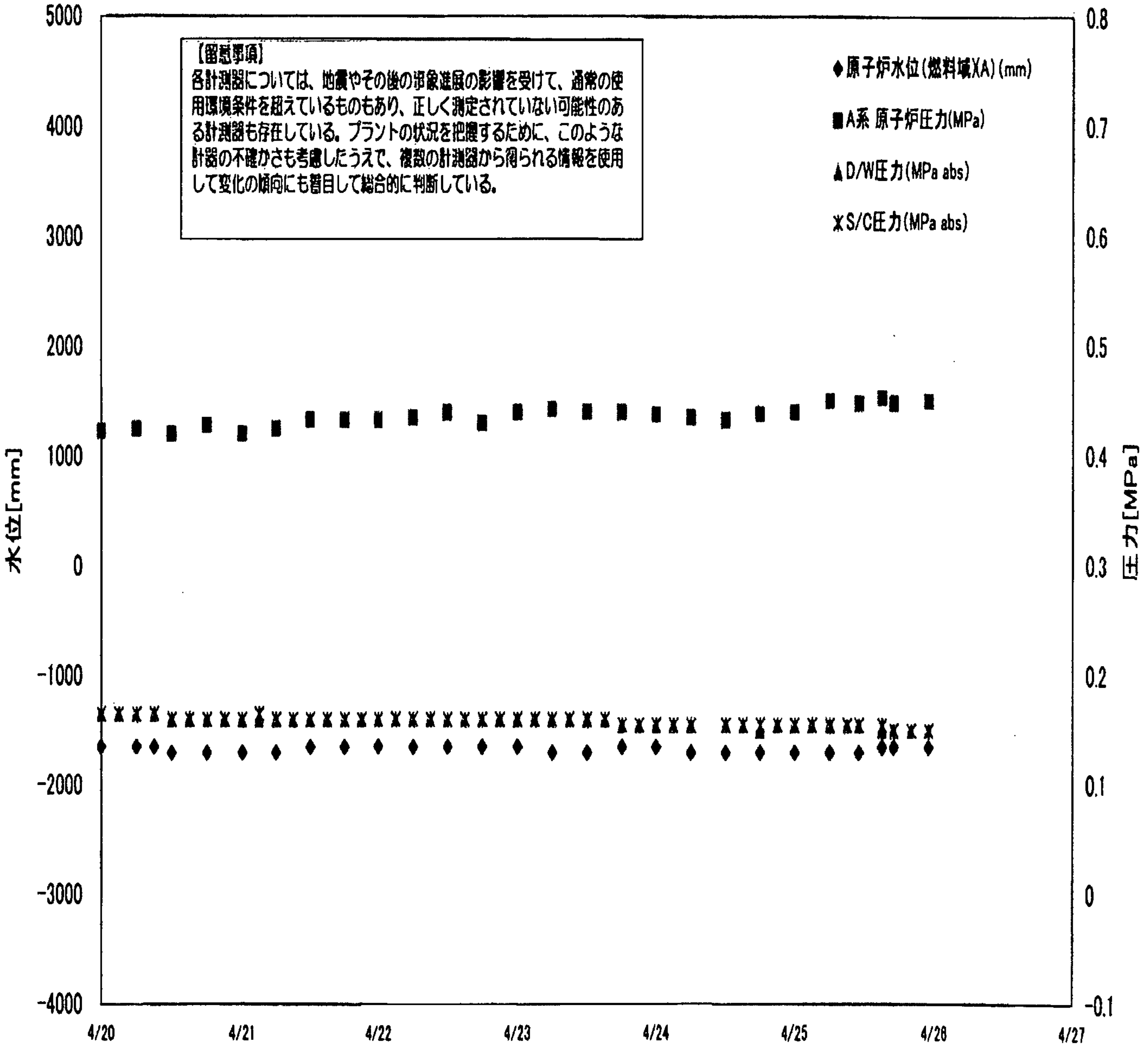
■各パラメータに関する補足説明

項目	記載方法	測定方法	記載点数／Ch 数 or 系統数
原子炉注水状況	注水流量／変更時間を記載　（注水流量を変更した場合のみ更新）。	仮設計器	1／1系統
原子炉水位	燃料域を監視する水位計にて測定したデータを記載。	本設指示計	A系　1／1Ch B系　1／1Ch
原子炉圧力	計器盤より圧力計器から伝送される電圧値を測定し、電圧値を圧力に換算したものを記載。A系／B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設計器盤より電圧値を測定し圧力に換算	A系　1／2Ch B系　1／2Ch
原子炉水温度	温度計設置箇所には系統流量がないためデータ未採取	−	−
原子炉圧力容器まわり温度	原子炉圧力容器まわり温度は複数箇所から採取しているが、全体把握の観点から代表部位として「給水ノズル位置」、「圧力容器下部」のデータを記載	本設記録計	給水ノズル位置　1／4Ch 圧力容器下部　1／2Ch（1号） 1／1Ch（2～3号）
D/W・S/C 圧力	本設指示計の指示値を記載。本設指示計にて採取できない場合には、計器盤より測定した電圧値を圧力に換算したものを記載。 （D/W：ドライウェル、S/C：圧力抑制室）	本設指示計：1号、2号 本設計器盤（電圧測定）：3号	本設指示計　1／1系統 本設記録計　常用1／1Ch 広域1／1Ch
D/W 雰囲気温度	D/W 内の雰囲気温度は複数箇所から採取しているが、全体把握の観点から代表部位として「D/W 上部（RPV ベローシール温度）、中央部（D/W HVH 戻り空気温度）」のデータを記載。（RPV：原子炉圧力容器、HVH：空調ユニット）	本設記録計	RPV ベローシール　1／5Ch D/W HVH 戻り　1／5Ch
CAMS 放射線モニタ	本設指示計の指示値を記載。 （CAMS：格納容器雰囲気モニタ系）	本設指示計	D/W　A系　1／1Ch B系　1／1Ch S/C　A系　1／1Ch B系　1／1Ch
S/C 温度	本設記録計の指示値を記載。A系／B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設記録計	A系1／4Ch（1号）、8Ch（2～3号） B系1／4Ch（1号）、8Ch（2～3号）
使用済燃料プール温度	本設記録計の指示値を記載。 （非熱モード：非常時熱負荷モード、SHC モード：原子炉停止時冷却系モード）	本設記録計	1／2Ch（1号）、1Ch（2～4号）
FPC ｽｷﾏｰｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ	本設指示計の指示値を記載。 （FPC：燃料プール冷却浄化系）	本設指示計	1／1系統

■注記に関する補足説明

項目	内容	4月26日01 時時点の状況
計器不良	計器不良：指示値ダウン（オーバー）スケール／検出器の不良	1号機　使用済燃料プール温度、CAMS D/W 放射線モニタ 2号機　圧力容器下部温度、S/C 圧力、RPV ベローシール温度 3号機　使用済燃料プール温度、スキマーサージタンクレベル 4号機　使用済燃料プール温度
データ採取対象外	4号機：炉心に燃料がないため、原子炉及びD/W関連のデータは採取せず。 5～6号機：現在冷温停止中のため、D/W 関連データは採取せず。	−
状況推移を継続確認中	指示は出ているものの、指示値ハンチング・マイナス表示など他パラメータと明らかに異なる推移を示したもの。	1号機　原子炉圧力、給水ノズル温度、CAMS S/C 放射線モニタ 2号機　原子炉圧力、CAMS S/C 放射線モニタ 3号機　原子炉圧力、RPV ベローシール温度、給水ノズル温度、CAMS S/C 放射線モニタ

1F1 水位・圧力に関するパラメータ



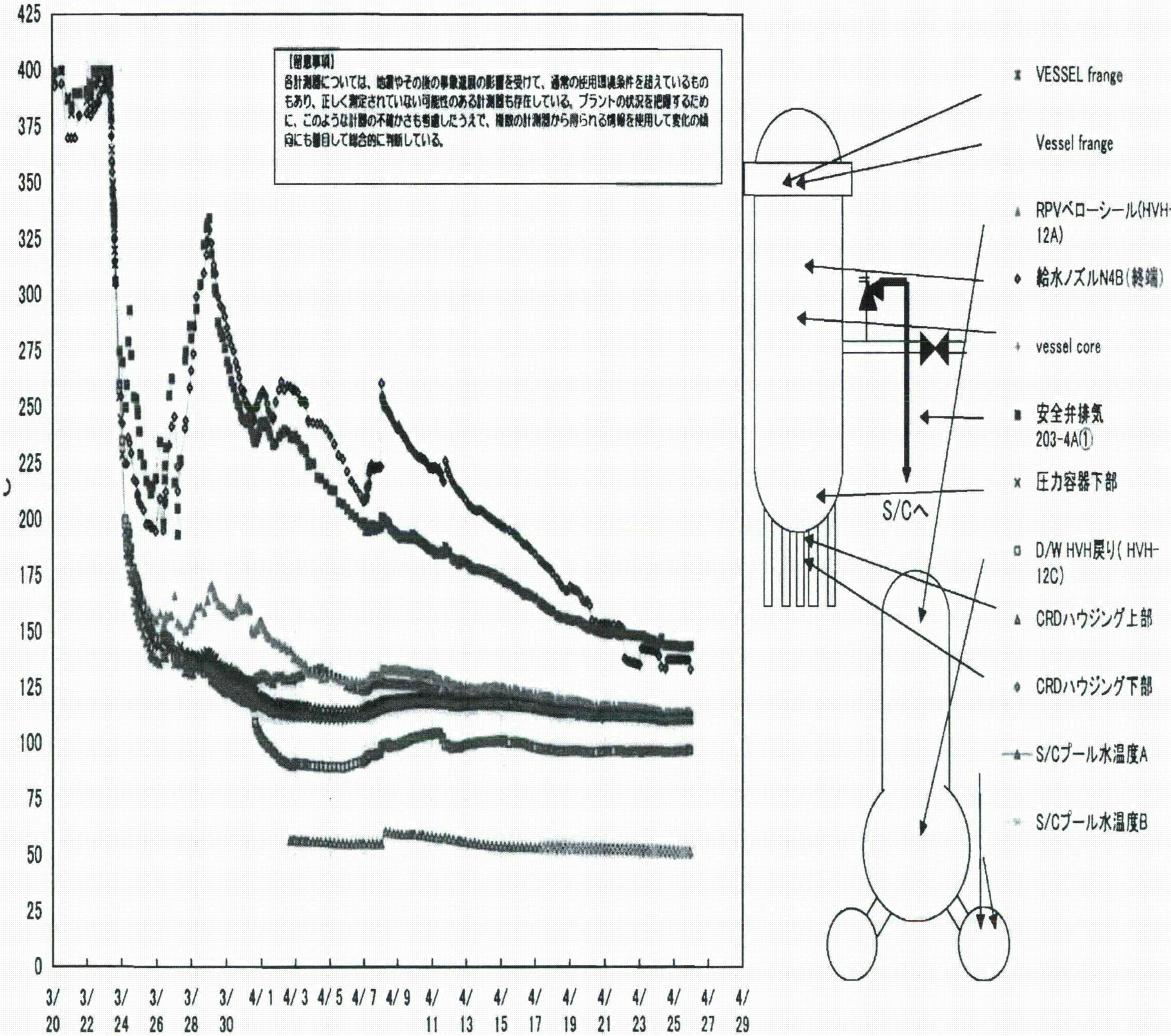
1F1 水位･圧力に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

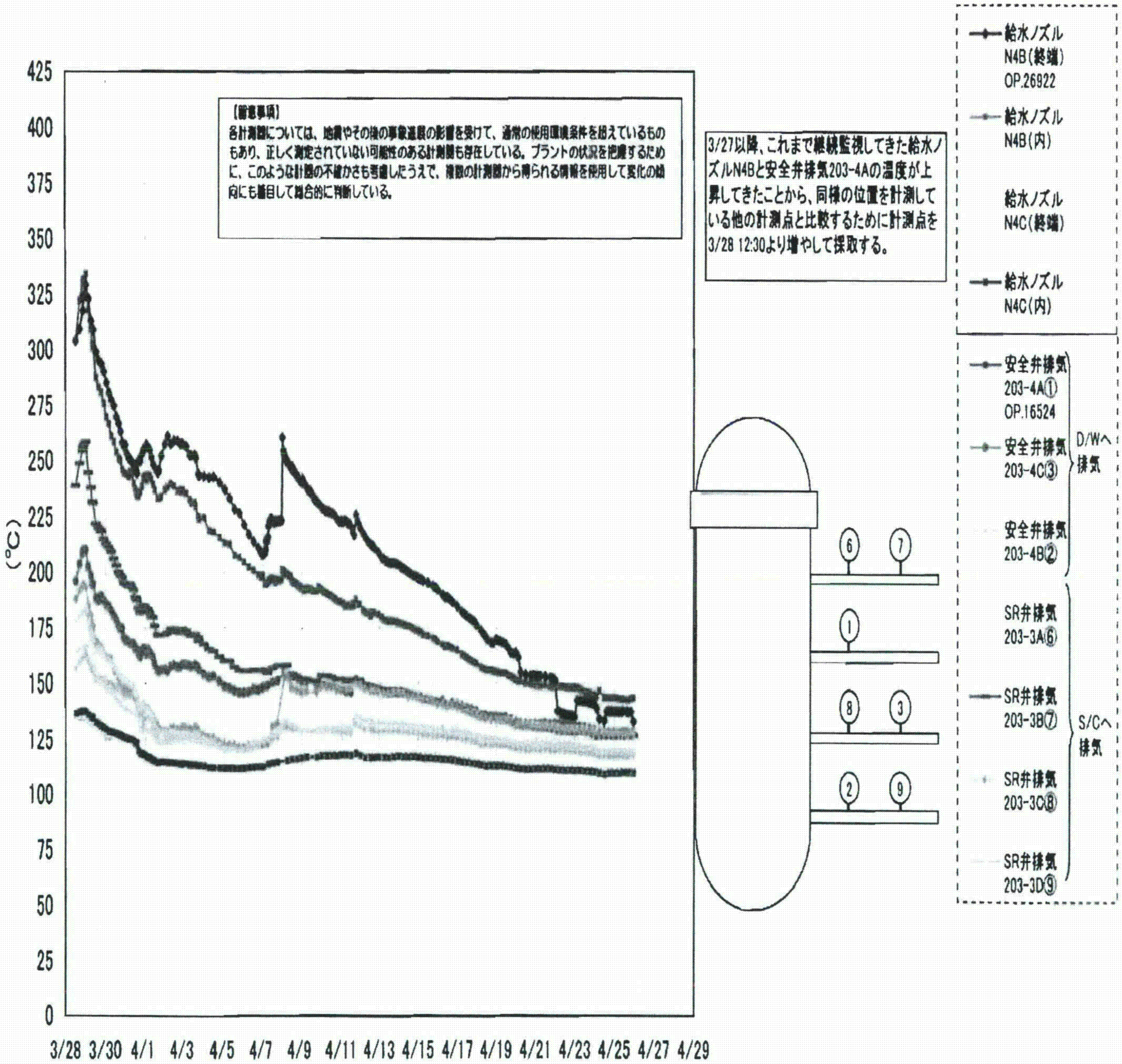
日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	備考
4/22 6:00	-1650	-1650	0.435	1.113	0.160	0.160			0.994	1.85	
4/22 9:00					0.160	0.160			0.994	1.84	
4/22 12:00	-1650	-1650	0.440	1.120	0.160	0.160			0.994	1.83	
4/22 15:00					0.160	0.160			0.995	1.83	
4/22 18:00	-1650	-1650	0.430	1.113	0.160	0.160			0.996	1.82	
4/22 21:00					0.160	0.160			0.996	1.81	
4/23 0:00	-1650	-1650	0.440	1.128	0.160	0.160			0.997	1.80	
4/23 3:00					0.160	0.160			0.997	1.79	
4/23 6:00	-1700	-1700	0.443	1.138	0.160	0.160			0.998	1.78	
4/23 9:00					0.160	0.160			0.999	1.77	
4/23 12:00	-1700	-1700	0.440	1.130	0.160	0.160			1.00	1.77	
4/23 15:00					0.160	0.160			1.00	1.76	
4/23 18:00	-1650	-1700	0.440	1.130	0.155	0.155			1.00	1.75	
4/23 21:00					0.155	0.155			1.00	1.75	
4/24 0:00	-1650	-1650	0.438	1.130	0.155	0.155			1.01	1.74	
4/24 3:00					0.155	0.155			1.01	1.74	
4/24 6:00	-1700	-1700	0.435	1.143	0.155	0.155			1.01	1.74	
4/24 12:00	-1700	-1700	0.433	1.143	0.155	0.155			1.02	1.74	
4/24 15:00					0.155	0.155			1.03	1.74	
4/24 18:00	-1700	-1700	0.438	1.148	0.150	0.155			1.03	1.74	
4/24 21:00					0.155	0.155			1.04	1.74	
4/25 0:00	-1700	-1700	0.440	1.160	0.155	0.155			1.04	1.74	
4/25 3:00					0.155	0.155			1.05	1.75	
4/25 6:00	-1700	-1650	0.450	1.173	0.155	0.155			1.06	1.76	
4/25 9:00					0.155	0.155			1.07	1.76	
4/25 11:00	-1700	-1650	0.448	1.168	0.155	0.155			1.08	1.76	
4/25 15:00	-1650	-1650	0.453	1.173	0.150	0.155			1.08	1.74	
4/25 17:00	-1650	-1550	0.448	1.165	0.150	0.150			1.09	1.74	
4/25 20:00					0.150	0.150			1.10	1.75	
4/25 23:00	-1650	-1650	0.450	1.173	0.150	0.150			1.10	1.75	

計器不良 計器不良

1F-1 温度に関するパラメータ(代表点)



1F-1 温度に関するパラメータ(給水ノズル及び安全弁排気温度)

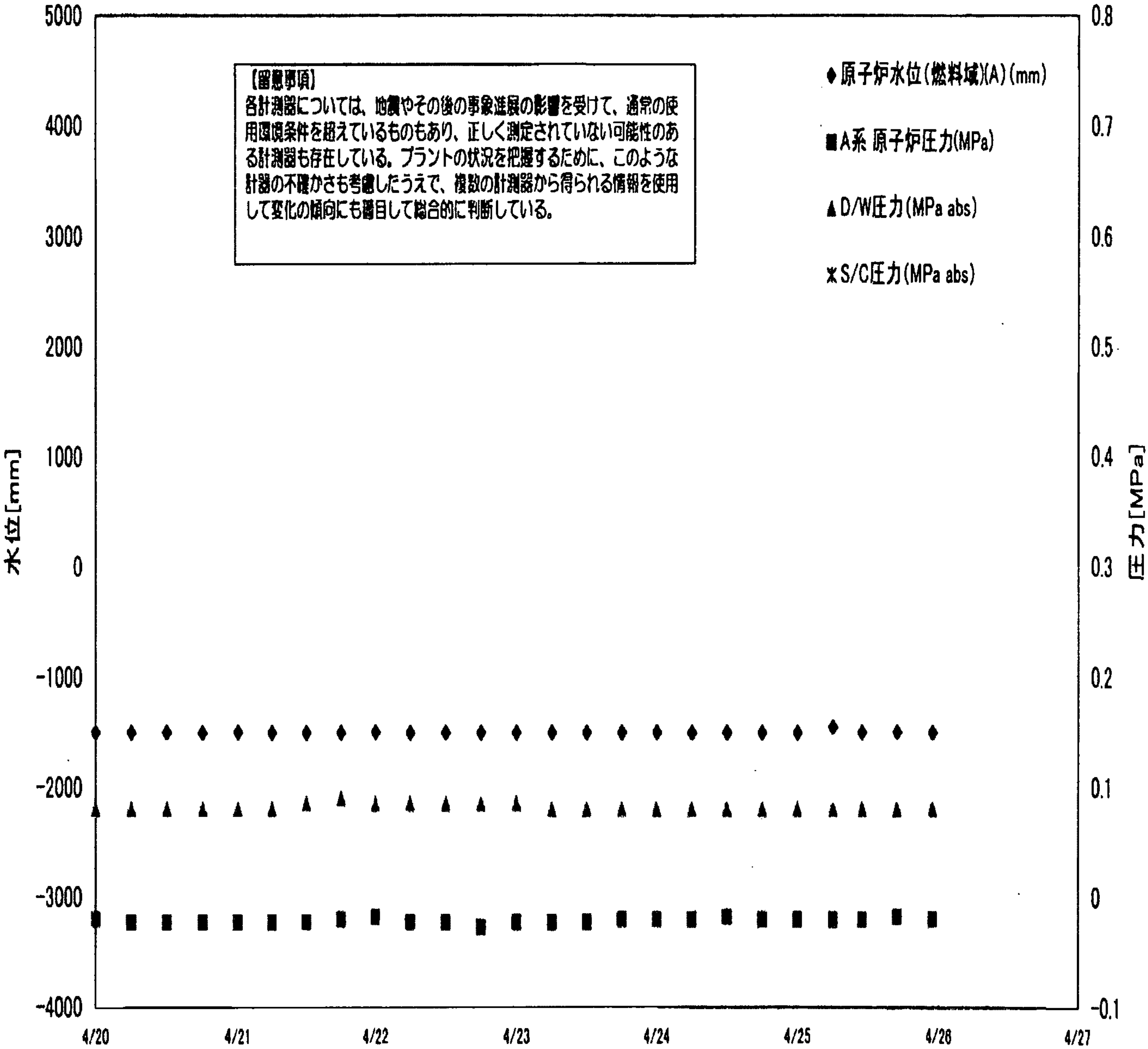


1F-1 温度に関するパラメータ

【補足事項】
外部計測器については、地震やその他の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

	VESSEL frange	Vessel frange	給水ノズルN4B(継端)	給水ノズルN4B(内)	給水ノズルN4C(継端)	給水ノズルN4C(内)	vessel core	圧力容器下部	CRDハウジング上部	CRDハウジング下部	安全弁排気203-4A①	安全弁排気203-4C②	安全弁排気203-4B③	SR弁排気203-3A⑥	SR弁排気203-3B⑦	SR弁排気203-3C⑧	SR弁排気203-3D⑨	D/W HVH戻り(HVH-12C)	RPVベローシール(HVH-12A)	S/Cプール水温度A	S/Cプール水温度B
4/18 0:00	116.9	113.7	176.4	114.8	114.9	113.9	115.1	115.9	114.5	114.6	158.9	137.7	123.8	137	136.1	136.1	126.8	97.1	120.8	53.5	53.4
4/18 6:00	116.4	113.3	173.9	114.2	114.5	113.5	114.7	115.4	114.1	114.1	157.3	136	122.3	135.8	134.9	134.7	125.8	96.9	120.2	53.5	53.9
4/18 9:00	116.2	113.2	172.4				114.6	115.2	113.9	114	156.7							96.7	119.9		
4/18 12:00	116.1	113.1	170.9	113.9	114.1	113.1	114.4	115.1	113.8	113.9	156.1	135.8	122.4	134.9	134.9	134.4	125.5	96.8	119.7	53.5	53.3
4/18 13:00	116.1	113.1	170.2				114.4	115.2	113.8	114	156.1							96.8	119.8		
4/18 18:00	116	113.1	168.8	113.9	114.2	113.2	114.4	115.1	113.8	113.9	156.1	135.3	122.2	135	134.4	134	125.4	96.8	119.7	53.4	53.2
4/18 21:00	116	113.2	168.5				114.4	115.1	113.8	114	155.4							96.8	119.7		
4/19 0:00	115.9	113.1	170.2	113.9	114.1	113.2	114.4	115.1	113.8	113.9	155.4	135.2	122.2	134.7	134.1	133.9	125.3	96.8	119.6	53.4	53.3
4/19 3:00	115.9	113.1	169.4				114.4	115.1	113.8	113.9	155.1							96.8	119.6		
4/19 6:00	115.9	113.1	169	113.9	114.1	113.2	114.3	115.1	113.8	113.9	154.7	135.1	122.1	134.5	133.8	133.8	126.1	96.9	119.4	53.3	53.2
4/19 9:00	115.9	113.1	168.8				114.3	115.1	113.8	113.9	154.8							97	119.4		
4/19 12:00	115.9	113	167.8	113.7	114	113	113	114.3	113.1	113.6	154.8	135	121.9	134.4	133.4	133.5	124.9	96.9	119.2	53.3	53.2
4/19 15:00	115.6	112.9	166				114	114.8	113.5	113.6	153.8							96.7	118.8		
4/19 18:00	115.5	112.7	164	113.4	113.7	112.7	113.8	114.5	113.3	113.4	153.3	134.2	121.3	133.7	132.7	132.8	124.2	96.6	118.7	53.4	53.2
4/19 21:00	115.2	112.3	163.5				113.5	114.2	113	113.1	152.8							96.4	118.3		
4/20 0:00	115	112	164.1	112.8	113	112.1	113.3	113.9	112.8	112.9	151.8	133	120.5	132.4	131.5	131.3	123.4	96.3	118	53.3	53.2
4/20 3:00	114.8	111.9	161.9				113.1	113.8	112.7	112.7	151.2							96.3	117.7		
4/20 6:00	114.6	111.7	155.2	112.5	112.8	111.8	112.9	113.5	112.5	112.6	151.2	132.1	120.3	132.5	131	131.5	123.2	96.2	117.4	53.3	53.1
4/20 12:00	114.4	111.5	154.1	112.3	112.5	111.6	112.7	113.3	112.3	112.4	150.3	131.8	120	132.2	130.7	131.3	122.9	96.2	117.2	53.2	53.1
4/20 18:00	114.3	111.5	153.6	112.3	112.5	111.6	112.7	113.4	112.3	112.3	149.9	131.8	119.8	132.1	130.3	131.1	122.7	96.3	117.2	53.1	53
4/20 21:00	114.3	111.6	153.6				112.7	113.4	112.3	111.4	149.4							96.5	117.2		
4/21 0:00	114.4	111.7	153.6	112.4	112.7	111.7	112.8	113.5	112.4	112.5	149.4	132	120	132	130.1	130.9	122.7	96.7	117.3	53.1	53
4/21 3:00	114.4	111.7	153.4				112.9	113.6	112.4	112.6	149.4							96.8	117.2		
4/21 6:00	114.3	111.7	153.4	112.5	112.7	111.7	112.8	113.6	112.4	112.6	148.9	131.9	119.8	131.6	129.7	130.5	122.7	96.7	117.1	53	52.9
4/21 12:00	114.5	111.9	153.3	112.7	112.8	111.8	113	113.6	112.6	112.6	149.3	132.4	120.2	132	129.9	130.9	123	96.8	117.3	53	52.8
4/21 18:00	114.4	111.7	152.8	112.5	112.7	111.8	112.9	113.5	112.4	112.6	148.8	132	119.8	131.7	129.6	130.6	122.8	96.9	117	52.9	52.8
4/21 21:00	114.3	111.7	152.4				112.8	113.4	112.3	112.4	148.4							96.8	116.9		
4/22 0:00	114.2	111.5	151.8	112.3	112.5	111.5	112.7	113.3	112.3	112.3	148.8	131.8	119.6	131.4	129.2	130.2	122.3	96.9	116.8	52.9	52.8
4/22 3:00	114	111.4	138.1				112.6	113.1	112.1	112.2	148.8							96.3	116.9		
4/22 6:00	114	111.4	137.4	112.1	112.3	111.3	112.5	113	112.1	112.2	148.8	132.2	119.8	130.3	128.4	129.1	122.8	96.4	116.8	52.8	52.7
4/22 9:00	113.8	111.3	138.8				112.4	112.9	112	112.1	148.7							96.4	116.6		
4/22 12:00	113.8	111.3	138.5	112	112.1	111.1	112.4	112.8	112	112	148.5	131.9	119.7	130.3	128.1	129.2	122.4	96.5	116.4	52.7	52.6
4/22 15:00	113.8	111.2	138.2				112.4	112.8	112	112	148.2							96.6	116.4		
4/22 18:00	113.6	111.3	136	112	112.2	111.2	112.4	112.8	112	112.1	148.3	131.8	119.7	130.4	128.1	129.4	122.4	96.7	116.4	52.6	52.5
4/22 21:00	113.8	111.2	135.7				112.4	112.8	112	112	148.1							96.8	116.3		
4/23 0:00	113.7	111.1	135.3	111.9	112.1	111.1	112.2	112.7	111.9	112	148	131.5	119.5	130.2	127.8	129.2	122.2	96.8	116.2	52.4	52.4
4/23 3:00	113.7	111	142.7				112.2	112.7	111.8	111.8	148.2							96.2	116		
4/23 6:00	113.6	111	142.8	111.7	111.9	111	112.1	112.6	111.8	111.8	147.8	130.8	119	130.5	128.7	129.4	121.7	96.7	115.9	52.4	52.3
4/23 9:00	113.5	110.9	142.3				112	112.5	111.7	111.7	147.1							96.8	115.7		
4/23 12:00	113.4	110.8	142.3	111.5	111.7	110.8	111.9	112.4	111.6	111.6	146.6	130.3	118.7	130.2	128.1	129.1	121.3	96.6	115.4	52.3	52.2
4/23 15:00	113.4	110.7	142.1				111.8	112.3	111.5	111.6	146.2							96.8	115.4		
4/23 18:00	113.1	110.6	141.8	111.3	111.5	110.6	111.7	112.1	111.4	111.4	145.9	129.8	118.4	128.7	127.7	128.7	121	96.7	115.2	52.1	52.1
4/23 21:00	113.1	110.5	141.4				111.6	112	111.3	111.4	145.3							96.9	115.1	52.1	52
4/24 0:00	113	110.5	141.2	111.1	111.3	110.4	111.5	111.9	111.2	111.3	145.1	129.3	118.2	128.3	127	128.3	120.7	96.8	114.9	52.1	52
4/24 3:00	112.8	110.2	139.2				111.2	111.6	110.9	111	144.4							96.7	114.8		
4/24 6:00	112.4	109.9	134.4	110.6	110.7	109.8	110.9	111.2	110.7	110.6	144.9	128.4	117	128.6	128.3	127.7	120	96.0	114	51.9	51.9
4/24 12:00	111.7	109.4	133.5	109.2	110.2	109.4	110.5	110.8	110.3	110.4	144	128.5	117.2	128.4	126.4	127.7	119.8	96.3	114	51.8	51.8
4/24 15:00	112.3	109.8	137.8				110.8	111.2	110.6	110.7	143.8							96.4	114		
4/24 18:00	112.3	109.8	137.8	110.6	110.7	109.8	110.8	111.3	110.7	110.7	143.7	128.2	117.1	128.4	128.2	127.7	119.7	96.5	114	51.7	51.7
4/24 21:00	112.3	109.8	137.8				110.9	111.3	110.7	110.7	143.8							96.5	114		
4/25 0:00	112.3	109.8	137.7	110.6	110.7	109.8	110.9	111.3	110.7	110.7	143.8	128.2	117	128.4	128.6	127.9	119.7	96.5	114	51.6	51.6
4/25 3:00	112.3	109.9	137.7				110.9	111.3	110.7	110.7	143.7							96.6	114		
4/25 6:00	112.3	109.9	137.7	110.7	110.8	109.8	110.9	111.4	110.7	110.7	143.4	128.2	117	128.3	128.4	127.8	119.7	96.6	114	51.5	51.4
4/25 9:00	112.3	110	137.8				111	111.4	110.8	110.8	143.1							96.7	114		
4/25 11:00	112.5	110.1	137.8	110.9	111	110.1	111.1	111.6	110.9	110.9	143.2	128.3	117.2	128.4	128.5	127.9	119.8	96.8	114.2	51.5	51.4
4/25 15:00	112.5	110.1	137.6	110.8	111	110	111.1	111.6	110.9	110.9	143	128.1	117.1	128.2	128.3	127.7	119.7	96.7	114.1	51.5	51.4
4/25 17:00	112.5	110.2	137.4	110.8	111	110.1	111.2	111.6	110.9	110.9	142.8	128.2	117.3	128.3	128.2	127.4	119.7	96.8	114.3	51.4	51.3
4/25 20:00	112.8	110.6	137.5				111.5	111.9	111.3	111.3	143.4							97.3	114.5		
4/25 23:00	112.3	110.1	133.3	110.8	110.9	109.9	111	111.3	110.9	110.9	143.8	128.5	117.8	128.9	128.9	128	119.9	97	113.7	51.3	51.2

1F2 水位・圧力に関するパラメータ



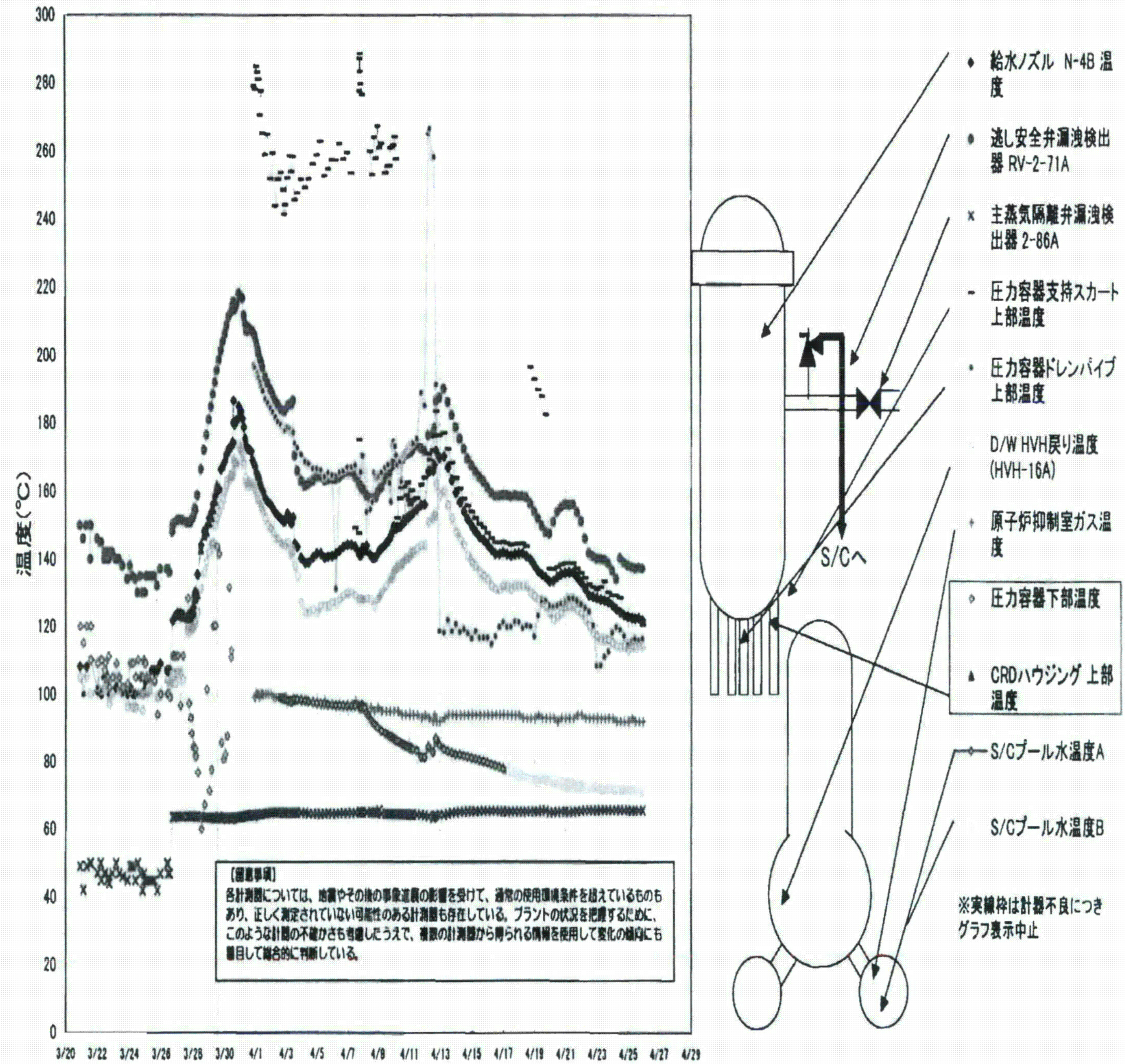
1F2 水位・圧力に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W (A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/18 0:00	-1500	-2100	-0.023	-0.027	0.085		25.8	29.3	0.592	108.0	0.06	
4/18 6:00	-1500	-2100	-0.025	-0.029	0.085		25.7	29.2	0.580	101.0	0.10	
4/18 12:00	-1500	-2100	-0.023	-0.032	0.085		25.6	29.1	0.584	101.0	0.08	
4/18 13:00	-1500	-2100	-0.023	-0.032	0.085		25.6	29.1	0.584	101.0	0.08	
4/18 18:00	-1500	-2100	-0.018	-0.027	0.085		25.5	29.0	0.578	85.4	0.07	
4/19 0:00	-1500	-2100	-0.020	-0.029	0.085		25.4	28.9	0.571	97.2	0.08	
4/19 6:00	-1500	-2100	-0.020	-0.029	0.085		25.3	28.8	0.568	114.0	0.08	
4/19 12:00	-1500	-2100	-0.020	-0.029	0.085		25.3	28.7	0.565	108.0	0.07	
4/19 18:00	-1500	-2100	-0.023	-0.027	0.080		25.2	28.6	0.564	99.2	0.07	
4/20 0:00	-1500	-2100	-0.020	-0.027	0.080		25.1	28.5	0.560	89.3	0.10	
4/20 6:00	-1500	-2100	-0.023	-0.029	0.080		25.0	28.4	0.555	105.0	0.08	
4/20 12:00	-1500	-2100	-0.023	-0.029	0.080		24.9	28.3	0.551	103.0	0.09	
4/20 18:00	-1500	-2100	-0.023	-0.029	0.080		24.8	28.1	0.547	101.0	0.08	
4/21 0:00	-1500	-2100	-0.023	-0.029	0.080		24.7	28.1	0.542	108.0	0.08	
4/21 6:00	-1500	-2050	-0.023	-0.029	0.080		24.6	28.0	0.538	109.0	0.08	
4/21 12:00	-1500	-2050	-0.023	-0.025	0.085		24.6	27.9	0.534	114.0	0.05	
4/21 18:00	-1500	-2050	-0.020	-0.025	0.090		24.5	27.8	0.530	120.0	0.07	
4/22 0:00	-1500	-2050	-0.018	-0.023	0.085		24.4	27.7	0.526	132.0	0.07	
4/22 6:00	-1500	-2100	-0.023	-0.027	0.085		24.3	27.6	0.522	137.0	0.07	
4/22 12:00	-1500	-2050	-0.023	-0.027	0.085		24.2	27.5	0.519	136.0	0.08	
4/22 18:00	-1500	-2050	-0.027	-0.034	0.085		24.1	27.4	0.517	135.0	0.06	
4/23 0:00	-1500	-2100	-0.023	-0.027	0.085		24.1	27.3	0.516	132.0	0.08	
4/23 6:00	-1500	-2100	-0.023	-0.027	0.080		24.0	27.0	0.512	135.0	0.07	
4/23 12:00	-1500	-2100	-0.023	-0.025	0.080		23.9	26.8	0.509	136.0	0.07	
4/23 18:00	-1500	-2050	-0.020	-0.023	0.080		23.8	26.7	0.506	128.0	0.10	
4/24 0:00	-1500	-2050	-0.020	-0.020	0.080		23.7	26.6	0.503	126.0	0.10	
4/24 6:00	-1500	-2050	-0.020	-0.025	0.080		23.6	26.5	0.500	110.0	0.10	
4/24 12:00	-1500	-2050	-0.018	-0.025	0.080		23.6	26.5	0.497	115.0	0.08	
4/24 18:00	-1500	-2050	-0.020	-0.025	0.080		23.5	26.4	0.496	107.0	0.07	
4/25 0:00	-1500	-2100	-0.020	-0.027	0.080		23.4	26.3	0.493	119.0	0.06	
4/25 6:00	-1450	-2100	-0.020	-0.027	0.080		23.3	26.2	0.490	103.0	0.06	
4/25 11:00	-1500	-2100	-0.020	-0.025	0.080		23.2	26.1	0.489	94.1	0.05	
4/25 17:00	-1500	-2100	-0.018	-0.025	0.080		23.2	26.0	0.486	98.6	0.07	
4/25 23:00	-1500	-2100	-0.020	-0.025	0.080		23.1	26.0	0.483	105.0	0.05	

計器不良

1F-2 温度に関するパラメータ(代表点)

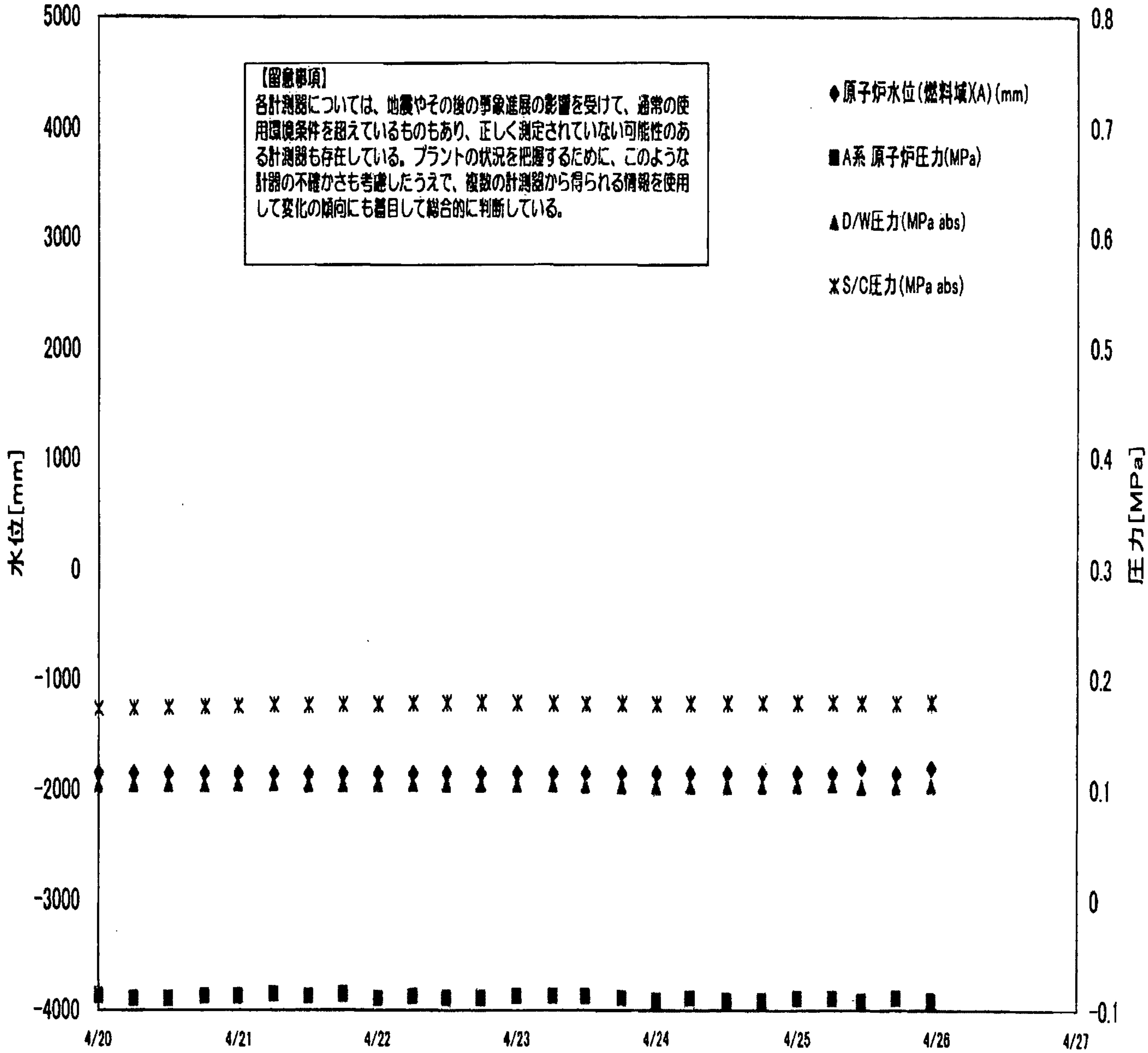


1F-2 温度に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

	逃し安全弁漏洩検出器 RV-2-71A	主蒸気隔離弁漏洩検出器 2-86A	給水ノズル N-4B 温度	CRDハウジング上部温度	圧力容器下部温度	圧力容器支持スカート上部温	圧力容器ドレンパイプ上部温度	D/W HVH戻り温度(HVH-16A)	RPVベローシール	原子炉抑制室ガス温度	S/Cプール水温度A	S/Cプール水温度B
4/16 6:00	159.5	65.6	142.8			146.3	114.8	132	O.S	94	79.5	
4/16 12:00	158.6	65.6	141.6			145	117.1	131	O.S	94	79.1	
4/16 18:00	158.7	65.4	141.6			144.9	119.9	131	O.S	94	78.6	
4/17 0:00	159	65.4	142			145.1	121.3	132	O.S	94	78.1	
4/17 6:00	158.9	65.3	141.5			144.7	119.8	132	O.S	94	77.6	
4/17 12:00	158.5	65.4	141.1			144.1	119.9	131	O.S	94	77	77.4
4/17 18:00	158.8	65.4	141.5			144.4	121.4	132	O.S	94	76.5	77
4/18 0:00	158.5	65.4	141.7			144.5	121.3	132	O.S	94	76.1	76.4
4/18 6:00	158.6	65.3	141.8			144.6	119.5	132	O.S	93	75.6	76
4/18 12:00	158.2	65.4	140.9			143.7	120.3	132	O.S	93	75.2	75.5
4/18 18:00	156.5	65.4	140			196.6	120	130	O.S	93	74.9	75.2
4/19 0:00	154.1	65.4	138.2			193	117.1	129	O.S	93	74.6	74.9
4/19 6:00	152	65.4	136.5			189.9	123.3	128	O.S	94	74.5	74.8
4/19 12:00	149.9	65.6	135.4			187.9	127.8	127	O.S	93	74.4	74.8
4/19 18:00	147.9	65.7	134.6			182.5	127.5	126	O.S	93	74.4	74.8
4/20 0:00	147.5	65.1	133.4			137.1	126.2	124	O.S	93	74.3	74.6
4/20 6:00	151	65.2	133.6			136.9	125.8	122	O.S	93	74	74.3
4/20 12:00	153.9	65.2	134.7			137.6	126.2	123	O.S	92	73.7	74
4/20 18:00	155.3	65.4	135.5			138.5	126.9	124	O.S	93	73.4	73.7
4/21 0:00	156.2	65.3	136			138.7	127.2	126	O.S	93	73.2	73.5
4/21 6:00	155.9	65.2	136.1			138.8	128.4	126	O.S	93	72.9	73.2
4/21 12:00	156.2	65.3	136			138.7	128.4	126	O.S	93	72.8	73
4/21 18:00	153.8	65.5	134.6			137.2	127.6	125	O.S	94	72.6	72.9
4/22 0:00	151.2	65.5	133.1			135.9	126.7	124	O.S	94	72.6	72.9
4/22 6:00	146.1	65.7	131.2			134.4	125.5	122	O.S	93	72.5	72.8
4/22 12:00	141.8	65.7	129.2			132.4	124.4	120	O.S	93	72.4	72.7
4/22 18:00	140.7	65.7	128.8			131.7	120.4	118	O.S	93	72.3	72.6
4/23 0:00	140.1	65.7	128.4			131	108.4	117	O.S	93	72.2	72.5
4/23 6:00	140	65.8	128			131.6	108.5	116	O.S	93	72.1	72.3
4/23 12:00	139.8	65.8	127.7			133.4	111	116	O.S	93	72	72.2
4/23 18:00	138.7	65.8	127.2			130.1	112.5	116	O.S	93	71.9	72.1
4/24 0:00	136.6	65.8	126.3			129.1	118.1	115	O.S	93	71.8	72.1
4/24 6:00	134	65.8	125.2			129.1	119.8	114	O.S	92	71.7	71.9
4/24 12:00	140.2	65.8	124.2			128.5	118.9	114	O.S	92	71.5	71.8
4/24 18:00	138.9	65.8	123.4			123.3	117.2	114	O.S	92	71.4	71.6
4/25 0:00	138.1	65.8	122.9			123.2	114.4	113	O.S	92	71.3	71.6
4/25 6:00	137.6	65.7	122.5			122	115.5	114	O.S	93	71.2	71.4
4/25 11:00	137.2	65.7	122.3			122.9	116.3	114	O.S	92	71.1	71.3
4/25 17:00	137.4	65.7	122.5			122.2	115.6	114	O.S	92	71	71.3
4/25 23:00	137.1	65.7	121.9			120.5	116.4	114	O.S	92	70.9	71.1
				計器不良	計器不良							

1F3 水位・圧力に関するパラメータ



1F3 水位・圧力に関するパラメータ

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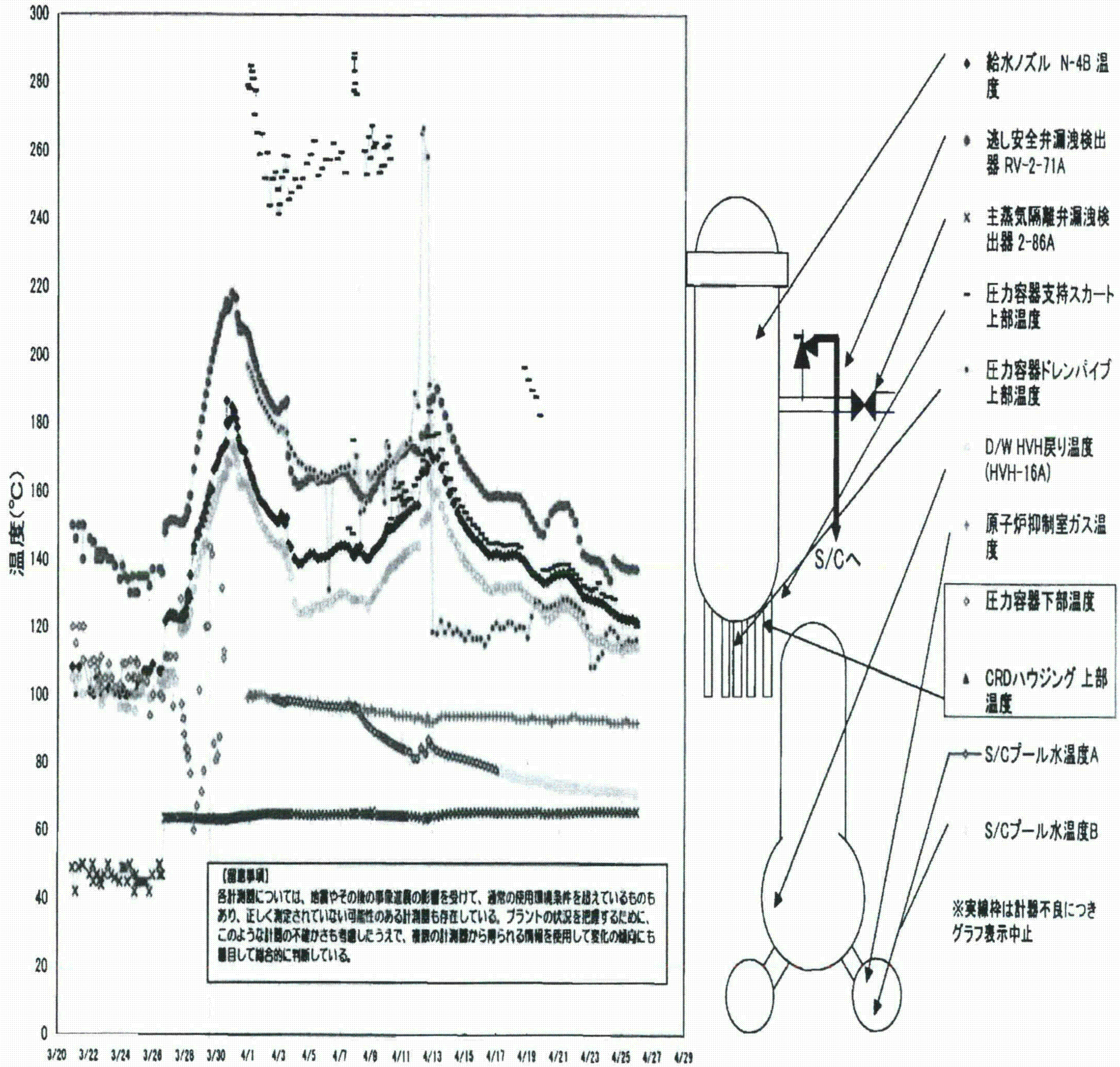
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/17 0:00	-1800	-2250	-0.085	-0.032	0.1043	0.1666	15.9	12.1	0.611	0.564	0.07	
4/17 6:00	-1800	-2250	-0.083	-0.030	0.1047	0.1675	15.9	12.1	0.610	0.562	0.07	
4/17 14:00	-1800	-2250	-0.085	-0.030	0.1043	0.1684	15.8	12.0	0.607	0.560	0.07	
4/17 19:00	-1800	-2250	-0.083	-0.032	0.1045	0.1687	15.8	12.0	0.605	0.559	0.07	
4/18 0:00	-1800	-2250	-0.085	-0.034	0.1045	0.1696	15.8	11.9	0.604	0.557	0.065	
4/18 6:00	-1800	-2250	-0.081	-0.034	0.1048	0.1701	15.8	11.9	0.602	0.556	0.065	
4/18 12:00	-1800	-2250	-0.081	-0.034	0.1047	0.1710	15.8	11.9	0.600	0.554	0.065	
4/18 13:10	-1800	-2250	-0.085	-0.034	0.1047	0.1712	15.8	11.9	0.599	0.554	0.065	
4/18 13:45	-1800	-2250	-0.081	-0.034	0.1047	0.1713	15.8	11.9	0.599	0.554	0.065	
4/18 18:00	-1850	-2250	-0.085	-0.034	0.1045	0.1715	15.7	11.8	0.598	0.552	0.065	
4/19 0:00	-1850	-2250	-0.085	-0.036	0.1041	0.1720	15.7	11.8	0.596	0.551	0.070	
4/19 6:00	-1850	-2250	-0.085	-0.034	0.1041	0.1724	15.7	11.8	0.594	0.549	0.065	
4/19 12:00	-1850	-2250	-0.085	-0.040	0.1036	0.1722	15.6	11.7	0.592	0.547	0.060	
4/19 18:10	-1850	-2250	-0.083	-0.040	0.1034	0.1727	15.6	11.7	0.590	0.546	0.065	
4/20 0:02	-1850	-2250	-0.087	-0.038	0.1041	0.1734	15.6	11.7	0.588	0.544	0.055	
4/20 6:00	-1850	-2250	-0.089	-0.038	0.1045	0.1741	15.5	11.6	0.587	0.542	0.070	
4/20 12:00	-1850	-2250	-0.089	-0.043	0.1045	0.1748	15.5	11.6	0.585	0.541	0.065	
4/20 18:10	-1850	-2250	-0.087	-0.043	0.1047	0.1754	15.5	11.6	0.582	0.540	0.065	
4/20 23:50	-1850	-2250	-0.087	-0.045	0.1054	0.1761	15.4	11.5	0.580	0.539	0.065	
4/21 6:00	-1850	-2250	-0.085	-0.043	0.1061	0.1768	15.4	11.5	0.579	0.538	0.065	
4/21 12:00	-1850	-2250	-0.087	-0.043	0.1050	0.1769	15.4	11.5	0.577	0.537	0.065	
4/21 18:00	-1850	-2250	-0.085	-0.043	0.1052	0.1775	15.3	11.4	0.575	0.535	0.065	
4/22 0:00	-1850	-2250	-0.089	-0.047	0.1055	0.1776	15.1	11.4	0.573	0.534	0.065	
4/22 6:00	-1850	-2250	-0.087	-0.047	0.1055	0.1780	15.2	11.4	0.570	0.532	0.070	
4/22 11:50	-1850	-2250	-0.089	-0.049	0.1048	0.1780	15.2	11.4	0.569	0.531	0.070	
4/22 17:50	-1850	-2250	-0.089	-0.049	0.1047	0.1783	15.2	11.3	0.568	0.530	0.080	
4/23 0:00	-1850	-2250	-0.087	-0.053	0.1047	0.1785	15.2	11.3	0.566	0.528	0.060	
4/23 6:15	-1850	-2250	-0.087	-0.049	0.1045	0.1782	15.1	11.3	0.564	0.527	0.070	
4/23 11:55	-1850	-2250	-0.087	-0.049	0.1038	0.1778	15.1	11.3	0.563	0.526	0.060	
4/23 18:00	-1850	-2250	-0.089	-0.051	0.1033	0.1776	15.0	11.2	0.562	0.525	0.060	
4/24 0:00	-1850	-2250	-0.091	-0.055	0.1027	0.1778	15.0	11.2	0.561	0.523	0.070	
4/24 5:50	-1850	-2250	-0.089	-0.053	0.1031	0.1778	15.0	11.2	0.560	0.522	0.060	
4/24 12:00	-1850	-2250	-0.091	-0.051	0.1031	0.1780	14.9	11.1	0.558	0.521	0.070	
4/24 18:00	-1850	-2250	-0.091	-0.051	0.1034	0.1785	14.9	11.1	0.557	0.520	0.070	
4/25 0:00	-1850	-2250	-0.089	-0.055	0.1038	0.1787	14.8	11.1	0.556	0.519	0.070	
4/25 6:00	-1850	-2250	-0.089	-0.053	0.1041	0.1789	14.8	11.1	0.554	0.518	0.070	
4/25 11:00	-1800	-2250	-0.091	-0.055	0.1029	0.1787	14.7	11.0	0.553	0.517	0.050	
4/25 17:00	-1850	-2250	-0.089	-0.055	0.1034	0.1787	14.7	11.0	0.552	0.516	0.050	
4/25 23:00	-1800	-2250	-0.091	-0.055	0.1041	0.1792	14.6	11.0	0.551	0.515	0.050	

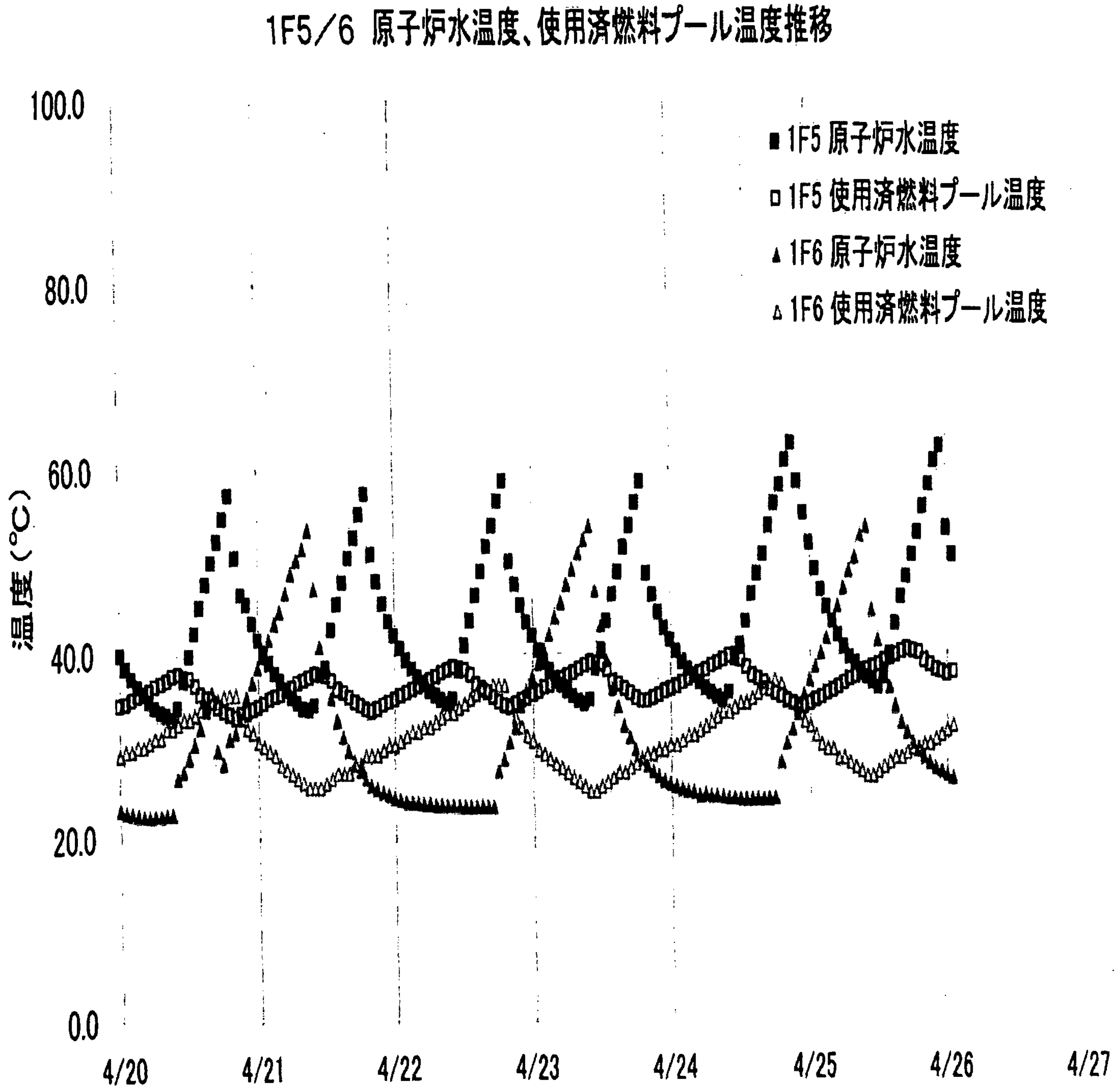
1F-2 温度に関するパラメータ(代表点)



1F-3 温度に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

	給水ノズルN4B温度	RPV胴フランジ	圧力容器下部温度	RPVスタッドボルト温度	RPV胴フランジ下部温度	逃し安全弁2-71D漏洩	逃し安全弁2-71F漏洩	主蒸気隔離弁2-86Aリークオフ	D/W HVH戻り温度	RPVベローシール	S/Cプール水温度A	S/Cプール水温度B
4/19 6:00	102.2	112.9	110.3	97.9	134.7	117.4	100.1	57.4	79.5	226.5	43.4	43.3
4/19 12:00	101.1	113.2	109.8	97.4	135.1	118.9	100.3	57.5	80.4	221.6	43.2	43.2
4/19 18:10	99.7	118.1	109.7	96.4	133.7	117.6	100.4	57.6	78.4	219.3	43.1	43.1
4/20 0:02	98.5	120.4	109.5	96.3	132.7	113.9	100.3	57.1	78.3	216.6	43	43
4/20 6:00	98.7	121.3	108.4	95.1	126.7	108.9	100.4	57	79.5	215	42.9	42.9
4/20 12:00	100.2	123.7	107.5	95.8	124.8	111.8	102.6	57.1	71.5	210.7	42.8	42.8
4/20 18:10	100.4	130.9	108.5	95.8	133.8	108.7	105.5	57.1	72	205.5	42.7	42.7
4/20 23:50	100.7	135.3	110.9	96.7	135.4	96.1	104.3	57	58	199.3	42.7	42.7
4/21 6:00	101.6	137.3	109.4	96.6	137.6	90.5	103.6	56.9	61.9	193.9	42.6	42.6
4/21 12:00	100.4	139.7	110.4	96.9	140.2	73.6	103.6	57.2	69.4	192.6	42.5	42.5
4/21 18:00	100	144.7	110	96.3	140	72.3	103.3	57.1	74.3	191.3	42.4	42.4
4/22 0:00	99.5	146	110.8	119.1	142.2	67.8	102.5	57	65.8	142	42.3	42.3
4/22 6:00	93.3	150.4	110.4	119.4	143.5	86.3	102.9	57.6	63.7	138.6	42.3	42.3
4/22 11:50	92.4	148.8	111.6	118.1	146.3	77.2	102.6	57.8	62.8	137.9	42.2	42.2
4/22 17:50	80.6	149.9	110.1	113.3	146.2	81.7	102.3	58.5	57.3	136.6	42.1	42.1
4/23 0:00	81.7	150	109.2	110.8	148.1	71.8	102.2	58.6	58.1	135.2	42.1	42.1
4/23 6:15	85.9	154.9	109.4	108.5	108.9	65.2	101.4	58.9	56.2	134.2	42	42
4/23 11:55	85.7	152.1	108.6	104.3	129.5	72.4	100.6	59.2	55.7	132.9	41.9	41.9
4/23 18:00	81.1	153	110.1	100.6	144.4	80.5	100.6	59.4	57.3	130.6	41.9	41.9
4/24 0:00	79.1	155.7	109.6	102.7	150.4	81.9	99.5	59.6	64.4	129.6	41.8	41.8
4/24 5:50	81.1	160.7	109.9	104.3	151.9	79.4	99.5	59.3	63.5	128.3	41.8	41.8
4/24 12:00	65.5	163.2	110.6	102.9	140.5	74.9	98.6	59.4	65.2	126.6	41.7	41.7
4/24 18:00	71.6	165.5	110.2	102.8	142.7	68	98.3	59.4	65.3	126.6	41.7	41.7
4/25 0:00	74.6	169	110.8	103.4	129.6	60.4	98.4	59.2	67.8	124.3	41.6	41.6
4/25 6:00	72.5	165.9	109.3	99.3	130	53	98.5	58.9	70.2	122.5	41.6	41.6
4/25 11:00	68.8	164.8	110	99.5	145.8	43.2	97.8	59.6	69.5	120	41.6	41.5
4/25 17:00	77.7	163.8	110	98	153	53.6	97.3	59.5	61.4	117.6	41.5	41.5
4/25 23:00	84.9	155.7	109.8	98.8	158.4	62.6	96.7	59.2	64.5	103.1	41.4	41.4



1F5／6 原子炉水温度、使用済燃料プール温度推移
100.0
80.0
60.0
40.0
20.0
0.0
温度（°C）
■1F5 原子炉水温度
□1F5 使用済燃料プール温度
▲1F6 原子炉水温度
△1F6 使用済燃料プール温度
4/20
4/21
4/22
4/23
4/24
4/25
4/26
4/27

1F5/6 原子炉水温度・使用済燃料プール温度

	1F5 原子炉水温度	1F5 使用済燃料プール温度	1F6 原子炉水温度	1F6 使用済燃料プール温度
4/23 12:00	40.4	38.8	43.0	25.5
4/23 13:00	43.5	38.2	39.2	26.0
4/23 14:00	46.4	36.9	36.1	26.5
4/23 15:00	48.8	36.6	34.1	27.0
4/23 16:00	51.5	36.1	32.1	27.0
4/23 17:00	53.8	35.6	30.8	27.5
4/23 18:00	56.3	35.1	29.5	28.0
4/23 19:00	58.6	34.8	28.6	28.5
4/23 20:00	48.7	34.8	27.8	29.0
4/23 21:00	46.3	35.1	27.1	29.0
4/23 22:00	44.4	35.4	26.6	29.5
4/23 23:00	42.7	35.8	26.1	29.5
4/24 0:00	41.4	36.1	25.8	30.0
4/24 1:00	40.2	36.4	25.5	30.0
4/24 2:00	39.0	36.8	25.2	30.5
4/24 3:00	38.2	37.1	25.0	31.0
4/24 4:00	37.4	37.5	24.8	31.0
4/24 5:00	36.7	37.8	24.4	31.5
4/24 6:00	36.1	38.1	24.6	32.0
4/24 7:00	35.6	38.6	24.4	32.5
4/24 8:00	35.1	38.9	24.4	33.0
4/24 9:00	34.7	39.2	24.3	33.5
4/24 10:00	35.6	39.6	24.2	33.5
4/24 11:00	39.7	39.3	24.2	34.0
4/24 12:00	40.8	39.2	24.1	34.5
4/24 13:00	43.4	38.4	24.1	34.5
4/24 14:00	46.3	37.5	24.1	35.0
4/24 15:00	48.5	37.1	24.1	35.5
4/24 16:00	50.6	36.7	24.1	36.0
4/24 17:00	53.7	35.9	24.1	36.5
4/24 18:00	56.1	35.5	24.2	37.0
4/24 19:00	58.1	35.2	28.1	36.5
4/24 20:00	60.8	34.7	30.1	35.0
4/24 21:00	62.6	34.4	31.6	34.5
4/24 22:00	58.4	34.1	33.3	34.0
4/24 23:00	55.0	34.1	35.3	32.5
4/25 0:00	51.8	34.4	36.9	32.0
4/25 1:00	49.0	34.8	38.4	31.0
4/25 2:00	46.8	35.1	39.9	30.0
4/25 3:00	44.9	35.5	41.5	29.5
4/25 4:00	43.3	35.8	43.3	29.5
4/25 5:00	41.8	36.2	45.0	28.5
4/25 6:00	40.5	36.6	46.9	28.5
4/25 7:00	39.4	37.0	48.8	28.0
4/25 8:00	38.7	37.3	50.2	27.5
4/25 9:00	37.5	37.9	52.6	27.0
4/25 10:00	37.2	38.0	53.5	26.5
4/25 11:00	36.6	38.3	44.5	26.5
4/25 12:00	36.1	38.6	41.2	27.0
4/25 13:00	37.2	39.0	38.1	27.5
4/25 14:00	39.7	39.3	36.1	28.0
4/25 15:00	43.0	39.6	34.0	28.5
4/25 16:00	45.9	40.0	32.3	28.5
4/25 17:00	48.1	40.3	31.2	29.0
4/25 18:00	50.5	40.1	30.1	29.5
4/25 19:00	52.9	39.9	29.3	29.5
4/25 20:00	55.6	39.0	28.5	30.0
4/25 21:00	58.0	38.5	27.9	30.0
4/25 22:00	60.6	38.0	27.3	30.5
4/25 23:00	62.2	37.8	27.0	31.0
4/26 0:00	53.3	37.5	26.6	31.5
4/26 1:00	50.5	37.8	26.3	32.0

SV原子力運営管理部 管理フォルダ\トラブル対応専用\1F(トラブル対応資料)\H110311 福島地震\高外放出防止PJ(滞留水関係)

福島第一原子力発電所
復旧班
H23.4.26 7:00現在

水位管理表

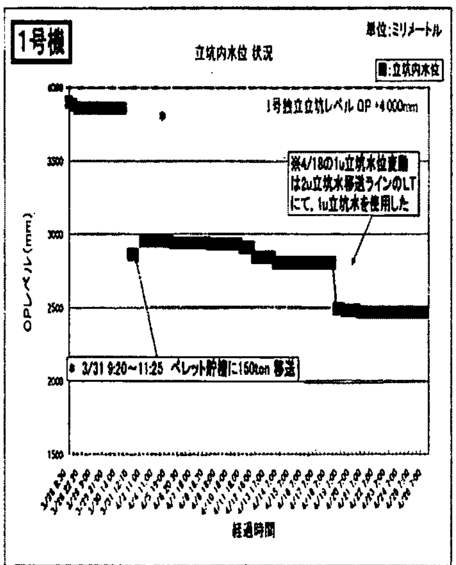
	月		水	水	水	木	木	木	金	金	金	土	土	土	日	日	日	月	月	月	火	火	火
	3/28 8:30		4/20 7:00	4/20 11:00	4/20 18:00	4/21 7:00	4/21 11:00	4/21 18:00	4/22 7:00	4/22 11:00	4/22 18:00	4/23 7:00	4/23 11:00	4/23 18:00	4/24 7:00	4/24 11:00	4/24 18:00	4/25 7:00	4/25 11:00	4/25 18:00	4/26 7:00	4/26 11:00	4/26 18:00
時間経過	0:00	3/28(13:00)~4/19(18:00) 省略 (グラフ上では表示しています)	550:30	554:30	561:30	574:30	578:30	585:30	598:30	602:30	609:30	622:30	626:30	633:30	646:30	650:30	657:30	670:30	674:30	681:30	694:30	698:30	705:30
1号機 立坑内水位	OP +3,900mm		OP +2,480mm	OP +2,480mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm		
1号機 T/B B1水位	OP +5,110mm		OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm		
2号機 立坑内水位	OP +3,050mm		OP +3,110mm	OP +3,110mm	OP +3,177mm	OP +3,170mm	OP +3,170mm	OP +3,160mm	OP +3,150mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,120mm	OP +3,120mm	OP +3,110mm	OP +3,115mm		
2号機 T/B B1水位	OP +2,780mm		OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm		
3号機 立坑内水位	OP +2,450mm		OP +2,920mm	OP +2,920mm	OP +2,920mm	OP +2,930mm	OP +2,930mm	OP +2,940mm	OP +2,940mm	OP +2,950mm	OP +2,960mm	OP +2,980mm	OP +2,970mm	OP +2,970mm	OP +2,970mm	OP +2,990mm	OP +2,990mm	OP +2,990mm	OP +3,000mm	OP +3,010mm	OP +3,020mm		
3号機 T/B B1水位	OP +2,490mm		OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +2,900mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm		
4号機 T/B B1水位	-		OP +2,950mm	OP +2,950mm	OP +2,950mm	OP +2,990mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,050mm	OP +3,050mm	OP +3,050mm		
集中Rw/B B2水位	OP +1,780mm		OP -1,046mm	OP -1,040mm	OP -1,005mm	OP -940mm	OP -922mm	OP -888mm	OP -827mm	OP -809mm	OP -775mm	OP -711mm	OP -683mm	OP -680mm	OP -680mm	OP-580mm	OP-544mm	OP-487mm	OP-463mm	OP-437mm	OP-377mm		

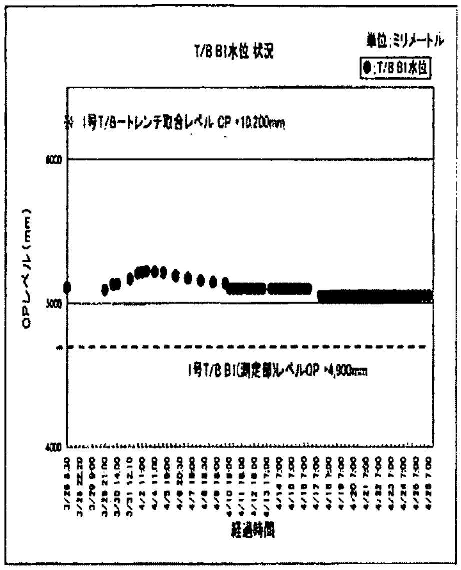
単位:ミリメートル

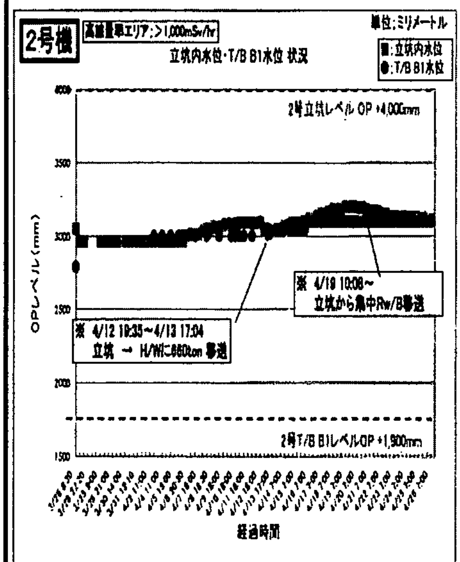
3/28 8:30のデータのうち、1、2号機は目測値のため参考値扱い

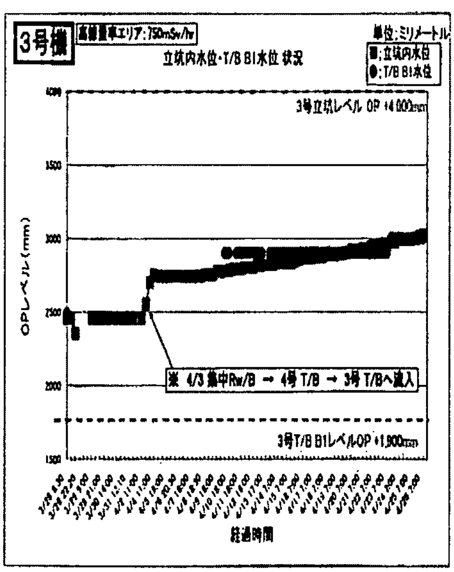
*:1号機T/Bと立坑間が逆U字状のダクト形状となっており、タービン建屋の水位はOP +10,200になるまで、トレンチ内に滞留水が流入する恐れはない。

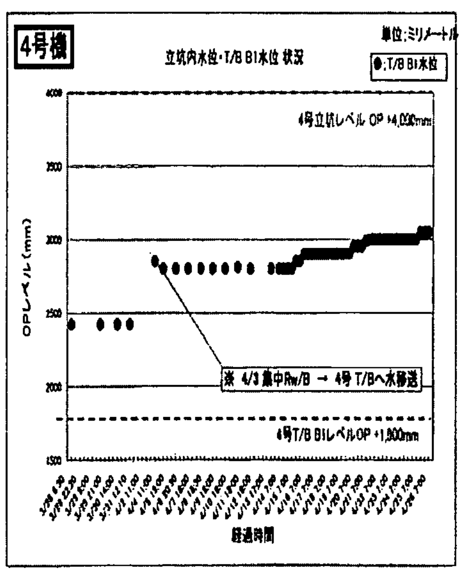
注1. 建屋水位は4/10よりITV監視を実施。注2. 4/11,12の1u立坑水位変動は2u立坑水移送ラインのLTにて、1u立坑水を使用した為。
注3. 4/12の2u T/B水位変動はITV不具合発生しカメラ調整した為。
注4. 4/13の1u立坑水位変動は2u立坑水移送ラインのLTにて、1u立坑水を使用した為。

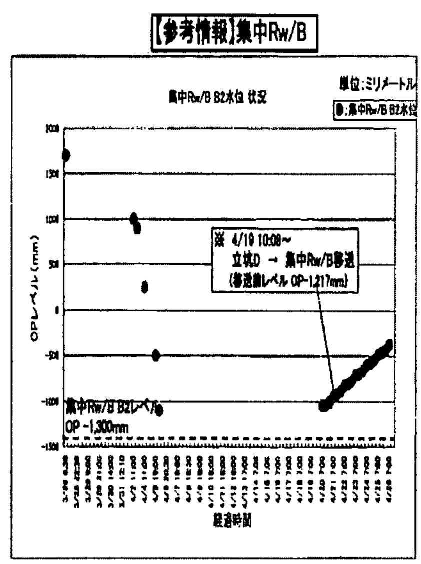




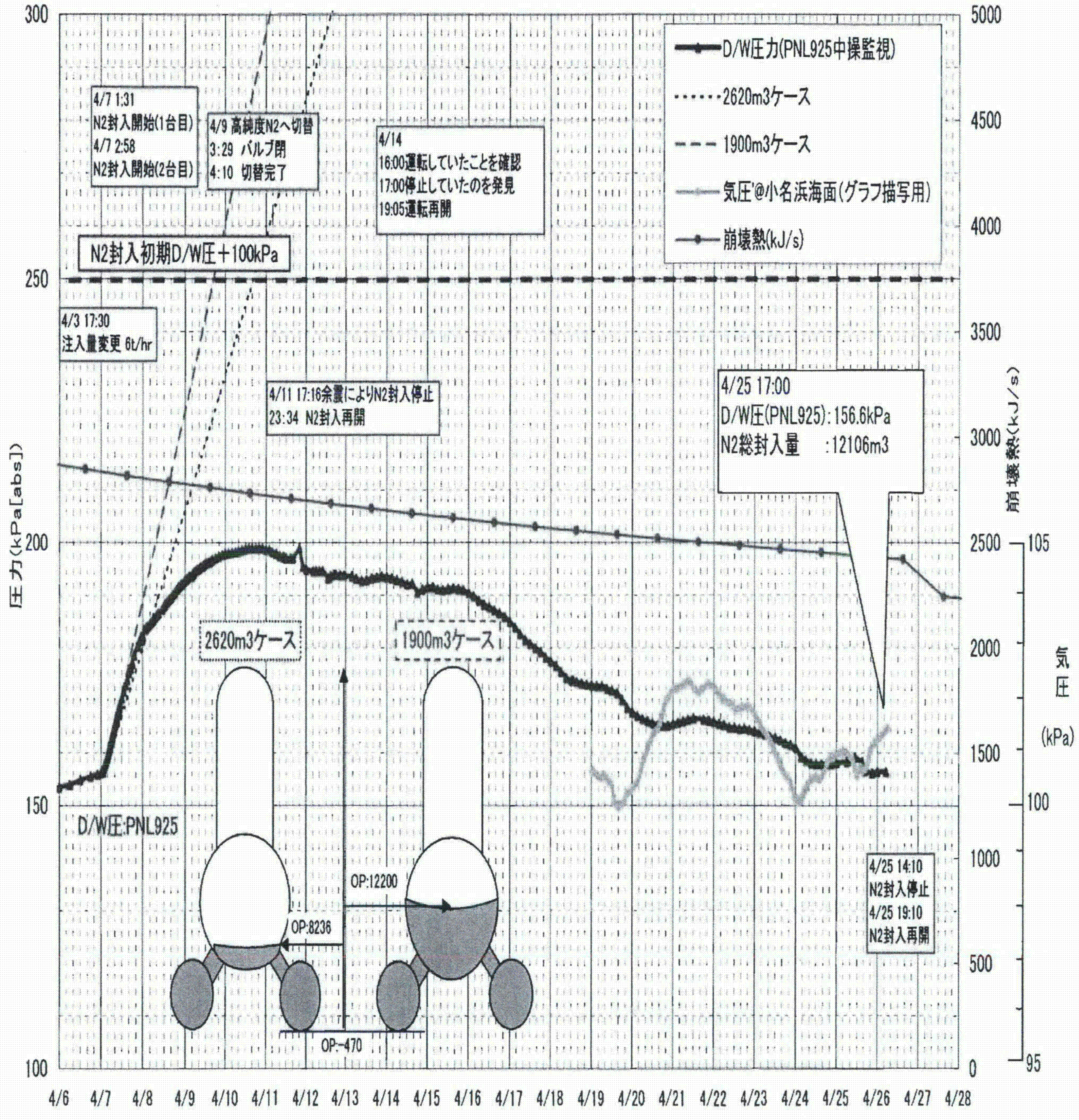








1F1 D/W圧(N2注入後の挙動)



From: Hoc, PMT12
Sent: Tuesday, April 26, 2011 3:07 PM
To: PMT10 Hoc
Subject: FW: Update to paper
Attachments: Composite rev 9.docx

From: Milligan, Patricia
Sent: Tuesday, April 26, 2011 3:01 PM
To: Uhle, Jennifer; Foster, Jack; Hoc, PMT12
Subject: Update to paper

Comments?

Thanks.

BG/118

5

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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(b)(5)

Meighan, Sean

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Wednesday, April 27, 2011 5:54 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; (b)(6) Wittick, Brian; Gregg Schneider; Lovell, Russ; Hochevar, Albert R. (INPO); Gakuto Nakamura; Gard, Lee A (INPO); Hiroyuki Matsuura; Junji Tanaka; jwhitcra@bechtel.com; Keith Moser; Michio Matsuda; Richard Rossi; Bob Holland; sekim@westinghouse.com; serorj@westinghouse.com; Shigeo Hattori; Shinya Fujii; Shuji Furuya; Yoneo Suzumegano; Tom Stevens
Subject: FW: April 27 briefing notes and excel spreadsheet
Attachments: TEPCO Sumarry Rev.101 Final April 27.xls; April 27 Ryan 6 pm briefing notes.doc

Attached are the briefing notes and parameter spread sheet. The radiation survey map was not available today.

BG/119

Meighan, Sean

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Tuesday, April 26, 2011 9:37 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; (b)(6) Wittick, Brian
Subject: FW: April 26 briefing notes, excel spreadsheet and radiation survey map
Attachments: 20110425 1640 Facility Area Survey Data[1].pdf; TEPCO Sumarry Rev.100 Final April 26.xls; April 26 Ryan 6 pm briefing notes.doc

Attached are the briefing notes, parameter spread sheet and survey map.

BG/120

Meighan, Sean

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Tuesday, April 26, 2011 1:07 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; [redacted] (b)(6)
Subject: FW: Drywell and SFP info
Attachments: 26 April Drywell Info.pdf; 26 April SFP Info.pdf

[redacted] (b)(5)

[redacted] (b)(5)

We have been told that the plan is to fill Unit 4 SFP between today and tomorrow and then keep adding to keep it full. They will both strengthen the Unit 4 RB and also "shore up" from underneath the Unit 4 SFP. We are trying to get the plan.

BG/121

4
[handwritten initials]

Water may be leaking from No. 4 reactor fuel pool

The operator of the troubled Fukushima Daiichi nuclear power plant says water may be leaking from the spent fuel pool of the No. 4 reactor.

More than 1,500 spent fuel rods are stored in the pool, the largest number at the site.

Tokyo Electric Power Company, or TEPCO, has been injecting water daily into the pool to make up for the loss of cooling function and prevent the fuel rods from being exposed and further damaged.

TEPCO has poured in 140 to 210 tons of water over each of the last few days. The company found that water levels in the pool were 10 to 40 centimeters lower than expected despite the water injections.

The walls of the reactor building supporting the pool were severely damaged by a hydrogen explosion last month. TEPCO says the pool may have been damaged by the blast as well.

According to a schedule announced earlier on containing the ongoing emergency, TEPCO plans to install concrete pillars to support the fuel pool by around July to increase its earthquake resistance.
Wednesday, April 27, 2011 09:05 +0900 (JST)

Not for

Fukushima-Daiichi Current Status and Planned Work

27 April at 06:00 & 09:00 (Rev-101)

		[redacted]						
Reactivity Control (Halt Reactor)	Current Status	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (For core shroud replacement work during outage)	■Core was loaded with bundles for the start of the next operation cycle ■RPV bolted up (Earthquake occurred after completion of RPV hydraulic test just before the startup) ■Maintaining cold shutdown	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
		CAMS (at 05:00 on 27 April): D/W: (A) & (B) No measurement S/C: (A) 1.14×10[?] SV/h (watching trend continuously) (B) 1.73×10[?] SV/h (watching trend continuously)	CAMS (at 05:00 on 27 April): D/W: (A) 2.27×10[?] SV/h (B) 2.56×10[?] SV/h. S/C: (A) 4.72×10[?] SV/h (watching trend continuously) (B) 4.33×10[?] SV/h (watching trend continuously)	CAMS (at 05:00 on 27 April): D/W: (A) 1.11×10[?] SV/h. (B) 1.09×10[?] SV/h. S/C: (A) 5.37×10[?] SV/h (watching trend continuously) (B) 5.03×10[?] SV/h (watching trend				
	Next Works Planned (TEPCO Headquarters' Activities)	(Long term measure) □To add boric acid to fresh coolant before achieving cold shut down (After restoring power) □Operating SLC	□Borated fresh water injection started (at 10:10 on 26 March) (Long term measure) □To add boric acid to fresh coolant before achieving cold shut down (After restoring power) □ Operating SLC	(Long term measure) □To add boric acid to fresh coolant before achieving cold shut down (After restoring power) □Operating SLC				
Coolant Supply & Residual Heat Removal (Core cooling)	Current Status	■Fresh water injection through FDW line (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.0 m3/h by interim instrumentation at 05:00 on 27 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installing temporary replacement pump for CCSW ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.9 m3/h by interim instrumentation at 05:00 on 27 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (25 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.9 m3/h by interim instrumentation at 05:00 on 27 April) ・Power source was switched to off-site power. (at 19:25 on 25 April) ■Installation of the alternate pump for RHRS (28 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)		■Ordinary operation in SHC mode of RHR (25 April 19:05-) [SHC mode: Cooling mode with heat-exchanger]	■Ordinary operation in SHC mode of RHR (26 April 17:54-) ■One out of two temporary RHRS pumps tripped (25 April 18:09 - 26 April 11:15)	
		■Reactor Water Level (at 05:00 on 27 April) TAF-1650 mm (Fuel Range; Gauge A) TAF-1650 mm (Fuel Range; Gauge B) ■RPV Dome Pressure (at 05:00 on 27 April) 0.450 MPa g (Gauge A) 1.553 MPa g (Gauge B) (watching trend continuously) ■RPV Temperature (at 05:00 on 27 April) Feed water nozzle: 142.4℃ (watching trend continuously) Bottom of RPV : 110.5℃	■Reactor Water Level (at 05:00 on 27 April) TAF -1500 mm (Fuel Range; Gauge A) TAF -2100 mm (Fuel Range; Gauge B) ■RPV Dome Pressure (at 05:00 on 27 April) -0.012 MPa g (Gauge A) (watching trend continuously) -0.023 MPa g (Gauge B) (watching trend continuously) ■RPV Temperature (at 05:00 on 27 April) Feed water nozzle: 129.4℃ Bottom of RPV : No measurement	■Reactor Water Level (at 05:00 on 27 April) TAF-1850 mm (Fuel Range; Gauge A) TAF-2250 mm (Fuel Range; Gauge C) ■RPV Dome Pressure (at 05:00 on 27 April) -0.053 MPa g (Gauge A) (watching trend continuously) -0.053 MPa g (Gauge C) (watching trend continuously) ■RPV Temperature (at 05:00 on 27 April) Feed water nozzle : 72.0 ℃ (watching trend continuously due to suspected indicator problem) Bottom of RPV : 110.7 ℃		■Reactor Water Level (at 06:00 on 27 April) TAF+1591 mm (Shut Down Range Gauge) ■RPV Dome Pressure (at 06:00 on 27 April) 0.003 MPa g ■Coolant Temprature (at 06:00 on 27 April) 33.3 ℃	■Reactor Water Level (at 06:00 on 27 April) TAF+2174mm ■RPV Dome Pressure (at 06:00 on 27 April) 0.019 MPa g ■Coolant Temprature (at 06:00 on 27 April) 47.9 ℃	

	Next Works Planned (Activities of Cooling Water Supply Force)	□Switch the temporary motor driven pump to MTP pump (The work was suspended due to high radiation environment around MTP in the turbine building). (Long Term Cooling Measure) □SHC ordinary operation in SHC mode after restoring off-site power & related equipments □For PCV flooding ・Core cooling water flow rate was changed. 6 → 14 → 6 m³/h (on 27 April)	□Switch the temporary motor driven pump to MTP pump (The work was suspended due to high radiation environment around MTP in the turbine building). (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the motor driven pump to MTP pump (The work was suspended because of high radiation environment around MTP in the turbine building). Preparing to drain the high radiation water (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments				
Containment Function (Cooling and Confinement)	Current Status	■D/W (at 05:00 on 27 April) ・Pressure: 0.155 MPa-abs ・Temperature: RPV bellow seal: 112.6 ℃ HVH return: 97.2 ℃ ■S/C (at 05:00 on 27 April) ・Pressure: 0.155 MPa-abs ・Temperature: (A) 31.0 ℃, (B) 32.9 ℃ ■Started ventilation through hardened line (at 14:30 on 12 March) ・PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310 kPa	■D/W (at 05:00 on 27 April) ・Pressure: 0.040 MPa-abs ・Temperature: RPV bellow seal: No measurement HVH return: 112 ℃ ■S/C (at 05:00 on 27 April) ・Pressure: Down Scale (Examining) ・Temperature: (A) 70.6 ℃, (B) 70.6 ℃ ■Ready to start ventilation through hardened line (Not executed so far) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 325 kPa	■D/W (at 05:00 on 27 April) ・Pressure: 0.1011 MPa-abs ・Temperature: RPV bellow seal: 121.7 ℃ (watching trend continuously) HVH return: 101.9 ℃ ■S/C (at 05:00 on 27 April) ・Pressure: 0.1757 MPa-abs ・Temperature: (A) 41.2 ℃, (B) 41.2 ℃ ■Started ventilation through hardened line (at 9:20 on 13 March) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310 kPa		■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	
	Next Works Planned (TEPCO Headquarters' Activities)	□Hydrogen countermeasure first ・Fill PCV and ventilation line with nitrogen ・Reinforced monitoring of PCV pressure ・Continue to secure ventilation line (After securing off-site power) □Restoring PCV spray function ・MUWC system, FP system (After restoration of equipments) □RHR operation in SHC mode □Restoring D/W cooling coil □Alternative heat removal by CUW	Same as unit 1	Same as unit 1				
Spent Fuel Pool (SFP) (Decay Heat Removal & Water Supply)	Current State	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of no power supply) ■Skimmer surge tank level 4200 mm (at 05:00 on 27 April) ■Watering by concrete pumping vehicle (Fresh Water) (called the Elephant) ・31 March 13:03-13:57 ・31 March 14:29-16:04 ・2 April 17:16-17:19 The nickname of concrete pumping vehicle for Unit 1 was changed from "large Giraffe" to "Elephant" to prevent confusion on 3 April. ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant #1 was moved from Unit 3 to Unit 1. (on 30 April)	■SFP water level uncertain (No water level meter) ■SFP temperature 57.0℃ (at 05:00 on 27 April) ■Skimmer surge tank level 6700mm (at 05:00 on 27 April) ■Fresh water injection to SFP trough the existing FPC line and temporary line ・19 April 16:08-17:28 ・22 April 15:55-17:40 ・25 April 10:12-11:18 (38 ton) ■Removal of the existing strainer in FPC line was completed (31 March). (Scheduled for 31 March)	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of lack of power supply) ■Skimmer surge tank level No measurement ■Water spray with new special pumping vehicle (call Zebra-improved) ・8 April 17:06-20:00 (Fresh Water) ・10 April 17:15-19:15 (Fresh Water) ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Zebra-improved was moved for replacement and the Elephant was moved: Unit 4→Unit 3 (on 11 April) ■Water spray with the Elephant #1 ・18 April 14:18 - 15:02 (30ton) ・22 April 14:13 - 15:40 (50ton) ・26 April 12:10 - 12:02 (check of water level) ■Confirmation of injection line to the pool through FPC line ・22 April 13:40 - 14:00 (10ton) ・26 April 12:25 - 14:02 (17.5ton) ■The Elephant #1 was moved from Unit 3 to Unit 1. (on 26 April)	■SFP water level : Uncertain ■SFP water temperature: gauge out of order (at 11:10 on 24 March and later) ■Skimmer surge tank level 4950 mm (at 05:00 on 27 April) ■Installation alternation pump for RHRS ■Watering with the Elephant ・5 April 17:35-18:22 ・7 April 18:23-19:40 ・9 April 17:07-19:24 ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant was moved: Unit 4 → Unit 3 (on 11 April) ■Water sampling from SFP by the Elephant #2 was completed (12 April) Most of the fuel is believed to be undamaged. ■Attaching measuring instruments (level gage etc.) on the Elephant #2 and measuring temperature, water level and radiation dose. (on 22, 23 and 24 April) ■Watering with the Elephant #2 ・25 April 18:15-00:26 (210ton) ・26 April 16:50-20:35 (130ton)	■Inventory securing ・CST → MUWC → FPC → SFP ■Heat removal ・FPC (Surge Tank) → RHR → S/C ・Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp. 40.1℃ (at 06:00 on 27 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■SHC mode (25 April 22:58 -)	■Inventory securing ・CST → MUWC → FPC → SFP ■Heat removal ・FPC (Surge Tank) → RHR → S/C ・Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp. 23.5℃ (at 06:00 on 27 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■SHC mode (25 April 10:19 -)	■SFP water temperature 32℃ at 09:00 on 26 April ■Cooling function achieved by fin coolers (at 18:26 on 24th March) ■Water supply to the common SFP by MUW system (24 March 16:15-18:04) ■FPC(A) started at 18:05 on 24th March

Not for

	planned work (Next Activities of FPC Team)	□Repair of the Elephant #1			□Water spray with the Elephant #2 (scheduled on 2 April 12:00 - : 70 ton) □Reinforcement work of fuel pool support structure			
High Voltage AC Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 16:46 on 20 March) ■Equipments of M&P tested for short circuit and ground but in fall on 21 March ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:30 on 24 March. ■Monitoring posts (MP5-8) were restored. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Okuma line has been available) (on 19 April) ・Tie line to Unit 6&6 main bus was installed. (on 25 April)	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■MCC 2A-1 in the turbine building was powered at 16:46 on 26 March ■Illumination is restored in main control room at 16:46 on 27 March ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Okuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed (on 25 April)	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line ・Trial electric charge of the motor Center vehicle for Unit3 and Unit4 was completed at 14:28 on 18 March ・Instalation of multi circuit breakers and power cables were completed on 19 March ・Inspection of cable from the breakers and loads was conducted on 20 March ・Instalation of cables were completed on 21 March. ・Power supply was stopped due to strengthening on-site power of Unit 3&4 (upgrade: 6.9kV→66kV) (25 April 10:23-15:27) ■T/B MCC 3C-2 has been powered at 22:10 on 22 March. ■T/B MCC 3C-1 has been powered at 22:21 on 22 March ■120V I & C main bus powered at 22:28 on 22 March ■Illumination is restored in main control room	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Power supply was stopped due to strengthening on-site power of Unit 3&4 (upgrade: 6.9kV→66kV) (25 April 10:23-15:27) ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:50 on 29 March ■Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Okuma line has been available) (on 19 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L, 2L) ■Non-safety grade buses of 5A and 5B are unavailable ■Temporary pump (RHRS) was installed and connected to the water supply line on 24th March ■Emergency administration building was powered on 24th March ■Water Purification Facility was powered at 9:10 on 24th March ■Investigating cable laying work for monitoring posts (MP-1/2/3/4) on 26 March. ■T/B MCC 5D-2 has been powered on 31 March ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L, 2L) ■Non-safety grade buses of 6A and 6B are unavailable ■Temporary pump (works as a substitute of RHRS) was installed and put in service (Powered by P/C) ■Test run of installed cable was conducted on 20 March ■Monitoring posts (MP1-4) were restored. ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power for common pool was restored at 15:30 on 24th March ■Temporary power for common pool was tripped due to sh… during practice of disconnect… operation (17 April, 14:36-1… restored at 17:44 on 17 Ap… ■P/C for common pool ・Power supply was stopped d… strengthen on-site power of Unit 3&4 (…→66kV) (25 April 16:48-16:34)
	planned work (Next Activities of Electric Power Supply Team)	□Restoration work of electricity will be restarted after completing water transfer from T/B	□Restoration of power for instrumentation	□Restoration work of electricity will be restarted after completing water transfer from T/B		□Laying temporary power cable for SLC (B)		
DC Power Supply	Current Status	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■Common DC125V has been powered at 16:30 on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status * Batteries for reactor level gauges were replaced by fresh ones at 12:15 on 21st March ■Restoration of DC 125V Charge center (B) (30 March)	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■DC 24 Charger 5B-1 has been powered on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status	
	Next Works Planned (Activities of Electric Power Supply Team)							
Miscellaneous Measures against Hydrogen	Current Status	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas ■Injection of N2 gas is in progress ・(Flow rate: 28㎥/h, degree of purity: 98%) 7 April 01:31- 9 April 03:29 (suspended due to switch to high degree of purity N2 gas) ・Injection of high degree of purity N2 gas (Flow rate: 28m3/h, degree of purity: 99.98%) 9 April 04:10 - ・Injection of N2 gas was stopped due to an earthquake (11 April 17:16 - 23:19) ・Injection was suspended (14 April 16:30 …	■Considering the injection of N2 gas into PCV ■Generation of hydrogen gas at the top part of the reactor building is of concerned * White smoke observed on 21st March was supposed to be the steam from SFP that was leaked through the rain drainage duct. It is hoped that this mitigates the concentrated of Hydrogen gas.	■Considering the injection of N2 gas into PCV		■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	
	Next Works Planned (Next Activities)		□Water jet pump is ready at off-site stock yard, however lifting machine is not available					

Not for

Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water level in T/B OP +5050mm (at 07:00 on 27 April) ; same as 26 April 07:00 ・Water transfer M/T → CST (3 April 13:55- 10 April 09:30) ■Draining water in Trench ・Radiation level of the water surface in the trench: 0.4 mSv/h on 28 March ・Water level (from top edge of grating to water surface) 1530 mm (at 7:00 on 27 April) : same as 26 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B ・Water level in T/B OP +3100mm (at 07:00 on 27 April) : same as 26 April 07:00 ・Water transfer (C/T → CST) (2 April 17:10 - 9 April 13:10) ・Monitoring camera for water level was installed (on 2 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: higher than 1000 mSv/h (on 28 Mar.) ・Water level (from top edge of grating to water surface) 850 mm (at 7:00 on 27 April) : same as 26 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation " Boxer" ・A rubber board was placed over the crack. (at 13:15 on 6 April) ・Injection of liquid chemical to prevent leaks (conducted on 7 April) ■ Water transfer (trench→R/B) (660 ton) ・April 12 19:35 - April 13 11:00 ・April 13 15:02 - 17:01	■Draining water in T/B ・Water level in T/B OP +3050mm (at 07:00 on 27 April) ; same as 26 April 07:00 ・Water transfer (CST → SPT surge tank) (28 March 17:40 - 31 March 08:37) ・H/W is full. Leak from vacuum breaker was confirmed (on 7 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: (No measurement due to difficulty in approach by debris) ・Water level (from top edge of grating to water surface) 870 mm (at 07:00 on 27 April) ; 10 mm higher than 26 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water level in T/B OP +3050mm (at 07:00 on 27 April) : same as 26 April 07:00 ・Water transfer (Concentrated RW → T/B) (2 April 14:25 - 4 April 09:22: suspended) ・Water transfer pumps were added (1 → 5 pumps: 3 Apr. 10:00 - 4 Apr. 09:22. suspended due to high water level in the trench) ■Work for shutting off the leak in pit ・Concrete was poured (25m3) to clog cracks	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ■Discharging water in sub-drain of Unit 5 to the sea: 950 m3 (4 April 21:00 - 8 April 12:14) ■Draining water in R/B ・CS area →Torus (on 19 April)	■Draining water ・Water transfer (RW base floor → R/B) (1 April 13:40 - 2 April 10:00) ・Suspended by large amount of water: considering draining water ■Discharging water in subdrain of Unit 6 to the sea: 372.6 m3 (4 April 21:00 - 9 April 18:52)	■Draining water ・Concentrated RW → sea: (4 April 19:03 - 10 April [illegible] ■Draining water from main proc[illegible] was completed. ■Draining water from incinerat[illegible] to the sea was completed. ■Concrete pouring for stopping[illegible] insulation is in progress ([illegible] April) ■Work for shutting off the lea[illegible] building (on 16 April) ■High contaminated water trans[illegible] from Unit 2 to RW facilities (19 April 10:08 -) ・Amount of increase at RW ([illegible] April) 315 mm higher than the in[illegible]
	Next Works Planned	□Draining water in T/B basement ・Preparing for transfer draining water in T/B basement to RW facilities		□Draining water in T/B basement ・Preparing for transfer water in T/B basement from the trench to RW facilities	□Work for shutting off the leak in pit			
Others	Current Status	■Barge ・Water transfer: Barge No.1 → Filtered water tank (on 1 & 2 April) ・Water transfer: Barge No.2 → Barge No.1: (on 2 & 3 April) ・Barge No.2 arrived at dock (on 4 April) ■Air Borne Contamination Control ・In progress (Conducted on 1, 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 24, 25 and 26 April) ■Removal of debris ・In progress (Conducted on 18, 19, 20, 21, 22, 23, 24, 25 and 26 April) ■Additional grout was poured (on 19 April): 7 ㎥ into intake power supply pit) ■Silt fence: (on 11 April Two fences were installed on the south). (on 13 April Unit 3&4: in front of Screen facilities). (on 14 April Unit 1&2: in front of Screen facilities, Unit 1-4: north of Intake) ■Iron plate in front of bar screen facilities. ■Nitrogen gas bubbling in Filtered water tank (13 April -) ■T-Hawk project (wireless-controlled helicopter) (on 10, 14, 15 and 21April) ■Placing of sandbags of zeolite around Intake structure (at 3 locations on 15 April, at 7 locations on 17 April, pulled 2 up for radiation dose measurement on 19 April) ■Field investigation with robot (Unit 1: on 17, 26 April) (Unit 2: on 18 April) (Unit 3: on 17 April) ■Fire engine was moved from Fukushima Daiichi to Fukushima Daini (for securing 2 D/G for Unit) ■Convoy Drill (Fukushima Daiichi site →J-village →Prefectural medical college) (on 21 April) ■Installation of Wimax (Wireless LAN) (on 26 April)						
	Next Works Planned	□Removal of debris (scheduled on 27 April) □Air Borne Contamination Control (scheduled on 27 April) □Field investigation with robot in Unit 1 (scheduled on 29 April)						

Abbreviations:

CAMS :Containment Area radiation Monitor System
CST :Condensate Storage Tank
CUW :(Reactor Water) Clean Up Water (System)
D/W :Dry Well
ECCS :Emergency Core Cooling System
FP :Fire Protection
MS :Main Steam
M/C :Motor Power Center
MUWC :Make Up Water Condensate (system)
P/C :Power Distribution Center

RCIC :Reactor Core Isolation Cooling
RHR :Residual Heat Removal
RPV :Reactor Pressure Vessel
S/C :Suppression Chamber
SDF :Self Defense Force
SFP :Spent Fuel Pool
SGTS :Stand by Gas Treatment System
SHC :Shut Down Cooling
SLC :Stand by Liquid Control

FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 26, 2011- TC Briefing.

Information that is in italics should not be shared as it has not yet been released by TEPCO.

The priorities remain as follows:

- Ensuring fresh water injection and cooling capabilities to the reactors and spent fuel pools. Goal is to reduce and maintain temperature in the reactors and spent fuel pools below 100 degrees centigrade.
- Draining water from the turbine buildings and trenches to reduce the radiation levels so that work can continue.
- Containing the spread of radioactive materials.

Highlights for today include the following:

- N2 purging of the Unit 1 Drywell was stopped yesterday for approximately five hours while power supply lines from Unit 5/6 were connected to a Unit 1/2 load center to improve reliability of Units 1 and 2. During that time, Drywell pressure decay and decay rate was monitored and used to estimate free space and water level in the Drywell. It is now believed that Drywell water level is .5 m below the bottom of the reactor vessel.
- The robot entered the Unit 1 reactor building on Tuesday to check for possible leakage from an electrical penetration or other areas on the reactor building first floor. *No leakage was observed. TEPCO is considering increasing injection flow up to 14 m3/hr to increase the flooding rate of the Drywell.*
- Transfer of highly radioactive water from Unit 2 to the Centralized Radioactive Waste Treatment Facility continues at a rate of 250 tons/day. Level in the Radioactive Waste Facility has risen 840 mm since the start of transfer.
- Unit 2 trench level decrease has slowed dropping only 10 mm since yesterday. It is now 890 mm below the trench top. Unit 3 trench level has increased an additional 20 mm and is now 980 mm from the top.
- After four days of stability, Unit 4 turbine building water level increased 50 mm and is now 3050 mm (1.5 m above floor level) which is slightly higher than the Unit 3 turbine building water level of 3000 mm.
- Two hundred ten tons of water were added to the Unit 4 Spent Fuel Pool (SFP) yesterday. Another 160 ton addition is scheduled for today to fill the pool. The structural integrity of the Unit 4 SFP is considered sufficient to support a full SFP. Calculations and observations indicate that approximately 82 tons of water is needed to be added to the Unit 4 SFP daily to maintain level.
- Thirty-eight tons of water was added Unit 2 SFP yesterday. Fifty tons of water is scheduled to be added to the Unit 3 SFP today. Boil off rates are 21 tons/day and 17 tons/day respectively.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line continues at 6.1 m3/hr. Comments on parameters:
  - Reactor pressure indicator A is increased slightly to .450 MPa abs (65 psig). Indicator B continues to be suspect.
  - Feedwater nozzle temperature continues to be suspect.
  - Reactor vessel lower temperature decreased slightly to 111 C (232 F)
  - Drywell and Torus pressure remained at .150 MPa abs (22 psia).
  - Drywell and Torus dose rates are considered to be suspect.
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection continues at 7 m3/hr. Comments on parameters:
  - Unit 2 reactor pressures remain suspect.
  - Feedwater nozzle temperature decreased slightly to 122 C (252 F)
  - Reactor vessel lower temperature is believed unreliable.
  - Drywell pressure was stable near atmospheric.
  - Dose rate in the U2 Drywell continues to decrease. The drywell dose rate is 2.31Sv/hr or (2,310 Rem/hr). The Torus dose rate reading is considered suspect.
- In Unit 3, of non-borated fresh water using the low pressure coolant injection continues at 6.8 m3/hr. Comments on parameters:
  - Unit 3 reactor pressures are considered suspect.
  - Feedwater nozzle temperature is considered to be suspect.
  - Reactor vessel lower temperature decreased slightly to 110 C (230 F)
  - Drywell pressure was steady at .104 MPa abs (15 psi). Torus pressure is also steady at .178 MPa abs (26 psi).
  - Dose rate in the U3 Drywell continues to decrease and is at 14.6 Sv/hr (1,460 Rem/hr). Dose rate in the Torus is considered to be suspect.

Dose Rates

- Overall site dose rates are stabilizing or only varying slightly. For example:
  - ➢ The last reading reported at the main gate was 52 μSv /hr (5.2 mrem/hour) and be 23 μSv /hr (2.3 mrem/hour) at the west gate.
  - ➢ The side of the administration building facing the units decreased slightly to .450 μSv/hr or 45 mrem/hr. The same as yesterday.

Meighan, Sean

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Wednesday, April 27, 2011 3:07 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; (b)(6) Wittick, Brian
Subject: FW: Unit 4 RB support plan
Attachments: Plan for Unit 4 RB support.pdf

Attached is an overview of the support being considered for Unit 4 RB. Presently TEPCO is still saying additional support is not need so this is "just in case". Schedule runs until July.

Drawing details in Japanese, we will work to translate.

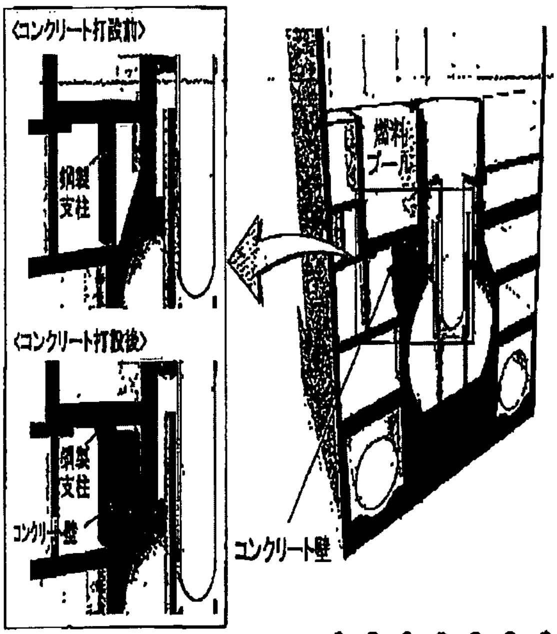
-Lee

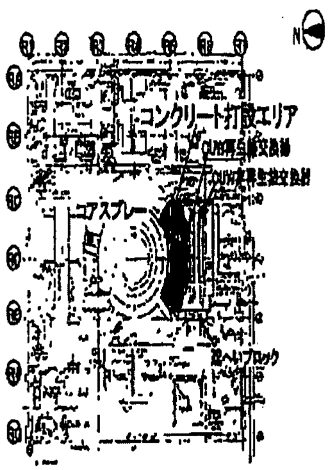
B6/122

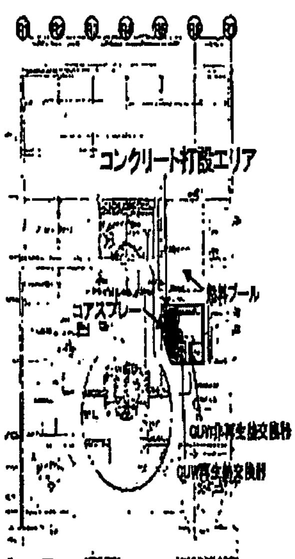
1F4 R/B 使用済燃料プール補強計画(案)

補強方法

・鉛直荷重に対する補強を目的として、燃料プールを下からコンクリートで補強する。上部はコンクリートを十分充填することが保証しにくいので、鋼製支柱で支持し、残った空間部を可能な限りグラウト充填する。







平面図　断面図

前提条件

・作業開始前に作業エリアの雰囲気線量が測定され、かつ安定している事。
(線量レベルが十分低く、作業可能であること)

・作業場所までの資材の搬入ルート及び人員の通行ルートが確保されている事。
(現状の散乱しているがれきは必要エリアを撤去する予定)

工期

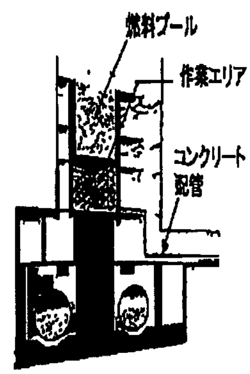
工期は現場の状況変化に応じて、再検討を行う。

	5月	6月	7月
準備工事(がれき撤去含む)			
足場組立・配管盛替[*1]・鋼製支柱組立[*2]			
型枠組立・コンクリート打設			
グラウト充填			

(注) *1:鋼製支柱と干渉している燃料プール床下の機器配管の撤去・盛替
*2:鋼製支柱の位置・支持方法については、今後検討を行う。

施工手順

・足場組立
(解体・撤去しない)
・鋼製支柱組立
(32本(16本×2列)程度)
・型枠組立
(解体・撤去しない)
・コンクリート打設準備
(配管段取等)
・コンクリート打設・グラウト充填
(コンクリート約400m³、グラウト約30m³)



Meighan, Sean

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Wednesday, April 27, 2011 4:46 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; (b)(6) Wittick, Brian
Subject: FW: Unit 4 RB support plan
Attachments: 1F4 RB SFP Reinforcement Plan (Draft).pdf

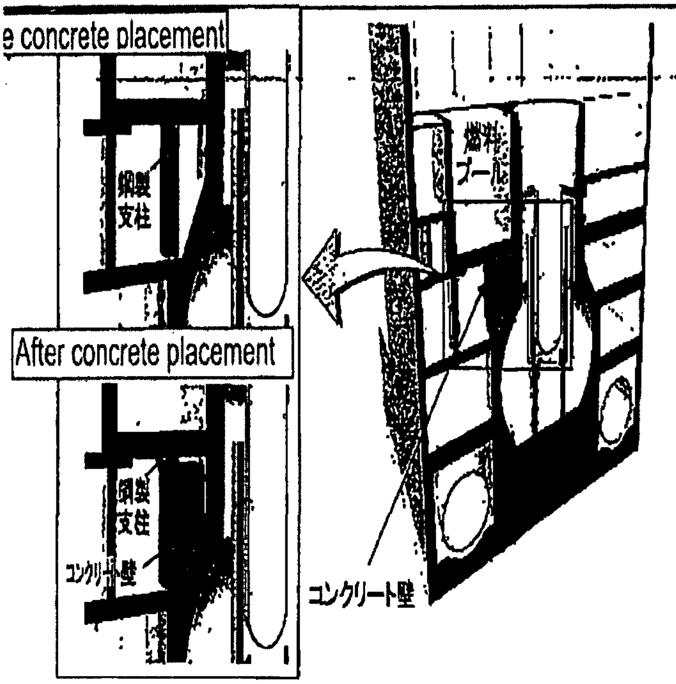
English translation now of the Unit 4 R/B Spent Fuel Pool Reinforcement Plan (Draft)

BG/123

1F4 R/B Spent Fuel Pool Reinforcement Plan (draft)

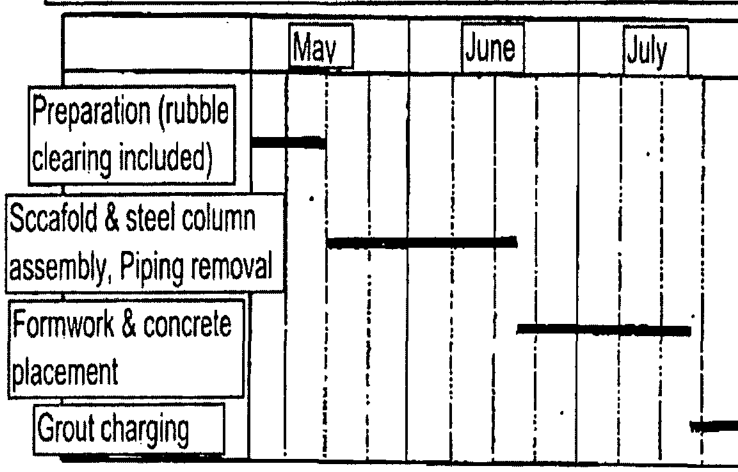
1F4 R/B 使用済燃料プール補強計画(案)

Reinforcement Method

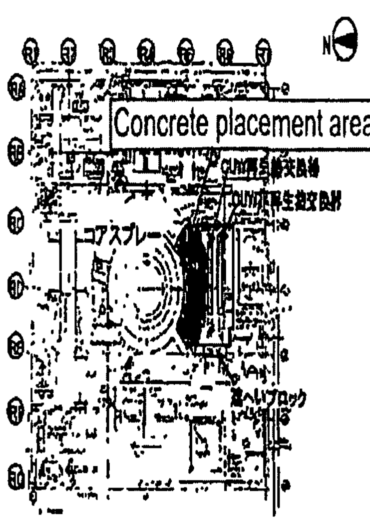


Presiquisit Condition

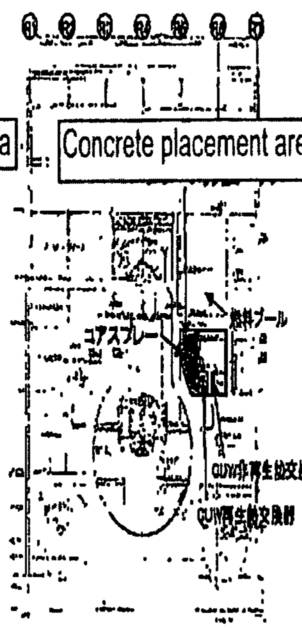
Schedule (to be reviewed over reflecting the changing conditions of the work area)



(注) *1:鋼製支柱と干渉している燃料プール床下の機器配管の撤去・盛替
*2:鋼製支柱の位置・支持方法については、今後検討を行う。



平面図

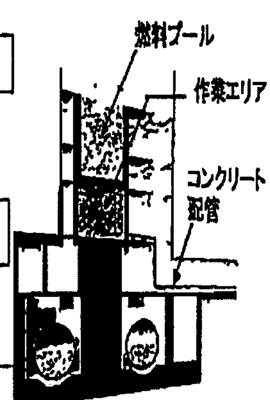


断面図

Work procedure

（32本(16本×2列)程度)

(配管撤去等)



東京電力

Wittick, Brian

From: Gard, Lee A (INPO) [GardLA@INPO.org]
Sent: Wednesday, April 27, 2011 5:54 AM
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Gepford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; (b)(6) Wittick, Brian; Gregg Schneider; Lovell, Russ; Hochevar, Albert R. (INPO); Gakuto Nakamura; Gard, Lee A (INPO); Hiroyuki Matsuura; Junji Tanaka; jwhitcra@bechtel.com; Keith Moser; Michio Matsuda; Richard Rossi; Bob Holland; sekim@westinghouse.com; serorj@westinghouse.com; Shigeo Hattori; Shinya Fujii; Shuji Furuya; Yoneo Suzumegano; Tom Stevens
Subject: FW: April 27 briefing notes and excel spreadsheet
Attachments: TEPCO Sumarry Rev.101 Final April 27.xls; April 27 Ryan 6 pm briefing notes.doc

Attached are the briefing notes and parameter spread sheet. The radiation survey map was not available today.

B6/124

Not for Release

Fukushima-Daiichi Current Status and Planned Work

27 April at 06:00 & 09:00 (Rev-101)

		1F	2F	3F	4F	5F	6F	[illegible]
Reactivity Control (Halt Reactor)	Current Status	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (For core shroud replacement work during outage)	■Core was loaded with bundles for the start of the next operation cycle ■RPV bolted up (Earthquake occurred after completion of RPV hydrostatic test just before the startup) ■Maintaining cold shutdown	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
		CAMS (at 05:00 on 27 April): D/W: (A) 0 (B) No measurement S/C: (A) 1.14×10^{0} SV/h (watching trend continuously) (B) 1.73×10^{0} SV/h (watching trend continuously)	CAMS (at 05:00 on 27 April): D/W: (A) 2.27×10^{1} SV/h (B) 2.56×10^{1} SV/h S/C: (A) 4.72×10^{-1} SV/h (watching trend continuously) (B) 4.33×10^{-1} SV/h (watching trend continuously)	CAMS (at 05:00 on 27 April): D/W: (A) 1.43×10^{1} SV/h (B) 1.09×10^{1} SV/h S/C: (A) 5.32×10^{-1} SV/h (watching trend continuously) (B) 5.08×10^{-1} SV/h (watching				
	Next Works Planned (TEPCO Headquarters' Activities)	<Long term measure> □To add boric acid to fresh coolant before acieving cold shut down <After restoring power> □Operating SLC	□Borated fresh water injection started (at 10:10 on 26 March) <Long term measure> □To add boric acid to fresh coolant before acieving cold shut down <After restoring power> □Operating SLC	<Long term measure> □To add boric acid to fresh coolant before acieving cold shut down <After restoring power> □Operating SLC				
Coolant Supply & Residual Heat Removal (Core cooling)	Current Status	■Fresh water injection through FDW line (Switch to temporary installed motor driven pump was completed) (Flow Rate: 5.9 m3/h by interim instrumentation at 05:00 on 27 April) ・Power source was switched to off-site power. (at 19:25 on 25 April) ■Installing temporary replacement pump for CCSW ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.9 m3/h by interim instrumentation at 05:00 on 27 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (29 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.9 m3/h by interim instrumentation at 05:00 on 27 April) ・Power source was switched to off-site power. (at 19:25 on 25 April) ■Installation of the alternate pump for RHRS (28 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)		■Ordinary operation in SHC mode of RHR (26 April 19:05-) (SHC mode: Cooling mode with heat-exchanger)	■Ordinary operation in SHC mode of RHR (26 April 17:55-) ■One out of two temporary RHRS pumps tripped (25 April 19:09 - 26 April 11:17)	
		■Reactor Water Level (at 05:00 on 27 April) TAF-1650 mm (Fuel Range: Gauge A) TAF-1600 mm (Fuel Range: Gauge B) ■RPV Dome Pressure (at 05:00 on 27 April) 0.450 MPa-g (Gauge A) 1.265 MPa-g (Gauge B) (watching trend continuously) ■RPV Temperature (at 05:00 on 27 April) Feed water nozzle: 132.0℃ (watching trend continuously) Bottom of RPV : 110.5℃	■Reactor Water Level (at 05:00 on 27 April) TAF -1500 mm (Fuel Range: Gauge A) TAF -2100 mm (Fuel Range: Gauge B) ■RPV Dome Pressure (at 05:00 on 27 April) -0.018 MPa-g (Gauge A) (watching trend continuously) -0.023 MPa-g (Gauge B) (watching trend continuously) ■RPV Temperature (at 05:00 on 27 April) Feed water nozzle: 120.4℃ Bottom of RPV : No measurement	■Reactor Water Level (at 05:00 on 27 April) TAF-1850 mm (Fuel Range: Gauge A) TAF-2250 mm (Fuel Range: Gauge C) ■RPV Dome Pressure (at 05:00 on 27 April) -0.053 MPa-g (Gauge A) (watching trend continuously) -0.099 MPa-g (Gauge C) (watching trend continuously) ■RPV Temperature (at 05:00 on 27 April) Feed water nozzle : 72.0 ℃ (watching trend continuously due to suspected indication problem) Bottom of RPV : 110.7 ℃		■Reactor Water Level (at 06:00 on 27 April) TAF+1561 mm (Shut Down Range Gauge) ■RPV Dome Pressure (at 06:00 on 27 April) 0.003 MPa-g ■Coolant Temprature (at 06:00 on 27 April) 33.3 ℃	■Reactor Water Level (at 06:00 on 27 April) TAF+2171mm ■RPV Dome Pressure (at 06:00 on 27 April) 0.010 MPa-g ■Coolant Temprature (at 06:00 on 27 April) 47.9 ℃	
	Next Works Planned (Activities of Cooling Water Supply Force)	□Switch the temporary motor driven pump to MUT pump (The work was suspended due to high radiation environment around MUTP in the turbine building). <Long Term Cooling Measure> □SHC ordinary operation in SHC mode after restoring off-site power & related equipments □For PCV flooding ・Core cooling water flow rate was changed. 6 → 14 → 6 m³/h (on 27 April)	□Switch the temporary motor driven pump to MUT pump (The work was suspended due to high radiation environment around MUTP in the turbine building). <Long Term Cooling Measure> □CSR ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the motor driven pump to MUT pump (The work was suspended because of high radiation environment around MUTP in the turbine building) Preparing to drain the high radiation water <Long Term Cooling Measure> □CSR ordinary operation in SHC mode after restoring off-site power & related equipments				

Containment Function (Cooling and Confinement)	Current Status	■D/W (at 05:00 on 27 April) ・Pressure: 0.155 MPa-abs ・Temperature: RPV bellow seal: 112.6 ℃ HVH return: 97.2 ℃ ■S/C (at 05:00 on 27 April) ・Pressure: 0.155 MPa-abs ・Temperature: (A) 51.0 ℃, (B) 50.9 ℃ ■Started ventilation through hardened line (at 14:30 on 12 March) ● PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310 kPa	■D/W (at 05:00 on 27 April) ・Pressure: 0.080 MPa-abs ・Temperature: RPV bellow seal: No measurement HVH return: 112 ℃ ■S/C (at 05:00 on 27 April) ・Pressure; Down Scale (Examining) ・Temperature: (A) 70.5 ℃, (B) 70.8 ℃ ■Ready to start ventilation through hardened line (Not executed so far) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 325 kPa	■D/W (at 05:00 on 27 April) ・Pressure: 0.1031 MPa-abs ・Temperature: RPV bellow seal: 121.7 ℃ (watching trend continuously) HVH return: 101.9 ℃ ■S/C (at 05:00 on 27 April) ・Pressure: 0.1787 MPa-abs ・Temperature: (A) 41.2 ℃, (B) 41.2 ℃ ■Started ventilation through hardened line (at 9:20 on 13 March) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310		■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	
	Next Works Planned (TEPCO Headquarters' Activities)	□Hydrogen countermeasure first ● Fill PCV and ventilation line with nitrogen ● Reinforced monitoring of PCV pressure ● Continue to secure ventilation line (After securing off-site power) □Restoring PCV spray function ● MUWC system, FP system (After restitution of equipments) □RHR operation in SHC mode □Restoring D/W cooling coil □Alternative heat removal by CUW	Same as unit 1	Same as unit 1				
Spent Fuel Pool (SFP) (Decay Heat Removal & Water Supply)	Current State	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of no power supply) ■Skimmer surge tank level 4200 mm (at 05:00 on 27 April) ■Watering by concrete pumping vehicle (Fresh Water) (called the Elephant) ・31 March 13:03-13:57 ・31 March 14:25-16:04 ・ 2 April 17:16-17:19 The nickname of concrete pumping vehicle for Unit 1 was changed from "large Giraffe" to "Elephant" to prevent confusion on 3 April. ■Preparation for water feeding with electric motor pumps was completed. (on 9 April). ■The Elephant #1 was moved from Unit 3 to Unit 1. (on 26 April)	■SFP water level uncertain (No water level meter) ■SFP temperature 57.0℃ (at 05:00 on 27 April) ■Skimmer surge tank level 5700mm (at 05:00 on 27 April) ■Fresh water injection to SFP trough the existing FPC line and temporary line ・19 April 16:08-17:28 ・22 April 15:55-17:40 ・25 April 10:12-11:18 (38 ton) ■Removal of the existing strainer in FPC line was completed (31 March). (Scheduled for 31 March)	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of lack of power supply) ■Skimmer surge tank level No measurement ■Water spray with new special pumping vehicle (call Zebra-improved) ・ 8 April 17:06- 20:00 (Fresh Water) ・10 April 17:15-19:15 (Fresh Water) ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Zebra-improved was moved for replacement and The Elephant was moved: Unit 4→Unit 3 (on 11 April) ■Water spray with the Elephant #1 ・19 April 14:19 - 15:02 (30ton) ・22 April 14:19 - 15:40 (50ton) ・26 April 12:00 - 12:02 (check of water level) ■Confirmation of injection line to the pool through FPC line ・22 April 13:40 - 14:00 (10ton) ・26 April 12:25 - 14:02 (47.5ton) ■The Elephant #1 was moved from Unit 3 to	■SFP water level : Uncertain ■SFP water temperature: gauge out of order (at 11:10 on 24 March and later) ■Skimmer surge tank level 4250 mm (at 05:00 on 27 April) ■Installation alternation pump for HPDS ■Watering with the Elephant ・ 5 April 17:35-18:22 ・ 7 April 18:23-19:40 ・ 9 April 17:07-19:24 ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant was moved: Unit 4 → Unit 3 (on 11 April) ■Water sampling from SFP by the Elephant #2 was completed. (12 April) Most of the fuel is believed to be undamaged. ■Attaching measuring instruments (level gage etc.) on the Elephant #2 and measuring temperature, water level and radiation dose. (on 22, 23 and 24 April) ■Watering with the Elephant #2 ・25 April 18:15-00:26 (210ton)	■Inventory securing ● (CST -> MUWC -> FPC -> SFP ■Heat removal ● FPC (Surge Tank) -> RHR -> S/C ● Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp: 40.1℃ (at 06:00 on 27 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■SHC mode (25 April 22:58 -)	■Inventory securing ● CST -> MUWC -> FPC -> SFP ■Heat removal ● FPC (Surge Tank) -> RHR -> S/C ● Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain(Water level alarms were not activated.) ■SFP Water temp: 23.5℃ (at 06:00 on 27 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■SHC mode (25 April 10:19 -)	■SFP water temperature 32℃ at 06:00 on 25 April ■Cooling function achieved by air fin coolers (at 16:26 on 24th March) ■Water supply to the common SFP by MUWC system (24 March 16:15-18:01) ■FPC(B) started at 18:05 on 24th March
	planned work (Next Activities of FPC Team)	□Repair of the Elephant #1			□Water spray with the Elephant #2 (scheduled on 27 April 12:00 - : 70 ton) □Reinforcement work of fuel pool support structure			

High Voltage AC Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■Equipments of MCC tested for short circuit and ground but in fall on 21 March ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:30 on 24 March ■Monitoring posts (MP5-8) were restored. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Okuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed (on 25 April)	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■MCC 2A-1 in the turbine building was powered at 16:45 on 26 March ■Illumination is restored in main control room at 16:46 on 27 March. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Okuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line ・Trial electric charge of the motor Center vehicle for Unit3 and Unit4 was completed at 14:28 on 18 March ・Instalation of multi circuit breakers and power cables were completed on 19 March ・Inspection of cable from the breakers and loads was conducted on 20 March ・Instalation of cables were completed on 21 March. ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 10:23-15:27) ■T/B MCC 3C-2 has been powered at 22:10 on 22 March. ■T/B MCC 3C-1 has been powered at 22:21 on 22 March ■120V I & C main bus powered at 22:28 on 22 March ■Illumination is restored in main control room	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 10:23-15:27) ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:50 on 29 March ■Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Okuma line has been available) (on 19 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yonomori line 1L, 2L) ■Non-safety grade buses of 5A and 5B are unavailable ■Temporary pump (RHRS) was installed and connected to the water supply line on 24th March ■Emergency administration building was powered on 24th March ■Water Purification Facility was powered at 9:15 on 24th March ■Investigating cable laying work for monitoring posts (MP-1/2/3/4) on 26 March. ■T/B MCC 5D-2 has been powered on 31 March ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yonomori line 1L, 2L) ■Non-safety grade buses of 6A and 6B are unavailable ■Temporary pump (works as a substitute of RHRS) was installed and put in service (Powered by P/C) ■Test run of installed cable was conducted on 20 March ■Monitoring posts (MP1-4) were restored. ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power for common pool was restored at 15:30 on 24th March ■Temporary power for common pool was tripped due to short circuit during practice of disconnecting switch operation (17 April 14:36-17:30) restored at 17:41 on 17 April ■P/C for common pool ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 15:56-16:34)
	planned work (Next Activities of Electric Power Supply Team)	□Restration work of electricity will be restarted after completing water transfer from T/B	□Restration of power for instrumentation	□Restration work of electricity will be restarted after completing water transfer from T/B		□Laying temporary power cable for SLC (B)		
DC Power Supply	Current Status	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■Common DC125V has been powered at 16:30 on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status ・Batteries for reactor level gauges were replaced by fresh ones at 12:15 on 21st March ■Restration of DC 125V Charge cenetr (B) (30 March)	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■DC 24 Charger 6B-1has been powered on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status	
	Next Works Planned (Activities of Electric Power ...	-						
Miscellaneous Measures against Hydrogen	Current Status	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas ■Injection of N2 gas is in progress ・(Flow rate: 28m³/h, degree of purity: 98%) 7 April 01:31- 9 April 03:29 (suspended due to switch to high degree of purity N2 gas) ・Injection of high degree of purity N2 gas (Flow rate: 28m³/h, degree of purity: 99.92%) 9 April 04:10 - ・Injection of N2 gas was stopped due to an earthquake (11 April 17:16 - 23:19)	■Considering the injection of N2 gas into PCV ■Generation of hydrogen gas at the top part of the reactor building is of concerned ・White smoke observed on 21st March was supposed to be the steam from SFP that was leaked through the rain drainage duct. It is hoped that this mitigates the concentrated of Hydrogen gas.	■Considering the injection of N2 gas into PCV		■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 26 March)	
	Next Works Planned (Next Activities)		□Water jet pump is ready at off-site stock yard, however lifting machine is not available					

Not for Release

Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water level in T/B OP +5060mm (at 07:00 on 27 April) : same as 26 April 07:00 ・Water transfer R/B → CST (3 April 13:55- 10 April 09:30) ■Draining water in Trench ・Radiation level of the water surface in the trench: 0.4 mSv/h on 28 March ・Water level (from top edge of grating to water surface) 1530 mm (at 7:00 on 27 April) : same as 26 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B ・Water level in T/B OP +3100mm (at 07:00 on 27 April) : same as 26 April 07:00 ・Water transfer (H/W → CST) (2 April 17:10 - 9 April 13:10) ・Monitoring camera for water level was installed (on 2 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: higher than 1000 mSv/h (on 29 Mar.) ・Water level (from top edge of grating to water surface) 650 mm (at 7:00 on 27 April) : same as 26 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation "Beaver" ・A rubber board was placed over the crack. (at 12:15 on 6 April) ・Injection of liquid chemical to prevent leaks (conducted on 7 April) ■ Water transfer (trench→RW) (660 ton) ・ April 12 19:35 - April 13 11:00 ・ April 13 15:02 - 17:04	■Draining water in T/B ・Water level in T/B OP +3050mm (at 07:00 on 27 April) : same as 26 April 07:00 ・Water transfer (CST → SPT surge tank) (29 March 17:40 - 31 March 08:37) ・H/W is full. Leak from vacuum breaker was confirmed (on 7 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: (No measurement due to difficulty in approach by debris) ・Water level (from top edge of grating to water surface) 970 mm (at 07:00 on 27 April) ; 10 mm higher than 26 April 07:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water level in T/B OP +3350mm (at 07:00 on 27 April) ; same as 26 April 07:00 ・Water transfer (Concentrated RW → T/B) (2 April 14:25 - 4 April 09:22; suspended) ・Water transfer pumps were added (1 → 5 pumps: 3 Apr. 10:00 - 4 Apr. 09:22, suspended due to high water level in the trench) ■Work for shutting off the leak in pit ・Concrete was poured (25m3) to clog cracks	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ■Discharging water in sub-drain of Unit 5 to the sea: 950 m3 (4 April 21:00 - 8 April 12:14) ■Draining water in R/B ・CS area →Torus (on 19 April)	■Draining water ・Water transfer (RW base floor → R/B) (1 April 11:40 - 2 April 10:00) ・ Suspended by large amount of water; considering draining water ■Discharging water in sub-drain of Unit 6 to the sea: 372.6 m3 (4 April 21:00 - 9 April 15:52)	■Draining water ・Concentrated RW → sea: 9070 m3 (4 April 19:03 - 10 April 17:40) ■Draining water from main process building was completed. ■Draining water from incinerator building to the sea was completed. ■Concrete pouring for stopping groundwater inundation is in progress (15 April - 18 April) ■Work for shutting off the leak of process building (on 16 April) ■High contaminated water transfer from Unit 2 to RW facilities (19 April 10:08 -) ・Amount of increase at RW (at 07:00 on 27 April) 916 mm higher than the initial value
	Next Works Planned	□Draining water in T/B basement ・Preparing for transfer draining water in T/B basement to RW facilities		□Draining water in T/B basement ・Preparing for transfer water in T/B basement from the trench to RW facilities	□Work for shutting off the leak in pit			
Others	Current Status	■Barge ・Water transfer: Barge No.1 → Filtered water tank (on 1 & 2 April) ・Water transfer: Barge No.2 → Barge No.1: (on 2 & 3 April) ・Barge No.2 arrived at dock (on 4 April) ■Air Borne Contamination Control ・In progress (Conducted on 1, 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 24, 25 and 26 April) ■Removal of debris ・In progress (Conducted on 16,19, 20, 21,22, 23, 24, 25 and 26 April) ■Additional grout was poured (on 19 April: 7 m^3 into intake power supply pit) ■Silt fence: (on 11 April Two fences were installed on the south), (on 13 April Unit 3&4: in front of Screen facilities), (on 14 April Unit 1&2: In front of Screen facilities, Unit 1-4: north of Intake) ■Iron plate in front of bar screen facilities. ■Nitrogen gas bubling in Filtered water tank (13 April -) ■T-Hawk project (wireless-controlled helicopter) (on 10, 11, 15 and 21April) ■Placing of sandbags of zeolite around Intake structure (at 3 locations on 15 April, at 7 locations on 17 April, pulled 2 up for radiation dose measurement on 19 April) ■Field investigation with robot (Unit 1: on 17, 26 April) (Unit 2: on 18 April) (Unit 3: on 17 April) ■Fire engine was moved from Fukushima Daiichi to Fukushima Daini (for securing 2 D/G for 1Unit) ■Convoy Drill (Fukushima Daiichi site →J-village →Prefectural medical college) (on 21 April) ■Installation of Wimax (Wireless LAN) (on 26 April)						
	Next Works Planned	□Removal of debris (scheduled on 27 April) □Air Borne Contamination Control (scheduled on 27 April) □Field investigation with robot in Unit 1 (scheduled on 28 April)						

Abbreviations:

CAMS :Containment Area radiation Monitor System
CST :Condensate Storage Tank
CUW :(Reactor Water) Clean Up Water (System)
D/W :Dry Well
ECCS :Emergency Core Cooling System
FP :Fire Protection
MS :Main Steam
M/C :Motor Power Center
MUWC :Make Up Water Condensate (system)
P/C :Power Distribution Center

RCIC :Reactor Core Isolation Cooling
RHR :Residual Heat Removal
RPV :Reactor Pressure Vessel
S/C :Suppression Chamber
SDF :Self Defense Force
SFP :Spent Fuel Pool
SGTS :Stand by Gas Treatment System
SHC :Shut Down Cooling
SLC :Stand by Liquid Control

FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 27, 2011- TC Briefing.

Information that is in italics should not be shared as it has not yet been released by TEPCO.

The priorities remain as follows:

- Ensuring fresh water injection and cooling capabilities to the reactors and spent fuel pools. Goal is to reduce and maintain temperature in the reactors and spent fuel pools below 100 degrees centigrade.
- Draining water from the turbine buildings and trenches to reduce the radiation levels so that work can continue.
- Containing the spread of radioactive materials.

Highlights for today include the following:

- Percent of fuel damage estimates has been revised for all three reactor cores. Current estimates are 55 % damage of Unit 1 fuel, 35 % of Unit 2 fuel and 30 % damage of Unit 3 fuel. A calculation error contributed to inaccuracies in the previous estimates of 70 %, 30 %, and 25 % respectively.
- N2 purging of the Unit 1 Drywell continues. It is now believed that Drywell water level is .5 m below the bottom of the reactor vessel. TEPCO increased injection flow to the primary containment vessel to 10 m3/hr Wednesday morning. After verifying leak tightness injection flow will be increased to 14 m3/hr later today.
- The robot will entered the Unit 1 reactor building on Thursday to check for possible leakage following the increase in vessel injection rate.
- Transfer of highly radioactive water from Unit 2 to the Centralized Radioactive Waste Treatment Facility continues at a rate of 250 tons/day. Level in the Radioactive Waste Facility has risen 946 mm since the start of transfer.
- Unit 2 trench level has not changed since late Monday. Unit 3 trench level has increased an additional 10 mm and is now 970 mm from the top.
- After increasing 50 mm yesterday, Unit 4 turbine building water level remained steady at 3050 mm (1.15 m above floor level). Unit 3 turbine building water level also remained steady at 3000 mm.
- One hundred thirty tons of water was added to the Unit 4 Spent Fuel Pool (SFP) yesterday. Another 70 ton addition is scheduled for today. Forty seven tons of water was added to the Unit 3 SFP yesterday. The fuel pool cooling line is now being used for injection into the Unit 3 SFP and the elephant has been moved to Unit 1.
- Based on recent differences between observed water level increase and calculated water level increase following water additions to the Unit 4 SFP, TEPCO now believes the Unit 4 SFP pool may be leaking.

Previously it was reported that observed water level increase following water addition was as expected.

- Although TEPCO considers that the Unit 4 reactor building structural integrity is sufficient to support the SFP, plans have been developed to add supports in the compartments under the Unit 4 SFP. Construction is expected to start in May and completed in July.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line will be increased in steps up to 14 m3/hr today until at least tomorrow morning. Comments on parameters:
  - Reactor pressure indicator A is steady at .450 MPa abs (65 psig). Indicator B continues to be suspect.
  - Feedwater nozzle temperature continues to be suspect.
  - Reactor vessel lower temperature is steady at 111 C (232 F)
  - Drywell and Torus pressure remained at .150 MPa abs (22 psia).
  - Drywell and Torus dose rates are considered to be suspect.
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection continues at approximately 7 m3/hr. Comments on parameters:
  - Unit 2 reactor pressures remain suspect.
  - Feedwater nozzle temperature decreased slightly to 120 C (248 F)
  - Reactor vessel lower temperature is believed unreliable.
  - Drywell pressure was stable near atmospheric.
  - Dose rate in the U2 Drywell continues to decrease. The drywell dose rate is 2.27Sv/hr or (2,270 Rem/hr). The Torus dose rate reading is considered suspect.
- In Unit 3, of non-borated fresh water using the low pressure coolant injection continues at 6.9 m3/hr. Comments on parameters:
  - Unit 3 reactor pressures are considered suspect.
  - Feedwater nozzle temperature is considered to be suspect.
  - Reactor vessel lower temperature decreased slightly to 110 C (230 F)
  - Drywell pressure was steady at .103 MPa abs (15 psi). Torus pressure is also steady at .178 MPa abs (26 psi).
  - Dose rate in the U3 Drywell continues to decrease and is at 14.3 Sv/hr (1,460 Rem/hr). Dose rate in the Torus is considered to be suspect.

Dose and Dose Rates

- A female employee received a cumulative radiation dose of 18 mSv during the first quarter of 2011. This exceeds the maximum allowable dose for a female of 5 mSv/3 months. Quarterly dose for all 19 female employees of the station is under review.
- Overall site dose rates are stabilizing or decreasing slightly. For example:
  - The last reading reported at the main gate was 51 μSv /hr (5.1 mrem/hour) and be 23 μSv /hr (2.3 mrem/hour) at the west gate.
  - The side of the administration building facing the units decreased slightly to .440 μSv/hr or 44 mrem/hr. The same as yesterday.

Valentine, Nicholee

From: Philpott, Stephen
Sent: Thursday, April 28, 2011 9:15 AM
To: Valentine, Nicholee
Subject: FW: Mark 1 Containment Issues (Q372)
Attachments: Report-BWRMarkIContainment_03212011.pdf; Q372 Request.pdf

Hi Nikki,

This is a response I received from GE related to the other chain of e-mails I sent you yesterday in response to FOIA 2011-0189. The attached report is not marked as Proprietary, so I imagine it's OK to release. Plus I have another e-mail that indicates this report was available on GE's website, so I think it has been available for a while (and it's a bit dated now).

Steve

From: Hren, Jeff (GE Power & Water) [mailt (b)(6)
Sent: Monday, April 04, 2011 11:13 PM
To: Philpott, Stephen
Cc: Harrison, James F. (GE Power & Water); GE Hitachi Nuclear Response Team (GE Power & Water)
Subject: Mark 1 Containment Issues (Q372)

Mr. Philpott,

It has been several days since you have issued your request. I am sending you a white paper that we prepared hoping it will satisfy your curiosity. Please reply with specifics if you desire more information.

Thanks,
Jeff

Jeff A. Hren
Technical Project Manager
GE Hitachi Nuclear Energy

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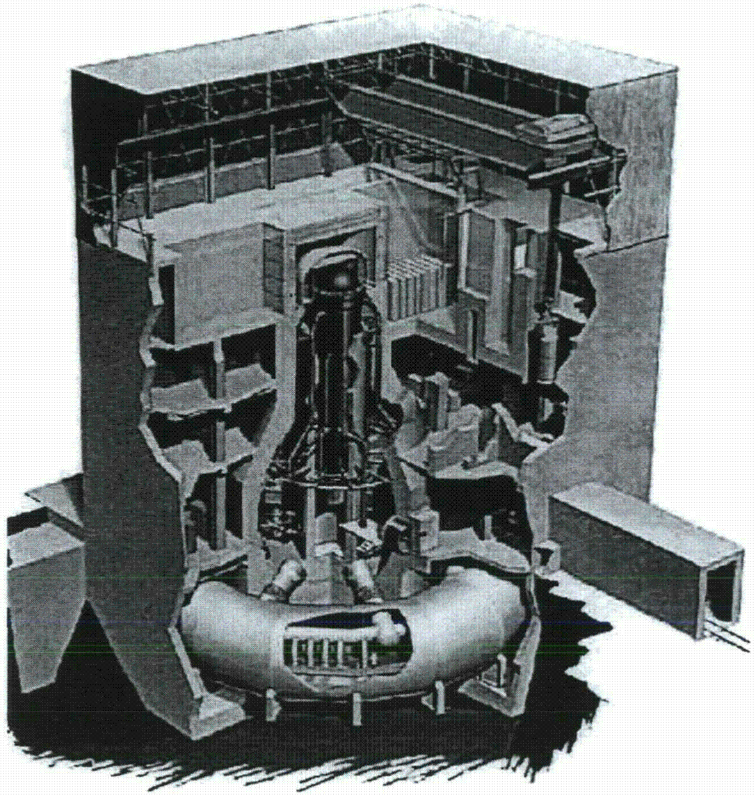


Mark I Containment Report

March 19, 2011

PURPOSE

This paper describes the Mark I containment design in use in the 23 U.S. reactors and its ability to fulfill its safety function in containing fission product releases under design basis conditions. It also offers, as an initial matter, some observations about the performance of the Mark I containment under many beyond-design-basis events experienced at Fukushima Daiichi in March 2011.

PERFORMANCE OF MARK I CONTAINMENTS AT FUKUSHIMA DAIICHI

Fukushima Daiichi Units 1-4 are boiling water reactors ("BWRs") equipped with Mark I containments. Units 1-3 were operating; Unit 4 was in shutdown with fuel offloaded when the earthquake and tsunami occurred, which resulted in the loss all offsite and on-site power to all four units.

Early reports regarding Units 1-3 stated plant operators used safety relief valves to relieve pressure in the reactor pressure vessel. In addition, when the fuel rods became uncovered, hydrogen formed in the core (due to zirconium/water reaction) and was also transported into the wetwell when the reactor vessel safety relief valves opened. The combination of steam and hydrogen flowing into the wetwell increased the wetwell temperature and pressure. Since there was no on-site or off-site power available, there was no means available to cool the wetwell water. Over time, the pressure in the primary containment rose over the design pressure. To avoid containment breach, venting became necessary. Upon venting, it is believed that vented hydrogen gas caused explosions at these units.

The following should be noted:

- Coincident long-term loss of both on-site and off-site power for an extended period of time is a beyond-design-basis event for the primary containment on any operating nuclear power plant.
- The Mark I containment vessels appeared to have held pressure to well above the design pressure.
- The response of the reactor pressure vessel and reactor in general agree with severe accident management studies performed in the 1980s and early 1990s.

BACKGROUND

Description of the Mark I Containment System

Figure 1 shows a cutaway view of a typical Mark I Containment system. The major components shown in the figure include:

- The drywell, which surrounds the reactor pressure vessel (RPV) and recirculation loops. The drywell is light-bulb shaped steel-lined pressure vessel backed over most of its surface with reinforced concrete.

- A wetwell is situated beneath the drywell and connected to the drywell by a system of vent pipes. The wetwell is a toroidal-shaped (donut shaped) pressure vessel which is filled to about half of its height with water. The wetwell is often referred to as a torus (donut shape) or as a suppression pool (due to its function) and is made from either steel or concrete.
- An interconnecting vent network exists between the drywell and the wetwell. The vents are open on one end to the drywell and on the other end open into a header in the wetwell that has additional downcomer vents below the water level in the suppression pool.

The drywell, wetwell and vent system form the primary containment around the reactor pressure vessel and recirculation loops. The function of the containment system is to contain the energy released during a postulated design-basis loss-of-coolant accident of any size reactor coolant pipe and to protect the reactor from external events. The design-basis break is the largest reactor recirculation system pipe. The primary containment system is designed to withstand the combined seismic, pressure and temperature loads for this event and maintain integrity. The containment system accommodates this accident without exceeding the design leakage rate; in this way, the containment system limits the release of fission products during that event to offsite dose to levels significantly below the guideline values specified by regulation (10 CFR 100).

The primary containment is one of the three main barriers limiting release of fission products from the BWR nuclear fuel into the environment. Other barriers include the fuel rod cladding and the reactor pressure vessel together with its piping, which form the reactor coolant pressure boundary and the primary containment. In addition to the three fission product barriers, the secondary containment surrounds the primary containment and houses emergency core cooling systems and the spent fuel pool.

Note: Secondary Containment may vary from site to site

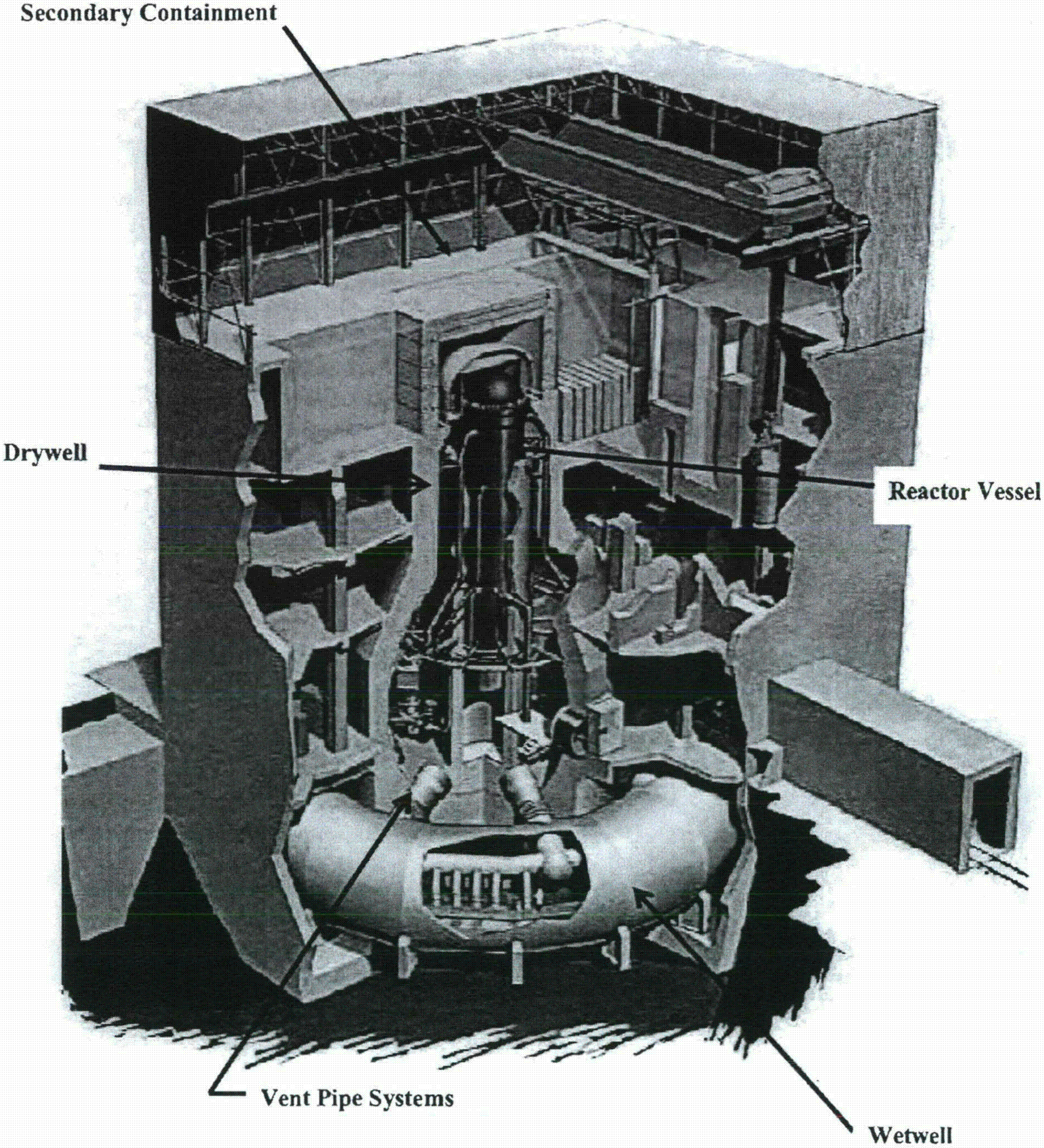


Figure 1 – Typical Mark I Containment System

CONTAINMENT OPERATION DURING A LOSS OF COOLANT ACCIDENT

During normal operation, the drywell atmosphere and the wetwell atmosphere is inerted (filled with nitrogen), and the wetwell water is at ambient temperature. In the event of a pipe break in the reactor coolant system inside the drywell, pressurized coolant escaping from inside the reactor coolant system will flash to steam and begin to pressurize and heat the drywell atmosphere. The reactor is automatically shut down. As the pressure rises in the drywell, the vent system will also pressurize, eventually forcing the steam into the wetwell below the water level. The steam contacting the water condenses in the wetwell. This reduces (suppresses) the pressure in primary containment following the loss of coolant accident by turning steam back into water.

Steam condensing in the wetwell gradually increases the wetwell temperature and pressure. As the accident progresses, plant instrumentation will sense the change in conditions in containment and in the reactor coolant system, and emergency systems will activate to cool the shut down reactor. Systems will also be activated to cool the water in the wetwell. These active emergency systems can be powered by off-site power or by on-site emergency diesel generators in the event of a loss of off-site power. With these emergency systems available, the Mark I containment system is designed to contain reactor water (and any fission products if present) without release during a range of pipe break scenarios, up to and including a full guillotine rupture of the largest pipe connected to the reactor vessel, such that the primary containment pressure does not exceed its design value (50 to 60 PSIG at expected accident temperature). This prevents discharge of any released water (and fission products if present) during the loss of coolant accident from escaping containment into the atmosphere.

Use of a wetwell for pressure suppression in primary containment is a feature of the General Electric BWR design.

DESIGN BASIS

Appendix A to 10 CFR 50 lists current general design criteria for nuclear power plants. Four General Design Criteria—2, 16, 50, and 51—are used for any reactor vendor containment design. Each of the criteria are provided below:

> Criterion 2 – Design bases for protection against natural phenomena. Structures, systems and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami and seiches without loss of capability to perform their safety functions. The design bases for these structures, systems, and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena and (3) the importance of the safety functions to be performed.

> Criterion 3 – Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the

environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

Criterion 50 – Containment design basis. The reactor containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions resulting from any loss-of-coolant accident. This margin shall reflect consideration of (1) the effects of potential energy sources which have not been included in the determination of the peak conditions, such as energy in steam generators and as required by § 50.44 energy from metal-water and other chemical reactions that may result from degradation but not total failure of emergency core cooling functioning, (2) the limited experience and experimental data available for defining accident phenomena and containment responses, and (3) the conservatism of the calculational model and input parameters.

Criterion 51 – Fracture prevention of containment pressure boundary. The reactor containment boundary shall be designed with sufficient margin to assure that under operating, maintenance, testing, and postulated accident conditions (1) its ferritic materials behave in a nonbrittle manner and (2) the probability of rapidly propagating fracture is minimized. The design shall reflect consideration of service temperatures and other conditions of the containment boundary material during operation, maintenance, testing, and postulated accident conditions, and the uncertainties in determining (1) material properties, (2) residual, steady state, and transient stresses, and (3) size of flaws.

The Mark I containment system has undergone extensive testing and analysis and in some cases has been modified to ensure that these criterion are satisfied, as described in the following sections.

ORIGINAL DESIGN OF THE MARK I CONTAINMENT

The original design of the Mark I containment system considered postulated accident loads associated with containment design. These included pressure and temperature loads associated with a loss-of-coolant accident (LOCA), seismic loads, dead loads, jet-impingement loads, and hydrostatic loads due to water in the suppression chamber.

The original design loads for the containment were based on large-scale tests performed by GE and other institutions. The purpose of these initial tests, performed from 1958 through 1962, was to demonstrate the viability of the pressure-suppression concept for reactor containment design. The tests were designed to simulate LOCAs with breaks in piping sized up to approximately twice the cross-sectional break area of the design-basis LOCA.

The tests were instrumented to obtain quantitative information associated with containment design pressures during these events. The data from these tests were the bases for the design and the initial NRC approval of the Mark I containment system.

EVOLUTION OF THE DESIGN

After the establishment of the original design criteria, additional loading conditions were identified which arise in the functioning of the pressure-suppression concept used in the Mark I containment system design. These conditions were noted in the course of performing large-scale testing of an advanced design pressure-suppression containment (Mark III). Specifically, during the large-scale testing of the Mark III containment system design in the period 1972 through 1974, new suppression pool hydrodynamic loads were identified for the postulated LOCAs. GE tested the Mark III containment concept in its Pressure Suppression Test Facility (PSTF). These tests were initiated for the Mark III concept because of configuration differences between the previous containment concept and the Mark III design. More sophisticated instrumentation was available for the Mark III tests, as were computerized methods for data analysis. It was from the PSTF testing that the short-term dynamic effects of drywell air being forced into the pool in the initial stage of the postulated LOCA were first identified. This air injection into the suppression pool water results in a pool swell event of short duration. In this event, a slug of water rises and impacts the underside of structural components within the suppression chamber.

In addition to the information obtained from the PSTF data, other LOCA-related dynamic load information were obtained from foreign testing programs for similar pressure-suppression containments. In these foreign tests, oscillatory condensation loads which occur during the later stages of a postulated LOCA were identified.

Also, experience at operating plants indicated that Safety Relief Valve (SRV) discharges to the suppression pool would cause oscillatory hydrodynamic loads within the suppression chamber. Both the LOCA and SRV discharge are characterized by an initial short period injection of air into the suppression pool, followed by a longer period of steam discharge into the suppression pool.

Further, during in-plant testing of Mark I containments, new suppression pool hydrodynamic loads which had not explicitly been included in the original Mark I containment design basis were identified. These additional loads result from dynamic effects of drywell air and steam being rapidly forced into the suppression pool (torus) during a postulated LOCA and from suppression pool response to safety relief valve (SRV) operation generally associated with plant transient conditions.

These hydrodynamic loads had not been considered in the original design of the Mark I containment, the NRC required that a detailed reevaluation of the Mark I containment system be made.

In February and April 1975, the NRC transmitted letters to all U.S. utilities owning BWR facilities with the Mark I containment system design, requesting that the owners quantify the hydrodynamic loads and assess the effect of these loads on the containment structure. The February 1975 letters reflected NRC concerns about the dynamic loads from SRV discharges, while the April 1975 letters indicated the need to evaluate the containment response to the newly identified dynamic loads associated with a postulated design basis LOCA.

As a result of these letters from the NRC, and recognizing that the additional evaluation effort would be very similar for all Mark I BWR plants, the affected utilities formed a Mark I Owners Group, and GE was designated as the Group's lead technical organization. The objectives of the group were to determine the magnitude and significance of these dynamic loads as quickly as possible and to identify courses of action needed to resolve any outstanding safety concerns. The Mark I Owners Group divided this task into two programs: A Short-Term Program and a Long-Term Program.

The objectives of the Short-Term Program (STP) were to verify that each Mark I containment system original configuration would maintain its integrity and functional capability when subjected to the most probable loads induced by a postulated design basis LOCA, and to verify that the licensed Mark I BWR facilities could continue to operate safely without endangering the health and safety of the public while a methodical, comprehensive Long-Term Program (LTP) was being conducted.

The STP structural acceptance criteria used to evaluate the design of the torus and related structures were based on providing adequate margins of safety; i.e., a safety-to-failure factor of 2, for continued operation of the plant's original configuration before the more detailed results of the LTP were available.

The NRC concluded that a sufficient margin of safety had been demonstrated in the STP to ensure the functional performance of the containment system and, therefore, any undue risk to the health and safety of the public was precluded. These conclusions were documented in the "Mark I Containment Short-Term Program Safety Evaluation Report," NUREG-0408, dated December 1977. The NRC granted the operating Mark I facilities an exemption relating to the structural factor of safety requirements of 10 CFR 50.55(a) for an interim period while the more comprehensive LTP was being conducted.

The objectives of the LTP were to establish conservative design basis loads that are appropriate for the anticipated life of each Mark I BWR facility, and to restore the originally intended design safety margins for each Mark I containment system. The plans for the LTP and the progress and results of the program were reviewed with the NRC throughout the performance of the program.

The LTP consisted of:

- The definition of loads for suppression pool hydrodynamic events
- The definition of structural assessment techniques
- The performance of a plant-unique analysis (PUA) for each Mark I facility in the U.S.

The generic aspects of the Mark I Owners Group effort were completed with the submittal of the "Mark I Containment Program Load Definition Report" (LDR) and the "Mark I Containment Program Structural Acceptance Criteria, Plant Unique Analysis Application Guide" (PUAAG). The NRC concluded that load definitions and structural acceptance criteria documented in these two reports were acceptable for use in the plant-unique analysis of each plant. The NRC conclusions and comments were presented in the "Mark I Containment Long-Term Program

Safety Evaluation Report, NUREG-0661," dated July 1980 and Supplement Number 1 to NUREG-0661.

GE provided reports to each Mark I BWR facility with plant unique LOCA hydrodynamic loads. GE also prepared and provided a supplementary generic load definition report and supporting application guides which provided the load definition procedures for the postulated LOCA and SRV actuation events for use in the structural re-evaluation of the pressure suppression chamber, vent system, SRV discharge piping, and other Mark I containment components.

The NRC reviewed the generic criteria and analysis techniques developed for the LTP for re-assessment of the Mark I containment. The NRC provided an acceptance criteria for application of the LTP loads assessment process in US NRC NUREG-0661, "Safety Evaluation Report, Mark I Containment Long-Term Program," July 1980 and NUREG-0661, Supplement 1, issued August 1982 (Refer to Attachment 4 for additional information regarding NUREG-0661)

Each BWR Mark I plant performed a plant-unique re-assessment of the Mark I containment, applying the load definition process developed by the LTP and implementing the NRC acceptance criteria of NUREG-0661. The objective of this reassessment was to either demonstrate that the existing plant design has the required safety margin or to identify any additional plant modifications that were necessary to restore the intended margins of safety in the containment design. The reports included, as appropriate, documentation of evaluation performed for modifications to the original design (the plant-unique assessments led to structural modifications to the torus and vent system at most US BWR's with Mark I containments to ensure compliance with the applicable criteria). The plant-unique analyses documented the efforts to address each of the applicable NUREG-0661 requirements and demonstrated with the NUREG-0661 acceptance criteria that the design of the containment is adequate and that the original design safety margins are either confirmed with the original design or restored with the modifications. Each Mark I BWR facility submitted its plant-unique analysis report to the NRC for approval, since each plant has an individual license with the NRC.

CONTAINMENT OPERATION DURING A STATION BLACKOUT

In the late 1980s and early 1990s, BWR operators made procedure changes and modifications to cope with events which involved the loss of the normal offsite power and normally available emergency diesel generators as discussed in NRC Regulatory Guide 1.155 (Station Blackout).

To support safe operation in a variety of circumstances, the plants have been designed and have developed procedures to address a wide range of potential events. The Emergency Operating Procedures provide instructions for maintaining adequate core cooling and protection of the reactor vessel and containment under a variety of prescribed emergency conditions. If adequate core cooling cannot be maintained, radiological emergency response procedures provide instructions for plant staff to take actions to mitigate the consequences of an event that could lead to radioactive material release to the public and provides for making recommendations to state and local agencies to take action to protect the health of the public such as evacuation or sheltering. The industry has also implemented Severe Accident Management Guidelines (SAMG) to diagnose and mitigate severe accidents. These operating guidelines include steps for dealing with challenges to containment integrity and reactor coolant loss beyond the original plant design basis. This includes methodology to use auxiliary equipment that is not driven by normal plant power sources to provide makeup water to the reactor vessel/containment. These guidelines interface with Emergency Operating Procedures to mitigate a loss of large areas of the plant and with state and local radiological emergency response procedures.

As a result of the September 11, 2001 terrorist attacks, additional actions and equipment were put in place at certain U.S. plants to allow water makeup to the reactor and the fuel pools should significant damage occur to the reactor buildings. These changes include pre-staged diesel-driven pumps, piping, and procedures that would support water makeup from various water supplies without the need for electrical power.

Also, as a result of the Industry Degraded Core Rulemaking (IDCOR) and NRC programs for Severe Accident Closure, recommended that all Mark I U.S. nuclear power plants add a containment venting capability. This containment vent was designed as a hard pipe that would discharge from the containment in the case of a BWR from the wetwell or drywell, and discharge to an elevated release, such as the plant stack. All U.S. Mark I nuclear reactors have installed this containment venting modification.

In summary, this vent allows operators to protect the integrity of the primary containment as well as preventing a ground-level release for the severe accident scenarios beyond the design and licensing basis (Refer to Attachment 5 for additional modification information specific to BWR Mark I containment).

CONCLUSION

The Mark I containments in currently operating BWRs have been designed to meet the specific provisions of 10 CFR 50 Appendix A, General Design Criteria 2, 16, 50 and 51 for containment design or the applicable equivalent regulation at the time of licensing.

The GE Mark I containment systems in U.S. BWRs have undergone extensive testing and analysis and have been modified to meet NRC regulations. The Mark I pressure suppression containment is a proven technology that has been enhanced with confirmatory testing, enhanced knowledge and advanced analysis over time. It meets all regulations and has been certified by review of the NRC through a Safety Evaluation Report (SER) at each Mark I plant under comprehensive, NRC-mandated Mark I Containment Program re-analyses performed to address the evolving design loading conditions.

The Mark I containment also has many features inherent in its design that make the probability of a severe accident extremely low. They have been modified throughout their operation to provide additional features and response capabilities to further reduce this probability.

Also, to ensure containment integrity, the drywell or primary containment, as called, is tested at established intervals (every 10 to 15 years) in accordance with 10 CFR 50 Appendix J Program (Primary Reactor Containment Leakage Testing). This test is used to demonstrate containment integrity and to demonstrate it will perform its safety function by verifying that leakage through the containment, and systems and components penetrating the primary containment, shall not exceed established limits. The containment and associated systems and components penetrating containment are designed to provide the final barrier in preventing the release of quantities of radioactive material that would have a significant radiological effect on the health of the public. This program also uses periodic surveillance testing to demonstrate the leak tightness.

Additional procedures, hardware and resources have been planned and prepared for the beyond-design-basis scenarios to assure protection of the safety and health of the public. In addition, 10 CFR 50, Appendix B, also assures that any conditions adverse to quality be identified and resolved. It requires assuring that the cause of the condition is determined and corrective actions taken to preclude repetition.

Attachments

U.S. Nuclear Plants With Mark I Containment

Reactor Name	State
Browns Ferry 1	Alabama
Browns Ferry 2	Alabama
Browns Ferry 3	Alabama
Brunswick 1	North Carolina
Brunswick 2	North Carolina
Cooper	Nebraska
Dresden 2	Illinois
Dresden 3	Illinois
Duane Arnold	Iowa
Edwin I. Hatch 1	Georgia
Edwin I. Hatch 2	Georgia
Fermi 2	Michigan
Hope Creek 1	New Jersey
James A. Fitzpatrick	New York
Monticello	Minnesota
Nine Mile Point 1	New York
Oyster Creek 1	New Jersey
Peach Bottom 2	Pennsylvania
Peach Bottom 3	Pennsylvania
Pilgrim 1	Massachusetts
Quad Cities 1	Illinois
Quad Cities 2	Illinois
Vermont Yankee 1	Vermont

Analyzed Loading Conditions For Mark I Containments

Hydrodynamic Loads evaluated a spectrum of postulated pipe breaks to determine the worst loading condition for each structural element. For the long-term program, an intermediate liquid break accident (IBA) and a small steam break accident (SBA) were specified in addition to the Design Basis Accident DBA. All LOCA and seismic loads are added together as appropriate for the load combination scenario. Not all of the suppression pool hydrodynamic loads can occur at the same time. In addition, the load magnitudes and timing will vary, depending on the accident scenario under consideration. Therefore, combinations of loading conditions have been determined from typical plant primary system and containment response analyses, with considerations for automatic actuation, manual actuation, and single active failures of the various systems in each event. The typical new loads analyzed were:

Pressure and temperature time histories for the suppression chamber wetwell and drywell

Vent system pressurization and thrust loads

Net vertical pool swell loads and average submerged pressures on the suppression chamber

Pool swell impact and drag loads on the vent system

Pool swell froth impingement loads

Pool fallback loads

Vent header deflector loads

Condensation oscillation loads and chugging loads

Fluid structure interaction

Safety-relief valve discharge loads

Submerged structure drag loads

Secondary effects loads

Seismic slosh/loads, which occurs due to horizontal seismic motion on the pool

Post-pool-swell waves/loads, due to the wave action associated with continued flow through the downcomers

Asymmetric vent system flow, resulting from asymmetric flowrates due to vent blockage

Downcomer gas-clearing loads, resulting from the rapid clearing of gas from the vent

system causing lateral loads as bubbles are being formed in the pool

Sonic and compression wave loads, due to the shock wave propagating from the break location

Safety-relief valve steam discharge loads

Original loads included pressure and temperature loads associated with a LOCA, seismic loads, dead weight loads, jet impingement loads, hydrostatic loads due to water in the suppression chamber, overload pressure test loads, and construction loads.

The generic aspects of the Mark I Owners Group LTP were completed with the submittal of the Mark I Containment Program Load Definition Report (LDR), and the Mark I Containment Program Structural Acceptance Guide (PUAAG), as well as supporting reports on the LTP experimental and analytical tasks. The generic analysis techniques were used to perform a plant unique analysis to confirm the adequacy of the modifications made to the containment structures and related piping. This analysis was documented in the Plant Unique Analysis Report (PUAR), which shows that the original margins of safety in the containment design have been restored.

Recommended Modifications For Mark I Containments

The Mark I containment was originally designed based on large-scale experimental tests in 1958 through 1962. More advanced large-scale tests in 1972 through 1974 and actual plant operations identified some new phenomena and issues needing resolution. The Mark I containment program began in 1975 when NRC sent letters to Mark I owners requiring Reevaluation of Containment Response to Hydrodynamic Loads. The BWR Owners Group embarked on a program to resolve the issues. The issues were highly scrutinized and reviewed for plant-specific applicability on operations and structural capability. In summary, dynamic effects of drywell air and steam being rapidly forced into the suppression pool (torus) during a postulated LOCA and from suppression pool response to SRV operation generally associated with plant transient operating conditions were addressed for:

- Loss-of-Coolant-Accident-Related Hydrodynamic Loads including Pool Swell Phenomena
- Loss-of-Coolant-Accident Steam Condensation Phenomena
- Safety-Relief Valve Discharge-Related Hydrodynamic Loads

The new experimental data and new analytical models extensively studied the issues. Immediate operability of the existing structures was demonstrated for the short-term then more robust structural improvements were implemented. Operational changes and strengthened structural supports at specific locations were implemented to meet ASME and other industry acceptance criteria. A typical list of hardware changes made:

- Torus: Additional ring girder reinforcement, Miter joint support saddles and saddle extension plates, Additional ring-girder-to-torus weld, Torus Temperature monitoring instrumentation, Torus tie-downs, Dynamic restraint snubbers

- Vent System: Downcomer/vent header stiffeners, Downcomer lateral bracing Downcomer longitudinal bracing, Vent header deflector, Vent line drain reinforcement, Torus-to-drywell vacuum breakers, and Vacuum breaker header support

- Internal Structures: Catwalk midbay supports, Catwalk lateral bracing, Catwalk supports at ring girders, Conduit rerouted

- Wetwell Piping Modifications (Internal): Spray header supports, HPCI turbine drain pot support, HPCI turbine exhaust line support, ECCS suction strainer reinforcement, LPCI full-flow test line supports, modify external supports

- Relief Valve Discharge Line Piping: Reinforced vent line penetration, Added T-quenchers, Added T-quencher supports, Added SRV line support, SRVDL vacuum breaker

- <u>Torus Hardened Vent</u>
- <u>Torus Vacuum Breaker</u> orientation changes
- <u>SRV operating</u> – recommendations to minimize loading, discharge piping pressure switch, instrumentation to allow SRV position monitoring

NUREG - 0661 ABSTRACT July 1980

"This Safety Evaluation Report prepared by the staff of the Office of Nuclear Reactor Regulation discusses suppression pool hydrodynamic loads in boiling water reactor (BWR) facilities with the Mark I pressure-suppression containment design. The report finishes the NRC's Generic Technical Activity A-7 (Mark I Containment Long-Term Program), which has been designated an "Unresolved Safety Issue." The report describes the generic techniques f o r the definition of suppression pool hydrodynamic loads in a Mark I system and the related structural acceptance criteria.

On the basis of a review of the experimental and analytical programs conducted by the Mark I Owners Group, the staff has concluded that, with one exception, the proposed suppression pool hydrodynamic load definition procedures (as modified by the staff ' s requirements in Appendix A of this report) will provide conservative estimates of these loading conditions. The exception is the lack of an acceptable specification for the downcomer "condensation oscillation" loads. In addition, requirements for confirmatory analyses and testing have been identified. The resolution o f these issues will be described in a supplement to this report.

The staff also has concluded that the proposed structural acceptance criteria are consistent with the requirements of the applicable codes and standards. In conjunction with the general structural analysis techniques, these criteria will provide an acceptable basis for establishing the margins o f safety in the Mark I containment design."

NUREG-0661 SUPPLEMENT 1 ABSTRACT August 1982

"When the NRC staff published "Safety Evaluation Report, Mark I Containment Long-Term Program" (NUREG-0661) .in July 1980 four areas were identified where the technical issues had not been fully resolved. These were:

1. Specification for condensation oscillation loads acting on the down comers
2. Adequacy o f the data base for specifying torus wall pressures during condensation oscillations,
3. Possibility of asymmetric torus loading during condensation oscillations, and
4. Effect of fluid compressibility in the vent system on pool swell loads.

The first item, downcomer condensation oscillation loads, lacked an acceptable load definition. The remaining three items had acceptable specifications; however, the NRC requested additional confirmatory information to justify the adequacy of the load specifications.

This supplement addresses the resolution of the four issues listed above. In response to NRC concerns expressed in NUREG-0661, the Mark I Owners Group conducted additional experimental and analytical studies. The experimental studies consisted basically of two additional condensation oscillation tests in the Full-Test Facility (Norco, California). The staff has reviewed these efforts and has concluded that all technical issues connected with the generic Mark I Long-Term Program have been resolved."

Summary:

NUREG 661 Contains a safety evaluation of loading determination methods and acceptance criteria for the evaluations that resulted in the modifications made as part of the Long Term Program.

NUREG 661 Supplement 1 contains a safety evaluation of the four unresolved issues described in NUREG 0661.

Summary of Critical Modifications

The following modifications are the more significant examples of improvements to the Mark I containment design as enhancements to design margins or increased capability to address "beyond design basis conditions."

Hardened Vent

In the 1980s, the NRC staff reviewed the potential for accidents more severe than those the plants were licensed and designed to mitigate. In order to enhance the ability of all containments to prevent and mitigate the consequences of severe accidents beyond the design basis accidents, the NRC requested that all plants install a hardened vent. In the event of a core damage accident, the hardened vent would allow reduction in containment post-accident pressure. Hardened meant that the vent would transport hydrogen, steam and other accident products and release them outside the reactor building. This would preclude damage to the reactor building and equipment from steam and the possible hydrogen explosions.

In response to the GL 89-16 and the results of their Individual Plant Examinations (IPEs), all of the nuclear power plants installed a hardened vent. This hardened vent capability would allow BWR plant operators to vent post-accident airborne materials by passing them through the water in the wetwell, thereby removing a large amount of the radioactive material contained in the vent stream before venting. This added capability increases the ability of the Mark I containment to mitigate the consequences of design-basis and beyond-design-basis accidents.

SRV Modifications

Mark I containments were designed for hydrostatic loads as part of the original design basis of the plants. During subsequent testing of the Mark III containment design, additional hydrodynamic loads were identified. The industry established a Mark I Owners' Group and developed test regimes to define the hydrodynamic loads and establish design criteria for evaluation of the Mark I containment.

The hydrodynamic loads are defined in Plant Unique Load Definition Reports and each Mark I containment was evaluated against its own report. As a result of this effort, Mark I plants modified their piping and/or pipe supports inside containment to reduce the loads an SRV discharge would impose on the torus and to withstand post-LOCA loads on SRV discharge piping. These modifications included pipe supports, discharge line vacuum breakers, "rams head" discharge pipe fittings and T-quenchers. The modifications provide additional margin to ensure that SRV actuation will not damage the wetwell pressure boundary, any of the wetwell internal components or piping, and also ensure that the SRV piping will remain functional during postulated transients and accidents.

Torus Attached Piping

In addition to the SRV piping modifications discussed above, the plant-unique analysis identified new loads on torus attached piping (TAP). In order to ensure the structural integrity of the torus for all postulated loads, all TAP was re-evaluated and either removed or modified as necessary. The piping was evaluated, and upgrades were made to torus attachments and pipe supports to ensure that they would withstand all postulated loads with a significant factor of safety between the design load and the actual load. These modifications ensure that the Mark I containment will continue to perform its safety function during plant transients and postulated accidents as well as improve the capability to mitigate beyond-design-basis events.

ECCS Suction Strainers

NRC Bulletin 96-03 identified NRC concerns with the potential for debris plugging of Emergency Core Cooling System (ECCS) suction strainers inside the containment wetwell. These concerns resulted from an event in Sweden and two events in the U. S. that indicated the possibility that fibrous insulation material dislodged by a design-basis accident and particulate material suspended in the wetwell water could be entrained on strainer surfaces causing loss of the ECCS pumps. These pumps are used for normal reactor shutdown and to inject cooling water into the reactor following an accident that depressurizes it.

The plant owners employed the BWR Owners' Group (BWROG) and the Electric Power Research Institute (EPRI) to conduct testing to determine criteria for designing and, particularly, sizing the strainers to ensure ECCS pumps capability if needed. Each plant owner then designed and installed new larger strainers. These strainers provide additional assurance that ECCS pumps will perform their intended function in the unlikely event of an accident.

Meighan, Sean

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 28, 2011 5:44 AM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; CAPT Dirk L Foster; Reid Tanaka
Subject: April 28 briefing notes, excel spreadsheet and radiation survey map
Attachments: April 28 Ryan 6 pm briefing notes.doc; TEPCO Sumarry Rev.102 final April 28(1).xls; 20110427 0850 Facility Area Survey Data[1].pdf

FYI,
Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

B6/126

FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 28, 2011- TC Briefing.

Information that is in italics should not be shared as it has not yet been released by TEPCO.

4
ALL

The priorities remain as follows:

- Ensuring fresh water injection and cooling capabilities to the reactors and spent fuel pools. Goal is to reduce and maintain temperature in the reactors and spent fuel pools below 100 degrees centigrade.
- Draining water from the turbine buildings and trenches to reduce the radiation levels so that work can continue.
- Containing the spread of radioactive materials.

<u>Highlights for today include the following:</u>

- N2 purging of the Unit 1 Drywell continues. TEPCO increased injection flow to the primary containment vessel to 10 m3/hr at approximately 10:00 am Wednesday morning. Reactor vessel temperature, drywell temperature and pressure were observed to decrease after the start of the injection increase. The rate of change of these parameters slowed this morning. TEPCO intends to stop the increased injection rate before drywell pressure reaches atmospheric.
- The robot is scheduled to enter the Unit 1 reactor building today to check for possible leakage following the increase in vessel injection rate.
- Transfer of highly radioactive water from Unit 2 to the Centralized Radioactive Waste Treatment Facility continues at a rate of 250 tons/day. Level in the Radioactive Waste Facility has risen 1055 mm since the start of transfer.
- Unit 2 trench level has decreased only slightly since Monday and is now 900 mm from the top of the trench. Unit 3 trench level has increased an additional 20 mm and is now 950 mm from the top.
- Unit 4 turbine building water level increased 50 mm and is at 3050 mm (1.2 m above floor level). Unit 3 turbine building water level remained steady at 3000 mm.
- Eighty five tons of water was added to the Unit 4 Spent Fuel Pool (SFP) yesterday. No addition to the Unit 4 SFP is scheduled for today. Sixty tons of water is scheduled to be added to Unit 2 SFP today.
- After reexamining the recent differences between observed water level increase and calculated water level increase following water additions to the Unit 4 SFP, TEPCO now believes the Unit 4 SFP pool may not be leaking. The condition of the Unit 4 SFP will continue to be evaluated closely by TEPCO.
- A water sample for radionuclide analysis is scheduled to be taken from the Unit 4 SFP today.

- TEPCO released their plan for radioactive water treatment today. Ultimately it will have a capacity of 1,200 m3/day. A reservoir capacity of 31, 400 m3 will be installed by early June. Additional capacity will be added later. Currently there is an accumulation of 87,500 m3 of radioactive waste water at the station. Injection into the reactor pressure vessels is adding to this total daily.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line was increased in steps up to 10 m3/hr yesterday on a temporary basis. Future injection flow will be determined following analysis of data obtained during the injection flow increase. Comments on parameters:
  - Reactor pressure decreased to .415 MPa abs (60 psig).
  - Feedwater nozzle temperature is considered to be suspect but did show a decrease of approximately 25 C (77F).
  - Reactor vessel lower decreased approximately 12 C to 98.5 C (209 F)
  - Drywell and Torus pressure decreased to .125 MPa abs (18 psia).
  - Drywell and Torus dose rates are considered to be suspect.
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection continues at approximately 7 m3/hr. Comments on parameters:
  - Unit 2 reactor pressures remain suspect.
  - Feedwater nozzle temperature was steady at 120 C (248 F)
  - Reactor vessel lower temperature is believed unreliable.
  - Drywell pressure was stable near atmospheric.
  - Dose rate in the U2 Drywell continues to decrease. The drywell dose rate is 2.24Sv/hr or (2,240 Rem/hr). The Torus dose rate reading is considered suspect.
- In Unit 3, of non-borated fresh water using the low pressure coolant injection continues at approximately 6.8 m3/hr. Comments on parameters:
  - Unit 3 reactor pressures are considered suspect.
  - Feedwater nozzle temperature is considered to be suspect.
  - Reactor vessel lower temperature was steady at 110 C (230 F)
  - Drywell pressure was steady at .102 MPa abs (15 psi). Torus pressure is also steady at .178 MPa abs (26 psi).
  - Dose rate in the U3 Drywell continues to decrease and is at 14.2 Sv/hr (1,420 Rem/hr). Dose rate in the Torus is considered to be suspect.

Dose and Dose Rates

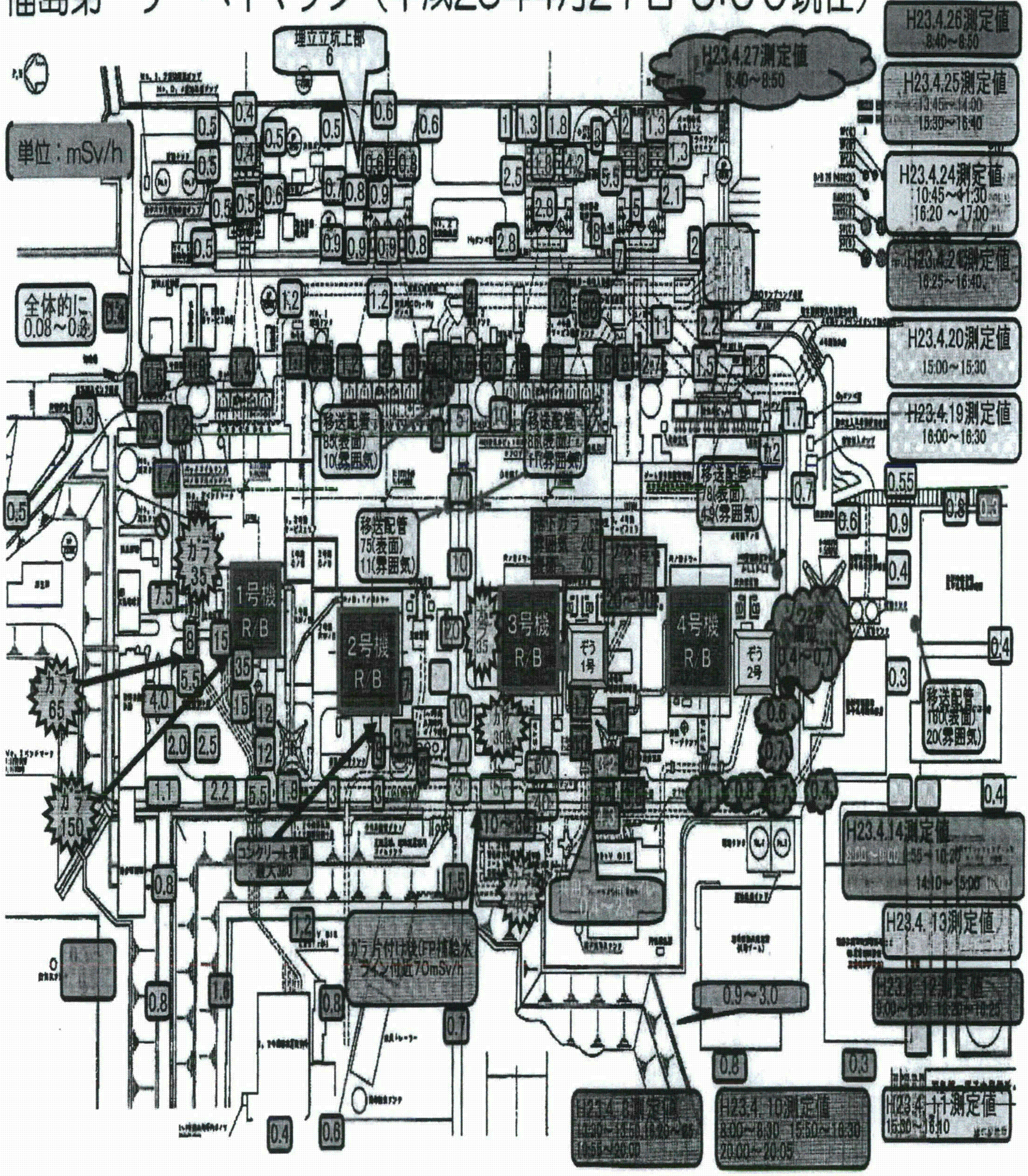
- As reported yesterday, a female employee received a cumulative radiation dose of approximately 18 mSv during the first quarter of 2011. This exceeds the maximum allowable dose for a female of 5 mSv/3 months. Upon examination it was determined that the woman received 13.6 mSv internal exposure. The woman was working in a building that was contaminated by the hydrogen explosion on March 12th and was not wearing a protective mask. Two other females working in the same building may have also exceeded their exposure limits.

- Overall site dose rates are stabilizing or decreasing slightly. For example:

  - The last reading reported at the main gate was 48 μSv /hr (4.8 mrem/hour) and 22 μSv /hr (2.2 mrem/hour) at the west gate.

  - The side of the administration building facing the units decreased slightly to 430 μSv/hr or 43 mrem/hr.

福島第一サーベイマップ（平成23年4月27日 8:50現在）



Not for

Fukushima-Daiichi Current Status and Planned Work

28 April at 06:00 & 09:00 (Rev-102)

Reactivity Control (Unit Reactor)	Current Status	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (For core shroud replacement work during outage)	■Core was loaded with bundles for the start of the next operation cycle ■RPV bolted up (Earthquake occurred after completion of RPV hydraulic test just before the startup) ■Maintaining cold shutdown	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
		CAMS (at 05:00 on 28 April): D/W: (A) & (B) No measurement S/C: (A) 1.18×10^{1} SV/h (watching trend continuously) (B) 1.67×10^{0} SV/h (watching trend continuously)	CAMS (at 05:00 on 28 April): D/W: (A) 2.21×10^{1} SV/h (B) 2.32×10^{1} SV/h, S/C: (A) 4.63×10^{1} SV/h (watching trend continuously) (B) 4.09×10^{1} SV/h (watching trend continuously)	CAMS (at 05:00 on 28 April): D/W: (A) 1.42×10^{1} SV/h, (B) 1.03×10^{1} SV/h, S/C: (A) 6.33×10^{-1} SV/h (watching trend continuously) (B) 5.02×10^{-1} SV/h (watching				
	Next Works Planned (TEPCO Headquarters' Activities)	(Long term measure) □To add boric acid to fresh coolant before acieving cold shut down (After restoring power) □Operating SLC	□Borated fresh water injection started (at 10:10 on 26 March) (Long term measure) □To add boric acid to fresh coolant before acieving cold shut down (After restoring power) □ Operating SLC	(Long term measure) □To add boric acid to fresh coolant before acieving cold shut down (After restoring power) □Operating SLC				
Coolant Supply & Residual Heat Removal (Core cooling)	Current Status	■Fresh water injection through FDW line (Switch to temporary installed motor driven pump was completed) (Flow Rate: 10.0 m³/h by interim instrumentation at 05:00 on 28 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■For PCV flooding ・Core cooling water flow rate was changed. 6 → 10 m3/h (child) (on 27 April) ■Installing temporary replacement pump for CCSW ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 7.0 m3/h by interim instrumentation at 05:00 on 28 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (28 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.8 m3/h by interim instrumentation at 05:00 on 28 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (28 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose (on 18 April)		■Ordinary operation in SHC mode of RHR (27 April 19:13-) (SHC mode: Cooling mode with heat-exchanger)	■Ordinary operation in SHC mode of RHR (27 April 20:05-) ■One out of two temporary RHRS pumps tripped (25 April 18:09 - 26 April 11:17)	
		■Reactor Water Level (at 05:00 on 28 April) TAF-1650 mm (Fuel Range: Gauge A) TAF-1600 mm (Fuel Range: Gauge B) ■RPV Dome Pressure (at 05:00 on 28 April) 0.118 MPa g (Gauge A) 1.168 MPa g (Gauge B) (watching trend continuously) ■RPV Temperature (at 05:00 on 28 April) Feed water nozzle: 107.1℃ (watching trend continuously) Bottom of RPV : 98.6℃	■Reactor Water Level (at 05:00 on 28 April) TAF -1500 mm (Fuel Range: Gauge A) TAF -2100 mm (Fuel Range: Gauge B) ■RPV Dome Pressure (at 05:00 on 28 April) -0.015 MPa g (Gauge A) (watching trend continuously) -0.020 MPa g (Gauge D) (watching trend continuously) ■RPV Temperature (at 05:00 on 28 April) Feed water nozzle: 119.0℃ Bottom of RPV : No measurement	■Reactor Water Level (at 05:00 on 28 April) TAF-1550 mm (Fuel Range: Gauge A) TAF-2250 mm (Fuel Range: Gauge C) ■RPV Dome Pressure (at 05:00 on 28 April) -0.055 MPa g (Gauge A) (watching trend continuously) -0.089 MPa g (Gauge C) (watching trend continuously) ■RPV Temperature (at 05:00 on 28 April) Feed water nozzle : 58.0 ℃ (watching trend continuously due to suspected indication problem) Bottom of RPV : 102.6 ℃		■Reactor Water Level (at 06:00 on 28 April) TAF+2081 mm (Shut Down Range Gauge) ■RPV Dome Pressure (at 06:00 on 28 April) 0.007 MPa g ■Coolant Temperature (at 06:00 on 28 April) 39.7 ℃	■Reactor Water Level (at 06:00 on 28 April) TAF+2129mm ■RPV Dome Pressure (at 06:00 on 28 April) 0.013 MPa g ■Coolant Temperature (at 06:00 on 28 April) 47.5 ℃	
	Next Works Planned (Activities of Cooling Water Supply Force)	□Switch the temporary motor driven pump to M/T pump (The work was suspended due to high radiation environment around M/TP in the turbine building). (Long Term Cooling Measure) □SHC ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the temporary motor driven pump to M/T pump (The work was suspended due to high radiation environment around M/TP in the turbine building). (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the motor driven pump to M/T pump (The work was suspended because of high radiation environment around M/TP in the turbine building). Preparing to drain the high radiation water (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments				

Not for

Containment Function (Cooling and Confinement)	Current Status	■D/W (at 06:00 on 28 April) ・Pressure: 0.125 MPa-abs ・Temperature: RPV bellow seal: 100.5 ℃ HVH return: 88.5 ℃ ■S/C (at 05:00 on 28 April) ・Pressure: 0.125 MPa-abs ・Temperature: (A) 30.7 ℃, (B) 60.6 ℃ ■Started ventilation through hardened line (at 14:30 on 12 March) * PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 310 kPa	■D/W (at 06:00 on 28 April) ・Pressure: 0.078 MPa-abs ・Temperature: RPV bellow seal: No measurement HVH return: 111 ℃ ■S/C (at 05:00 on 28 April) ・Pressure: Down Scale (Examining) ・Temperature: (A) 70.4 ℃, (B) 70.7 ℃ ■Ready to start ventilation through hardened line (Not executed so far) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 325	■D/W (at 05:00 on 28 April) ・Pressure: 0.1017 MPa-abs ・Temperature: RPV bellow seal: 124.7 ℃ (watching trend continuously) HVH return: 102.1 ℃ ■S/C (at 05:00 on 28 April) ・Pressure: 0.1783 MPa-abs ・Temperature: (A) 41.0 ℃, (B) 41.0 ℃ ■Started ventilation through hardened line (at 9:20 on 13 March) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa		■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	
	Next Works Planned (TEPCO Headquarters' Activities)	□Hydrogen countermeasure first * Fill PCV and ventilation line with nitrogen * Reinforced monitoring of PCV pressure * Continue to secure ventilation line <After securing off-site power> □Restoring PCV spray function * MUWC system, FP system <After restoration of equipments> □RHR operation in SHC mode □Restoring D/W cooling coil □Alternative heat removal by CUW	Same as unit 1	Same as unit 1				
Spent Fuel Pool (SFP) (Decay Heat Removal & Water Supply)	Current State	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of no power supply) ■Skimmer surge tank level 1700 mm (at 05:00 on 28 April) ■Watering by concrete pumping vehicle (Fresh Water) (called the Elephant) ・31 March 13:03-13:57 ・31 March 14:29-16:04 ・2 April 17:16-17:19 The nickname of concrete pumping vehicle for Unit 1 was changed from "large Giraffe" to "Elephant" to prevent confusion on 3 April. ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant #1 was moved from Unit 3 to Unit 1. (on 26 April)	■SFP water level uncertain (No water level meter) ■SFP temperature 58.0℃ (at 05:00 on 28 April) ■Skimmer surge tank level 5100mm (at 05:00 on 28 April) ■Fresh water injection to SFP trough the existing FPC line and temporary line ・19 April 16:08-17:28 ・22 April 15:55-17:40 ・25 April 10:12-11:18 (38 ton) ■Removal of the existing strainer in FPC line was completed (31 March). (Scheduled for 31 March)	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of lack of power supply) ■Skimmer surge tank level No measurement ■Water spray with the special pumping vehicle (call Zebra-improved) ・8 April 17:06-20:00 (Fresh Water) ・10 April 17:15-19:15 (Fresh Water) ■Preparation for water feeding with electric motor pumps was completed (on 9 April) ■The Zebra-improved was moved for replacement and The Elephant was moved: Unit 4→Unit 3 (on 11 April) ■Water spray with the Elephant #1 ・18 April 14:18 - 15:02 (30ton) ・22 April 14:19 - 15:40 (50ton) ・26 April 12:00 - 12:02 (check of water level) ■Confirmation of injection line to the pool through FPC line ・22 April 13:40 - 14:00 (10ton)	■SFP water level : Uncertain ■SFP water temperature: gauge out of order (at 11:10 on 21 March and later) ■Skimmer surge tank level 4550 mm (at 05:00 on 28 April) ■Installation alternation pump for RHRS ■Watering with the Elephant ・5 April 17:35-18:22 ・7 April 18:23-19:40 ・9 April 17:07-19:24 ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant was moved: Unit 4 → Unit 3 (on 11 April) ■Water sampling from SFP by the Elephant #2 was completed. (12 April) Most of the fuel is believed to be undamaged. ■Attaching measuring instruments (level gage etc.) on the Elephant #2 and measuring temperature, water level and radiation dose. (on 22, 23 and 24 April)	■Inventory securing * CST -> MUWC -> FPC -> SFP ■Heat removal * FPC (Surge Tank) -> RHR -> S/C * Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp: [illegible]℃ (at 06:00 on 28 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (~ 1 April) ■SHC mode (27 April 18:11 ~)	■Inventory securing * CST -> MUWC -> FPC -> SFP ■Heat removal * FPC (Surge Tank) -> RHR -> S/C * Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp: 37.0℃ (at 06:00 on 28 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (~ 1 April) ■SHC mode (27 April 20:03 ~)	■SFP water temperature 32℃ at 06:50 on 27 April ■Cooling function achieved by fin coolers (at 16:26 on 24th March) ■Water supply to the common SFP by MUW system (24 March 16:15-18:01) ■FPC(A) started at 18:05 on 24th March
	planned work (Next Activities of FPC Team)	□Repair of the Elephant #1	□Fresh water injection to SFP trough the existing FPC line (scheduled on 29 April 11:00-11:30 60ton)		□Sampling water in SFP (scheduled on 25 April) □Reinforcement work of fuel pool support structure			

Not for

High Voltage AC Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■Equipments of M/B tested for short circuit and ground but in fail on 21 March ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:30 on 24 March ■Monitoring posts. (MPS-8) were restored. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line – Ohkuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■MCC 2C-1 in the turbine building was powered at 15:40 on 25 March ■Illumination is restored in main control room at 16:46 on 27 March. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line – Ohkuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line ・Trial electric charge of the motor Center vehicle for Unit3 and Unit4 was completed at 14:28 on 18 March ・Instalation of multi circuit breakers and power cables were completed on 19 March ・Inspection of cable from the breakers and loads was conducted on 20 March ・Instalation of cables were completed on 21 March. ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 10:23-15:27) ・Uprating Ohkuma-line #3 (6.9→66kV) (scheduled on 27-30 April) ■T/B MCC 3C-2 has been powered on 22 March. ■T/B MCC 3C-1 has been powered on 22 March ■120V I & C main bus powered on 22 March	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 10:23-15:27) ・Uprating Ohkuma-line #3 (6.9→66kV) (scheduled on 27-30 April) ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:50 on 29 March ■Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line – Ohkuma line has been available) (on 19 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L,2L) ■Non-safety grade buses of 5A and 5B are unavailable ■Temporary pump (RHRS) was installed and connected to the water supply line on 24th March ■Emergency administration building was powered on 24th March ■Water Purification Facility was powered at 9:10 on 24th March ■Investigating cable laying work for monitoring posts (MP-1/2/3/4) on 26 March. ■T/B MCC 5D-2 has been powered on 31 March ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed (25 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yono-Mori line 1L,2L) ■Non-safety grade buses of 6A and 6B are unavailable ■Temporary pump (works as a substitute of RHRS) was installed and put in-service (Powered by P/C) ■Test run od installed cable was conducted on 20 March ■Monitoring posts (MP1-4) were restored. ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power for common pool was restored at 15: on 24th March ■Temporary power for common pool was tripped due to during practice of disconn operation (17 April 14:36- restored at 17:44 on 17 ■P/C for common pool ・Power supply was stopped strengthen on-site power of Unit 3&4 6.9kV →66kV) (26 April 15:56-16:34)
	planned work (Next Activities of Electric Power Supply Team)	□Restration work of electricity will be restarted after completing water transfer from T/B	□Restration of power for instrumentation	□Power off due to work at Shin-Fukushima substation (scheduled on 12 & 17 May) □Restration work of electricity will be restarted after completing water transfer from T/B	□Power off due to work at Shin-Fukushima substation (scheduled on 12 & 17 May)	□Charging test of startup transformer SSR (scheduled on 2 May) □Laying temporary power cable for SLC (B)		
DC Power Supply	Current Status	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■Common DC125V has been powered at 16:30 on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status ＊Batteries for reactor level gauges were replaced by fresh ones at 12:15 on 21st March ■Restration of DC 125V Charge center (B) (30 March)	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■DC 24 Charger 5B-1has been powered on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status	
	Next Works Planned (Activities of Electric Power							
Miscellaneous Measures against Hydrogen	Current Status	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas ■Injection of N2 gas is in progress ・(Flow rate: $28m^3/h$, degree of purity: 98%) 7 April 01:31- 9 April 03:59 (suspended due to switch to high degree of purity N2 gas) ・Injection of high degree of purity N2 gas (Flow rate: 28m3/h, degree of purity: 99.92%) 9 April 04:10 - ・Injection of N2 gas was stopped due to an	■Considering the injection of N2 gas into PCV ■Generation of hydrogen gas at the top part of the reactor building is of concerned ＊White smoke observed on 21st March was supposed to be the steam from SFP that was leaked through the rain drainage duct. It is hoped that this mitigates the concentrated of Hydrogen gas.	■Considering the injection of N2 gas into PCV		■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	
	Next Works Planned (Next Activities)		□Water jet pump is ready at off-site stock yard, however lifting machine is not available					

Not for

Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water level in T/B OP +5050mm (at 07:00 on 28 April) : same as 17 April 11:00 ・Water transfer H/W → CST (3 April 13:55- 10 April 09:30) ■Draining water in Trench ・Radiation level of the water surface in the trench: 0.4 mSv/h on 28 March ・Water level (from top edge of grating to water surface) 1530 mm (at 7:00 on 28 April) ; same as 20 April 18:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B ・Water level in T/B OP +3100mm (at 07:00 on 28 April) ; same as 16 April 07:00 ・Water transfer (H/W → CST) (2 April 17:10 - 9 April 13:10) ・Monitoring camera for water level was installed (on 2 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: higher than 1000 mSv/h (on 28 Mar.) ・Water level (from top edge of grating to water surface) 930 mm (at 7:00 on 28 April) ; same as 27 April 19:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation "Beaver" ・A rubber board was placed over the crack. (at 13:15 on 6 April) ・Injection of liquid chemical to prevent leaks (conducted on 7 April) ■ Water transfer (trench→H/W) (660 ton)	■Draining water in T/B ・Water level in T/B OP +3100mm (at 07:00 on 28 April) : same as 21 April 11:00 ・Water transfer (CST → S/T surge tank) (28 March 17:40 - 31 March 08:37) ・H/W is full. Leak from vacuum breaker was confirmed (on 7 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: (No measurement due to difficulty in approach by debris) ・Water level (from top edge of grating to water surface) 950 mm (at 07:00 on 28 April) : 10 mm higher than 27 April 18:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water level in T/B OP +3100mm (at 07:00 on 28 April) : same as 27 April 11:00 ・Water transfer (Concentrated RW → T/B) (2 April 14:25 - 4 April 09:22: suspended) ・Water transfer pumps were added (1 → 6 pumps: 3 Apr. 10:00 - 4 Apr. 09:22, suspended due to high water level in the trench) ■Work for shutting off the leak in pit ・Concrete was poured (25m3) to clog cracks	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ■Discharging water in sub-drain of Unit 5 to the sea: 950 m3 (4 April 21:00 - 8 April 12:14) ■Draining water in R/B ・CS area →Torus (on 19 April)	■Draining water ・Water level in T/B OP +3330mm (on 27 April) ; 16 mm higher than 25 April ・Water transfer (B1 base floor → H/W) (1 April 13:40 - 2 April 10:00) ・ Suspended by large amount of water; considering draining water ■Discharging water in sub-drain of Unit 6 to the sea: 372.6 m3 (4 April 21:00 - 9 April 18:52)	■Draining water ・Concentrated RW → sea (1 April 19:03 - 10 April ■Draining water from main pro building was completed ■Draining water from incinerat to the sea was completed ■Concrete pouring for stoppin groundwater inundation is in progress (18 April) ■Work for shutting off the l process building (on 16 April) ■High contaminated water tra from Unit 2 to RW faciliti (19 April 10:08 -) ・Amount of increase at RW (28 April) 1055 mm higher than the
	Next Works Planned	□Draining water in T/B basement ・Preparing for transfer draining water in T/B basement to RW facilities		□Draining water in T/B basement ・Preparing for transfer water in T/B basement from the trench to RW facilities	□Work for shutting off the leak in pit		□Draining water ・Preparing for transfer water in T/B basement to temporary storage tank (scheduled from 1 May)	
Others	Current Status	■Barge ・Water transfer, Barge No.1 → Filtered water tank (on 1 & 2 April) ・Water transfer; Barge No.2 → Barge No.1 (on 2 & 3 April) ・Barge No.2 arrived at dock (on 4 April) ■Air Borne Contamination Control ・In progress (Conducted on 1, 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 24, 25,26 and 27 April) ■Removal of debris ・In progress (Conducted on 18,19, 20, 21,22, 23, 24, 25, 26 and 27 April) ■Additional grout was poured (on 19 April, 7 m³ into intake power supply pit) ■Silt fence: (on 11 April Two fences were installed on the south), (on 13 April Unit 3&4: in front of Screen facilities), (on 14 April Unit 1&2: in front of Screen facilities, Unit 1-4: north of Intake) ■Iron plate in front of bar screen facilities. ■Nitrogen gas bubbling in Filtered water tank (13 April -) ■T-Hawk project (wireless-controlled helicopter) (on 10, 14, 15 and 21April) ■Placing of sandbags of zeolite around Intake structure (at 3 locations on 15 April, at 7 locations on 17 April, pulled 2 up for radiation dose measurement on 19 April) ■Field investigation with robot (Unit 1: on 17, 26 April) (Unit 2: on 18 April) (Unit 3: on 17 April) ■Fire engine was moved from Fukushima Daiichi to Fukushima Daini (for securing 2 D/G for 1Unit) ■Survey Drill (Fukushima Daiichi site →J-village →Prefectural medical college) (on 21 April) ■Installation of Wimax (Wireless LAN) (on 26 April)						
	Next Works Planned	□Removal of debris (scheduled on 28 April) □Air Borne Contamination Control (scheduled on 28 April) □Field investigation with robot in Unit 1 (scheduled on 28 April)						

Abbreviations:

CAMS :Containment Area radiation Monitor System	RCIC :Reactor Core Isolation Cooling
CST :Condensate Storage Tank	RHR :Residual Heat Removal
CUW :(Reactor Water) Clean Up Water (System)	RPV :Reactor Pressure Vessel
D/W :Dry Well	S/C :Suppression Chamber
ECCS :Emergency Core Cooling System	SDF Self Defense Force
FP :Fire Protection	SFP :Spent Fuel Pool
MS :Main Steam	SGTS :Stand by Gas Treatment System
M/C :Motor Power Center	SHC :Shut Down Cooling
MUWC :Make Up Water Condensate (system)	SLC :Stand by Liquid Control
P/C :Power Distribution Center	

From: Gard, Lee A (INPO)
To: Huffert, Anthony; Moore, Carl; Casto, Chuck; Genford, Heather; Mitman, Jeffrey; Hay, Michael; Salay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Foster, Dirk L CAPT USN; reid.tanaka@usfj.mil
Subject: FW: Drywell and SFP Info
Date: Tuesday, April 26, 2011 1:11:10 AM
Attachments: 26 April Drywell Info.pdf
26 April SFP Info.pdf

(b)(4)

B6/127

Meighan, Sean

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Friday, April 29, 2011 10:08 PM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; CAPT Dirk L Foster; Reid Tanaka
Subject: 1F Plant DATA (4/30/2011)
Attachments: 福島第一プラントパラメータ0430_06時00分.pdf; 作業予定・現状0430_800Ｆｉｘ.pdf

All,
Plant data as of today.
Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

B6/128

福島第一　1～4号　作業状況（4月30日　8:00現在）

本店情報班

項目	1号	2号	3号	4号
原子炉注水	**[4/30予定]** 給水系による淡水注入継続	**[4/30予定]** 消火系による淡水注入継続	**[4/30予定]** 消火系による淡水注入継続	－
	[実績] 6.0m^3/h（4/30 5:00）で注入中 （4/29 10:08～10:14 10→6m^3/h）	**[実績]** 6.9m^3/h（4/30 5:00）で注入中 （4/25 18:25 外部電源へ切替）	**[実績]** 6.5m^3/h（4/30 5:00）で注入中 （4/25 18:25 外部電源へ切替）	－
SFP注水	**[4/30予定]** なし	**[4/30予定]** なし	**[4/30予定]** なし	**[4/30予定]** 10:00～11:00　ゾウ2号による水位計測、温度測定
	[実績] なし	**[実績]** ・4/28 10:15～11:28 FPC注水（約43t）	**[実績]** ・4/26 12:00～12:02 ゾウ1号による水面確認 ・4/26 12:25～14:02 FPC注水(47.5t)	**[実績]** ・4/29 ゾウ2号による水位計測(10:29)、温度測定(10:35)実施。
	[ｽｷﾏｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ] 2600mm（4/30 5:00）	**[ｽｷﾏｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ]** 5700mm（4/30 5:00）	**[ｽｷﾏｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ]** 計器不良	**[ｽｷﾏｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ]** 5850mm（4/30 5:00）
T/B水抜き	**[4/30予定]** なし	**[4/30予定]** なし	**[4/30予定]** なし	**[4/30予定]** なし
	[実績] なし	**[実績]** なし	**[実績]** なし	**[実績]** なし
	[T/B水位] OP+5050mm（4/30 7:00） （4/17 11:00より変化なし） （参考：復水器底面はOP+1900mm）	**[T/B水位]** OP+3100mm（4/30 7:00） （4/16 7:00より変化なし） （参考：復水器底面はOP+300mm）	**[T/B水位]** OP+3000mm（4/30 7:00） （4/23 11:00より変化なし） （参考：復水器底面はOP+300mm）	**[T/B水位]** OP+3100mm(4/30 7:00) （4/27 11:00より変化なし） （参考：復水器底面はOP+1250mm）
トレンチ状況	**[ﾄﾚﾝﾁﾚﾍﾞﾙ]** グレーチング上面～水面まで 1940mm（4/30 7:00） （4/29 18:00より変化なし）	**[ﾄﾚﾝﾁﾚﾍﾞﾙ]** グレーチング上面～水面まで 850mm（4/30 7:00） （4/29 18:00より 30mm上昇）	**[ﾄﾚﾝﾁﾚﾍﾞﾙ]** グレーチング上面～水面まで 920mm(4/30 7:00) （4/29 18:00より 10mm上昇）	**[ﾄﾚﾝﾁﾚﾍﾞﾙ]** －
集中RW排水受入	**[予定]** 4/19 10:00～ 2号立坑→集中Rw/Bへの移送（250t/day）。			
	[実績] 4/19 10:08～4/29 9:16　2号立坑→集中Rw/Bへの移送。(4/30 7:00現在　初期値からの増加量：1184mm。4/29 18:00から変化なし)			

その他：【1号機N_2封入】4/7 1:31～ N_2封入継続中（4/9 4:10～ 高純度N_2装置インサービス）、4/11 11:19 コンプレッサ2台化。4/14 19:05 N_2封入再開。4/25 14:10　電源切替による一時停止。4/25 19:10 N_2封入再開。

【飛散防止対策】4/29 10:30～14:00 5号機R/B山側・旧事務本館前道路、体育館付近(5800m^2)、4号機タービン建屋海側(7000 m^2)。
4/30 物揚場西側、旧事務本館前道路、体育館付近(4000m^2)、4号機タービン建屋南側(3000 m^2)。

【ガレキ撤去】4/29 9:00～16:00　3号機R/B西側、南側ヤード　4個（計67個)。4/30 9:00～16:00　3号機R/B西側、南側ヤード。

【R/B内現場ロボット調査】4/29 11:36～14:05 1号機R/B1F漏えい状況の調査実施。

福島第一　1～4号　作業状況（4月30日　8:00現在）

本店情報班

【5/6号機T/B水位】5号機:溜水若干量（移送予定なし）、6号機:3080mm(4/29)(4/28より20mm上昇。参考:復水器底面はOP+1000mm)

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）

4月30日 6:00現在

号機	1号機	2号機	3号機	4号機	5号機	6号機
原子炉注水状況	給水ラインを用いた淡水注入中。 流量 6.0m³/h (4/30 5:00 現在)	消火系ラインを用いた淡水注入中。 流量 6.9m³/h (4/30 5:00 現在)	消火系ラインを用いた淡水注入中。 流量 6.5m³/h (4/30 5:00 現在)	※2 (全燃料取出中につき監視対象外)	※2 (原子炉の除熱機能が維持されており、注水不要)	
原子炉水位	燃料域A：−1650mm 燃料域B：−1700mm (4/30 5:00 現在)	燃料域A：−1500mm 燃料域B：−2100mm (4/30 5:00 現在)	燃料域A：−1850mm 燃料域B：−2250mm (4/30 5:00 現在)		停止域 1772mm (4/30 6:00 現在)	停止域 2035mm (4/30 6:00 現在)
原子炉圧力	A系 0.435MPa g (A) B系 1.205MPa g (B) ※3 (4/30 5:00 現在)	A系−0.025MPa g (A) ※3 B系−0.025MPa g (D) ※3 (4/30 5:00 現在)	A系−0.066MPa g (A) ※3 B系−0.091MPa g (C) ※3 (4/30 5:00 現在)		0.002MPa g (4/30 6:00 現在)	0.010MPa g (4/30 6:00 現在)
原子炉水温度	(系統流量がないため採取不可)				40.7℃ (4/30 6:00 現在)	47.7℃ (4/30 6:00 現在)
原子炉圧力容器まわり温度	給水ノズル温度：131.2℃ ※3 圧力容器下部温度：101.6℃ (4/30 5:00 現在)	給水ノズル温度：119.1℃ 圧力容器下部温度：※1 (4/30 5:00 現在)	給水ノズル温度：83.6 ※3 圧力容器下部温度：113.1℃ (4/30 5:00 現在)		※2（原子炉水温度にて監視中）	
D/W·S/C圧力	D/W 0.120MPa abs S/C 0.115MPa abs (4/30 5:00 現在)	D/W 0.075MPa abs S/C ※1 (4/30 5:00 現在)	D/W 0.1043MPa abs S/C 0.1803MPa abs (4/30 5:00 現在)		※2 (原子炉の除熱機能が維持されているため監視対象外)	
D/W雰囲気温度	RPVベローシール：102.2℃ HVH戻り：91.4℃ (4/30 5:00 現在)	RPVベローシール：※1 HVH戻り：109℃ (4/30 5:00 現在)	RPVベローシール：125.3℃※3 HVH戻り：101.2℃ (4/30 5:00 現在)			
CAMS放射線モニタ	D/W (A) ※1 (B) ※1 S/C (A) 1.16×10⁰Sv/h ※3 (B) 1.57×10⁰Sv/h ※3 (4/30 5:00 現在)	D/W (A) 2.19×10¹Sv/h (B) 2.46×10¹Sv/h S/C (A) 4.44×10⁻¹Sv/h ※3 (B) 4.52×10¹Sv/h ※3 (4/30 5:00 現在)	D/W (A) 1.39×10¹Sv/h (B) 1.05×10¹Sv/h S/C (A) 5.24×10⁻¹Sv/h ※3 (B) 4.91×10⁻¹Sv/h ※3 (4/30 5:00 現在)			
S/C温度	A系：50.4℃ B系：50.3℃ (4/30 5:00 現在)	A系：68.8℃ B系：69.1℃ (4/30 5:00 現在)	A系：40.7℃ B系：40.7℃ (4/30 5:00 現在)			
D/W設計使用圧力	0.384MPa g (0.485MPa abs)	0.384MPa g (0.485MPa abs)	0.384MPa g (0.485MPa abs)	-	-	
D/W最高使用圧力	0.427MPa g (0.528MPa abs)	0.427MPa g (0.528MPa abs)	0.427MPa g (0.528MPa abs)			
使用済燃料プール温度	※1	56℃ (4/30 5:00 現在)	※1	※1	39.6℃ (4/30 6:00 現在)	29.0℃ (4/30 6:00 現在)
FPCスキマーサージタンクレベル	2600mm (4/30 5:00 現在)	5700mm (4/30 5:00 現在)	※1	5850mm (4/30 5:00 現在)	※2	
電源	外部電源受電中 (P/C2C)		外部電源受電中 (P/C4D)		外部電源受電中	
その他情報	4月30日 1:00 現在のプラント関連パラメータのうち、5号機について以下の通り訂正する。 (誤) 非熱モード (4/29 21:16〜) → (正) SHCモード (4/29 21:16〜)			共用プール： 31℃ (4/29 8:00)	5u：SHCモード (4/29 21:16〜)	6u：非熱モード (4/29 18:12〜)

圧力換算　ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
　　　　　絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

※1：計器不良
※2：データ採取対象外
※3：状況推移を継続確認中

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）に関する補足説明

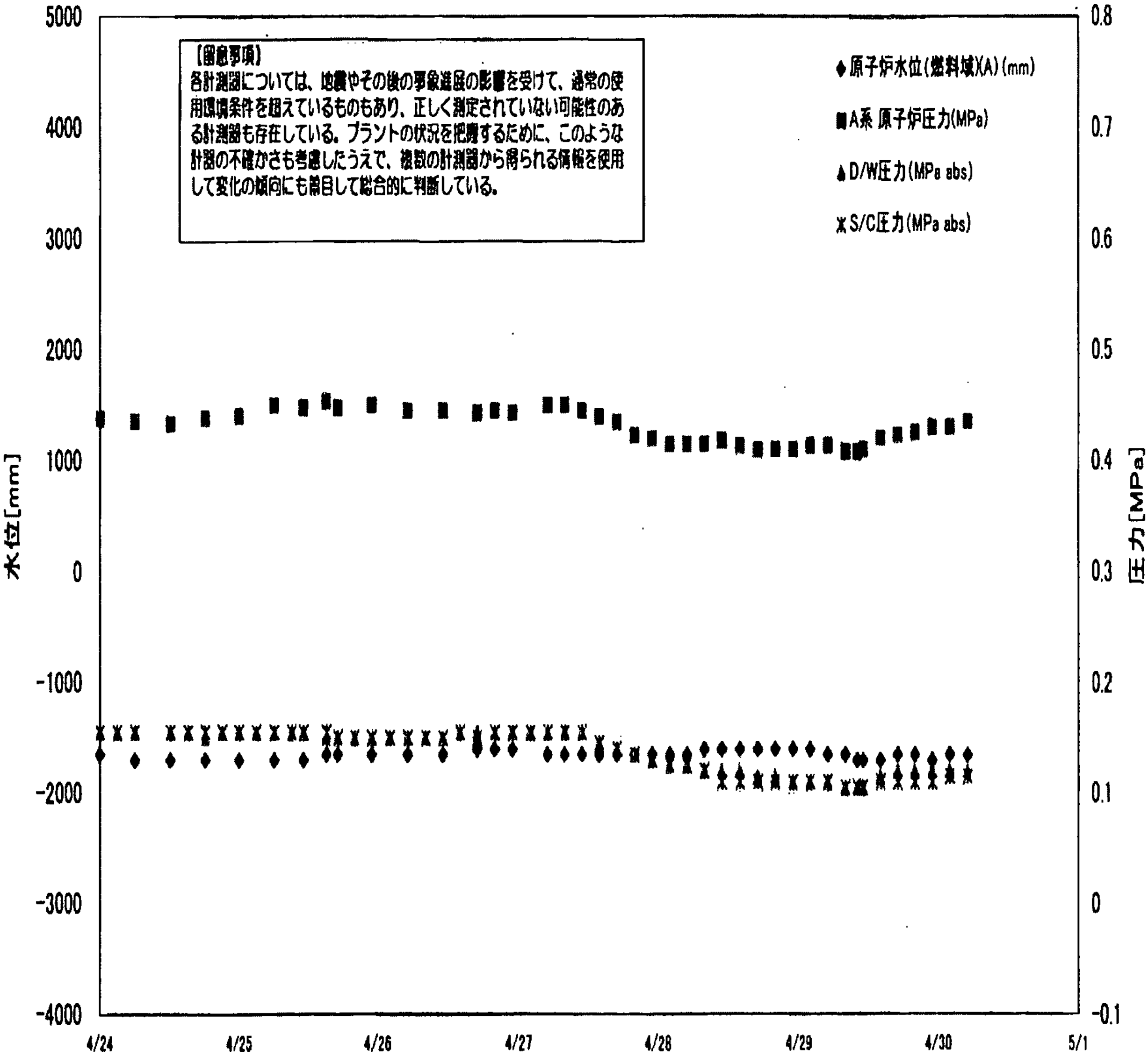
■各パラメータに関する補足説明

項目	記載方法	測定方法	記載点数/Ch 数 or 系統数
原子炉注水状況	注水流量/変更時間を記載　（注水流量を変更した場合のみ更新）。	仮設計器	1/1系統
原子炉水位	燃料域を監視する水位計にて測定したデータを記載。	本設指示計	A系　1/1Ch B系　1/1Ch
原子炉圧力	計器盤より圧力計器から伝送される電圧値を測定し、電圧値を圧力に換算したものを記載。A系/B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設計器盤より電圧値を測定し圧力に換算	A系　1/2Ch B系　1/2Ch
原子炉水温度	温度計設置箇所には系統流量がないためデータ未採取	−	−
原子炉圧力容器まわり温度	原子炉圧力容器まわり温度は複数箇所から採取しているが、全体把握の観点から代表部位として「給水ノズル位置」、「圧力容器下部」のデータを記載	本設記録計	給水ノズル位置　1/4Ch 圧力容器下部　1/2Ch（1号） 1/1Ch（2~3号）
D/W・S/C圧力	本設指示計の指示値を記載。本設指示計にて採取できない場合には、計器盤より測定した電圧値を圧力に換算したものを記載。 （D/W：ドライウェル、S/C：圧力抑制室）	本設指示計：1号、2号 本設計器盤（電圧測定）：3号	本設指示計　1/1系統 本設記録計　常用1/1Ch 広域1/1Ch
D/W雰囲気温度	D/W内の雰囲気温度は複数箇所から採取しているが、全体把握の観点から代表部位として「D/W上部（RPVベローシール温度）、中央部（D/W HVH戻り空気温度）」のデータを記載。（RPV：原子炉圧力容器、HVH：空調ユニット）	本設記録計	RPVベローシール　1/5Ch D/W HVH戻り　1/5Ch
CAMS放射線モニタ	本設指示計の指示値を記載。 （CAMS：格納容器雰囲気モニタ系）	本設指示計	D/W　A系　1/1Ch B系　1/1Ch S/C　A系　1/1Ch B系　1/1Ch
S/C温度	本設記録計の指示値を記載。A系/B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設記録計	A系1/4Ch（1号）、8Ch（2~3号） B系1/4Ch（1号）、8Ch（2~3号）
使用済燃料プール温度	本設記録計の指示値を記載。 （非熱モード：非常時熱負荷モード、SHCモード：原子炉停止時冷却系モード）	本設記録計	1/2Ch（1号）、1Ch（2~4号）
FPCｽｷﾏｰｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ	本設指示計の指示値を記載。 （FPC：燃料プール冷却浄化系）	本設指示計	1/1系統

■注記に関する補足説明

項目	内容	4月30日6時時点の状況
計器不良	計器不良：指示値ダウン（オーバー）スケール/検出器の不良	1号機　使用済燃料プール温度、CAMS D/W放射線モニタ 2号機　圧力容器下部温度、S/C圧力、RPVベローシール温度 3号機　使用済燃料プール温度、スキマーサージタンクレベル 4号機　使用済燃料プール温度
データ採取対象外	4号機：炉心に燃料がないため、原子炉及びD/W関連のデータは採取せず。 5~6号機：現在冷温停止中のため、D/W関連データは採取せず。	−
状況推移を継続確認中	指示は出ているものの、指示値ハンチング・マイナス表示など他パラメータと明らかに異なる推移を示したもの。	1号機　原子炉圧力、給水ノズル温度、CAMS S/C放射線モニタ 2号機　原子炉圧力、CAMS S/C放射線モニタ 3号機　原子炉圧力、RPVベローシール温度、給水ノズル温度、CAMS S/C放射線モニタ

1F1 水位・圧力に関するパラメータ

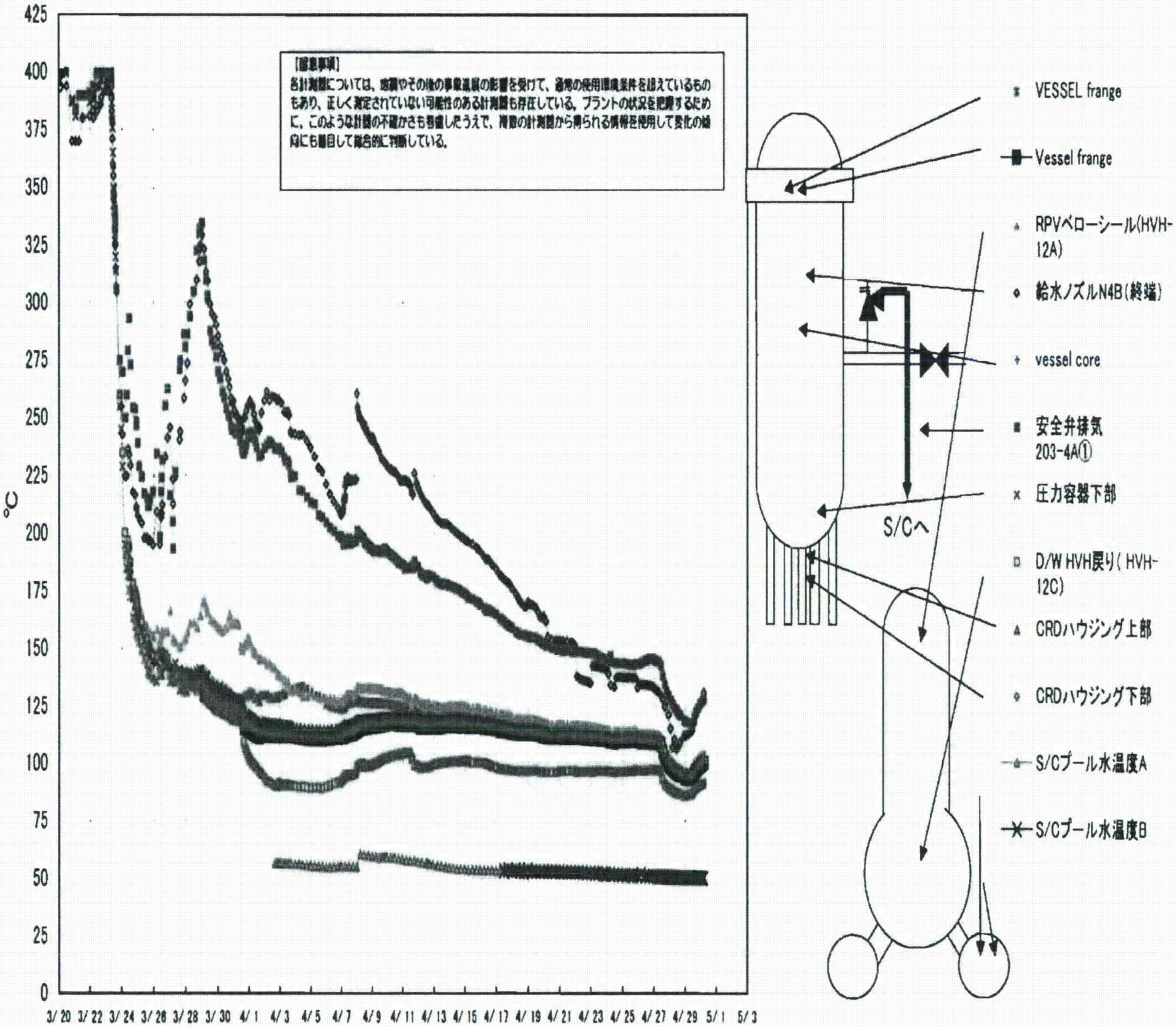


1F1 水位・圧力に関するパラメータ

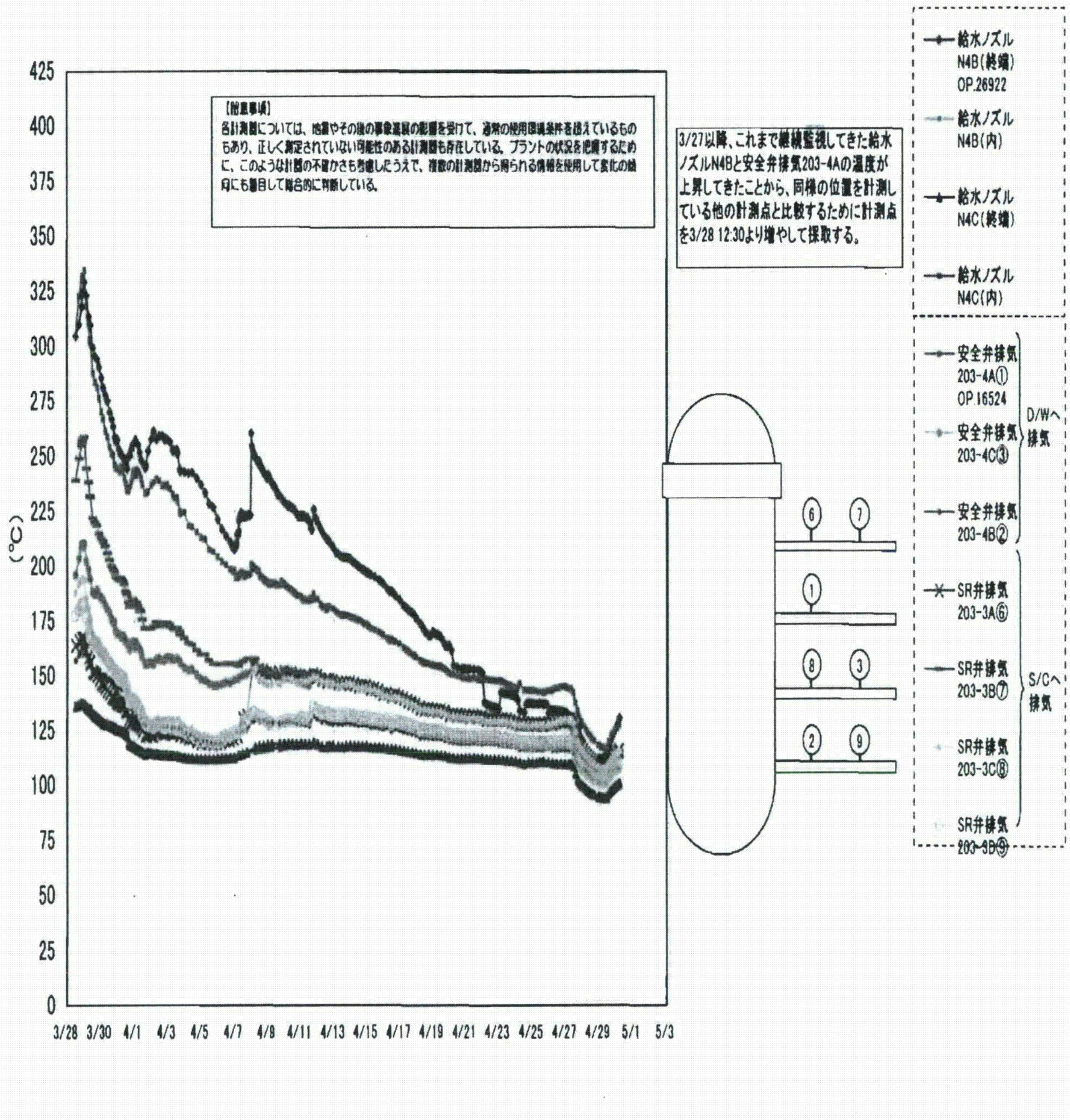
【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	備考
4/26 5:00	-1650	-1650	0.445	1.185	0.150	0.150			1.11	1.74	
4/26 8:00					0.150	0.150			1.12	1.74	
4/26 11:00	-1650	-1650	0.445	1.180	0.150	0.150			1.12	1.74	
4/26 14:00					0.155	0.155			1.12	1.74	
4/26 17:00	-1600	-1650	0.443	1.183	0.155	0.150			1.13	1.74	
4/26 20:00	-1600	-1650	0.445	1.190	0.155	0.155			1.13	1.74	
4/26 23:00	-1600	-1650	0.443	1.203	0.155	0.155			1.13	1.73	
4/27 2:00					0.155	0.155			1.13	1.73	
4/27 5:00	-1650	-1600	0.450	1.205	0.155	0.155			1.14	1.73	
4/27 8:00	-1650	-1650	0.450	1.205	0.155	0.155			1.14	1.72	
4/27 11:00	-1650	-1650	0.445	1.203	0.155	0.155			1.14	1.72	
4/27 14:00	-1650	-1650	0.440	1.198	0.145	0.145			1.15	1.71	
4/27 17:00	-1650	-1650	0.435	1.188	0.140	0.140			1.15	1.71	
4/27 20:00	-1650	-1650	0.423	1.175	0.135	0.135			1.16	1.70	
4/27 23:00	-1650	-1550	0.420	1.173	0.130	0.130			1.16	1.69	
4/28 2:00	-1650	-1600	0.415	1.170	0.125	0.125			1.16	1.68	
4/28 5:00	-1650	-1600	0.415	1.168	0.125	0.125			1.16	1.67	
4/28 8:00	-1600	-1600	0.415	1.170	0.120	0.120			1.16	1.65	
4/28 11:00	-1600	-1600	0.418	1.170	0.120	0.110			1.16	1.64	
4/28 14:00	-1600	-1600	0.413	1.163	0.120	0.110			1.17	1.62	
4/28 17:00	-1600	-1600	0.410	1.168	0.115	0.110			1.17	1.60	
4/28 20:00	-1600	-1600	0.410	1.165	0.115	0.110			1.17	1.58	
4/28 23:00	-1600	-1600	0.410	1.168	0.110	0.110			1.17	1.56	
4/29 2:00	-1600	-1650	0.413	1.170	0.110	0.110			1.17	1.53	
4/29 5:00	-1650	-1650	0.413	1.175	0.110	0.110			1.17	1.50	
4/29 8:00	-1650	-1650	0.408	1.180	0.105	0.105			1.17	1.48	
4/29 10:00	-1700	-1700	0.408	1.173	0.105	0.105			1.18	1.46	
4/29 11:00	-1700	-1700	0.410	1.175	0.105	0.105			1.17	1.49	
4/29 14:00	-1700	-1700	0.420	1.185	0.115	0.110			1.16	1.57	
4/29 17:00	-1650	-1650	0.423	1.188	0.120	0.110			1.16	1.59	
4/29 20:00	-1650	-1700	0.425	1.190	0.120	0.110			1.16	1.60	
4/29 23:00	-1700	-1700	0.430	1.200	0.120	0.110			1.16	1.60	
4/30 2:00	-1650	-1700	0.430	1.198	0.120	0.115			1.16	1.59	
4/30 5:00	-1650	-1700	0.435	1.205	0.120	0.115			1.16	1.57	
							計器不良	計器不良			

1F-1 温度に関するパラメータ(代表点)



1F-1 温度に関するパラメータ(給水ノズル及び安全弁排気温度)

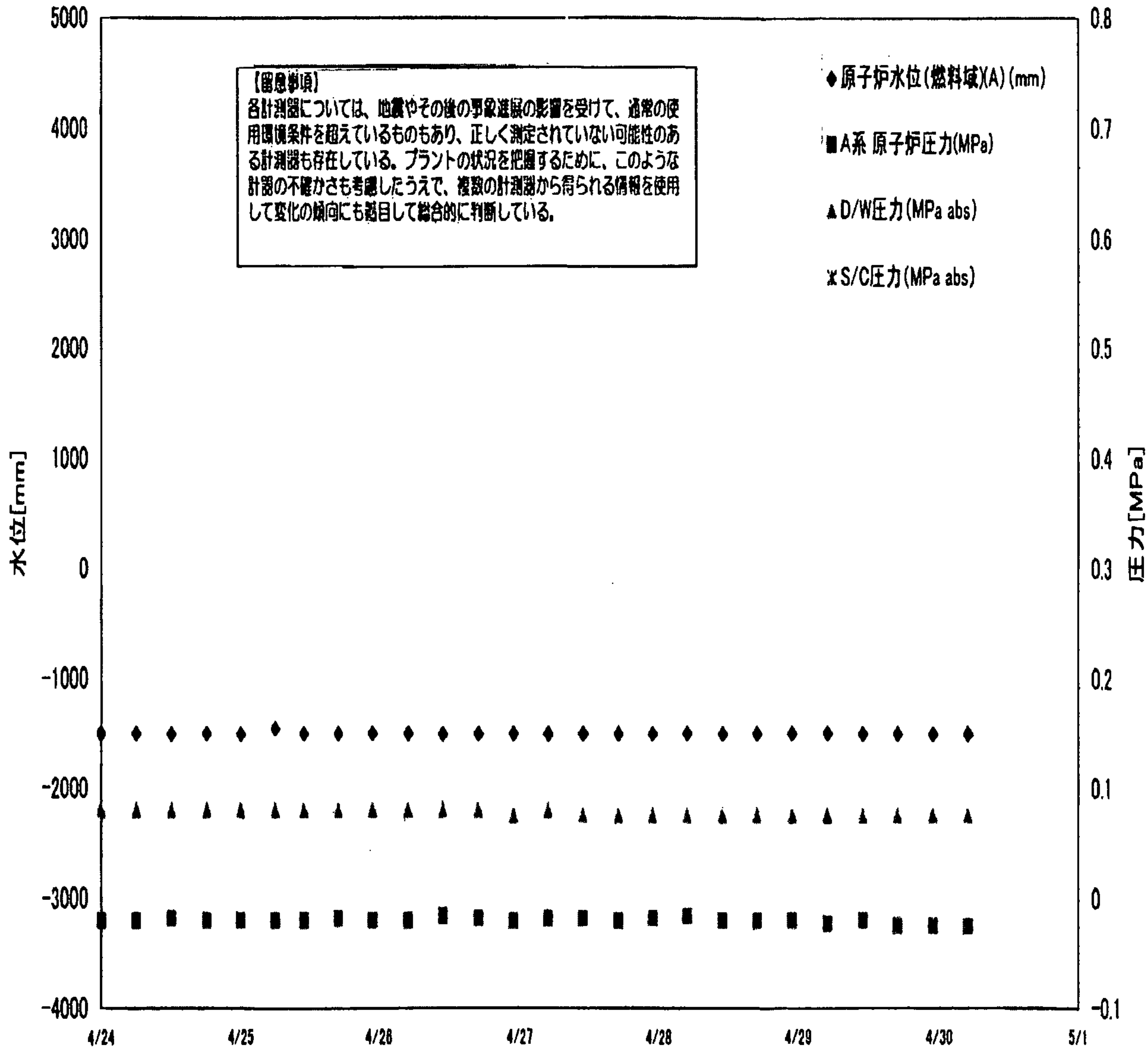


1F-1 温度に関するパラメータ

【補足事項】
計測装置については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も含まれている。プラントの状態を把握するために、このような計器の不確かさも考慮したうえで、複数の計器から得られる情報を使用して総合的に判断している。

	VESSEL flange	Vessel frange	給水ノズルN4B(端部)	給水ノズルN4B(内)	給水ノズルN4C(端部)	給水ノズルN4C(内)	vessel core	圧力容器下部	CRDハウジング上部	CRDハウジング下部	安全弁排気203-4A①	安全弁排気203-4C②	安全弁排気203-4B③	SR弁排気203-3A⑥	SR弁排気203-3B⑦	SR弁排気203-3C⑧	SR弁排気203-3D⑨	D/W HVH戻り(HVH-12C)	RPVベローシール(HVH-12A)	S/Cプール水温度A	S/Cプール水温度B
4/21 3:00	114.4	111.7	153.4				112.8	113.5	112.4	112.5	140.4							96.8	117.2		
4/21 6:00	114.3	111.7	153.4	112.5	112.7	111.7	112.8	113.5	112.4	112.5	140.8	131.8	119.8	131.8	129.7	130.5	122.7	96.7	117.1	53	52.8
4/21 12:00	114.6	111.8	153.3	112.7	112.8	111.8	113	113.6	112.6	112.6	140.3	132.4	120.2	132	129.9	130.8	123	96.8	117.3	53	52.8
4/21 18:00	114.4	111.7	152.8	112.5	112.7	111.8	112.8	113.5	112.4	112.6	140.6	132	119.8	131.7	129.8	130.8	122.6	96.9	117	52.9	52.8
4/21 21:00	114.3	111.7	152.4				112.8	113.4	112.3	112.4	140.4							96.8	116.9		
4/22 0:00	114.2	111.5	151.6	112.3	112.5	111.5	112.7	113.3	112.3	112.3	140.4	131.9	119.6	131.4	129.2	130.2	122.5	96.9	116.8	52.8	52.8
4/22 3:00	114	111.4	139.1				112.6	113.1	112.1	112.2	140.8							96.3	116.8		
4/22 6:00	114	111.4	137.4	112.1	112.3	111.3	112.5	113	112.1	112.2	140.8	132.2	119.8	130.3	128.4	129.1	122.6	96.4	116.8	52.8	52.7
4/22 9:00	113.8	111.3	136.8				112.4	112.9	112	112.1	140.7							96.4	116.6		
4/22 12:00	113.8	111.3	136.8	112	112.1	111.1	112.4	112.8	112	112	140.5	131.9	118.7	130.3	128.1	128.2	122.4	96.5	116.4	52.7	52.8
4/22 15:00	113.8	111.2	138.2				112.4	112.8	112	112	140.2							96.6	116.4		
4/22 18:00	113.8	111.3	136	112	112.2	111.2	112.4	112.8	112	112.1	140.3	131.8	118.7	130.4	128.1	128.4	122.4	96.7	116.4	52.6	52.5
4/22 21:00	113.8	111.2	135.7				112.4	112.8	112	112	140.1							96.8	116.3		
4/23 0:00	113.7	111.1	135.3	111.9	112.1	111.1	112.2	112.7	111.9	112	140	131.5	118.5	130.2	127.8	129.2	122.2	96.8	116.2	52.4	52.4
4/23 3:00	113.7	111	142.7				112.2	112.7	111.8	111.8	140.2							96.2	116		
4/23 6:00	113.6	111	142.6	111.7	111.9	111	112.1	112.6	111.8	111.8	147.6	130.8	118	130.6	128.7	128.4	121.7	96.7	115.8	52.4	52.3
4/23 9:00	113.5	110.9	142.3				112	112.6	111.7	111.7	147.1							96.6	115.7		
4/23 12:00	113.4	110.8	142.3	111.5	111.7	110.8	111.9	112.4	111.6	111.6	146.6	130.3	118.7	130.2	128.1	129.1	121.3	96.6	115.4	52.3	52.2
4/23 15:00	113.4	110.7	142.1				111.8	112.3	111.5	111.6	146.2							96.6	115.4		
4/23 18:00	113.1	110.6	141.8	111.3	111.5	110.6	111.7	112.1	111.4	111.4	145.9	129.8	118.4	129.7	127.7	128.7	121	96.7	115.2	52.1	52.1
4/23 21:00	113.1	110.5	141.4				111.6	112	111.3	111.4	145.3							96.8	115.1	52.1	52
4/24 0:00	113	110.6	141.2	111.1	111.3	110.4	111.5	111.9	111.2	111.3	145.1	129.3	118.2	129.3	127	128.3	120.7	96.8	114.8	52.1	52
4/24 3:00	112.8	110.2	139.2				111.2	111.6	110.9	111	144.4							96.7	114.6		
4/24 6:00	112.4	109.9	134.4	110.6	110.7	109.6	110.9	111.2	110.7	110.8	140.9	128.4	117	128.8	128.3	127.7	120	96.6	114	51.9	51.9
4/24 12:00	111.7	109.4	133.5	109.2	110.2	109.4	110.6	110.8	110.3	110.4	144	128.5	117.2	128.4	128.4	127.7	119.8	96.3	114	51.8	51.8
4/24 15:00	112.3	109.8	137.8				110.8	111.2	110.6	110.7	143.8							96.4	114		
4/24 18:00	112.3	109.6	137.8	110.4	110.7	109.6	110.8	111.3	110.7	110.7	143.7	128.2	117.1	128.4	128.2	127.7	119.7	96.6	114	51.7	51.7
4/24 21:00	112.3	109.8	137.8				110.9	111.3	110.7	110.7	143.6							96.6	114		
4/25 0:00	112.3	109.8	137.7	110.6	110.7	109.8	110.9	111.3	110.7	110.7	143.8	128.2	117	128.4	128.6	127.9	119.7	96.5	114	51.6	51.5
4/25 3:00	112.3	109.8	137.7				110.8	111.3	110.7	110.7	143.7							96.6	114		
4/25 6:00	112.3	109.9	137.7	110.7	110.8	109.8	110.9	111.4	110.7	110.7	143.4	128.2	117	128.3	128.4	127.8	119.7	96.8	114	51.6	51.4
4/25 9:00	112.3	110	137.8				111	111.5	110.8	110.8	143.1							96.7	114		
4/25 11:00	112.5	110.1	137.8	110.9	111	110.1	111.1	111.6	110.9	110.9	143.2	128.3	117.2	128.4	128.5	127.9	119.8	96.8	114.2	51.6	51.4
4/25 15:00	112.6	110.1	137.8	110.8	111	110	111.1	111.6	110.9	110.9	143	128.1	117.1	128.2	128.5	127.7	119.7	96.7	114.1	51.5	51.4
4/25 17:00	112.6	110.2	137.4	110.8	111	110.1	111.2	111.6	110.9	110.9	142.8	128.2	117.3	128.3	128.2	127.4	119.7	96.8	114.3	51.4	51.3
4/25 20:00	112.8	110.6	137.5				111.5	111.8	111.3	111.3	143.4							97.3	114.5		
4/25 23:00	112.3	110.1	133.3	110.6	110.9	109.8	111	111.3	110.9	110.9	143.6	128.5	117.6	128.8	128.8	128	119.8	97	113.7	51.3	51.2
4/26 2:00	112.1	109.8	135				111.1	111.3	110.4	110.8	143.5							96.8	113.2		
4/26 5:00	111.8	109.8	134.7	110.3	110.4	109.8	110.5	110.9	110.4	110.3	144	127.8	118.7	128.7	128.9	128.3	119.5	96.8	113.4	51.3	51.0
4/26 8:00	111.7	109.4	134.8				110.4	110.8	110.3	110.3	144.8							96.8	113.2		
4/26 11:00	111.7	109.4	134.8	110.2	110.3	109.4	110.6	110.8	110.2	110.3	144.8	127.8	118.7	128.3	127.8	128.1	118.7	97	113.2	51.2	51.1
4/26 14:00	111.7	109.4	134.5				110.5	110.8	110.2	110.3	145							97	113.2		
4/26 17:00	111.7	109.4	134.3	110.2	110.2	109.4	110.4	110.8	110.2	110.3	148.5	128.2	118.9	130.1	128.9	130	120.2	97.1	113.1	51.1	51
4/26 20:00	111.7	109.4	134.2				110.4	110.8	110.2	110.2	145.7							97.2	113.1		
4/26 23:00	111.6	109.3	133.5	110.1	110.2	109.3	110.3	110.7	110.1	110.2	145.5	128.2	118.9	130.8	128.4	130.4	120.2	97.3	112.9	51.1	51
4/27 2:00	111.5	109.2	133				110.2	110.6	110	110.1	144.8							97.3	112.8		
4/27 5:00	111.4	109.1	132	109.9	110	109.1	110.1	110.5	109.9	110	144.7	127.9	118.7	130.3	128.3	130.3	120.1	97.2	112.8	51	50.9
4/27 8:00	111.4	109.1	131.4	109.8	110	109.1	110.1	110.4	109.9	110	144.4	127.8	118.6	130.5	128.3	130.3	120.1	97.3	112.8	51	50.9
4/27 11:00	110.5	108.5	130	108.8	109.1	108.2	109.1	109.4	109.1	109.1	142.8	128.5	115.8	128.1	127.8	128.8	118.1	96.5	111.6	51	50.8
4/27 14:00	107.1	104.8	128.3	105.3	105.8	104.7	105.5	106.9	105.6	105.4	138.3	122.6	112.2	125.4	124.1	124.8	115.2	95.2	108	50.9	50.8
4/27 17:00	104.4	102.3	125	102.8	103.2	102.2	102.8	103.3	103	102.8	134.4	119.3	109.6	121.5	120.5	120.4	112	91.2	105.3	50.9	50.8
4/27 20:00	102.7	100.8	127.4	101.1	101.6	100.5	101.2	101.5	101.4	101.3	131.6	117	107.7	119.3	118.4	118.2	110.1	90.1	103.5	50.9	50.7
4/27 23:00	101.6	99.4	121.8	100	100.4	99.4	100	100.3	100.2	100	128.8	115.5	106.5	117.8	117	118.7	108.8	89.4	102.4	50.8	50.7
4/28 2:00	100.6	98.6	118.4	99.1	99.8	98.5	99	99.4	99.4	99.1	127.8	114.2	105.8	116.4	115.6	115.4	107.7	88.9	101.5	50.8	50.6
4/28 5:00	99.6	97.7	107.3	98.2	98.7	97.5	98.2	98.5	98.5	98.2	126.8	112.8	104.6	114.8	114.1	113.8	106.6	88.2	100.5	50.7	50.6
4/28 8:00	98.7	96.7	110.8	97.3	97.7	96.6	97.2	97.6	97.6	97.2	124.3	111.8	103.8	113.7	113	112.7	105.8	87.7	99.6	50.7	50.6
4/28 11:00	97.8	96	108.8	96.6	97	95.9	96.5	96.8	96.8	96.7	123.4	111	103.3	112.8	112	111.7	104.8	87.3	98.8	50.7	50.6
4/28 14:00	97.6	95.4	107.4	96.1	96.6	95.4	95.8	96.5	96.4	96.1	122	109.8	102.5	111.7	111	110.7	104.2	87	98.1	50.7	50.6
4/28 17:00	97.1	95.1	109.8	95.7	96.1	95	95.5	95.9	96	95.7	121	109.2	101.8	110.8	110.2	109.8	103.8	86.7	97.5	50.7	50.6
4/28 23:00	96.3	94.1	112.5	94.8	95.1	94.1	94.8	95.1	95.2	95	119	107.8	101	109.4	108.8	108.5	102.8	86.1	96.3	50.7	50.6
4/29 2:00	96	93.8	112.4	94.8	94.8	93.9	94.5	94.9	95	94.8	118.3	107.3	100.6	108.8	108.1	108	102.2	86.1	96	50.7	50.5
4/29 5:00	95.7	93.4	113	94.2	94.7	93.6	94.2	94.6	95.1	94.6	117.7	106.8	100.4	108.1	107.8	107.6	102.1	86.3	95.8	50.7	50.5
4/29 8:00	95.1	93.7	113.8	94.3	94.6	93.8	94.5	94.6	95.6	95.2	117.7	106.8	100.4	107.9	107.7	107.8	102.4	86.8	96	50.7	50.4
4/29 10:00	95.8	93.6	114.3	94.1	94.6	93.7	94.4	94.7	95.3	95	117.3	106.8	100.3	107.8	107.5	107.7	102.3	86.7	94.8	50.6	50.4
4/29 11:00	96.1	93.8	114.7	94.4	94.8	94	94.7	95	95.6	95.4	117.8	106.8	100.6	108.1	107.7	107.8	102.6	87	95.2	50.6	50.4
4/29 14:00	98.2	95.7	118.1	96.6	96.7	95.8	96.8	96.9	97.3	97.1	120.5	109.3	102.8	110	110.1	110.2	104.5	88.4	97.4	50.6	50.4
4/29 17:00	99.6	97.1	121.3	97.6	98	97	97.8	98.2	98.5	98.4	122.8	111.1	104.1	112.3	112	112	106.3	89.3	98.8	50.5	50.4
4/29 20:00	100.7	99	123.7	98.8	98.9	97.8	98.8	99.2	99.6	99.2	124.4	112.3	105.2	113.5	113.1	113.2	107.4	89.8	99.8	50.6	50.4
4/29 23:00	101.8	99	125.6	99.7	99.9	98.9	99.8	100.1	100.4	100.2	126	113.5	106.2	114.8	114.3	114.4	108.3	90.5	100.8	50.5	50.4
4/30 2:00	102.8	99.7	128.4	100.4	100.8	99.8	100.7	101	101.1	101	127.3	114.4	106.8	115.8	115.2	115.3	109.1	90.9	101.5	50.6	50.3
4/30 5:00	103.7	100.4	131.2	101.2	101.3	100.3	101.4	101.8	101.7	101.7	128.1	115.1	107.8	116.4	115.8	116.1	109.8	91.4	102.2	50.4	50.3

1F2 水位・圧力に関するパラメータ



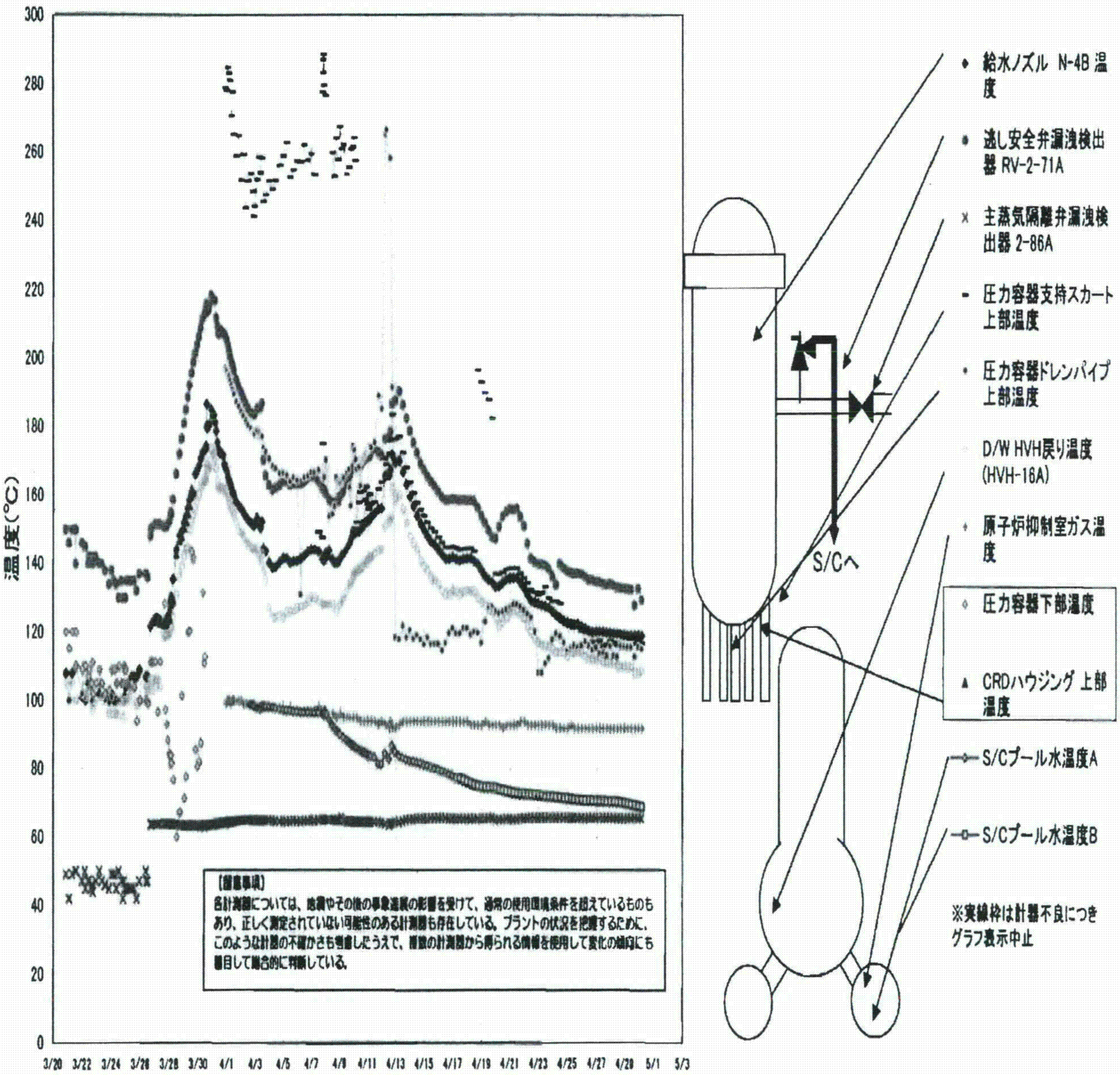
1F2 水位･圧力に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W (A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/21 12:00	-1500	-2050	-0.023	-0.025	0.085		24.6	27.9	0.534	114.0	0.05	
4/21 18:00	-1500	-2050	-0.020	-0.025	0.090		24.5	27.8	0.530	120.0	0.07	
4/22 0:00	-1500	-2050	-0.018	-0.023	0.085		24.4	27.7	0.526	132.0	0.07	
4/22 6:00	-1500	-2100	-0.023	-0.027	0.085		24.3	27.6	0.522	137.0	0.07	
4/22 12:00	-1500	-2050	-0.023	-0.027	0.085		24.2	27.5	0.519	136.0	0.08	
4/22 18:00	-1500	-2050	-0.027	-0.034	0.085		24.1	27.4	0.517	135.0	0.06	
4/23 0:00	-1500	-2100	-0.023	-0.027	0.085		24.1	27.3	0.516	132.0	0.08	
4/23 6:00	-1500	-2100	-0.023	-0.027	0.080		24.0	27.0	0.512	135.0	0.07	
4/23 12:00	-1500	-2100	-0.023	-0.025	0.080		23.9	26.8	0.509	136.0	0.07	
4/23 18:00	-1500	-2050	-0.020	-0.023	0.080		23.8	26.7	0.506	128.0	0.10	
4/24 0:00	-1500	-2050	-0.020	-0.020	0.080		23.7	26.6	0.503	126.0	0.10	
4/24 6:00	-1500	-2050	-0.020	-0.025	0.080		23.6	26.5	0.500	110.0	0.10	
4/24 12:00	-1500	-2050	-0.018	-0.025	0.080		23.6	26.5	0.497	115.0	0.08	
4/24 18:00	-1500	-2050	-0.020	-0.025	0.080		23.5	26.4	0.496	107.0	0.07	
4/25 0:00	-1500	-2100	-0.020	-0.027	0.080		23.4	26.3	0.493	119.0	0.06	
4/25 6:00	-1450	-2100	-0.020	-0.027	0.080		23.3	26.2	0.490	103.0	0.06	
4/25 11:00	-1500	-2100	-0.020	-0.025	0.080		23.2	26.1	0.489	94.1	0.05	
4/25 17:00	-1500	-2100	-0.018	-0.025	0.080		23.2	26.0	0.486	98.6	0.07	
4/25 23:00	-1500	-2100	-0.020	-0.025	0.080		23.1	26.0	0.483	105.0	0.05	
4/26 5:00	-1500	-2100	-0.020	-0.025	0.080		23.0	25.9	0.480	104.0	0.06	
4/26 11:00	-1500	-2050	-0.016	-0.025	0.080		22.9	25.8	0.477	76.4	0.07	
4/26 17:00	-1500	-2100	-0.018	-0.025	0.080		22.8	25.7	0.476	106.0	0.08	
4/26 23:00	-1500	-2100	-0.020	-0.027	0.075		22.7	25.6	0.474	57.7	0.08	
4/27 5:00	-1500	-2100	-0.018	-0.023	0.080		22.7	25.6	0.472	43.3	0.08	
4/27 11:00	-1500	-2100	-0.018	-0.025	0.075		22.6	25.5	0.470	45.9	0.06	
4/27 17:00	-1500	-2100	-0.020	-0.023	0.075		22.5	25.4	0.467	43.3	0.05	
4/27 23:00	-1500	-2100	-0.018	-0.020	0.075		22.5	25.3	0.465	41.9	0.08	
4/28 5:00	-1500	-2100	-0.016	-0.020	0.075		22.4	25.2	0.463	40.8	0.08	
4/28 11:00	-1500	-2100	-0.020	-0.023	0.075		22.3	25.2	0.461	39.7	0.04	
4/28 17:00	-1500	-2100	-0.020	-0.020	0.075		22.3	25.1	0.460	38.3	0.07	
4/28 23:00	-1500	-2100	-0.020	-0.023	0.075		22.2	25.0	0.456	37.4	0.06	
4/29 5:00	-1500	-2100	-0.023	-0.023	0.075		22.1	24.9	0.454	35.9	0.08	
4/29 11:00	-1500	-2100	-0.020	-0.023	0.075		22.1	24.8	0.452	37.1	0.08	
4/29 17:00	-1500	-2100	-0.025	-0.025	0.075		22.0	24.8	0.449	36.1	0.07	
4/29 23:00	-1500	-2100	-0.025	-0.023	0.075		22.0	24.7	0.447	38.5	0.07	
4/30 5:00	-1500	-2100	-0.025	-0.025	0.075		21.9	24.6	0.444	45.2	0.07	

計器不良

1F-2 温度に関するパラメータ(代表点)



1F-2 温度に関するパラメータ

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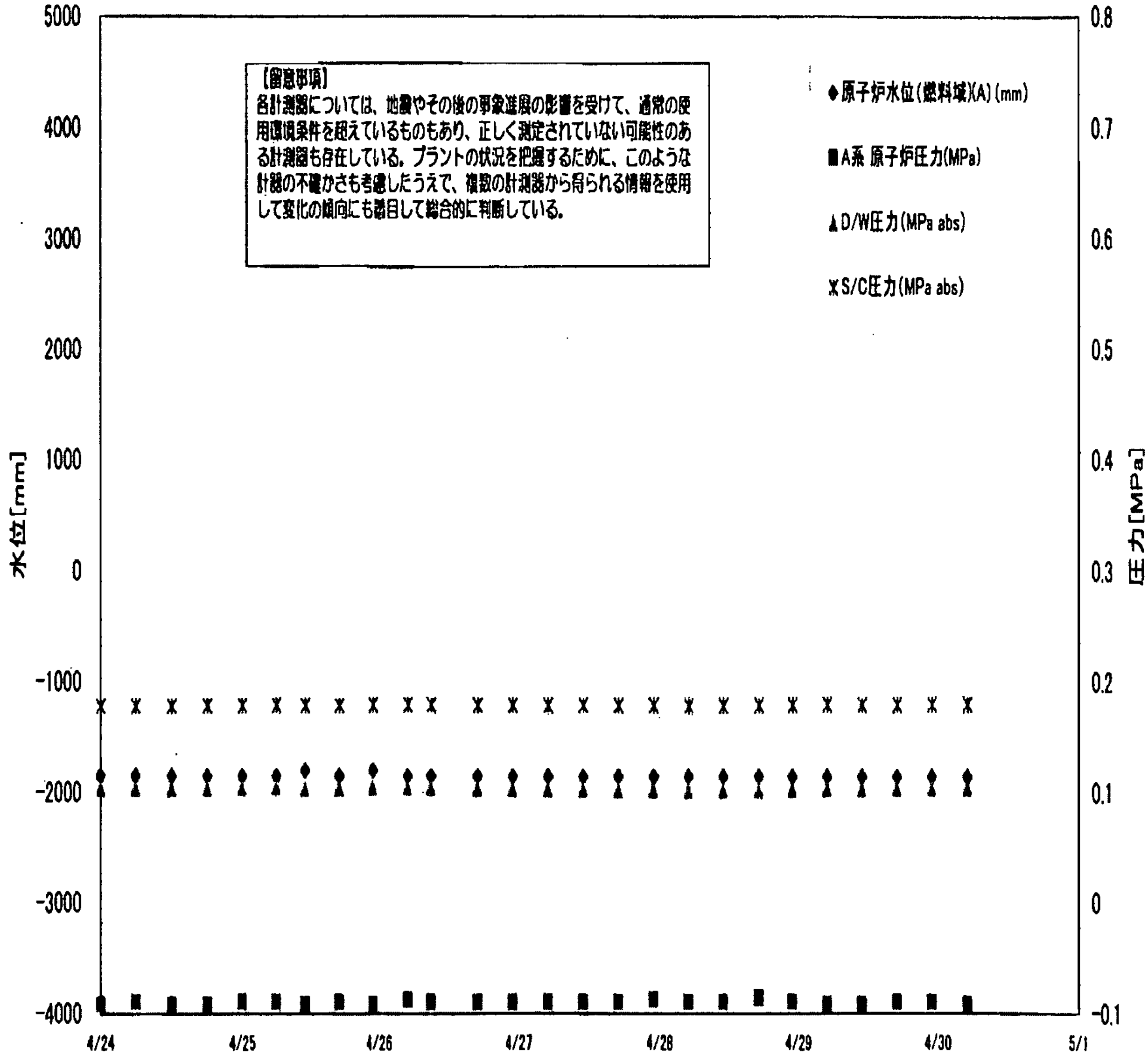
	逃し安全弁漏洩検出器 RV-2-71A	主蒸気隔離弁漏洩検出器 2-86A	給水ノズル N-4B 温度	CRDハウジング上部温度	圧力容器下部温度	圧力容器支持スカート上部温	圧力容器ドレンパイプ 上部温度	D/W HVH戻り温度(HVH-16A)	RPVベローシール	原子炉格納容器ガス温度	S/Cプール水温度A	S/Cプール水温度B
4/20 0:00	147.5	65.1	133.4			137.1	126.2	124	O.S	93	74.3	74.6
4/20 6:00	151	65.2	133.6			136.9	125.8	122	O.S	93	74	74.3
4/20 12:00	153.9	65.2	134.7			137.6	126.2	123	O.S	92	73.7	74
4/20 18:00	155.3	65.4	135.5			138.5	126.9	124	O.S	93	73.4	73.7
4/21 0:00	156.2	65.3	136			138.7	127.2	126	O.S	93	73.2	73.5
4/21 6:00	155.9	65.2	136.1			138.8	128.4	126	O.S	93	72.9	73.2
4/21 12:00	156.2	65.3	136			138.7	128.4	126	O.S	93	72.8	73
4/21 18:00	153.8	65.5	134.6			137.2	127.6	125	O.S	94	72.6	72.9
4/22 0:00	151.2	65.5	133.1			135.9	126.7	124	O.S	94	72.6	72.9
4/22 6:00	146.1	65.7	131.2			134.4	125.5	122	O.S	93	72.5	72.8
4/22 12:00	141.8	65.7	129.2			132.4	124.4	120	O.S	93	72.4	72.7
4/22 18:00	140.7	65.7	128.8			131.7	120.4	118	O.S	93	72.3	72.6
4/23 0:00	140.1	65.7	128.4			131	108.4	117	O.S	93	72.2	72.5
4/23 6:00	140	65.8	128			131.6	108.5	116	O.S	93	72.1	72.3
4/23 12:00	139.8	65.8	127.7			133.4	111	116	O.S	93	72	72.2
4/23 18:00	138.7	65.8	127.2			130.1	112.5	116	O.S	93	71.9	72.1
4/24 0:00	136.6	65.8	126.3			129.1	118.1	115	O.S	93	71.8	72.1
4/24 6:00	134	65.8	125.2			129.1	119.8	114	O.S	92	71.7	71.9
4/24 12:00	140.2	65.8	124.2			128.5	118.9	114	O.S	92	71.5	71.8
4/24 18:00	138.9	65.8	123.4			123.3	117.2	114	O.S	92	71.4	71.6
4/25 0:00	138.1	65.8	122.9			123.2	114.4	113	O.S	92	71.3	71.6
4/25 6:00	137.6	65.7	122.5			122	115.5	114	O.S	93	71.2	71.4
4/25 11:00	137.2	65.7	122.3			122.9	116.3	114	O.S	92	71.1	71.3
4/25 17:00	137.4	65.7	122.5			122.2	115.6	114	O.S	92	71	71.3
4/25 23:00	137.1	65.7	121.9			120.5	116.4	114	O.S	92	70.9	71.1
4/26 5:00	136.4	65.6	121.2			120	117.5	113	O.S	92	70.8	70.9
4/26 11:00	135.4	65.7	120.5			120.1	116.2	112	O.S	92	70.7	71
4/26 17:00	135.4	65.8	120.2			117.3	115	112	O.S	92	70.7	70.9
4/26 23:00	135	65.7	120.4			117	115.7	112	O.S	92	70.6	70.9
4/27 5:00	134.9	65.7	120.4			117.6	114	112	O.S	92	70.5	70.8
4/27 11:00	134.4	65.7	120.3			116	114.2	111	O.S	92	70.5	70.8
4/27 17:00	134	65.8	120.1			116.5	113.4	111	O.S	92	70.5	70.7
4/27 23:00	134.4	65.8	120.1			117.6	116.1	111	O.S	92	70.4	70.7
4/28 5:00	133.8	65.7	119.9			117.1	113.3	111	O.S	92	70.4	70.7
4/28 11:00	133.4	65.7	119.8			116.2	113.1	110	O.S	92	70.3	70.6
4/28 17:00	133.2	65.6	119.6			117	116.3	110	O.S	92	70.3	70.5
4/28 23:00	133	65.6	119.4			116.2	116.1	110	O.S	92	70	70.3
4/29 5:00	132.9	65.6	119.2			116.5	115.9	110	O.S	92	69.7	70
4/29 11:00	132.6	65.7	119.2			118.3	115.8	110	O.S	92	69.6	69.8
4/29 17:00	128	65.8	119.3			116.7	113	108	O.S	92	69.3	69.6
4/29 23:00	132.9	65.7	119.3			117.5	115.8	108	O.S	92	69.1	69.3
4/30 5:00	129.6	65.6	119.1			116.8	115.3	109	O.S	92	68.8	69.1
				計器不良	計器不良							

1F3 水位・圧力に関するパラメータ



1F3 水位・圧力に関するパラメータ

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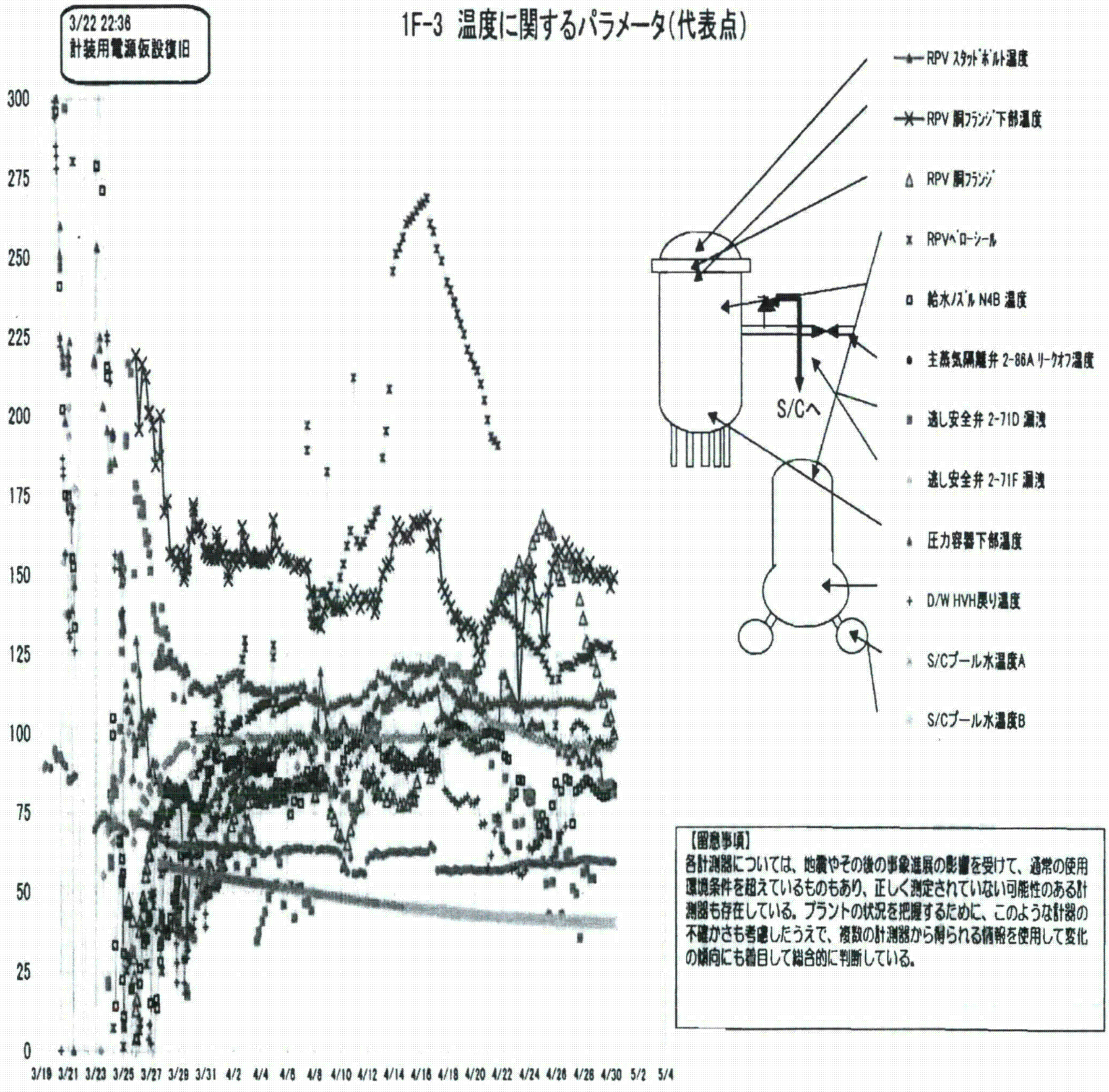
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/20 12:00	-1850	-2250	-0.089	-0.043	0.1045	0.1748	15.5	11.6	0.585	0.541	0.065	
4/20 18:10	-1850	-2250	-0.087	-0.043	0.1047	0.1754	15.5	11.6	0.582	0.540	0.065	
4/20 23:50	-1850	-2250	-0.087	-0.045	0.1054	0.1761	15.4	11.5	0.580	0.539	0.065	
4/21 6:00	-1850	-2250	-0.085	-0.043	0.1061	0.1768	15.4	11.5	0.579	0.538	0.065	
4/21 12:00	-1850	-2250	-0.087	-0.043	0.1050	0.1769	15.4	11.5	0.577	0.537	0.065	
4/21 18:00	-1850	-2250	-0.085	-0.043	0.1052	0.1775	15.3	11.4	0.575	0.535	0.065	
4/22 0:00	-1850	-2250	-0.089	-0.047	0.1055	0.1776	15.1	11.4	0.573	0.534	0.065	
4/22 6:00	-1850	-2250	-0.087	-0.047	0.1055	0.1780	15.2	11.4	0.570	0.532	0.070	
4/22 11:50	-1850	-2250	-0.089	-0.049	0.1048	0.1780	15.2	11.4	0.569	0.531	0.070	
4/22 17:50	-1850	-2250	-0.089	-0.049	0.1047	0.1783	15.2	11.3	0.568	0.530	0.060	
4/23 0:00	-1850	-2250	-0.087	-0.053	0.1047	0.1785	15.2	11.3	0.566	0.528	0.060	
4/23 6:15	-1850	-2250	-0.087	-0.049	0.1045	0.1782	15.1	11.3	0.564	0.527	0.070	
4/23 11:55	-1850	-2250	-0.087	-0.049	0.1038	0.1778	15.1	11.3	0.563	0.526	0.060	
4/23 18:00	-1850	-2250	-0.089	-0.051	0.1033	0.1776	15.0	11.2	0.562	0.525	0.060	
4/24 0:00	-1850	-2250	-0.091	-0.055	0.1027	0.1776	15.0	11.2	0.561	0.523	0.070	
4/24 5:50	-1850	-2250	-0.089	-0.053	0.1031	0.1778	15.0	11.2	0.560	0.522	0.060	
4/24 12:00	-1850	-2250	-0.091	-0.051	0.1031	0.1780	14.9	11.1	0.558	0.521	0.070	
4/24 18:00	-1850	-2250	-0.091	-0.051	0.1034	0.1785	14.9	11.1	0.557	0.520	0.070	
4/25 0:00	-1850	-2250	-0.089	-0.055	0.1038	0.1787	14.8	11.1	0.556	0.519	0.070	
4/25 6:00	-1850	-2250	-0.089	-0.053	0.1041	0.1789	14.8	11.1	0.554	0.518	0.070	
4/25 11:00	-1800	-2250	-0.091	-0.055	0.1029	0.1787	14.7	11.0	0.553	0.517	0.050	
4/25 17:00	-1850	-2250	-0.089	-0.055	0.1034	0.1787	14.7	11.0	0.552	0.516	0.050	
4/25 23:00	-1800	-2250	-0.091	-0.055	0.1041	0.1792	14.6	11.0	0.551	0.515	0.050	
4/26 5:00	-1850	-2250	-0.087	-0.055	0.1043	0.1794	14.6	11.0	0.550	0.514	0.040	
4/26 9:00	-1850	-2250	-0.089	-0.055	0.1041	0.1794	14.5	10.9	0.549	0.513	0.040	
4/26 17:00	-1850	-2250	-0.089	-0.051	0.1033	0.1790	13.9	10.9	0.517	0.511	0.050	
4/26 23:00	-1850	-2250	-0.089	-0.049	0.1034	0.1792	14.2	10.9	0.530	0.510	0.050	
4/27 5:00	-1850	-2250	-0.089	-0.053	0.1031	0.1787	14.3	10.9	0.532	0.508	0.050	
4/27 11:00	-1850	-2250	-0.089	-0.053	0.1029	0.1792	14.3	10.8	0.534	0.507	0.040	
4/27 17:00	-1850	-2250	-0.089	-0.053	0.1022	0.1789	14.3	10.8	0.534	0.505	0.050	
4/27 23:00	-1850	-2250	-0.087	-0.055	0.1022	0.1789	14.3	10.8	0.534	0.504	0.045	
4/28 5:00	-1850	-2250	-0.089	-0.055	0.1017	0.1783	14.2	10.8	0.533	0.502	0.050	
4/28 11:00	-1850	-2250	-0.089	-0.055	0.1017	0.1785	14.2	10.7	0.532	0.501	0.050	
4/28 17:10	-1850	-2250	-0.085	-0.055	0.1017	0.1790	14.2	10.7	0.532	0.500	0.050	
4/28 23:00	-1850	-2250	-0.089	-0.060	0.1027	0.1792	14.1	10.7	0.530	0.498	0.040	
4/29 5:00	-1850	-2250	-0.091	-0.062	0.1036	0.1799	14.1	10.6	0.529	0.496	0.050	
4/29 11:00	-1850	-2250	-0.091	-0.060	0.1033	0.1796	17.0	10.6	0.527	0.495	0.050	
4/29 17:00	-1850	-2250	-0.089	-0.060	0.1038	0.1799	14.0	10.6	0.528	0.494	0.050	
4/29 23:00	-1850	-2250	-0.089	-0.064	0.1040	0.1804	14.0	10.5	0.525	0.492	0.050	
4/30 5:00	-1850	-2250	-0.091	-0.066	0.1043	0.1803	13.9	10.5	0.524	0.491	0.040	

1F-3 温度に関するパラメータ(代表点)



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1F-3 温度に関するパラメータ

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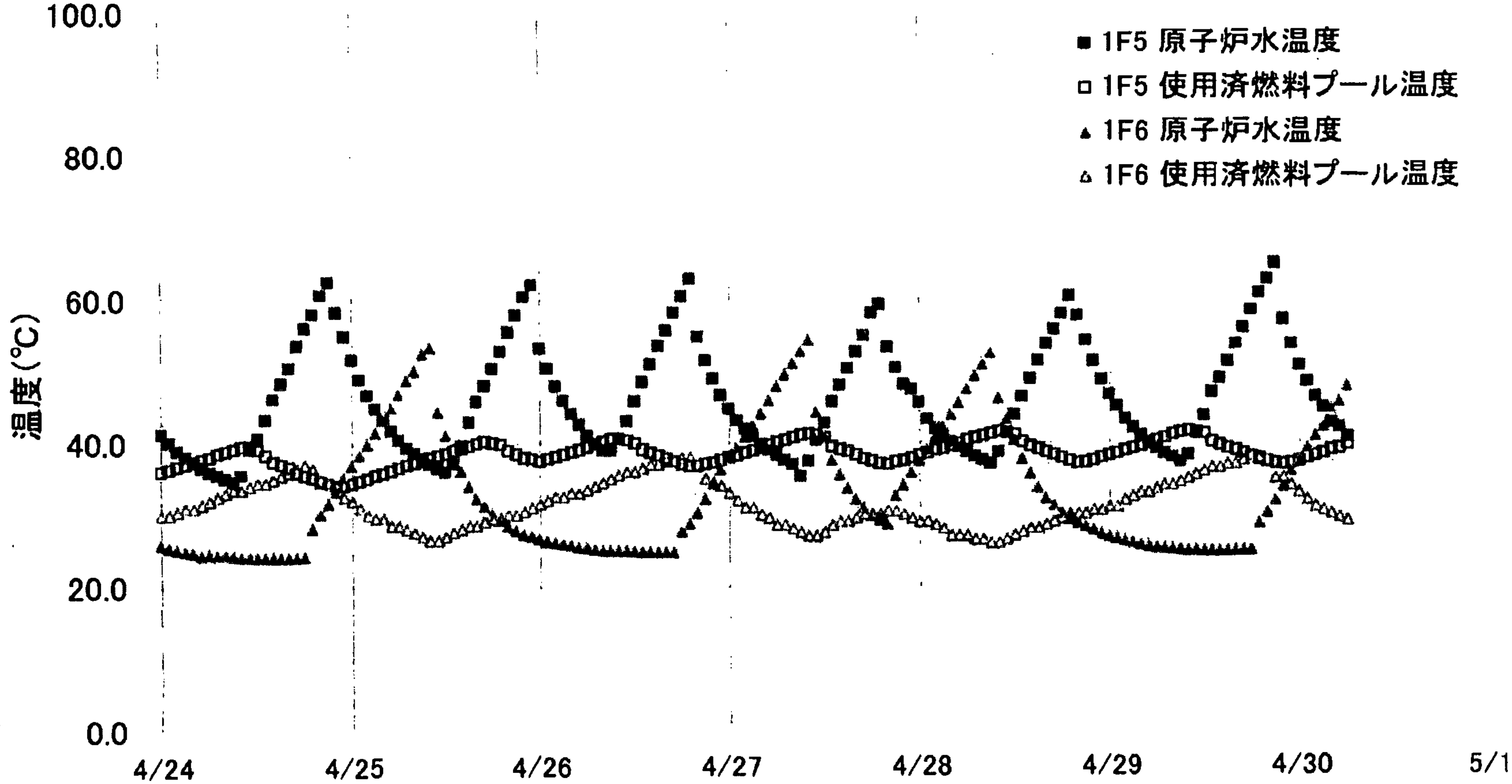
	給水ノズル N4B温度	RPV 胴フランジ	圧力容器下部温度	RPV スタッドボルト温度	RPV 胴フランジ下部温度	逃し安全弁 2-71D 漏洩	逃し安全弁 2-71F 漏洩	主蒸気隔離弁 2-86A リークオフ	D/W HVH戻り温度	RPVベローシール	S/Cプール水温度A	S/Cプール水温度B
4/22 11:50	92.4	148.8	111.6	116.1	146.3	77.2	102.6	57.8	62.8	137.9	42.2	42.2
4/22 17:50	80.6	149.9	110.1	113.3	146.2	81.7	102.3	58.5	57.3	136.6	42.1	42.1
4/23 0:00	81.7	150	109.2	110.8	148.1	71.8	102.2	58.6	58.1	135.2	42.1	42.1
4/23 6:15	85.9	154.9	109.4	108.5	108.9	65.2	101.4	58.9	56.2	134.2	42	42
4/23 11:55	85.7	152.1	108.6	104.3	129.5	72.4	100.6	59.2	55.7	132.9	41.9	41.9
4/23 18:00	81.1	153	110.1	100.6	144.4	80.5	100.6	59.4	57.3	130.6	41.9	41.9
4/24 0:00	79.1	155.7	109.6	102.7	150.4	81.9	99.5	59.6	64.4	129.6	41.8	41.8
4/24 6:50	81.1	160.7	109.8	104.3	151.9	79.4	99.5	59.3	63.5	128.3	41.8	41.8
4/24 12:00	65.5	163.2	110.6	102.9	140.5	74.9	98.6	59.4	65.2	126.6	41.7	41.7
4/24 18:00	71.6	166.5	110.2	102.8	142.7	68	98.3	59.4	65.3	126.6	41.7	41.7
4/25 0:00	74.6	169	110.8	103.4	129.6	60.4	98.4	59.2	67.8	124.3	41.6	41.6
4/25 6:00	72.5	165.9	109.3	99.3	130	53	98.5	58.9	70.2	122.5	41.6	41.6
4/25 11:00	68.8	164.8	110	99.5	145.8	43.2	97.8	59.6	69.5	120	41.6	41.5
4/25 17:00	77.7	163.8	110	98	153	53.6	97.3	59.5	61.4	117.6	41.5	41.5
4/25 23:00	84.9	155.7	109.8	98.8	158.4	62.6	96.7	59.2	64.5	103.1	41.4	41.4
4/26 5:00	67.9	151	110.4	94.9	156.8	66.7	97	59	67.3	117.9	41.4	41.4
4/26 9:00	82.5	149.4	110.7	97	158	43.4	96.7	59.1	69	121.5	41.4	41.4
4/26 17:00	86.2	154.8	110.5	94.3	160.7	62.4	96	59.6	71.2	122.2	41.3	41.3
4/26 23:00	85.6	156.6	110.7	92	158.7	63.2	96.1	59.7	96.7	122.2	41.2	41.2
4/27 5:00	72	153.1	110.7	94.3	157	51.7	96.3	59.9	101.9	121.7	41.2	41.2
4/27 11:00	82.3	160.4	110.3	95.3	153.7	50	97.3	59.9	103.6	123.4	41.1	41.1
4/27 17:00	83.2	143.2	109.9	92.4	156.8	36	96.7	60.6	104	124.6	41.1	41.1
4/27 23:00	84.6	137.1	110.2	90.5	152.1	56.6	97.2	60.7	102.9	124.1	41.1	41.1
4/28 5:00	86	129.5	109.6	92.7	150.9	57.8	96.2	60.9	102.1	124.7	41	41
4/28 11:00	85.1	127.2	109.4	91.3	154.4	54.7	95.6	60.7	98.9	125.4	41	41
4/28 17:10	83.5	124.1	110	94.9	150.1	54.7	96	60.6	95.5	128	41	41
4/28 23:00	82.4	120.6	112.1	92.2	149.7	96.3	96.8	60.5	98.1	129.1	40.9	40.9
4/29 5:00	81.3	114.7	112.7	91.6	150.8	85.1	96.7	60.2	98.6	128.3	40.9	40.9
4/29 11:00	80.6	111	112.9	84	151.7	84	96.7	60.3	97.2	127.4	40.9	40.9
4/29 17:00	80.9	105.1	113.7	83.7	151.2	84.5	96.3	60.4	97.6	127.6	40.8	40.8
4/29 23:00	81.6	108.2	113.3	83.2	147.1	84.8	96.1	60.1	97.9	128.6	40.8	40.8
4/30 5:00	83.6	100.9	113.1	84.6	150	81.6	97	60	101.2	125.3	40.7	40.7

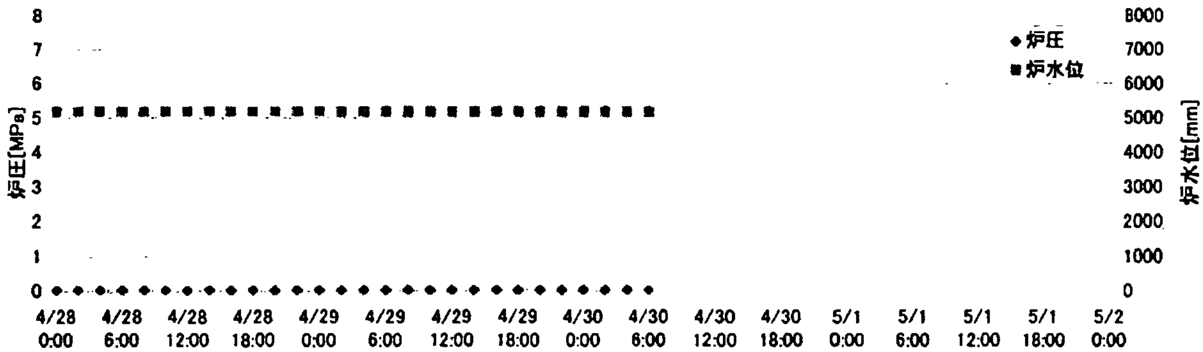
1F5／6 原子炉水温度、使用済燃料プール温度推移

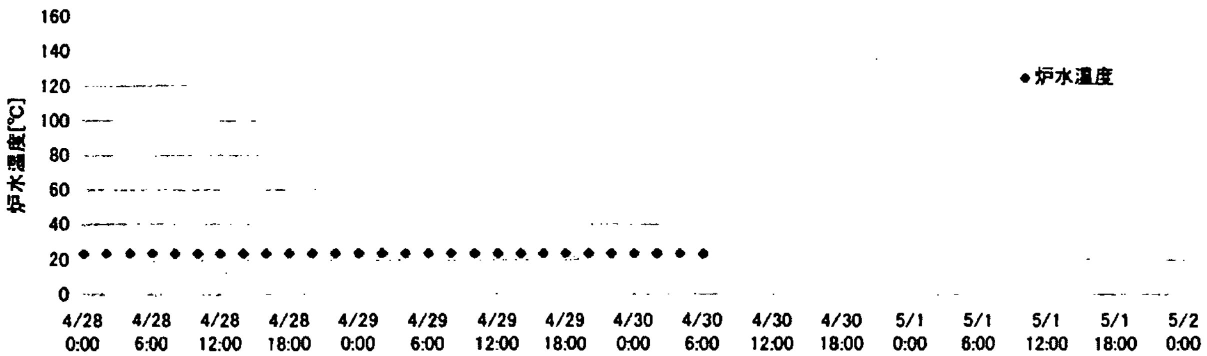


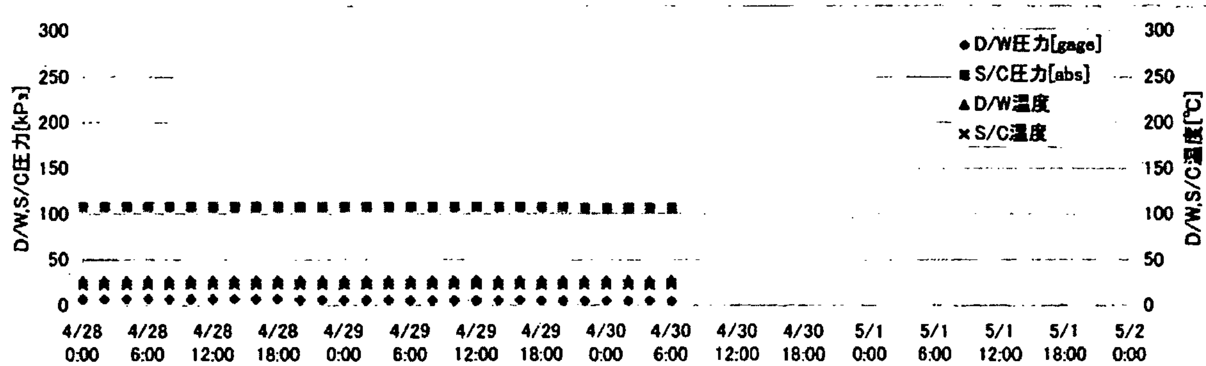
1F5/6 原子炉水温度・使用済燃料プール温度

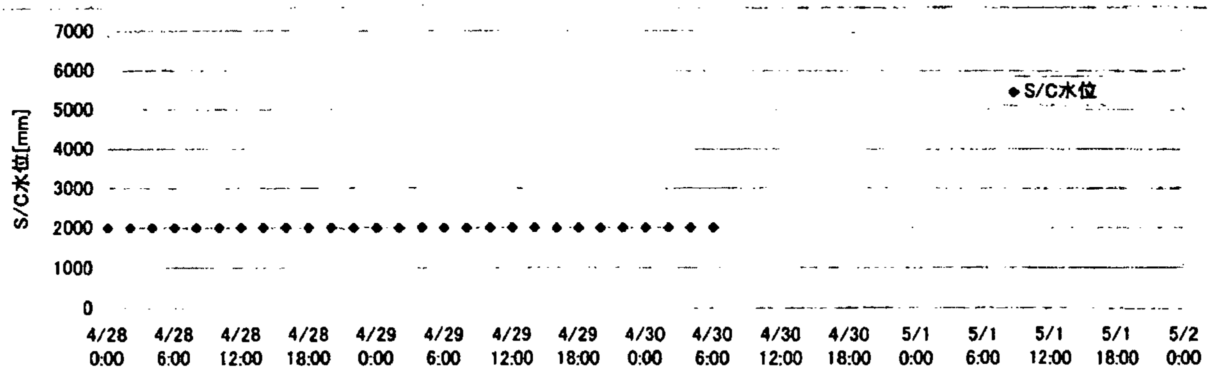
	1F5 原子炉水温度	1F5 使用済燃料プール温度	1F6 原子炉水温度	1F6 使用済燃料プール温度
4/27 10:00	37.5	41.3	54.3	27.0
4/27 11:00	40.4	41.1	44.3	27.0
4/27 12:00	42.8	40.8	40.9	27.5
4/27 13:00	45.8	39.5	37.6	28.5
4/27 14:00	48.1	39.1	35.5	29.0
4/27 15:00	50.4	38.8	33.6	29.0
4/27 16:00	52.7	38.3	32.1	29.5
4/27 17:00	55.0	37.8	30.9	30.0
4/27 18:00	58.2	37.5	29.8	30.0
4/27 19:00	59.4	37.1	29.2	30.0
4/27 20:00	53.4	37.0	28.6	30.5
4/27 21:00	50.5	37.4	32.6	30.5
4/27 22:00	48.2	37.6	34.1	30.0
4/27 23:00	47.5	37.9	35.9	29.5
4/28 0:00	45.7	38.3	37.5	29.0
4/28 1:00	43.3	38.6	39.0	29.0
4/28 2:00	41.9	39.0	40.7	28.5
4/28 3:00	41.0	39.2	42.1	28.0
4/28 4:00	40.1	39.6	43.9	27.0
4/28 5:00	39.4	39.9	45.6	27.0
4/28 6:00	38.7	40.4	47.5	27.0
4/28 7:00	38.1	40.7	49.3	26.5
4/28 8:00	37.6	41.0	50.9	26.5
4/28 9:00	37.1	41.3	52.5	26.0
4/28 10:00	38.7	41.6	46.2	26.0
4/28 11:00	41.3	41.4	43.2	26.5
4/28 12:00	43.9	41.1	40.3	27.0
4/28 13:00	46.4	40.1	37.7	27.5
4/28 14:00	48.9	39.5	35.6	28.0
4/28 15:00	51.4	39.1	33.7	28.0
4/28 16:00	53.8	38.7	32.2	28.5
4/28 17:00	55.8	38.3	31.2	29.0
4/28 18:00	58.0	37.9	30.2	29.5
4/28 19:00	60.5	37.5	29.3	30.0
4/28 20:00	57.7	37.1	28.7	30.0
4/28 21:00	54.2	37.2	28.2	30.0
4/28 22:00	51.3	37.5	27.7	30.5
4/28 23:00	48.7	37.9	27.2	30.5
4/29 0:00	46.6	38.2	26.8	31.0
4/29 1:00	45.1	38.5	26.6	31.0
4/29 2:00	43.3	38.9	26.2	32.0
4/29 3:00	42.0	39.2	26.0	32.5
4/29 4:00	41.0	39.5	25.7	33.0
4/29 5:00	40.0	39.9	25.5	33.0
4/29 6:00	39.1	40.3	25.3	33.5
4/29 7:00	38.4	40.6	25.2	34.0
4/29 8:00	37.9	41.1	25.1	34.0
4/29 9:00	37.3	41.4	25.0	34.5
4/29 10:00	38.2	41.6	24.9	35.0
4/29 11:00	41.2	41.4	24.9	35.5
4/29 12:00	43.7	41.2	24.8	36.0
4/29 13:00	47.0	40.1	24.8	36.5
4/29 14:00	48.9	39.6	24.8	36.5
4/29 15:00	51.3	39.2	24.9	37.0
4/29 16:00	53.7	38.9	24.9	37.0
4/29 17:00	55.9	38.4	24.9	37.5
4/29 18:00	58.4	38.0	24.9	38.0
4/29 19:00	60.8	37.7	28.6	37.5
4/29 20:00	62.7	37.3	30.1	37.5
4/29 21:00	64.9	37.0	31.9	35.0
4/29 22:00	57.1	36.9	33.8	35.0
4/29 23:00	53.7	37.1	36.0	34.0
4/30 0:00	50.7	37.4	37.6	33.0
4/30 1:00	48.4	37.8	39.2	32.0
4/30 2:00	46.3	38.1	40.8	31.0
4/30 3:00	44.8	38.4	42.1	30.5
4/30 4:00	42.7	38.9	44.6	30.0
4/30 5:00	42.0	39.1	45.6	29.5
4/30 6:00	40.7	39.6	47.7	29.0

2F－1号機

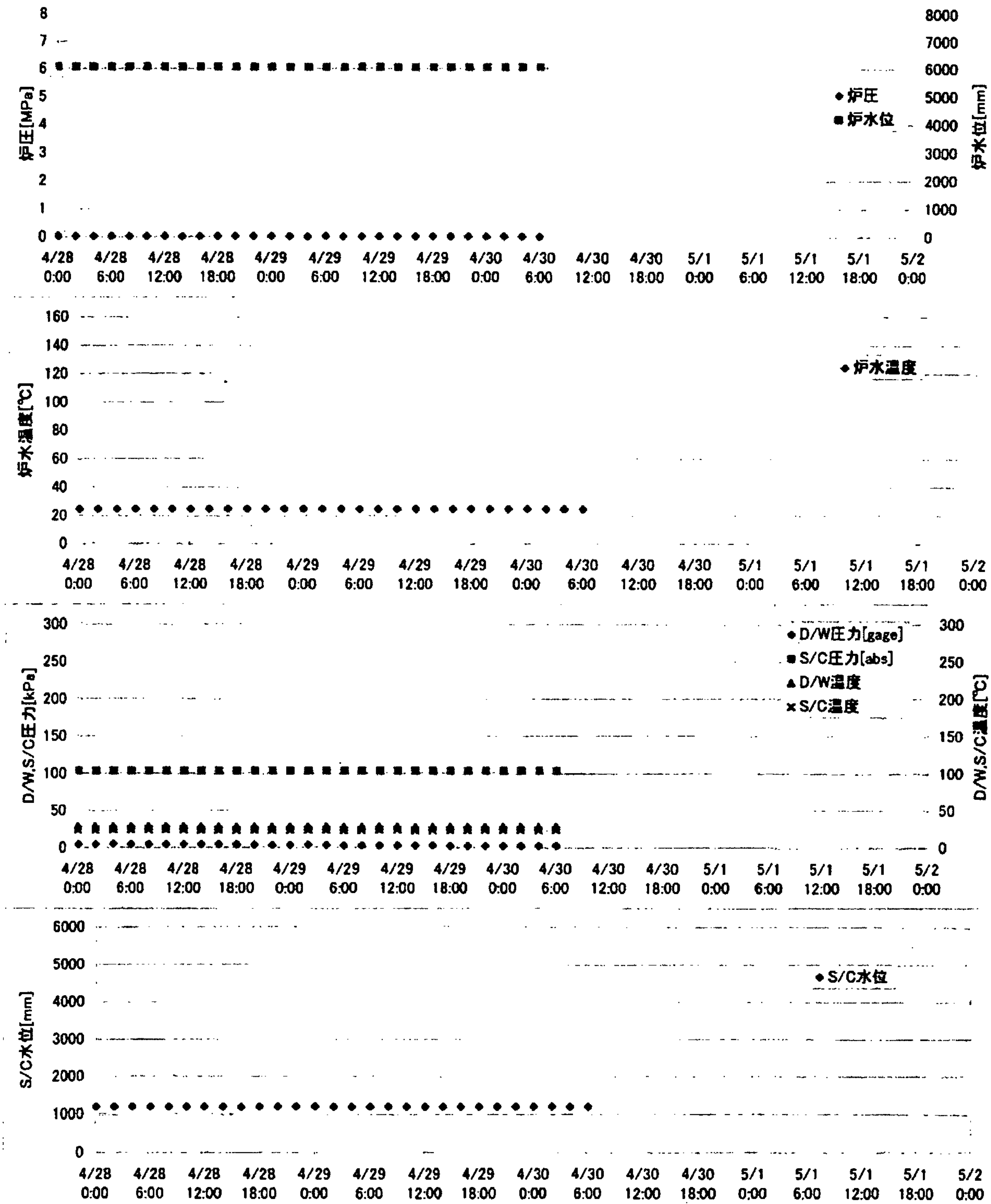

炉圧
炉水位
炉圧[MPa]
炉水位[mm]
8
7
6
5
4
3
2
1
0
8000
7000
6000
5000
4000
3000
2000
1000
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00


炉水温度
炉水温度[℃]
160
140
120
100
80
60
40
20
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00

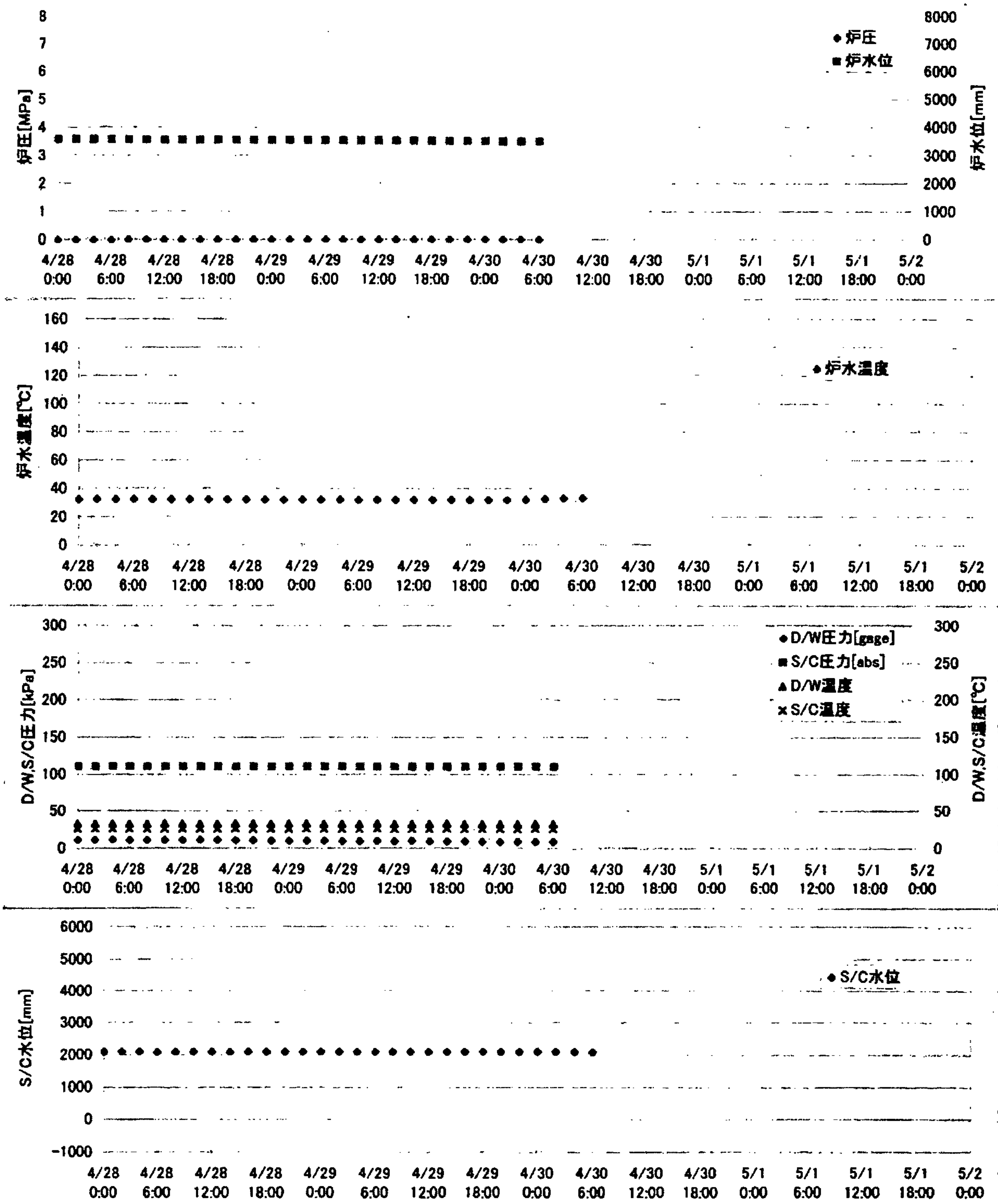

D/W圧力[gage]
S/C圧力[abs]
D/W温度
S/C温度
D/W,S/C圧力[kPa]
D/W,S/C温度[℃]
300
250
200
150
100
50
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00


S/C水位
S/C水位[mm]
7000
6000
5000
4000
3000
2000
1000
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00

2F－2号機

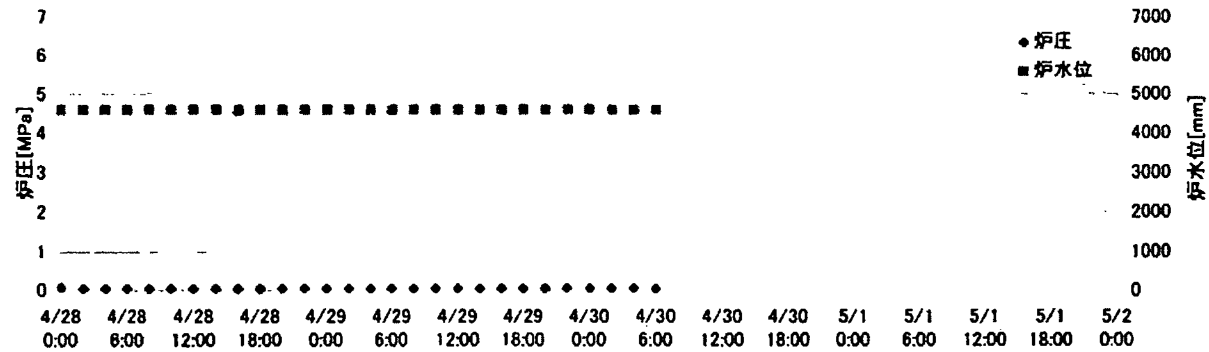

炉圧[MPa]
炉水位[mm]
◆炉圧
■炉水位
炉水温度[℃]
◆炉水温度
D/W,S/C圧力[kPa]
D/W,S/C温度[℃]
◆D/W圧力[gage]
■S/C圧力[abs]
▲D/W温度
×S/C温度
S/C水位[mm]
◆S/C水位
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00

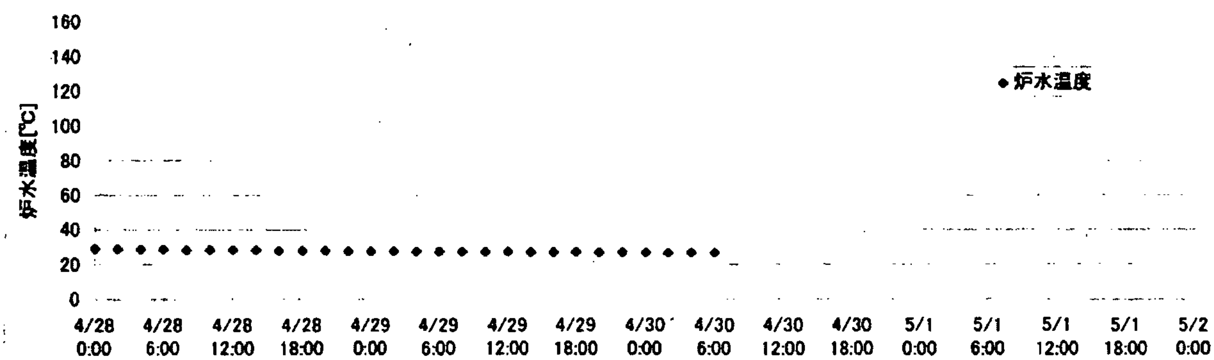
2F－3号機

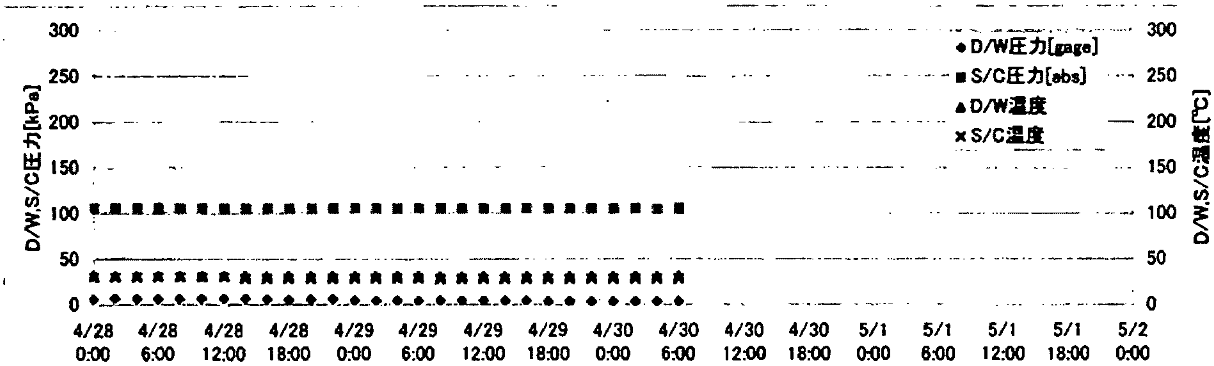


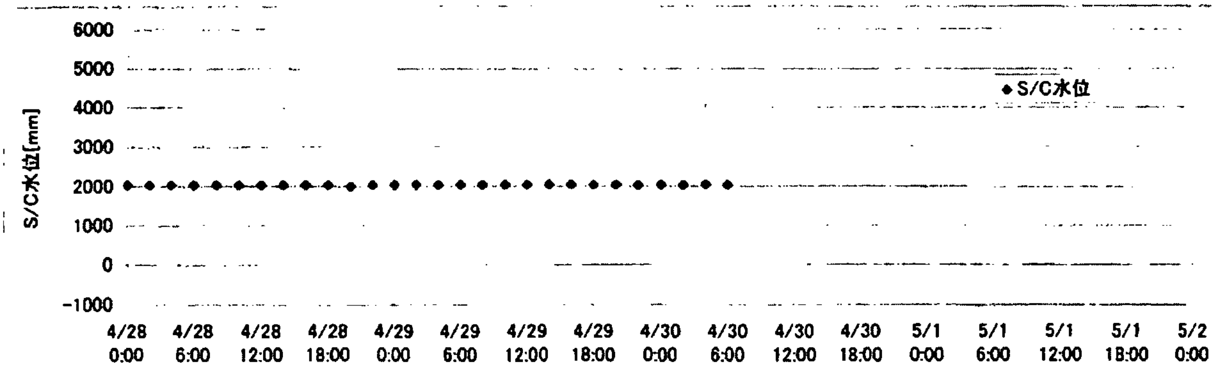
炉圧[MPa]
炉水位[mm]
炉圧
炉水位
炉水温度[℃]
炉水温度
D/W,S/C圧力[kPa]
D/W,S/C温度[℃]
D/W圧力[gage]
S/C圧力[abs]
D/W温度
S/C温度
S/C水位[mm]
S/C水位
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00

2F－4号機


炉圧
炉水位
炉圧[MPa]
炉水位[mm]
7
6
5
4
3
2
1
0
7000
6000
5000
4000
3000
2000
1000
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00


炉水温度
炉水温度[℃]
160
140
120
100
80
60
40
20
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00


D/W圧力[gage]
S/C圧力[abs]
D/W温度
S/C温度
D/W,S/C圧力[kPa]
D/W,S/C温度[℃]
300
250
200
150
100
50
0
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00


S/C水位
S/C水位[mm]
6000
5000
4000
3000
2000
1000
0
-1000
4/28 0:00
4/28 6:00
4/28 12:00
4/28 18:00
4/29 0:00
4/29 6:00
4/29 12:00
4/29 18:00
4/30 0:00
4/30 6:00
4/30 12:00
4/30 18:00
5/1 0:00
5/1 6:00
5/1 12:00
5/1 18:00
5/2 0:00

2F－1号機　※燃料頂部(TAF)からの水位＝炉水位＋4200[mm]

時間	炉圧 [MPa (gage)]	炉水位 [mm] 停止時	炉水温度[℃] 給水ﾉｽﾞﾙ温度	D/W圧力 [kPa(gage)]	D/W温度 [℃]	S/C圧力 [kPa(abs)]	S/C水位 [mm]	S/C温度 [℃]
2011/4/28 0:00	0.05	5200	23.9	7	27.5	108	2003	23
2011/4/28 2:00	0.05	5200	23.9	8	27.5	108	2002	23
2011/4/28 4:00	0.05	5200	23.9	8	27.5	108	2003	23
2011/4/28 6:00	0.05	5200	23.9	8	27.5	108	2003	23
2011/4/28 8:00	0.05	5200	23.9	7	27.5	108	2003	23
2011/4/28 10:00	0.05	5200	23.9	7	27.5	108	2002	23
2011/4/28 12:00	0.05	5200	23.9	7	27.5	108	2002	23
2011/4/28 14:00	0.05	5200	23.9	7	27.5	108	2002	23
2011/4/28 16:00	0.05	5200	23.9	7	27.5	108	2002	23
2011/4/28 18:00	0.05	5200	24.0	7	27.5	108	2002	23
2011/4/28 20:00	0.05	5200	24.0	7	27.4	108	2002	23
2011/4/28 22:00	0.05	5200	24.0	6	27.4	108	2003	23
2011/4/29 0:00	0.05	5200	24.0	6	27.5	108	2003	23
2011/4/29 2:00	0.05	5200	24.0	6	27.5	108	2004	23
2011/4/29 4:00	0.05	5200	24.0	6	27.4	108	2004	23
2011/4/29 6:00	0.05	5200	24.0	6	27.4	108	2004	23
2011/4/29 8:00	0.05	5200	23.9	6	27.5	108	2004	23
2011/4/29 10:00	0.05	5200	23.9	6	27.4	108	2004	23
2011/4/29 12:00	0.05	5200	23.9	6	27.4	108	2006	23
2011/4/29 14:00	0.05	5200	23.9	6	27.4	108	2005	23
2011/4/29 16:00	0.05	5200	23.9	6	27.4	108	2005	23
2011/4/29 18:00	0.05	5200	23.9	6	27.4	108	2004	23
2011/4/29 20:00	0.05	5200	23.9	5	27.4	108	2006	23
2011/4/29 22:00	0.05	5200	23.9	5	27.4	107	2006	23
2011/4/30 0:00	0.05	5200	23.9	5	27.4	107	2004	23
2011/4/30 2:00	0.05	5200	23.9	5	27.4	107	2004	23
2011/4/30 4:00	0.05	5200	23.9	5	27.4	107	2004	23
2011/4/30 6:00	0.05	5200	23.8	5	27.5	107	2004	23
2011/4/30 8:00								
2011/4/30 10:00								
2011/4/30 12:00								
2011/4/30 14:00								
2011/4/30 16:00								
2011/4/30 18:00								
2011/4/30 20:00								
2011/4/30 22:00								
2011/5/1 0:00								

2F－2号機　※燃料頂部(TAF)からの水位＝炉水位＋4200[mm]

時間	炉圧 [MPa (gage)]	炉水位 [mm] 停止時	炉水温度[℃] 給水ﾉｽﾞﾙ温度	D/W圧力 [kPa(gage)]	D/W温度 [℃]	S/C圧力 [kPa(abs)]	S/C水位 [mm]	S/C温度 [℃]
2011/4/28 0:00	0.04	6050	24.8	4.6	28.6	104	1200	24
2011/4/28 2:00	0.03	6050	24.8	4.9	28.5	104	1200	24
2011/4/28 4:00	0.03	6050	24.8	5.1	28.5	104	1200	24
2011/4/28 6:00	0.03	6050	24.9	5.0	28.4	104	1200	24
2011/4/28 8:00	0.03	6050	24.9	5.0	28.4	104	1200	24
2011/4/28 10:00	0.03	6050	24.9	5.0	28.5	104	1200	24
2011/4/28 12:00	0.04	6050	24.9	5.0	28.5	104	1200	24
2011/4/28 14:00	0.03	6050	24.9	5.0	28.4	104	1200	24
2011/4/28 16:00	0.03	6050	24.9	4.9	28.4	104	1200	24
2011/4/28 18:00	0.03	6050	24.9	4.7	28.4	104	1200	24
2011/4/28 20:00	0.03	6050	24.9	4.2	28.5	104	1200	24
2011/4/28 22:00	0.03	6050	24.9	4.1	28.4	104	1200	24
2011/4/29 0:00	0.03	6050	24.9	3.9	28.4	104	1200	24
2011/4/29 2:00	0.03	6050	24.9	3.9	28.4	104	1200	24
2011/4/29 4:00	0.03	6050	24.9	3.7	28.5	104	1200	24
2011/4/29 6:00	0.03	6050	24.9	3.5	28.4	104	1200	24
2011/4/29 8:00	0.03	6050	24.8	3.5	28.4	104	1200	24
2011/4/29 10:00	0.03	6050	24.8	3.4	28.4	104	1200	24
2011/4/29 12:00	0.03	6050	24.8	3.4	28.5	104	1200	24
2011/4/29 14:00	0.03	6050	24.8	3.4	28.4	104	1200	24
2011/4/29 16:00	0.03	6050	24.8	3.4	28.4	104	1200	24
2011/4/29 18:00	0.03	6050	24.8	3.2	28.4	104	1200	24
2011/4/29 20:00	0.03	6050	24.8	3.0	28.3	104	1200	24
2011/4/29 22:00	0.03	6050	24.8	2.9	28.3	104	1200	24
2011/4/30 0:00	0.03	6050	24.7	2.8	28.4	104	1200	24
2011/4/30 2:00	0.04	6050	24.7	2.8	28.3	104	1200	24
2011/4/30 4:00	0.03	6050	24.8	2.7	28.3	104	1200	24
2011/4/30 6:00	0.03	6050	24.7	2.7	28.4	104	1200	24
2011/4/30 8:00								
2011/4/30 10:00								
2011/4/30 12:00								
2011/4/30 14:00								
2011/4/30 16:00								
2011/4/30 18:00								
2011/4/30 20:00								
2011/4/30 22:00								
2011/5/1 0:00								

2F−3号機　※燃料頂部(TAF)からの水位＝炉水位＋4200[mm]

時間	炉圧 [MPa (gage)]	炉水位 [mm] アップセット	炉水温度[℃] 給水ノズル温度	D/W圧力 [kPa(gage)]	D/W温度 [℃]	S/C圧力 [kPa(abs)]	S/C水位 [mm]	S/C温度 [℃]
2011/4/28 0:00	0.00	3576	32.9	11	33.0	110	2100	26
2011/4/28 2:00	0.00	3575	32.8	11	33.0	110	2100	26
2011/4/28 4:00	0.00	3570	32.7	11	33.0	110	2100	26
2011/4/28 6:00	0.00	3570	32.9	11	33.0	110	2100	26
2011/4/28 8:00	0.00	3568	32.9	11	32.9	110	2100	26
2011/4/28 10:00	0.00	3565	32.8	11	33.1	110	2100	26
2011/4/28 12:00	0.00	3561	32.7	11	32.9	110	2100	26
2011/4/28 14:00	0.00	3558	32.6	11	33.0	110	2100	26
2011/4/28 16:00	0.00	3555	32.5	11	33.0	110	2100	26
2011/4/28 18:00	0.00	3555	32.5	11	33.1	110	2100	26
2011/4/28 20:00	0.00	3549	32.4	10	32.9	110	2100	26
2011/4/28 22:00	0.00	3549	32.3	10	32.8	110	2100	26
2011/4/29 0:00	0.00	3545	32.4	10	32.8	110	2100	26
2011/4/29 2:00	0.00	3545	32.4	10	32.8	110	2100	26
2011/4/29 4:00	0.00	3542	32.3	10	32.8	110	2100	26
2011/4/29 6:00	0.00	3538	32.3	10	32.8	110	2100	26
2011/4/29 8:00	0.00	3535	32.3	10	32.8	110	2100	26
2011/4/29 10:00	0.00	3532	32.3	10	32.8	110	2100	26
2011/4/29 12:00	0.00	3532	32.2	10	32.8	110	2100	26
2011/4/29 14:00	0.00	3524	32.2	10	32.8	110	2100	26
2011/4/29 16:00	0.00	3521	32.2	10	32.9	110	2100	26
2011/4/29 18:00	0.00	3520	32.1	9	32.8	110	2100	26
2011/4/29 20:00	0.00	3511	32.1	9	32.7	110	2100	26
2011/4/29 22:00	0.00	3508	32.1	9	32.6	110	2100	26
2011/4/30 0:00	0.00	3506	32.5	9	32.6	110	2100	26
2011/4/30 2:00	0.00	3502	33.1	9	32.7	110	2100	26
2011/4/30 4:00	0.00	3500	33.4	9	32.7	110	2100	26
2011/4/30 6:00	0.00	3497	33.5	9	32.8	110	2100	26
2011/4/30 8:00								
2011/4/30 10:00								
2011/4/30 12:00								
2011/4/30 14:00								
2011/4/30 16:00								
2011/4/30 18:00								
2011/4/30 20:00								
2011/4/30 22:00								
2011/5/1 0:00								

2F－4号機　※燃料頂部(TAF)からの水位＝炉水位＋4200[mm]

時間	炉圧 [MPa (gage)]	炉水位 [mm] ｱｯﾌﾟｾｯﾄ	炉水温度[℃] 給水ﾉｽﾞﾙ温度	D/W圧力 [kPa(gage)]	D/W温度 [℃]	S/C圧力 [kPa(abs)]	S/C水位 [mm]	S/C温度 [℃]
2011/4/28 0:00	0.10	4589	29.4	6	32.3	106	2050	30
2011/4/28 2:00	0.07	4589	29.3	7	32.5	106	2050	30
2011/4/28 4:00	0.07	4589	29.1	7	32.1	106	2050	30
2011/4/28 6:00	0.07	4589	29.0	7	31.7	106	2050	30
2011/4/28 8:00	0.07	4589	28.9	7	32.0	106	2050	30
2011/4/28 10:00	0.07	4589	28.7	7	31.6	106	2050	30
2011/4/28 12:00	0.07	4589	28.6	7	32.4	106	2050	30
2011/4/28 14:00	0.07	4589	28.5	7	31.9	106	2050	29
2011/4/28 16:00	0.07	4589	28.3	6	32.1	106	2050	29
2011/4/28 18:00	0.07	4589	28.2	6	32.1	106	2050	29
2011/4/28 20:00	0.07	4589	28.1	6	31.4	106	2000	29
2011/4/28 22:00	0.07	4589	28.0	6	31.2	106	2050	29
2011/4/29 0:00	0.07	4589	27.9	5	31.3	106	2050	29
2011/4/29 2:00	0.07	4589	27.9	5	31.6	106	2050	29
2011/4/29 4:00	0.07	4589	27.8	5	31.7	106	2050	29
2011/4/29 6:00	0.07	4589	27.7	5	31.6	106	2050	29
2011/4/29 8:00	0.07	4589	27.7	5	31.7	106	2050	28
2011/4/29 10:00	0.07	4589	27.6	5	31.8	106	2050	28
2011/4/29 12:00	0.07	4589	27.5	5	31.6	106	2050	28
2011/4/29 14:00	0.07	4589	27.4	5	31.7	106	2050	28
2011/4/29 16:00	0.07	4589	27.4	5	31.6	106	2050	28
2011/4/29 18:00	0.07	4589	27.3	4	31.4	106	2050	28
2011/4/29 20:00	0.07	4589	27.2	4	31.5	106	2050	28
2011/4/29 22:00	0.07	4589	27.2	4	31.5	106	2050	28
2011/4/30 0:00	0.07	4589	27.2	4	31.7	106	2050	28
2011/4/30 2:00	0.07	4589	27.1	4	31.5	106	2050	28
2011/4/30 4:00	0.07	4589	27.1	4	31.4	105	2050	28
2011/4/30 6:00	0.07	4589	27.0	4	31.6	106	2050	28
2011/4/30 8:00								
2011/4/30 10:00								
2011/4/30 12:00								
2011/4/30 14:00								
2011/4/30 16:00								
2011/4/30 18:00								
2011/4/30 20:00								
2011/4/30 22:00								
2011/5/1 0:00								

Fukushima Daiichi Daily Update

April 28, Thu. 17:00

1. Major evolutions

Unit 1 trial flooding operation is continuing. RPV injection flow was increased from 6m3/h to 10m3/h yesterday 10:00AM. RPV water level increased by 10cm but stabilized after 10 hours. The reason of level stabilization is not identified. RPV pressure and D/W pressure decreased gradually. Various temperature parameters decreased. Estimation of D/W water level is not available. Injection flow rate was maintained at 10m3/h and will be returned to 6m3/h when D/W pressure drops below 0.11MPa abs to avoid negative pressure. There is no change observed in the water level in Unit 1 trench or turbine building.

Tepco corrected yeasterday's communication concerning possible leakage from Unit 4 SFP. Recent data didn't show any indication of leakage.

Tepco press released their plan of radioactive water treatment. The treatment system is composed of Cs Absorber, Decontamination System, Desalination System and reservoirs, as outlined in the "Roadmap for Restoration". Some principal parameters are;

Treatment Capacity:	1,200m3/day
D/F:	10E+4-10E+6 on Cs (from 10E+5 -10E+6 Bq/cm3 to 10E+1-10E+2 Bq/cm3)
Reservoir Capacity:	31,400 m3 will be installed before early June. Addition is considered, including HLW reservoir)
Accumulated water:	87,500 m3 currently plus 210-500 m3/day of injected water

2. Unit status

Unit 1:

RPV injection flow was increased from 6m3/h to 10m3/h. Reactor pressure and D/W pressure decreased gradually. FW nozzle temperature and RPV bottom temperature decreased.

	4/28 5:00	4/27 5:00	4/25 23:00
Reactor Pressure (MPa g)	0.415/1.168*	0.450/1.205*	0.450/1.173*
FW Nozzle Temperature (℃)	107.3*	132.0*	133.3*
	*under examination		
RPV Bottom Temperature (℃)	98.5	110.5	111.3
Injection flow rate (m3/h)	10.0	5.9	6.1
D/W pressure (MPa abs)	0.125	0.155	0.150

No SFP spray scheduled today.

Unit 2:

FW Nozzle Temperature continues to decrease;

	4/28 5:00	4/27 5:00	4/25 23:00
Reactor Pressure (MPa g)	-0.016*/-0.020*	-0.018*/-0.023*	-0.020*/-0.025*
FW Nozzle Temperature (C)	119.9	120.4	121.9
RPV Bottom Temperature (C)	→	→	indication incorrect
Injection flow rate (m3/h)	7.0	6.9	7.0
D/W pressure (MPa abs)	0.075	0.080	0.080
SFP temperature (C)	50.0	57.0	71.0

SFP water supply is scheduled today 10:00-11:30, 60 t.

Unit 3:
No big changes within a limited band;

	4/28 5:00	4/27 5:00	4/25 23:00
Reactor Pressure (MPa g)	-0.055*/-0.089*	-0.053*/-0.089*	-0.055*/-0.091*
FW Nozzle Temperature (℃)	86.0*	72.0*	84.9*
	*under examination		
RPV Bottom Temperature (℃)	109.6	110.7	109.8
Injection flow rate (m3/h)	6.8	6.9	6.8
D/W pressure (MPa abs)	0.1017	0.1031	0.1041

SFP water supply is not scheduled today.

Unit 4:
SFP water spray was conducted on 4/27 12:18-15:15, 85 t. No schedule for today.

Common pool:
32C (4/27 6:50)

3. T/B and Trench drainage
Unit 1 T/B and Trench level unchanged. Unit 2 trench level decreased. Unit 3 Trench level and Unit 4 T/B level are increasing;

	T/B (above floor level)	Trench (below grating) as of 4/28 7:00
Unit 1	3.15 m (no change since 4/27 7:00)	1.53 m (no change since 4/27 7:00)
Unit 2	1.20 m (no change since 4/27 7:00)	0.90 m (-1cm since 4/27 7:00)* *water transfer continued.
Unit 3	1.10 m (no change since 4/27 7:00)	0.95 m (+ 2cm since 4/27 7:00)
Unit 4	1.20 m (+5cm since 4/27 7:00)	

4. Site Environmental Data
Site environmental dose is gradually decreasing;

	4/28 9:00	4/27 9:00	4/26 9:00
Main Gate (μSv/h):	48.0	51.0	52.0
West Gate (μSv/h):	21.8	22.7	23.3
Adm. Bldg. (μSv/h):	430	440	450

[Environmental Data]

a. **Radiation Level during on Apr. 27-Apr. 28**

Time and Date	Dose rate (μ Sv/h)	Location
16:00 2011/04/27	22.7	Monitoring Car in West gate of Fukushima Daiichi NPS
00:00 2011/04/28	22.4	Monitoring Car in West gate of Fukushima Daiichi NPS
08:00 2011/04/28	21.9	Monitoring Car in West gate of Fukushima Daiichi NPS

Monitoring post data (μ Sv/h)

	MP-1	M-2	MP-3	MP-4	MP-5	MP-6	MP-7	MP-8
16:00 2011 04/27	7	29	23	21	32	58	155	149
00:00 2011 04/28	7	29	23	21	31	58	154	148
08:00 2011 04/28	7	28	22	20	30	56	150	144

b. **Iodine and Cesium are detected by the isotopic analysis;**

- Site Dust Sampling Data, 4/26, at west gate

	4/26 11:25-11:45		
	① Measured (Bq/cm3)	Ratio ①/②	②limitation of breathing air for radiation worker
Volatile			
I-131	5.0E-05	0.05	1E-03
Cs-134	1.2E-05	0.01	2E-03
Cs-137	1.4E-05	0.00	3E-03
Particulate			
I-131	4.0E-05	0.04	1E-03
Cs-134	9.7E-06	0.00	2E-03
Cs-137	1.0E-05	0.00	3E-03

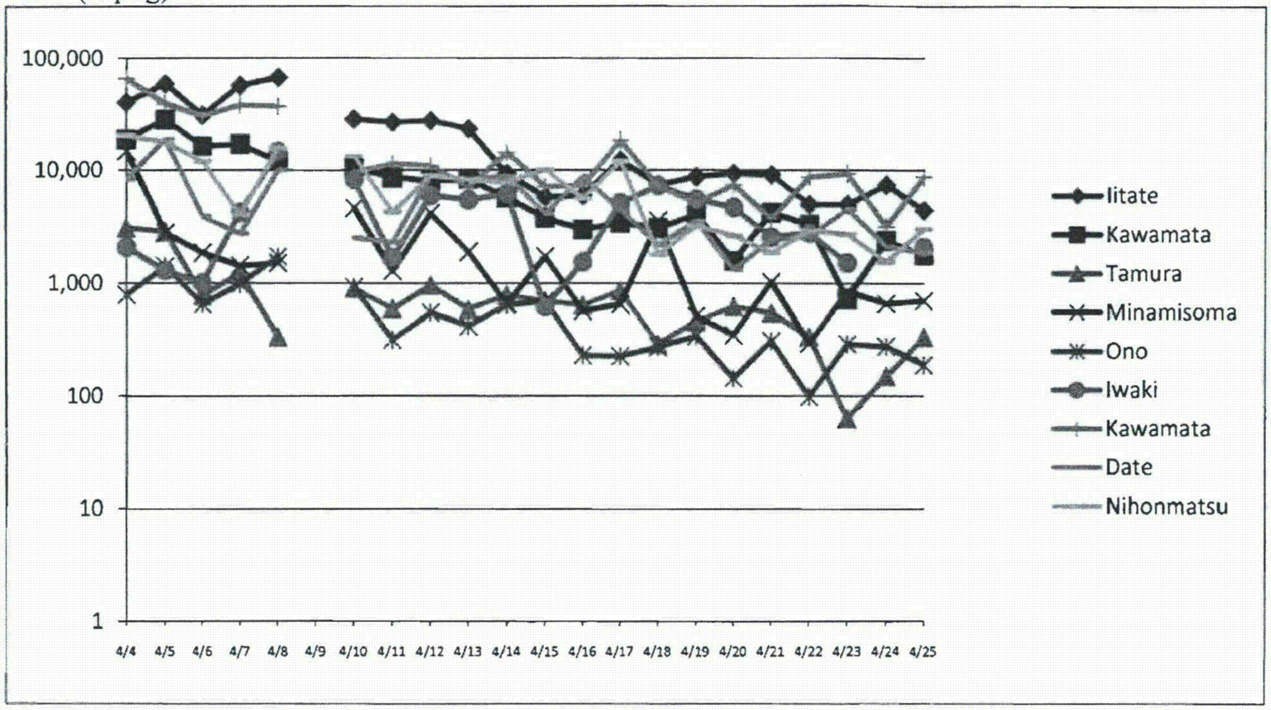
- Dust Sampling Data, 4/25 beyond 20 km from station

Time and Date	I-131 (Bq/m3)	Cs-137 (Bq/m3)	Location
10:01-10:21 4/25	ND	ND	(Point1) 60 km northwest of station
12:36-12:56 4/25	ND	ND	(Point2-1) 40 km northwest of station
11:32-11:52 4/25	ND	ND	(Point2-6) 45 km south of station

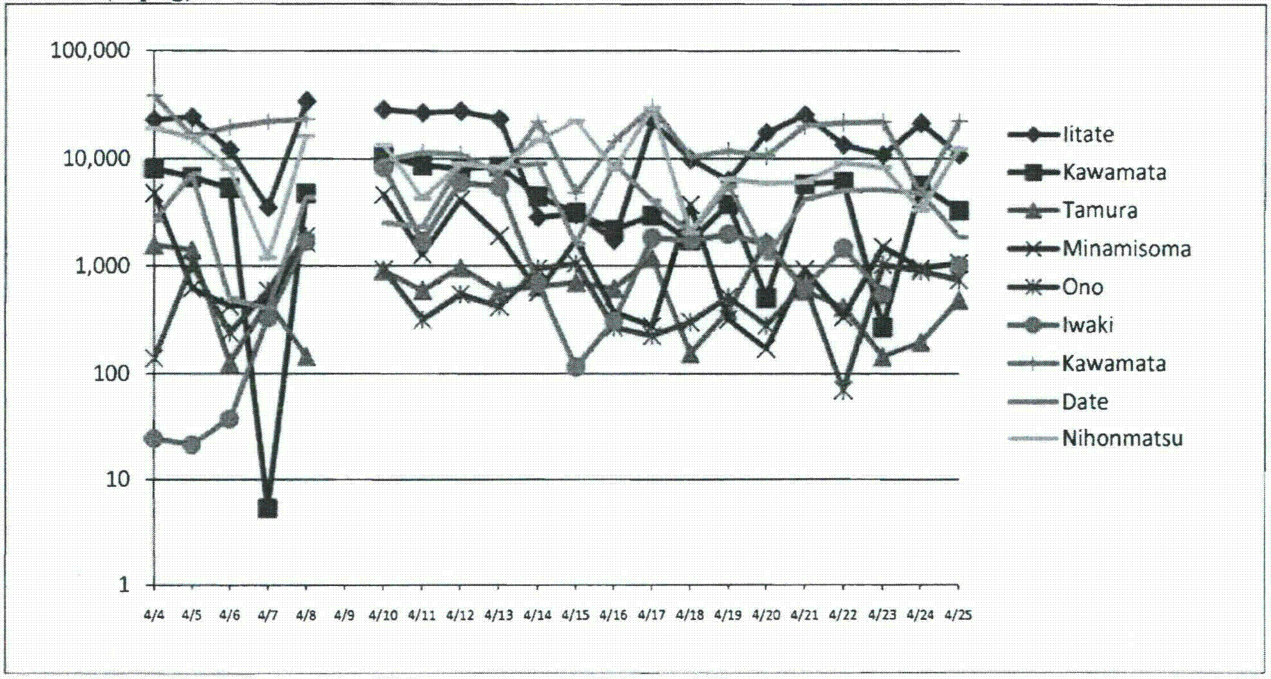
- Pond Water and Soil Sampling Data, 4/25 beyond 20 km from station

Place	Distance from the plant	Sample	Nuclide	Radioactive level(Bq/kg) 4/25
Iitate	40km northwest Point2-1	Pond water	I-131	43.0
			Cs-137	32.1
		Soil	I-131	4,390
			Cs-137	10,800
Kawamata	45km northwest Point2-2	Soil	I-131	1,780
			Cs-137	3,720
Tamura	40km west Point2-3	Soil	I-131	333
			Cs-137	484
Minamisoma	25km north Point2-4	Soil	I-131	698
			Cs-137	1,060
Ono	40km southwest Point2-5	Soil	I-131	189
			Cs-137	744
Iwaki	45km south Point2-6	Soil	I-131	2,080
			Cs-137	1,010
Kawamata	35km northwest Point2-7	Soil	I-131	8,690
			Cs-137	22,400
Date	50km northwest Point2-8	Soil	I-131	1,870
			Cs-137	1,850
Nihonmatsu	45km west-northwest Point2-9	Soil	I-131	3,010
			Cs-137	12,400

I-131 (Bq/kg)



CS-137 (Bq/kg)



- Measured from potable water samples at several prefectures.

		4/26
Tochigi (Utsunomiya)	I-131(Bq/kg)	ND
	Cs-137(Bq/kg)	ND
Ibaraki (Hitachinaka)	I-131(Bq/kg)	0.45
	Cs-137(Bq/kg)	ND
Tokyo (Shinjuku)	I-131(Bq/kg)	ND
	Cs-137(Bq/kg)	ND

- I-131 was detected in water reservoir in Fukushima prefecture.

	4/18	4/19	4/20	4/21	4/22	4/23	4/24	4/25	4/26	Location
I-131 (Bq/kg)	11.1	ND	ND	ND	ND	ND	ND	14.1	ND	Iitate(Tajiri) in Fukushima

- Nuclide analysis result for sea water samples at 330 m south from the discharge point of units 1-4

	4/26 14:10		
Nuclide	①Sample concentration (Bq/cm3)	Ratio ①/②	②National Safety guideline limitation (Bq/cm3)
I-131	2.7E-02	0.68	4.0E-02
Cs-134	1.3E-01	2.2	6.0E-02
Cs-137	1.3E-01	1.4	9.0E-02

Nuclide analysis result for sea water samples at 30 m north from the discharge point of units 5&6

	4/26 14:30		
Nuclide	①Sample concentration (Bq/cm3)	Ratio ①/②	②National Safety guideline limitation (Bq/cm3)
I-131	8.6E-02	2.2	4.0E-02
Cs-134	2.1E-01	3.5	6.0E-02
Cs-137	2.3E-01	2.6	9.0E-02

Nuclide analysis result for sea water samples at unit 2 screen

		4/26		
	Nuclide	①Sample concentration (Bq/cm3)	Ratio ①/②	②National Safety guideline limitation (Bq/cm3)
Inside the silt fence	I-131	1.3E+02	3,300	4.0E-02
	Cs-134	2.4E+01	400	6.0E-02
	Cs-137	2.5E+01	280	9.0E-02
Outside the silt fence	I-131	7.7E+01	1,900	4.0E-02
	Cs-134	1.7E+01	280	6.0E-02
	Cs-137	1.7E+01	190	9.0E-02

Nuclide analysis result for sea water samples at 15 km offshore points (4/26)

		4/26		
	Nuclide	①Sample concentration (Bq/cm3)	Ratio ①/②	②National Safety guideline limitation (Bq/cm3)
15 km off the coast of Fukushima-Daiichi site	I-131			4.0E-02
	Cs-134			6.0E-02
	Cs-137			9.0E-02
15 km off the coast of Fukushima – Daini site	I-131	2.8E-02	0.70	4.0E-02
	Cs-134	8.4E-02	1.4	6.0E-02
	Cs-137	8.8E-02	0.98	9.0E-02
15 km off the coast of Iwasawa	I-131	ND	-	4.0E-02
	Cs-134	2.8E-02	0.47	6.0E-02
	Cs-137	2.7E-02	0.30	9.0E-02

- Measurement result for sub drain on 1st floor of turbine building(Bq/cm3) (4/25) (No new data available)

Unit	Unit1 Sub drain	Unit2 Sub drain	Unit3 Sub drain	Unit4 Sub drain	Unit5 Sub drain	Unit6 Sub drain	Unit1 Deep well
I-131	1.3E+02	6.1E+02	2.0E+01	9.3E-02	1.3E-01	3.8E-01	ND
Cs-134	5.5E+01	3.3E+01	3.9E+00	1.2E-01	2.5E-01	3.3E-01	ND
Cs-137	6.4E+01	3.7E+01	4.2E+00	1.3E-01	3.1E-01	3.9E-01	ND

* 1;Gauge out of order
* 2;Not monitored
* 3;Under examination

Plant parameters of Fukushima-Daiichi NPS

28 April at 06:00

Unit number	1	2	3	4	5	6
Water injection to RPV	Continuous fresh water injection by using feed water system line Flow rate:10.0m^3/Hr (167L/min) Measured by temporary instrumentation (28 April at 05:00)	Continuous fresh water injection by using FP system line Flow rate:7.0m^3/Hr (117L/min) Measured by temporary instrumentation (28 April at 05:00)	Continuous fresh water injection by using FP system line Flow rate:6.8m3/Hr (113L/min) Measurement by temporary instrumentation (28 April at 05:00)	*2	*2	
Reactor water level	Fuel range A:-1650 mm Fuel range B:-1600 mm (28 April at 05:00)	Fuel range A:-1500 mm Fuel range B:-2100 mm (28 April at 05:00)	Fuel range A:-1850 mm Fuel range B:-2250 mm (28 April at 05:00)		Shutdown range 2081 mm (28 April at 06:00)	Shutdown range 2138 mm (28 April at 06:00)
Reactor pressure	0.415 MPa(g) (A) 1.168 MPa(g) (B)*3 (28 April at 05:00)	-0.016 MPa(g) (A)*3 -0.020 MPa(g) (D)*3 (28 April at 05:00)	-0.055MPa(g) (A)*3 -0.089MPa(g) (C)*3 (28 April at 05:00)		0.007 MPa(g) (28 April at 06:00)	0.013 MPa(g) (28 April at 06:00)
Reactor water temperature	Could not be monitored without PLR flow				38.7℃ (28 April at 06:00)	47.5℃ (28 April at 06:00)
Reactor pressure vessel temperature	Feed water nozzle:107.3℃*3 RV lower part:98.5℃ (28 April at 05:00)	Feed water nozzle:119.9℃ RV lower part:*1 (28 April at 05:00)	Feed water nozzle:86.0℃*3 RV lower part:109.6℃ (28 April at 05:00)		*2 Monitored by coolant temperature for units 5 & 6	
D/W S/C pressure	D/W:0.125MPa (abs) S/C:0.125MPa (abs) (28 April at 05:00)	D/W:0.075MPa (abs) S/C: *1 (28 April at 05:00)	D/W:0.1017MPa (abs) S/C:0.1783MPa (abs) (28 April at 05:00)		*2	
D/W temperature	RPV bellow seal:100.5℃ HVH return:88.3℃ (28 April at 05:00)	RPV bellow seal:*1 HVH return:111℃ (28 April at 05:00)	RPV bellow seal:124.7℃*3 HVH return:102.1℃ (28 April at 05:00)			
CAMS	D/W (A): *1 D/W (B): *1 S/C (A):1.16×10^{0}Sv/h*3 S/C (B):1.67×10^{0}Sv/h*3 (28 April at 05:00)	D/W (A):2.24×10^1 Sv/h D/W (B):2.52×10^1 Sv/h S/C (A):4.63×10^{-1}Sv/h*3 S/C (B):4.08×10^1 Sv/h*3 (28 April at 05:00)	D/W (A):1.42×10^1 Sv/h D/W (B):1.08×10^1 Sv/h S/C (A):5.33×10^{-1}Sv/h*3 S/C (B):5.02×10^{-1} Sv/h*3 (28 April at 05:00)			
S/C temperature	A:50.7℃ B:50.6℃ (28 April at 05:00)	A:70.4℃ B:70.7℃ (28 April at 05:00)	A:41.0℃ B:41.0℃ (28 April at 05:00)			
D/W design pressure	384 kPa(g)	384 kPa(g)	384 kPa(g)	-	-	
D/W maximum operating pressure	427 kPa(g)	427 kPa(g)	427 kPa(g)			
SFP water temperature	*1	50.0 ℃ (28 April at 05:00)	*1	*1	40.4℃ (28 April at 06:00)	27.0℃ (28 April at 06:00)
FPC surge tank level	3700 mm (28 April at 05:00)	5400 mm (28 April at 05:00)	*1	6550 mm (28 April at 05:00)	*2	
Power source	Off site power delivered (P/C 2C)		Off site power delivered (P/C 4D)		Off site power delivered (as ordinary condition)	
Other information				Common SFP: around 32 (℃) (27 April at 06:50)	5u:Shutdown cooling mode (from 27 April 19:13)	6u:SFP cooling mode (from 27 April 20:08)

Pressure conversion
Gauge pressure(MPag)=Absolute pressure(MPa abs) - Atmospheric pressure (standard atmospheric pressure 0.1013 MPa)

Wittick, Brian

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 28, 2011 1:57 AM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; CAPT Dirk L Foster; Reid Tanaka
Subject: FW: Press release on Unit injection
Attachments: Unit 1 injection.doc

FYI,
Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

BG/129

4

TEPCO monitoring No.1 reactor

Tokyo Electric Power Company is monitoring one of the reactors at the Fukushima Daiichi nuclear plant to determine whether more water could be pumped inside to cool the fuel rods.

Tokyo Electric plans to submerge the fuel rods at 2 reactors in water by July this year.

On Wednesday morning, the utility increased the amount of water injected into the No.1 reactor from 6 tons per hour to 10 tons per hour on an experimental basis.

As a result, the temperature at the top of the reactor was 107.3 degrees Celsius Thursday morning, down 24.7 degrees from before the water increase. The temperature at the bottom of the reactor had dropped 12 degrees to 98.5 degrees Celsius.

Pressure inside the reactor containment vessel was also down.

Tokyo Electric says it's not yet known how deep the water inside the reactor container is, but that no leakage outside the reactor building has been confirmed.

The utility had initially planned to increase the amount of water injected to 14 tons per hour on Wednesday, but it says it will continue to monitor temperatures and pressure through Thursday evening.

Thursday, April 28, 2011 12:48 +0900 (JST)

Meighan, Sean

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 28, 2011 12:47 AM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Bradley Gawbow; CAPT Dirk L Foster; Reid Tanaka
Subject: FW: April 28 Updates
Attachments: 20110428 0500 Unit 1 Drywell Pressure[1].pdf; 20110428 0700 Water Levels[1].pdf; 20110428 Rev.14 Evaluated Water Level in U1 PCV[1].pdf; 20110428 0600 Plant Parameters[1].pdf

All,
(b)(4)
(b)(4) Also, please add me to your distribution list and remove Lee Gard as I will have relieved him by tomorrow.
Thanks,
Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

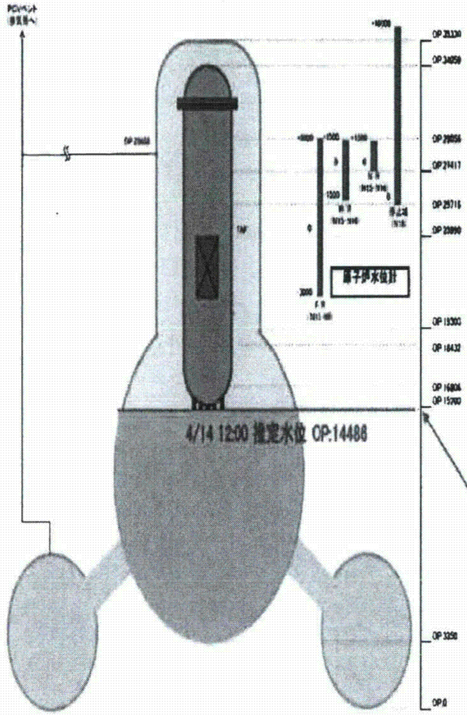
From: Ryan, Robert D (WANO)
Sent: Wednesday, April 27, 2011 10:55 PM
To: INPO EmergencyResponseCtr (INPO); INPOERCTech; INPOERCAnalysis
Cc: Gard, Lee A (INPO); Maddox, James E. (INPO); Garchow, David F.(INPO); Gambone, Robert L (INPO)
Subject: April 28 Updates

Latest information on N2 purge, drywell level, building water levels and temperature / pressure graphs

(b)(4)

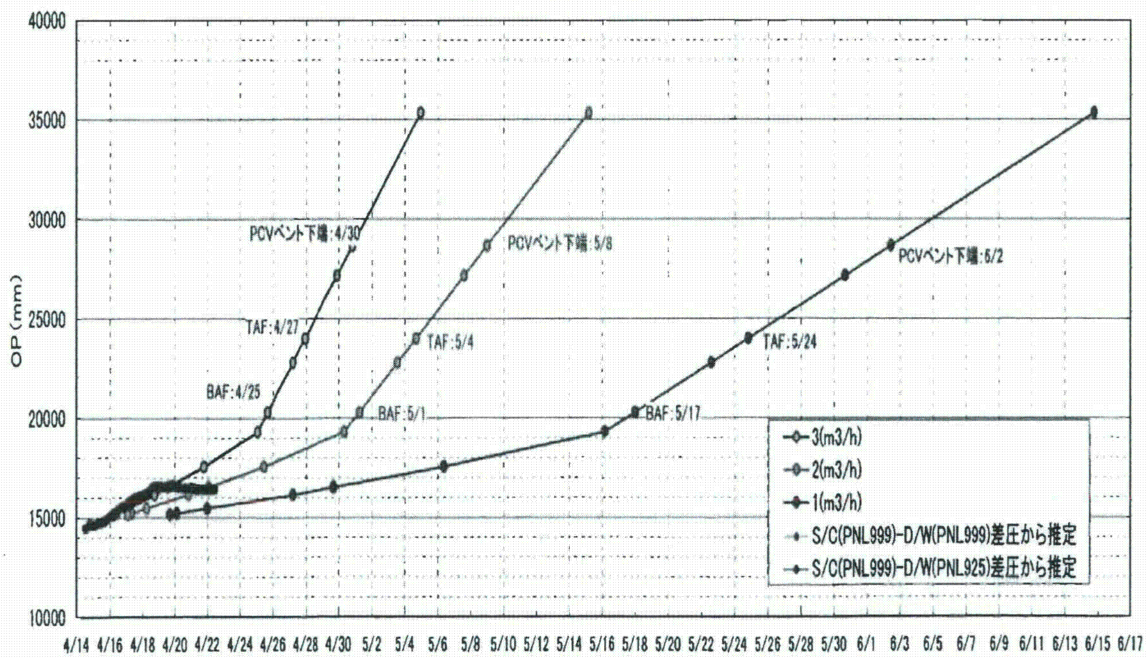
Bob

B6/130



1F-1 OP(mm)	水量 PCV(m^3)	位置		D/W水位形成に寄与する流量に応じた各エレベーションへの到達日 3(m^3/h)	2(m^3/h)	1(m^3/h)
35330	7736	(V)	PCV上端	5/4 22:09	5/15 3:14	6/14 18:28
28650	7440	(U)	PCVベント下端	4/30 19:29	5/8 23:14	6/2 10:28
27150	7373	(T)	D/W水位(上部)LS	4/29 21:09	5/7 13:44	5/30 15:28
23990	7233	(S)	TAF	4/27 22:29	5/4 15:44	5/24 19:28
22781	7179	(R)	JPノズル	4/27 4:29	5/3 12:44	5/22 13:28
20290	7069	(Q)	BAF到達	4/25 15:49	5/1 5:44	5/17 23:28
19303	7025	(P)	D/W球ー円筒接合部	4/25 1:09	4/30 7:44	5/16 3:28
17540	6790	(O)	CAMS	4/21 18:49	4/25 10:14	5/6 8:28
16524	6630	(N)	SRV水没	4/19 13:29	4/22 2:14	4/29 16:28
16150	6570	(M)	温度計端子箱	4/18 17:29	4/20 20:14	4/27 4:28
15450	6445	(L)	RPV下部温度計水没	4/16 23:49	4/18 5:44	4/21 23:28
15200	6400	(K)	RPV底部冠水	4/16 8:49	4/17 7:14	4/20 2:28
15150	6390	(J)	D/W圧力計	4/16 5:29	4/17 2:14	4/19 16:28
14700	6305	(I)	電気ペネトレーション	4/15 1:03	4/15 7:34	4/16 3:09
14486	6266	(H)	SLC注入ライン止弁	4/14 12:00	4/14 12:00	4/14 12:00
12200	5837	(G)	D/W球赤道面			
11200	5643	(F)	HVH温度計			
8236	5113	(E)	S/Cベント開口上端			
3570	2410	(D)	S/C中心			
2780	1820	(C)	S/C通常最高水位			
2680	1750	(B)	S/C通常最低水位			
-470	0	(A)	S/C底部			

各エレベーションへの到達日



水位管理表

	月		土	土	土	日	日	日	月	月	月	火	火	火	水	水	水	木	木	木	金	金	金
	3/28 8:30		4/23 7:00	4/23 11:00	4/23 18:00	4/24 7:00	4/24 11:00	4/24 18:00	4/25 7:00	4/25 11:00	4/25 18:00	4/26 7:00	4/26 11:00	4/26 18:00	4/27 7:00	4/27 11:00	4/27 18:00	4/28 7:00	4/28 11:00	4/28 18:00	4/29 7:00	4/29 11:00	4/29 18:00
時間経過	0:00	3/29(13:00)～4/22(18:00) 省略 (グラフ上では表示しています)	622:30	626:30	633:30	646:30	650:30	657:30	670:30	674:30	681:30	694:30	698:30	705:30	718:30	722:30	729:30	742:30	746:30	753:30	766:30	770:30	777:30
1号機 立坑内水位	OP +3,900mm		OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm					
1号機 T/B B1水位	OP +5,110mm		OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm					
2号機 立坑内水位	OP +3,050mm		OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,120mm	OP +3,130mm	OP +3,130mm	OP +3,120mm	OP +3,120mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,100mm	OP +3,100mm					
2号機 T/B B1水位	OP +2,790mm		OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,110mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm					
3号機 立坑内水位	OP +2,450mm		OP +2,980mm	OP +2,970mm	OP +2,970mm	OP +2,990mm	OP +2,990mm	OP +2,990mm	OP +2,990mm	OP +3,000mm	OP +3,010mm	OP +3,020mm	OP +3,020mm	OP +3,020mm	OP +3,030mm	OP +3,040mm	OP +3,040mm	OP +3,050mm					
3号機 T/B B1水位	OP +2,490mm		OP +2,900mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm					
4号機 T/B B1水位	-		OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,100mm	OP +3,100mm	OP +3,100mm					
集中Rw/B B2水位	OP +1,700mm		OP -711mm	OP -680mm	OP -640mm	OP -600mm	OP -580mm	OP -548mm	OP -483mm	OP -469mm	OP -427mm	OP -377mm	OP -380mm	OP -325mm	OP -271mm	OP -250mm	OP -222mm	OP -162mm					

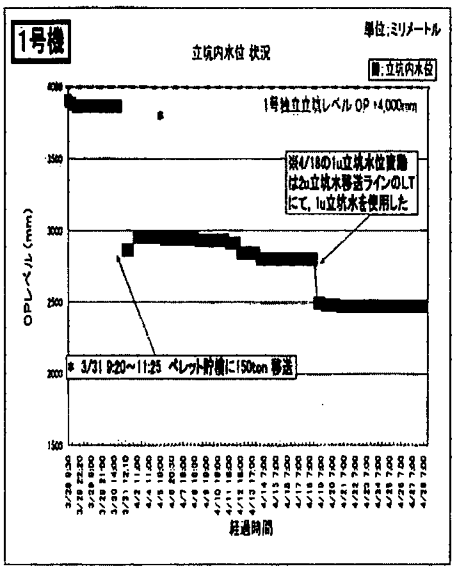
単位:ミリメートル

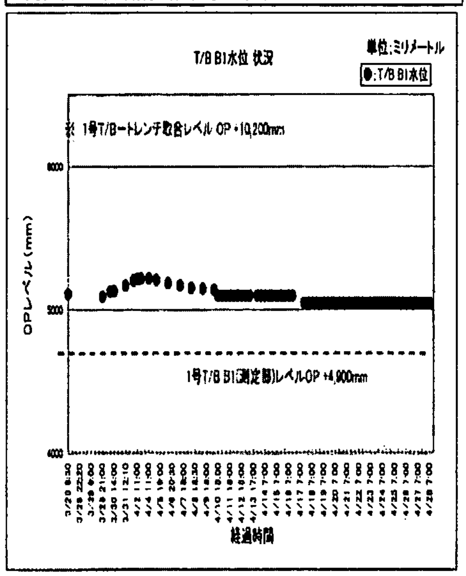
3/28 8:30のデータのうち, 1, 2号機は目測値のため参考値扱い

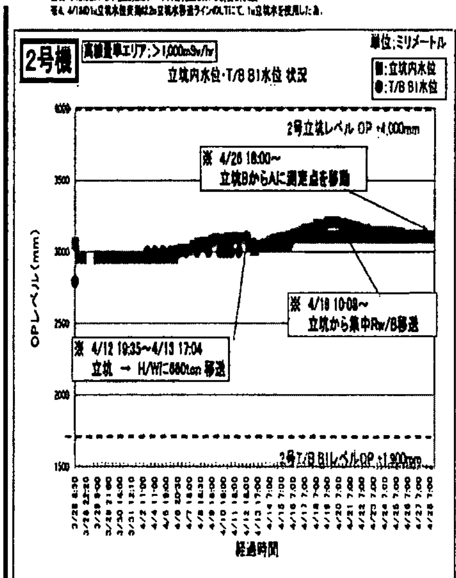
●:1号機T/Bと立坑間が逆U字状のダクト形状となっており, タービン建屋の水位はOP +10,200になるまで, トレンチ内に滞留水が流入する恐れはない。

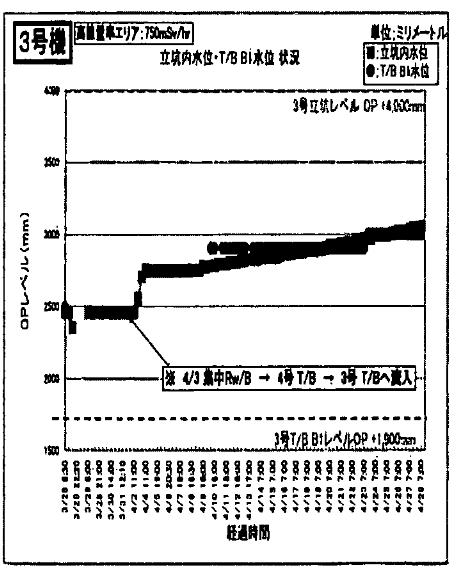
注1, 建屋水位は4/10よりITV監視を実施。注2, 4/11,12の1u立坑水位変動は2u立坑水移送ラインのLTにて, 1u立坑水を使用した為。
注3, 4/12の2uT/B水位変動はITV不具合発生しカメラ調整した為。
注4, 4/18の1u立坑水位変動は2u立坑水移送ラインのLTにて, 1u立坑水を使用した為。

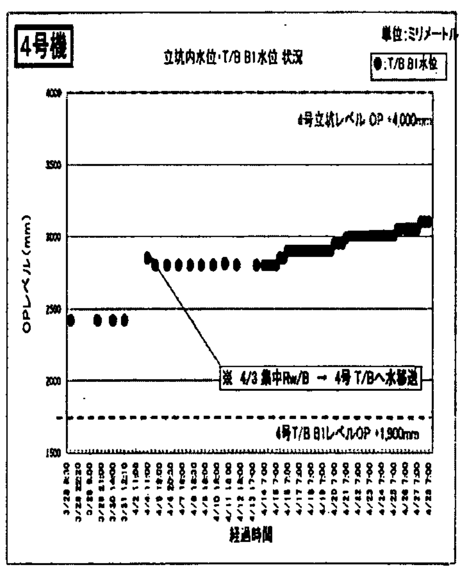
福島第一原子力発電所
復旧班
H23.4.28 7:00現在



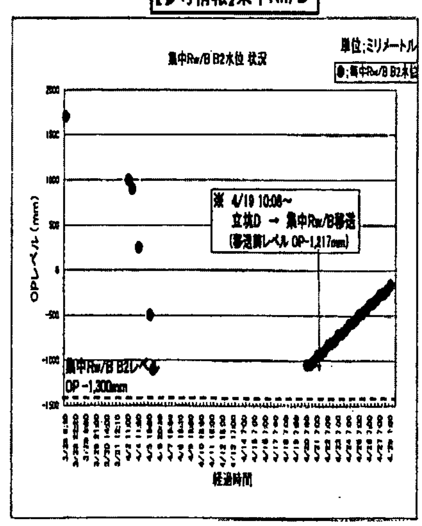






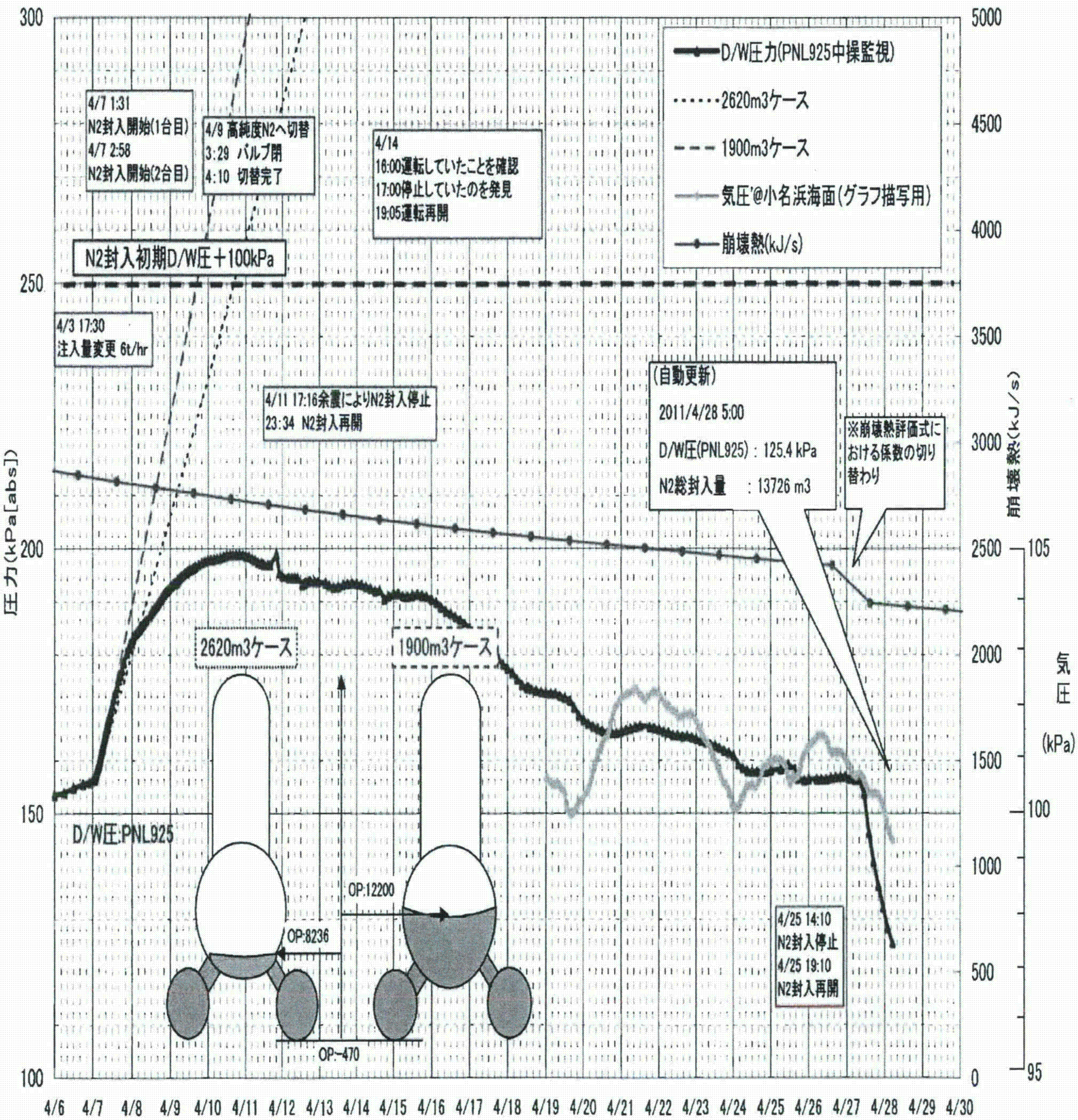


【参考情報】集中Rw/B



4月28日最新共用1Fデータ(5時00分現在).xls

1F1 D/W圧(N2注入後の挙動)



福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）

4月28日 6:00 現在

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

号機	1号機	2号機	3号機	4号機	5号機	6号機
原子炉注水状況	給水ラインを用いた淡水注入中。 流量 10.0m^3/h （4/28 5:00 現在）	消火系ラインを用いた淡水注入中。 流量 7.0m^3/h （4/28 5:00 現在）	消火系ラインを用いた淡水注入中。 流量 6.8m^3/h （4/28 5:00 現在）		※2 （原子炉の除熱機能が維持されており、注水不要）	
原子炉水位	燃料域A：−1650mm 燃料域B：−1600mm （4/28 5:00 現在）	燃料域A：−1500mm 燃料域B：−2100mm （4/28 5:00 現在）	燃料域A：−1850mm 燃料域B：−2250mm （4/28 5:00 現在）		停止域 2081mm （4/28 6:00 現在）	停止域 2138mm （4/28 6:00 現在）
原子炉圧力	A系 0.415MPa g (A) B系 1.168MPa g (B) ※3 （4/28 5:00 現在）	A系−0.016MPa g (A) ※3 B系−0.020MPa g (D) ※3 （4/28 5:00 現在）	A系−0.055MPa g (A) ※3 B系−0.089MPa g (C) ※3 （4/28 5:00 現在）		0.007MPa g （4/28 6:00 現在）	0.013MPa g （4/28 6:00 現在）
原子炉水温度	（系統流量がないため採取不可）				38.7℃ （4/28 6:00 現在）	47.5℃ （4/28 6:00 現在）
原子炉圧力容器まわり温度	給水ノズル温度：107.3℃ ※3 圧力容器下部温度：98.5℃ （4/28 5:00 現在）	給水ノズル温度：119.9℃ 圧力容器下部温度：※1 （4/28 5:00 現在）	給水ノズル温度：86.0℃ ※3 圧力容器下部温度：109.6℃ （4/28 5:00 現在）	※2 （全燃料取出中につき監視対象外）	※2（原子炉水温度にて監視中）	
D/W・S/C 圧力	D/W 0.125MPa abs S/C 0.125MPa abs （4/28 5:00 現在）	D/W 0.075MPa abs S/C ※1 （4/28 5:00 現在）	D/W 0.1017MPa abs S/C 0.1783MPa abs （4/28 5:00 現在）			
D/W 雰囲気温度	RPV ベローシール：100.5℃ HVH 戻り：88.3℃ （4/28 5:00 現在）	RPV ベローシール：※1 HVH 戻り：111℃ （4/28 5:00 現在）	RPV ベローシール：124.7℃※3 HVH 戻り：102.1℃ （4/28 5:00 現在）			
CAMS 放射線モニタ	D/W (A) ※1 (B) ※1 S/C (A) 1.16×10^{0}Sv/h ※3 (B) 1.67×10^{0}Sv/h ※3 （4/28 5:00 現在）	D/W (A) 2.24×10^{1}Sv/h (B) 2.52×10^{1}Sv/h S/C (A) 4.63×10^{-1}Sv/h ※3 (B) 4.08×10^{1}Sv/h ※3 （4/28 5:00 現在）	D/W (A) 1.42×10^{1}Sv/h (B) 1.08×10^{1}Sv/h S/C (A) 5.33×10^{-1}Sv/h ※3 (B) 5.02×10^{-1}Sv/h ※3 （4/28 5:00 現在）		※2 （原子炉の除熱機能が維持されているため監視対象外）	
S/C 温度	A系：50.7℃ B系：50.6℃ （4/28 5:00 現在）	A系：70.4℃ B系：70.7℃ （4/28 5:00 現在）	A系：41.0℃ B系：41.0℃ （4/28 5:00 現在）			
D/W 設計使用圧力	0.384MPa g (0.485MPa abs)	0.384MPa g (0.485MPa abs)	0.384MPa g (0.485MPa abs)	-	-	
D/W 最高使用圧力	0.427MPa g (0.528MPa abs)	0.427MPa g (0.528MPa abs)	0.427MPa g (0.528MPa abs)			
使用済燃料プール温度	※1	50.0℃ （4/28 5:00 現在）	※1	※1	40.4℃ （4/28 6:00 現在）	27.0℃ （4/28 6:00 現在）
FPC スキマーサージタンクレベル	3700mm （4/28 5:00 現在）	5400mm （4/28 5:00 現在）	※1	6550mm （4/28 5:00 現在）	※2	
電源	外部電源受電中（P/C2C）		外部電源受電中（P/C4D）		外部電源受電中	
その他情報				共用プール： 32℃ （4/27 6:50）	5u：SHC モード （4/27 19:13〜）	6u：非熱モード （4/27 20:08〜）

圧力換算　ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

※1：計器不良
※2：データ採取対象外
※3：状況推移を継続確認中

公開用

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）に関する補足説明

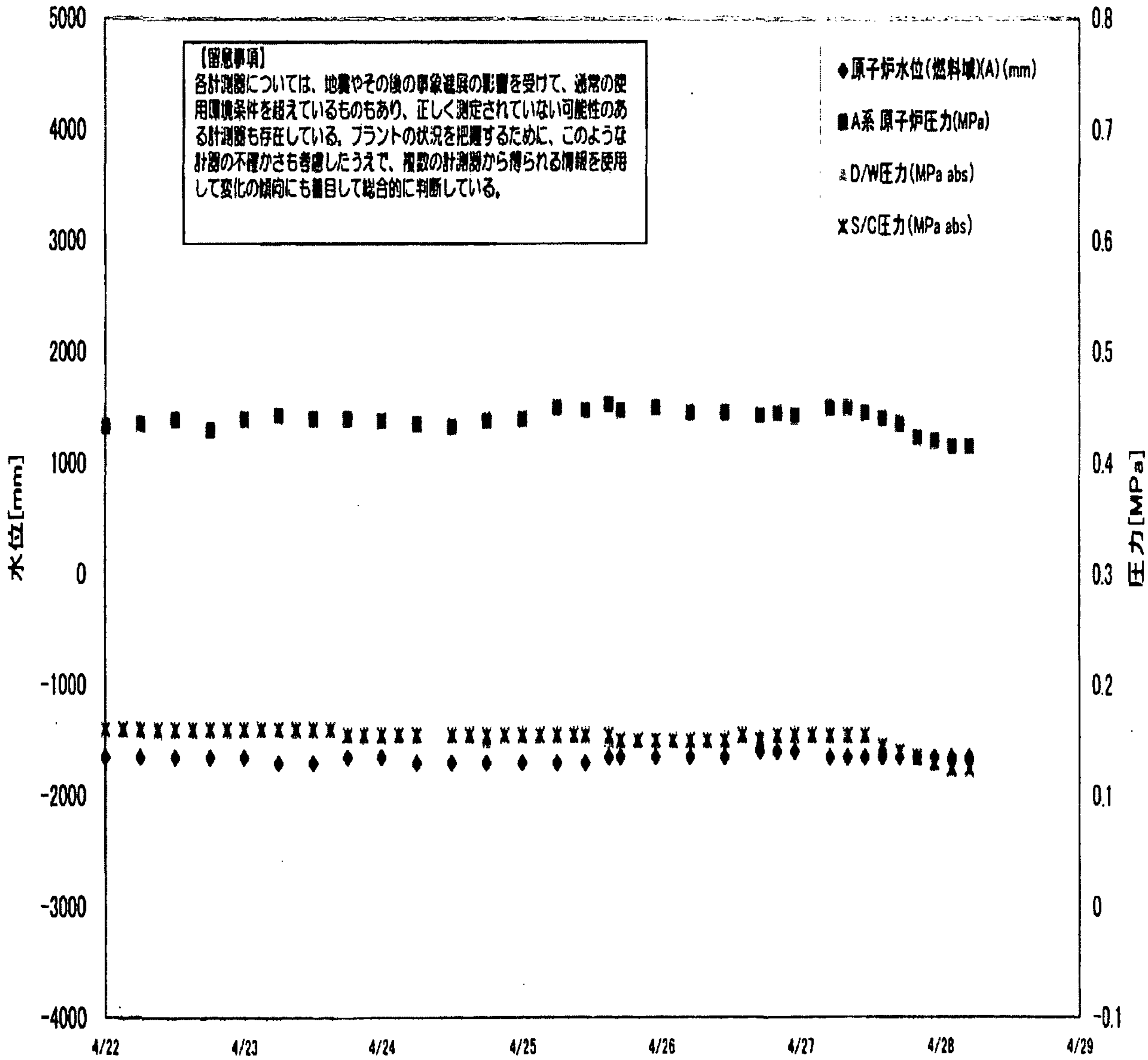
■各パラメータに関する補足説明

項目	記載方法	測定方法	記載点数/Ch 数 or 系統数
原子炉注水状況	注水流量／変更時間を記載　（注水流量を変更した場合のみ更新）。	仮設計器	1／1系統
原子炉水位	燃料域を監視する水位計にて測定したデータを記載。	本設指示計	A系　1／1Ch B系　1／1Ch
原子炉圧力	計器盤より圧力計器から伝送される電圧値を測定し、電圧値を圧力に換算したものを記載。A系／B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設計器盤より電圧値を測定し圧力に換算	A系　1／2Ch B系　1／2Ch
原子炉水温度	温度計設置箇所には系統流量がないためデータ未採取	—	—
原子炉圧力容器まわり温度	原子炉圧力容器まわり温度は複数箇所から採取しているが、全体把握の観点から代表部位として「給水ノズル位置」、「圧力容器下部」のデータを記載	本設記録計	給水ノズル位置　1／4Ch 圧力容器下部　1／2Ch（1号） 1／1Ch（2～3号）
D/W・S/C圧力	本設指示計の指示値を記載。本設指示計にて採取できない場合には、計器盤より測定した電圧値を圧力に換算したものを記載。 （D/W：ドライウェル、S/C：圧力抑制室）	本設指示計：1号、2号 本設計器盤（電圧測定）：3号	本設指示計　1／1系統 本設記録計　常用1／1Ch 広域1／1Ch
D/W雰囲気温度	D/W 内の雰囲気温度は複数箇所から採取しているが、全体把握の観点から代表部位として「D/W上部（RPV ベローシール温度）、中央部（D/W HVH 戻り空気温度）」のデータを記載。（RPV：原子炉圧力容器、HVH：空調ユニット）	本設記録計	RPV ベローシール　1／5Ch D/W HVH 戻り　1／5Ch
CAMS 放射線モニタ	本設指示計の指示値を記載。 （CAMS：格納容器雰囲気モニタ系）	本設指示計	D/W　A系　1／1Ch B系　1／1Ch S/C　A系　1／1Ch B系　1／1Ch
S/C 温度	本設記録計の指示値を記載。A系／B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設記録計	A系1／4Ch（1号）、8Ch（2～3号） B系1／4Ch（1号）、8Ch（2～3号）
使用済燃料プール温度	本設記録計の指示値を記載。 （非熱モード：非常時熱負荷モード、SHC モード：原子炉停止時冷却系モード）	本設記録計	1／2Ch（1号）、1Ch（2～4号）
FPC ｽｷﾏｰｻｰｼﾞﾀﾝｸﾚﾍﾞﾙ	本設指示計の指示値を記載。 （FPC：燃料プール冷却浄化系）	本設指示計	1／1系統

■注記に関する補足説明

項目	内容	4月28日6時時点の状況
計器不良	計器不良：指示値ダウン（オーバー）スケール／検出器の不良	1号機　使用済燃料プール温度、CAMS D/W 放射線モニタ 2号機　圧力容器下部温度、S/C 圧力、RPV ベローシール温度 3号機　使用済燃料プール温度、スキマーサージタンクレベル 4号機　使用済燃料プール温度
データ採取対象外	4号機：炉心に燃料がないため、原子炉及びD/W関連のデータは採取せず。 5～6号機：現在冷温停止中のため、D/W 関連データは採取せず。	—
状況推移を継続確認中	指示は出ているものの、指示値ハンチング・マイナス表示など他パラメータと明らかに異なる推移を示したもの。	1号機　原子炉圧力、給水ノズル温度、CAMS S/C 放射線モニタ 2号機　原子炉圧力、CAMS S/C 放射線モニタ 3号機　原子炉圧力、RPV ベローシール温度、給水ノズル温度、CAMS S/C 放射線モニタ

1F1 水位・圧力に関するパラメータ



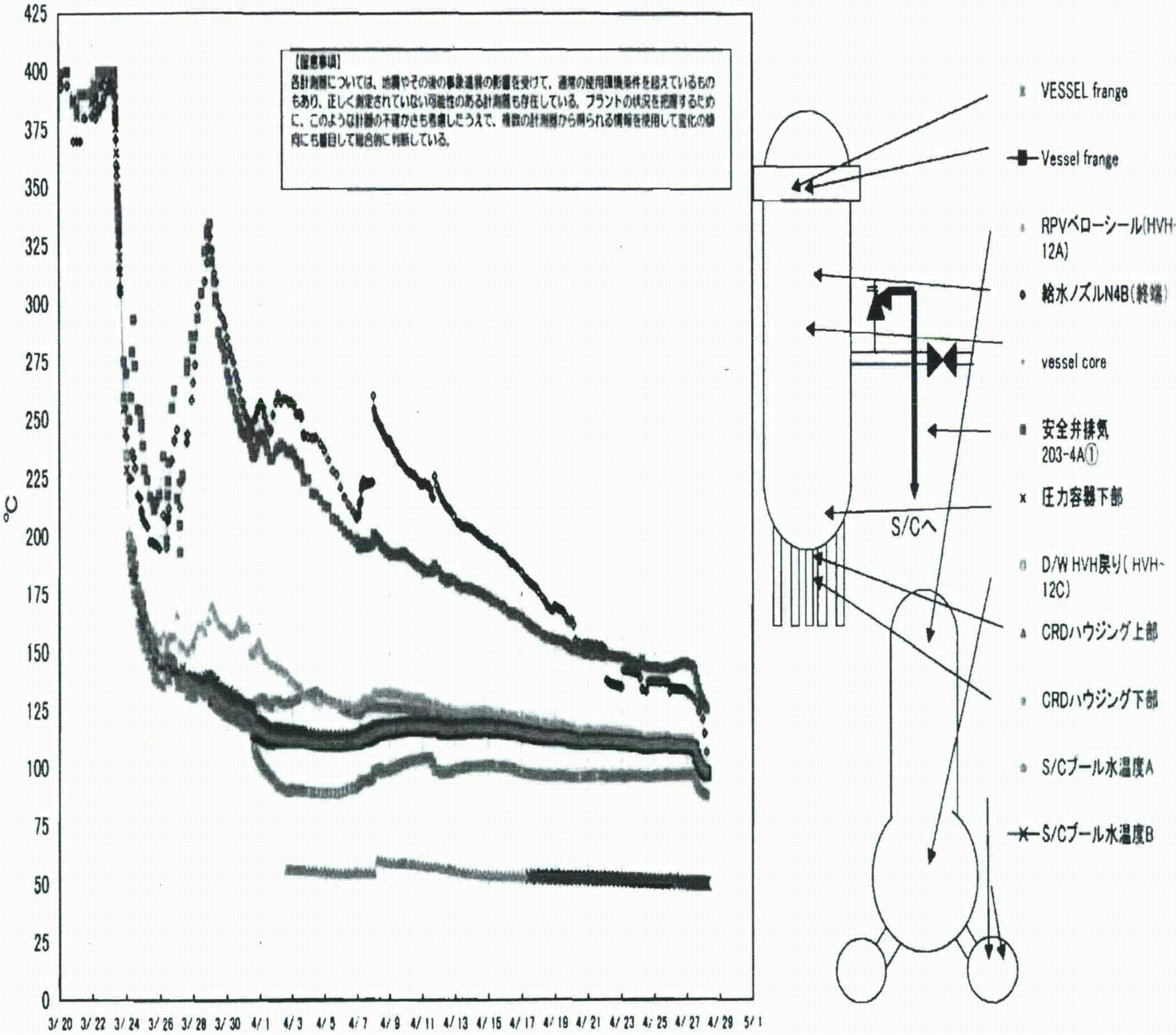
1F1 水位･圧力に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

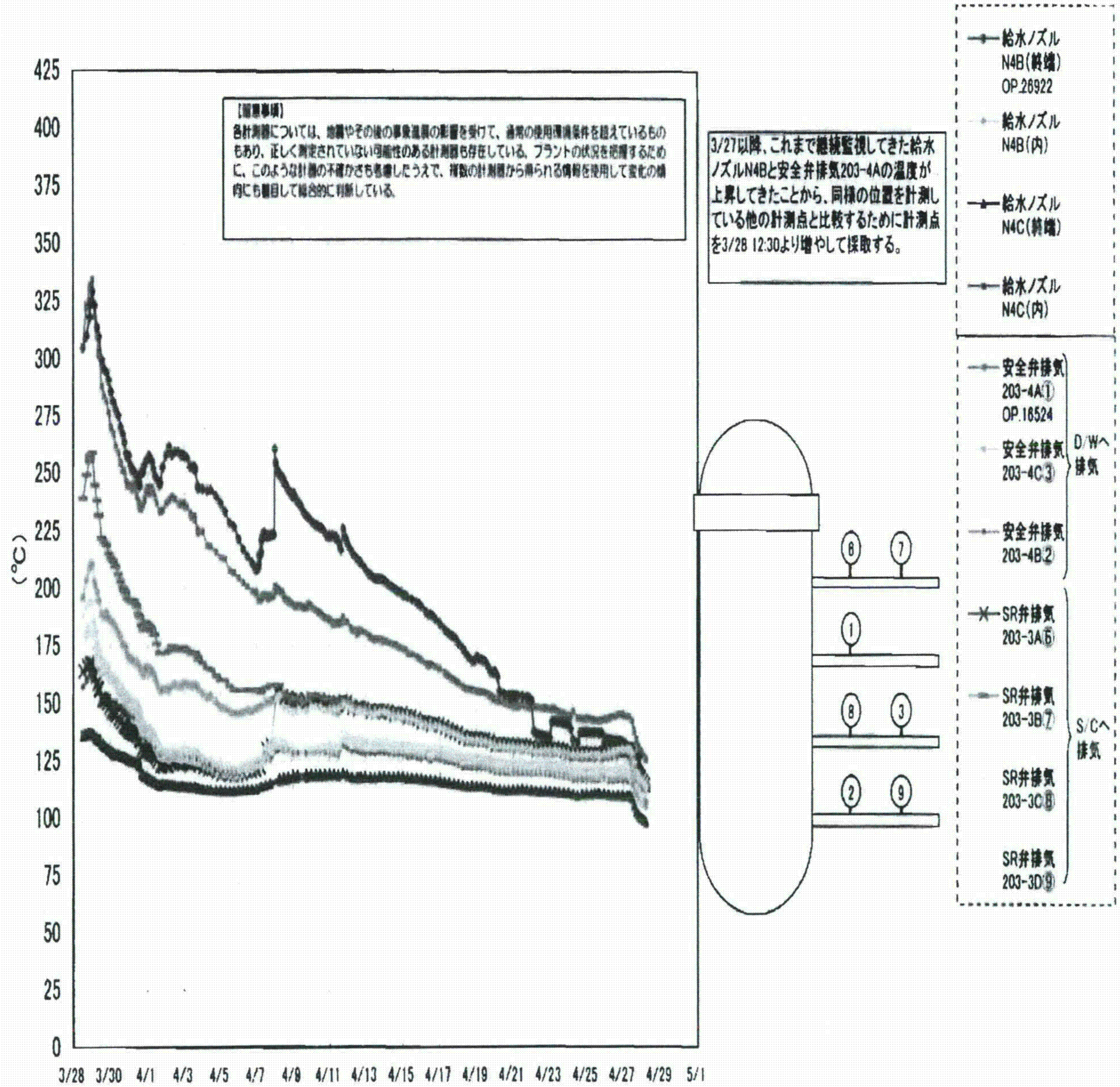
日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	備考
4/24 6:00	-1700	-1700	0.435	1.143	0.155	0.155			1.01	1.74	
4/24 12:00	-1700	-1700	0.433	1.143	0.155	0.155			1.02	1.74	
4/24 15:00					0.155	0.155			1.03	1.74	
4/24 18:00	-1700	-1700	0.438	1.148	0.150	0.155			1.03	1.74	
4/24 21:00					0.155	0.155			1.04	1.74	
4/25 0:00	-1700	-1700	0.440	1.160	0.155	0.155			1.04	1.74	
4/25 3:00					0.155	0.155			1.05	1.75	
4/25 6:00	-1700	-1650	0.450	1.173	0.155	0.155			1.06	1.76	
4/25 9:00					0.155	0.155			1.07	1.76	
4/25 11:00	-1700	-1650	0.448	1.168	0.155	0.155			1.08	1.76	
4/25 15:00	-1650	-1650	0.453	1.173	0.150	0.155			1.08	1.74	
4/25 17:00	-1650	-1550	0.448	1.165	0.150	0.150			1.09	1.74	
4/25 20:00					0.150	0.150			1.10	1.75	
4/25 23:00	-1650	-1650	0.450	1.173	0.150	0.150			1.10	1.75	
4/26 2:00					0.150	0.150			1.11	1.75	
4/26 5:00	-1650	-1650	0.445	1.185	0.150	0.150			1.11	1.74	
4/26 8:00					0.150	0.150			1.12	1.74	
4/26 11:00	-1650	-1650	0.445	1.180	0.150	0.150			1.12	1.74	
4/26 14:00					0.155	0.155			1.12	1.74	
4/26 17:00	-1600	-1650	0.443	1.183	0.155	0.150			1.13	1.74	
4/26 20:00	-1600	-1650	0.445	1.190	0.155	0.155			1.13	1.74	
4/26 23:00	-1600	-1650	0.443	1.203	0.155	0.155			1.13	1.73	
4/27 2:00					0.155	0.155			1.13	1.73	
4/27 5:00	-1650	-1600	0.450	1.205	0.155	0.155			1.14	1.73	
4/27 8:00	-1650	-1650	0.450	1.205	0.155	0.155			1.14	1.72	
4/27 11:00	-1650	-1650	0.445	1.203	0.155	0.155			1.14	1.72	
4/27 14:00	-1650	-1650	0.440	1.198	0.145	0.145			1.15	1.71	
4/27 17:00	-1650	-1650	0.435	1.188	0.140	0.140			1.15	1.71	
4/27 20:00	-1650	-1650	0.423	1.175	0.135	0.135			1.16	1.70	
4/27 23:00	-1650	-1550	0.420	1.173	0.130	0.130			1.16	1.69	
4/28 2:00	-1650	-1600	0.415	1.170	0.125	0.125			1.16	1.68	
4/28 5:00	-1650	-1600	0.415	1.168	0.125	0.125			1.16	1.67	

計器不良 計器不良

1F-1 温度に関するパラメータ(代表点)



1F-1 温度に関するパラメータ(給水ノズル及び安全弁排気温度)

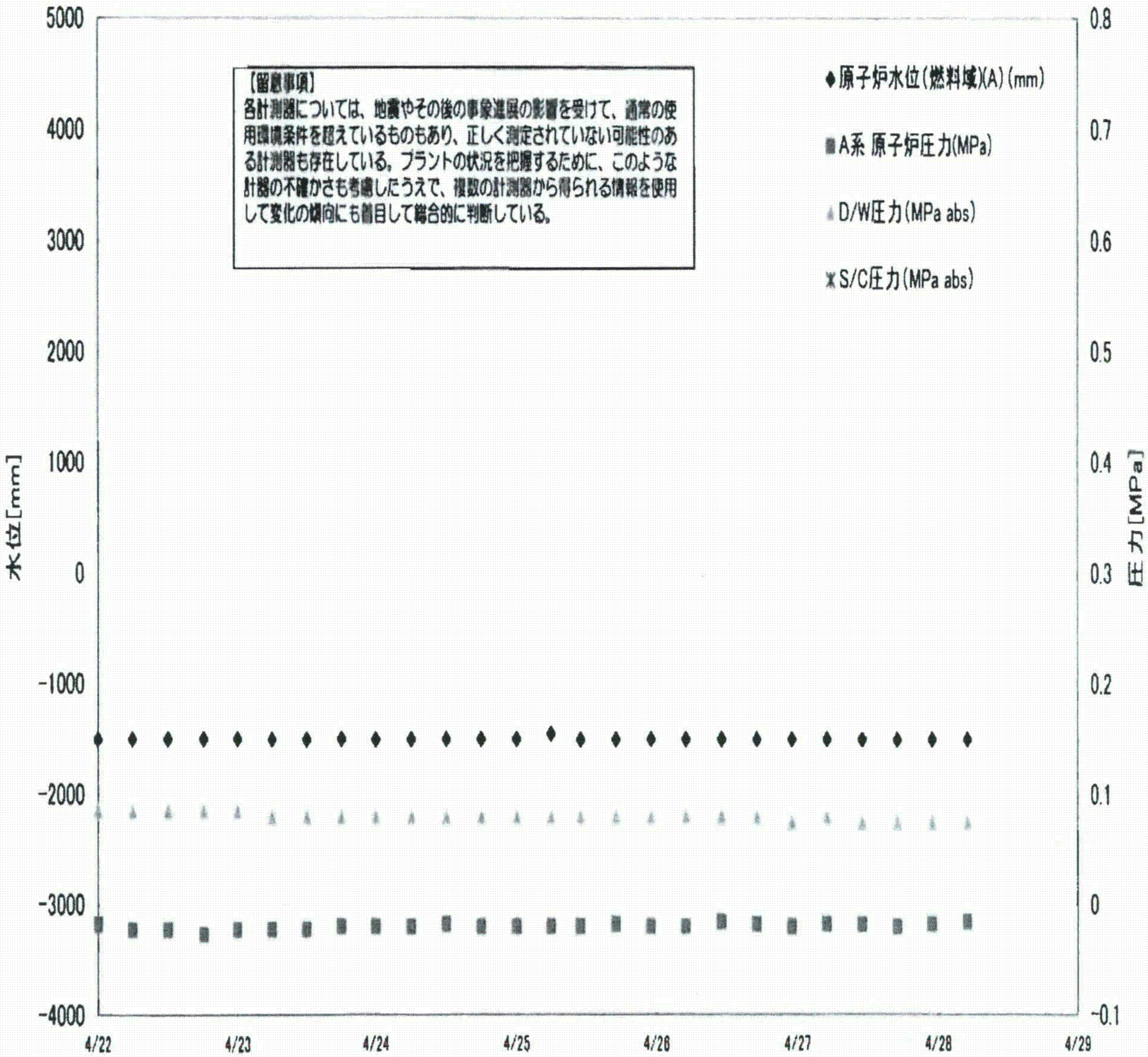


1F-1 温度に関するパラメータ

【留意事項】
各計器値については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものがあり、正しく測定されていない可能性のある計器も含まれている。プラントの状態を把握するために、このような計器の不確かさも考慮したうえで、複数の計器から得られる情報を総合して継続的に監視していく。

	VESSEL frange	Vessel frange	給水ノズルN4B(端部)	給水ノズル N4B(内)	給水ノズル N4C(端部)	給水ノズル N4C(内)	vessel core	圧力容器下部	CRDハウジング上部	CRDハウジング下部	安全弁排気 203-4A	安全弁排気 203-4C	安全弁排気 203-4B	SR弁排気 203-3A	SR弁排気 203-3B	SR弁排気 203-3C	SR弁排気 203-3D	D/W HVH戻り(HVH-12C)	RPVベローシール(HVH-12A)	S/Cプール水温度A	S/Cプール水温度B
4/19 0:00	115.9	113.1	170.2	113.9	114.1	113.2	114.4	115.1	113.8	113.9	155.4	135.2	122.2	134.7	134.1	133.9	125.3	96.8	118.8	53.4	53.8
4/19 3:00	115.9	113.1	169.4				114.4	115.1	113.8	113.9	155.1							96.9	118.9		
4/19 6:00	115.9	113.1	169	113.9	114.1	113.2	114.3	115.1	113.8	113.0	154.7	135.1	122.1	134.8	133.8	133.8	125.1	96.9	119.4	53.3	53.2
4/19 9:00	115.9	113.1	168.8				114.3	115.1	113.8	113.9	154.8							97	119.4		
4/19 12:00	115.9	113	167.8	113.7	114	113	113	114.3	113.1	113.8	154.8	135	121.8	134.4	133.4	133.5	124.9	96.9	119.2	53.3	53.2
4/19 15:00	115.8	112.8	164				114	114.8	113.5	113.6	152.8							96.7	118.8		
4/19 18:00	115.3	112.7	164	113.4	113.7	112.7	113.8	114.5	113.3	113.4	153.3	134.2	121.3	133.7	133.7	132.8	124.2	96.6	118.7	53.4	53.2
4/19 21:00	116.2	112.3	163.5				113.5	114.2	113	113.1	152.6							96.4	118.3		
4/20 0:00	115	112	164.1	112.8	113	112.1	113.3	113.8	112.8	112.8	151.8	133	120.5	132.4	131.6	131.3	123.4	96.3	118	53.3	53.2
4/20 3:00	114.8	111.8	161.8				113.1	113.8	112.7	112.7	151.2							96.3	117.7		
4/20 6:00	114.6	111.7	155.2	112.5	112.8	111.8	112.9	113.5	112.5	112.8	151.2	132.1	120.3	132.5	131	131.3	123.2	96.2	117.4	53.2	53.1
4/20 12:00	114.4	111.5	154.1	112.3	112.5	111.6	112.7	113.3	112.3	112.4	150.3	131.8	120	132.2	130.7	131.3	122.8	96.2	117.2	53.2	53.1
4/20 18:00	114.3	111.5	151.8	112.3	112.5	111.6	112.7	113.4	112.3	112.3	149.8	131.8	119.9	132.1	130.3	131.1	122.7	96.3	117.3	53.1	53
4/20 21:00	114.3	111.6	153.8				112.7	113.4	112.3	111.4	149.4							96.5	117.2		
4/21 0:00	114.4	111.7	153.6	112.4	112.7	111.7	112.8	113.5	112.4	112.5	149.4	132	120	132	130.1	130.9	122.7	96.7	117.3	53.1	53
4/21 3:00	114.3	111.7	153.4				112.8	113.5	112.4	112.5	149.4							96.8	117.2		
4/21 6:00	114.3	111.7	153.4	112.5	112.7	111.7	112.8	113.5	112.4	112.5	148.8	131.6	119.8	131.6	129.7	130.8	122.7	96.7	117.3	53	52.9
4/21 12:00	114.5	111.9	153.3	112.7	112.8	111.8	113	113.8	112.6	112.8	148.3	132.4	120.2	132	129.9	130.8	123	96.8	117.5	53	52.8
4/21 18:00	114.4	111.7	152.8	112.5	112.7	111.8	112.8	113.5	112.4	112.4	148.6	132	118.8	131.7	129.4	130.8	122.8	96.9	117	52.8	52.8
4/21 21:00	114.3	111.7	152.4				112.8	113.4	112.3	112.4	148.4							96.8	116.9		
4/22 0:00	114.2	111.6	151.9	112.3	112.5	111.5	112.7	113.3	112.3	112.3	148.8	131.8	119.8	131.4	128.2	130.2	122.3	96.9	116.8	52.8	52.8
4/22 3:00	114	111.4	138.1				112.6	113.1	112.1	112.3	148.8							96.5	116.8		
4/22 6:00	114	111.4	137.4	112.1	112.3	111.3	112.5	113	112.1	112.2	148.8	132.2	119.8	130.3	128.4	128.1	122.8	96.4	116.6	52.8	52.7
4/22 9:00	113.8	111.3	136.8				112.4	112.9	112	112.1	148.7							96.4	116.6		
4/22 12:00	113.8	111.3	136.5	112	112.1	111.1	112.4	112.8	112	112	148.5	131.0	119.7	130.3	128.1	129.2	122.4	96.5	116.4	52.7	52.6
4/22 15:00	113.8	111.2	136.2				112.4	112.8	112	112	148.2							96.6	116.4		
4/22 18:00	113.8	111.3	136	112	112.2	111.2	112.4	112.8	112	112.1	148.3	131.8	118.7	130.4	128.1	128.4	122.4	96.7	116.4	52.6	52.5
4/22 21:00	113.8	111.2	135.7				112.4	112.8	112	112	148.1							96.8	116.3		
4/23 0:00	113.7	111.1	135.3	111.9	112.1	111.1	112.2	112.7	111.8	111.8	148	131.5	119.5	130.2	127.8	128.2	122.2	96.8	116.2	52.4	52.4
4/23 3:00	113.7	111	142.7				112.2	112.7	111.8	111.8	148.2							96.7	116		
4/23 6:00	113.6	111	142.8	111.7	111.8	111	112.1	112.6	111.8	111.8	147.8	130.8	119	130.3	128.7	128.4	121.7	96.7	115.9	52.4	52.3
4/23 9:00	113.5	110.8	142.3				112	112.6	111.7	111.7	147.1							96.8	115.7		
4/23 12:00	113.4	110.8	142.5	111.5	111.7	110.8	111.9	112.4	111.6	111.6	148.4	130.3	118.7	130.2	128.1	128.1	121.3	96.9	115.4	52.3	52.2
4/23 15:00	113.4	110.7	142.1				111.8	112.3	111.5	111.6	148.2							96.8	115.4		
4/23 18:00	113.1	110.6	141.8	111.3	111.5	110.6	111.7	112.1	111.4	111.4	145.9	129.8	118.4	128.7	127.7	128.7	121	96.7	115.2	52.1	52.1
4/23 21:00	113.1	110.5	141.4				111.6	112	111.5	111.4	145.3							96.8	115.1	52.1	52
4/24 0:00	113	110.5	141.2	111.1	111.3	110.4	111.5	111.9	111.2	111.3	145.1	128.3	118.2	129.3	127	128.3	120.7	96.8	114.9	52.1	52
4/24 3:00	112.8	110.2	138.2				111.2	111.6	110.9	111	144.4							96.7	114.6		
4/24 6:00	112.4	108.8	134.4	110.6	110.7	109.8	110.9	111.2	110.7	110.8	148.3	128.4	117	126.8	126.3	127.7	120	96.6	114	51.8	51.9
4/24 12:00	111.7	108.4	133.5	109.2	110.2	108.4	110.5	110.8	110.3	110.4	144	128.5	117.2	128.4	126.4	127.7	110.8	96.5	114	51.8	51.8
4/24 15:00	112.3	108.8	137.8				110.8	111.2	110.6	110.7	143.8							96.4	114		
4/24 18:00	112.3	108.8	137.8	110.6	110.7	108.8	110.8	111.3	110.7	110.7	143.7	128.2	117.1	128.4	126.2	127.7	119.7	96.6	114	51.7	51.7
4/24 21:00	112.3	108.8	137.8				110.9	111.3	110.7	110.7	143.8							96.5	114		
4/25 0:00	112.3	108.8	137.7	110.8	110.7	108.8	110.9	111.3	110.7	110.7	143.8	128.2	117	128.4	128.6	127.9	118.7	96.5	114	51.6	51.5
4/25 3:00	112.3	109.0	137.7				110.8	111.3	110.7	110.7	143.7							96.6	114		
4/25 6:00	112.3	108.8	137.7	110.7	110.8	109.8	110.8	111.4	110.7	110.7	143.4	128.2	117	128.3	128.4	127.8	118.7	96.8	114	51.6	51.4
4/25 9:00	112.3	110	137.6				111	111.4	110.8	110.8	143.1							96.7	114		
4/25 11:00	112.5	110.1	137.8	110.9	111	110.1	111.1	111.6	110.9	110.8	143.2	128.3	117.2	128.4	128.5	127.8	118.8	96.6	114.2	51.5	51.4
4/25 15:00	112.5	110.1	137.6	110.8	111	110	111.1	111.8	110.8	110.8	143	128.1	117.1	128.3	128.3	127.7	118.7	96.7	114.1	51.5	51.4
4/25 17:00	112.5	110.2	137.4	110.8	111	110.1	111.2	111.8	110.9	110.9	142.8	128.2	117.3	128.3	126.2	127.4	118.7	96.8	114.3	51.4	51.3
4/25 20:00	112.8	110.4	137.4				111.5	111.8	111.5	111.3	143.4							97.3	114.5		
4/25 23:00	112.3	110.1	135.5	110.8	110.8	108.8	111	111.3	110.9	110.8	143.8	128.5	117.4	128.9	128.9	128	118.8	97	115.7	51.3	51.2
4/26 2:00	112.1	108.9	135				111.1	111.3	110.4	110.8	143.5							96.8	115.2		
4/26 5:00	111.8	109.8	134.7	110.3	110.4	109.8	110.3	110.9	110.4	110.3	144	127.8	118.7	128.7	128.9	128.3	118.5	96.8	115.4	51.3	51.4
4/26 8:00	111.7	109.4	134.8				110.4	110.8	110.3	110.3	144.5							96.8	115.3		
4/26 11:00	111.7	109.4	134.5	110.2	110.3	109.4	110.3	110.8	110.2	110.3	144.8	127.8	118.7	128.3	127.8	128.1	118.7	97	115.2	51.2	51.1
4/26 14:00	111.7	109.4	134.5				110.3	110.8	110.2	110.3	145							97	115.2		
4/26 17:00	111.7	109.4	134.3	110.2	110.3	109.4	110.4	110.8	110.2	110.3	145.5	128.2	118.8	130.1	128.8	130	120.2	97.1	115.1	51.1	51
4/26 20:00	111.7	109.4	134.2				110.4	110.8	110.2	110.2	145.7							97.2	115.1		
4/26 23:00	111.6	109.3	133.5	110.1	110.2	109.3	110.3	110.7	110.1	110.2	145.5	128.2	118.8	130.5	121.4	130.4	120.2	97.3	115.3	51.1	51
4/27 2:00	111.5	109.2	133				110.2	110.6	110	110.1	144.9							97.3	112.8		
4/27 5:00	111.4	109.1	132	109.9	110	109.1	110.1	110.1	109.8	110	144.7	127.8	118.7	130.3	128.3	130.3	120.1	97.3	112.8	51	50.9
4/27 8:00	111.4	109.1	131.4	108.8	110	109.1	110.1	110.4	108.8	110	144.4	127.8	118.8	130.3	128.3	130.3	120.1	97.3	112.8	51	50.8
4/27 11:00	110.3	108.3	130	108.8	108.1	108.2	108.1	108.4	108.1	108.1	142.8	126.5	118.8	128.1	127.8	128.3	118.8	96.3	111.8	51	50.9
4/27 14:00	107.8	105.8	126.3	105.2	105.8	104.7	105.5	105.3	105.8	102.4	131.3	122.8	113.8	121.4	124.1	124.4	115.3	93.2	108	50.8	50.8
4/27 17:00	104.3	102.5	125	102.8	103.2	102.2	102.8	103.3	101	102.8	124.4	119.3	105.8	121.8	120.3	120.4	112	91.2	105.2	50.8	50.8
4/27 20:00	102.7	100.6	121.4	101.1	101.8	100.6	101.2	101.5	101.4	101.3	131.5	117	107.7	115.5	119.4	118.2	110.1	90.1	103.5	50.8	50.7
4/27 23:00	101.6	99.4	121.8	100	100.4	99.4	100	100.3	100.2	100	121.8	115.5	108.5	117.8	117	118.7	108.8	90.4	102.4	50.8	50.7
4/28 2:00	100.6	98.5	118.4	98.1	98.8	98.5	99	99.6	99.4	98.1	127.8	114.2	104.8	116.4	115.6	115.4	107.7	89.8	101.3	50.8	50.6
4/28 5:00	98.6	97.7	107.3	98.3	98.7	97.5	98.2	98.5	98.5	98.3	125.8	112.4	104.8	114.8	114.1	113.8	106.5	98.3	100.5	50.7	50.6

1F2 水位・圧力に関するパラメータ



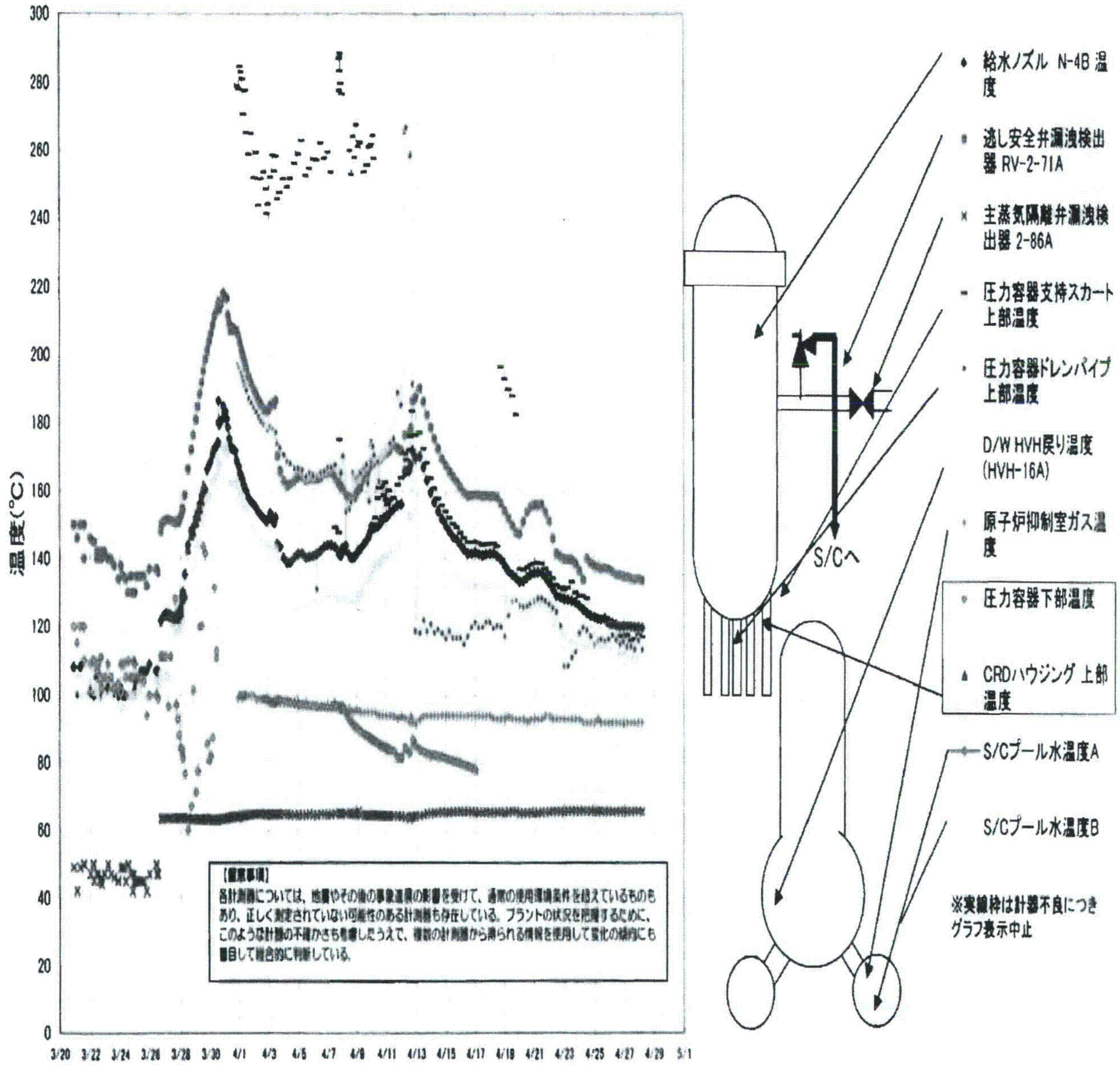
1F2 水位・圧力に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W (A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/19 12:00	-1500	-2100	-0.020	-0.029	0.085		25.3	28.7	0.565	108.0	0.07	
4/19 18:00	-1500	-2100	-0.023	-0.027	0.080		25.2	28.6	0.564	99.2	0.07	
4/20 0:00	-1500	-2100	-0.020	-0.027	0.080		25.1	28.5	0.560	89.3	0.10	
4/20 6:00	-1500	-2100	-0.023	-0.029	0.080		25.0	28.4	0.555	105.0	0.08	
4/20 12:00	-1500	-2100	-0.023	-0.029	0.080		24.9	28.3	0.551	103.0	0.09	
4/20 18:00	-1500	-2100	-0.023	-0.029	0.080		24.8	28.1	0.547	101.0	0.08	
4/21 0:00	-1500	-2100	-0.023	-0.029	0.080		24.7	28.1	0.542	108.0	0.08	
4/21 6:00	-1500	-2050	-0.023	-0.029	0.080		24.6	28.0	0.538	109.0	0.08	
4/21 12:00	-1500	-2050	-0.023	-0.025	0.085		24.6	27.9	0.534	114.0	0.05	
4/21 18:00	-1500	-2050	-0.020	-0.025	0.090		24.5	27.8	0.530	120.0	0.07	
4/22 0:00	-1500	-2050	-0.018	-0.023	0.085		24.4	27.7	0.526	132.0	0.07	
4/22 6:00	-1500	-2100	-0.023	-0.027	0.085		24.3	27.6	0.522	137.0	0.07	
4/22 12:00	-1500	-2050	-0.023	-0.027	0.085		24.2	27.5	0.519	136.0	0.08	
4/22 18:00	-1500	-2050	-0.027	-0.034	0.085		24.1	27.4	0.517	135.0	0.06	
4/23 0:00	-1500	-2100	-0.023	-0.027	0.085		24.1	27.3	0.516	132.0	0.08	
4/23 6:00	-1500	-2100	-0.023	-0.027	0.080		24.0	27.0	0.512	135.0	0.07	
4/23 12:00	-1500	-2100	-0.023	-0.025	0.080		23.9	26.8	0.509	136.0	0.07	
4/23 18:00	-1500	-2050	-0.020	-0.023	0.080		23.8	26.7	0.506	128.0	0.10	
4/24 0:00	-1500	-2050	-0.020	-0.020	0.080		23.7	26.6	0.503	126.0	0.10	
4/24 6:00	-1500	-2050	-0.020	-0.025	0.080		23.6	26.5	0.500	110.0	0.10	
4/24 12:00	-1500	-2050	-0.018	-0.025	0.080		23.6	26.5	0.497	115.0	0.08	
4/24 18:00	-1500	-2050	-0.020	-0.025	0.080		23.5	26.4	0.496	107.0	0.07	
4/25 0:00	-1500	-2100	-0.020	-0.027	0.080		23.4	26.3	0.493	119.0	0.06	
4/25 6:00	-1450	-2100	-0.020	-0.027	0.080		23.3	26.2	0.490	103.0	0.06	
4/25 11:00	-1500	-2100	-0.020	-0.025	0.080		23.2	26.1	0.489	94.1	0.05	
4/25 17:00	-1500	-2100	-0.018	-0.025	0.080		23.2	26.0	0.488	98.6	0.07	
4/25 23:00	-1500	-2100	-0.020	-0.025	0.080		23.1	26.0	0.483	105.0	0.05	
4/26 5:00	-1500	-2100	-0.020	-0.025	0.080		23.0	25.9	0.480	104.0	0.06	
4/26 11:00	-1500	-2050	-0.016	-0.025	0.080		22.9	25.8	0.477	76.4	0.07	
4/26 17:00	-1500	-2100	-0.018	-0.025	0.080		22.8	25.7	0.476	106.0	0.08	
4/26 23:00	-1500	-2100	-0.020	-0.027	0.075		22.7	25.6	0.474	57.7	0.08	
4/27 5:00	-1500	-2100	-0.018	-0.023	0.080		22.7	25.6	0.472	43.3	0.08	
4/27 11:00	-1500	-2100	-0.018	-0.025	0.075		22.6	25.5	0.470	45.9	0.06	
4/27 17:00	-1500	-2100	-0.020	-0.023	0.075		22.5	25.4	0.467	43.3	0.05	
4/27 23:00	-1500	-2100	-0.018	-0.020	0.075		22.5	25.3	0.465	41.9	0.08	
4/28 5:00	-1500	-2100	-0.016	-0.020	0.075		22.4	25.2	0.463	40.8	0.08	

計器不良

1F-2 温度に関するパラメータ(代表点)

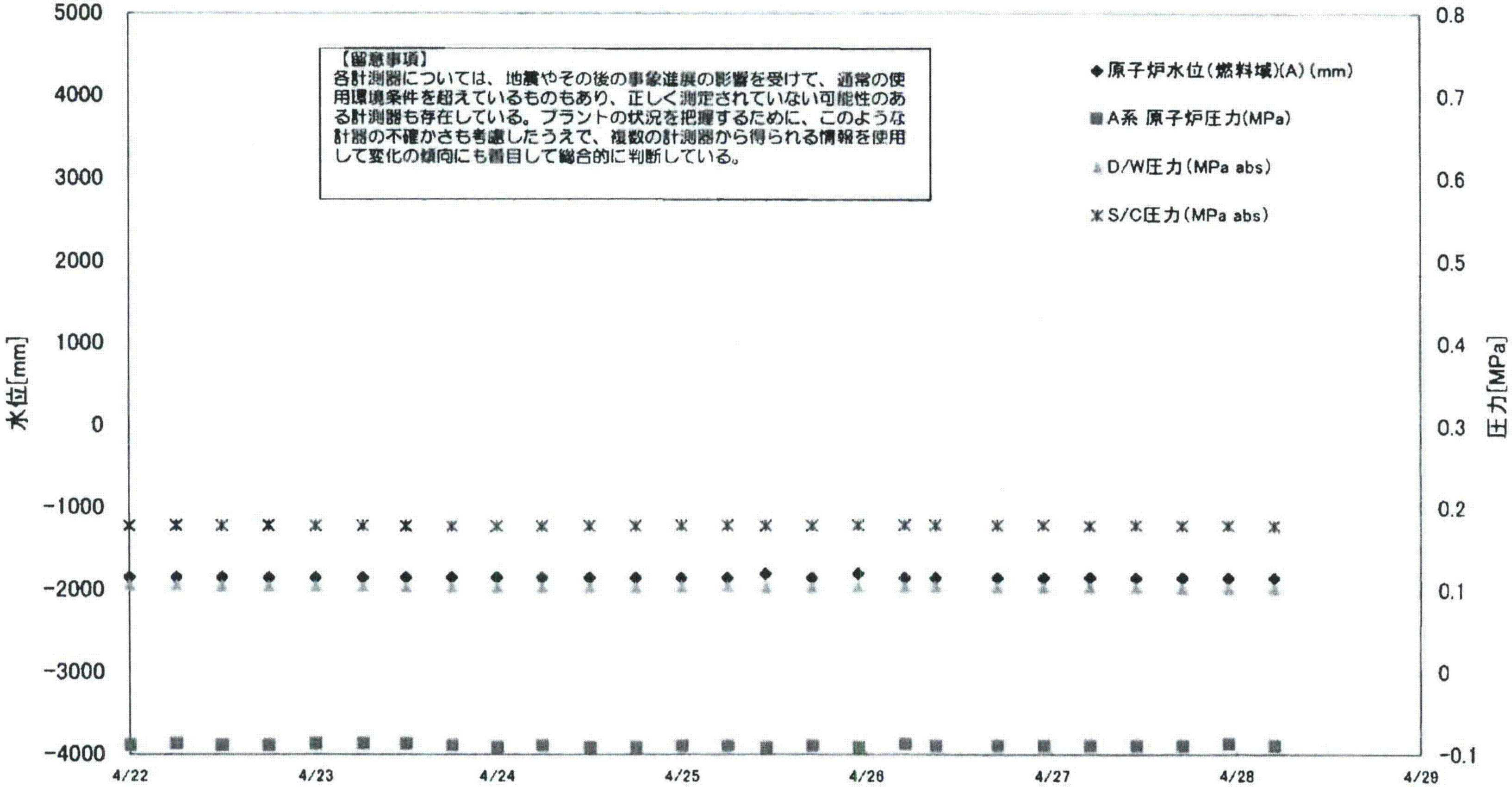


1F-2 温度に関するパラメータ

（留意事項）
各計測値については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測値から得られる情報を活用して変化の傾向にも着目して総合的に判断している。

	逃し安全弁漏洩検出器 RV-2-71A	主蒸気隔離弁漏洩検出器 2-88A	給水ノズル N-4B 温度	CRDハウジング上部温度	圧力容器下部温度	圧力容器支持スカート上部温	圧力容器ドレンパイプ上部温度	D.W HVH戻り温度(HVH-16A)	RPVベローシール	原子炉抑制室ガス温度	S/Cプール水温度A	S/Cプール水温度B
4/19 0:00	154.1	65.4	138.2			193	117.1	129	O.S	93	74.6	74.9
4/19 6:00	152	65.4	136.5			189.9	123.3	128	O.S	94	74.5	74.8
4/19 12:00	149.9	65.6	135.4			187.9	127.8	127	O.S	93	74.4	74.8
4/19 18:00	147.9	65.7	134.6			182.5	127.5	128	O.S	93	74.4	74.8
4/20 0:00	147.5	65.1	133.4			137.1	126.2	124	O.S	93	74.3	74.6
4/20 6:00	151	65.2	133.8			136.9	125.8	122	O.S	93	74	74.3
4/20 12:00	153.9	65.2	134.7			137.8	126.2	123	O.S	92	73.7	74
4/20 18:00	155.3	65.4	135.5			138.5	126.9	124	O.S	93	73.4	73.7
4/21 0:00	156.2	65.3	136			138.7	127.2	126	O.S	93	73.2	73.5
4/21 6:00	155.9	65.2	138.1			138.8	128.4	126	O.S	93	72.9	73.2
4/21 12:00	156.2	65.3	138			138.7	128.4	126	O.S	93	72.8	73
4/21 18:00	153.8	65.5	134.6			137.2	127.6	125	O.S	94	72.6	72.9
4/22 0:00	151.2	65.5	133.1			135.9	126.7	124	O.S	94	72.6	72.9
4/22 6:00	146.1	65.7	131.2			134.4	125.5	122	O.S	93	72.5	72.8
4/22 12:00	141.8	65.7	129.2			132.4	124.4	120	O.S	93	72.4	72.7
4/22 18:00	140.7	65.7	128.8			131.7	120.4	118	O.S	93	72.3	72.6
4/23 0:00	140.1	65.7	128.4			131	108.4	117	O.S	93	72.2	72.5
4/23 6:00	140	65.8	128			131.6	108.5	116	O.S	93	72.1	72.3
4/23 12:00	139.8	65.8	127.7			133.4	111	116	O.S	93	72	72.2
4/23 18:00	138.7	65.8	127.2			130.1	112.5	116	O.S	93	71.9	72.1
4/24 0:00	138.6	65.8	126.3			129.1	118.1	115	O.S	93	71.8	72.1
4/24 6:00	134	65.8	125.2			129.1	119.8	114	O.S	92	71.7	71.9
4/24 12:00	140.2	65.8	124.2			128.5	118.9	114	O.S	92	71.5	71.8
4/24 18:00	138.9	65.8	123.4			123.3	117.2	114	O.S	92	71.4	71.6
4/25 0:00	138.1	65.8	122.9			123.2	114.4	113	O.S	92	71.3	71.6
4/25 6:00	137.6	65.7	122.5			122	115.5	114	O.S	93	71.2	71.4
4/25 11:00	137.2	65.7	122.3			122.9	118.3	114	O.S	92	71.1	71.3
4/25 17:00	137.4	65.7	122.5			122.2	115.6	114	O.S	92	71	71.3
4/25 23:00	137.1	65.7	121.9			120.5	118.4	114	O.S	92	70.9	71.1
4/26 5:00	136.4	65.6	121.2			120	117.5	113	O.S	92	70.8	70.9
4/26 11:00	135.4	65.7	120.5			120.1	116.2	112	O.S	92	70.7	71
4/26 17:00	135.4	65.8	120.2			117.3	115	112	O.S	92	70.7	70.9
4/26 23:00	135	65.7	120.4			117	115.7	112	O.S	92	70.6	70.9
4/27 5:00	134.9	65.7	120.4			117.6	114	112	O.S	92	70.5	70.8
4/27 11:00	134.4	65.7	120.3			116	114.2	111	O.S	92	70.5	70.8
4/27 17:00	134	65.8	120.1			116.5	113.4	111	O.S	92	70.5	70.7
4/27 23:00	134.4	65.8	120.1			117.6	118.1	111	O.S	92	70.4	70.7
4/28 5:00	133.8	65.7	119.9			117.1	113.3	111	O.S	92	70.4	70.7
				計器不良	計器不良							

1F3 水位・圧力に関するパラメータ

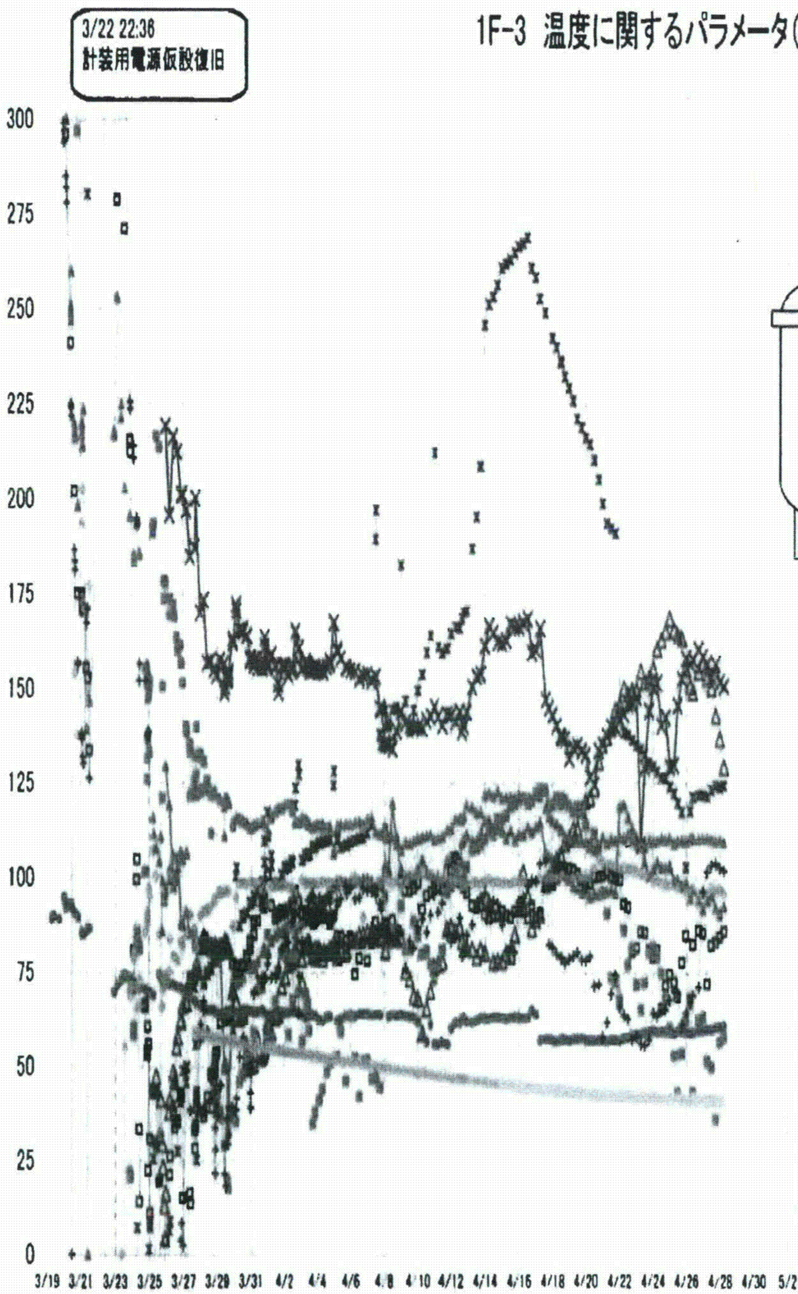


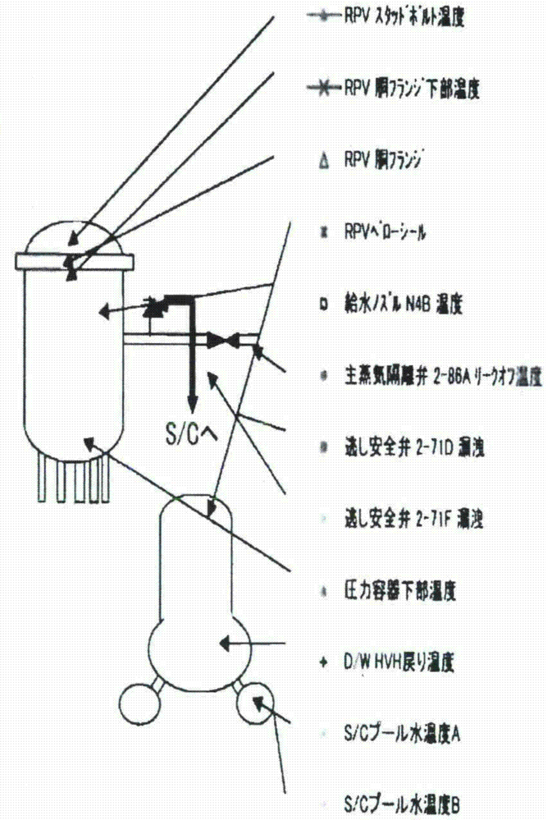
1F3 水位・圧力に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。
プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/18 18:00	-1850	-2250	-0.085	-0.034	0.1045	0.1715	15.7	11.8	0.598	0.552	0.065	
4/19 0:00	-1850	-2250	-0.085	-0.036	0.1041	0.1720	15.7	11.8	0.596	0.551	0.070	
4/19 6:00	-1850	-2250	-0.085	-0.034	0.1041	0.1724	15.7	11.8	0.594	0.549	0.065	
4/19 12:00	-1850	-2250	-0.085	-0.040	0.1036	0.1722	15.6	11.7	0.592	0.547	0.080	
4/19 18:10	-1850	-2250	-0.083	-0.040	0.1034	0.1727	15.6	11.7	0.590	0.546	0.065	
4/20 0:02	-1850	-2250	-0.087	-0.038	0.1041	0.1734	15.6	11.7	0.588	0.544	0.055	
4/20 6:00	-1850	-2250	-0.089	-0.038	0.1045	0.1741	15.5	11.6	0.587	0.542	0.070	
4/20 12:00	-1850	-2250	-0.089	-0.043	0.1045	0.1748	15.5	11.6	0.585	0.541	0.065	
4/20 18:10	-1850	-2250	-0.087	-0.043	0.1047	0.1754	15.5	11.6	0.582	0.540	0.065	
4/20 23:50	-1850	-2250	-0.087	-0.045	0.1054	0.1761	15.4	11.5	0.580	0.539	0.065	
4/21 6:00	-1850	-2250	-0.085	-0.043	0.1061	0.1768	15.4	11.5	0.579	0.538	0.065	
4/21 12:00	-1850	-2250	-0.087	-0.043	0.1050	0.1769	15.4	11.5	0.577	0.537	0.065	
4/21 18:00	-1850	-2250	-0.085	-0.043	0.1052	0.1775	15.3	11.4	0.575	0.535	0.065	
4/22 0:00	-1850	-2250	-0.089	-0.047	0.1055	0.1776	15.1	11.4	0.573	0.534	0.065	
4/22 6:00	-1850	-2250	-0.087	-0.047	0.1055	0.1780	15.2	11.4	0.570	0.532	0.070	
4/22 11:50	-1850	-2250	-0.089	-0.049	0.1048	0.1780	15.2	11.4	0.569	0.531	0.070	
4/22 17:50	-1850	-2250	-0.089	-0.049	0.1047	0.1783	15.2	11.3	0.568	0.530	0.080	
4/23 0:00	-1850	-2250	-0.087	-0.053	0.1047	0.1785	15.2	11.3	0.566	0.528	0.060	
4/23 6:15	-1850	-2250	-0.087	-0.049	0.1045	0.1782	15.1	11.3	0.564	0.527	0.070	
4/23 11:55	-1850	-2250	-0.087	-0.049	0.1038	0.1778	15.1	11.3	0.563	0.526	0.060	
4/23 18:00	-1850	-2250	-0.089	-0.051	0.1033	0.1778	15.0	11.2	0.562	0.525	0.060	
4/24 0:00	-1850	-2250	-0.091	-0.055	0.1027	0.1778	15.0	11.2	0.561	0.523	0.070	
4/24 5:50	-1850	-2250	-0.089	-0.053	0.1031	0.1778	15.0	11.2	0.560	0.522	0.060	
4/24 12:00	-1850	-2250	-0.091	-0.051	0.1031	0.1780	14.9	11.1	0.558	0.521	0.070	
4/24 18:00	-1850	-2250	-0.091	-0.051	0.1034	0.1785	14.9	11.1	0.557	0.520	0.070	
4/25 0:00	-1850	-2250	-0.089	-0.055	0.1038	0.1787	14.8	11.1	0.556	0.519	0.070	
4/25 6:00	-1850	-2250	-0.089	-0.053	0.1041	0.1789	14.8	11.1	0.554	0.518	0.070	
4/25 11:00	-1800	-2250	-0.091	-0.055	0.1029	0.1787	14.7	11.0	0.553	0.517	0.050	
4/25 17:00	-1850	-2250	-0.089	-0.055	0.1034	0.1787	14.7	11.0	0.552	0.516	0.050	
4/25 23:00	-1800	-2250	-0.091	-0.055	0.1041	0.1792	14.6	11.0	0.551	0.515	0.050	
4/26 5:00	-1850	-2250	-0.087	-0.055	0.1043	0.1794	14.6	11.0	0.550	0.514	0.040	
4/26 9:00	-1850	-2250	-0.089	-0.055	0.1041	0.1794	14.5	10.9	0.549	0.513	0.040	
4/26 17:00	-1850	-2250	-0.089	-0.051	0.1033	0.1790	13.9	10.9	0.517	0.511	0.050	
4/26 23:00	-1850	-2250	-0.089	-0.049	0.1034	0.1792	14.2	10.9	0.530	0.510	0.050	
4/27 5:00	-1850	-2250	-0.089	-0.053	0.1031	0.1787	14.3	10.9	0.532	0.508	0.050	
4/27 11:00	-1850	-2250	-0.089	-0.053	0.1029	0.1792	14.3	10.8	0.534	0.507	0.040	
4/27 17:00	-1850	-2250	-0.089	-0.053	0.1022	0.1789	14.3	10.8	0.534	0.505	0.050	
4/27 23:00	-1850	-2250	-0.087	-0.055	0.1022	0.1789	14.3	10.8	0.534	0.504	0.045	
4/28 5:00	-1850	-2250	-0.089	-0.055	0.1017	0.1783	14.2	10.8	0.533	0.502	0.050	

1F-3 温度に関するパラメータ(代表点)





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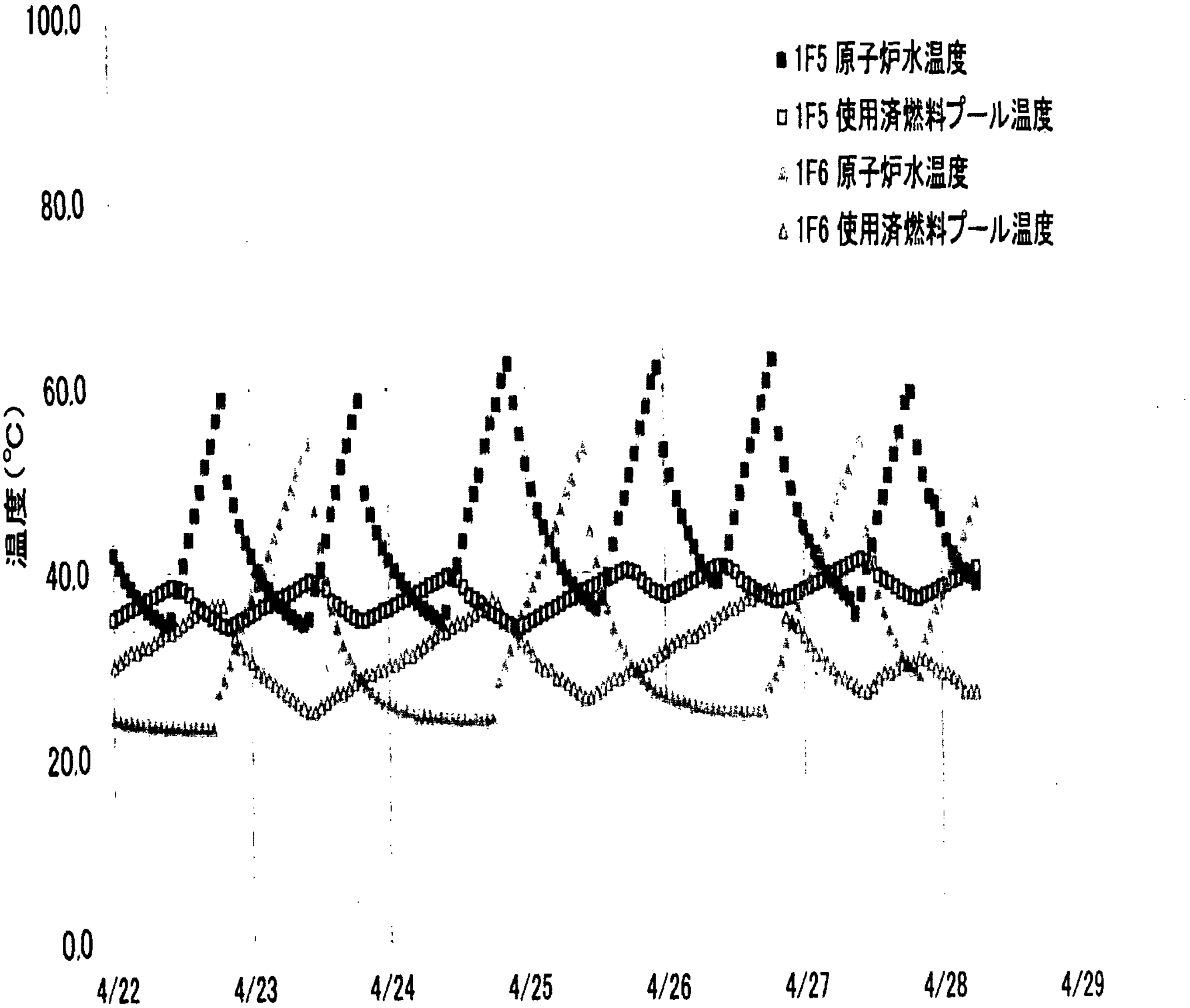
1F-3 温度に関するパラメータ

【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

	給水ノズルN4B温度	RPV胴フランジ	圧力容器下部温度	RPVスタッドボルト温度	RPV胴フランジ下部温度	逃し安全弁2-71D温度	逃し安全弁2-71F温度	主蒸気隔離弁2-86Aリークオフ	D/W HVH戻り温度	RPVベローシール	S/Cプール水温度A	S/Cプール水温度B
4/20 6:00	88.7	121.3	108.4	95.1	126.7	108.9	100.4	57	79.5	215	42.9	42.9
4/20 12:00	100.2	123.7	107.5	95.8	124.8	111.8	102.6	57.1	71.5	210.7	42.8	42.8
4/20 18:10	100.4	130.9	108.5	95.8	133.6	108.7	105.5	57.1	72	205.5	42.7	42.7
4/20 23:50	100.7	135.3	110.9	98.7	135.4	96.1	104.3	57	58	199.3	42.7	42.7
4/21 6:00	101.6	137.3	109.4	98.6	137.6	90.5	103.6	56.9	61.9	193.9	42.6	42.6
4/21 12:00	100.4	139.7	110.4	96.9	140.2	73.8	103.8	57.2	68.4	192.6	42.5	42.5
4/21 18:00	100	144.7	110	98.3	140	72.3	103.3	57.1	74.3	191.3	42.4	42.4
4/22 0:00	99.5	146	110.9	119.1	142.2	67.8	102.5	57	65.6	142	42.3	42.3
4/22 6:00	93.3	150.4	110.4	119.4	143.5	86.3	102.9	57.6	63.7	138.6	42.3	42.3
4/22 11:50	92.4	148.8	111.6	116.1	148.3	77.2	102.6	57.8	62.8	137.9	42.2	42.2
4/22 17:50	80.6	149.9	110.1	113.3	148.2	81.7	102.3	58.5	57.3	136.6	42.1	42.1
4/23 0:00	81.7	150	109.2	110.8	148.1	71.8	102.2	58.6	58.1	135.2	42.1	42.1
4/23 6:15	85.9	154.9	109.4	108.5	108.9	65.2	101.4	58.9	56.2	134.2	42	42
4/23 11:55	85.7	152.1	108.6	104.3	129.5	72.4	100.6	59.2	55.7	132.9	41.9	41.9
4/23 18:00	81.1	153	110.1	100.6	144.4	80.5	100.6	59.4	57.3	130.6	41.9	41.9
4/24 0:00	79.1	155.7	109.6	102.7	150.4	81.9	99.5	59.6	64.4	129.6	41.8	41.8
4/24 5:50	81.1	160.7	109.9	104.3	151.9	79.4	99.5	59.3	63.5	128.3	41.8	41.8
4/24 12:00	65.5	163.2	110.6	102.9	140.5	74.9	98.6	59.4	65.2	126.6	41.7	41.7
4/24 18:00	71.6	165.5	110.2	102.8	142.7	68	98.3	59.4	65.3	126.6	41.7	41.7
4/25 0:00	74.6	169	110.8	103.4	129.6	60.4	98.4	59.2	67.8	124.3	41.6	41.6
4/25 6:00	72.5	165.9	109.3	99.3	130	53	98.5	58.9	70.2	122.5	41.6	41.6
4/25 11:00	68.8	164.8	110	99.5	145.6	43.2	97.8	59.6	69.5	120	41.6	41.5
4/25 17:00	77.7	163.8	110	98	153	53.6	97.3	59.5	81.4	117.6	41.5	41.5
4/25 23:00	84.9	155.7	109.8	98.8	158.4	62.6	96.7	59.2	64.5	103.1	41.4	41.4
4/26 5:00	67.9	151	110.4	94.9	156.8	66.7	97	59	67.3	117.9	41.4	41.4
4/26 9:00	82.5	149.4	110.7	97	158	43.4	98.7	59.1	69	121.5	41.4	41.4
4/26 17:00	86.2	154.8	110.5	94.3	160.7	82.4	96	59.6	71.2	122.2	41.3	41.3
4/26 23:00	85.6	156.6	110.7	92	158.7	63.2	96.1	59.7	96.7	122.2	41.2	41.2
4/27 5:00	72	153.1	110.7	94.3	157	51.7	96.3	59.9	101.9	121.7	41.2	41.2
4/27 11:00	82.3	150.4	110.3	95.3	153.7	50	97.3	59.9	103.6	123.4	41.1	41.1
4/27 17:00	83.2	143.2	109.9	92.4	156.6	36	96.7	60.6	104	124.6	41.1	41.1
4/27 23:00	84.6	137.1	110.2	90.5	152.1	56.6	97.2	60.7	102.9	124.1	41.1	41.1
4/28 5:00	86	129.5	109.6	92.7	150.9	57.8	96.2	60.9	102.1	124.7	41	41

1F5／6 原子炉水温度、使用済燃料プール温度推移



1F5/6 原子炉水温度・使用済燃料プール温度

	1F5 原子炉水温度	1F5 使用済燃料プール温度	1F6 原子炉水温度	1F6 使用済燃料プール温度
4/25 9:00	37.5	37.9	52.6	27.0
4/25 10:00	37.2	38.0	53.5	26.5
4/25 11:00	36.6	38.3	44.5	26.5
4/25 12:00	36.1	38.6	41.2	27.0
4/25 13:00	37.2	39.0	38.1	27.5
4/25 14:00	39.7	39.3	36.1	28.0
4/25 15:00	43.0	39.6	34.0	28.5
4/25 16:00	45.9	40.0	32.3	28.5
4/25 17:00	48.1	40.3	31.2	29.0
4/25 18:00	50.5	40.1	30.1	29.5
4/25 19:00	52.9	39.9	29.3	29.5
4/25 20:00	55.6	39.0	28.5	30.0
4/25 21:00	58.0	38.5	27.9	30.0
4/25 22:00	60.6	38.0	27.3	30.5
4/25 23:00	62.2	37.8	27.0	31.0
4/26 0:00	53.3	37.5	26.6	31.5
4/26 1:00	50.5	37.8	26.3	32.0
4/26 2:00	48.0	38.1	26.1	32.5
4/26 3:00	46.0	38.4	25.9	32.5
4/26 4:00	44.2	38.8	25.7	33.0
4/26 5:00	42.7	39.1	25.5	33.0
4/26 6:00	41.1	39.5	25.4	33.5
4/26 7:00	39.9	40.0	25.2	34.0
4/26 8:00	39.1	40.3	25.1	34.5
4/26 9:00	39.0	40.6	25.0	35.0
4/26 10:00	40.6	40.6	25.0	35.5
4/26 11:00	43.1	40.4	24.9	36.0
4/26 12:00	45.9	40.0	24.9	36.0
4/26 13:00	48.6	39.1	24.8	36.5
4/26 14:00	51.1	38.7	24.8	37.0
4/26 15:00	53.7	38.3	24.8	37.0
4/26 16:00	55.8	37.9	24.8	37.5
4/26 17:00	58.3	37.5	24.8	37.5
4/26 18:00	60.6	37.1	27.6	38.0
4/26 19:00	63.0	36.8	28.7	38.0
4/26 20:00	54.9	36.8	30.2	37.0
4/26 21:00	51.6	37.1	32.2	35.0
4/26 22:00	49.0	37.3	34.3	34.5
4/26 23:00	46.7	37.7	36.3	34.0
4/27 0:00	44.8	38.0	37.9	33.0
4/27 1:00	43.2	38.3	39.3	32.0
4/27 2:00	42.0	38.7	40.8	31.0
4/27 3:00	41.0	39.0	42.3	31.0
4/27 4:00	39.9	39.4	44.2	30.0
4/27 5:00	39.0	39.7	45.9	29.5
4/27 6:00	38.3	40.1	47.9	28.5
4/27 7:00	37.6	40.4	49.5	28.5
4/27 8:00	37.0	40.8	51.1	28.0
4/27 9:00	35.4	41.1	52.8	27.5
4/27 10:00	37.5	41.3	54.3	27.0
4/27 11:00	40.4	41.1	44.3	27.0
4/27 12:00	42.8	40.8	40.9	27.5
4/27 13:00	45.8	39.5	37.6	28.5
4/27 14:00	48.1	39.1	35.5	29.0
4/27 15:00	50.4	38.8	33.6	29.0
4/27 16:00	52.7	38.3	32.1	29.5
4/27 17:00	55.0	37.8	30.9	30.0
4/27 18:00	58.2	37.5	29.8	30.0
4/27 19:00	59.4	37.1	29.2	30.0
4/27 20:00	53.4	37.0	28.6	30.5
4/27 21:00	50.5	37.4	32.6	30.5
4/27 22:00	48.2	37.6	34.1	30.0
4/27 23:00	47.5	37.9	35.9	29.5
4/28 0:00	45.7	38.3	37.5	29.0
4/28 1:00	43.3	38.6	39.0	29.0
4/28 2:00	41.9	39.0	40.7	28.5
4/28 3:00	41.0	39.2	42.1	28.0
4/28 4:00	40.1	39.6	43.9	27.0
4/28 5:00	39.4	39.9	45.6	27.0
4/28 6:00	38.7	40.4	47.5	27.0

Wittick, Brian

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 28, 2011 12:47 AM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; Bradley Gawbow; CAPT Dirk L Foster; Reid Tanaka
Subject: FW: April 28 Updates
Attachments: 20110428 0500 Unit 1 Drywell Pressure[1].pdf; 20110428 0700 Water Levels[1].pdf; 20110428 Rev.14 Evaluated Water Level in U1 PCV[1].pdf; 20110428 0600 Plant Parameters[1].pdf

All,

[redacted] (b)(4)

Thanks,
Al

6

Al Hochevar
Institute of Nuclear Power Operations
Cell [redacted] (b)(6)

From: Ryan, Robert D (WANO)
Sent: Wednesday, April 27, 2011 10:55 PM
To: INPO EmergencyResponseCtr (INPO); INPOERCTech; INPOERCAnalysis
Cc: Gard, Lee A (INPO); Maddox, James E. (INPO); Garchow, David F.(INPO); Gambone, Robert L (INPO)
Subject: April 28 Updates

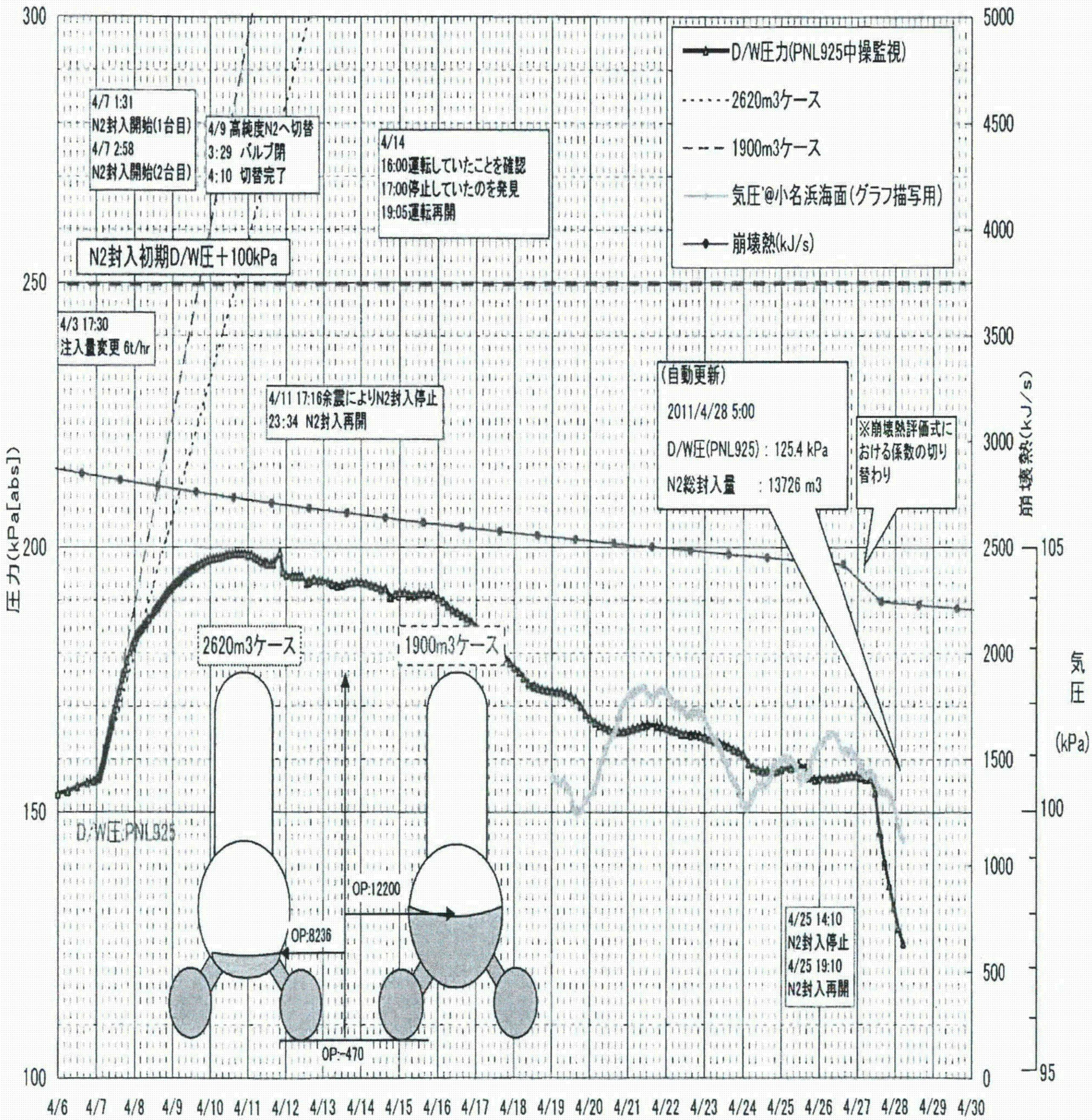
Latest information on N2 purge, drywell level, building water levels and temperature / pressure graphs

[redacted] (b)(4)

ɔb

4月28日最新共用1Fデータ(5時00分現在).xls

1F1 D/W圧(N2注入後の挙動)



福島第一原子力発電所
復旧班
H23.4.28 7:00現在

水位管理表

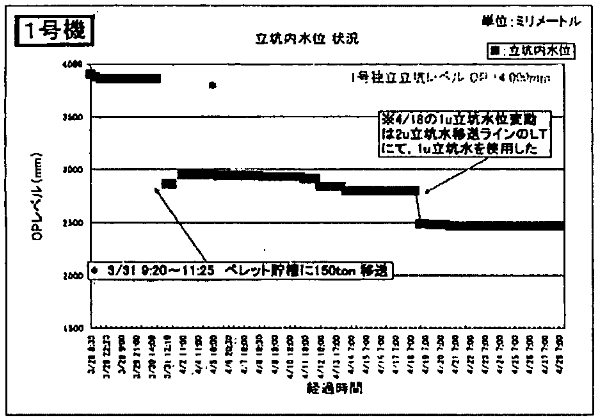
	月		土	土	土	日	日	日	月	月	月	火	火	火	水	水	水	木	木	木	金	金	金
	3/28 8:30		4/23 7:00	4/23 11:00	4/23 18:00	4/24 7:00	4/24 11:00	4/24 18:00	4/25 7:00	4/25 11:00	4/25 18:00	4/26 7:00	4/26 11:00	4/26 18:00	4/27 7:00	4/27 11:00	4/27 18:00	4/28 7:00	4/28 11:00	4/28 18:00	4/29 7:00	4/29 11:00	4/29 18:00
時間経過	0:00	3/28(13:00)～4/22(18:00) 省略 (グラフ上では表示しています)	622:30	626:30	633:30	646:30	650:30	657:30	670:30	674:30	681:30	694:30	698:30	705:30	718:30	722:30	729:30	742:30	746:30	753:30	766:30	770:30	777:30
1号機 立坑内水位	OP +3,900mm		OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm	OP +2,470mm					
1号機 T/B B1水位	OP +5,110mm		OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm	OP +5,050mm					
2号機 立坑内水位	OP +3,050mm		OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,130mm	OP +3,120mm	OP +3,120mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,110mm	OP +3,100mm	OP +3,100mm					
2号機 T/B B1水位	OP +2,790mm		OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm	OP +3,100mm					
3号機 立坑内水位	OP +2,450mm		OP +2,960mm	OP +2,970mm	OP +2,970mm	OP +2,990mm	OP +2,990mm	OP +2,990mm	OP +2,990mm	OP +3,000mm	OP +3,010mm	OP +3,020mm	OP +3,020mm	OP +3,020mm	OP +3,030mm	OP +3,040mm	OP +3,040mm	OP +3,050mm					
3号機 T/B B1水位	OP +2,490mm		OP +2,900mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm					
4号機 T/B B1水位	-		OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,000mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,050mm	OP +3,100mm	OP +3,100mm	OP +3,100mm					
集中Rw/B B2水位	OP +1,700mm		OP -311mm	OP -483mm	OP -460mm	OP -460mm	OP -580mm	OP -548mm	OP -487mm	OP -489mm	OP -437mm	OP -377mm	OP -360mm	OP -329mm	OP -271mm	OP -266mm	OP -223mm	OP -162mm					

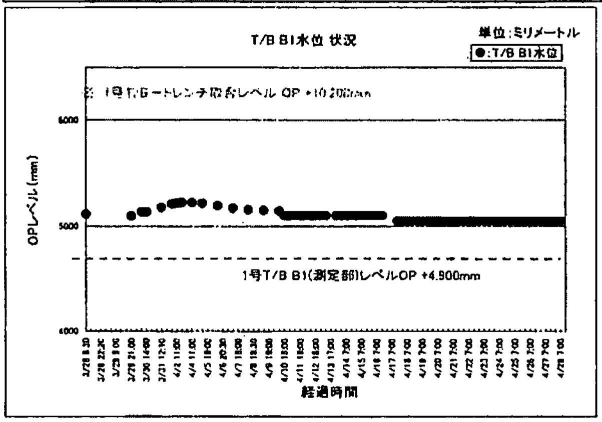
単位：ミリメートル

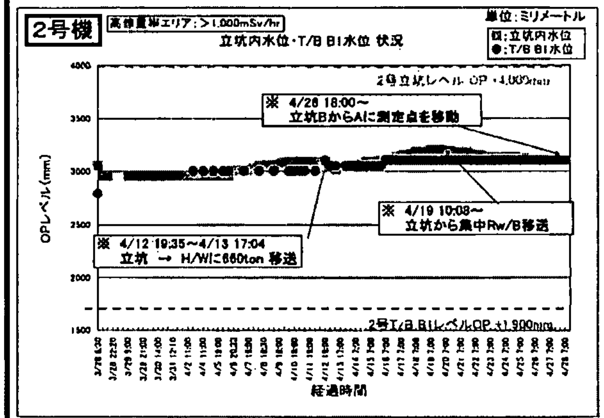
3/28 8:30のデータのうち、1、2号機は目測値のため参考値扱い

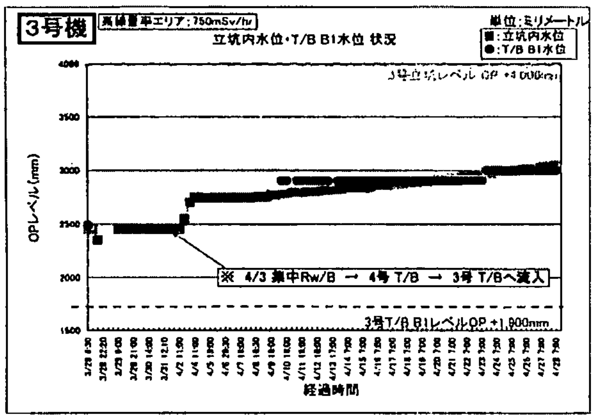
＊；1号機T/Bと立坑間が逆U字状のダクト形状となっており、タービン建屋の水位はOP +10,200になるまで、トレンチ内に残留水が流入する恐れはない。

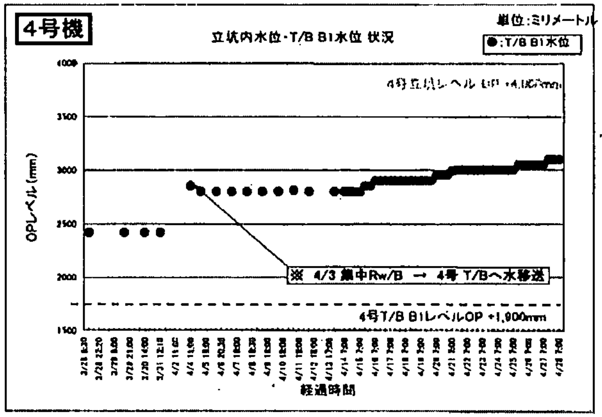
※1. 建屋水位は4/10よりITV計測を実施。※2. 4/11,12の1u立坑水位変動は2u立坑水移送ラインのLTにて、1u立坑水を使用した為。
※3. 4/12の2uT/B水位変動はITV不具合発生しカメラ調整した為。
※4. 4/18の1u立坑水位変動は2u立坑水移送ラインのLTにて、1u立坑水を使用した為。



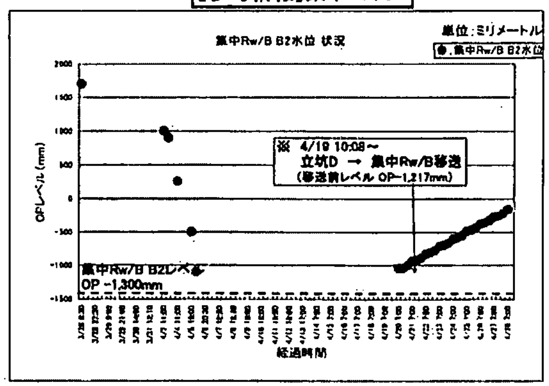


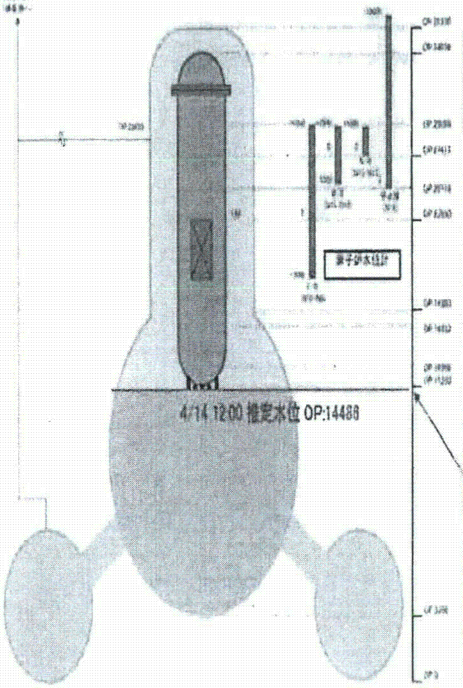




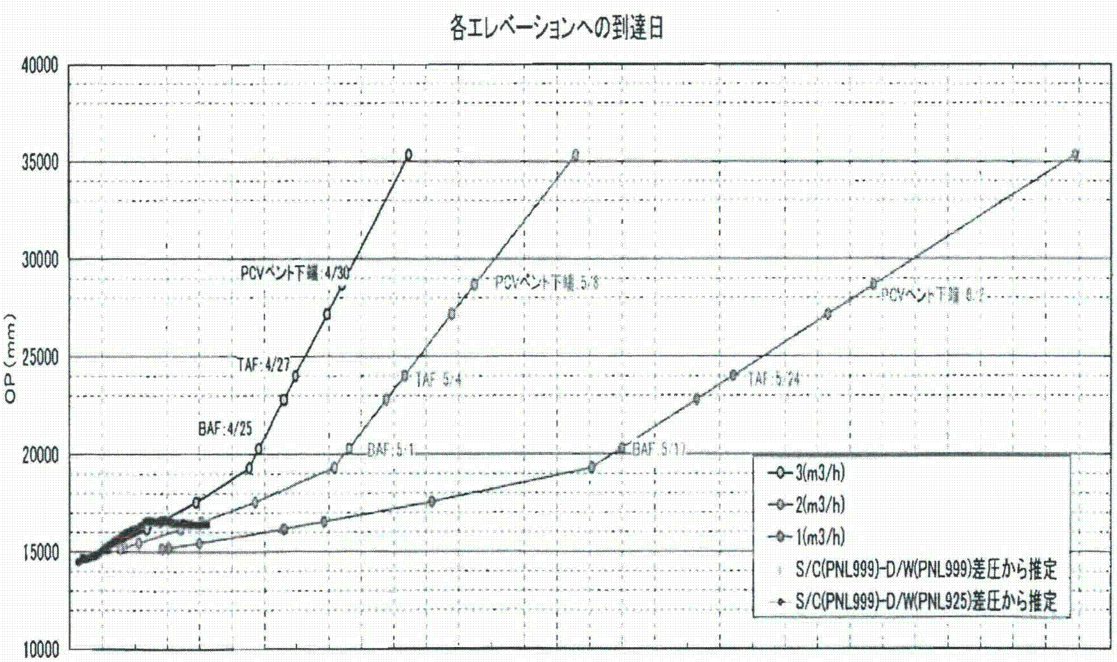


【参考情報】集中Rw/B





1F-1	水量	位置		D/W水位形成に寄与する流量に応じた各エレベーションへの到達日		
OP(mm)	PCV(m^3)			3(m^3/h)	2(m^3/h)	1(m^3/h)
35330	7736	(V)	PCV上端	5/4 22:09	5/15 3:14	6/14 18:28
28650	7440	(U)	PCVベント下端	4/30 19:29	5/8 23:14	6/2 10:28
27150	7373	(T)	D/W水位(上部)LS	4/29 21:09	5/7 13:44	5/30 15:28
23990	7233	(S)	TAF	4/27 22:29	5/4 15:44	5/24 19:28
22781	7179	(R)	JPノズル	4/27 4:29	5/3 12:44	5/22 13:28
20290	7069	(Q)	BAF到達	4/25 15:49	5/1 5:44	5/17 23:28
19303	7025	(P)	D/W球ー円筒接合部	4/25 1:09	4/30 7:44	5/16 3:28
17540	6790	(O)	CAMS	4/21 18:49	4/25 10:14	5/6 8:28
16524	6630	(N)	SRV水没	4/19 13:29	4/22 2:14	4/29 18:28
16150	6570	(M)	温度計端子箱	4/18 17:29	4/20 20:14	4/27 4:28
15450	6445	(L)	RPV下部温度計水没	4/16 23:49	4/18 5:44	4/21 23:28
15200	6400	(K)	RPV底部冠水	4/16 8:49	4/17 7:14	4/20 2:28
15150	6390	(J)	D/W圧力計	4/16 5:29	4/17 2:14	4/19 18:28
14700	6305	(I)	電気ペネトレーション	4/15 1:03	4/15 7:34	4/16 3:09
14486	6266	(H)	SLC注入ライン止弁	4/14 12:00	4/14 12:00	4/14 12:00
12200	5837	(G)	D/W球赤道面			
11200	5643	(F)	HVH温度計			
8236	5113	(E)	S/Cベント開口上端			
3570	2410	(D)	S/C中心			
2780	1820	(C)	S/C通常最高水位			
2680	1750	(B)	S/C通常最低水位			
-470	0	(A)	S/C底部			



【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計測の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）

4月28日 6:00 現在

号機	1号機	2号機	3号機	4号機	5号機	6号機
原子炉注水状況	給水ラインを用いた淡水注入中。 流量 10.0m³/h （4/28 5:00 現在）	消火系ラインを用いた淡水注入中。 流量 7.0m³/h （4/28 5:00 現在）	消火系ラインを用いた淡水注入中。 流量 6.8m³/h （4/28 5:00 現在）	※2 （全燃料取出中につき監視対象外）	※2 （原子炉の除熱機能が維持されており、注水不要）	
原子炉水位	燃料域A：−1650mm 燃料域B：−1600mm （4/28 5:00 現在）	燃料域A：−1500mm 燃料域B：−2100mm （4/28 5:00 現在）	燃料域A：−1850mm 燃料域B：−2250mm （4/28 5:00 現在）		停止域 2081mm （4/28 6:00 現在）	停止域 2138mm （4/28 6:00 現在）
原子炉圧力	A系 0.415MPa g（A） B系 1.168MPa g（B）※3 （4/28 5:00 現在）	A系 −0.016MPa g（A）※3 B系 −0.020MPa g（D）※3 （4/28 5:00 現在）	A系 −0.055MPa g（A）※3 B系 −0.089MPa g（C）※3 （4/28 5:00 現在）		0.007MPa g （4/28 6:00 現在）	0.013MPa g （4/28 6:00 現在）
原子炉水温度	（系統流量がないため採取不可）				38.7℃ （4/28 6:00 現在）	47.5℃ （4/28 6:00 現在）
原子炉圧力容器まわり温度	給水ノズル温度：107.3℃ ※3 圧力容器下部温度：98.5℃ （4/28 5:00 現在）	給水ノズル温度：119.9℃ 圧力容器下部温度：※1 （4/28 5:00 現在）	給水ノズル温度：86.0℃ ※3 圧力容器下部温度：109.6℃ （4/28 5:00 現在）		※2（原子炉水温度にて監視中）	
D/W・S/C圧力	D/W 0.125MPa abs S/C 0.125MPa abs （4/28 5:00 現在）	D/W 0.075MPa abs S/C ※1 （4/28 5:00 現在）	D/W 0.1017MPa abs S/C 0.1783MPa abs （4/28 5:00 現在）		※2 （原子炉の除熱機能が維持されているため監視対象外）	
D/W雰囲気温度	RPVベローシール：100.5℃ HVH戻り：88.3℃ （4/28 5:00 現在）	RPVベローシール：※1 HVH戻り：111℃ （4/28 5:00 現在）	RPVベローシール：124.7℃ ※3 HVH戻り：102.1℃ （4/28 5:00 現在）			
CAMS放射線モニタ	D/W（A）※1 （B）※1 S/C（A）1.16×10⁰Sv/h ※3 （B）1.67×10⁰Sv/h ※3 （4/28 5:00 現在）	D/W（A）2.24×10¹Sv/h （B）2.52×10¹Sv/h S/C（A）4.63×10⁻¹Sv/h ※3 （B）4.08×10⁻¹Sv/h ※3 （4/28 5:00 現在）	D/W（A）1.42×10¹Sv/h （B）1.08×10¹Sv/h S/C（A）5.33×10⁻¹Sv/h ※3 （B）5.02×10⁻¹Sv/h ※3 （4/28 5:00 現在）			
S/C温度	A系：50.7℃ B系：50.6℃ （4/28 5:00 現在）	A系：70.4℃ B系：70.7℃ （4/28 5:00 現在）	A系：41.0℃ B系：41.0℃ （4/28 5:00 現在）			
D/W設計使用圧力	0.384MPa g（0.485MPa abs）	0.384MPa g（0.485MPa abs）	0.384MPa g（0.485MPa abs）	-	-	
D/W最高使用圧力	0.427MPa g（0.528MPa abs）	0.427MPa g（0.528MPa abs）	0.427MPa g（0.528MPa abs）			
使用済燃料プール温度	※1	50.0℃ （4/28 5:00 現在）	※1	※1	40.4℃ （4/28 6:00 現在）	27.0℃ （4/28 6:00 現在）
FPCスキマーサージタンクレベル	3700mm （4/28 5:00 現在）	5400mm （4/28 5:00 現在）	※1	6550mm （4/28 5:00 現在）	※2	
電源	外部電源受電中（P/C2C）		外部電源受電中（P/C4D）		外部電源受電中	
その他情報				共用プール： 32℃ （4/27 6:50）	5u：SHCモード （4/27 10:13～）	6u：非[illegible]モード （4/27 20:08～）

圧力換算　ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

※1：計器不良
※2：データ採取対象外
※3：状況推移を継続確認中

公開用

福島第一原子力発電所　プラント関連パラメータ（水位・圧力・温度などのデータ）に関する補足説明

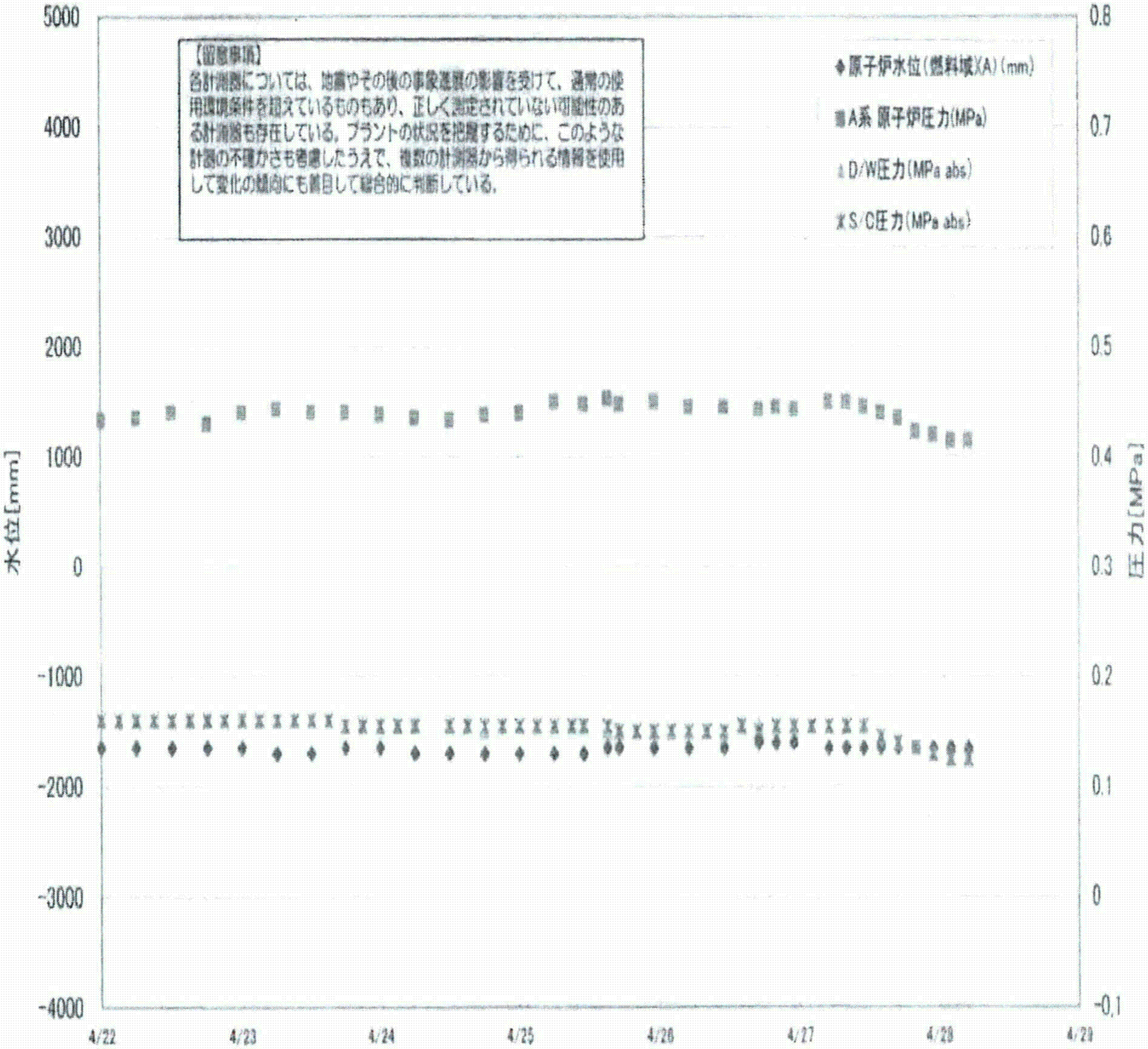
■各パラメータに関する補足説明

項目	記載方法	測定方法	記載点数/Ch 数 or 系統数
原子炉注水状況	注水流量/変更時間を記載（注水流量を変更した場合のみ更新）。	仮設計器	1/1系統
原子炉水位	燃料域を監視する水位計にて測定したデータを記載。	本設指示計	A系 1/1Ch B系 1/1Ch
原子炉圧力	計器盤より圧力計器から伝送される電圧値を測定し、電圧値を圧力に換算したものを記載。A系/B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設計器盤より電圧値を測定し圧力に換算	A系 1/2Ch B系 1/2Ch
原子炉水温度	温度計設置箇所には系統流量がないためデータ未採取	—	—
原子炉圧力容器まわり温度	原子炉圧力容器まわり温度は複数箇所から採取しているが、全体把握の観点から代表部位として「給水ノズル位置」、「圧力容器下部」のデータを記載	本設記録計	給水ノズル位置 1/4Ch 圧力容器下部 1/2Ch（1号） 1/1Ch（2~3号）
D/W・S/C圧力	本設指示計の指示値を記載。本設指示計にて採取できない場合には、計器盤より測定した電圧値を圧力に換算したものを記載。 （D/W：ドライウェル、S/C：圧力抑制室）	本設指示計：1号、2号 本設計器盤（電圧測定）：3号	本設指示計 1/1系統 本設記録計 狭帯1/1Ch 広帯1/1Ch
D/W 雰囲気温度	D/W 内の雰囲気温度は複数箇所から採取しているが、全体把握の観点から代表部位として「D/W 上部（RPV ベローシール温度）、中央部（D/W HVH 戻り空気温度）」のデータを記載。（RPV：原子炉圧力容器、HVH：空調ユニット）	本設記録計	RPV ベローシール 1/5Ch D/W HVH 戻り 1/5Ch
CAMS 放射線モニタ	本設指示計の指示値を記載。 （CAMS：格納容器雰囲気モニタ系）	本設指示計	D/W A系 1/1Ch B系 1/1Ch S/C A系 1/1Ch B系 1/1Ch
S/C 温度	本設記録計の指示値を記載，A系/B系それぞれ複数点データがあるが、1点を代表として採取し記載。	本設記録計	A系1/4Ch（1号）、8Ch（2~3号） B系1/4Ch（1号）、8Ch（2~3号）
使用済燃料プール温度	本設記録計の指示値を記載。 （非熱モード：非常時熱負荷モード、SHC モード：原子炉停止時冷却系モード）	本設記録計	1/2Ch（1号）、1Ch（2~4号）
FPC スキマーサージタンクレベル	本設指示計の指示値を記載。 （FPC：燃料プール冷却浄化系）	本設指示計	1/1系統

■注記に関する補足説明

項目	内容	4月28日6時時点の状況
計器不良	計器不良：指示値ダウン（オーバー）スケール/検出器の不良	1号機 使用済燃料プール温度、CAMS D/W 放射線モニタ 2号機 圧力容器下部温度、S/C 圧力、RPV ベローシール温度 3号機 使用済燃料プール温度、スキマーサージタンクレベル 4号機 使用済燃料プール温度
データ採取対象外	4号機：炉心に燃料がないため、原子炉及びD/W関連のデータは採取せず。 5~6号機：現在冷温停止中のため、D/W関連データは採取せず。	—
状況推移を継続確認中	指示は出ているものの、指示値ハンチング・マイナス表示など他パラメータと明らかに異なる推移を示したもの。	1号機 原子炉圧力、給水ノズル温度、CAMS S/C 放射線モニタ 2号機 原子炉圧力、CAMS S/C 放射線モニタ 3号機 原子炉圧力、RPV ベローシール温度、給水ノズル温度、CAMS S/C 放射線モニタ

1F1 水位・圧力に関するパラメータ

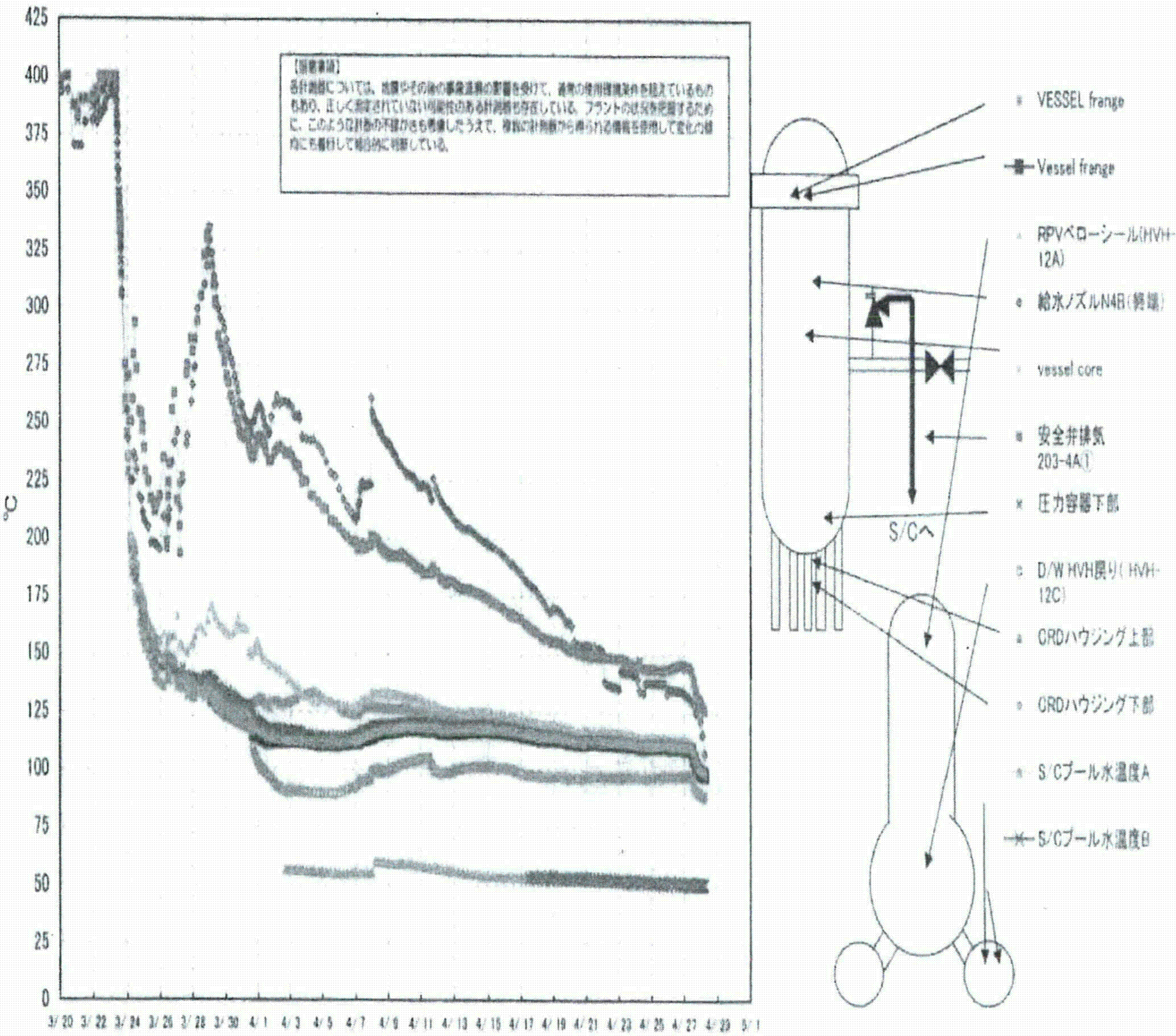


1F1 水位・圧力に関するパラメータ

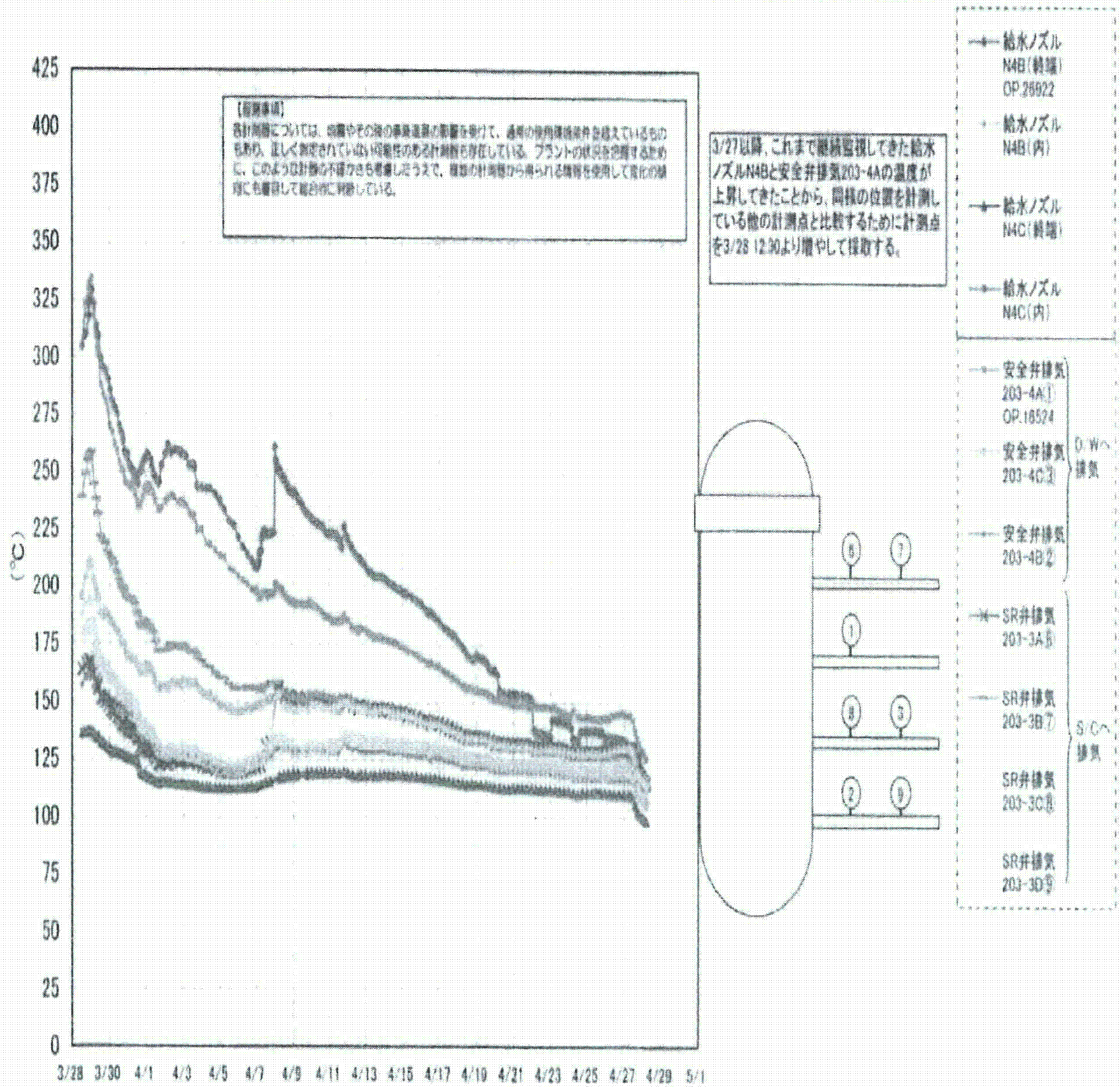
(補足説明)
各計測値については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測値も存在している。
プラントの状況を把握するために、このような計器の不確かさを考慮したうえで、複数の計測値から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	備考
4/24 6:00	-1700	-1700	0.435	1.143	0.155	0.155			1.01	1.74	
4/24 12:00	-1700	-1700	0.433	1.143	0.155	0.155			1.02	1.74	
4/24 15:00					0.155	0.155			1.03	1.74	
4/24 18:00	-1700	-1700	0.438	1.148	0.150	0.155			1.03	1.74	
4/24 21:00					0.155	0.155			1.04	1.74	
4/25 0:00	-1700	-1700	0.440	1.160	0.155	0.155			1.04	1.74	
4/25 3:00					0.155	0.155			1.05	1.75	
4/25 6:00	-1700	-1650	0.450	1.173	0.155	0.155			1.06	1.76	
4/25 9:00					0.155	0.155			1.07	1.76	
4/25 11:00	-1700	-1650	0.448	1.168	0.155	0.155			1.08	1.76	
4/25 15:00	-1650	-1650	0.453	1.173	0.150	0.155			1.08	1.74	
4/25 17:00	-1650	-1550	0.448	1.165	0.150	0.150			1.09	1.74	
4/25 20:00					0.150	0.150			1.10	1.75	
4/25 23:00	-1650	-1650	0.450	1.173	0.150	0.150			1.10	1.75	
4/26 2:00					0.150	0.150			1.11	1.75	
4/26 5:00	-1650	-1650	0.445	1.185	0.150	0.150			1.11	1.74	
4/26 8:00					0.150	0.150			1.12	1.74	
4/26 11:00	-1650	-1650	0.445	1.180	0.150	0.150			1.12	1.74	
4/26 14:00					0.155	0.155			1.12	1.74	
4/26 17:00	-1600	-1650	0.443	1.183	0.155	0.150			1.13	1.74	
4/26 20:00	-1600	-1650	0.445	1.190	0.155	0.155			1.13	1.74	
4/26 23:00	-1600	-1650	0.443	1.203	0.155	0.155			1.13	1.73	
4/27 2:00					0.155	0.155			1.13	1.73	
4/27 5:00	-1650	-1600	0.450	1.205	0.155	0.155			1.14	1.73	
4/27 8:00	-1650	-1650	0.450	1.205	0.155	0.155			1.14	1.72	
4/27 11:00	-1650	-1650	0.445	1.203	0.155	0.155			1.14	1.72	
4/27 14:00	-1650	-1650	0.440	1.198	0.145	0.145			1.15	1.71	
4/27 17:00	-1650	-1650	0.435	1.188	0.140	0.140			1.15	1.71	
4/27 20:00	-1650	-1650	0.423	1.175	0.135	0.135			1.16	1.70	
4/27 23:00	-1650	-1550	0.420	1.173	0.130	0.130			1.16	1.69	
4/28 2:00	-1650	-1600	0.415	1.170	0.125	0.125			1.16	1.68	
4/28 5:00	-1650	-1600	0.415	1.168	0.125	0.125			1.16	1.67	
							計器不良	計器不良			

1F-1 温度に関するパラメータ(代表点)



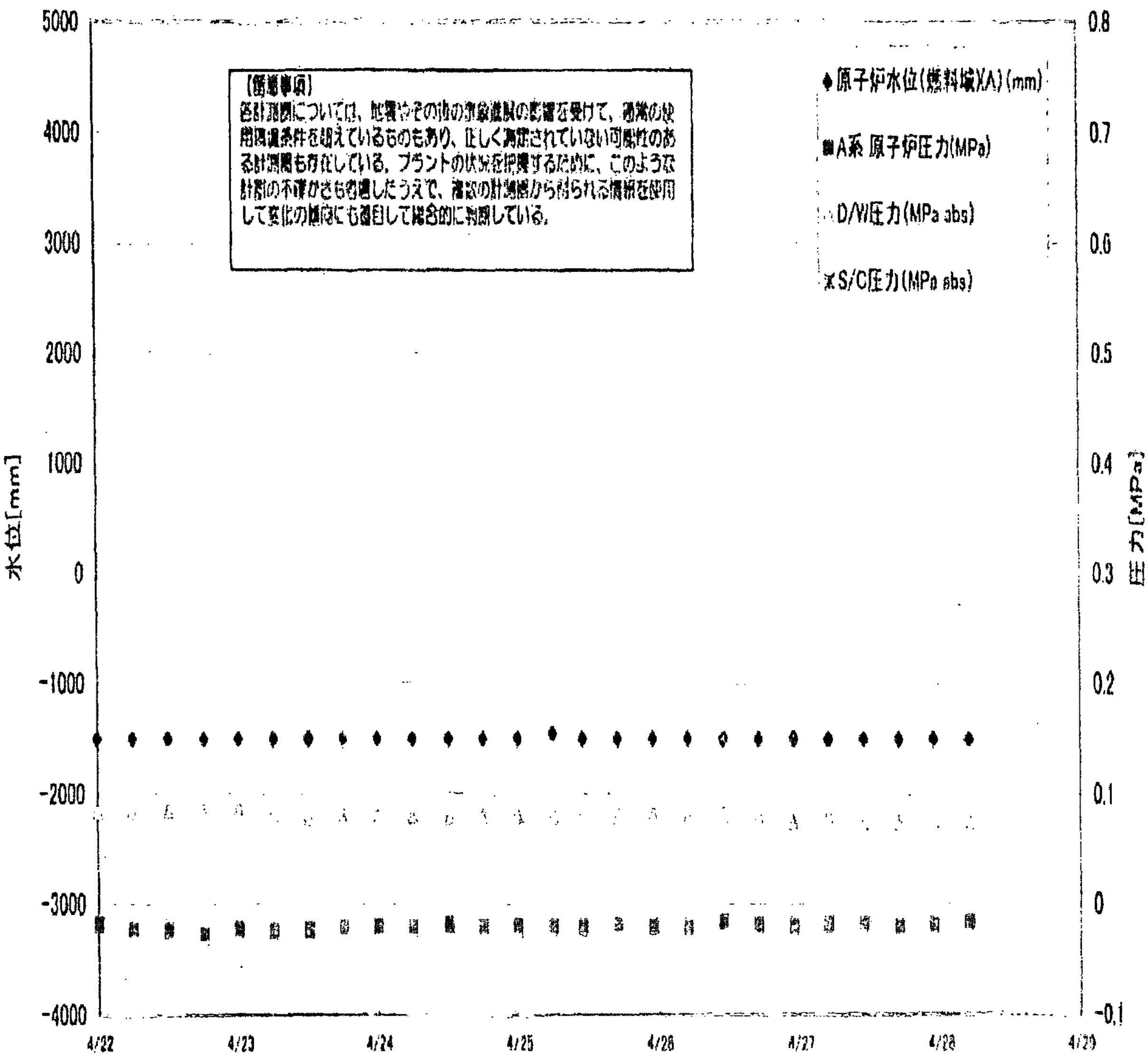
1F-1 温度に関するパラメータ(給水ノズル及び安全弁排気温度)



1F-1 温度に関するパラメータ

	VESSEL flange	Vessel flange	給水ノズルN4B(端部)	給水ノズルN4B(内)	給水ノズルN4D(端部)	給水ノズルN4D(内)	vessel core	圧力容器下部	CRDハウジング上部	CRDハウジング下部	安全弁排気	安全弁排気	安全弁排気	SR弁排気	SR弁排気	SR弁排気	SR弁排気	D/W	[illegible]	S/Cプール水温度A	S/Cプール水温度B
4/19 0:00	115.9	113.1	120.7	113.5	114.1	113.2	114.4	115.1	[illegible]	[illegible]	[illegible]	135.2	132.2	[illegible]	134.1	133.8	135.5	86.5	[illegible]	33.4	[illegible]
4/19 3:00	115.8	113.1	199.4				114.4	[illegible]	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]		
4/19 6:00	115.9	112.1	[illegible]	113.8	114.1	113.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4/19 9:00	[illegible]	112.1	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]		
4/19 12:00	115.9	113	187.5	112.7	114	113	113	114.2	112.1	[illegible]	154.8	125	121.5	134.4	[illegible]	133.5	[illegible]	[illegible]	119.3	33.3	33.3
4/19 15:00	[illegible]	112.8	[illegible]				113	[illegible]	113.5	[illegible]	[illegible]							[illegible]	[illegible]		
4/19 18:00	[illegible]	112.7	[illegible]	113.4	[illegible]	112.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4/19 21:00	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]		

1F2 水位・圧力に関するパラメータ



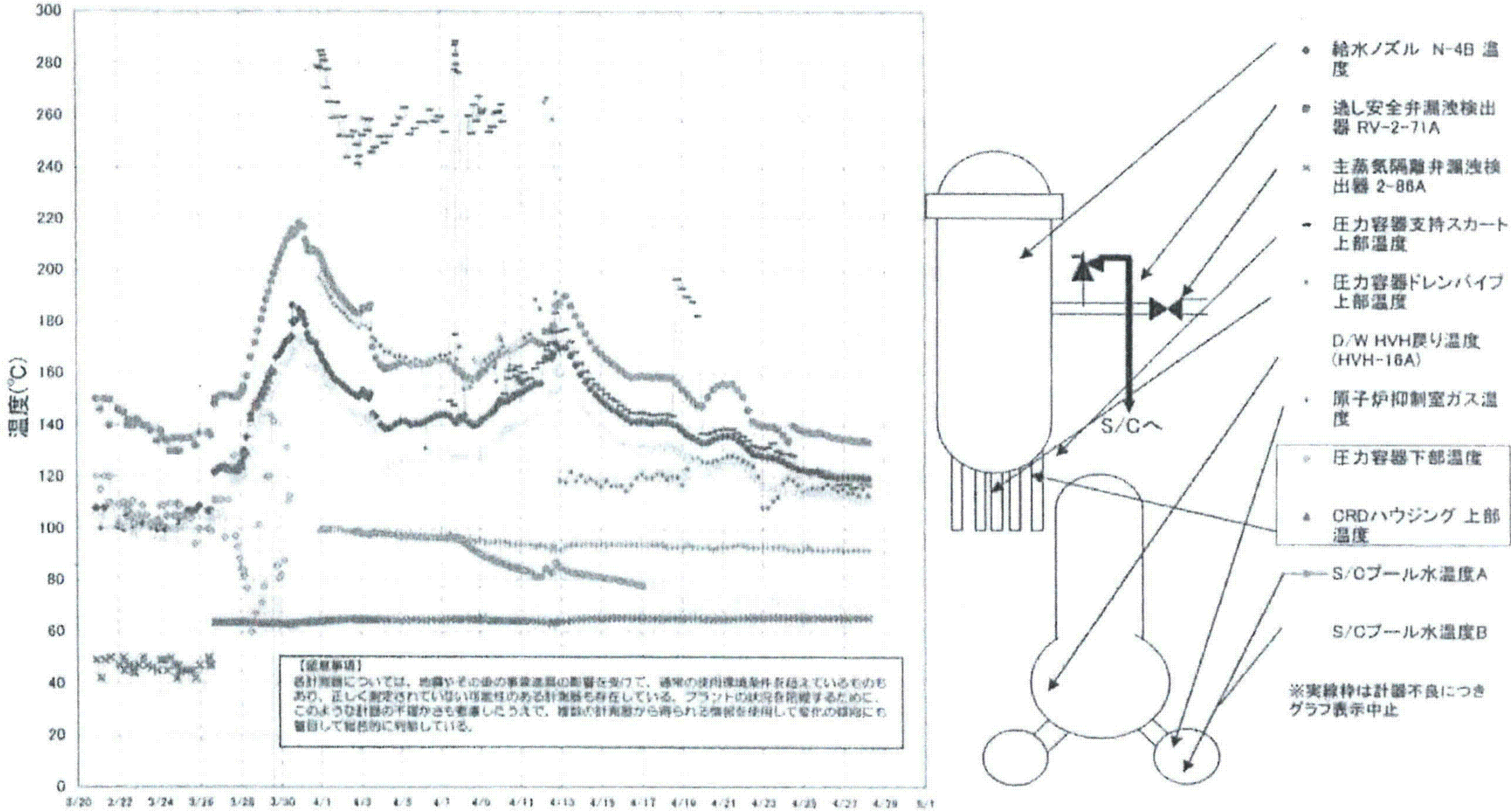
1F2 水位·圧力に関するパラメータ

[illegible]

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域)(B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中樸線量(mSv/h)	備考
4/19 12:00	-1500	-2100	-0.020	-0.029	0.085		25.3	28.7	0.565	108.0	0.07	
4/19 18:00	-1500	-2100	-0.023	-0.027	0.080		25.2	28.6	0.564	99.2	0.07	
4/20 0:00	-1500	-2100	-0.020	-0.027	0.080		25.1	28.5	0.560	89.3	0.10	
4/20 6:00	-1500	-2100	-0.023	-0.029	0.080		25.0	28.4	0.555	105.0	0.08	
4/20 12:00	-1500	-2100	-0.023	-0.029	0.080		24.9	28.3	0.551	103.0	0.09	
4/20 18:00	-1500	-2100	-0.023	-0.029	0.080		24.8	28.1	0.547	101.0	0.08	
4/21 0:00	-1500	-2100	-0.023	-0.029	0.080		24.7	28.1	0.542	108.0	0.08	
4/21 6:00	-1500	-2050	-0.023	-0.029	0.080		24.6	28.0	0.538	109.0	0.08	
4/21 12:00	-1500	-2050	-0.023	-0.025	0.085		24.6	27.9	0.534	114.0	0.05	
4/21 18:00	-1500	-2050	-0.020	-0.025	0.090		24.5	27.8	0.530	120.0	0.07	
4/22 0:00	-1500	-2050	-0.018	-0.023	0.085		24.4	27.7	0.526	132.0	0.07	
4/22 6:00	-1500	-2100	-0.023	-0.027	0.085		24.3	27.6	0.522	137.0	0.07	
4/22 12:00	-1500	-2050	-0.023	-0.027	0.085		24.2	27.5	0.519	136.0	0.08	
4/22 18:00	-1500	-2050	-0.027	-0.034	0.085		24.1	27.4	0.517	135.0	0.06	
4/23 0:00	-1500	-2100	-0.023	-0.027	0.085		24.1	27.3	0.516	132.0	0.08	
4/23 6:00	-1500	-2100	-0.023	-0.027	0.080		24.0	27.0	0.512	135.0	0.07	
4/23 12:00	-1500	-2100	-0.023	-0.025	0.080		23.9	26.8	0.509	136.0	0.07	
4/23 18:00	-1500	-2050	-0.020	-0.023	0.080		23.8	26.7	0.506	128.0	0.10	
4/24 0:00	-1500	-2050	-0.020	-0.020	0.080		23.7	26.6	0.503	126.0	0.10	
4/24 6:00	-1500	-2050	-0.020	-0.025	0.080		23.6	26.5	0.500	110.0	0.10	
4/24 12:00	-1500	-2050	-0.018	-0.025	0.080		23.6	26.5	0.497	115.0	0.06	
4/24 18:00	-1500	-2050	-0.020	-0.025	0.080		23.5	26.4	0.496	107.0	0.07	
4/25 0:00	-1500	-2100	-0.020	-0.027	0.080		23.4	26.3	0.493	119.0	0.06	
4/25 6:00	-1450	-2100	-0.020	-0.027	0.080		23.3	26.2	0.490	103.0	0.06	
4/25 11:00	-1500	-2100	-0.020	-0.025	0.080		23.2	26.1	0.489	94.1	0.05	
4/25 17:00	-1500	-2100	-0.018	-0.025	0.080		23.2	26.0	0.486	98.6	0.07	
4/25 23:00	-1500	-2100	-0.020	-0.025	0.080		23.1	26.0	0.483	105.0	0.05	
4/26 5:00	-1500	-2100	-0.020	-0.025	0.080		23.0	25.9	0.480	104.0	0.06	
4/26 11:00	-1500	-2050	-0.018	-0.025	0.080		22.9	25.8	0.477	76.4	0.07	
4/26 17:00	-1500	-2100	-0.018	-0.025	0.080		22.8	25.7	0.478	106.0	0.08	
4/26 23:00	-1500	-2100	-0.020	-0.027	0.075		22.7	25.6	0.474	57.7	0.08	
4/27 5:00	-1500	-2100	-0.018	-0.023	0.080		22.7	25.6	0.472	43.3	0.08	
4/27 11:00	-1500	-2100	-0.018	-0.025	0.075		22.6	25.5	0.470	45.9	0.06	
4/27 17:00	-1500	-2100	-0.020	-0.023	0.075		22.5	25.4	0.467	43.3	0.05	
4/27 23:00	-1500	-2100	-0.018	-0.020	0.075		22.5	25.3	0.465	41.9	0.08	
4/28 5:00	-1500	-2100	-0.016	-0.020	0.075		22.4	25.2	0.463	40.8	0.08	

計器不良

1F-2 温度に関するパラメータ(代表点)

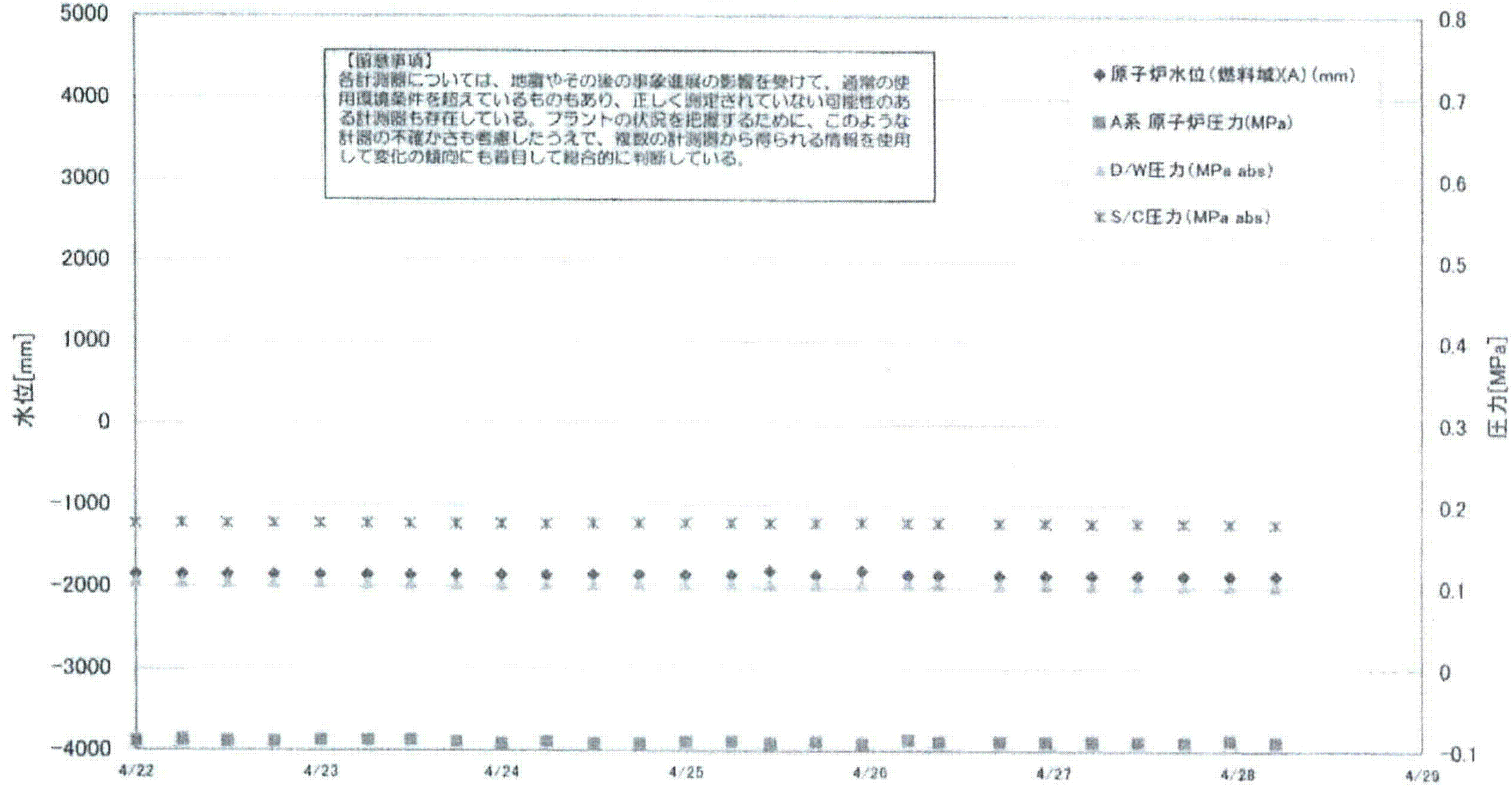


IF-2 温度に関するパラメータ

【留意事項】
各計測値については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものがあり、正しく指示されていない可能性のある計測値も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を利用して、変化の傾向にも着目して総合的に判断している。

	逃し安全弁漏洩検出器 RV-2-71A	主蒸気隔離弁漏洩検出器 2-80A	給水ノズル N-4B 温度	CRDハウジング上部温度	圧力容器下部温度	圧力容器支持スカート上部温	圧力容器ドレンパイプ上部温度	D/W HVH戻り温度(HVH-16A)	RPVベローシール	原子炉抑制室ガス温度	S/Cプール水温度A	S/Cプール水温度B
4/19 0:00	154.1	65.4	138.2			193	117.1	129	O.S	93	74.6	74.0
4/19 6:00	152	65.4	136.5			189.9	123.3	128	O.S	94	74.5	74.0
4/19 12:00	140.9	65.6	135.4			187.9	127.8	127	O.S	93	74.4	74.8
4/19 18:00	147.9	65.7	134.6			182.5	127.5	126	O.S	93	74.4	74.8
4/20 0:00	147.5	65.1	133.4			137.1	126.2	124	O.S	93	74.3	74.6
4/20 6:00	151	65.2	133.6			130.9	125.8	122	O.S	93	74	74.3
4/20 12:00	153.9	65.2	134.7			137.6	126.2	123	O.S	92	73.7	74
4/20 18:00	155.3	65.4	135.5			138.5	128.9	124	O.S	93	73.4	73.7
4/21 0:00	156.2	65.3	136			138.7	127.2	126	O.S	93	73.2	73.5
4/21 6:00	155.9	65.2	136.1			139.9	128.4	126	O.S	93	72.9	73.2
4/21 12:00	156.2	65.3	136			138.7	128.4	126	O.S	93	72.8	73
4/21 18:00	153.8	65.5	134.6			137.2	127.6	125	O.S	94	72.6	72.9
4/22 0:00	151.2	65.5	133.1			135.9	126.7	124	O.S	94	72.6	72.9
4/22 6:00	146.1	65.7	131.2			134.4	125.6	122	O.S	93	72.5	72.8
4/22 12:00	141.8	65.7	129.2			132.4	124.4	120	O.S	93	72.4	72.7
4/22 18:00	140.7	65.7	128.8			131.7	120.4	118	O.S	93	72.3	72.6
4/23 0:00	140.1	65.7	128.4			131	106.4	117	O.S	93	72.2	72.5
4/23 6:00	140	65.8	128			131.6	103.5	116	O.S	93	72.1	72.3
4/23 12:00	139.8	65.8	127.7			133.4	111	116	O.S	93	72	72.2
4/23 18:00	138.7	65.8	127.2			130.1	112.5	116	O.S	93	71.9	72.1
4/24 0:00	130.6	65.8	126.3			129.1	118.1	115	O.S	93	71.8	72.1
4/24 6:00	134	65.8	125.2			129.1	119.8	114	O.S	92	71.7	71.9
4/24 12:00	140.2	65.8	124.2			128.5	118.9	114	O.S	92	71.5	71.8
4/24 18:00	138.9	65.8	123.4			123.3	117.2	114	O.S	92	71.4	71.6
4/25 0:00	138.1	65.8	122.9			123.2	114.4	113	O.S	92	71.3	71.6
4/25 6:00	137.8	65.7	122.5			122	115.6	114	O.S	93	71.2	71.4
4/25 11:00	137.2	65.7	122.3			122.9	116.3	114	O.S	92	71.1	71.3
4/25 17:00	137.4	65.7	122.5			122.2	115.6	114	O.S	92	71	71.3
4/25 23:00	137.1	65.7	121.9			120.5	116.4	114	O.S	92	70.9	71.1
4/26 5:00	136.4	65.6	121.2			120	117.5	113	O.S	92	70.8	70.9
4/26 11:00	135.4	65.7	120.5			120.1	116.2	112	O.S	92	70.7	71
4/26 17:00	135.4	65.8	120.2			117.3	115	112	O.S	92	70.7	70.9
4/26 23:00	135	65.7	120.4			117	115.7	112	O.S	92	70.6	70.9
4/27 5:00	134.9	65.7	120.4			117.6	114	112	O.S	92	70.5	70.8
4/27 11:00	134.4	65.7	120.3			116	114.2	111	O.S	92	70.5	70.9
4/27 17:00	134	65.8	120.1			116.5	113.4	111	O.S	92	70.6	70.7
4/27 23:00	134.4	65.8	120.1			117.6	116.1	111	O.S	92	70.4	70.7
4/28 5:00	133.8	65.7	119.9			117.1	113.3	111	O.S	92	70.4	70.7
				計器不良	計器不良							

1F3 水位・圧力に関するパラメータ

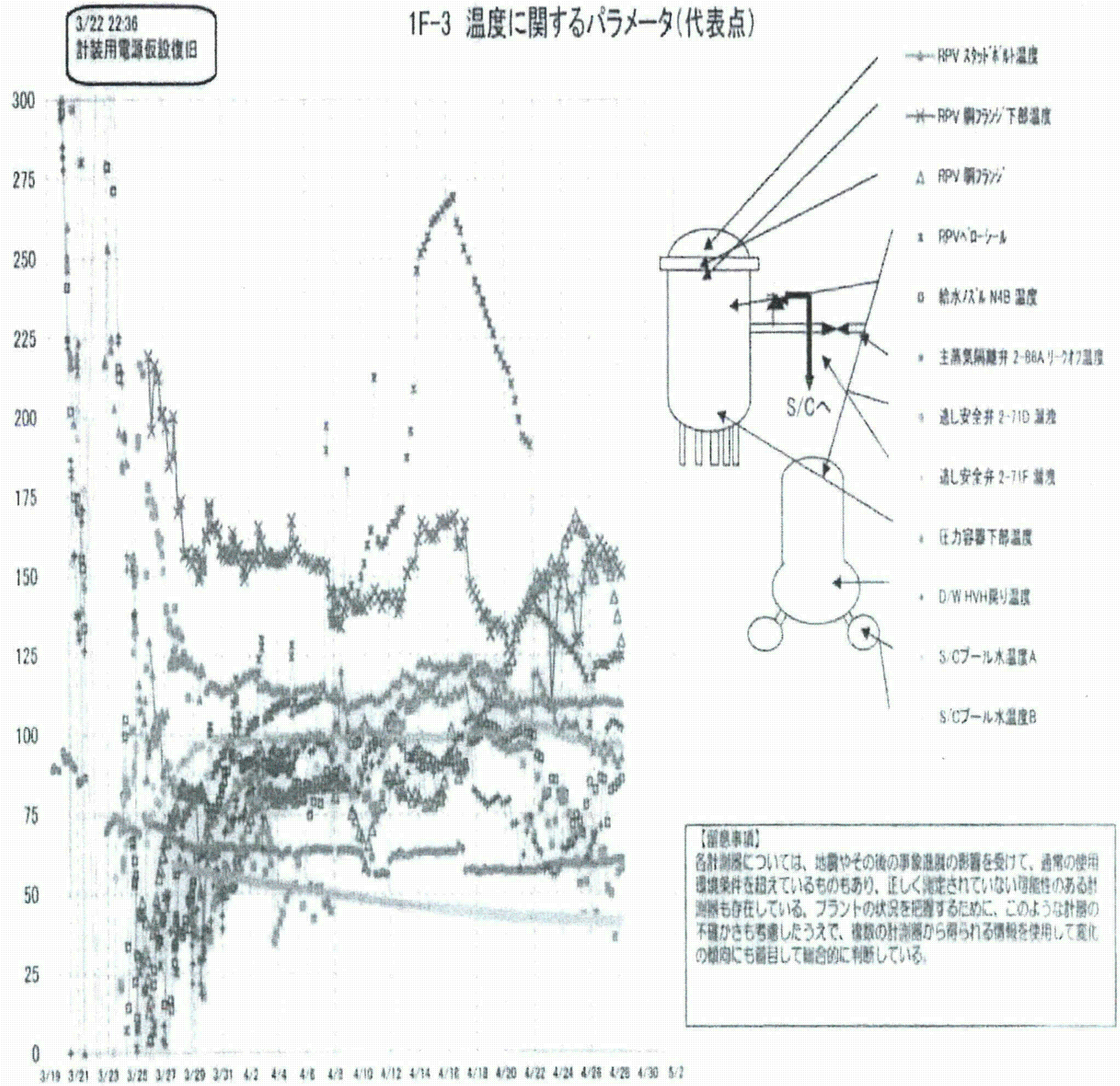


1F3 水位・圧力に関するパラメータ

【留意事項】
各計測値については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測値も存在している。プラントの状況を判断するために、このような計器の不確かさも考慮したうえで、複数の計測値から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

日時	原子炉水位(燃料域)(A)(mm)	原子炉水位(燃料域B)(mm)	A系 原子炉圧力(MPa)	B系 原子炉圧力(MPa)	D/W圧力(MPa abs)	S/C圧力(MPa abs)	CAMS D/W(A)(Sv/h)	CAMS D/W(B)(Sv/h)	CAMS S/C(A)(Sv/h)	CAMS S/C(B)(Sv/h)	中操線量(mSv/h)	備考
4/18 18:00	-1850	-2250	-0.086	-0.034	0.1045	0.1716	15.7	11.8	0.598	0.552	0.085	
4/19 0:00	-1850	-2250	-0.085	-0.030	0.1041	0.1720	15.7	11.8	0.596	0.551	0.070	
4/19 6:00	-1850	-2250	-0.085	-0.034	0.1041	0.1724	15.7	11.8	0.594	0.549	0.085	
4/19 12:00	-1850	-2250	-0.085	-0.040	0.1036	0.1722	15.6	11.7	0.592	0.547	0.080	
4/19 18:10	-1850	-2250	-0.083	-0.040	0.1034	0.1727	15.6	11.7	0.590	0.540	0.085	
4/20 0:02	-1850	-2250	-0.087	-0.038	0.1041	0.1734	15.6	11.7	0.588	0.544	0.055	
4/20 6:00	-1850	-2250	-0.089	-0.038	0.1045	0.1741	15.5	11.6	0.587	0.542	0.070	
4/20 12:00	-1850	-2250	-0.089	-0.043	0.1045	0.1748	15.5	11.6	0.585	0.541	0.065	
4/20 18:10	-1850	-2250	-0.087	-0.043	0.1047	0.1754	15.5	11.6	0.582	0.540	0.065	
4/20 23:50	-1850	-2250	-0.087	-0.045	0.1054	0.1761	15.4	11.5	0.580	0.539	0.065	
4/21 6:00	-1850	-2250	-0.085	-0.043	0.1061	0.1768	15.4	11.5	0.579	0.538	0.065	
4/21 12:00	-1850	-2250	-0.087	-0.043	0.1050	0.1769	15.4	11.5	0.577	0.537	0.065	
4/21 18:00	-1850	-2250	-0.085	-0.043	0.1052	0.1775	15.3	11.4	0.575	0.535	0.065	
4/22 0:00	-1850	-2250	-0.089	-0.047	0.1055	0.1776	15.1	11.4	0.573	0.534	0.065	
4/22 6:00	-1850	-2250	-0.087	-0.047	0.1055	0.1780	15.2	11.4	0.570	0.532	0.070	
4/22 11:50	-1850	-2250	-0.089	-0.049	0.1048	0.1780	15.2	11.4	0.569	0.531	0.070	
4/22 17:50	-1850	-2250	-0.089	-0.049	0.1047	0.1783	15.2	11.3	0.568	0.530	0.080	
4/23 0:00	-1850	-2250	-0.087	-0.053	0.1047	0.1785	15.2	11.3	0.566	0.528	0.060	
4/23 6:15	-1850	-2250	-0.087	-0.049	0.1045	0.1782	15.1	11.3	0.564	0.527	0.070	
4/23 11:55	-1850	-2250	-0.087	-0.049	0.1038	0.1778	15.1	11.3	0.563	0.526	0.060	
4/23 18:00	-1850	-2250	-0.089	-0.051	0.1030	0.1778	15.0	11.2	0.562	0.525	0.060	
4/24 0:00	-1850	-2250	-0.091	-0.055	0.1027	0.1776	15.0	11.2	0.561	0.523	0.070	
4/24 5:50	-1850	-2250	-0.089	-0.053	0.1031	0.1778	15.0	11.2	0.560	0.522	0.080	
4/24 12:00	-1850	-2250	-0.091	-0.051	0.1031	0.1780	14.9	11.1	0.558	0.521	0.070	
4/24 18:00	-1850	-2250	-0.091	-0.051	0.1034	0.1786	14.9	11.1	0.557	0.520	0.070	
4/25 0:00	-1850	-2250	-0.089	-0.055	0.1038	0.1787	14.8	11.1	0.556	0.519	0.070	
4/25 6:00	-1850	-2250	-0.089	-0.053	0.1041	0.1789	14.8	11.1	0.554	0.518	0.070	
4/25 11:00	-1800	-2250	-0.091	-0.055	0.1029	0.1787	14.7	11.0	0.553	0.517	0.050	
4/25 17:00	-1850	-2250	-0.089	-0.055	0.1034	0.1787	14.7	11.0	0.552	0.516	0.050	
4/25 23:00	-1800	-2250	-0.091	-0.055	0.1041	0.1792	14.6	11.0	0.551	0.516	0.050	
4/26 5:00	-1850	-2250	-0.087	-0.055	0.1043	0.1794	14.6	11.0	0.550	0.514	0.040	
4/26 9:00	-1850	-2250	-0.089	-0.055	0.1041	0.1794	14.5	10.9	0.549	0.513	0.040	
4/26 17:00	-1850	-2250	-0.089	-0.051	0.1039	0.1790	13.9	10.9	0.517	0.511	0.050	
4/26 23:00	-1850	-2250	-0.089	-0.049	0.1034	0.1792	14.2	10.9	0.530	0.510	0.050	
4/27 5:00	-1850	-2250	-0.089	-0.053	0.1031	0.1787	14.3	10.9	0.532	0.509	0.050	
4/27 11:00	-1850	-2250	-0.089	-0.053	0.1029	0.1792	14.3	10.8	0.534	0.507	0.040	
4/27 17:00	-1850	-2250	-0.089	-0.053	0.1022	0.1780	14.3	10.8	0.534	0.505	0.050	
4/27 23:00	-1850	-2250	-0.087	-0.055	0.1022	0.1789	14.3	10.8	0.534	0.504	0.045	
4/28 5:00	-1850	-2250	-0.089	-0.055	0.1017	0.1783	14.2	10.8	0.533	0.502	0.050	

1F-3 温度に関するパラメータ(代表点)



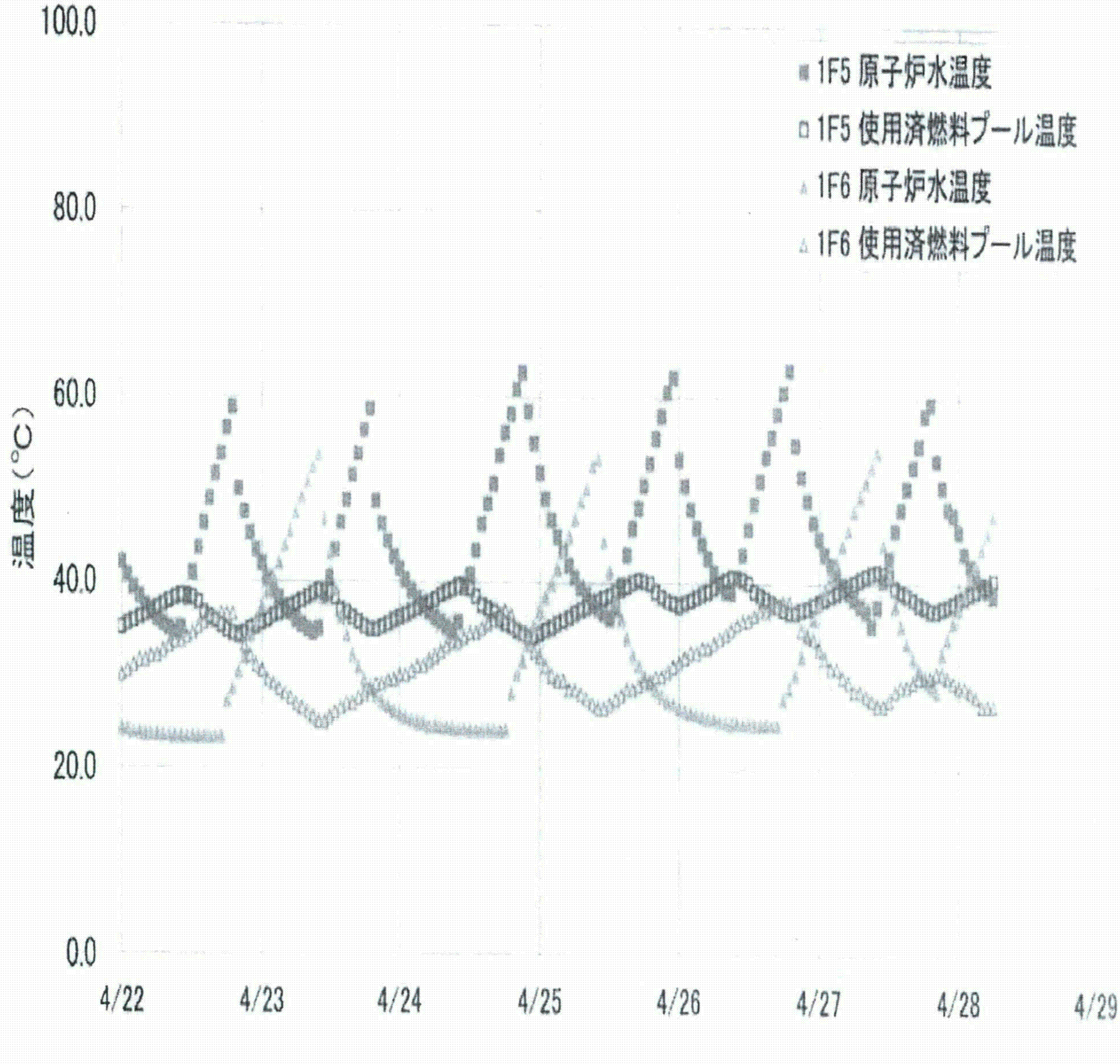
【留意事項】
各計測器については、地震やその後の事象進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

1F-3 温度に関するパラメータ

【注意事項】
各計測器については、地震やその後の事故進展の影響を受けて、通常の使用環境条件を超えているものもあり、正しく測定されていない可能性のある計測器も存在している。プラントの状況を把握するために、このような計器の不確かさも考慮したうえで、複数の計測器から得られる情報を使用して変化の傾向にも着目して総合的に判断している。

	給水ノズルN4B温度	RPV胴フランジ	圧力容器下部温度	RPVスタッドボルト温度	RPV胴フランジ下部温度	逃し安全弁2-71D温度	逃し安全弁2-71F温度	主蒸気隔離弁2-86Aリーク(?)	D/W HVH戻り温度	RPVベローシール	S/Cプール水温度A	S/Cプール水温度B
4/20 6:00	98.7	121.3	108.4	95.1	125.7	108.9	100.4	57	70.5	215	42.9	42.9
4/20 12:00	100.2	123.7	107.5	95.8	124.8	111.8	102.6	57.1	71.5	210.7	42.8	42.8
4/20 18:10	100.4	130.9	108.5	95.8	131.8	108.7	105.5	57.1	72	205.5	42.7	42.7
4/20 23:50	100.7	135.3	110.9	98.7	135.4	99.1	104.3	57	58	199.9	42.7	42.7
4/21 6:00	101.6	137.3	109.4	96.6	137.6	90.5	103.8	56.9	61.9	193.9	42.6	42.6
4/21 12:00	100.4	139.7	110.4	96.0	140.2	73.6	103.6	57.2	69.4	192.6	42.5	42.5
4/21 18:00	100	144.7	110	96.3	140	72.3	103.3	57.1	74.3	191.3	42.4	42.4
4/22 0:00	93.5	148	110.9	119.1	142.2	67.6	102.5	57	65.6	142	42.3	42.3
4/22 6:00	93.5	150.4	110.4	119.4	143.5	68.3	102.9	57.6	63.7	138.8	42.3	42.3
4/22 11:50	97.4	148.8	111.6	118.1	148.3	77.2	102.6	57.8	62.9	137.9	42.2	42.2
4/22 17:50	60.8	149.9	110.1	113.3	146.2	81.7	102.3	58.5	57.3	136.8	42.1	42.1
4/23 0:00	81.7	150	109.2	110.8	148.1	71.6	102.2	58.6	58.1	135.2	42.1	42.1
4/23 6:15	85.9	154.9	109.4	108.5	108.9	65.2	101.4	58.9	58.2	134.2	42	42
4/23 11:55	85.7	152.1	108.6	104.3	129.5	72.4	100.6	59.2	55.7	132.9	41.9	41.9
4/23 18:00	81.1	153	110.1	100.6	144.4	80.5	100.6	59.4	57.3	130.6	41.9	41.9
4/24 0:00	79.1	155.7	109.6	102.7	150.4	81.9	99.5	59.6	64.4	129.6	41.8	41.8
4/24 5:50	81.1	160.7	109.9	104.3	151.9	79.4	99.5	59.3	62.5	128.3	41.6	41.6
4/24 12:00	65.5	163.2	110.6	102.9	140.5	74.8	98.6	59.4	65.2	126.6	41.7	41.7
4/24 18:00	71.6	165.5	110.2	102.6	142.7	68	98.3	59.4	65.3	126.6	41.7	41.7
4/25 0:00	74.6	169	110.8	103.4	129.0	60.4	98.4	59.2	67.6	124.3	41.5	41.6
4/25 6:00	72.5	165.9	109.3	99.3	130	53	98.5	58.9	70.2	122.5	41.6	41.6
4/25 11:00	69.8	164.6	110	89.5	145.0	43.2	97.8	59.6	69.5	120	41.6	41.5
4/25 17:00	77.7	163.8	110	98	153	53.0	97.3	59.5	81.4	117.8	41.5	41.5
4/25 23:00	84.9	155.7	109.8	98.8	158.4	62.6	98.7	59.7	64.5	103.1	41.4	41.4
4/26 5:00	87.9	161	110.4	94.9	156.8	68.7	97	59	67.3	117.9	41.4	41.4
4/26 9:00	82.5	149.4	110.7	97	150	43.4	96.7	59.1	69	121.5	41.4	41.4
4/26 17:00	86.2	164.8	110.5	94.3	160.7	82.4	96	59.6	71.2	122.2	41.3	41.3
4/26 23:00	85.6	166.6	110.7	92	158.7	63.2	96.1	59.7	98.7	122.2	41.2	41.2
4/27 5:00	72	153.1	110.7	94.3	157	51.7	96.3	59.9	101.9	121.7	41.2	41.2
4/27 11:00	82.3	150.4	110.3	95.3	153.7	50	97.3	59.9	103.6	123.4	41.1	41.1
4/27 17:00	83.2	143.2	109.9	92.4	158.8	38	96.7	60.6	104	124.6	41.1	41.1
4/27 23:00	84.6	137.1	110.2	90.5	152.1	56.6	97.2	60.7	102.9	124.1	41.1	41.1
4/28 5:00	86	128.5	109.6	92.7	160.9	57.8	96.2	60.9	102.1	124.7	41	41

1F5／6 原子炉水温度、使用済燃料プール温度推移



1F5/6 原子炉水温度・使用済燃料プール温度

	1F5 原子炉水温度	1F5 使用済燃料プール温度	1F6 原子炉水温度	1F6 使用済燃料プール温度
4/25 9:00	37.5	37.9	52.6	27.0
4/25 10:00	37.2	38.0	53.5	26.5
4/25 11:00	38.6	38.3	44.5	26.5
4/25 12:00	38.1	38.6	41.2	27.0
4/25 13:00	37.2	39.0	38.1	27.5
4/25 14:00	39.7	39.3	36.1	28.0
4/25 15:00	43.0	39.6	34.0	28.5
4/25 16:00	45.9	40.0	32.3	28.5
4/25 17:00	48.1	40.3	31.2	29.0
4/25 18:00	50.5	40.1	30.1	29.5
4/25 19:00	52.9	39.5	29.3	29.5
4/25 20:00	55.6	39.0	28.5	30.0
4/25 21:00	58.0	38.5	27.9	30.0
4/25 22:00	60.6	38.0	27.3	30.5
4/25 23:00	62.2	37.8	27.0	31.0
4/26 0:00	53.3	37.5	26.6	31.5
4/26 1:00	50.5	37.8	26.3	32.0
4/26 2:00	48.0	38.1	26.1	32.5
4/26 3:00	46.0	38.4	25.9	32.5
4/26 4:00	44.2	38.8	25.7	33.0
4/26 5:00	42.7	39.1	25.5	33.0
4/26 6:00	41.1	39.5	25.4	33.5
4/26 7:00	39.9	40.0	25.2	34.0
4/26 8:00	39.1	40.3	25.1	34.5
4/26 9:00	39.0	40.6	25.0	35.0
4/26 10:00	40.6	40.6	25.0	35.5
4/26 11:00	43.1	40.4	24.9	36.0
4/26 12:00	45.9	40.0	24.9	36.0
4/26 13:00	48.6	39.1	24.8	36.5
4/26 14:00	51.1	38.7	24.6	37.0
4/26 15:00	53.7	38.3	24.8	37.0
4/26 16:00	55.8	37.9	24.8	37.5
4/26 17:00	58.3	37.5	24.8	37.5
4/26 18:00	60.6	37.1	27.6	38.0
4/26 19:00	63.0	36.8	28.7	38.0
4/26 20:00	54.9	36.8	30.2	37.0
4/26 21:00	51.6	37.1	32.2	35.0
4/26 22:00	49.0	37.3	34.3	34.5
4/26 23:00	46.7	37.7	36.3	34.0
4/27 0:00	44.8	38.0	37.9	33.0
4/27 1:00	43.2	38.3	39.3	32.0
4/27 2:00	42.0	38.7	40.8	31.0
4/27 3:00	41.0	39.0	42.3	31.0
4/27 4:00	39.9	39.4	44.2	30.0
4/27 5:00	39.0	39.7	45.9	29.5
4/27 6:00	38.3	40.1	47.9	28.5
4/27 7:00	37.6	40.4	49.5	28.5
4/27 8:00	37.0	40.8	51.1	28.0
4/27 9:00	35.4	41.1	52.8	27.5
4/27 10:00	37.5	41.3	54.3	27.0
4/27 11:00	40.4	41.1	44.3	27.0
4/27 12:00	42.8	40.6	40.9	27.5
4/27 13:00	45.9	39.5	37.6	28.5
4/27 14:00	48.1	39.1	35.5	29.0
4/27 15:00	50.4	38.8	33.8	29.0
4/27 16:00	52.7	38.3	32.1	29.5
4/27 17:00	55.0	37.8	30.9	30.0
4/27 18:00	58.2	37.5	29.8	30.0
4/27 19:00	59.4	37.1	29.2	30.0
4/27 20:00	53.4	37.0	28.6	30.5
4/27 21:00	50.5	37.4	32.6	30.5
4/27 22:00	48.2	37.6	34.1	30.0
4/27 23:00	47.5	37.8	35.9	29.5
4/28 0:00	45.7	38.3	37.5	29.0
4/28 1:00	43.3	38.6	39.0	29.0
4/28 2:00	41.9	39.0	40.7	28.5
4/28 3:00	41.0	39.2	42.1	28.0
4/28 4:00	40.1	39.6	43.9	27.0
4/28 5:00	39.4	39.9	45.6	27.0
4/28 6:00	38.7	40.4	47.5	27.0

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)

BG/131

From:	Hoc, PMT12
Sent:	Wednesday, March 16, 2011 1:55 PM
To:	PMTERDS Hoc
Subject:	FW: Press Release PDF 16 March 2010 02
Attachments:	Press Release PDF 16 March 2010 02.pdf

From: PMT02 Hoc
Sent: Wednesday, March 16, 2011 1:10 PM
To: Hoc, PMT12
Subject: FW: Press Release PDF 16 March 2010 02

From: PMT02 Hoc
Sent: Wednesday, March 16, 2011 1:08 PM
To: Burnell, Scott; Coggins, Angela; (b)(6) ; Jones, Cynthia; Brenner, Eliot
Cc: cmht@nnsa.doe.gov; narac@llnl.gov; HOO Hoc; LIA11 Hoc
Subject: Press Release PDF 16 March 2010 02

Attached as requested by the NRC Chairman is the PDF version of the NRC Protective Measures Team (PMT) dose estimates that support the NRC and State Department press release to expand the evacuation zone to 50 miles. (b)(5) It is our understanding that NRC's Office of Public Affairs will attach this PDF containing dose projections to their next press release.

Protective Measures Team
NRC Operations Center
301-816-5100

BG/132

From:	Hochevar, Albert R. (INPO)
To:	Mitman, Jeffrey; Chuck Casto; Freeman, Scott; Miller, Mark; Mitchell, Matthew; Peterson, Hironori; Plasse, Richard; Reynolds, Steven; Temps, Robert
Subject:	FW: Curie Content of Fuel Cores and Spent Fuel Pools
Date:	Saturday, April 30, 2011 10:46:22 PM
Attachments:	TB Sample.PDF Fukushima - Activity Release from U1, U2 & U3 reactor cores.pdf SFP U2 sampling data 041611.jpg WATER TREATMENT.docx

All,

Here is some information I received from the Shaw group. I have permission from Bob Holland to release this to you.

Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

From: Holland, Robert (Stoughton) [mailto:robert.holland@shawgrp.com]
Sent: Saturday, April 30, 2011 8:17 AM
To: Hochevar, Albert R. (INPO)
Cc: Gard, Lee A (INPO); Fadel, Daniel P
Subject: FW: Curie Content of Fuel Cores and Spent Fuel Pools

Al,

This is info we asked Shaw Radiological folks to provide. Please use as you see fit. I just forwarded Tom Stevens' table on SFP data to her for additional info. She had asked for some additional info at bottom...

V/r Bob

Robert Holland
Project Manager
Nuclear Services
Shaw Power Group
100 Technology Center Drive
Stoughton, MA 02072-4705
617.589.1256 direct
(b)(6) cell
617.589.2969 fax
robert.holland@shawgrp.com

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B6/133

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4

(b)(4)

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(b)(4)

Shaw

(b)(4)

(b)(4)

(b)(4)

From:	Hochevar, Albert R. (INPO)
To:	Reynolds, Steven
Cc:	Chuck Casto; Freeman, Scott; Miller, Mark; Mitchell, Matthew; Peterson, Hironori; Plasse, Richard; Temps, Robert; Mitman, Jeffrey
Subject:	[WARNING: MESSAGE ENCRYPTED]OFF SHORE CONTAMINATION RESULTS
Date:	Saturday, April 30, 2011 11:25:34 PM
Attachments:	OFF SHORE CONTAMINATION Press Release.docx NUCLIDE SUMMARY.pdf

---

Steve,

Off shore contamination results. Not sure if you have this or not. If I am sending you information that is not useful, please let me know.

Al

Rw

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

6

eff

Results of Nuclide Analysis of Seawater <Offshore of Ibaraki Prefecture> Reference

(Data summarized on April 30)

Place of Sampling	3 km offshore of Takadokobama shore		3 km offshore of Kujihama shore		3 km offshore of Oarai shore		3 km offshore of Hirai shore		3 km offshore of Hasaki shore		② Density limit by the announcement of Reactor Regulation (Bq/cm3) (the density limit in the water outside of surrounding monitored areas in the section 6 of the appendix 2)
Time and Date of Sample Collection	At 9:00am April 29, 2011		At 7:59am April 29, 2011		At 10:46am April 29, 2011		At 8:20am April 29, 2011		At 9:38am April 29, 2011		
Detected Nuclides (Half-life)	①Density of Sample (Bq/cm^3)	Scaling Factor (①/②)	①Density of Sample (Bq/cm^3)	Scaling Factor (①/②)	①Density of Sample (Bq/cm^3)	Scaling Factor (①/②)	①Density of Sample (Bq/cm^3)	Scaling Factor (①/②)	①Density of Sample (Bq/cm^3)	Scaling Factor (①/②)	
I-131 (about 8 days)	ND	-	ND	-	ND	-	ND	-	ND	-	4E-02
Cs-134 (about 2 years)	ND	-	ND	-	ND	-	ND	-	ND	-	6E-02
Cs-137 (about 30 years)	ND	-	ND	-	ND	-	ND	-	ND	-	9E-02

※ ○.○E−○ means ○.○×10$^{-○}$

※ Data of other nuclides are under evaluation.

Press Release (Apr 30,2011)
The results of nuclide analyses of radioactive materials in seawater collected at the offshore area of Ibaraki Prefecture

On April 29, 2011, we started sampling survey of the sea water at 5 points in the 3km offshore area of Ibaraki Prefecture.

Today we have conducted nuclide analysis of radioactive materials in the water sampled on April 29. We have reported the result of the analysis to NISA and the government of Ibaraki Prefecture as per attached.

From: Hayden, Elizabeth
To: Brenner, Eliot
Subject: FW: d4awings
Date: Monday, March 28, 2011 4:50:00 PM
Attachments: Document.pdf

PDF of Bechtel equipment drawings.

-----Original Message-----
From: Hayden, Elizabeth
Sent: Friday, March 25, 2011 10:06 AM
To: 'MMallen@bechtel.com'
Subject: FW: d4awings

Michelle,

Here are the 3 drawings on the equipment that evolved.

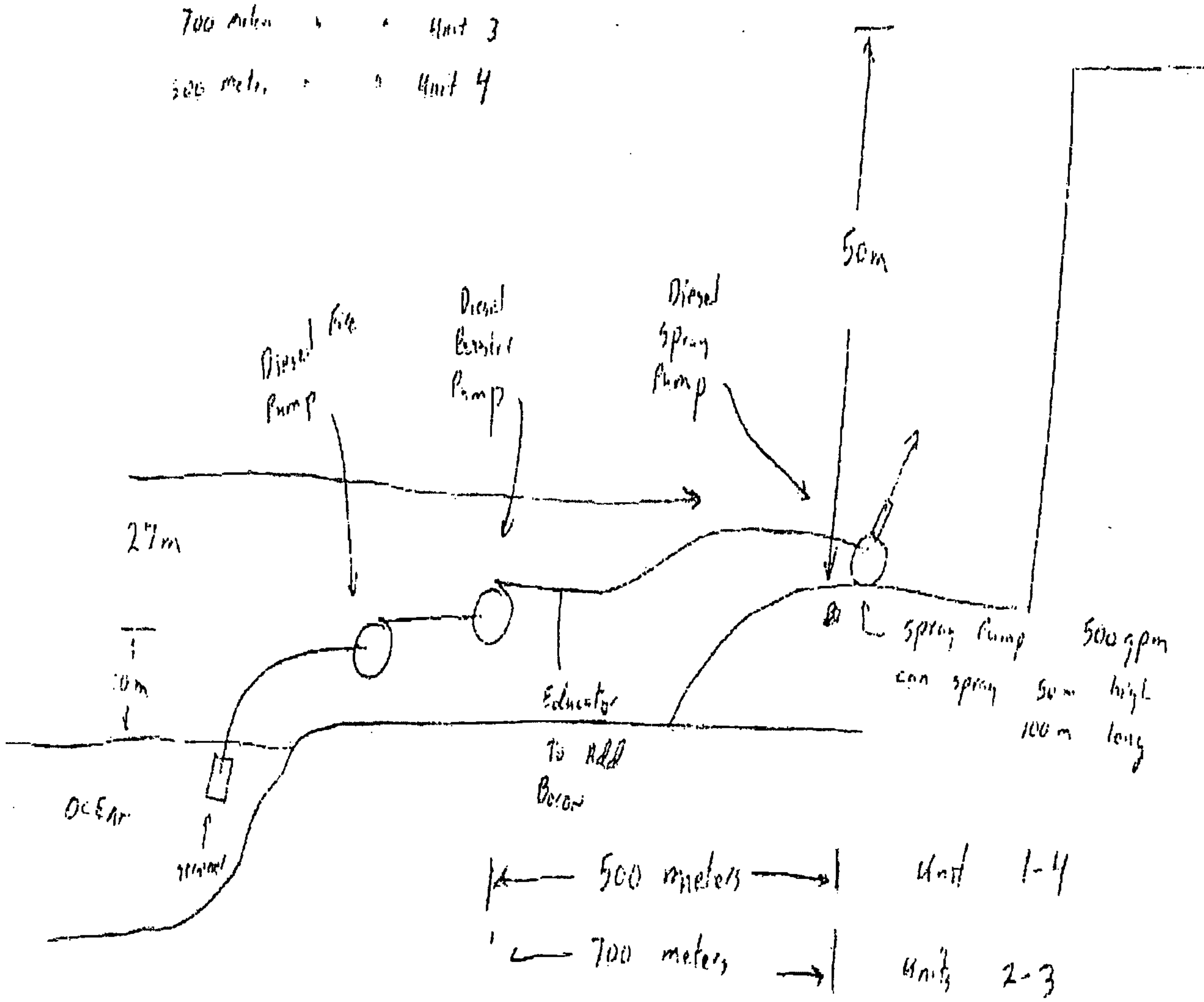
Beth Hayden
Senior Advisor
Office of Public Affairs
U.S. Nuclear Regulatory Commission
--- Protecting People and the Environment
301-415-8202
elizabeth.hayden@nrc.gov

-----Original Message-----
From: ELIZABETH.HAYDEN@NRC.GOV [mailto:ELIZABETH.hayden@nrc.gov]
Sent: Friday, March 25, 2011 8:51 AM
To: Hayden, Elizabeth
Subject: d4awings

BH/134

4 TRAINS NEEDED example shows one TRAIN

Need 500 meters piping for Unit 1
700 meters Unit 2
700 meters " " Unit 3
500 meters " " Unit 4

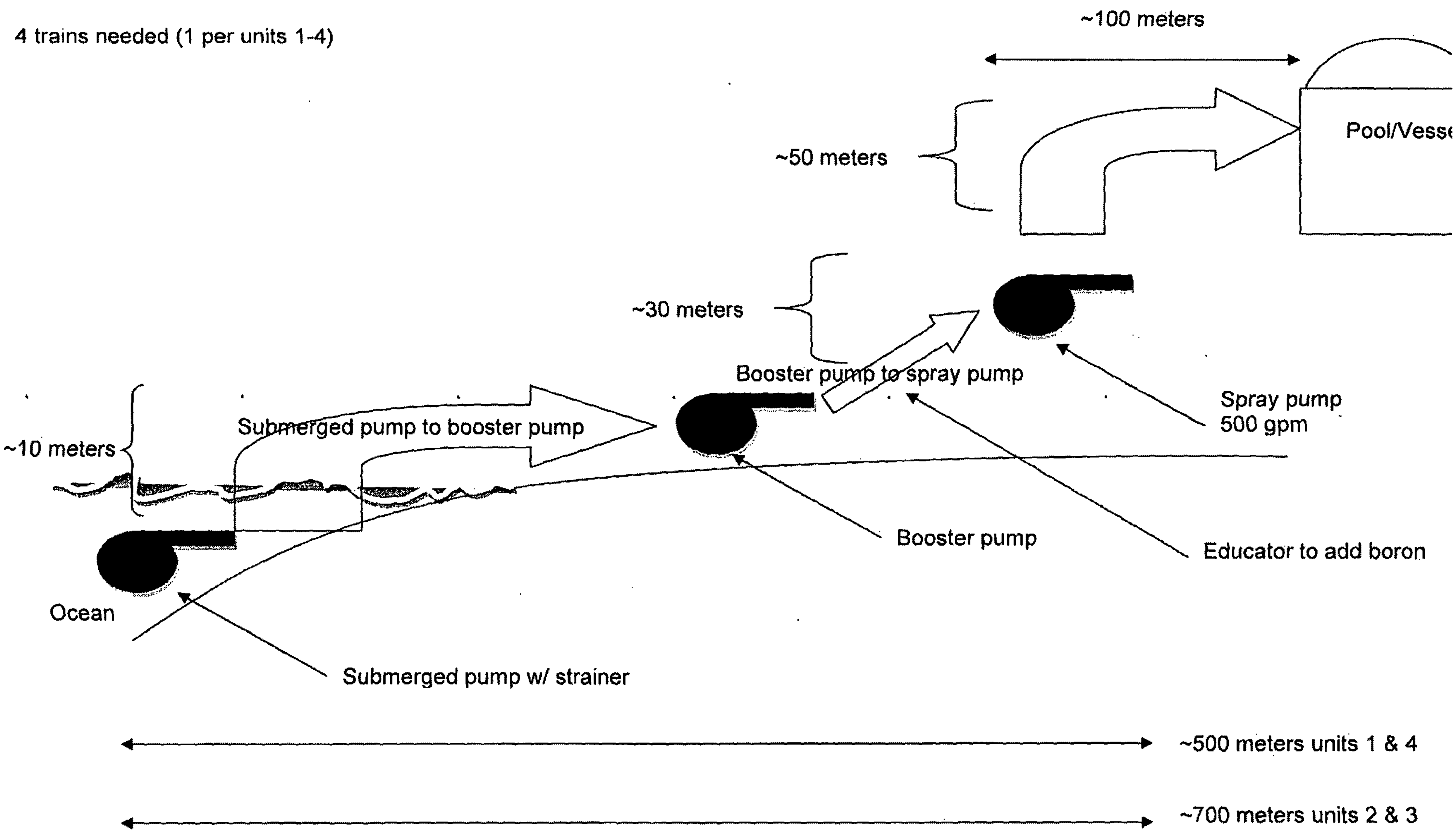


Also need Diesel Tanks

Robots which enter high Radiation field

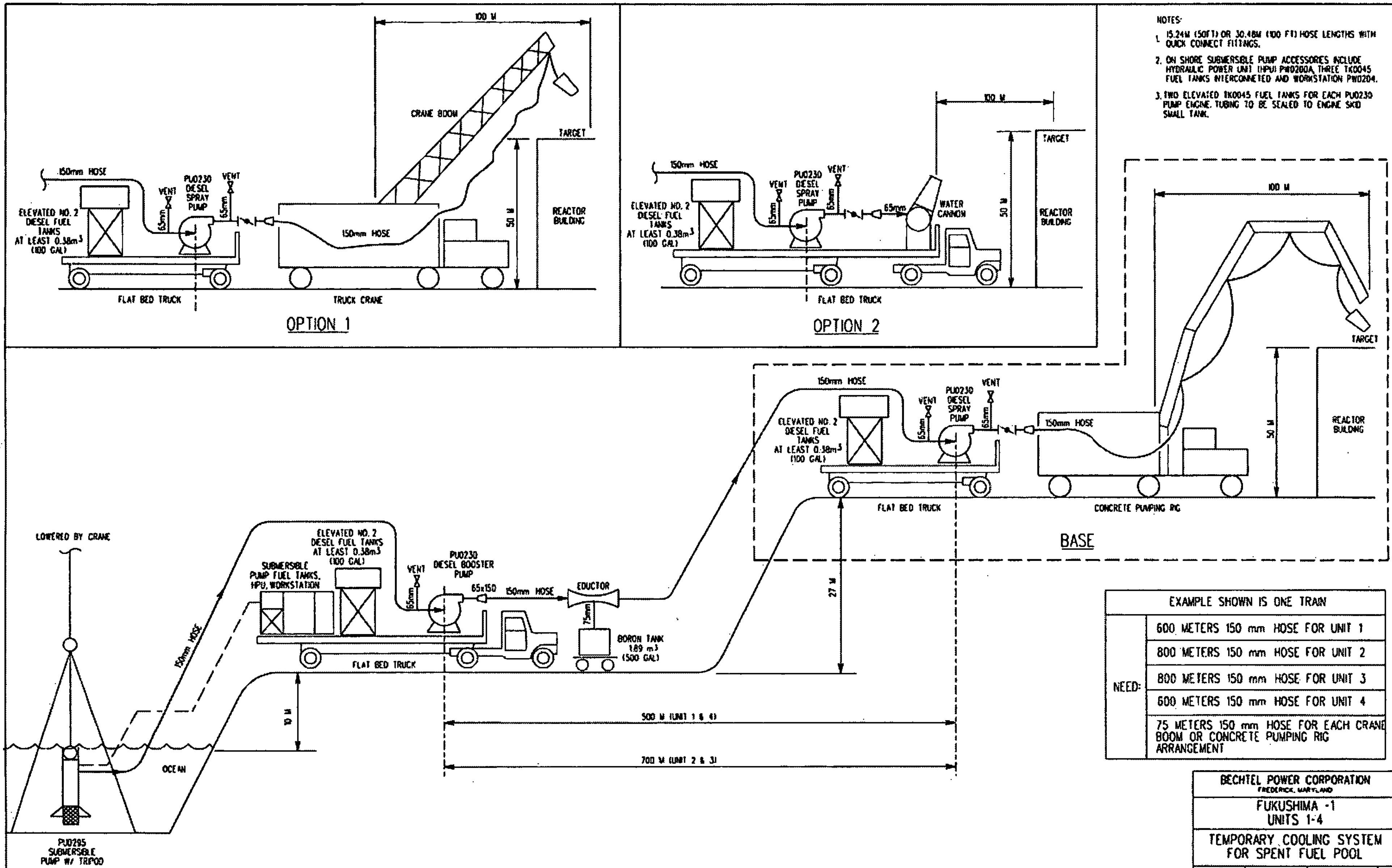
(b)(6)

4 trains needed (1 per units 1-4)



*Notes:
Also need diesel trucks
Robots to enter high radiation areas

Train 2



NOTES:

1. 15.24M (50FT) OR 30.48M (100 FT) HOSE LENGTHS WITH QUICK CONNECT FITTINGS.
2. ON SHORE SUBMERSIBLE PUMP ACCESSORIES INCLUDE HYDRAULIC POWER UNIT (HPU) PW0200A, THREE TK0045 FUEL TANKS INTERCONNECTED AND WORKSTATION PW0204.
3. TWO ELEVATED TK0045 FUEL TANKS FOR EACH PU0230 PUMP ENGINE. TUBING TO BE SEALED TO ENGINE SKID SMALL TANK.

EXAMPLE SHOWN IS ONE TRAIN	
NEED:	600 METERS 150 mm HOSE FOR UNIT 1
	800 METERS 150 mm HOSE FOR UNIT 2
	800 METERS 150 mm HOSE FOR UNIT 3
	600 METERS 150 mm HOSE FOR UNIT 4
	75 METERS 150 mm HOSE FOR EACH CRANE BOOM OR CONCRETE PUMPING RIG ARRANGEMENT

BECHTEL POWER CORPORATION
FREDERICK, MARYLAND

FUKUSHIMA -1
UNITS 1-4

TEMPORARY COOLING SYSTEM FOR SPENT FUEL POOL

DATE	DRAWING NO.	REV.
3/18/2011	00001	0

6 5 4 3 2

...\2 TEMP COOLING SYSTEM.dgn 3/18/2011 2:11:48 AM

From: Hoc, PMT12
Sent: Friday, April 29, 2011 11:26 AM
To: OST01 HOC
Subject: FW: DRAFT Document - Recommendation on Update to Travel Advisory - Official Use Only
Attachments: OUO DRAFT Rec for Travel Advisory Update 29April11.docx

---

From: Hoc, PMT12
Sent: Friday, April 29, 2011 11:21 AM
To: Hoc, PMT12; Bentz, Julie A.; veal.lee@epamail.epa.gov; Perciasepe.Bob@epamail.epa.gov; Dietrich.Debbie@epamail.epa.gov; Keith, Sam (ATSDR/DTEM/ATB); Tupin.Edward@epamail.epa.gov; boyd.mike@epa.gov
Cc: McDermott, Brian; Evans, Michele; Skeen, David; Milligan, Patricia; Brock, Kathryn
Subject: DRAFT Document - Recommendation on Update to Travel Advisory - Official Use Only

Sorry...here is the attachment.

From: Hoc, PMT12
Sent: Friday, April 29, 2011 11:09 AM
To: 'Bentz, Julie A.'; 'veal.lee@epamail.epa.gov'; 'Perciasepe.Bob@epamail.epa.gov'; 'Dietrich.Debbie@epamail.epa.gov'; 'Keith, Sam (ATSDR/DTEM/ATB)'; 'Tupin.Edward@epamail.epa.gov'; 'boyd.mike@epa.gov'
Cc: McDermott, Brian; Evans, Michele; Skeen, David; Milligan, Patricia
Subject: DRAFT Document - Recommendation on Update to Travel Advisory - Official Use Only

Hello Interagency Partners,

The attached document provides draft language to assist with communications (b)(5)
(b)(5)

NRC wants to collect any critical comments (show-stoppers) from the Interagency (one set of comments per agency) by no later than COB on Monday 2MAY11 ET, so that NRC may integrate/resolve any issues raised and finalize the document. Once the document is finalized, the NRC team in Japan will provide the document to the Ambassador and provide the team's current assessment of the decision considerations.

NRC would be happy to discuss your comments either individually or in a conference call, perhaps on Monday if there is interest. Please direct all replies/comments to PMT12, Kathryn Brock, and Brian McDermott (pmt12.hoc@nrc.gov, Kathryn.brock@nrc.gov, brian.mcdermott@nrc.gov). Or, we may be reached by telephone through the Operations Center at 301-816-5100.

Sincerely,

Kathryn Brock
US Nuclear Regulatory Commission
Protective Measures Team (PMT)

B6/135

(b)(5)

(b)(5)

DRAFT as of 09:15 hrs 29 April 11

(b)(5)

DRAFT as of 09:15 hrs 29 April 11

From:	OST01 HOC
Sent:	Friday, April 29, 2011 4:25 AM
To:	RST01 Hoc; Hoc, PMT12
Subject:	FW: OUO FW: April 28 briefing notes, excel spreadsheet and radiation survey map OUO
Attachments:	April 28 Ryan 6 pm briefing notes.doc; TEPCO Sumarry Rev.102 final April 28(1).xls; 20110427 0850 Facility Area Survey Data[1].pdf

---

From: ET02 Hoc
Sent: Friday, April 29, 2011 4:02 AM
To: OST01 HOC
Subject: FW: OUO FW: April 28 briefing notes, excel spreadsheet and radiation survey map OUO

From: ET01 Hoc
Sent: Friday, April 29, 2011 4:01:35 AM
To: ET02 Hoc
Subject: FW: OUO FW: April 28 briefing notes, excel spreadsheet and radiation survey map OUO
Auto forwarded by a Rule

From: LIA08 Hoc
Sent: Friday, April 29, 2011 4:01:30 AM
To: ET01 Hoc
Subject: OUO FW: April 28 briefing notes, excel spreadsheet and radiation survey map OUO
Auto forwarded by a Rule

Liaison Team Coordinator
US Nuclear Regulatory Commission
email: lia08.hoc@nrc.gov
Desk Ph: 301-816-5185

From: Wittick, Brian
Sent: Friday, April 29, 2011 2:22 AM
To: Emche, Danielle; LIA08 Hoc
Subject: FW: April 28 briefing notes, excel spreadsheet and radiation survey map

FYI

From: Hochevar, Albert R. (INPO) [mailto:HochevarAR@INPO.org]
Sent: Thursday, April 28, 2011 5:44 AM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; CAPT Dirk L Foster; Reid Tanaka
Subject: April 28 briefing notes, excel spreadsheet and radiation survey map

FYI,

B6/136

Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

6

Wittick, Brian

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 28, 2011 5:44 AM
To: Huffert, Anthony; Wittick, Brian; Moore, Carl; Chuck Casto; Norwood, Donald; Gepford, Heather; Mitman, Jeffrey; Salay, Michael; Hay, Michael; Meighan, Sean; Garchow, Steve; Reynolds, Steven; CAPT Dirk L Foster; Reid Tanaka
Subject: April 28 briefing notes, excel spreadsheet and radiation survey map
Attachments: April 28 Ryan 6 pm briefing notes.doc; TEPCO Sumarry Rev.102 final April 28(1).xls; 20110427 0850 Facility Area Survey Data[1].pdf

FYI,
Al

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(6)

B6/137

4

FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 28, 2011- TC Briefing.

Information that is in italics should not be shared as it has not yet been released by TEPCO.

The priorities remain as follows:

- Ensuring fresh water injection and cooling capabilities to the reactors and spent fuel pools. Goal is to reduce and maintain temperature in the reactors and spent fuel pools below 100 degrees centigrade.

- Draining water from the turbine buildings and trenches to reduce the radiation levels so that work can continue.

- Containing the spread of radioactive materials.

Highlights for today include the following:

- N2 purging of the Unit 1 Drywell continues. TEPCO increased injection flow to the primary containment vessel to 10 m3/hr at approximately 10:00 am Wednesday morning. Reactor vessel temperature, drywell temperature and pressure were observed to decrease after the start of the injection increase. The rate of change of these parameters slowed this morning. TEPCO intends to stop the increased injection rate before drywell pressure reaches atmospheric.

- The robot is scheduled to enter the Unit 1 reactor building today to check for possible leakage following the increase in vessel injection rate.

- Transfer of highly radioactive water from Unit 2 to the Centralized Radioactive Waste Treatment Facility continues at a rate of 250 tons/day. Level in the Radioactive Waste Facility has risen 1055 mm since the start of transfer.

- Unit 2 trench level has decreased only slightly since Monday and is now 900 mm from the top of the trench. Unit 3 trench level has increased an additional 20 mm and is now 950 mm from the top.

- Unit 4 turbine building water level increased 50 mm and is at 3050 mm (1.2 m above floor level). Unit 3 turbine building water level remained steady at 3000 mm.

- Eighty five tons of water was added to the Unit 4 Spent Fuel Pool (SFP) yesterday. No addition to the Unit 4 SFP is scheduled for today. Sixty tons of water is scheduled to be added to Unit 2 SFP today.

- After reexamining the recent differences between observed water level increase and calculated water level increase following water additions to the Unit 4 SFP, TEPCO now believes the Unit 4 SFP pool may not be leaking. The condition of the Unit 4 SFP will continue to be evaluated closely by TEPCO.

- A water sample for radionuclide analysis is scheduled to be taken from the Unit 4 SFP today.

- TEPCO released their plan for radioactive water treatment today. Ultimately it will have a capacity of 1,200 m3/day. A reservoir capacity of 31, 400 m3 will be installed by early June. Additional capacity will be added later. Currently there is an accumulation of 87,500 m3 of radioactive waste water at the station. Injection into the reactor pressure vessels is adding to this total daily.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line was increased in steps up to 10 m3/hr yesterday on a temporary basis. Future injection flow will be determined following analysis of data obtained during the injection flow increase. Comments on parameters:
  - Reactor pressure decreased to .415 MPa abs (60 psig).
  - Feedwater nozzle temperature is considered to be suspect but did show a decrease of approximately 25 C (77F).
  - Reactor vessel lower decreased approximately 12 C to 98.5 C (209 F)
  - Drywell and Torus pressure decreased to .125 MPa abs (18 psia).
  - Drywell and Torus dose rates are considered to be suspect.
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection continues at approximately 7 m3/hr. Comments on parameters:
  - Unit 2 reactor pressures remain suspect.
  - Feedwater nozzle temperature was steady at 120 C (248 F)
  - Reactor vessel lower temperature is believed unreliable.
  - Drywell pressure was stable near atmospheric.
  - Dose rate in the U2 Drywell continues to decrease. The drywell dose rate is 2.24Sv/hr or (2,240 Rem/hr). The Torus dose rate reading is considered suspect.
- In Unit 3, of non-borated fresh water using the low pressure coolant injection continues at approximately 6.8 m3/hr. Comments on parameters:
  - Unit 3 reactor pressures are considered suspect.
  - Feedwater nozzle temperature is considered to be suspect.
  - Reactor vessel lower temperature was steady at 110 C (230 F)
  - Drywell pressure was steady at .102 MPa abs (15 psi). Torus pressure is also steady at .178 MPa abs (26 psi).
  - Dose rate in the U3 Drywell continues to decrease and is at 14.2 Sv/hr (1,420 Rem/hr). Dose rate in the Torus is considered to be suspect.

Dose and Dose Rates

- As reported yesterday, a female employee received a cumulative radiation dose of approximately 18 mSv during the first quarter of 2011. This exceeds the maximum allowable dose for a female of 5 mSv/3 months. Upon examination it was determined that the woman received 13.6 mSv internal exposure. The woman was working in a building that was contaminated by the hydrogen explosion on March 12^{th} and was not wearing a protective mask. Two other females working in the same building may have also exceeded their exposure limits.

- Overall site dose rates are stabilizing or decreasing slightly. For example:

  - The last reading reported at the main gate was 48 μSv /hr (4.8 mrem/hour) and 22 μSv /hr (2.2 mrem/hour) at the west gate.

  - The side of the administration building facing the units decreased slightly to 430 μSv/hr or 43 mrem/hr.

Not for Release

Fukushima-Daiichi Current Status and Planned Work

28 April at 06:00 & 09:00 (Rev-102)

		1F1	1F2	1F3	1F4	1F5	1F6	Common Pool
Reactivity Control (Unit Reactor)	Current Status	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All CRs are kept inserted in the core	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (For core shroud replacement work during outage)	■Core was loaded with bundles for the start of the next operation cycle* ■RPV bolted up (Earthquake occurred after completion of RPV hydrostatic test just before	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
		CAMS (at 05:00 on 28 April): D/W: (A) & (B) No measurement S/C: (A) 1.16×10^{0} SV/h (watching trend continuously) (B) 1.67×10^{0} SV/h (watching trend continuously)	CAMS (at 05:00 on 28 April): D/W: (A) 2.24×10^{1} SV/h, (B) 2.52×10^{1} SV/h, S/C: (A) 4.63×10^{-1} SV/h (watching trend continuously) (B) 4.08×10^{1} SV/h (watching	CAMS (at 05:00 on 28 April): D/W: (A) 1.42×10^{1} SV/h, (B) 1.08×10^{1} SV/h, S/C: (A) 5.33×10^{-1} SV/h (watching trend continuously) (B) 5.07×10^{-1} SV/h (watching				
	Next Works Planned (TEPCO Headquarters' Activities)	(Long term measure) □To add boric acid to fresh coolant before acieving cold shut down (After restoring power) □Operating SLC	□Borated fresh water injection started (at 10:10 on 26 March) (Long term measure) □To add boric acid to fresh coolant before acieving cold shut down (After restoring power) □ Oprating SLC	(Long term measure) □To add boric acid to fresh coolant before acieving cold shut down (After restoring power) □Operating SLC				
Coolant Supply & Residual Heat Removal (Core cooling)	Current Status	■Fresh water injection through FDW line (Switch to temporary installed motor driven pump was completed) (Flow Rate: 10.0 m^3/h by interim instrumentation at 05:00 on 28 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■For PCV flooding ・Core cooling water flow rate was changed 6 → 10 m3/h (Hold) (on 27 April) ■Installing temporary replacement pump for CCSW ■Camera to monitor operating conditions of Core cooling water supply pumps was installed (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 7.0 m3/h by interim instrumentation at 05:00 on 28 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (28 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed (on 6 April) ■Backup line for core cooling water injection was installed. (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April)	■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6.8 m3/h by interim instrumentation at 05:00 on 28 April) ・Power source was switched to off-site power. (at 18:25 on 25 April) ■Installation of the alternate pump for RHRS (28 March) ■Camera to monitor operating conditions of Core cooling water supply pumps was installed. (on 6 April) ■Backup line for core cooling water injection was installed (on 14 April) ■Temporary D/G for core cooling water injection was moved to high ground (on 15 April) ■Replacement of water supply hose		■Ordinary operation in SHC mode of RHR (27 April 19:13-) (SHC mode: Cooling mode with heat-exchanger)	■Ordinary operation in SHC mode of RHR (27 April 20:08-) ■One out of two temporary RHRS pumps tripped (25 April 18:00 - 26 April 11:17)	
		■Reactor Water Level (at 05:00 on 28 April) TAF-1650 mm (Fuel Range: Gauge A) TAF-1600 mm (Fuel Range: Gauge B) ■RPV Dome Pressure (at 05:00 on 28 April) 0.415 MPa-g (Gauge A) 1.164 MPa-g (Gauge B) (watching trend continuously) ■RPV Temperature (at 05:00 on 28 April) Feed water nozzle: 107.3℃ (watching trend continuously) Bottom of RPV : 98.5℃	■Reactor Water Level (at 05:00 on 28 April) TAF -1500 mm (Fuel Range: Gauge A) TAF -2100 mm (Fuel Range: Gauge B) ■RPV Dome Pressure (at 05:00 on 28 April) -0.016 MPa-g (Gauge A) (watching trend continuously) -0.020 MPa-g (Gauge D) (watching trend continuously) ■RPV Temperature (at 05:00 on 28 April) Feed water nozzle: 113.9℃ Bottom of RPV : No measurement	■Reactor Water Level (at 05:00 on 28 April) TAF-1650 mm (Fuel Range: Gauge A) TAF-2250 mm (Fuel Range: Gauge C) ■RPV Dome Pressure (at 05:00 on 28 April) -0.055 MPa-g (Gauge A) (watching trend continuously) -0.059 MPa-g (Gauge C) (watching trend continuously) ■RPV Temperature (at 05:00 on 28 April) Feed water nozzle : 86.0 ℃ (watching trend continuously due to suspected indication problem) Bottom of RPV : 109.6 ℃		■Reactor Water Level (at 06:00 on 28 April) TAF-2331 mm (Shut Down Range Gauge) ■RPV Dome Pressure (at 06:00 on 28 April) 0.007 MPa-g ■Coolant Temprature (at 06:00 on 28 April) 38.7 ℃	■Reactor Water Level (at 06:00 on 28 April) TAF-2132mm ■RPV Dome Pressure (at 06:00 on 28 April) 0.013 MPa-g ■Coolant Temprature (at 06:00 on 28 April) 47.5 ℃	
	Next Works Planned (Activities of Cooling Water Supply Force)	□Switch the temporary motor driven pump to M/T pump (The work was suspended due to high radiation environment around M/TP in the turbine building). (Long Term Cooling Measure) □SHC ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the temporary motor driven pump to M/T pump (The work was suspended due to high radiation environment around M/TP in the turbine building). (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments	□Switch the motor driven pump to M/T pump (The work was suspended because of high radiation environment around M/TP in the turbine building). Preparing to drain the high radiation water (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments				

Containment Function (Cooling and Confinement)	Current Status	■D/W (at 06:00 on 28 April) ・Pressure: 0.125 MPa-abs ・Temperature: RPV bellow seal: 100.5 ℃ HVH return: 88.3 ℃ ■S/C (at 06:00 on 28 April) ・Pressure: 0.125 MPa-abs ・Temperature: (A) 60.7 ℃, (B) 50.6 ℃ ■Started ventilation through hardened line (at 14:30 on 12 March) * PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 319 kPa	■D/W (at 06:00 on 28 April) ・Pressure: 0.075 MPa abs ・Temperature: RPV bellow seal: No measurement HVH return: 111 ℃ ■S/C (at 06:00 on 28 April) ・Pressure: Down Scale (Examining) ・Temperature: (A) 70.4 ℃, (B) 70.7 ℃ ■Ready to start ventilation through hardened line (Not executed so far) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rupture disc working pressure : 375	■D/W (at 05:00 on 28 April) ・Pressure: 0.1017 MPa-abs ・Temperature: RPV bellow seal: 121.7 ℃ (watching trend continuously) HVH return: 102.1 ℃ ■S/C (at 05:00 on 28 April) ・Pressure: 0.1783 MPa-abs ・Temperature: (A) 41.0 ℃, (B) 41.0 ℃ ■Started ventilation through hardened line (at 9:20 on 13 March) PCV design pressure : 384 kPa		■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	■Negative pressure kept by SGTS ■RHR was stopped and resumed for installing temporary RHRS (on 20 April)	
	Next Works Planned (TEPCO Headquarters' Activities)	□Hydrogen countermeasure first * Fill PCV and ventilation line with nitrogen * Reinforced monitoring of PCV pressure * Continue to secure ventilation line <After securing off-site power> □Restoring PCV spray function * MUWC system, FP system <After restration of equipments> □RHR operation in SHC mode □Restoring D/W cooling coil □Alternative heat removal by CTF	Same as unit 1	Same as unit 1				
Spent Fuel Pool (SFP) (Decay Heat Removal & Water Supply)	Current State	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of no power supply) ■Skimmer surge tank level 3700 mm (at 05:00 on 28 April) ■Watering by concrete pumping vehicle (Fresh Water) (called the Elephant) ・31 March 13:03-13:57 ・31 March 14:29-16:04 ・2 April 17:16-17:19 The nickname of concrete pumping vehicle for Unit 1 was changed from "large Giraffe" to "Elephant" to prevent confusion on 3 April. ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant #1 was moved from Unit 3 to Unit 1. (on 26 April)	■SFP water level uncertain (No water level meter) ■SFP temperature 50.0℃ (at 05:00 on 28 April) ■Skimmer surge tank level 5400mm (at 05:00 on 28 April) ■Fresh water injection to SFP trough the existing FPC line and tempolary line ・19 April 16:08-17:28 ・22 April 15:55-17:40 ・25 April 10:12-11:15 (38 ton) ■Removal of the existing strainer to FPC line was completed (31 March). (Scheduled for 31 March)	■SFP water level uncertain (No water level meter) ■SFP temperature uncertain (Unable to measure because of lack of power supply) ■Skimmer surge tank level No measurement ■Water spray with new special pumping vehicle (call Zebra-improved) ・8 April 17:06- 20:00 (Fresh Water) ・10 April 17:15-19:15 (Fresh Water) ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Zebra-improved was moved for replacement and The Elephant was moved: Unit 4→Unit 3 (on 11 April) ■Water spray with the Elephant #1 ・18 April 14:19 - 15:02 (30ton) ・22 April 14:19 - 15:40 (50ton) ・26 April 12:00 - 12:02 (check of water level) ■Confirmation of injection line to the pool through	■SFP water level : Uncertain ■SFP water temperature: gauge out of order (at 11:10 on 24 March and later) ■Skimmer surge tank level 6550 mm (at 05:00 on 28 April) ■Installation alternation pump for RHRS ■Watering with the Elephant ・5 April 17:35-18:22 ・7 April 18:23-19:40 ・9 April 17:07-19:24 ■Preparation for water feeding with electric motor pumps was completed. (on 9 April) ■The Elephant was moved: Unit 4 → Unit 3 (on 11 April) ■Water sampling from SFP by the Elephant #2 was completed. (12 April) Most of the fuel is believed to be undamaged. ■Attaching measuring instruments (level gage etc..) on the Elephant #2 and measuring temperature, water level and radiation dose. (on 22, 23 and 24 April)	■Inventory securing * CST -> MUWC -> FPC -> SFP ■Heat removal * FPC (Surge Tank) -> RHR -> S/C * Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain (Water level alarms were not activated.) ■SFP Water temp: 40.4℃ (at 06:00 on 28 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (- 1 April) ■S/C mode (27 April 19:13 -)	■Inventory securing * CST -> MUWC -> FPC -> SFP ■Heat removal * FPC (Surge Tank) -> RHR -> S/C * Heat removal in S/C cooling mode of RHR ■SFP Water level: uncertain(Water level alarms were not activated.) ■SFP Water temp: 27.9℃ (at 06:00 on 28 April) ■Secondary containment is intact with roof of R/B ■Fresh water was transferred to fresh water tank #3 by tank lorry (-) April) ■SHC mode (27 April 20:09 -)	■SFP water temperature 32℃ at 06:00 on 27 April ■Cooling function achieved by air fin coolers (at 18:26 on 24th March) ■Water supply to the common SFP by MUW system (21 March 16:15-18:01) ■FPC(A) started at 18:05 on 24th March
	planned work (Next Activities of FPC Team)	□Repair of the Elephant #1	□Fresh water injection to SFP trough the existing FPC line (scheduled on 29 April 10:00-11:30 60ton)		□Sampling water in SFP (scheduled on 28 April) □Reinforcement work of fuel pool support structure			
High Voltage AC Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■Equipments of MCT tested for short circuit and ground but in fail on 21 March ■125V 1 & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:30 on 24 March ■Monitoring posts (MP5-8) were restored. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Ohkuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■MCC 2A-1 in the turbine building was powered at 16:40 on 26 March ■Illumination is restored in main control room at 16:46 on 27 March. ■Strengthen on-site power ・Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Ohkuma line has been available) (on 19 April) ・Tie line to Unit 5&6 main bus was installed. (on 25 April)	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Temporary power supply achieved utilizing the non-damaged part of 66kV off-site power transmission line ・Trial electric charge of the motor Center vehicle for Unit3 and Unit4 was completed at 14:28 on 18 March ・Instalation of multi circuit breakers and power cables were completed on 19 March ・Inspection of cable from the breakers and loads was conducted on 20 March ・Instalation of cables were completed on 21 March. ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 10:23-15:27) ・Operating Ohkuma-line #3 (6.9→66kV) (scheduled on 27-30 April) ■T/B MCC 3C-2 has been powered on 22 March.	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 10:23-15:27) ・Operating Ohkuma line #3 (6.9→66kV) (scheduled on 27-30 April) ■125V 1 & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:50 on 29 March ■Tie line between Unit1&2 and Unit3&4 was installed. (Tohoku Nuclear line - Ohkuma line has been available) (on 19 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yoru Mori line 1L,2L) ■Non-safety grade buses of 5A and 5B are unavailable ■Temporary pump (RHRS) was installed and connected to the water supply line on 24th March ■Emergency administration building was powered on 24th March ■Water Purification Facility was powered at 9:10 on 24th March ■Investigating cable laying work for monitoring posts (MP-1/2/3/4) on 26 March. ■T/B MCC 5D-2 has been powered on 31 March ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yoru Mori line 1L,2L) ■Non-safety grade buses of 6A and 6B are unavailable ■Temporary pump (works as a substitute of RHRS) was installed and put in service (Powered by P/C) ■Test run od installed cable was conducted on 20 March ■Monitoring posts (MP1-4) were restored. ■Strengthen on-site power ・Tie line to Unit 1&2 main bus was installed. (25 April)	■Temporary power for common pool was restored at 15:30 on 24th March ■Temporary power for common pool was tripped due to short circuit during practice of disconnecting switch operation (17 April 14:36 17:30) (restored at 17:44 on 17 April) ■P/C for common pool ・Power supply was stopped due to strengthen on-site power of Unit 3&4 (uprate: 6.9kV →66kV) (26 April 15:56-16:34)

	planned work (Next Activities of Electric Power Supply Team)	□Restration work of electricity will be restarted after completing water transfer from T/B	□Restration of power for instrumentation	□Power off due to work at Shin-Fukushima substation (scheduled on 12 & 17 May) □Restration work of electricity will be restarted after completing water transfer from T/B	□Power off due to work at Shin-Fukushima substation (scheduled on 12 & 17 May)	□Charging test of startup transformer 5SB (scheduled on 2 May) □Laying temporary power cable for SLC (B)		
DC Power Supply	Current Status	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■Common DC125V has been powered at 16:30 on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status * Batteries for reactor level gauges were replaced by fresh ones at 12:15 on 21st March ■Restration of DC 125V Charge cenetr (B) (30 March)	■Part of I & C equipments were powered by temporary battery to monitor plant status	■Part of I & C equipments were powered by temporary battery to monitor plant status ■DC 24 Charger 5B-1has been powered on 31 March	■Part of I & C equipments were powered by temporary battery to monitor plant status	
	Next Works Planned (Activities of Electric Power							
Miscellaneous Measures against Hydrogen	Current Status	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas ■Injection of N2 gas is in progress ・(Flow rate: 28m³/h, degree of purity: 98%) 7 April 01:31- 9 April 03:29 (suspended due to switch to high degree of purity N2 gas) ・Injection of high degree of purity N2 gas (Flow rate: 28m3/h, degree of purity: 99.97%) 9 April 04:10 - ・Injection of N2 gas was stopped due to [illegible]	■Considering the injection of N2 gas into PCV ■Generation of hydrogen gas at the top part of the reactor building is of concerned * White smoke observed on 21st March was supposed to be the steam from SFP that was leaked through the rain drainage duct. It is hoped that this mitigatre the concentrated of Hydrogen gas.	■Considering the injection of N2 gas into PCV		■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	■3 holes(3~7.5 cm) were drilled on the ceiling panel (250 mm thick) of the rector building on 18 March to relieve hydrogen gas and to avoid explosion ■The holes on the R/B ceiling were covered to prevent rain inundation (on 20 March)	
	Next Works Planned (Next Activities)		□Water jet pump is ready at off-site stock yard, however lifting machine is not available					
Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water level in T/B OP +5050mm (at 07:00 on 28 April) : same as 17 April 11:00 ・Water transfer H/W ← CST (3 April 13:55- 10 April 09:30) ■Draining water in Trench ・Radiation level of the water surface in the trench: 0.4 mSv/h on 28 March ・Water level (from top edge of grating to water surface) 1530 mm (at 7:00 on 28 April) : same as 20 April 18:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B ・Water level in T/B OP +3100mm (at 07:00 on 28 April) : same as 16 April 07:00 ・Water transfer (H/W → CST) (2 April 17:10 9 April 13:10) ・Monitoring camera for water level was installed (on 2 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: higher than 1000 mSv/h (on 28 Mar.) ・Water level (from top edge of grating to water surface) 900 mm (at 7:00 on 28 April) : same as 27 April 18:00 ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation "Beaver" ・A rubber board was placed over the crack. (at 13:15 on 6 April) ・Injection of liquid chemical to prevent leaks (conducted on 7 April) ■ Water transfer (trench→R/B) (660 ton)	■Draining water in T/B ・Water level in T/B OP +3000mm (at 07:00 on 28 April) : same as 23 April 11:00 ・Water transfer (CST → SPT surge tank) (28 March 17:40 - 31 March 08:37) ・H/W is full. Leak from vacuum breaker was confirmed (on 7 April) ■Draining water in Trench ・Radiation level of the water surface in the trench: (No measurement due to difficulty in approach by debris) ・Water level (from top edge of grating to water surface) 950 mm (at 07:00 on 28 April) : 10 mm higher than 27 April 18:00 : Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water level in T/B OP +3100mm (at 07:00 on 28 April) : same as 27 April 11:00 ・Water transfer (Concentrated RW → T/B) (2 April 14:25 - 4 April 09:22: suspended) ・Water transfer pumps were added (1 → 5 pumps: 3 Apr. 10:00 - 4 Apr. 09:22, suspended due to high water level in the trench) ■Work for shutting off the leak in pit ・Concrete was poured (25m3) to clog cracks	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ■Discharging water in sub-drain of Unit 5 to the sea: 950 m3 (4 April 21:00 - 8 April 12:14) ■Draining water in R/B ・CS area →Torus (on 19 April)	■Draining water ・Water level in T/B OP +3050mm (on 27 April) : 15 mm higher than 26 April ・Water transfer (RW base floor → H/W) (1 April 13:40 - 2 April 10:00) ・Suspended by large amount of water: considering draining water ■Discharging water in sub-drain of Unit 6 to the sea: 372.6 m3 (4 April 21:00 - 9 April 18:52)	■Draining water ・Concentrated RW → sea: 9070 m3 (4 April 19:03 - 10 April 17:40) ■Draining water from main process building was completed. ■Draining water from incinerator building to the sea was completed. ■Concrete pouring for stopping groundwater inundation is in progress (15 April - 18 April) ■Work for shutting off the leak of process building (on 16 April) ■High contaminated water transfer from Unit 2 to RW facilities (19 April 10:08 -) ・Amount of increase at RW (at 07:00 on 28 April) 1065 mm higner than the initial value
	Next Works Planned	□Draining water in T/B basement ・Preparing for transfer draining water in T/B basement to RW facilities		□Draining water in T/B basement ・Preparing for transfer water in T/B basement from the trench to RW facilities	□Work for shutting off the leak in pit		□Draining water ・Preparing for transfer water in T/B basement to temporary storage tank (scheduled from 1 May)	

Others	Current Status	■Barge ・Water transfer: Barge No.1 → Filtered water tank (on 1 & 2 April) ・Water transfer: Barge No.2 → Barge No.1: (on 2 & 3 April) ・Barge No.2 arrived at dock (on 4 April) ■Air Borne Contamination Control ・In progress (Conducted on 1, 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 24, 25,26 and 27 April) ■Removal of debris ・In progress (Conducted on 18,19, 20, 21,22, 23, 24, 25, 26 and 27 April) ■Additional grout was poured (on 19 April: 7 m^3 into intake power supply pit) ■Silt fence: (on 11 April Two fences were installed on the south), (on 13 April Unit 3&4: in front of Screen facilities), (on 14 April Unit 1&2: In front of Screen facilities, Unit 1-4: north of Intake) ■Iron plate in front of bar screen facilities ■Nitrogen gas bubbling in Filtered water tank (13 April -) ■T-Hawk project (wireless-controlled helicopter) (on 10, 14, 15 and 21April) ■Placing of sandbags of zeolite around intake structure (at 3 locations on 15 April, at 7 locations on 17 April, pulled 2 up for radiation dose measurement on 19 April) ■Field investigation with robot (Unit 1: on 17, 26 April) (Unit 2: on 18 April)) (Unit 3: on 17 April) ■Fire engine was moved from Fukushima Daiichi to Fukushima Daini (for securing 2 D/G for 1Unit) ■Convey Drill (Fukushima Daiichi site →J-village →Prefectural medical college) (on 21 April) ■Installation of Wimax (Wireless LAN) (on 25 April)
	Next Works Planned	□Removal of debris (scheduled on 28 April) □Air Borne Contamination Control (scheduled on 28 April) □Field investigation with robot in Unit 1 (scheduled on 28 April)

Abbreviations:

CAMS :Containment Area radiation Monitor System
CST :Condensate Storage Tank
CUW :(Reactor Water) Clean Up Water (System)
D/W :Dry Well
ECCS :Emergency Core Cooling System
FP Fire Protection
MS :Main Steam
M/C :Motor Power Center
MUWC :Make Up Water Condensate (system)
P/C :Power Distribution Center

RCIC :Reactor Core Isolation Cooling
RHR :Residual Heat Removal
RPV :Reactor Pressure Vessel
S/C :Suppression Chamber
SDF :Self Defense Force
SFP :Spent Fuel Pool
SGTS :Stand by Gas Treatment System
SHC :Shut Down Cooling
SLC :Stand by Liquid Control

福島第一サーベイマップ（平成23年4月27日 8:50現在）