(137 Documents)

Group BG

(Records Withheld In Part)

From: RST01 Hoc
Sent: Monday, April 04, 2011 3:03 AM
To: Lingenfelter, Andy (GNF); ge.hitachinuclearresponseteam@ge.com; RST03 Hoc
Subject: RE: Naval Reactors recommendations for securing water pool leak for 0300 call - one additional vendor for leak repairs
Attachments: Calcium Bentonite - Relief Aid to Japan

NRC RST also received the attached offer to supply bentonite from Montana Bentonite.

From: Lingenfelter, Andy (GNF) [mailto:andy.lingenfelter@gnf.com]
Sent: Sunday, April 03, 2011 11:41 PM
To: RST01 Hoc; ge.hitachinuclearresponseteam@ge.com
Subject: Naval Reactors recommendations for securing water pool leak for 0300 call - one additional vendor for leak repairs

Hello RST Team,

We added one vendor to your list for securing leaks.
See attached document.

Best Regards,

Andy

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Sun 4/3/2011 7:57 PM
To: (b)(6)

(b)(6)

The RST intends to provide the attached information to our Japan site team at the 0300 (EDT) call on 4/4. Please provide any feedback or comments (if any) before then.

This is a lower priority request, not intended to take away from other ongoing efforts.

Thanks,
Eric Thomas
NRC RST

BG/1

(b)(5)

(b)(5)

(b)(5)

Bano, Mahmooda

From:	Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent:	Tuesday, April 05, 2011 12:25 AM
To:	Scott, Michael; Giessner, John; Blamey, Alan; Collins, Elmo
Subject:	FW: Anti Dispersant Question
Attachments:	POTENITAL EFFECTS OF (b)(4) docx; additional chem properties from site team.pdf

All

Here is the analysis of the fixative agent.

Al Hochevar

Institute of Nuclear Power Operations

Cell (b)(6)

B6/2

(b)(4)

From: Mike Scott

To: RST

Subj: Additional info on anti-dispersion ~~agent~~ (translated)

Paste the two pages together to get 8 1/2 x 17 (approx.)

4/4/11

飛散防止剤の散布　試験計画(案)

7

PLAN FOR TESTING TO ASSESS THE HEAT TRANSFER OF FU

5. 飛散防止剤混入時における燃料棒伝熱性能の評価試験計画

試験目的 TEST PURPOSE

(1)基礎特性試験: (1) BASIC PROPERTIES TEST

・物性値変化及び沸騰時の被覆管への付着、固化の状況を確認。

Change in physical values + attachment on pipe coating when boiling + solidification

(2)伝熱性能試験: (2) HEAT TRANSFER TEST

・燃料棒の伝熱性能及び流動特性に及ぼす飛散防止材の影響を評価。

・飛散防止剤の燃料棒付着及びはく離状況を確認。

・Evaluate impact of anti-dispersion agent on fuel rod's heat transfer property + flow property

・Confirm attachment + detachment of agent on fuel rod

試験装置 TEST EQUIPMENT

(1)基礎特性試験 (1) BASIC PROPERTIES TEST

① 物性値変化(密度、粘度、沸点)(淡水+防止剤、~~海水+~~防止剤)

② 被覆管への付着、固化の可能性(淡水+防止剤)

水面境界部、水面以下

① physical values change (density, viscosity, boiling temperature) (fresh water + agent, sea water + agent)

② possibility of attachment, solidification on pipe coating (fresh water + agent)

(2)伝熱特性試験 (2) HEAT TRANSFER PROPERTY TEST

①ヒータを加熱して流体温度、壁面温度を熱電対で計測し、燃料棒の伝熱特性(除熱性能)を評価。

② 差圧計により差圧を測定して、流路の圧力損失(流動状態)を評価。

③ 長時間運転による飛散防止剤の付着状況、及び飛散防止剤がはく離する平均流速(せん断力)を確認。

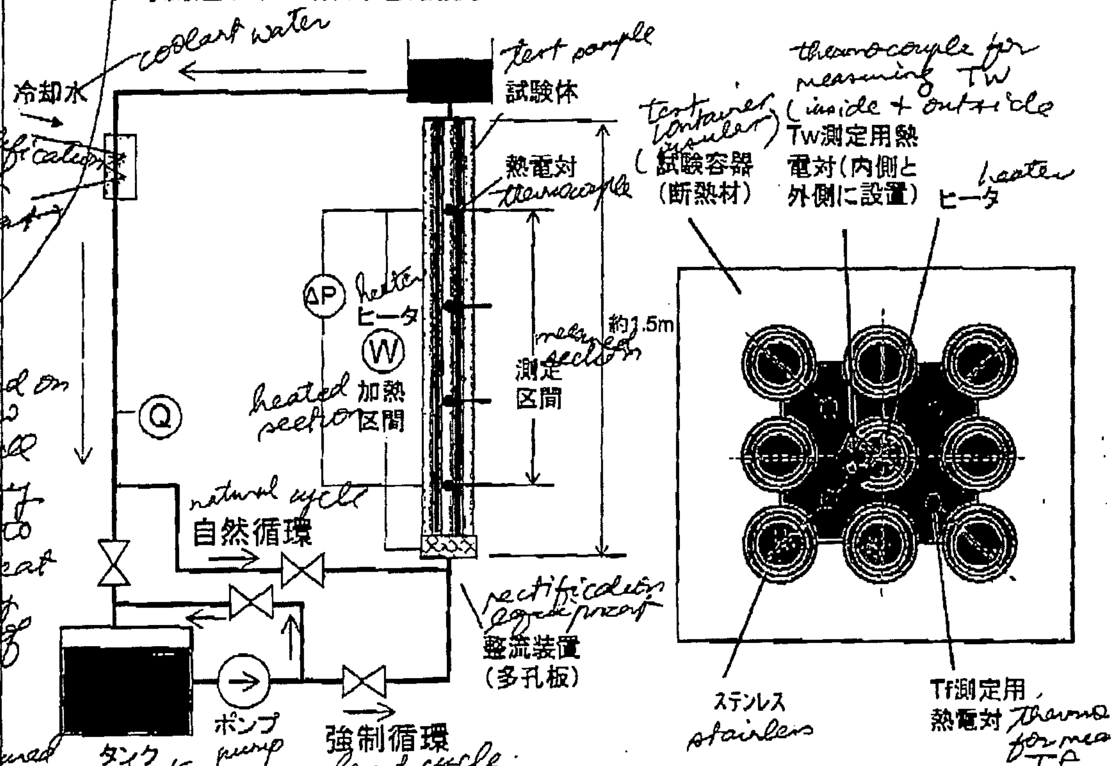


図1　試験装置概略図 Test equipment

① heater is turned on to measure flow temperature, wall temperature by thermocouple to evaluate the heat transfer property (heat removal) of fuel rod.

② Differential pressure is measured by differential manometer, to assess the pressure loss of flow channel.

③ Confirm the attachment of anti-dispersion agent + average speed of ablation by long hours operation.

l rod evaluation

2011年4月4日 4

RODS WHEN MIXING ANTI-DISPERSION AGENTS

試験条件 TEST CONDITIONS

FLOW SPEED + TEMPERATURE ARE PARAMETERS, changing type of agents

流速、温度をパラメータとして、飛散防止剤の有無及び種類を変えて試験を実施する。

表1 伝熱特性試験 試験条件 — HEAT TRANSFER PROPERTY TEST

test case 試験ケース	flow speed 流速 [m/s]	agent 飛散防止剤	temperature 温度 [℃]	concentration 濃度	評価項目 assessment	
Case1	0.01～0.1	無し None	40	0	伝熱特性比較	heat transfer comparison
Case2	0.01～0.1	クリコート C-720 グリーン Clicote C-720 Green	40	～標準×5 standard x5	伝熱特性、付着特性	heat transfer, attachment
Case3	～1	無し None	40	0	流動特性比較	flow property comparison
Case4	～1	クリコート C-720 グリーン	40	～標準×5	流動特性、はく離特性	flow property, abrasion property
Case5	0.07	クリコート C-720 グリーン	40～100	～標準×5	温度の影響	temperature impact
Case6	0.07	フライネットR FLYNET R	40～100	～標準×5	飛散防止剤種類の影響	type of agent
Case7	0.07	AGUA-A3000	40～100	～原液	飛散防止剤種類の影響	"

伝熱評価方法 METHOD TO TEST HEAT TRANSFER

以下の式より、熱通過率Kを評価する。 Assess heat path rate K by the following formula.

$$K = \frac{W}{(T_w - T_f)\cdot A} \quad \cdots\cdots\cdots\cdots (1)$$

A = heated area
TW = wall temperature
Tf = flow temperature
W = heater heat

但し、A:加熱面積、TW:壁面温度、Tf:流体温度、W:ヒータ加熱量、

この熱通過率には、流体の熱伝達率hと飛散防止剤の熱抵抗l/λが含まれている。 ~~K path rate~~ Heat path rate includes flow heat transfer rate h + heat resistance 1/λ of agent.

$$K = \frac{1}{\frac{1}{h} + \frac{l}{\lambda}} \quad \cdots\cdots\cdots\cdots (2)$$

heat path rate K + agent's heat resistance 1/λ calculated by formula

以上の式より、熱通過率K及び飛散防止剤の熱抵抗l/λを算出する。

工程 TIME SCHEDULE

日程	3/31	4/1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
試験計画 test plan																
(1)基礎特性試験 (試験準備含む) (1) basic property test including preparation																
(2)伝熱特性試験 (2) heat transfer property																
装置製作 test equipment production																
試験(Case1,2,3) test																
試験(Case4,5) test																
試験(Case6,7) test																
評価 assessment																

sample change

... of agent

X

Lee, Richard

From: Lee, Richard
Sent: Tuesday, April 05, 2011 10:13 AM
To: Binder, Jeffrey L.
Subject: RE: 4/4 S-1 Briefing Package

Jeff:

Thx, Richard

-----Original Message-----
From: Binder, Jeffrey L. [mailto:binderjl@ornl.gov]
Sent: Tuesday, April 05, 2011 9:31 AM
To: Lee, Richard
Subject: FW: 4/4 S-1 Briefing Package

per request

From: Douglas E Burns [Douglas.Burns@inl.gov]
Sent: Tuesday, April 05, 2011 9:25 AM
To: bari@bnl.gov; Binder, Jeffrey L.; Busby, Jeremy T.; cgrandy@anl.gov; dddixon@lanl.gov; Derek C Wadsworth; diamond@bnl.gov; Dana L Kelly; farmer@anl.gov; Flanagan, George F.; Gehin, Jess C.; Harrison, Thomas J.; horak@bnl.gov; james.buelt@pnl.gov; Jack Lance; Joy L Rempe; kbsoren@sandia.gov; ks@bnl.gov; monica.regalbuto@nuclear.energy.gov; Poore III, Willis P.; Philip D Wheatley; Richard.Reister@nuclear.energy.gov; Robert W Youngblood; Rogaunt@sandia.gov; spburns@sandia.gov; steve.schneider@em.doe.gov; taiwo@anl.gov; Tom.Miller@nuclear.energy.gov; Trevor.Cook@nuclear.energy.gov; Wagner, John C.; Alice.Caponiti@nuclear.energy.gov
Subject: 4/4 S-1 Briefing Package

Here's the briefing package from yesterday's Science Experts call.

Doug

Douglas E. Burns
INL Fuel Cycle Science & Technology
208-526-2051 (office)
(b)(6) (cell)

BG/3

Lee, Richard

From: Lee, Richard
Sent: Tuesday, April 05, 2011 3:45 PM
To: Sheron, Brian
Subject: FW: Fukushima Organizational Considerations
Attachments: Fukushima Organizational Consideration.docx

Brian:

Did you get this e-mail? I could not tell from the distribution list.

Richard

-----Original Message-----
From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Tuesday, April 05, 2011 11:57 AM
To: DL-NITsolutions
Subject: FW: Fukushima Organizational Considerations

-----Original Message-----
From: Ellis, Jim
Sent: Sunday, April 03, 2011 3:04 PM
To: Kelly, John E (NE)
Cc: Purcell, Richard T. (INPO); Webster, Bill E (INPO)
Subject: Fukushima Organizational Considerations

John;

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

All the best,

Jim Ellis

From: Kelly, John E (NE) [JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Friday, April 01, 2011 1:27 PM
To: Mortensen, George K (INPO); Ellis, James O. (INPO)
Subject: Science call

Today (Friday April 1) Science call is at 4:30 pm EDT call in number is

202-586-2535

Dr. John E. Kelly

BG/4

Deputy Assistant Secretary for Nuclear Reactor Technologies
NE-7
U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585
phone: 202-586-5458
fax: 202-586-0541
mobile: (b)(6)

Bano, Mahmooda

From: Spurlock, Kenneth CAPT USN MDAO (b)(6)
Sent: Tuesday, April 05, 2011 10:17 PM
To: CherryRC@state.gov; Blamey, Alan; aleshia.duncan@nuclear.energy.gov; Cook, William; Smith, Brooke; Casto, Chuck; damian.peko@nuclear.energy.gov; Dorman, Dan; Emche, Danielle; DuncanAD@state.gov; Collins, Elmo; Stahl, Eric; HowardEB@state.gov; Foster, Jack; Giessner, John; Trapp, James; (b)(6); jllacha@sandia.gov; Jeffrey.Miller@pnl.gov; Monninger, John; Foggie, Kirk (b)(6) (b)(6) MearsJM@state.gov; Scott, Michael; Call, Michel; MoralesRA@state.gov; rogaunt@sandia.gov; AwanRX@state.gov; Devercelly, Richard; Bernhard, Rudolph
Subject: Re: This is a test (U)

Classification: Unclassified

Lima Charlie
Ken Spurlock
Captain, USN
Director, Navy Surface Programs
Mutual Defense Assistance Office
SIPR: spurlockkr@state.sgov.gov
DSN 315-224-5409
Cell (b)(6)

From: Cherry, Ronald C [mailto:CherryRC@state.gov]
Sent: Wednesday, April 06, 2011 11:10 AM
To: Alan Blamey <Alan.Blamey@nrc.gov>; Aleshia Duncan <aleshia.duncan@nuclear.energy.gov>; Bill Cook <william.cook@nrc.gov>; Brooke Smith <brooke.smith@nrc.gov>; Cherry, Ronald C <CherryRC@state.gov>; Chuck Casto <chuck.casto@nrc.gov>; Damian Peko <damian.peko@nuclear.energy.gov>; Dan Dorman <Dan.dorman@nrc.gov>; Danielle Emche <Danielle.Emche@nrc.gov>; Duncan, Aleshia D <DuncanAD@state.gov>; Elmo Collins <Elmo.Collins@nrc.gov>; Eric Stahl <Eric.Stahl@nrc.gov>; Howard, E. Bruce <HowardEB@state.gov>; Jack Foster <jack.foster@nrc.gov>; Jack Giessner <John.Giessner@nrc.gov>; James Trapp <james.trapp@nrc.gov>; James Trapp <(b)(6)>; Jeff LaChance <jllacha@sandia.gov>; Jeff Miller <Jeffrey.Miller@pnl.gov>; John Monninger <john.monninger@nrc.gov>; Spurlock, Kenneth CAPT USN MDAO; Kirk Foggie <kirk.foggie@nrc.gov>; LTC Andrae Brooks <(b)(6)>; MAJ Keith Simmers <(b)(6)>; Mears, Jeremy M <MearsJM@state.gov>; Michael L. Scott <michael.scott@nrc.gov>; Michel Call <Michel.Call@nrc.gov>; Morales, Russell A <MoralesRA@state.gov>; Randy Gauntt <rogaunt@sandia.gov>; Awan, Riaz X (Sofia - DOE) <AwanRX@state.gov>; Richard Devercelly <richard.devercelly@nrc.gov>; Rudy Bernhard <Rudolph.Bernhard@nrc.gov>; Russ Morales <Russ@earthtabi.com>; Todd Jackson <Todd.Jackson@nrc.gov>; Tony Nakanishi <tony.nakanishi@nrc.gov>; Tony Ulses <anthony.ulses@nrc.gov>
Subject: This is a test

Ronald C. Cherry
Energy Attaché
Director, DOE Japan Office
U.S. Embassy Tokyo
Tel. (0)3-3224-5444
Fax (0)3-3224-5769
Cell (b)(6)
email CherryRC@state.gov

BG/5

This email is UNCLASSIFIED.

Bano, Mahmooda

From: Scott, Michael
Sent: Tuesday, April 05, 2011 6:37 PM
To: Blamey, Alan; Bernhard, Rudolph
Subject: FW: Bechtel (U)

-----Original Message-----
From: Cook, William
Sent: Tuesday, April 05, 2011 10:22 AM
To: Casto, Chuck; Monninger, John; Scott, Michael
Subject: FW: Bechtel (U)

Just in case you had not heard, probably old news. Found this in my email this morning.
Hope you all get home soon.
Best regards.
Bill
-----Original Message-----
From: Monaghan, Dylan M Lt Col USAF MDAO [mailto (b)(6)
Sent: Saturday, April 02, 2011 9:56 AM
To: Kubista, Theodore LTC USA MDAO; MLagemann@rel.com.au
Cc: Cook, William
Subject: Re: Bechtel (U)

Classification: Unclassified

Thanks Ted

Mark please let me know when you get this and let me know when you return to beautiful Perth by the sea.

Thanks for everything especially your patience.

Dylan

----- Original Message -----
From: Kubista, Theodore LTC USA MDAO
Sent: Saturday, April 02, 2011 10:09 PM
To: Mark Lagemann <MLagemann@rel.com.au>
Cc: Monaghan, Dylan M Lt Col USAF MDAO; 'william.cook@nrc.gov' <william.cook@nrc.gov>
Subject: FW: Bechtel (U)

Forwarded on behalf of Lt Col D. Monaghan...

-----Original Message-----
From: Monaghan, Dylan M Lt Col USAF MDAO
Sent: Saturday, April 02, 2011 9:59 PM
To: (b)(6)
Cc: Brown, Edward Col USAF MDAO; Tanaka, Rodney CIV MDAO; Spurlock, Kenneth CAPT USN MDAO; Collier, Andrew H. CDR USN MDAO; Kubista, Theodore LTC USA MDAO; Grana, Brian T. Maj USMC; Young, Joseph ChiefPolMil AMEMB JP
Subject: Bechtel (U)

Classification: Unclassified

BG/6

Chuck, Ted,

'lease contact Mark from Bechtel and advise that they are cleared to depart Japan. TEPCO ıdvised me a few minutes ago that the pumping ops have finally gotten underway.

Please cc J5 and Bill Cook

TEPCO had many difficulties along the way with the barge water--the fixture designed at Yokota developed leaks getting everything wet. Hoses and connections burst. They labored through the day, performed on site repairs and somehow made it all work.

They send their many thanks for everything. Bechtel is off the hook.

Dylan

From: (b)(6)
To: Bonaccorso, Amy
Subject: Re: REPLY: It is time for New Technology to be used at Fukushima Reactor Site
Date: Tuesday, April 05, 2011 3:24:21 PM

Amy,

Thank you so very much for guiding us to help with Fukushima. It is much appreciated.

Denyse

In a message dated 4/5/2011 10:58:24 A.M. Eastern Daylight Time, amy.Bonaccorso@nrc.gov writes:

> Hello Mr. DuBrucq:
>
> Thank you for contacting us about your ideas. We appreciate suggestions that work toward resolving the situation in Japan; it's reassuring to see how helpful and dedicated private citizens have been in light of this disaster. Unfortunately, we are currently unable to consider each suggestion that comes in.
>
> The Institute of Nuclear Power Operations is, however, accepting some suggestions for analysis. If you'd like to submit something to them for consideration, their email is: inpoercassistance@inpo.org.
>
> Please understand that the NRC has some of the most expert people in the world available to assist the Japanese authorities in whatever way they request. We are fully staffed in all our response teams at this time and working 24-hours a day.
>
> Thank you,
>
> Amy
>
> ---
>
> **From:** (b)(6)
> **Sent:** Monday, April 04, 2011 4:56 PM
> **To:** OPA Resource; (b)(6) NITOPS@NNSA.DOE.GOV; the.secretary@doe.gov; (b)(6); prof-ronstewart@cyberglyphics.com (b)(6)
> **Subject:** It is time for New Technology to be used at Fukushima Reactor Site

BG/7

Gentlemen and Joy,

The diaper solution, newspaper and saw dust to stop the leaking radioactive water into the ocean is just the last straw. Use the CryoRain Technology to get Fukushima accessible within a week - cooled down, radioactive water frozen in blocks and flown to the South Pole, and the leaking wall repaired with rebar and concrete while iced tubing holds back the water.

See offer to Japanese Embassy in Washington DC.

Sincerely,

Denyse DuBrucq EdD

CEO - CryoRain Inc.

1 Webster Street

Arlington MA 02474-5203 USA

937 766-4660

(b)(6)

From: (b)(6)
To: earthquake@ws.mofa.go.jp
Sent: 4/4/2011 4:44:05 P.M. Eastern Daylight Time
Subj: (no subject)

Mr. Sachio Muto

Embassy of Japan

2025 Massachusetts Avenue NW

Washington DC 20008

Dear Mr. Muto,

The news of Fukushima work saddens me when rather than use clear technology like CryoRain provides, they are now trying to stop radioactive water leakage with a mix of shredded newspaper, sawdust and a polymer that is used in diapers.

We can, as you already know, cool down the fuel rods in reactors and spent fuel rod storage with Cryogenically cold, pure, inert Nitrogen gas. And also, we can freeze into ice blocks the radioactive water and port it to the South Pole. With the same Liquid Nitrogen technology we can freeze water to make a blockage for the leak spewing radioactive water into the ocean which will allow full strength patching of the concrete wall with the rebar and other reinfocements placed in the breach.

Here are a few paragraphs of new updates followed by my patent text and drawings. We can use bendable copper to carry the Nitrogen gas at cryogenic temperatures to the back side of the breach and using several inserts get full coverage in the developing ice blockage. They just insert the rebar reinforcements and the ocean side cover of the wall and pour in the concrete.

I sometimes wonder why the "people in charge" make such illogical acts to handle things. I am sure that were you to employ these three fixes with Liquid Nitrogen, you'd have the temperature, leakage, and radioactive water situations under control in a week, not a few months.

I am at your service in this recovery.

Denyse DuBrucq

CEO - CryoRain Inc.

1 Webster Street

Arlington MA 02474-5203 USA

(937 766-4660) to

(b)(6)

See the article paragraphs and my patent text and drawings appropriate to handling dam (wall) breaches.

Monday's – April 4 article"

A crack in a maintenance pit found over the weekend was the latest confirmation that radioactivity continues to spill into the environment. The leak is a symptom of the primary difficulty at the Fukushima Dai-ichi comples: Racdioactive water is pooling around the plant and preventing workers from powering up cooling systems needed to stabilize dangerously vulnerable fuel rods.

...

Radioactive water has pooled up throughout the Fukushima Dai-ichi plant because

the operator has been forced to rely on makeshift ways of pumping water into the plant – and allowing it to gush out wherever it can – to bring down temperatures and pressure in the reactor cores.

From Denyse DuBrucq patent application 11/750,149 filed May 17, 2007: Titled: "Liquid Nitrogen Enabler – Apparatus."

FIG. 15 is a schematic representation of another embodiment of the present invention used to block flow through breaches in dams, dikes, and the like;

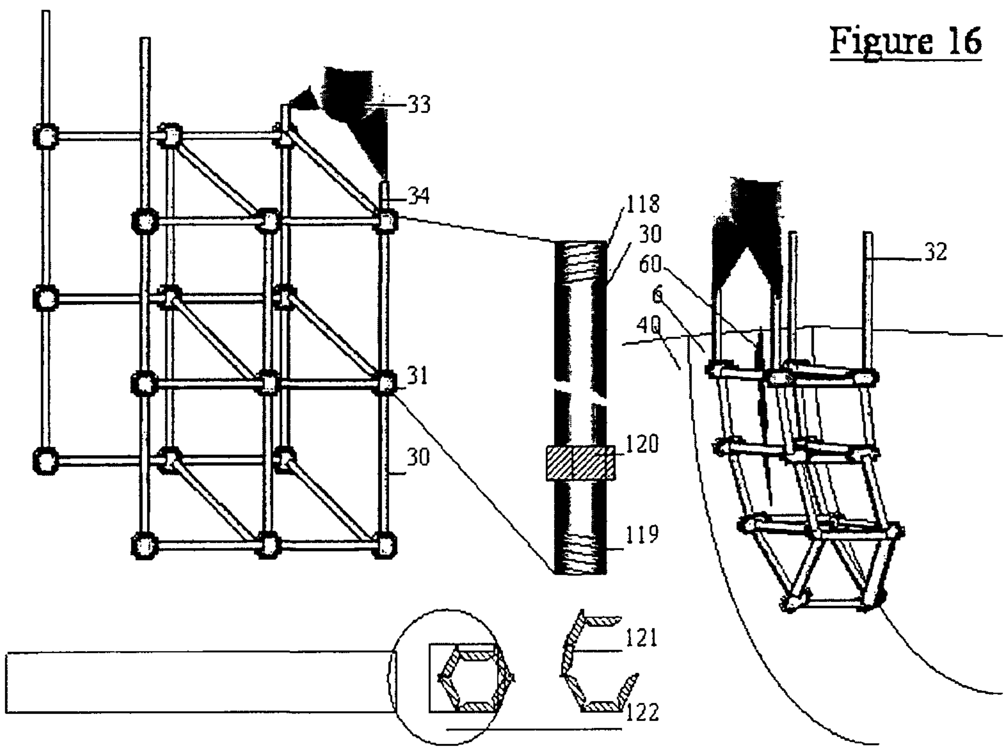
FIG. 16 shows opposite threading of pipes to allow conforming the icing pipes to the dam or dike form to first, stop the flow from a breach, and second allow repair of the breach before melting the resulting ice barrier to water flow, of the embodiment illustrated in FIG. 15.

FIGS. 15 & 16 show means to place a temporary repair on a dam or dike 6 with a hole or breach 60 in its structure holding the water 40 back to prevent flooding downstream. FIG. 15 shows the basic components on a square pattern of pipes 30 held together in a structure with elbows 31. It has a funnel 33 feed for liquid nitrogen 1 which is supplied by a cryo-tank 35 feeding many gallons of liquid nitrogen into the structure via the feeder tubing 34. Nitrogen gas is released from the pipe structure through open exhaust pipes 32. This cooled structure causes the ice 4 to form on the structure freezing the water 40 in the river, stream or reservoir. As ice forms a solid block on the structural pipes, it blocks the flow to the breach in the dam or dike. This returns control of water flow and also allows empty dry, but cold, space for workers to repair the breach while the ice patch is in place. Once the repair is strong enough to hold back the water, liquid nitrogen 1 is no longer fed into the pipe structure. The ice melts and the pipe structure is pulled from the water and taken away.

[Unable to display image][Unable to display image]

FIG. 16 shows a means to conform the pipe structure to the curvature of the dam or dike up-water surface using pipes 30 that are threaded in opposite directions 118 & 119 on the ends of the pipe and a hex-structure 120 turning capability, either fixed 120 or removable 121 so the pipe length can be altered by turning the pipe with a wrench 122. The dam 6 curvature is illustrated showing the conforming pipe structure with the breach 60 clear of the ice structure foreseen with the design of the pipe configuration. During application either configuration can be iced in a place of placid water flow and pulled into the water stream at the breach location.

Figure 16



Another embodiment utilizes on-site moldable elbows 31, which possess undefined angles needed by dimensional changes in the piping. This can be handled in at least two ways. First, the elbows could be molded in place using a low temperature mixture of Woods Metal and Indium to reduce the molding temperature to around 60°C. The flow channels would be formed using Popsicle-like ice bars and t-shaped, x-shaped or hex-shaped outlets per elbow. The outside elbows may have five pipe outlets and the corner elbows may have three x-shaped outlets. Second, a

plastic material capable of tightly holding the threaded areas may be used. Many such materials are used in medical efforts for patient comfort such as foams and gels. These materials would have to retain strength at low temperatures as liquid nitrogen passes through them.

From: Bonaccorso, Amy
To: (b)(6)
Subject: REPLY: Japanese Reactor Events
Date: Tuesday, April 05, 2011 11:01:00 AM

Hello Ms. Fosgitt:

Thank you for contacting us about your ideas. We appreciate suggestions that work toward resolving the situation in Japan; it's reassuring to see how helpful and dedicated private citizens have been in light of this disaster. Unfortunately, we are currently unable to consider each suggestion that comes in.

The Institute of Nuclear Power Operations is, however, accepting some suggestions for analysis. If you'd like to submit something to them for consideration, their email is: inpoercassistance@inpo.org.

Please understand that the NRC has some of the most expert people in the world available to assist the Japanese authorities in whatever way they request. We are fully staffed in all our response teams at this time and working 24-hours a day.

Thank you,

Amy

From: Jennifer Fosgitt [mailto (b)(6)]
Sent: Monday, April 04, 2011 7:01 PM
To: OPA Resource
Subject: Japanese Reactor Events

As I sit watching the news tonight and hear that radioactive water is being dumped directly into the sea, I wonder if there is a better method of cooling/containment.

I am a civil engineer and my business partner, Craig Blue, is a mechanical and civil engineer Shortly after the situation in Japan began, Craig drew up the attached idea on containment utilizing lead pellets and concrete (with additive to control the melting/boiling point of the mix). The drawing shows the use of a conveyor; however a concrete pump would be able to pump the mixture as well (Craig and I have both worked in the heavy construction industry for 20 years). The proposed containment for the mix could be a new fuel tank with the bottom cut flat to fit over the area to be contained and a square opening cut in the top to allow for the mixture to be contained around the area. In addition, secondary containment could be achieved by placing concrete barrier around the area and stabilizing it with earthen berms on the outside. All work could be accomplished utilizing robotic controlled heavy equipment.

I understand that the constraints in the area may be more than what we have considered; however, I wanted to try one more time to forward this idea on to someone that might take a look at it.

Thank you for your consideration,

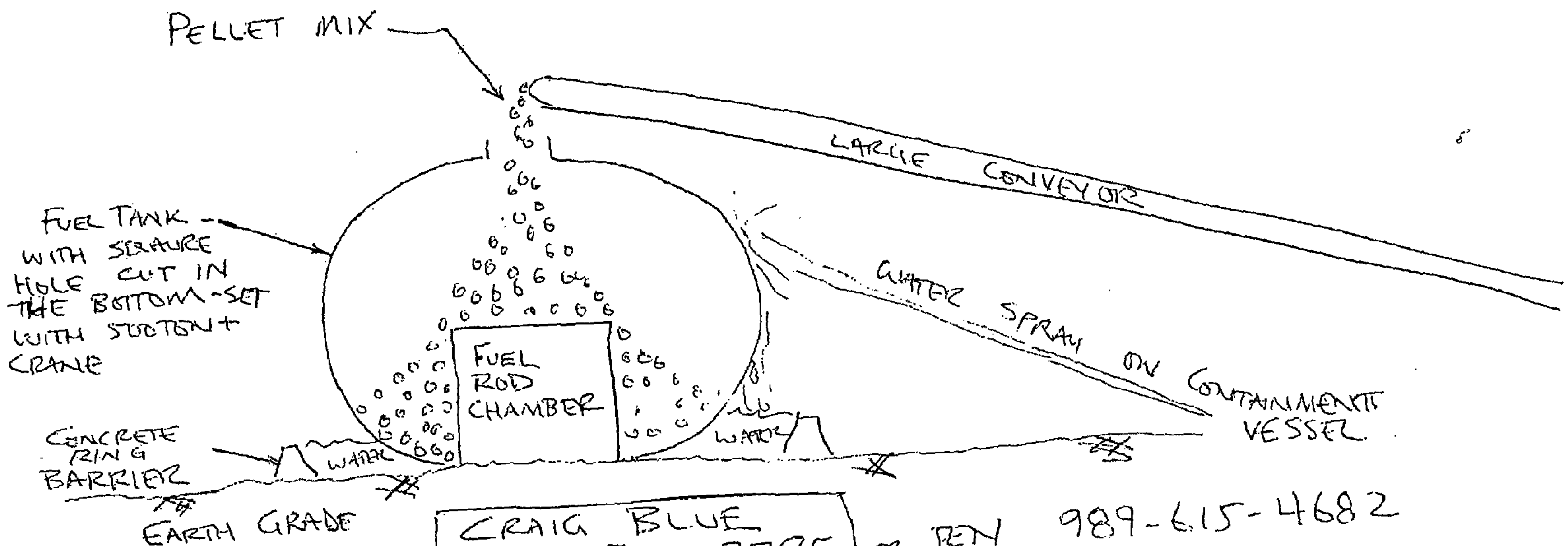
BG/18

Jennifer Fosgitt, PE & Craig Blue

PELLET MIX OF LEAD, IRON ?, AND CERAMIC BEADS

RADIATION CONTAINMENT
SOLUTION 3-16-2011, 700 AM ET

WANT HIGH MELT/BOIL POINT CERAMIC BEADS
THINK 10% LEAD TO 40% LEAD PELLETS
40% TO 80% CERAMIC
0% TO 40% IRON PELLETS



CRAIG BLUE
989-513-7785 or JEN 989-615-4682

	MELT POINT	BOIL POINT
LEAD		
LEAD	621.3°F	3,160°F
IRON	2,802°F	4,960°F
TUNGSTEN	6,150°F	10,700°F

NOTE: CERAMIC BEADS/PELLETS MUST HAVE A HIGH M.P. & B.P. SIMILAR TO TUNGSTEN

Bano, Mahmooda

From: Scott, Michael
Sent: Tuesday, April 05, 2011 5:47 AM
To: 'GardLA@INPO.org'
Subject: Re: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

Hi Lee. If you're coming here we'll be two ships passing in night. I'm leaving tomorrow. But good to hear from you - catch you next time.

Sent from my NRC blackberry
Michael Scott
(b)(6)

----- Original Message -----
From: Gard, Lee A (INPO) <GardLA@INPO.org>
To: Scott, Michael
Sent: Tue Apr 05 05:15:22 2011
Subject: Re: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

Mike - looking Fwd to working with you again after many yrs See you Thursday Lee Gatd

Sent from my iPhone

On Apr 5, 2011, at 2:26 AM, "Scott, Michael" <Michael.Scott@nrc.gov<mailto:Michael.Scott@nrc.gov>> wrote:

I believe that in Japan those are "Ah so" moments. ☺ Glad it's going well.

Mike

From: Hochevar, Albert R. (INPO) [mailto:HochevarAR@INPO.org]
Sent: Tuesday, April 05, 2011 2:16 AM
To: Blamey, Alan; Scott, Michael; Miller, Marie; Giessner, John; Bernhard, Rudolph; john.monniger@nrc.gov<mailto:john.monniger@nrc.gov>; Salay, Michael
Cc: Gard, Lee A (INPO)
Subject: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

AH HA moments occurring on both sides. This is productive.
Al

B6/9

Bano, Mahmooda

From: Scott, Michael
Sent: Tuesday, April 05, 2011 2:32 AM
To: 'Hochevar, Albert R. (INPO)'
Subject: RE: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

Thanks to you. Good to see you again.

Mike

From: Hochevar, Albert R. (INPO) [mailto:HochevarAR@INPO.org]
Sent: Tuesday, April 05, 2011 2:28 AM
To: Scott, Michael
Subject: RE: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

Mike,

Did not have a chance to thank you in person. Safe travels home.

Al

From: Scott, Michael [mailto:Michael.Scott@nrc.gov]
Sent: Tuesday, April 05, 2011 3:26 PM
To: Hochevar, Albert R. (INPO); Blamey, Alan; Miller, Marie; Giessner, John; Bernhard, Rudolph; Salay, Michael
Cc: Gard, Lee A (INPO)
Subject: RE: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

I believe that in Japan those are "Ah so" moments. ☺ Glad it's going well.

Mike

From: Hochevar, Albert R. (INPO) [mailto:HochevarAR@INPO.org]
Sent: Tuesday, April 05, 2011 2:16 AM
To: Blamey, Alan; Scott, Michael; Miller, Marie; Giessner, John; Bernhard, Rudolph; john.monniger@nrc.gov; Salay, Michael
Cc: Gard, Lee A (INPO)
Subject: TEPCO ENGINEER TO ENGINEER TALKS GOING ON RIGHT NOW

AH HA moments occurring on both sides. This is productive.
Al

B6/10

DISCLAIMER:
This e-mail and any of its attachments may contain proprietary INPO or WANO information that is privileged, confidential, or protected by copyright belonging to INPO or WANO. This e-mail is intended solely for the use of the individual or entity for which it is intended. If you are not the intended recipient of this e-mail, any dissemination, distribution, copying, or action taken in relation to the contents of and attachments to this e-mail is contrary to the rights of INPO or WANO and is prohibited. If you are not the intended recipient of this e-mail, please notify the sender immediately by return e-mail and permanently delete the original and any copy or printout of this e-mail and any attachments
Thank you.

Bano, Mahmooda

From: Scott, Michael
Sent: Saturday, April 02, 2011 2:44 AM
To: RST01 Hoc
Cc: Taylor, Robert; Giessner, John; Blamey, Alan; Monninger, John; Sheikh, Abdul; Ali, Syed
Subject: FW: Japan Structural Team Report
Attachments: Japan Structural Team Report.docx

RST:

Please forward the attached structural evaluation for U4 SFP to the consortium for consideration in its work on recommendations for U4 SFP path forward. They have already gotten the reactor building evaluation that is the second half of the attached file.

Mike

-----Original Message-----
From: Ali, Syed
Sent: Saturday, April 02, 2011 2:23 AM
To: Scott, Michael
Cc: Sheikh, Abdul; Case, Michael; Richards, Stuart; Hogan, Rosemary; Holian, Brian; Auluck, Rajender
Subject: Japan Structural Team Report

Mike:

Please see attached Japan Structural Team Report.

Thanks,
Syed and Abdul

B6/11

Issues Addressed by the Structural Team

1. Reviewed imagery and compared with damage assessment of walls and floors provided by TEPCO for structural assessment of the Reactor Building.
2. Provided support for meeting with Japan Police on stability of spent fuel pool.
3. Provided support in the Radiation Task Group meetings for structural related issues. (2:00PM meetings at NISA).
4. Provided support in the Fuel Transfer Task Group meetings for structural related issues. (4:00PM meetings at NISA).
5. Performed structural assessment for flooding the containment (drywell and torus).
6. Prepared structural assessment of the Unit 4 spent fuel pool integrity.
7. Analyzed TEPCO's supplied data and performed calculations to understand and assess water levels in the spent fuel pools and drywell.
8. Participated in daily meetings with TEPCO/NISA.
9. Provided support for developing the CAD model of the damaged structure to be used in the hydrogen explosion assessments.

Unit 4 Spent Fuel Pool- Structural Assessment

Current Status:

1. Steam coming out from the spent fuel pool
2. Water level in the pool is not known.

TEPCO Assessment

a. That there is 5.15 meters (17 feet) of water above the fuel racks. This means that water level is about 2.7 meters (9 feet) below the top of the pool.
b. The concrete floors located at the top and mid height of the spent fuel pool that connect the spent fuel pool walls to the outside reactor building walls are probably damaged. (Source aerial photographs)
c. The reactor building outer perimeter walls above the spent fuel floor are damaged. In addition, one of the reactor building walls adjacent to the spent fuel pool wall is also damaged. (Source aerial photographs)
d. The spent fuel pool walls, floor slab, and support structure below the floor slab are intact.
e. The damaged Unit 4 SFP has adequate safety margin to support full height of water and seismic loads. This conclusion is based on a comparison in change of Unit 4 reactor building geometry, including the damage to perimeter walls and additional water in the reactor cavity area.

NRC Japan Team Assessment

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(b)(5)

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9. [redacted] (b)(5)

Uncertainties and additional questions/issues

1. Damage to exterior walls is known from videos and imagery but the extent of damage to interior walls and floors is not known. TEPCO has provided estimates (or guesses) but no one has been inside the reactor building to provide an accurate estimate of the damage.
2. Design details such as all wall and floor thicknesses, concrete and steel properties, and rebar details are not known to the NRC staff. Staff calculations and judgments are based on assuming properties similar to U.S. plants of similar vintage.
3. There have been some questions on the strength of the damaged structures to support the radiation/shielding structures to be erect to prevent further spread of the radiation. However, these effects can be determined only after the design and configuration of the radiation/shielding structures has been finalized.
4. Accelerations and response spectra of the March 11, 2011, earthquake and their relationship with any future aftershocks are not known. Assessment of the damaged structures to the March 11, 2011, earthquake and any future aftershocks can be made after such information becomes available.

Containment Flooding Assessment

Question:

Can the reactor building structure support additional loads of water due to flooding of primary containment and reactor vessel.

Response:

Item #1: Drywell Flooding

The drywell containment is 1-1/2 inch thick steel plate. The bottom of the drywell steel containment is resting directly on concrete. The upper part of the drywell is enclosed by thick (5-7 feet thick) concrete shield walls. There is approximately 2 inch gap between the drywell and shield walls. The foundation is more than 30 feet thick.

There is no information about the condition of concrete walls or floor after the earthquake/tsunami event. However, it is unlikely that these walls or foundation are severely damaged or cracked. A quick review of the videos or photographs is inconclusive.

Addition of water to flood the drywell containment will impose gravity loads. These loads will be directly transferred to the concrete foundation. The concrete foundation is thick and can support these loads.

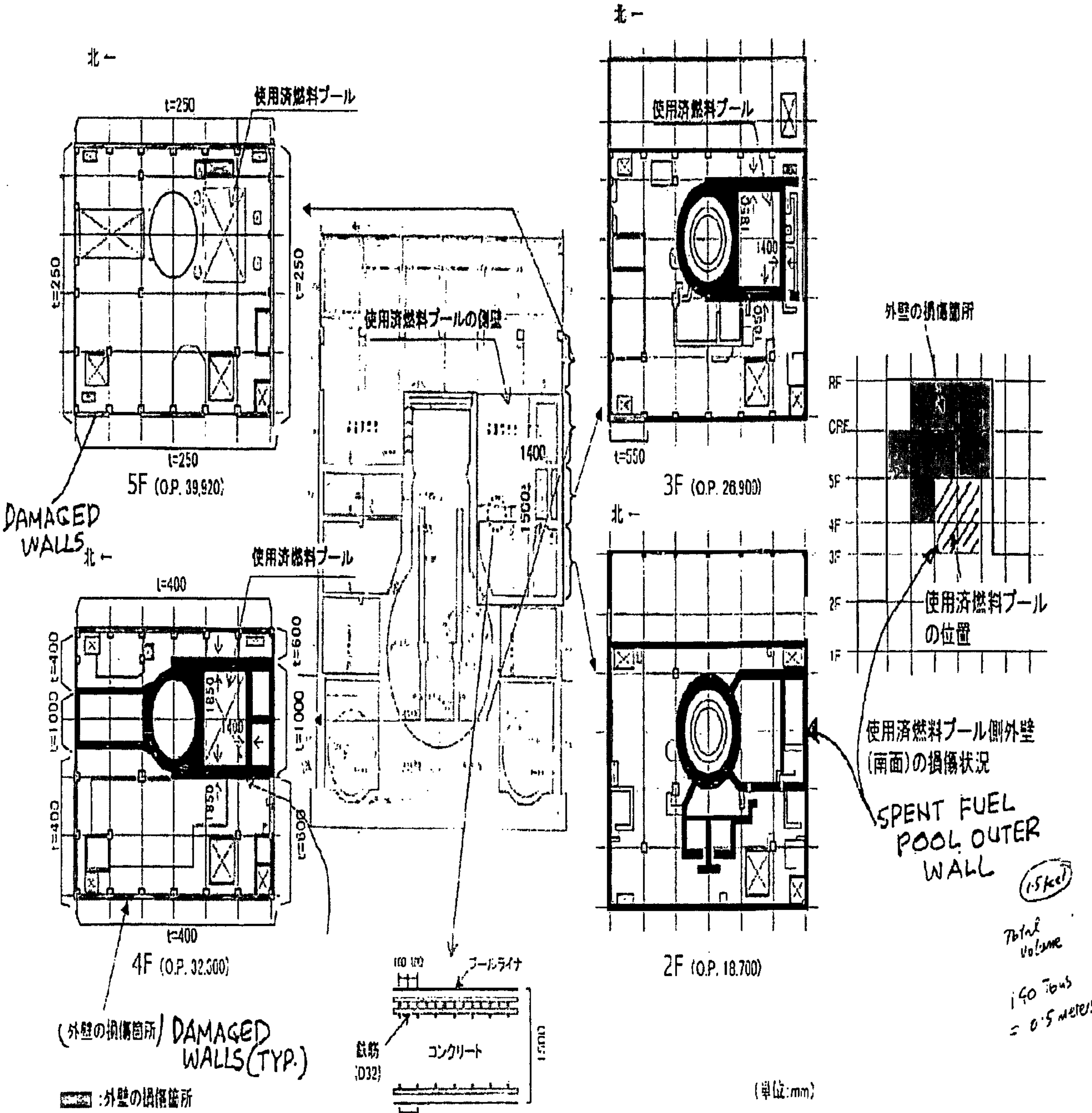
In the unlikely event of a new earthquake while the drywell is flooded, additional horizontal loads will be imposed on the drywell steel. The existing structure has not been analyzed for these loads. However, in the worst case scenario, drywell vessel may deflect 2 inches and come into with the thick concrete shield walls. The shield walls have significant capacity to resist horizontal loads to be imposed by the drywell during this unlikely event. Furthermore, the horizontal ground motions detected during the recent earthquake were about the same as the design basis. Any subsequent earthquake in future during the short time the drywell is flooded is not likely to be of the same magnitude as the March 11, 2011, earthquake.

The reactor vessel is supported on a pedestal inside the drywell. This pedestal is designed for design basis earthquake loads. Once the drywell and reactor vessel are flooded, the horizontal forces transferred to the pedestal are not likely to increase because of the damping effect of the water inside the drywell.

In summary, flooding of drywell and reactor vessel is not likely to compromise their structural integrity.

Item # 2 - Suppression Pool (Torus)

The suppression pool (torus) has a diameter of 29.5 feet and major diameter of 109.9 feet. Bottom half of the torus is full of water during normal plant operations. If the torus is flooded to the top, it will increase gravity loads on the 5/8" to 3/4" thick torus steel and associated supports. During an earthquake, the torus will be subjected to additional horizontal loads due to an increase in total volume of water. However, due to overall rigidity and geometrical configuration and inherent design margins, it is not likely to affect the structural integrity of the torus and associated supports.



参考：福島第一4号機 使用済燃料プールの構造と周辺の損傷状況

UNIT-4 REACTOR BUILDING STRUCTURAL DAMAGE

余震に対する原子炉建屋の検討

1. 目的

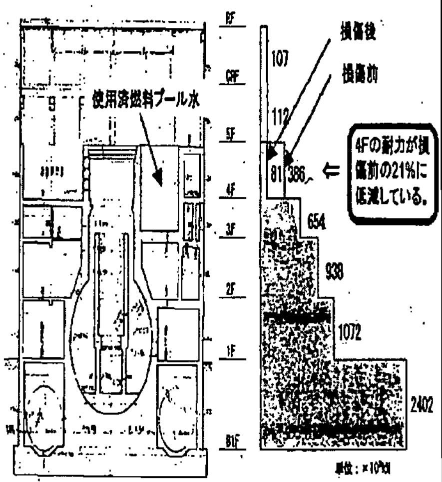
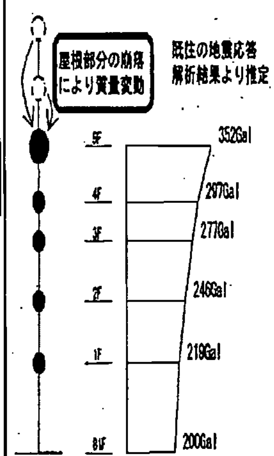
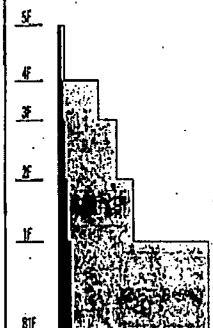
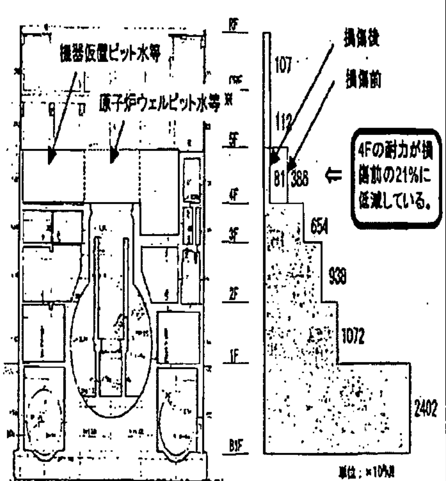
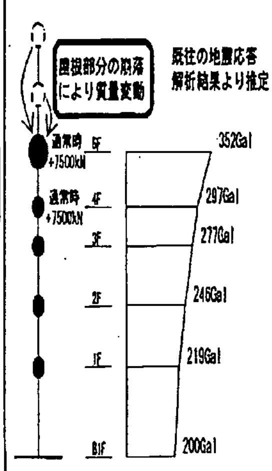
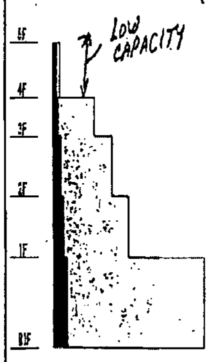
損傷した4号機原子炉建屋の余震に対する検討を実施する。

2. 検討条件

①4号機について、設計の時と同様の"通常時"と、今後冷却材を最大限入れた場合の"満水時"に余震が来た場合の原子炉建屋の構造評価を行う。なお、4号機については定検状態であったため炉心が開放されているので、PCV内には水が入らないと仮定する。

②4階以上の外壁が損傷しているので、ここでは仮に4階以上の全ての外壁の耐力が喪失したと仮定する。

③基礎スラブ上端で200Gal程度の余震が生じたと仮定する。

	損傷前後の建屋の耐力（保有水平耐力）	余震の想定（基礎スラブ上で200Galを想定）	余震に対する検討
4号機 EW方向 通常時 RESULT DESIGN TIME	【保有水平耐力】	【重量仮定】 【応答加速度仮定】	せん断力（×10⁴kN） 保有耐力（×10⁴kN） 余裕度 41 81 2.0 67 654 9.8 97 938 9.7 124 1072 8.6 169 2402 14.2 【余震時の応答せん断力と保有水平耐力の比較】
RESPONSE MEETING CURRENT SITUATION 4号機 EW方向 満水時	※厳密には燃料や汽水分離器などの移動分があるが、ここでは簡便的に水の増量分を2フロアに振り分けて考慮する 【保有水平耐力】	【重量仮定】 【応答加速度仮定】	せん断力（×10⁴kN） 保有耐力（×10⁴kN） 余裕度 44 81 1.8 72 654 9.1 102 938 9.2 129 1072 8.3 174 2402 13.8 【余震時の応答せん断力と保有水平耐力の比較】

From: RST01 Hoc
Sent: Tuesday, April 05, 2011 1:24 AM
To: (b)(6)
Subject: FW: Option B Recommendation Document
Attachments: Option B Recommendations -Combo 0100 4-05 REDLINE.docx

---

From: RST08 Hoc
Sent: Tuesday, April 05, 2011 1:12 AM
To: RST01 Hoc
Subject: Option B Recommendation Document

The attached Option B recommendations reflects conversations on the 11 to 7 shift with Naval Reactors and INPO .

Eva Brown, BWR Systems and Ops Analyst
Reactor Safety Team
Nuclear Regulatory Commission
(301)816-5100

B6/12

(b)(5)

~~1300~~0100 EDT Monday, April ~~04~~05, 2011

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

From: RST01B Hoc
Sent: Tuesday, April 05, 2011 8:57 AM
To: Versluis, Rob
Subject: FW: Industry Comments on Option B Considerations
Attachments: 4-4-11 Industry consortium comments on additional measures.docx

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

From: RST01 Hoc
Sent: Monday, April 04, 2011 10:44 PM
To: RST07 Hoc; RST08 Hoc; RST09 Hoc; Hoc, RST16; RST03 Hoc; RST01B Hoc
Subject: FW: Industry Comments on Option B Considerations

From: Crane, Randall M. (INPO) [mailto:CraneRM@inpo.org]
Sent: Monday, April 04, 2011 10:43 PM
To: RST01 Hoc
Subject: FW: Industry Comments on Option B Considerations

Randall M. Crane, Sr. Evaluator
Equipment Reliability/Materials
Institute of Nuclear Power Operations

CraneRM@INPO.org
770 644-8712 (desk)
(b)(6) (cell)

From: Crane, Randall M. (INPO)
Sent: Monday, April 04, 2011 9:03 PM
To: 'rst01hoc@nrc.gov'
Cc: INPO EmergencyResponseCtr (INPO); INPOERCTech
Subject: Industry Comments on Option B Considerations

RST,

(b)(5)

B6/13

(b)(5)

Randall M. Crane, Sr. Evaluator
Emergency Response Center Technical Coordinator
Equipment Reliability/Materials
Institute of Nuclear Power Operations

CraneRM@INPO.org
INPOERCTech@inpo.org
770 644-8022 (ERC)
770 644-8712 (desk)
(b)(6) (cell)

From: Ruppert, Gregory F. (INPO)
Sent: Monday, April 04, 2011 8:14 PM
To: Crane, Randall M. (INPO)
Subject: option b

(b)(5)

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(b)(5)

(b)(5)

From: RST01 Hoc
Sent: Monday, April 04, 2011 10:44 PM
To: RST07 Hoc; RST08 Hoc; RST09 Hoc; Hoc, RST16; RST03 Hoc; RST01B Hoc
Subject: FW: Industry Comments on Option B Considerations
Attachments: 4-4-11 Industry consortium comments on additional measures.docx

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Sent: Monday, April 04, 2011 10:43 PM
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Institute of Nuclear Power Operations

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RST,

(b)(5)

Randall M. Crane, Sr. Evaluator
Emergency Response Center Technical Coordinator

B6/14

Equipment Reliability/Materials
Institute of Nuclear Power Operations

CraneRM@INPO.org
INPOERCTech@inpo.org
770 644-8022 (ERC)
770 644-8712 (desk)
(b)(6) (cell)

From: Ruppert, Gregory F. (INPO)
Sent: Monday, April 04, 2011 8:14 PM
To: Crane, Randall M. (INPO)
Subject: option b

5

(b)(5)

(b)(5)

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From:	RST01 Hoc
Sent:	Tuesday, April 05, 2011 10:46 AM
To:	(b)(6)
Cc:	FOIA Response.hoc Resource
Subject:	FW: ERC Daily Call Agenda.docx
Attachments:	ERC Daily Call Agenda.docx

From: Reandeau, Michael A. (INPO) [mailto:ReandeauMA@inpo.org] **On Behalf Of** INPOERCTech
Sent: Tuesday, April 05, 2011 10:04 AM
To: RST01 Hoc
Subject: FW: ERC Daily Call Agenda.docx

Brian, agenda for 1100 call today. Please respond to this email letting me know that you received this agenda.

Mike Reandeau
INPO ERC Technical Lead

From: Reandeau, Michael A. (INPO)
Sent: Tuesday, April 05, 2011 10:01 AM
To: INPOERCTech
Subject: ERC Daily Call Agenda.docx

BG/15

4/5/2011

1100 – Technical Refocus Meeting – Led by INPO Tech Lead

(b)(5)

3. If actions are not complete:

   a) Go around to the various parties that have worked on the request to present a brief status.
   b) Conduct a brief brainstorming/additional focus helpful technical input from the attendees: 5-10 minutes (this is valuable to the NRC and participants)
   c) Rescope problem if needed
   d) Determine new actions and responsible parties if applicable.
   e) Determine what the completion time should be; if possible deliver to NRC by 1530
   f) Determine what the product will be (email, paper, etc.)
   g) Is a 1600 phone call necessary? If so, identify:
      I. Who needs to participate?,
      II. Who is the lead of the call and will set it up?,
      III. What is the desired outcome of the call?
4. Adjourn

From:	Weber, Michael
Sent:	Tuesday, April 05, 2011 9:19 AM
To:	Boger, Bruce; McGinty, Tim
Cc:	ET05 Hoc; ET01 Hoc; OST02 HOC; LIA06 Hoc; LIA08 Hoc; Andersen, James; Muessle, Mary
Subject:	HEADS UP - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

Note Mike's interest in understanding (b)(5) (b)(5) Likely to surface on the call this morning at 10.

From: Franovich, Mike
Sent: Tuesday, April 05, 2011 7:31 AM
To: Weber, Michael
Cc: Virgilio, Martin; Coggins, Angela; Wiggins, Jim; Muessle, Mary; Andersen, James; Merzke, Daniel; Evans, Michele; Batkin, Joshua; Hipschman, Thomas; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar, Patrice; Orders, William; Nieh, Ho
Subject: RE: FYI - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

Mike,

Thanks for providing the detailed summary this morning. (b)(5)

(b)(5)

v/r,

Mike Franovich
Technical Assistant for Reactors
Office of Commissioner Ostendorff
301-415-1784

From: Weber, Michael
Sent: Tuesday, April 05, 2011 6:55 AM
To: Batkin, Joshua; Hipschman, Thomas; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar, Patrice; Orders, William; Nieh, Ho; Franovich, Mike
Cc: Virgilio, Martin; Coggins, Angela; Wiggins, Jim; Muessle, Mary; Andersen, James; Merzke, Daniel; Evans, Michele
Subject: FYI - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

Good morning. Josh and I participated in the 4 April Deputies Committee Meeting on Japan. We should receive the official summary of the meeting in a couple days. In the interim, here are the high level results of the meeting for your information. I provided this information to our team in Japan and in the Ops Center for awareness and follow-up, as appropriate.

(b)(5)

B6/16

(b)(5)

Mike

Michael Weber
Deputy Executive Director for Materials, Waste, Research,
State, Tribal, and Compliance Programs
U.S. Nuclear Regulatory Commission

301-415-1705
Mail Stop O16E15

From: RST01 Hoc
Sent: Tuesday, April 05, 2011 10:44 AM
To: RST06 Hoc
Subject: FW: FYI - Ops center and Site Team staffing

From: McGinty, Tim
Sent: Tuesday, April 05, 2011 10:30 AM
To: Hoc, PMT12; RST01 Hoc; LIA06 Hoc
Subject: FW: FYI - Ops center and Site Team staffing

As an FYI

From: Weber, Michael
Sent: Tuesday, April 05, 2011 9:26 AM
To: Boger, Bruce; McGinty, Tim
Subject: FYI - Ops center and Site Team staffing

Looks like you can defer, to some extent, on Marty's planned meeting with the Chairman.

From: Virgilio, Martin
Sent: Tuesday, April 05, 2011 8:55 AM
To: Franovich, Mike
Cc: Evans, Michele; Weber, Michael; Wiggins, Jim; Casto, Chuck; Collins, Elmo; Borchardt, Bill
Subject: Ops center and Site Team staffing

Mike

I am going to be meeting with the Chairman later this week to discuss that very point.

Marty

From: Franovich, Mike
Sent: Tuesday, April 05, 2011 7:31 AM
To: Weber, Michael
Cc: Virgilio, Martin; Coggins, Angela; Wiggins, Jim; Muessle, Mary; Andersen, James; Merzke, Daniel; Evans, Michele; Batkin, Joshua; Hipschman, Thomas; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar, Patrice; Orders, William; Nieh, Ho
Subject: RE: FYI - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

Mike,

Thanks for providing the detailed summary this morning. (b)(5)

(b)(5)

B6/17

v/r,

Mike Franovich
Technical Assistant for Reactors
Office of Commissioner Ostendorff
301-415-1784

From: Weber, Michael
Sent: Tuesday, April 05, 2011 6:55 AM
To: Batkin, Joshua; Hipschman, Thomas; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar, Patrice; Orders, William; Nieh, Ho; Franovich, Mike
Cc: Virgilio, Martin; Coggins, Angela; Wiggins, Jim; Muessle, Mary; Andersen, James; Merzke, Daniel; Evans, Michele
Subject: FYI - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

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(b)(5)

(b)(5)

Mike

Michael Weber
Deputy Executive Director for Materials, Waste, Research,
State, Tribal, and Compliance Programs
U.S. Nuclear Regulatory Commission

301-415-1705
Mail Stop O16E15

Franovich, Mike

From: Franovich, Mike
Sent: Tuesday, April 05, 2011 9:11 AM
To: Virgilio, Martin
Subject: RE: Ops center and Site Team staffing

Thanks Marty. You know I wouldn't be worth my salt as a TA if I didn't ask for instant analysis.

Hope all is well.

Mike

From: Virgilio, Martin
Sent: Tuesday, April 05, 2011 8:55 AM
To: Franovich, Mike
Cc: Evans, Michele; Weber, Michael; Wiggins, Jim; Casto, Chuck; Collins, Elmo; Borchardt, Bill
Subject: Ops center and Site Team staffing

Mike

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Marty

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Sent: Tuesday, April 05, 2011 7:31 AM
To: Weber, Michael
Cc: Virgilio, Martin; Coggins, Angela; Wiggins, Jim; Muessle, Mary; Andersen, James; Merzke, Daniel; Evans, Michele; Batkin, Joshua; Hipschman, Thomas; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar, Patrice; Orders, William; Nieh, Ho
Subject: RE: FYI - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

Mike,

Thanks for providing the detailed summary this morning. (b)(5)

(b)(5)

v/r,

Mike Franovich
Technical Assistant for Reactors
Office of Commissioner Ostendorff
301-415-1784

From: Weber, Michael
Sent: Tuesday, April 05, 2011 6:55 AM
To: Batkin, Joshua; Hipschman, Thomas; Sharkey, Jeffry; Castleman, Patrick; Sosa, Belkys; Snodderly, Michael; Bubar,

36/18

Patrice; Orders, William; Nieh, Ho; Franovich, Mike
Cc: Virgilio, Martin; Coggins, Angela; Wiggins, Jim; Muessle, Mary; Andersen, James; Merzke, Daniel; Evans, Michele
Subject: FYI - SUMMARY OF DEPUTIES COMMITTEE MEETING 4 APRIL 2011

Good morning. Josh and I participated in the 4 April Deputies Committee Meeting on Japan. We should receive the official summary of the meeting in a couple days. In the interim, here are the high level results of the meeting for your information. I provided this information to our team in Japan and in the Ops Center for awareness and follow-up, as appropriate.

(b)(5)

(b)(5)

Mike

Michael Weber
Deputy Executive Director for Materials, Waste, Research,
State, Tribal, and Compliance Programs
U.S. Nuclear Regulatory Commission

301-415-1705
Mail Stop O16E15

Tracking:

Schaperow, Jason

From: Schaperow, Jason
Sent: Wednesday, April 06, 2011 4:16 PM
To: Tinkler, Charles
Subject: FW: NRC dose estimates (Japan response)
Attachments: 26 March 2011 NARAC source term 3 Fukushima Units_Summary_Data.xlsx; Discussion on basis of revised NARAC source term.doc

I was thinking of sending the following reply to the Ops Center. Does it look O.K. to you?

(b)(5)

Jason Schaperow"

From: PMT02 Hoc
Sent: Tuesday, April 05, 2011 1:00 PM
To: Tinkler, Charles; Schaperow, Jason; Lee, Richard
Cc: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12; FOIA Response.hoc Resource
Subject: FW: NRC dose estimates (Japan response)

Charlie and Jason,

Attached is a spreadsheet that lists the radionuclide releases from Units 1, 2 and 3. The values were based on assumptions in the attached word file, as discussed with other Federal agency representatives.

Tony
PMT NRC Operations Center
301-816-5100

From: PMT02 Hoc
Sent: Saturday, March 26, 2011 4:47 PM
To: 'Fetter, Steve'
Cc: PMT02 Hoc; narac@llnl.gov; cmht@nnsa.doe.gov; FOIA Response.hoc Resource; PMT09 Hoc; Hoc, PMT12; PMT11 Hoc
Subject: RE: NRC dose estimates (Japan response)

Dr. Fetter,

Attached is a spreadsheet with the 3-unit breakdown of the total releases provided to NARAC for their use in the plausible realistic case (PRC version 3).

(b)(5)

If you have questions concerning this spreadsheet, please do not hesitate to contact me.

Sincerely,

BG/19

Steve LaVie, Radiological Assistant Assessment Director
USNRC Protective Measures Team
301-816-5100

From: Fetter, Steve [mailto: (b)(6)]
Sent: Saturday, March 26, 2011 11:51 AM
To: PMT11 Hoc; narac@llnl.gov; cmht@nnsa.doe.gov
Cc: PMT02 Hoc; Hoc, PMT12
Subject: RE: NRC dose estimates (Japan response)
Importance: High

NRC,

(b)(5)

--Steve

Steve Fetter
Assistant Director at-large
Office of Science and Technology Policy
Executive Office of the President
(b)(6)

From: PMT11 Hoc [mailto:PMT11.Hoc@nrc.gov]
Sent: Thursday, March 24, 2011 5:36 PM
To: narac@llnl.gov; cmht@nnsa.doe.gov; Fetter, Steve
Cc: PMT02 Hoc; Hoc, PMT12
Subject: NRC dose estimates (Japan response)

Attn: Ken Foster, NARAC

--- THIS IS A MONITORING OPERATION FOR THE FUKUSHIMA REACTOR IN JAPAN ---

This is a MONITORING OPERATION FOR THE JAPAN EARTHQUAKE TSUNAMI AFTERMATH.

Attached is a spreadsheet that summarizes the projected doses from the three reactors for various downwind distances.

(b)(5)

Please call if more clarification is needed at: 301-816-5419 (Protective Measures Team)

Please reply to this email to acknowledge receipt.

This information should not be released at this time.

--- THIS IS A MONITORING OPERATION FOR THE FUKUSHIMA REACTOR IN JAPAN ---

(b)(5)

(b)(5)

(b)(5)

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

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

(b)(5)

Dave Herman

Naval Reactors

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Wed 4/6/2011 5:32 PM
To: RST09 Hoc; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc; Caponiti DOE; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen; EPRI Event Response Center; GE Hitachi NucResponseTeam; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent; INPO ERC; INPOERCTECH; (b)(6); Joel Pero (Bettis); Johne Kelly; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL); Richard Stark; Rob Versluis; Hoc, RST16; RST01B Hoc; RST03 Hoc; RST07 Hoc; Russell Morales; Sal Golub; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Subject: FW: Final SFP Assessment Document

BG/20

FYI

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

For Final Review,

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

Thanks,

Mike

Mike Brown

Reactor Safety Team

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

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From: RST01 Hoc
Sent: Wednesday, April 06, 2011 10:59 AM
To: (b)(6)
Subject: FW: See attached docs for 1100 call
Attachments: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

---

From: Jaquin, Michael C. (INPO) [mailto:JaquinMC@inpo.org]
Sent: Wednesday, April 06, 2011 10:08 AM
To: RST01 Hoc
Cc: INPOERCTech
Subject: See attached docs for 1100 call

(b)(4)

See attached "one-page" docs

Mike Jaquin
INPO ERC Tech lead

B6/21

(b)(4)

(b)(4)

From:	Reandeau, Michael A. (INPO) <ReandeauMA@inpo.org> on behalf of INPOERCTech <inpoerctech@inpo.org>
Sent:	Wednesday, April 06, 2011 2:50 PM
To:	RST01 Hoc
Cc:	INPOERCTech
Subject:	FW: ACTION ITEM TST 152
Attachments:	fixatives.pdf; ATT00002..txt; MSDS-CC-Wet.pdf; DataSheetCCWet.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

(b)(4)

Mike Reandeau

INPO ERC Technical Lead

From: Ryan, Kevin P. (INPO)
Sent: Wednesday, April 06, 2011 10:05 AM
To: INPOERCTech
Subject: FW: ACTION ITEM TST 152

BG/22

From: Nestel, Bill A (INPO)
Sent: Wednesday, April 06, 2011 9:54 AM
To: Ryan, Kevin P. (INPO)
Subject: ACTION ITEM TST 152

(b)(4)

A MIME attachment of type <application/octet-stream> was removed here
by a drop-attachments-by-name filter rule on the host
<maill.nrc.gov>.

MATERIAL SAFETY DATA SHEET

Trade Name: CC Wet

Section I – General Information:

Item Name: CC Wet

Manufactured by: InstaCote, INC.
160 C Lavoy Rd.
Erie, MI 48133
Phone (734) 847-5260 Fax (743) 847-9008
Emergency Phone (800) 359-2783

Date MSDS Prepared: February 19, 2001
Last Review Date: February 19, 2001
MSDS Preparer's Name: Charles J. Smith Chemist/ M.S.
Product Description: Water Base Anti-dusting Media
Multiple Parts (Yes/No) No
Description of Related Comp. NA

Section II – Ingredient/Identity Information:

This product is considered to be non-hazardous under OSHA Hazard Communication Standard 29.CFR 1910.1200

Distilled Water
Glycerin
Monosaccharide
Non-ionic Surfactant
Non-halogenated yellow dye

HMIS Codes
Health 1 Fire 1 Reactivity 1 Special None
Scale 4 = extreme, 3 = high, 2 = moderate, 1 = insignificant

Section III – Physical/Chemical Properties:

Appearance: Amber Liquid pH: 8.5
Specific Gravity: 1.05 Viscosity: 31 cps.

Vapor Density: > than air
Coating V.O.C.: 0.00 lbs./gal
Coating V.O.C.: 0.0g/l
Water Solubility: 100%
Boiling Point: 214°F

Evaporation Rate <Ether
MaterialV.O.C.:0.0 lbs./gal
Material V.O.C.: 0g/l
Odor: None

Section IV – Fire and Explosion Hazard Data:

Flash Point: Water Base, NA
Flammable Limits: Upper – N/A Lower: - N/A
Extinguishing Media: As for surrounding fire. This product is a very low fire hazard. This product is a water-based material and while it may not burn, it can splatter and froth. Do not spray water into hot material, use water fog to cool surrounding fire.

Section V – Reactivity Data:

Stability (Y/N) Y
Conditions to Avoid: None Known
Materials to Avoid: None Known
Hazardous Decomposition Products: Carbon-monoxide,-dioxide

Section VI – Health Hazard Data:

Primary Routes of Exposure: Skin & Eye Contact, Ingestion and Inhalation

Skin & Eye Contact: Prolonged and repeated skin contact may cause irritation and burns.

Ingestion: Ingesting large volumes of product may cause CNS depression.

Inhalation: Extended periods of breathing atomized vapors may cause CNS depression.

Section VII – Emergency First Aid:

Eye Contact: Flush eyes with a large amount of water for at least 15 minutes. Consult a physician if irritation persists.

Skin Contact: Wash area with soap and water.

Ingestion: Do not induce vomiting. Get immediate medical attention.

Inhalation: Move individual to fresh air. Consult a physician if irritation persist or breath becomes labored.

Section VIII – Precautions for Safe Handling, Storage and Use:

Personal Protective Equipment for Routine Use:

Respiratory Protection: Respirators are not routinely required when using this product indoors or outdoors. In any case when excessive mist and atomization of product occurs such as high pressure air spraying, use NIOSH/MSHA approved full or half face respirator with dust cartridge.

Gloves: Gloves are not normally required for routine use. If an individual is known to have skin susceptible to irritation by other chemicals, this individual should wear butyl or nitrile type gloves.

Eye Protection: Safety goggles or glasses with side shields should always be worn.

Work Practices: Do not eat drink or smoke while applying this product. Wash hands immediately upon leaving the work site. Treat this product caution as you would any other chemical.

Spill/Release Procedures: Large spills can be vacuumed up. Small spills can be treated with absorbent clay, earth sand or other material, shoveled into a DOT approved container and disposed of according to all local, state and Federal regulations.

Waste Disposal Procedure: Incinerated or dispose of in accordance with local, state and Federal regulations.

Storage and Handling: Store product in a dry environment. Protect product from extremes in temperatures.

Other Health Hazard Precautions: None

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TECHNICAL DATE SHEET
CC WET
March 8, 2002

InstaCote, Inc. TECHNICAL DATA

Contamination Control

CC Wet

Description: CC Wet is an aqueous based product designed for application to surfaces contaminated with beryllium, asbestos, radiological nucleotides (plutonium, uranium) or any other toxic or problematic particulate. CC Wet wets, penetrates and causes the particles to adhere to the surface and not become airborne. CC Wet creeps into all cracks and crevices, never dries out and will not re-release the particulate matter. CC Wet contains an active UV die, which is highly visible under black light to map coverage. CC Wet is non-toxic, non-hazardous, non-flammable and will not support biological growth.

Application: CC Wet can be applied using a garden canister spray unit with fan tip. The very fine mist has virtually no impingement energy and will not cause contaminate particles to become airborne. Fan tip will produce a mist pattern 4'-6' wide, and one gallon CC Wet will cover 1250 – 1500 ft^2.

Physical Properties:

State:	Liquid	Color:	Iridescent Yellow
Odor:	Mild Citrus	VOC:	>0.001 #/gal
Boiling Point:	214°F	Freezing Point:	28°F
Sp. Gr.:	1.05	Wt/gal:	8.77 lbs/gal
Refractive Index:	13.5 Brix Min.	PH:	8.4 – 9.2
Viscosity:	38 cps	Refractive Index:	13.5 Brix (min.)
Vapor Pressure:	24 mmHg @ 25°C	Vapor Density:	0.6mg/cm @ 20°C

From: RMTPACTSU_ELNRC <RMTPACTSU_ELNRC@ofda.gov>
Sent: Wednesday, April 06, 2011 3:46 PM
To: inpoercassistance@inpo.org
Cc: LIA01 Hoc; LIA11 Hoc; LIA02 Hoc; LIA03 Hoc; RMTPACTSU_ELC; RMTPACTSU_ELNRC
Subject: ACTION -- FW: Japan Cooling Water
Attachments: RE: CONFIDENTIAL - Chemical Treatment - Emergency Salt Water Reactor Cooling - Part IV; RE: CONFIDENTIAL - Chemical Treatment - Emergency Salt Water Reactor Cooling - Part II; CONFIDENTIAL - Chemical Treatment - Emergency Salt Water Reactor Cooling ; pwprofile.doc; PROTO1.doc; RSTM Titrtion.doc; RSTMD.DOC; PK LaQue Corrosion Analysis.xls; CHEMREAC.DOC

Please refer to the email string below for an offer of support/assistance for your review/evaluation. Thanks in advance for your help!

From: RMTPACTSU_ELC
Sent: Wednesday, April 06, 2011 3:39 PM
To: RMTPACTSU_ELNRC
Subject: FW: Japan Cooling Water

For your review.

From: Brendel, Brian D [mailto:BrendelBD@state.gov]
Sent: Tuesday, April 05, 2011 11:01 AM
To: RMTPACTSU_RM; RMTPACTSU_AC
Subject: FW: Japan Cooling Water
Importance: High

Dear RMT,

(b)(5)

Brian

SBU
This email is UNCLASSIFIED.

From: Todd Eden [mailto:(b)(6)
Sent: Tuesday, April 05, 2011 10:42 AM
To: Brendel, Brian D
Cc: bill@billgang.com; JSBland@CHESNUC.com; doug_smith@mccain.senate.gov; 'Alan Sparks'; 'Bill Hall'; Brendel, Brian D; 'Diana Edwards'; 'Information Systems Laboratories '(b)(6); lmann@4liberty.biz;

BG/23

mike.davidson@TIDEH2O.NET; 'Nathan H. Miller'; 'Russ Thomas'; JapanEmergencyUSC; 'Fred Porter - Navy NRC'; 'Jim Eden'
Subject: RE: Japan Cooling Water
Importance: High

Mr. Brendel,

I've answered your questions below for your convenience. Thank you for your assistance.

Time - We are radiating our ocean, our fish.

> Lets get Nuclear chemists & physicists on the phone.
> We can explain what we have and then support them with the documentation.
> I've attached some technical information for your perusal.

Kindest Regards,

Todd Eden

(b)(6)

(b)(6) | (b)(6) | Skype ToddEden | IM (b)(6)

From: Brendel, Brian D [mailto:BrendelBD@state.gov]
Sent: Tuesday, April 05, 2011 6:22 AM
To: Todd Eden
Subject: RE: Japan

Mr Eden,

Thank you for your information thus far.
What are you offering exactly? A gift of services, advise etc?

> We are offering a product, at fee, to reduce the discharge of radioactive water into the environment.
> The product is a blend of chemistry that is added to water to make it more usable over and over again, far beyond the characteristics of any chemicals offered by the major chemical companies.
> The product costs is equivalent to the cost of conventional water treatment chemistry.

Do you have representatives in Japan?

> No. The chemistry is currently being used with acid to clean pipelines on Navy ships.
> The cleaning contract with the Navy has been in place for over 15 years I believe.
> The chemistry applied to process water treatment has been in use for 17 years.

What are you patent numbers so that Japanese authorities can reference them?

> Patent # 5451335 1:1 soap compositions of acids and amines or ammonia useful in removal and prevention of scale
> Patent # 5322635 Soap compositions of carboxylic acids and amines useful in removal and prevention of scale
> Patent # 4797220 Descaling and anti-oxidizing composition and process therefore: Granted in 1988, now expired, but formula still valid
> Patent # 5609692 Method or removing chloride ion or a compound thereof from a surface contaminated therewith

I have done a patent search for Gemma Companies and found no patents. Perhaps I made a mistake in my search?

My apologies. The Patents are registered with herc Products Incorporated

When have you applied this technology in the past?

I have a long list of applications, Chrysler, Los Alamos National Labs, Xerox, Digital Equipment Corporation. I've worked with industry experts; Marley Cooling Towers, Layne Western, National Association of Corrosion Engineers, Cooling Tower Institute, Thomas Laronge, Paul Puckorious, Chuck and Tom Brandvold (Association of Water Technologists), Enerco, and more.

I am happy to get them all involved.

Do you have references from within the nuclear industry or academic community?

Academic and industry standards, yes.

Nuclear, no, though I have several in the industry copied hereto that are collaborating with us.

You mentioned in your original voicemail that this technology was also tested. Do you have test results?

Yes, I have certifications to industry standards of the performance of the chemistry. I can provide these electronically.

Some are attached.

Please understand that we have received many offers from U.S. companies that wish to assist Japan, who also has many resources. Much more information is needed to make an offer stand out.

NOBODY HAS CHEMISTRY LIKE THIS.
TIME IS ESSENTIAL – WE ARE RADIATING OUR OCEANS AND FOOD SOURCE.
We don't have time.
Lets get Nuclear chemists & physicists on the phone.
We can explain what we have and then support them with the documentation.
I've attached some information for your perusal.

Brian

SBU
This email is UNCLASSIFIED.

From: Todd Eden [mailt (b)(6)
Sent: Monday, April 04, 2011 11:29 PM
To: Brendel, Brian D
Subject: RE: Japan

Dear Mr. Brendel,

Thank you for your call this morning.

Gemma Companies owns United States patents for a certain chemistry that we believe will assist Japanese authorities in their attempts to cool the nuclear fuel rods at the Fukushima Da-ichi plant.

This chemistry increases the re-usability of water so that the amount of water needed to cool the rods can be reduced, dramatically, thus decreasing the amount of water and radioactive ions being discharged into the Pacific Ocean. We estimate that our chemical blend will reduce the amount of water use at the plant by more than 70%.

Our blend of chemistry can be obtained in Asia, mixed in a tanker and applied to the reactor cooling water. The chemicals are non-hazardous, non-toxic, and near biodegradable. They consist of Hydroxy Acetic Acid, TEA and SXS. The chemistry is applied at the rate of 6 ppm neat product to 100 ppm total hardness as CaCo3.

We attach with this letter a diagram of the chemical reaction and request that you put us in contact with the proper decision making authorities.

Respectfully,

Todd Eden

(b)(6) | Skype ToddEden | IM (b)(6) 6

From: Brendel, Brian D [mailto:BrendelBD@state.gov]
Sent: Monday, April 04, 2011 8:51 AM
To: toddeden1@gmail.com
Subject: Japan

.....
Brian Brendel
Department of State
EAP / Japan Desk
Economics - Trade Policy Officer
BrendelBD@state.gov
Office: 202.736.7050
Cell: (b)(6) 6

SBU
This email is UNCLASSIFIED.

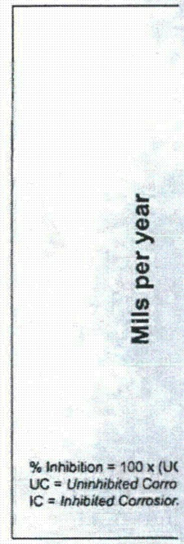
316 Stainless Steel
6 hours exposure
Static or stirred?

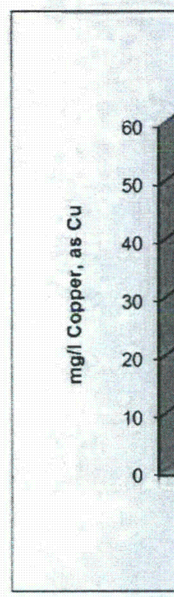
Corrosion Inhibition Analysis

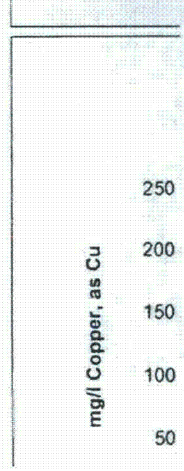
LaQue Corrosion Services
Wrightsville Beach, NC
4-Apr-97

A	12.5% Pipe Klean	50.6
C	10.89% Muriatic Acid	58.4
B	20% Pipe Klean	59.1
D	17.43% Muriatic Acid	76.6

Hrs	Cu, mg/l 10% HCl		10% HCl + 3% C360
0		0	0
6		20	3.5
24		52.5	16
	Cu, mg/l 10% HCl		10% HCl + 3% C360
0		0	0
29		107.5	13.5
293		27500	218







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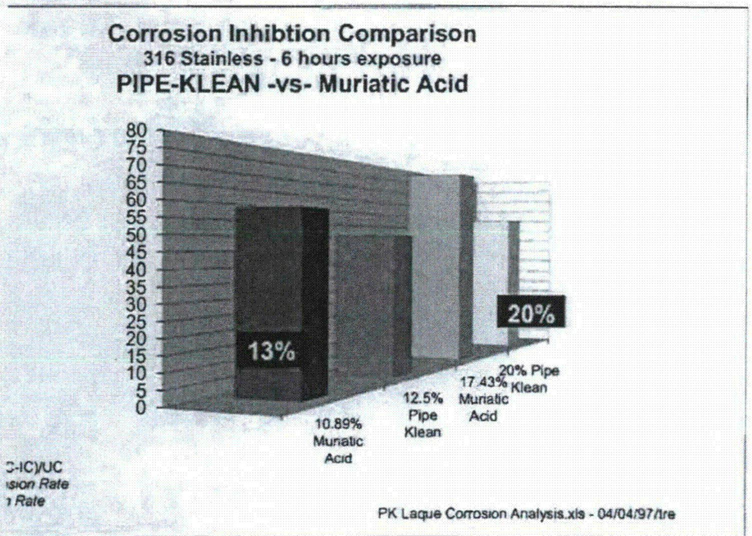
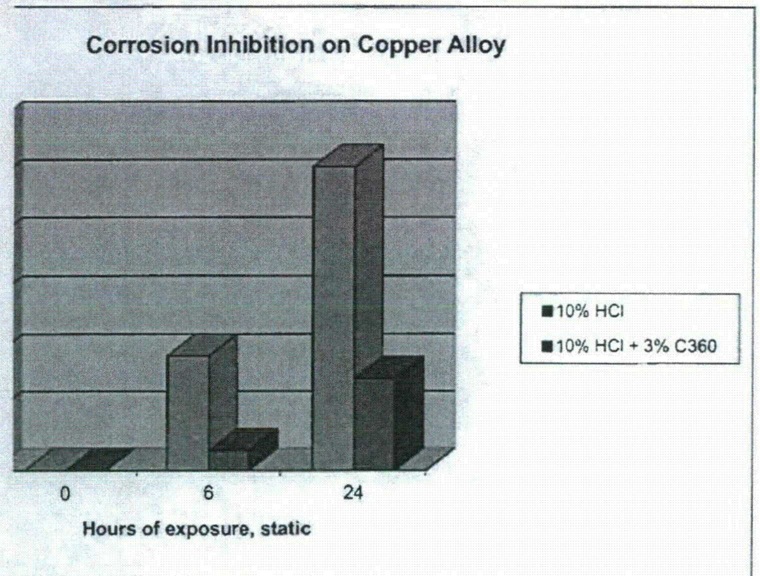
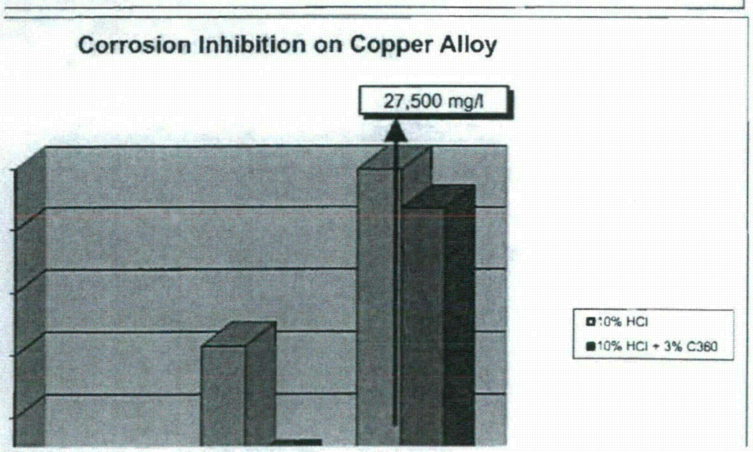
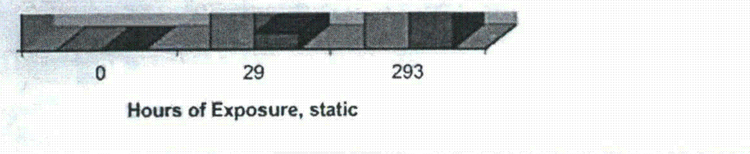

Corrosion Inhibtion Comparison
316 Stainless - 6 hours exposure
PIPE-KLEAN -vs- Muriatic Acid
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
13%
20%
10.89% Muriatic Acid
12.5% Pipe Klean
17.43% Muriatic Acid
20% Pipe Klean
PK Laque Corrosion Analysis.xls - 04/04/97/tre


Corrosion Inhibition on Copper Alloy
10% HCl
10% HCl + 3% C360
0
6
24
Hours of exposure, static


Corrosion Inhibition on Copper Alloy
27,500 mg/l
10% HCl
10% HCl + 3% C360


0
29
293
Hours of Exposure, static

Attachment PROTO1.doc(17920 bytes) cannot be converted to PDF format.

Attachment CHEMREAC.DOC(16384 bytes) cannot be converted to PDF format.

COMPOUND 360 RESIDUAL TESTING STUDIES

THE DEVELOPMENT OF

"RSTM"
(RESIDUAL SOLUBILITY TEST METHOD)

By: Todd R. Eden, Director, Process Water Division
Jerome H. Ludwig, Executive Vice President, Technical Director
Tim Miller, Laboratory Technician

September 19, 2011

PREFACE:

The following analyses were made in an effort to develop, qualify and quantify a method for evaluating residual H.E.R.C. Compound 360 used in water treatment formulas. H.E.R.C. Compound 360 functions as a scale inhibitor and descaler while providing two corrosion inhibitor components of three for the control of open, evaporative cooling water treatment systems. The method required ease of application for field use, accuracy, and quantitative analyses.

The functionality of Compound 360 is multiple where the initial functionality is scale and corrosion product control and/or removal and when supplemented with phosphate provide adequate corrosion control. Identifying residual C360, the scale inhibitor, descaler and two of the three components necessary for prudent corrosion control are presumed present. The third component of the corrosion control package, phosphate, is an additional test method required in the field.

COMPOUND 360 FUNCTIONALITY:

The scale inhibitor and descaler chemicals in Compound 360 are consumed by hardness salts and corrosion products (oxides). Furthermore, microbes can also degrade some of the chemicals. As the chemicals are consumed chemical needs to be replaced. When degraded, biocides are necessary to alleviate the problem and chemical adjustment must then be made. Without a definitive means to determine the residual chemical we do not know if the system is maintaining scale adequately or if microbes are degrading the chemistry.

For the past many years we have relied on pH, alkalinity and hardness ratios to determine if the product is performing. These readings can be misleading because of a multitude reasons. For example, softened water has no hardness or carbonate alkalinity (versus bicarbonate alkalinity which is not scale forming), therefore pH, alkalinity and hardness ratios cannot be used in softened water conditions. Usually, when microbes degrade the chemistry, pH and alkalinity can remain low however deposition can occur lowering hardness ratios, pH and alkalinity. While all the readings except hardness ratios indicated the system was in control, it actually wasn't and the potential for system failure existed.

Lack of residual chemicals can cause system failures which could result in a multitude of problems including plant shutdown, production failures and downtime. Additional concerns are presented when dealing with hospitals, power plants, fuel production facilities, etc., wherein a shutdown could be both dangerous to the welfare and life of the ill or significantly expensive in the case of plant shutdown or simply the lack of sufficient cooling.

STUDIES

A multitude of studies were made in an effort to challenge the method ultimately established.

STUDY I - THYMOLPHTHALEIN INDICATOR

Predicated on previous research on the development of ORP Patent, we learned the chemistry had limitations on generating buffered acid at a pH beyond 8.8 to 9.0 and that the chemistry was temperature dependent. Based on this we decided to consider a pH indicator which would change color at pH 8.8 - 9.0.

This was a very basic test that required the addition of the indicator to a water sample. As the water sample received added NaOH, by calculated volume, the pH was observed. NaOH was added to a pH of 9.0 and 10.0. The results from this study revealed the following.

1. The color change was directly related to pH.
2. The color definition was not definitive enough.

3. This was not a quantitative measurement.
4. Copper effected the color. (As would probably iron)
5. The color indicator did reveal the chemicals ability to generate acid at a pH above 8.8 and 9.0. The pH and color density were both reduced with time and temperature increase which affects the interpretations due to the functionality of the buffered acid.
6. This appears to be a good demonstration on the generation of buffered acid by Compound 360.

STUDY II - IN VARIOUS WATER TYPES, WHAT IS BEING TITRATED WITH THE COLOR INDICATOR ?

SYSTEM WATER SAMPLE	1A	1B	2C	3A	3B	4A	5A	6A	6B
pH	7.8	7.8	7.6	8.5	8.2	7.4	8.0	8.2	8.2
Ttl. Hardness	1100	1900	2800	2400	1950	500	1050	1200	1450
M. Alkalinity	240	410	370	390	410	140	280	220	240
A. mls 0.1N NaOH to pH 9.0	0.4	1.0	1.0	0.5	0.75	0.4	0.7	0.5	0.7
B. mls 0.1N NaOH to pH 9.0 with 1% 1:1 soap added.	4.4	5.1	5.0	4.5	4.8	4.4	4.8	4.5	4.7
0.1N NaOH difference - A-B	**4.0**	**4.1**	**4.0**	**4.0**	**4.05**	**4.0**	**4.1**	**4.0**	**4.0**

This study revealed that the 1:1 soap of Compound 360 was the largest portion of materials in water that was being titrated with NaOH to a pH of 9.0, **independent of hardness and alkalinity.** The evaluation quantitatively determined the 1:1 soap addition in various water samples which were obtained from open evaporative cooling systems that have been on Compound 360 treatment formulas.

STUDY III - EVALUATE C360 EFFECT TO LOWER pH ON VARIOUS WATER SAMPLES

Three samples of water were used which came from systems treated with C360 formulas. The pH of each sample was adjusted to 10 units. Added C360 was made to compare C360 consumption to specific pH units.

SAMPLE	mls C360 from pH 10-9	mls C360 from pH 9-8	mls C360 from pH 8-7	M Alkalinity, ppm	Total Hardness, ppm
6A	285	100	70	220	1200
3B	360	120	70	410	1950
1B	190	65	50	410	1900
Distilled - Conditioned	100	80	60	-	-
Distilled - Conditioned	100	60	30	-	-
Distilled	80	70	40	-	-
Tap - Conditioned	80	26	27	-	-
Tap - Conditioned	88	36	36	-	-
Tap	100	35	30	120	200

CONDITIONED - Hard boil water for 10 minutes, stir overnight.

Distilled Conditioned Water formed no precipitate. Tap Conditioned formed precipitate. In some cases we observed decreasing pH units over time.

STUDY IV - pH SUPPRESSION

[redacted]

(b)(5)

[redacted]

(b)(5)

[redacted]

(b)(5)

[redacted]

(b)(5)

RESIDUAL SOLUBILITY TEST METHOD (RSTM)

(Buffered acidity 0 - 500 mg/l)

MODEL RSTM-1		ORDER CODE 6200 - RSTM
QUANTITY	**CONTENTS**	**CODE**
1 ea.	Directions	RSTMD
1 ea.	Graduated Cylinder	GC 25
1 ea.	Mixing Vial, Flask	SYR10
1 ea.	Sodium Hydroxide Sol. 0.02N (N/50)	NAOH 0.02 1= 1
1 ea.	Sodium Hydroxide Sol. 0.2N	NAOH 0.2 1=10

ADDITIONAL APPARATUS REQUIRED

1. Temperature compensated pH meter. Range 0-14 units.
2. Distilled water.

PREPARATIONS

1. Calibrate pH meter and compensate for temperature.

PROCEDURES

1. Fill graduated cylinder to the 25 mL line, exactly, with water sample water.
2. Transfer solution to clean mixing vial.
3. Insert temperature compensated pH probe into water sample. (pH must read less than 8.8 or 9.0)
4. Add reagent to water sample, note which reagent and count drops.
   a. Add drops until designated pH (<8.8* or 9.0*) is achieved.
   **(A lower pH endpoint increases cleaning rate, 9.0 pH is highest pH tolerable)*
5. Insure which reagent was used.
7. Each drop added represents either 1 ppm (0.02 - N/50 reagent) or 10 ppm (0.20 reagent) residual. solubility.
8. Record as ppm Residual Solubility.

***NOTE:** Minimum residual level for inhibition should be >/= 50 ppm unless otherwise designated.*

INTERFERENCE

Method is sensitive to temperature, water sample should represent coldest system water. Analyses should be made as quickly as possible. Upon addition of reagent the pH will normally drift downward. Accurate reading is made when taken before pH drifting.

Anything that adds acidity or increases solubility including acid, bicarbonate, carbonic acid, etc., will contribute to residual readings. Influences that decrease residual solubility contributed by microbiological degradation, alkali; dirt, debris, chemicals and gasses will also be detected.

herc
PRODUCTS INCORPORATED
2202 W. Lone Cactus, #15
Phoenix, AZ 85027-2621
602-492-0336

Doc.word/hercpw/techdata/TITRTION.DOC

herc
PRODUCTS INCORPORATED
PROCESS WATER APPLICATIONS DIVISION

Process Water Business Profile

Monday, June 23, 1997

INTRODUCTION:

The process water division of H.E.R.C. Products Incorporated provides patented and proprietary products and techniques for the inhibition, cleaning and removal of scale and corrosion.

Customers of H.E.R.C. are water treatment company's who provide not only product but also services and consulting for the control of scale, corrosion and microbiological contamination's. H.E.R.C. customers are primarily located throughout the U.S. and Canada with limited representation abroad.

H.E.R.C.'s customers represent a variety of equipment system types including refinery, pulp and paper, automotive, cold storage, meat - fish and poultry, beverage, utility, comfort cooling, etc.

All applications include:

- descaling,
- cleaning,
- maintenance (inhibition) .

for the control of:

- scale,
- corrosion,
- microbiological contamination.

associated with systems including:

- cooling towers,
- thermal storage,
- hot - cold & chilled closed loops,
- re & de humidification,
- tower fill rehabilitation,
- plate and frame rehabilitation,
- evaporative condensers,
- ice storage,
- air washers,
- open evaporative process,

Process Water Business Profile, continued.

Associated with systems including

- tube and shell exchangers,
- radiators,
- boilers,
- compressed air, etc.

Products applications encompass water problems associated to:

- metal oxides,
- carbonate based hardness salt precipitation,
- corrosion products,
- tuberculation,
- corrosion.

Performance characteristics include:

- increased heat flux tolerance,
- non-metal corrosion inhibition,
- acid catalyzing,
- increased hardness salt thresholds,
- on-line descaling,
- off-line descaling,
- tower and heat exchanger descaling,
- plate and frame descaling,
- acid inhibition
- tuberculation dissolution.

DISTRIBUTORS:

Air Systems, Inc.	CA
Aqua Laboratories Incorporated	MD
Aqua-Chem, Inc.	CO
Chemco Chemical Specialties, Inc.	*CA
Ecotron Hercan Corporation	*MONTREAL, CANADA
Enerco Corporation	MI
Feedwater Treatment Systems, Inc.	NY
Frank J. Anfosso & Associates, Inc.	*TX
International Chemtex Corporation	**MN
Keytech Water Management	KITCHNER, CANADA
KML Incorporated	*IN
Maintenance Engineering Corporation	**TX
Premier Water & Energy Technologies, Inc.	*FL

Process Water Business Profile, continued.

DISTRIBUTORS:

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Puckorious & Associates	CO
Quatic Industries, Incorporated.	GUELPH, CANADA
Water Chemical Service	MD
A.P.I. International	AZ
CWTS, Incorporated	TX
Texas Water Management	TX
Pacific Water Treatment	CA

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The Xerox Corporation	CA
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Lockheed / Martin Astronautics	CO
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US Olympic Aquatic Training Center	CO
National Research Center	Toronto, Canada
Alberta Government & Telephone	Edmonton, Canada
National Renewable Energy Laboratory	CO
Clear Lake CO-generation	TX
American CO-Generation	NJ
Coca-Cola Minute Maid Juice	FL
Commercial Air Services Inc.	NV
Good Humor	Canada
General Motors Corporation	MI and Canada
Charter Steel	WI
Best Western Hotels (RTC)	AZ
Gilbert Public Schools	AZ
Calgon Corporation	PA

(H.E.R.C. Products Incorporated is not able to maintain an accurate, up to date list of users. Those noted above are listed because of their name recognition to the general public)

Estimate of number of projects performed to date (systems): **600**

herc
PRODUCTS INCORPORATED

RESIDUAL SOLUBILITY TEST METHOD

(Buffered acidity 0 - 500 mg/l)

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ADDITIONAL APPARATUS REQUIRED

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***NOTE:** Minimum residual level for inhibition should be >/= 50 ppm unless otherwise designated.*

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herc
PRODUCTS INCORPORATED
2202 W. Lone Cactus, #15
Phoenix, AZ 85027-2621
623-492-0336

Bano, Mahmooda

From: Herman, David R CIV NAVSEA, 08 (b)(6)
Sent: Wednesday, April 06, 2011 10:02 PM
To: RST01 Hoc; RST09 Hoc; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc; Dei, Donald E CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent (b)(6); Joel Pero (Bettis); Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL); Hoc, RST16; RST01B Hoc; RST03 Hoc; RST07 Hoc; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08; Ali, Syed; Blamey, Alan; Casto, Chuck; Collins, Elmo; Emche, Danielle; Giessner, John; Jackson, Todd; Miller, Marie; Monninger, John; NRC Team at USAID; Bernhard, Rudolph; Salay, Michael; Scott, Michael; Sheikh, Abdul; Stahl, Eric; Taylor, Robert; Way, Ralph
Cc: RST06 Hoc; Herman, David R CIV NAVSEA, 08
Subject: RE: Final Stability Document

(Note: This NR response does not go to all industry recipients who received the original NRC email below. Please pass to other recipients as needed to continue the work discussed in the following)

NR comments regarding the NRC-RST "Stablility" condition document:

a. RST issued a "final" version of the "Stable" paper on 4/6/2011 before NR provided final comments/concerns.

b. NR concluded that the document would require revision to be usable, and that NR comments/review will be established in the next revision (in lieu of asking for the document to be retracted).

c. During 1800 phone call between RST and NRC-Japan:

i. NRC-Japan asked about the "final" Stability document, noting that NRC-Japan wanted to provide comments back to RST before using with the Japanese.

ii. NR(Herman) suggested RST and NRC-Japan treat the 4-6-2011 version as a DRAFT, and provide comments back to RST. NR will also work with NRC-HQ to resolve comments on need for more thorough scrutiny of which organizations will use the document and how it will be applied (ie: the document should receive senior management review and agreement based on the likely scope of use).

iii. Also discussed the need for completeness and internal consistency (eg: concerns regarding criticality are addressed for SFPs, but should also be addressed for the three reactors).

iv. NRC-RST and NRC-Japan agreed the document will be treated as DRAFT, and additional staffing will be done prior to issuing as a FINAL for use with other organizations.

v. Herman back-briefed the ET-Lead(Zimmerman) on the change in plans - Zimmerman agreed.

This This email is provided to inform NRC/NR team members of the change in plans, and to highlight the need for additionalstaffing by the team. NR will provide additional review and comments on the Stability document during day-staff hours on 4-7-2011.

B6/24

Dave Herman

Naval Reactors

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Wed 4/6/2011 2:11 PM
To: RST09 Hoc; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc; Caponiti DOE; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen; EPRI Event Response Center; GE Hitachi NucResponseTeam; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent; INPO ERC; INPOERCTECH; '(b)(6)'; Joel Pero (Bettis); Johne Kelly; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL); Richard Stark; Rob Versluis; Hoc, RST16; RST01B Hoc; RST03 Hoc; RST07 Hoc; Russell Morales; Sal Golub; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08; Ali, Syed; Blamey, Alan; Casto, Chuck; Collins, Elmo; Emche, Danielle; Giessner, John; Jackson, Todd; Miller, Marie; Monninger, John; NRC Team at USAID; Bernhard, Rudolph; Salay, Michael; Scott, Michael; Sheikh, Abdul; Stahl, Eric; Taylor, Robert; Way, Ralph
Cc: RST06 Hoc
Subject: FW: Final Stability Document

Final document, also being sent to NRC Team in Japan.

RST Coordinator

From: RST08 Hoc
Sent: Wednesday, April 06, 2011 2:09 PM
To: RST01 Hoc
Subject: Final Stability Document

Here is the issued document

Mike

Mike Brown

Reactor Safety Team

From: RST01 Hoc
Sent: Wednesday, April 06, 2011 4:36 AM
To: RST08 Hoc; RST09 Hoc; RST06 Hoc
Subject: FW: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

---

From: DiRito, Paul J (WANO) [mailto:DiRitoPJ@INPO.org] **On Behalf Of** INPOERCTech
Sent: Wednesday, April 06, 2011 4:25 AM
To: RST01 Hoc
Subject: RE: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

(b)(4)

Paul Di Rito
INPO Technical Support Coordinator
770 644 8022

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Tuesday, April 05, 2011 11:08 PM
To: (b)(6)

(b)(6)

Subject: FW: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

FYI

From: RST07 Hoc
Sent: Tuesday, April 05, 2011 11:04 PM
To: RST01 Hoc
Subject: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

BG/25

RST01,

Please distribute this for review.

All,

The RST has reviewed and incorporated all previous comments as appropriate.

Please review and supply any additional comments by 0200 April 6, 2011.

CHN
RST BWR Analyst

From:	DiRito, Paul J (WANO) <DiRitoPJ@INPO.org> on behalf of INPOERCTech <inpoerctech@inpo.org>
Sent:	Wednesday, April 06, 2011 4:25 AM
To:	RST01 Hoc
Subject:	RE: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx
Follow Up Flag:	Follow up
Flag Status:	Flagged

(b)(4)

Paul Di Rito
INPO Technical Support Coordinator
770 644 8022

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Tuesday, April 05, 2011 11:08 PM
To: (b)(6)
(b)(6)
Subject: FW: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

FYI

From: RST07 Hoc
Sent: Tuesday, April 05, 2011 11:04 PM
To: RST01 Hoc
Subject: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

RST01,

Please distribute this for review.

B6/26

All,

The RST has reviewed and incorporated all previous comments as appropriate.

Please review and supply any additional comments by 0200 April 6, 2011.

CHN
RST BWR Analyst

From: RST01 Hoc
Sent: Wednesday, April 06, 2011 12:03 AM
To: RST08 Hoc; RST06 Hoc
Subject: FW: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

---

From: DiRito, Paul J (WANO) [mailto:DiRitoPJ@INPO.org] **On Behalf Of** INPOERCTech
Sent: Tuesday, April 05, 2011 11:58 PM
To: RST01 Hoc
Subject: RE: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

The RST has incorporated previous INPO ERC comments appropriately. We have no additional comments.

Paul Di Rito
INPO ERC Technical Support Coordinator
770 644 8022

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Tuesday, April 05, 2011 11:08 PM
To (b)(6)

(b)(6)

Subject: FW: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

FYI

From: RST07 Hoc
Sent: Tuesday, April 05, 2011 11:04 PM
To: RST01 Hoc
Subject: 04-05 2200 One Pagers RPV Injection Cntmt Fill.docx

RST01,

Please distribute this for review.

All,

The RST has reviewed and incorporated all previous comments as appropriate.

Please review and supply any additional comments by 0200 April 6, 2011.

BG/27

CHN
RST BWR Analyst

Bano, Mahmooda

From: Scott, Michael
Sent: Wednesday, April 06, 2011 8:15 PM
To: RST01 Hoc
Cc: Blamey, Alan
Subject: RE: ACTION ITEM TST 152

I am back in U.S. now, so your POC in Japan is Alan Blamey.

Mike

From: RST01 Hoc
Sent: Wednesday, April 06, 2011 6:56 PM
To: Scott, Michael
Subject: FW: ACTION ITEM TST 152

FYI

From: Reandeau, Michael A. (INPO) [mailto:ReandeauMA@inpo.org] **On Behalf Of** INPOERCTech
Sent: Wednesday, April 06, 2011 2:50 PM
To: RST01 Hoc
Cc: INPOERCTech
Subject: FW: ACTION ITEM TST 152

(b)(4)

Mike Reandeau

B6/29

INPO ERC Technical Lead

From: Ryan, Kevin P. (INPO)
Sent: Wednesday, April 06, 2011 10:05 AM
To: INPOERCTech
Subject: FW: ACTION ITEM TST 152

From: Nestel, Bill A (INPO)
Sent: Wednesday, April 06, 2011 9:54 AM
To: Ryan, Kevin P. (INPO)
Subject: ACTION ITEM TST 152

(b)(4)

From: Wittick, Brian
Sent: Wednesday, April 06, 2011 12:20 PM
To: Hoc, PMT12; ET07 Hoc; Merzke, Daniel
Cc: Andersen, James
Subject: RE: : Permanent reentry guidance

Thanks....very helpful.

Brian Wittick
Executive Technical Assistant for Reactors
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-2496 (w); (b)(6) (c)

From: Hoc, PMT12
Sent: Wednesday, April 06, 2011 12:15 PM
To: Wittick, Brian; ET07 Hoc; Merzke, Daniel
Cc: Andersen, James
Subject: RE: : Permanent reentry guidance

Brian...just learned that Dan has been the lead for this correspondence.

- Generated by NRC and EPA staff level based on a request from the White House.
- Vetted through the ET at NRC after sending to interagency and Japan site team for comments.
- EPA and the White House will have final approval on release.
- Not sure of the plan for promulgation. It may or may not be discussed at a Deputies meeting next week and possibly then transmitted to the Ambassador. Just speculation now how it will be implemented.

From: Wittick, Brian
Sent: Wednesday, April 06, 2011 12:03 PM
To: Hoc, PMT12; ET07 Hoc
Cc: Andersen, James
Subject: RE: : Permanent reentry guidance

Do you have any additional details on the document such as:

- Who generated the document
- Who is it vetted with
- Who has final approval on release
- What is the plan for promulgation

Thanks,
Brian Wittick
Executive Technical Assistant for Reactors
Office of the Executive Director for Operations
S. Nuclear Regulatory Commission
301-415-2496 (w); (b)(6) (c)

B6/129

From: Hoc, PMT12
Sent: Wednesday, April 06, 2011 11:45 AM
To: ET07 Hoc; Wittick, Brian
Cc: Andersen, James
Subject: FW: : Permanent reentry guidance

Brian,

This document was requested by Commissioner Svinicki's office (Castleman), so please forward to the other Commission offices as well.

Thanks,

PMT

From: Milligan, Patricia
Sent: Tuesday, April 05, 2011 12:58 PM
To: Hoc, PMT12
Subject: : Permanent reentry guidance

Electronic copy of previously delivered document. Please provide your comments by the end of the day.
Thanks

5

(b)(5)

(b)(5)

From:	Hoc, PMT12
Sent:	Thursday, April 07, 2011 8:51 AM
To:	PMT03 Hoc
Subject:	FW: permanent reentry guidance rev 1.docx
Attachments:	permanent reentry guidance rev 1.docx

For task tracker of last email.

From: Milligan, Patricia
Sent: Wednesday, April 06, 2011 3:26 PM
To: Merzke, Daniel; Hoc, PMT12
Subject: permanent reentry guidance rev 1.docx

BG/30

(b)(5)

(b)(5)

Schaperow, Jason

From: Schaperow, Jason
Sent: Thursday, April 07, 2011 3:00 PM
To: Santiago, Patricia
Subject: FW: Request for clearance to release data

Importance: High

Hi Pat,

I just spoke with Richard Lee. He said he will ask Shawn to add the bullet below or (b)(5) (b)(5)

Thanks,
Jason

From: Schaperow, Jason
Sent: Thursday, April 07, 2011 2:58 PM
To: Lee, Richard
Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia; Tinkler, Charles; Gibson, Kathy; Zigh, Ghani
Subject: RE: Request for clearance to release data
Importance: High

Hi Richard,

Per Pat Santiago's email immediately below, here is a bullet that could be added to the sheet on "Vulnerability of Spent Nuclear Fuel Pools" for Senator Bingaman:

(b)(5)

Thanks,
Jason

>>
>

Richard
Jason is coming to see you since Charlie is out.
Kathy wanted to add a bullet on how fuel is arranged in the pool based on B5b but it likely is for something else. She did call and said she may have given me a comment but was thinking of something else.
Please work with Jason.
thanks

From: Gibson, Kathy
Sent: Thursday, April 07, 2011 10:22 AM
To: Lee, Richard; Zigh, Ghani
Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia; Tinkler, Charles; Schaperow, Jason
Subject: RE: Request for clearance to release data

BG/31

- Brian wants us to call congressional affairs and see if we (OCA) should contact the Senator's office and tell them they need to make the request through NRC and not through our contractor. Then we will provide the response to the senator's office through OCA.

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

From: Lee, Richard
Sent: Thursday, April 07, 2011 10:12 AM
To: Zigh, Ghani
Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia; Tinkler, Charles; Schaperow, Jason; Gibson, Kathy
Subject: RE: Request for clearance to release data

Thanks, will let SNL knows to proceed with providing the info.
Richard

From: Zigh, Ghani
Sent: Thursday, April 07, 2011 9:50 AM
To: Lee, Richard; Gibson, Kathy; Tinkler, Charles; Schaperow, Jason
Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia
Subject: RE: Request for clearance to release data

We already shared these information and more with other people like NEI, DOE/NE, and commissioner Magwood.
You have my vote to share these two attachments with the senator.

From: Lee, Richard
Sent: Thursday, April 07, 2011 9:23 AM
To: Zigh, Ghani; Gibson, Kathy; Tinkler, Charles; Schaperow, Jason
Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia
Subject: RE: Request for clearance to release data

I have provided printout of the 2 attachments to Ghani.

From: Zigh, Ghani
Sent: Thursday, April 07, 2011 8:37 AM
To: Gibson, Kathy; Lee, Richard; Tinkler, Charles; Schaperow, Jason
Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia
Subject: RE: Request for clearance to release data

Where are the attachments that they want to send?

From: Gibson, Kathy
Sent: Thursday, April 07, 2011 8:34 AM
To: Lee, Richard; Tinkler, Charles; Schaperow, Jason; Zigh, Ghani

Cc: Wagner, Katie; Navarro, Carlos; Santiago, Patricia
Subject: RE: Request for clearance to release data

What do you advise?

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

From: Lee, Richard
Sent: Thursday, April 07, 2011 8:03 AM
To: Tinkler, Charles; Schaperow, Jason; Gibson, Kathy
Cc: Wagner, Katie
Subject: FW: Request for clearance to release data
Importance: High

We should give a reply as soon as possible on this request.

From: Burns, Shawn [mailto:spburns@sandia.gov]
Sent: Thursday, April 07, 2011 2:19 AM
To: Wagner, Katie; Lee, Richard
Cc: Sorenson, Ken B; Lindgren, Eric; Pickering, Susan Y; Orrell, Stanley A
Subject: [WARNING: MESSAGE ENCRYPTED]Request for clearance to release data
Importance: High

Katie and Richard,

Sandia received a request from U.S. Senator Jeff Bingaman's personal staff relating to the spent nuclear fuel fire experiments and associated analyses conducted by Sandia for the NRC in 2007. I have attached two files which contain the information that we would like to forward to Senator Bingaman's office. Sandia handles this information as Official Use Only and as such the files are encrypted. You should already have received a separate e-mail containing a link which will allow you to obtain the password required to open these files. Please be aware that the password website will only remain open until 2:00 a.m. Saturday morning Washington time.

As per the process that Sandia and NRC have established, the purpose of this e-mail is to formally request NRC permission to release this information to Senator Bingaman's office for the purpose of allowing the Senator and his staff to understand one aspect of the ongoing event at the Fukushima Dai-Ichi nuclear power reactor site in Japan.

Please let me know if you have any questions regarding this request or if you have any difficulty obtaining the password or opening the attached files. As is often the case with the Fukushima event, there is some urgency associated with this request as we are trying to respond to the Senator's office in a timely manner.

Best regards,

Shawn

Shawn P. Burns, Ph.D., P.E.
Manager, Risk and Reliability Analysis
Department 6761

Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185-0748

Phone: (505)844-6200
Mobile: (b)(6)
Fax: (505)844-2829

e-mail: spburns@sandia.gov
Web: http://www.sandia.gov/ERN/nuclear-energy/index.html

From:	RST01 Hoc
Sent:	Thursday, April 07, 2011 1:38 PM
To:	Hoc, PMT12
Cc:	RST06 Hoc
Subject:	Long term stability paper
Attachments:	FINAL - Criterion to Establish Stable Conditions - 1400 04-06.pdf

BG/32

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

(b)(5)

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

(b)(5)

From: RST01 Hoc
Sent: Thursday, April 07, 2011 10:20 AM
To: RST09 Hoc; RST08 Hoc; RST06 Hoc
Subject: FW: ERC 1100 Daily Call 4-7-11.docx
Attachments: ERC 1100 Daily Call 4-7-11.docx

From: Reandeau, Michael A. (INPO) [mailto:ReandeauMA@inpo.org]
Sent: Thursday, April 07, 2011 10:03 AM
To: RST01 Hoc
Cc: INPOERCTech
Subject: ERC 1100 Daily Call 4-7-11.docx

B6/33

4/7/2011

1100 – Technical Refocus Meeting – Led by INPO Tech Lead

1. Review agenda for the call:
2. Discuss the Status of Open Actions
   a. MDRIR discussion – actions moving froward (INPO lead)
   b. Status of structural integrity of U4 SFP (GEH lead)
   c. Fatal flaw review of **General Discussion of the Desired End State of all Spent Fuel Pools** document (NRC RST lead)
   d. Continued industry/government interaction (INPO lead)
3. Review new action items discussed during the call.
4. Adjourn

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

1. NRC RST will send out the final **Stable Plant Conditions** document on 4/6 at 1600 EST. No comments expected.
2. NRC RST sent out the **Additional Measures** documents (MDRIR and MDSL) just prior to the 1100 call. Comments are due back to the NRC RST by 4/6 1600 EST.
3. NRC RST to incorporate comments on the **General Discussion of the Desired End State of all Spent Fuel Pools** and send out the revised version by 4/6 1600 EST. No comments expected unless a fatal flaw is identified.
   - INPO ERC Technical will attempt to obtain more detailed data on the statis of U1 and U3 SFPs and provide this information to NRC RST.
4. GEH to provide updated containment H2/O2 calculations to RST for inclusion in the **Additional Measures in Light of TEPCO Current Strategy** document by 4/6 2000 EST.
   - RST to distribute the updated document.
5. INPO ERC Technical to followup with GEH on when to be ready for discussion regarding U4 SFP structural integrity with TEPCO (tentatively scheduled for 4/7 0200 EST).
   - GEH/NRC RST to compare assessment information.
6. INPO ERC Technical to provided updated status on U1 containment N2 purge efforts and actions TEPCO will take following completion of the N2 purge effort.
7. GEH to take into account the U1 containment N2 purge on the updated H2/O2 calculations.

Baca, Bernadette

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 07, 2011 9:08 AM
To: Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject: FW: Short and Long term Water treatment
Attachments: Treatment of water (translated).pdf

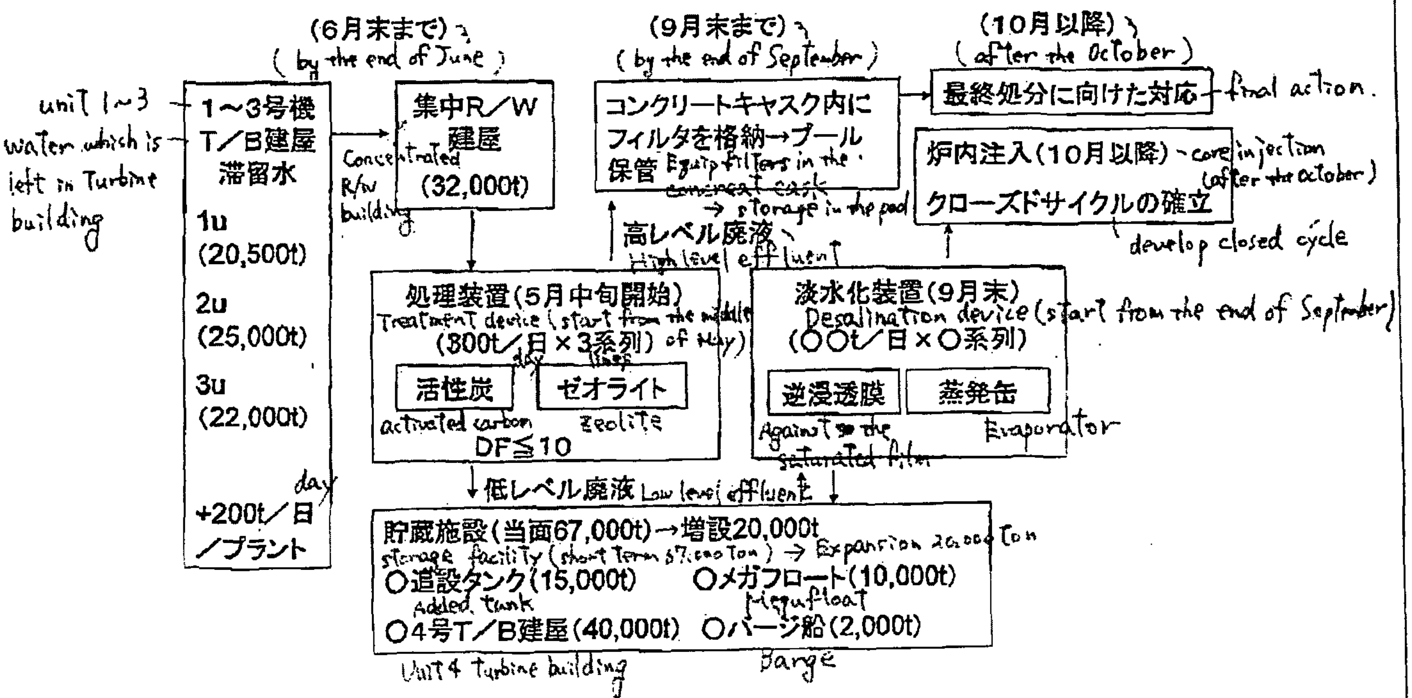
For your information,
Al

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

B6/34

Collection and Treatment flow of radioactive water (Plan)

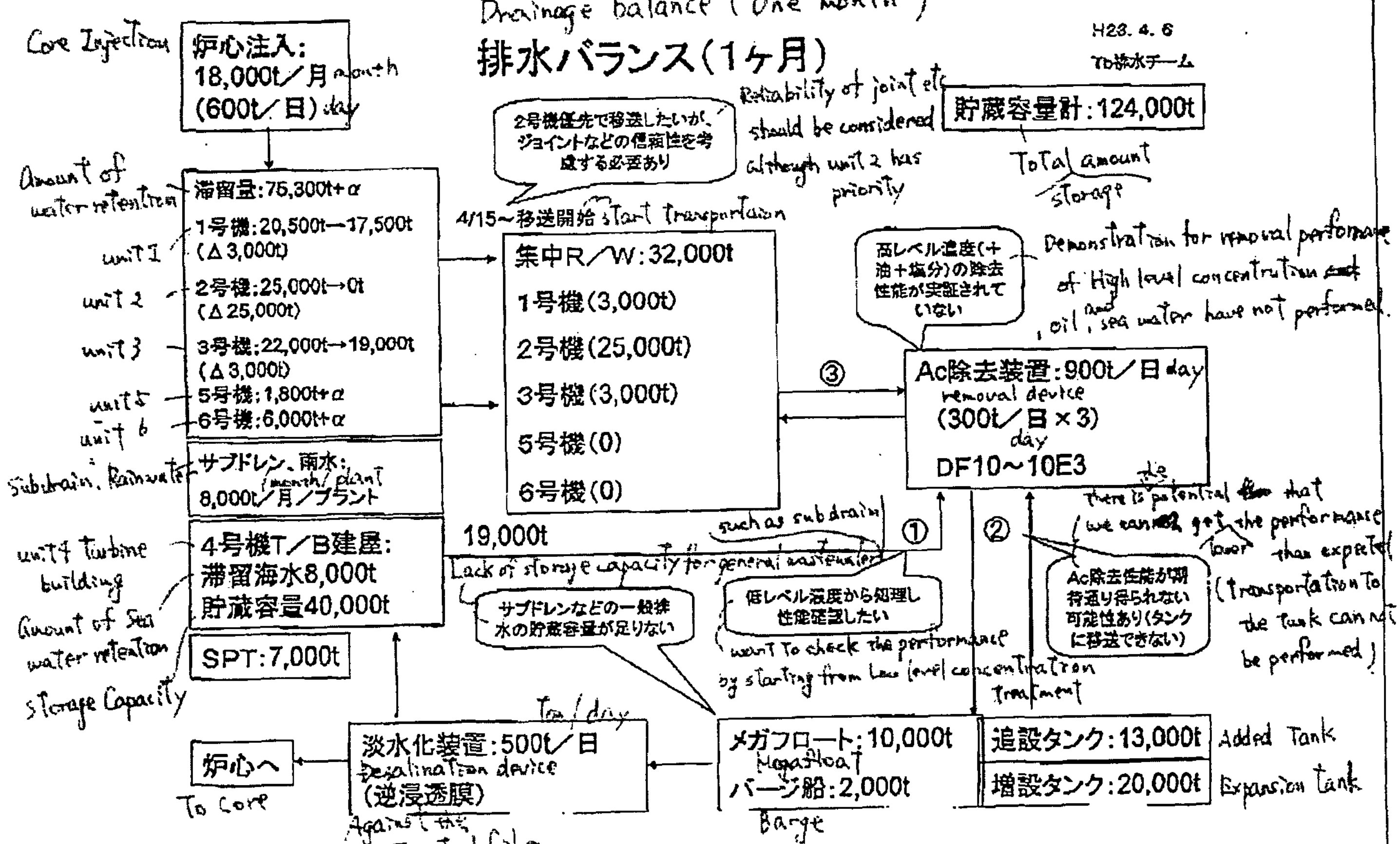
放射性滞留水の回収・処理フロー(案)



Drainage balance (One month)

排水バランス(1ヶ月)

H23. 4. 6
TO排水チーム



Lee, Richard

From: Lee, Richard
Sent: Thursday, April 07, 2011 9:43 PM
To: Powers, Dana; dapower@sandia.gov
Subject: FW: Suggestions on filling reactor cavity

Dana:

FYI
Richard

From: Kelly, John E (NE) [JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Thursday, April 07, 2011 9:27 PM
To: DL-NERT-All; DL-NITsolutions
Subject: FW: Suggestions on filling reactor cavity

From: Gambone, Robert L (INPO) [mailto:GamboneRL@INPO.org]
Sent: Thursday, April 07, 2011 6:11 PM
To: Kelly, John E (NE)
Cc: Ellis, Jim; Webster, Bill E (INPO); Purcell, Richard T. (INPO)
Subject: Suggestions on filling reactor cavity

John, below are some options that the industry has developed to possibly fill the reactor cavity and remove energy from the drywell head.

(b)(4)

B6/35

(b)(4)

Rob Gambone
VP, Plant Operations Division
INPO
770-644-8713 work
(b)(6) cell
GamboneRL@inpo.org<mailto:GamboneRL@inpo.org>

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Thank you.

Baca, Bernadette

From:	Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent:	Thursday, April 07, 2011 8:38 AM
To:	Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject:	FW: Response to questions of April 7, 2011
Attachments:	Spent fuel pool water drawings img-407161936.pdf

TEPCO Information on the spent fuel pools.

Structural integrity of Units 1 and 3 spent fuel pools

Unit 1: no information on the condition of the pool since the roof is collapsed.
Unit 2: no information on the condition of the pool. However, they believe that some of the water is flowing onto the top of the drywell head and that is what is causing the steam that is being seen coming out of the reactor building.
Unit 3: Judging from the steam evaporating from the spent fuel pool and thermography, a leak from the pool is suspected. Some speculate that some of this water or the water sprayed into the pool may be being flowing onto the containment head. Nuclide analysis of turbine building water indicates that the water is not originating from the spent fuel pool.
Unit 4: Judging from the steam evaporating from the spent fuel pool and thermography, a leak from the pool is suspected. Cavity gate may have been displaced.

Levels in the pool
Unit 1: Only one source of determining water level is available and that is the Skimmer Surge Tank level. One source of level indication is not sufficient in TEPCO's judgment to adequately determine the level in the Unit 1 spent fuel pool.
Unit 2: It was determined that SFP is full of water. This is based on the Skimmer Surge Tank level and pool temperature. The fluctuations we are seeing in SFP water temperature instrument may indicate when the temperature sensor is above or below the water level.
Unit 3: Water level is not determined. The water level is estimated as TAF + 2.1 m, assuming 10% yield of water supply by past water spraying and the Zebra is now directing water directly into the pool. Therefore the yield is higher There is no direct measure to confirm these values. TEPCO personnel are controlling temperature and level based on indirect information. For example:

- Based on heat load and evaporation calculations the water supplied by the Zebra is more than sufficient to maintain temperature below 100 degrees centigrade.

- Large increases in radiation levels have not been observed just before the water spray operation by Zebra.

- Temperature measured by a reconnaissance plane every morning using ultra-red ray thermometer is less than 100 degree centigrade, however, the accuracy of this measurement technique cannot be confirmed.

Unit 4: It was determined that SFP is full of water based on the Skimmer Surge Tank level and visual observation by camera.

BG/36

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

ナ

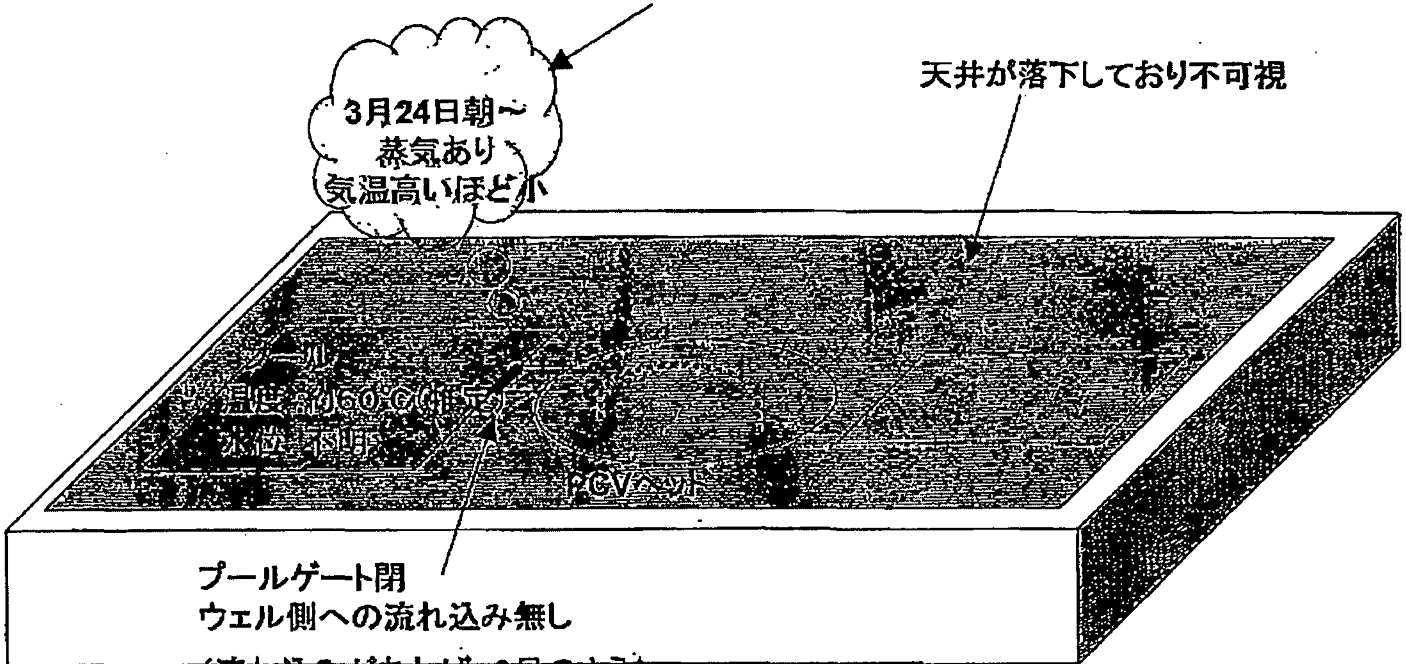
1F－1

崩壊熱：6．24×10^4kcal/hr

1-3uの中で最も崩壊熱が小さい

プール水温が約50℃以上に到達していると推定され、プールからの蒸気が、気温・湿度等の影響により、白煙となったものと考えられる。

天井が落下しており不可視

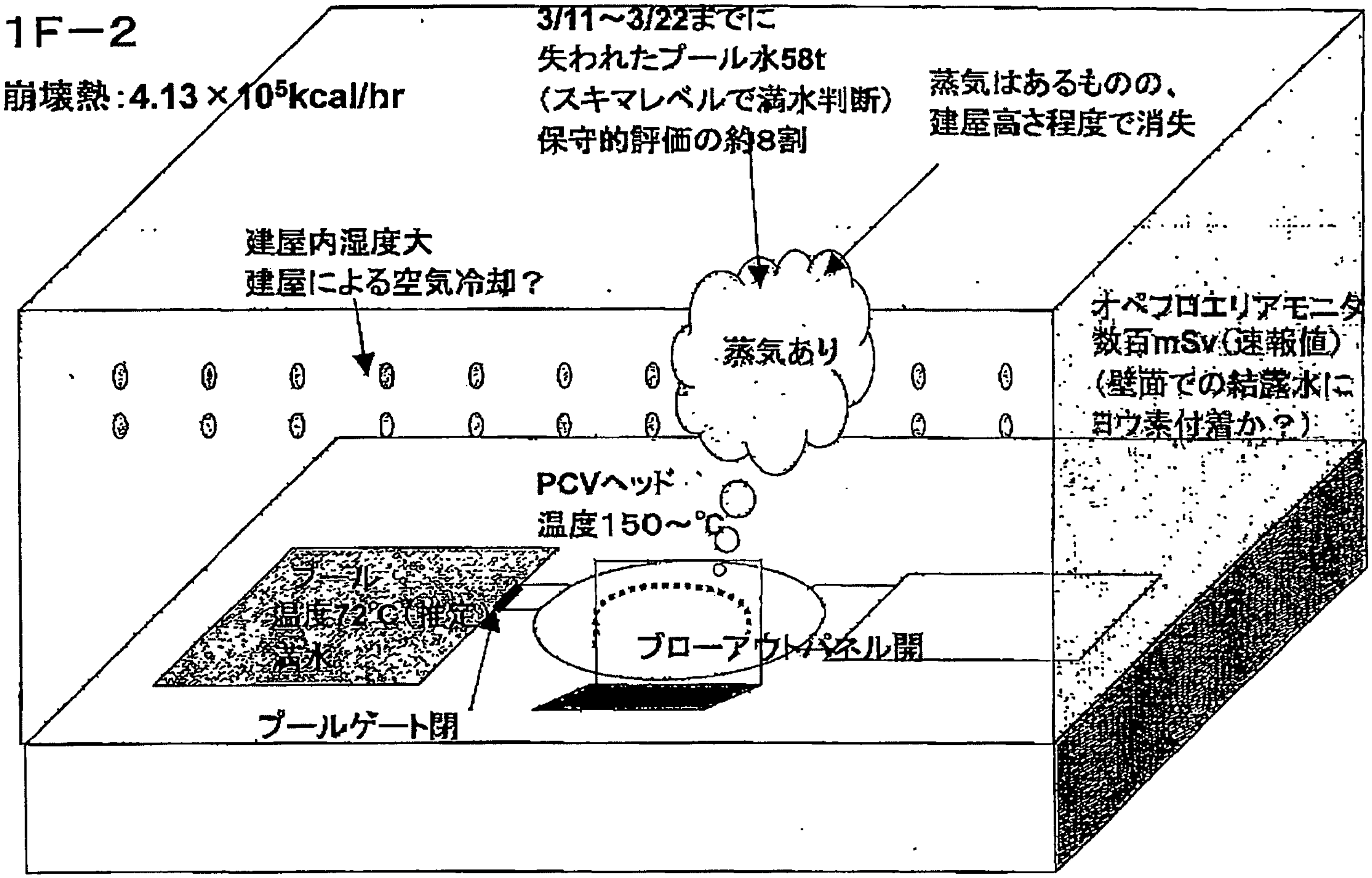


プールゲート閉
ウェル側への流れ込み無し

（流れ込みがあれば、3号のような蒸気発生があるはず。）

1F−2

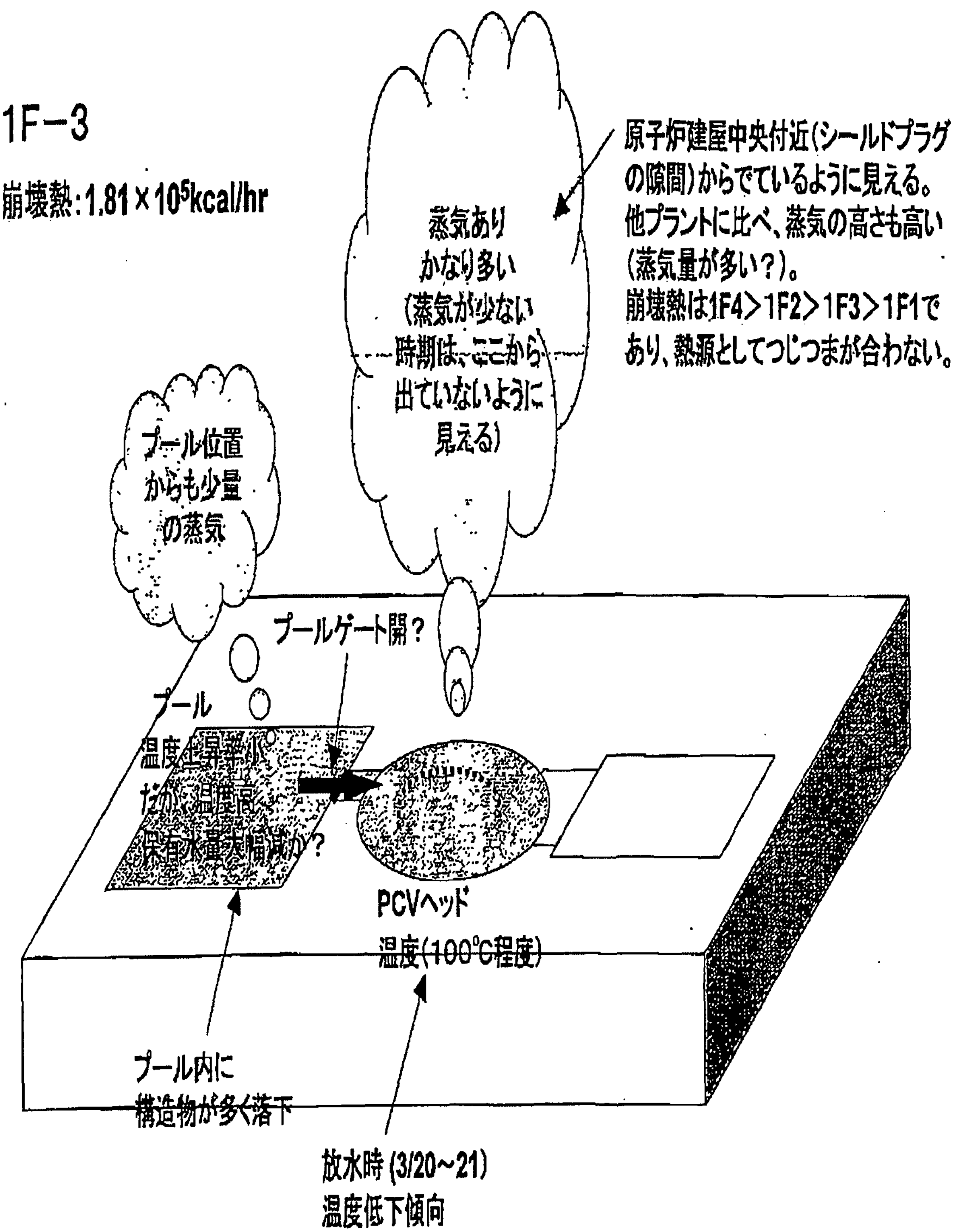
崩壊熱：4.13×10^5kcal/hr



温度計が露出すると、雰囲気温度を
測ることになるため温度が下がる？

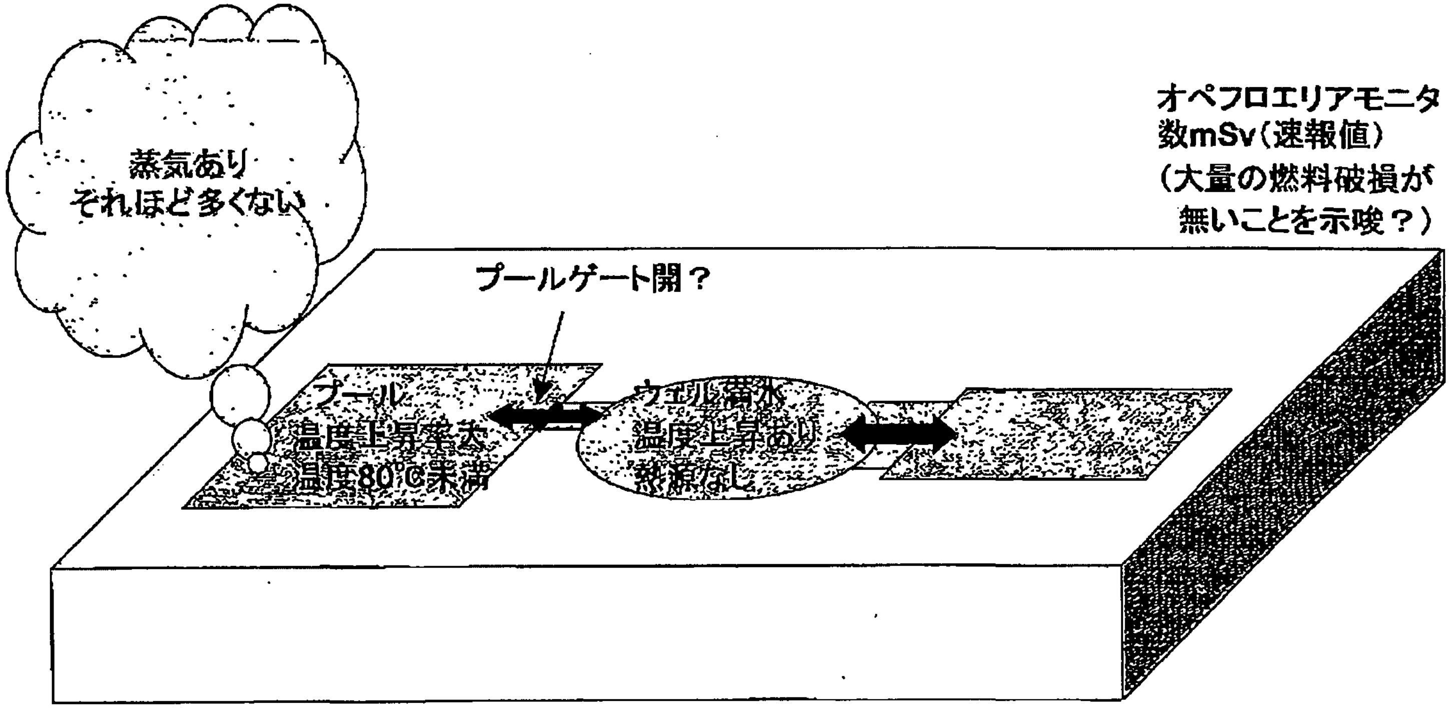
1F−3

崩壊熱：1.81×10^{5}kcal/hr



1F－4

崩壊熱：1.62×10^6kcal/hr



スキマーサージタンクの水位変化で満水と評価すると
600t程度の水が3/11～3/27までに消失
燃料を露出させて水素を発生させるには不十分。

Baca, Bernadette

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Thursday, April 07, 2011 8:15 AM
To: Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject: April 7 Briefing Notes, excel spreadsheet and unit 1 pressure and temperature curves
Attachments: TEPCO Sumarry Rev.71 FinalF April 7.xls; Nitrogen Purge Graphs img-407163222.pdf; Spinnato speaking notes 6 pm briefing April 7.doc

For your information

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

BG/37

FUKUSHIMA DAIICHI

The priorities are 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 to reduce the radiation levels so that work can continue

- Containing the spread of radioactive materials.

Highlights for today include the following:

- Trails of white vapor are intermittently being seen coming out of the units 1, 2, 3, and 4 reactor buildings.

- Disposal of radioactive water and radiation levels of water in the turbine building basements as well as debris around the plant continue to delay work to restore cooling functions.

- N2 purging of Unit 1 continues.

- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening. Drainage of the unit's 5 and 6 underground ground water pits will be completed on Saturday.

- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening. Following completion of pumping, workers will check the radwaste facility for cracks that might have been caused by the earthquake.

- The release of slightly contaminated water from units 5 and 6 ground water pits to the sea will be completed on Saturday.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line continues at 6 cubic meters/hr. Reactor pressure indicators A and B continue to show increasing pressure. A has increased to .395 MPa g, (57.29 psig) and B has increased to .793 MPa g (115.01 psig). Feedwater nozzle temperature is currently reading 246.6 degrees centigrade or (476 degrees Fahrenheit.) Reactor vessel lower temperature has also increased slightly and is reading 119.4 degrees Centigrade or (247 degrees Fahrenheit.) Drywell pressure has increased to .185 MPa abs or (26.83 psia) and torus pressure has increased to.155 MPa abs or (22.48 psia.) Dose rates in the U1 Drywell increased significantly to 187 Sv/Hr or (18,700 Rem/hr) as of 6 am this morning, but have decreased to 68.3 Sv/Hr or (6,830 Rem/hr.) Dose rates in the Torus decreased slightly to 12.2 Sv/Hr or (1,220 Rem/hr.)

- Transfer of water from the Unit 1 condenser hotwell to the CST has been slowed because of problems with the pump. Completion date of water transfer has not been fixed.

- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection has been reduced to 7 cubic meters/hr, (= to the goal and equivalent to the decay heat rate 14 days after shutdown.) Unit 2 reactor and drywell pressure remains stable. Feedwater nozzle temperature has decreased to 141.2 degrees centigrade or (286 degrees Fahrenheit.) Dose rates in the U2 Drywell and Torus continue to decrease. The drywell dose rates are at 29.4 Sv/hr or (2,940 Rem/hr) and the dose rate in the Torus has decreased to .765 Sv/hr or (76.5 Rem/hr.)

- The temperature in the Unit 2 spent fuel pool is 53 degrees centigrade or (127 degrees Fahrenheit.) The Unit 2 spent fuel pool is being sprayed this evening from 1700-1900.

- Transfer of water from the Unit 2 condenser hotwell to the CST continues and it is estimated that this transfer will be completed on Saturday morning.

- 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.) Unit 3 pressures are stable. Feedwater nozzle temperature has increased slightly to 88.8 degrees centigrade or (192 degrees Fahrenheit) and reactor vessel lower temperature has decreased and is at 110.7 degrees Centigrade or (231 degrees Fahrenheit.) Dose rates in the U3 Drywell and Torus continue to drop. The drywell is at 18.8 Sv/hr (1,880 Rem/hr) and the dose rate in the Torus is .738 Sv/hr or (73.8 Rem/hr.)

- Preparations are continuing to transfer water from the Unit 3 condenser hotwell to the CST.

<u>Dose Rates</u>

- Overall site dose rates are continuing to decrease and we have not seen an increase in dose rate since the nitrogen purge was started.

Update: As a result of the earthquake last night

Onagawa NPS—remains in cold shutdown

One off-site power line is available. Unit 1, 2, 3 are operating in RHR shutdown cooling mode. Once Fuel Pool Cooling pump for each unit tripped, however they were immediately restarted by operators.

It was reported in the news report that there was a leak in a spent fuel pool at Onagawa as a result of the earthquake. While there was no leak, a small amount of water that sloshed out of the pool due to the wave action caused by the earthquake.

Higashidori NPS-- remains in cold shutdown

Off-site power was not available and the Emergency Diesel Generators automatically started. At 3:30 on April 8 one off-site power line was restored to service. One FPC pump tripped, however it was immediately restarted by operators.

Not for Release

Fukushima-Daiichi Current Status and Planned Work

7 April at 12:00 (Rev-71)

		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Reactivity Control (Sub Control)	Current Status	■All CRs are kept inserted in the core ■70% of the core is estimated to be damaged (at 12:00 on 15 March)	■All CRs are kept inserted in the core ■30% of the core is estimated to be damaged (at 15:30 on 18 March)	■All CRs are kept inserted in the core ■25% of the core is estimated to be damaged (at 12:00 on 14 March)	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (Pri 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) ■Returned to cold shutdown (at 14:30 on 20 March)	■Long term outage (? month) ■RPV fuel on ■Cold shutdown (at 19:27 on 20 March)	
		CAMS (at [illegible]) D/W [illegible] Sv/h S/C [illegible] Sv/h	CAMS (at [illegible]) D/W [illegible] Sv/h S/C [illegible] Sv/h	CAMS (at [illegible]) D/W [illegible] Sv/h S/C [illegible] Sv/h				
	Next Tasks Planned (TEPCO Headquarters' Activities)	(Long term measure) ○To add boric acid to fresh coolant before achieving cold shut down (After restoring power) ○Operating SLC	Started fresh water into [illegible] (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				
Core Cooling & Residual Heat Removal (Core Cooling)	Current Status	■RCS unavailable • (Reason: loss of function of the auxiliary equipment cooling system (using sea water)) ■Fresh water injection through FP line (Switch to temporary installed motor driven pump was completed) (Flow rate: [illegible] by remote instrumentation at [illegible] on [illegible] April) ■Power supply of the [illegible] pump was switched to off site power (3 April 10:[illegible]–12:[illegible]) ■Installing temporary [illegible] (for [illegible])	■RCS unavailable • (Reason: loss of function of the auxiliary equipment cooling system (using sea water)) ■Fresh water injection to the FP line of the pressure control line (Switch to temporary installed motor driven pump was completed) (Flow rate: [illegible] by remote instrumentation at 12:[illegible] on [illegible] April) ■Power supply of the [illegible] pump was switched to off site power (3 April 10:[illegible]–12:[illegible]) ■Installation of the alternate pump for [illegible] ([illegible] March)	■RCS unavailable • (Reason: loss of function of the auxiliary equipment cooling system (using sea water)) ■Fresh water injection to the FP line of the [illegible] (Switch to temporary installed motor driven pump was completed) (Flow rate: [illegible] by remote instrumentation at [illegible] on 3 April) ■Power supply of the [illegible] motor driven pump was switched to off site power (3 April [illegible]–12:[illegible]) ■Installation of the alternate pump for [illegible] ([illegible] March)		■Ordinary operation in SHC mode of RHR	■Ordinary operation in SHC mode of RHR	
		■RPV Dome Pressure (at [illegible]) [illegible] MPa g (Gauge A) [illegible] MPa g (Gauge B) ■Reactor Water Level (at [illegible]) FP [illegible] mm (Fuel Range Gauge A) FP [illegible] mm (Fuel Range Gauge B) ■RPV Metal Temperature (at [illegible]) Feed water nozzle [illegible] °C Bottom of RPV [illegible] °C	■RPV Dome Pressure (at [illegible]) [illegible] MPa g (Gauge A) [illegible] MPa g (Gauge B) ■Reactor Water Level (at [illegible]) FP [illegible] mm (Fuel Range Gauge A) FP [illegible] mm (Fuel Range Gauge B) ■RPV Metal Temperature (at [illegible]) Feed water nozzle [illegible] °C Bottom of RPV No measurement	■RPV Dome Pressure (at [illegible]) [illegible] MPa g (Gauge A) [illegible] MPa g (Gauge C) ■Reactor Water Level (at [illegible]) FP [illegible] mm (Fuel Range Gauge A) FP [illegible] mm (Fuel Range Gauge C) ■RPV Metal Temperature (at [illegible]) Feed water nozzle [illegible] °C (unmeasurable) Bottom of RPV [illegible] °C		■RPV Dome Pressure (at [illegible]) [illegible] MPa ■Reactor Water Level (at [illegible]) TAF [illegible] mm (Shut Down Range Gauge) ■Coolant Temperature (at [illegible]) [illegible] °C	■RPV Dome Pressure (at [illegible]) [illegible] MPa ■Reactor Water Level (at [illegible]) TAF [illegible] mm ■Coolant Temperature (at [illegible]) [illegible]	
	Next Tasks Planned (Activities of Cooling Water Supply Force)	○Establish remote monitoring measurement of operating conditions of Core cooling water supply pumps (scheduled on 6 April) ○Switch the motor driven pump to M/U pump (The work was suspended due to high radiation environment around M/P in the turbine building). ○Water flow will be reduced to [illegible] that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) ○RHR ordinary operation in SHC mode after restoring off-site power & related equipments	○Establish remote monitoring measurement of operating conditions of Core cooling water supply pumps (scheduled on 6 April) ○Switch the temporary motor driven pump to M/U pump (The work was suspended due to high radiation environment around M/P in the turbine building). ○Water flow will be reduced to [illegible] that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) ○RHR ordinary operation in SHC mode after restoring off-site power & related equipments	○Establish remote monitoring measurement of operating conditions of Core cooling water supply pumps (scheduled on 6 April) ○Establish remote monitoring measurement of water level in [illegible] ○Switch the motor driven pump to M/U pump (The work was suspended because of high radiation environment around M/P in the turbine building) Preparing to drain the high radiation water ○Water flow will be reduced to [illegible] that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) ○RHR ordinary operation in SHC mode after restoring off-site power & related equipments				

Not for Release

Containment Function (Cooling and Containment)	Current Status	■Pressure (at 12:00 on 7 April) D/W: 0.1[illegible] MPa abs S/C: 0.1[illegible] MPa abs ■Started ventilation through hardened line (at 14:30 on 12 March) • PCV design pressure: [illegible] kPa PCV max pressure for use: [illegible] kPa Rupture disc working pressure: 310 kPa	■Pressure (at 12:00 on 7 April) D/W: 0.100 MPa abs S/C: Down Scale (Examining) ■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: 42[illegible]	■Pressure (at 12:00 on 7 April) D/W: 0.1[illegible] MPa abs S/C: 0.1[illegible] MPa abs ■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: 31[illegible] kPa		■Negative pressure kept by SGTS	■Negative pressure kept by SGTS	
	Next Tasks Planned (TEPCO Headquarters' Expectation)	[illegible]Hydrogen countermeasure (plan) • Fill PCV and ventilation line with nitrogen • Reinforced monitoring of PCV pressure • [illegible] to secure ventilation line [illegible] [illegible] [illegible] [illegible] restoration of equipment [illegible] [illegible]	Same as unit 1					
Spent Fuel Pool (SFP) Cooling Heat Removal & Water Supply	Current State	■SFP water level [illegible] (No water level meter) ■SFP temperature [illegible] ■[illegible] tank level [illegible] ■[illegible] [illegible] Injected the [illegible] [illegible] March [illegible] [illegible] March [illegible] [illegible] April [illegible] [illegible]	■SFP water level [illegible] (No water level meter) ■SFP temperature [illegible] ■Skimmer surge tank level [illegible] ■[illegible] ■Fresh water [illegible] [illegible] March [illegible] [illegible] March [illegible] [illegible] [illegible] April [illegible] [illegible] April [illegible] ■Renewal of the existing [illegible] was completed [illegible] March [illegible]	■SFP water level [illegible] (No water level meter) ■SFP temperature [illegible] ■Skimmer surge tank level [illegible] ■[illegible] in the operating floor ■[illegible] [illegible] March [illegible] (Sea water) [illegible] March [illegible] (Fresh water) [illegible] March [illegible] (Fresh water) [illegible] April [illegible] (Fresh water) [illegible] April [illegible] (Fresh water) ■ Check the condition of [illegible] [illegible] to be started [illegible] April)	■SFP water level: [illegible] ■SFP water temperature: [illegible] ■Skimmer surge tank level: [illegible] ■[illegible] in the operating floor ■Installation of alternative pump for [illegible] ■[illegible] [illegible] March [illegible] [illegible] March [illegible] (Fresh water) [illegible] March [illegible] [illegible] April [illegible] (Fresh water) [illegible] April [illegible] (Fresh water) ■ [illegible] ■[illegible]	■[illegible] • [illegible] ■Heat removal • [illegible] • Heat removal [illegible] cooling mode of [illegible] ■SFP water level: [illegible] ■SFP water temp. [illegible] ■[illegible]	■[illegible] • [illegible] ■Heat removal • [illegible] • Heat removal [illegible] cooling mode of [illegible] ■SFP water level: [illegible] ■SFP water temp. [illegible] ■[illegible]	■SFP water temperature [illegible] ■[illegible] [illegible] ■[illegible] [illegible] ■[illegible]
	Planned with [illegible]	[illegible]		Preparing for water transfer [illegible]	[illegible]	[illegible]	[illegible] to fill Pure Water Tank No. [illegible]	

Not for Release

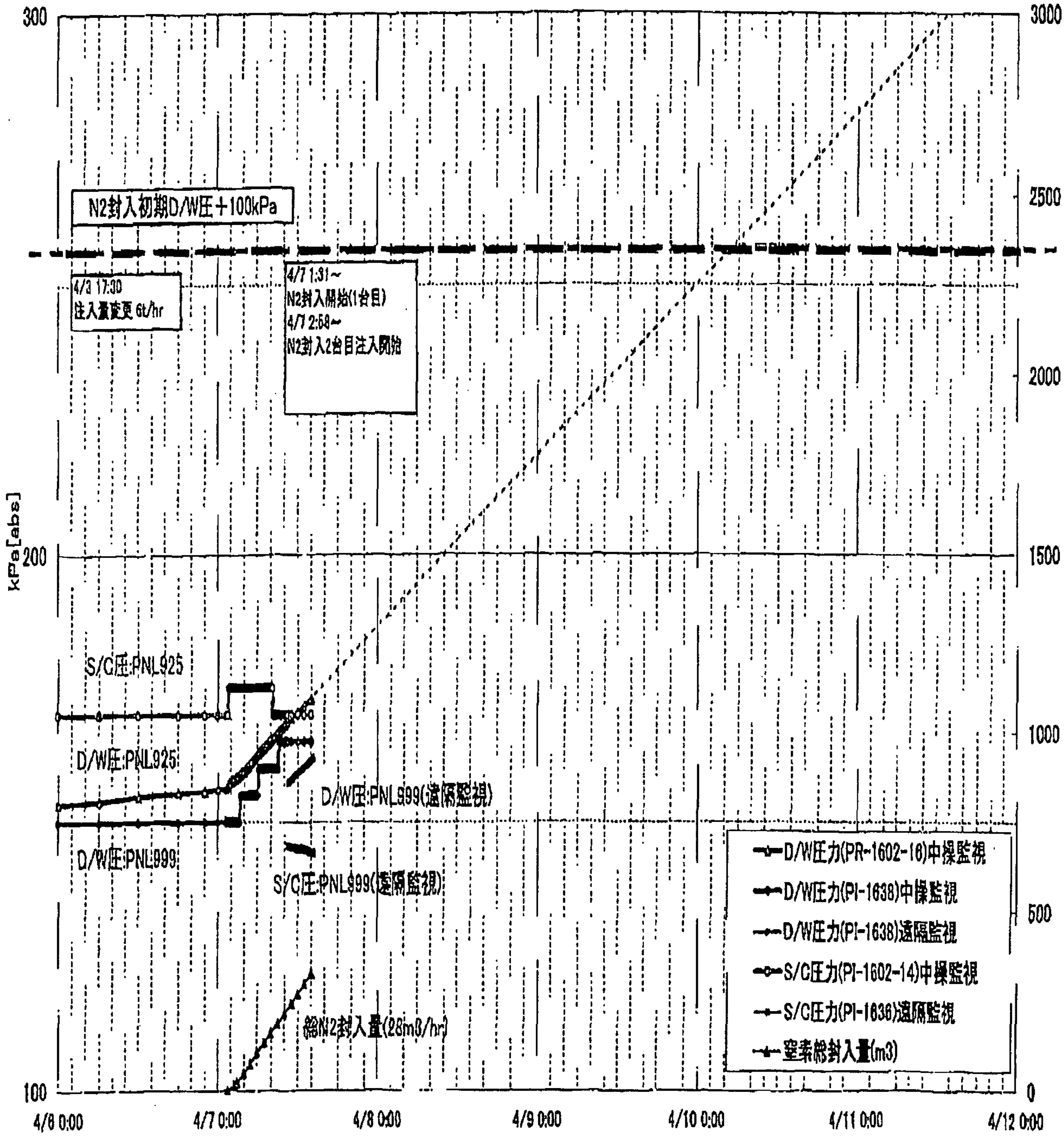
High Voltage AC Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■Equipments of MCC tested for short circuit and ground but in fail on 21 March ■120V I & C main bus powered at 01:40 on 23 March ■Illumination of MCR restored at 11:30 on 24 March ■Monitoring parts (ISS ?) were restored.	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■MCC 2D-1 in the turbine building was powered at 16:45 on 26 March ■Illumination is restored in main control room at 16:46 on 26 March	■480V P/C 4D powered through transmission line (at 10:35 on 22nd March) · Temporary power supply blocked utilizing the non-damaged part of 66kV off-site power transmission line · Trial electric charge of the power Center vehicle for Unit3 and Unit4 are completed at 19:58 on 18 March · Installation of multi circuit breakers and power cables were completed on 19 March · Inspection of cable from the breakers and [illegible] conducted on 20 March · Installation 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 22:21 on 22 March ■120V I & C main bus powered at 22:28 on 22 March ■Illumination is restored in main control room at 22:43 on 22 March ■T/B MCC 3D-1 has been powered on 23 March ■T/B MCC 3D-1 has been powered on 23 March	■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 utilizing 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 4:10 on 24th March ■Investigating cable laying work for monitoring parts (MP ?) on 25 March ■T/B MCC 5D-2 has been powered on 24 March	■Temporary power supply achieved utilizing the non-damaged part of 66kV off-site power transmission line (Yonomori line 1L, 2L) ■6.9kV emergency bus 6C is powered by ordinary transmission line and startup transformer ■Emergency diesel generator 6B in service (Emergency bus 6D is energized) ■Non safety grade buses of 6A and 6B are unavailable ■Temporary pump (with as a substitute of RHRS) was installed and put in service (Powered by D/G) ■Test run of installed cable was conducted on 20 March ■Monitoring posts (MP1 ?) were restored	■Temporary power for common pool was restored at 15:30 on 24th March
	Planned work (Next Activities) of Electric Power Supply Level	Test on the newly installed motor for SW pump was postponed due to the high radiation level Plan to restore air conditioning system in MCR Plan to [illegible] in the unit 1 & unit 2 [illegible] in the basement	Restoration of · illumination in MCR · Air conditioning system in MCR · CAMS (Rx) are [illegible]	Restoration work for MCR & MCC suspended due to the high radiation level Schedule for powering to loads is [illegible]		Laying temporary power cable for SW pump	Investigating cable laying work for monitoring posts	Investigating the power restoration work for I & C and illumination
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 ■Compressor (ICS ?) has been powered at [illegible] on 26 March	■Part of I & C equipments were powered by temporary battery to monitor plant status · Batteries for [illegible] level gauges were replaced by fresh ones at 12:13 on 21st March ■Restoration of DC 125V (large current) on 22 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 (?) has been powered on 20 March	■Part of I & C equipments were powered by temporary battery to monitor plant status	
	Next Works Planned (Next Activities) of Electric Power Supply Level							
Installation Measures against Hydrogen	Current Status	■Measures for hydrogen gas accumulation in RV · Considering the injection of N_2 gas ■ [illegible]	■Measures for hydrogen gas accumulation in RV · Considering the injection of N_2 gas (confirming the line for N_2 gas injection) ■Accumulation of hydrogen gas at the top of the reactor building is of concerned · Hole was drilled on 21st March; appears to be the steam from SFP that was leaked through the hole It is hoped that this mitigates the concentration of hydrogen gas	■Measures for hydrogen gas accumulation in RV · Considering the injection of N_2 gas (Confirming the line for N_2 gas injection)		■3 holes (?) were drilled on the ceiling panel (250 mm thick) of the building on 18 March to release hydrogen and to avoid explosion	■3 holes (?) were drilled on the ceiling panel (250 mm thick) of the building on 18 March to release hydrogen and to avoid explosion	
	Next Works Planned (Next Activities)		Measures for hydrogen gas accumulation in RV · Injection of N_2 gas Water jet pump is ready at off site stock yard, however lifting machine is not available	Measures for hydrogen gas accumulation in RV · Injection of N_2 gas				Prevention of hydrogen gas explosion: Bore drilling work is planned on the building (roof ?) by using a remote drilling device

Drainage Building (T/B) and Water Drainage	Current Status	■Draining water in T/B ・Water transfer R/B → CST (3 April 13:55 -) ■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) 106 cm (at [illegible] April) ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B Water transfer (R/B → CST) (2 April 17:10 -) ・By ten pumps (5 April 15:40 -) ・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 March) ・Water level (from top edge of grating to water surface) 104 cm (at [illegible]) ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation "Beaver" ・Water seeping through a layer of [illegible] was confirmed by investigation of [illegible] ・Injection of liquid chemical to [illegible] [illegible] ・It had been confirmed that the leak	■Draining water in T/B Water transfer (CST → SPT surge tank) (28 March 17:40 - 31 March 08:37) ■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) 125 cm (at [illegible] April) ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water transfer (Concentrated RW → T/B) (2 April 18:25 - 3 April [illegible]) ・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)	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ・Suspended by large amount of water: considering draining water ・Discharge water in sub drain to the sea (4 April 21:00 -)	■Draining water ・Water transfer (RW base floor → R/B) (1 April 13:10 - 2 April 10:00) ・Suspended by large amount of water: considering draining water ・Discharge water in sub-drain to the sea (4 April 21:00 -)	■Draining water ・Concentrated RW → sea (4 April 19:00 -) ■Discharging water in sub-drain of Unit 5&6 to the sea ・6 discharging pumps were added (at 17:25 on 5 April) ・1 sub-drain pump of Unit 6 stopped (at 18:37 on 5 April) ■Discharged water Unit 5: [illegible] Unit 6: [illegible]
	Next Steps Planned	Draining water in T/B ・Considering transferring the highly contaminated water to concentrated RW	Selection of metal panel in front of screen pump building (scheduled on 5 April) [illegible] work for shutting off the leak Draining water in T/B ・Considering transferring the highly contaminated water to concentrated RW	Water transfer R/B → CST (scheduled on [illegible]) Considering transferring the highly contaminated water to concentrated RW	Work for shutting off the leak ・[illegible] in the trench [illegible] sea water meter (scheduled on 5 April)			Repair of boundary - Prevention of leaks from [illegible] below [illegible] highly contaminated water is [illegible] [illegible]
Others	Current Status	■Barge ・Water transfer: Barge No.1 → filtered water tank [illegible] [illegible] ・Water transfer: Barge No.2 → Barge No.1 (3 April [illegible]) ・Barge No. [illegible] ■[illegible] ・[illegible]						
	Next Steps Planned	Barge ・Water transfer: Barge No.1 → filtered water tank [illegible] ・[illegible] 2 weeks later						

Abbreviations

CAMS: Containment Atmospheric Monitoring System	RCIC: Reactor Core Isolation Cooling	[illegible]
CST: Condensate Storage Tank	[illegible]	
CUW: Reactor Water Clean Up 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	
P/C: Power Center	SHC: Shut Down Cooling	
MUWC: Make Up Water Condensate System	SLC: Stand-by Liquid Control	

1F1 D/W,S/C圧(N2注入後の挙動)



※1：計器不良
※2：データ採取対象外

福島第一原子力発電所　プラント関連パラメータ

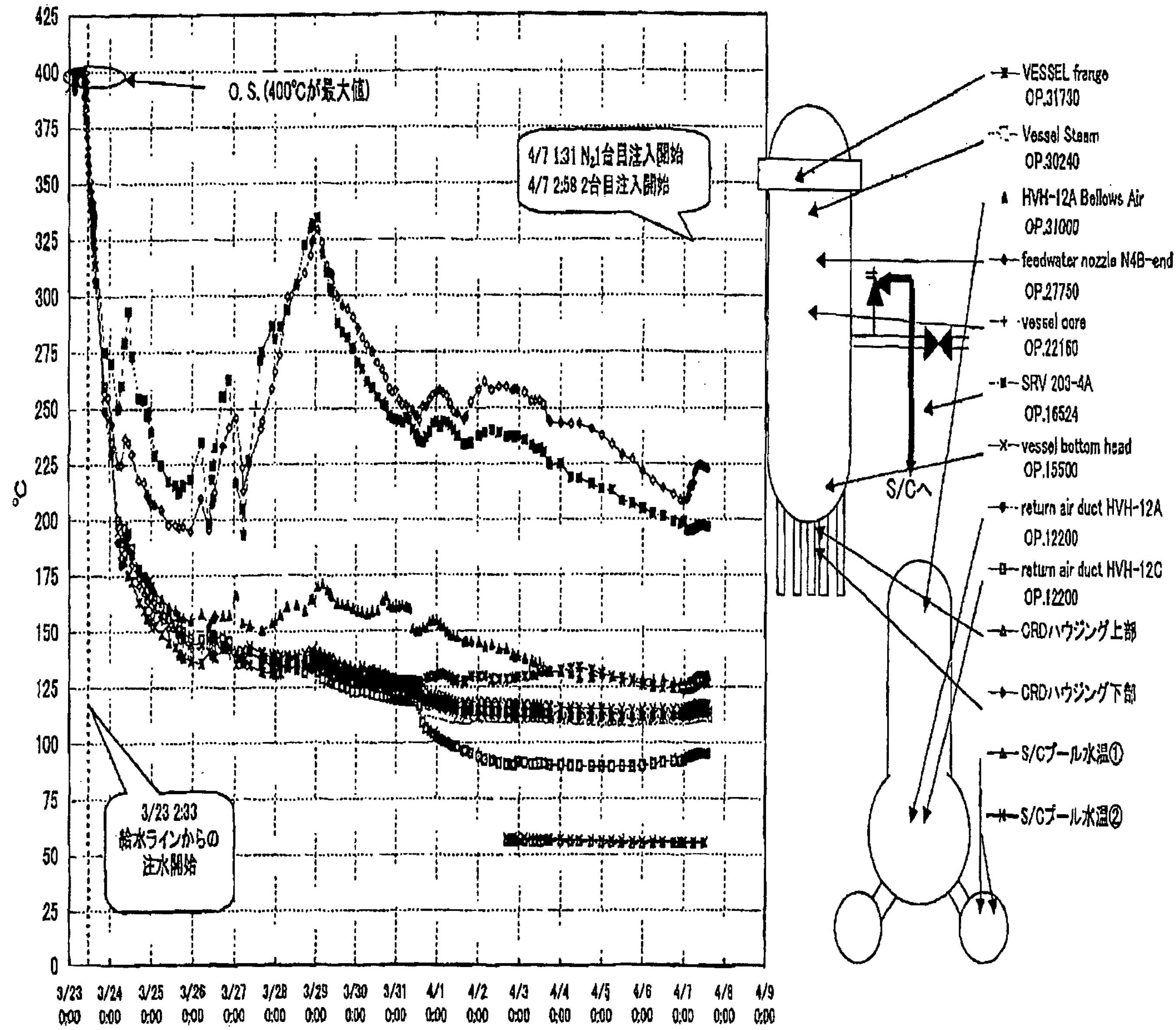
4月7日　12:00現在

号機	1u	2u	3u	4u	5u	6u
注水状況	給水ラインを用いた淡水注入中。 流量 6m³/h (4/3 17:30) 仮設計器	消火系ラインを用いた淡水注入中。 流量 8m³/h (4/3 12:12) 仮設計器	消火系ラインを用いた淡水注入中。 流量 7m³/h (4/3 17:32) 仮設計器	停止中	停止中	停止中
原子炉水位	燃料域A：−1650mm 燃料域B：−1650mm (4/7 12:00 現在)	燃料域A：−1500mm (4/7 12:00 現在)	燃料域A：−1900mm 燃料域B：−2250mm (4/7 12:00 現在)	※2	停止域 1801mm (4/7 12:00 現在)	停止域 1816mm (4/7 12:00 現在)
原子炉圧力	0.376MPa g (A) 0.758MPa g (B) (4/7 12:00 現在)	−0.009MPa g (A) −0.016MPa g (B) (4/7 12:00 現在)	0.000MPa g (A) −0.081MPa g (C) (4/7 12:00 現在)	※2	0.002MPa g (4/7 12:00 現在)	0.008MPa g (4/7 12:00 現在)
原子炉水温度	(系統流量がないため採取不可)			※2	39.1℃ (4/7 12:00 現在)	37.1℃ (4/7 12:00 現在)
原子炉圧力容器温度	給水ノズル温度：223.8℃ 圧力容器下部温度：116.9℃ (4/7 12:00 現在)	給水ノズル温度：143.6℃ 圧力容器下部温度 ※1 (4/7 12:00 現在)	給水ノズル温度：88.3℃(調査中) 圧力容器下部温度：112.3℃ (4/7 12:00 現在)	4u：原子炉内に発熱体（燃料）なし 5,6u：原子炉水温度にて監視中		
D/W・S/C圧力	D/W 0.165MPa abs S/C 0.160MPa abs (4/7 12:00 現在)	D/W 0.100MPa abs S/C ダウンスケール (調査中) (4/7 12:00 現在)	D/W 0.1059MPa abs S/C 0.1720MPa abs (4/7 12:00 現在)	※2		
CAMS	D/W 3.17×10¹Sv/h S/C 1.29×10¹Sv/h (4/7 12:00 現在)	D/W 3.05×10¹Sv/h S/C 7.94×10¹Sv/h (4/7 12:00 現在)	D/W 1.93×10¹Sv/h S/C 7.68×10⁻¹Sv/h (4/7 12:00 現在)	※2		
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)	※2		
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	※1	51.0℃ (4/7 12:00 現在)	※1	※1	36.0℃ (4/7 12:00 現在)	21.0℃ (4/7 12:00 現在)
FPCスキマーサージタンクレベル	4500mm (4/7 12:00 現在)	5500mm (4/7 12:00 現在)	※1	4900mm (4/7 12:00 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	・3号機　原子炉圧力容器温度について、データ採取を行い、状況推移を継続調査中。 ・2号機　S/C圧力について、状況推移を継続調査中。			共用プール：28℃程度 (4/7 7:45)	5u：非常モード (4/7 9:51〜)	6u：SHCモード (4/7 10:16〜)

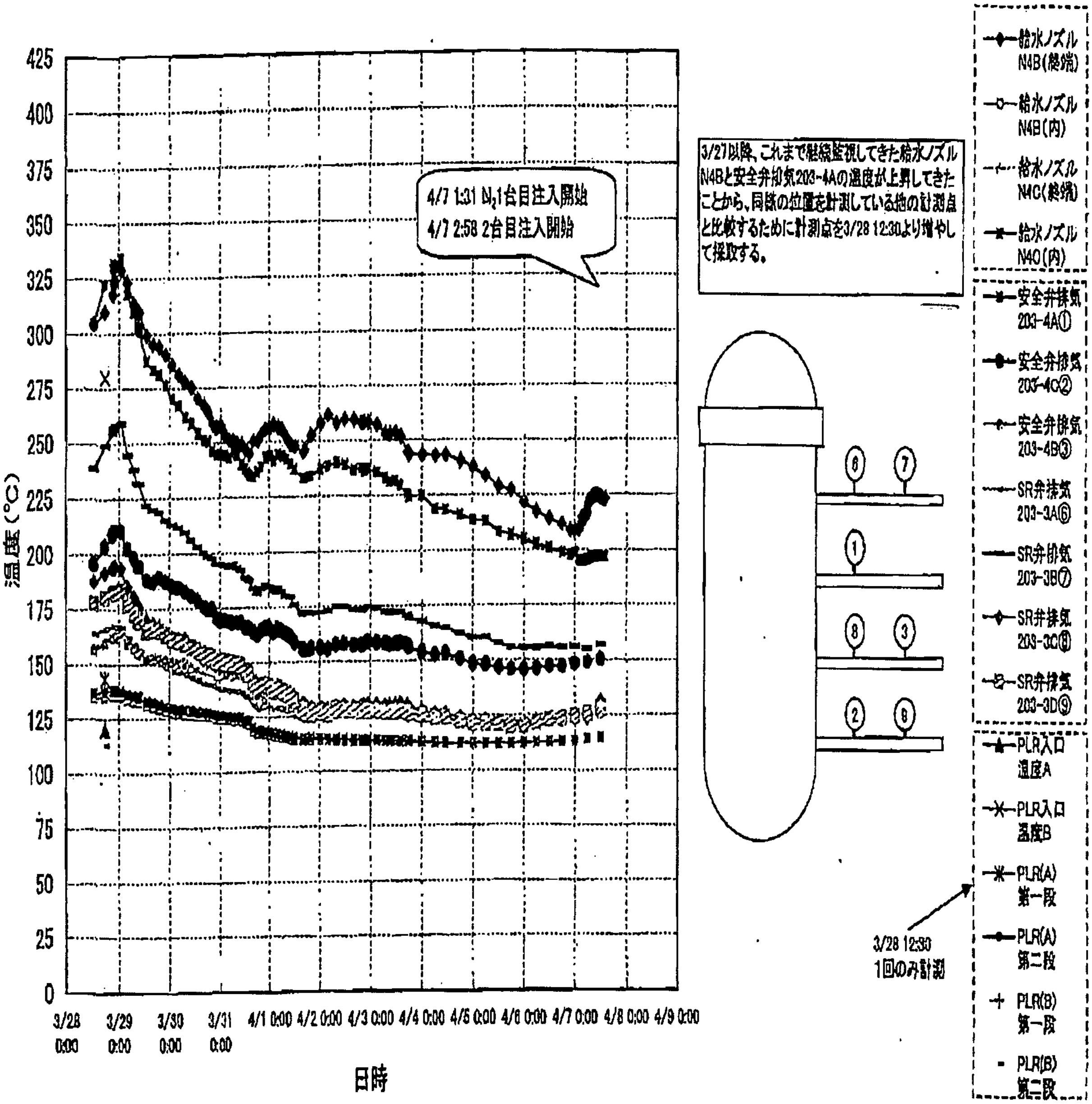
圧力換算	ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
	絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

本店情報班 (914855)
1F情報班 (9632507)

1F-1RPV周辺代表点温度(4/7 14:00)



1F-1 給水ノズル温度および安全弁排気温度比較（4月7日 14:00）



From: RST08 Hoc
Sent: Thursday, April 07, 2011 12:12 PM
To: OST01 HOC
Subject: FW: April 7 Briefing Notes, excel spreadsheet and unit 1 pressure and temperature curves
Attachments: TEPCO Sumarry Rev.71 FinalF April 7.xls; Nitrogen Purge Graphs img-407163222.pdf; Spinnato speaking notes 6 pm briefing April 7.doc

Jeff,

Here is the file.

The only one that needs to be on 11x17 is the Excel Spreadsheet.

Thanks,

Mike

Mike Brown
Reactor Safety Team

From: RST01 Hoc
Sent: Thursday, April 07, 2011 10:27 AM
To: RST09 Hoc; RST08 Hoc
Subject: FW: April 7 Briefing Notes, excel spreadsheet and unit 1 pressure and temperature curves

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From: Blamey, Alan
Sent: Thursday, April 07, 2011 9:17 AM
To: RST01 Hoc
Subject: FW: April 7 Briefing Notes, excel spreadsheet and unit 1 pressure and temperature curves

FYI

From: Hochevar, Albert R. (INPO) [mailto:HochevarAR@INPO.org]
Sent: Thursday, April 07, 2011 9:15 AM
To: Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject: April 7 Briefing Notes, excel spreadsheet and unit 1 pressure and temperature curves

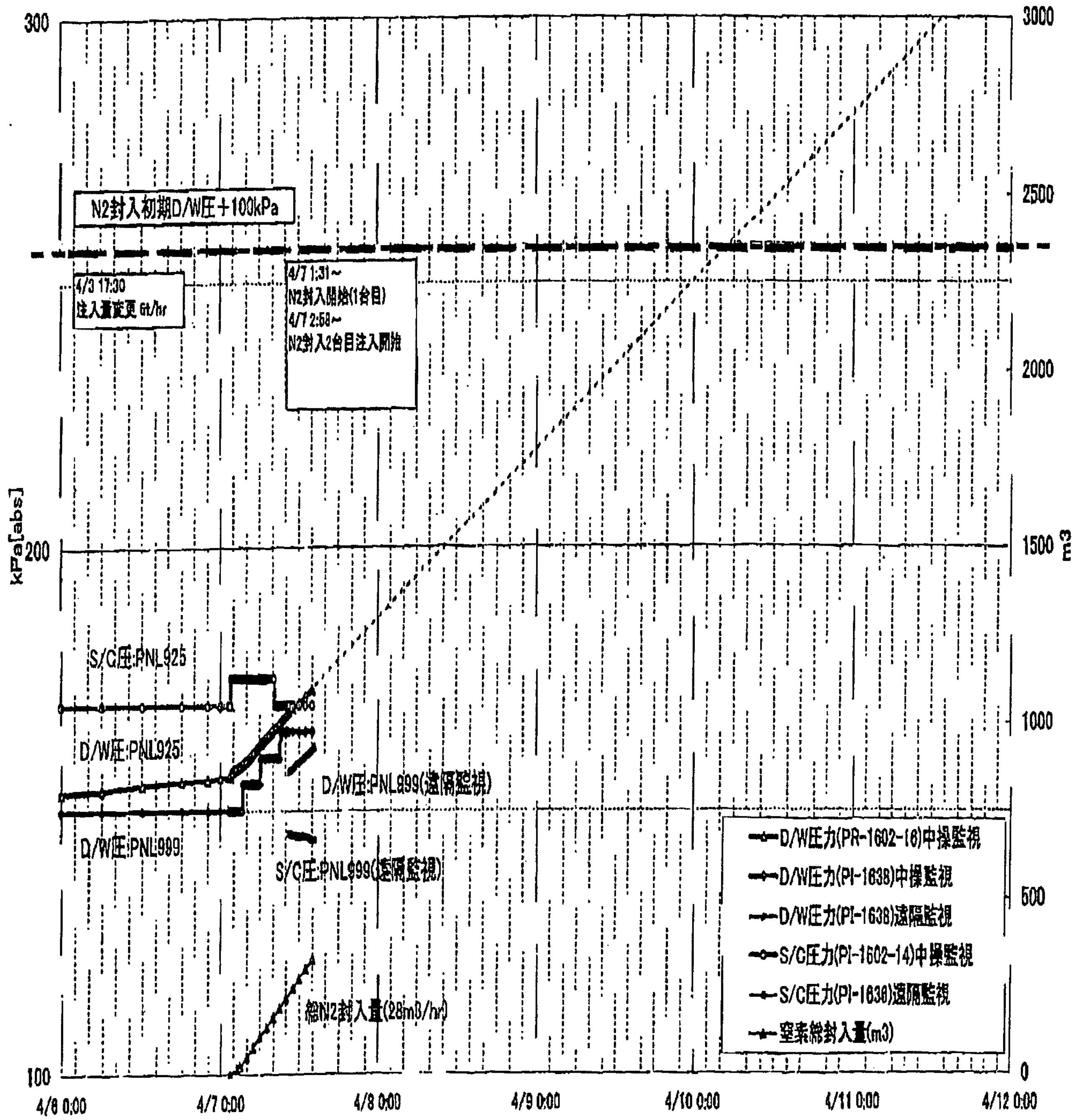
For your information

Al Hochevar
Institute of Nuclear Power Operations
Cell (b)(4)

B6/38

4月7日最新共用1Fデータ(14時10分現在).xls

1F1 D/W,S/C圧(N2注入後の挙動)



※1：計器不良
※2：データ採取対象外

福島第一原子力発電所　プラント関連パラメータ

4月7日　12:00 現在

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原子炉水位	燃料域A：−1650mm 燃料域B：−1650mm （4/7 12:00 現在）	燃料域A：−1500mm （4/7 12:00 現在）	燃料域A：−1900mm 燃料域B：−2250mm （4/7 12:00 現在）	※2	停止域 1801mm （4/7 12:00 現在）	停止域 1816mm （4/7 12:00 現在）
原子炉圧力	0.376MPa g (A) 0.758MPa g (B) （4/7 12:00 現在）	−0.009MPa g (A) −0.016MPa g (B) （4/7 12:00 現在）	0.000MPa g (A) −0.081MPa g (C) （4/7 12:00 現在）	※2	0.002MPa g （4/7 12:00 現在）	0.008MPa g （4/7 12:00 現在）
原子炉水温度	（系統流量がないため採取不可）			※2	39.1℃ （4/7 12:00 現在）	37.1℃ （4/7 12:00 現在）
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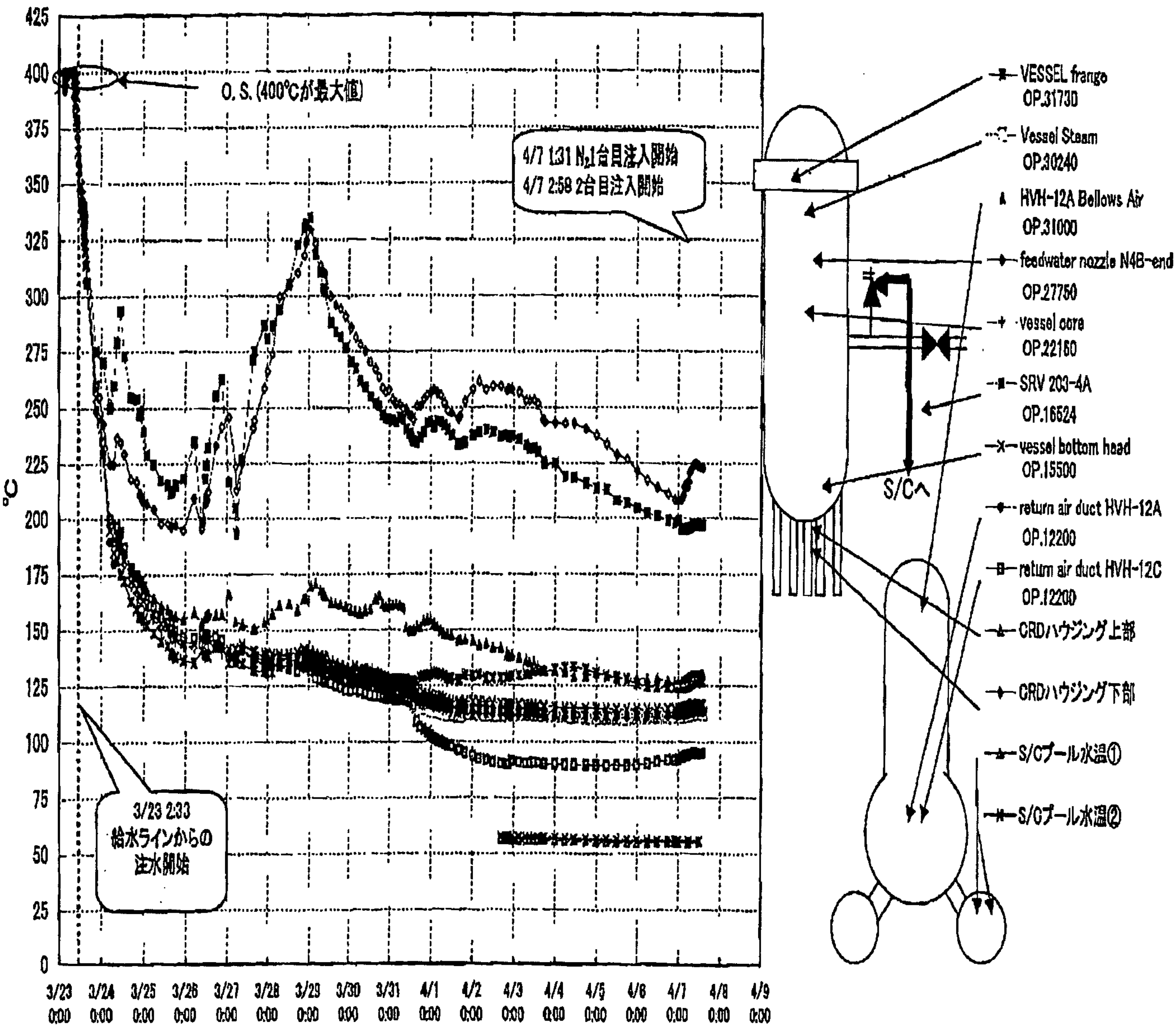
D/W・S/C 圧力	D/W 0.165MPa abs S/C 0.150MPa abs （4/7 12:00 現在）	D/W 0.100MPa abs S/C ダウンスケール（調査中） （4/7 12:00 現在）	D/W 0.1059MPa abs S/C 0.1720MPa abs （4/7 12:00 現在）	※2		
CAMS	D/W 3.17×10^{1}Sv/h S/C 1.29×10^{1}Sv/h （4/7 12:00 現在）	D/W 3.05×10^{1}Sv/h S/C 7.94×10^{-1}Sv/h （4/7 12:00 現在）	D/W 1.93×10^{1}Sv/h S/C 7.68×10^{-1}Sv/h （4/7 12:00 現在）	※2		
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)	※2		
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	※1	51.0℃ （4/7 12:00 現在）	※1	※1	36.0℃ （4/7 12:00 現在）	21.0℃ （4/7 12:00 現在）
FPC スキマーサージタンクレベル	4500mm （4/7 12:00 現在）	6500mm （4/7 12:00 現在）	※1	4900mm （4/7 12:00 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	・3号機　原子炉圧力容器温度について、データ採取を行い、状況推移を継続調査中。 ・2号機　S/C圧力について、状況推移を継続調査中。			共用プール：28℃程度 （4/7 7:45）	5u：非熱モード （4/7 8:51〜）	6u：SHCモード （4/7 10:16〜）

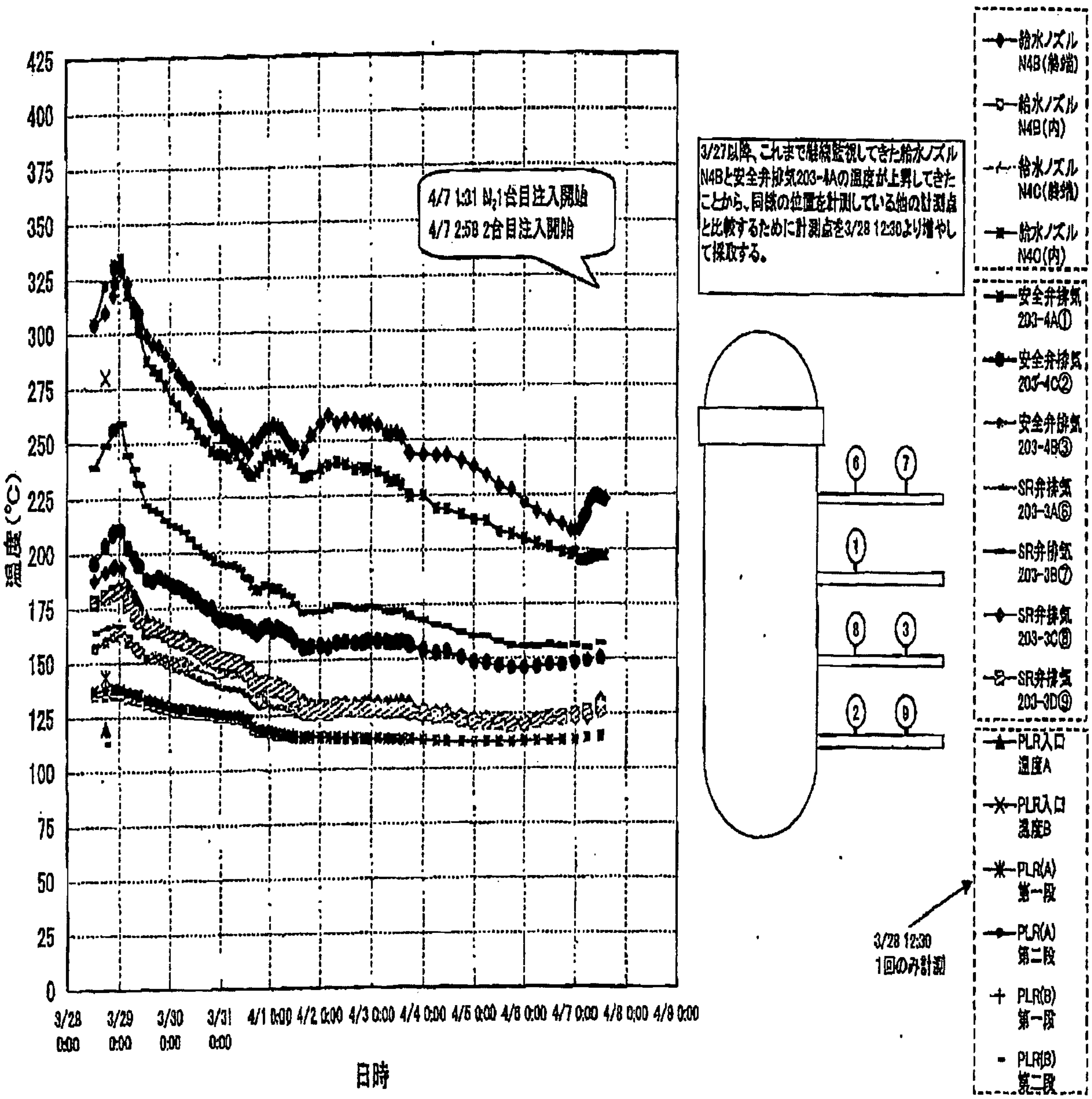
圧力換算　ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

本店情報班 (914855)
1F 情報班 (9632507)

1F-1RPV周辺代表点温度(4/7 14:00)



1F-1 給水ノズル温度および安全弁排気温度比較（4月7日 14:00）



Not for Release

Fukushima-Daiichi Current Status and Planned Work

7 April at 12:00 (Rev-71)

		1F	2F	3F	4F	5F	6F	[illegible]
Reactivity Control (Halt Reactor)	Current Status	■All CRs are kept inserted in the core ■70% of the core is estimated to be damaged (at 15:00 on 15 March)	■All CRs are kept inserted in the core ■30% of the core is estimated to be damaged (at 15:30 on 15 March)	■All CRs are kept inserted in the core ■25% of the core is estimated to be damaged (at 12:00 on 14 March)	■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 (at 14:3 on 20 March)	■Long term outage (7 month) ■RPV Head on ■Cold shutdown (at 19:29 on 20 March)	
		CAMS (at 12:00 on 7 April): D/W: 3.17×10[1] SV/h S/C: 1.20×10[1] SV/h	CAMS (at 12:00 on 7 April): D/W: 3.05×10[1] SV/h S/C: 1.94×10[-1] SV/h	CAMS (at 12:00 on 7 April): D/W: 1.93×10[1] SV/h S/C: 7.69×10[-1] SV/h				
	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	■ECCS unavailable • Reason: loss of function of the auxiliary equipment cooling system (using sea water) ■Fresh water injection through FDW line (Switch to temporary installed motor driven pump was completed) (Flow Rate: 6 m³/h by interim instrumentation at 17:30 on 3 April) ■Power source of the interim motor driven pump was switched to off-site power (3 April 10:32 -12:02) ■Installing temporary replacement pump for CCSW	■ECCS unavailable • Reason: loss of function of the auxiliary equipment cooling system (using sea water) ■Fresh water injection from FP line to low pressure coolant injection (Switch to temporary installed motor driven pump was completed) (Flow Rate: 8 m3/h by interim instrumentation at 12:12 on 3 April) ■Power source of the interim motor driven pump was switched to off-site power (3 April 10:14 - 12:12) ■Installation of the alternate pump for RHRS (28 March)	■ECCS unavailable • Reason: loss of function of the auxiliary equipment cooling system (using sea water) ■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 18:16 on 5 April) ■Power source of the interim motor driven pump was switched to off-site power (3 April 09:56 -12:18) ■Instalation of the alternate pump for RHRS (28 March)		■Ordinary operation in SHC mode of RHR (7 April 09:5?-)	■Ordinary operation in SHC mode of RHR (7 April 13:16-)	
		■RPV Dome Pressure (at 12:00 on 7 April) 0.173 MPa-g (Gauge A) 0.153 MPa-g (Gauge B) ■Reactor Water Level (at 12:00 on 7 April) TAF-1650 mm (Fuel Range; Gauge A) TAF-1650 mm (Fuel Range; Gauge B) ■RPV Metal Temperature (at 12:00 on 7 April) Feed water nozzle: 223.8℃ Bottom of RPV : 116.9℃	■RPV Dome Pressure (at 12:00 on 7 April) -0.009 MPa-g (Gauge A) 0.016 MPa-g (Gauge B) ■Reactor Water Level (at 12:00 on 7 April) TAF -1500 mm (Fuel Range; Gauge A) TAF - mm (Fuel Range; Gauge B) ■RPV Metal Temperature (at 12:00 on 7 April) Feed water nozzle: 143.6℃ Bottom of RPV : No mesurement	■RPV Dome Pressure (at 12:00 on 7 April) 0.050 MPa-g (Gauge A) -0.031 MPa-g (Gauge C) ■Reactor Water Level (at 12:00 on 7 April) TAF-1900 mm (Fuel Range; Gauge A) TAF-2250 mm (Fuel Range; Gauge C) ■RPV Metal Temperature (at 12:00 on 7 April) Feed water nozzle: 84.3℃ (questionable) Bottom of RPV : 112.3℃		■RPV Dome Pressure (at 12:00 on 7 April) 0.002 MPa-g ■Reactor Water Level (at 12:00 on 7 April) TAF+1691 mm (Shut Down Range Gauge) ■Coolant Temperature (at 12:00 on 7 April) 33.1℃	■RPV Dome Pressure (at 12:00 on 7 April) 0.008 MPa-g ■Reactor Water Level (at 12:00 on 7 April) TAF+1616 mm ■Coolant Temperature (at 12:00 on 7 April) 37.1℃	
	Next Works Planned (Activities of Cooling Water Supply Force)	□Establish remote monitoring measurement of operating conditions of Core cooling water supply pumps (scheduled on 6 April) □Switch the motor driven pump to MUW pump (The work was suspended due to high radiation environment around MUWP in the turbine building) □Water flow will be reduced to 4m³ that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments	□Establish remote monitoring measurement of operating conditions of Core cooling water supply pumps (scheduled on 6 April) □Switch the temporary motor driven pump to MUW pump (The work was suspended due to high radiation environment around MUWP in the turbine building) □Water flow will be reduced to 7m³ that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments	□Establish remote monitoring measurement of operating conditions of Core cooling water supply pumps (scheduled on 6 April) □Establish remote monitoring measurement of water level in T/B □Switch the motor driven pump to MUW pump (The work was suspended because of high radiation environment around MUWP in the turbine building) Preparing to drain the high radiation water □Water flow will be reduced to 7m3 that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off-site power & related equipments				

Containment Function (Cooling and Confinement)	Current Status	■Pressure (at 12:00 on 7 April) D/W; 0.165 MPa-abs S/C; 0.150 MPa-abs ■Started ventilation through hardened line (at 14:30 on 12 March) • PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rapture disc working pressure : 310 kPa	■Pressure (at 12:00 on 7 April) D/W; 0.100 MPa-abs S/C; Down Scale (Examining) ■Ready to start ventilation through hardened line (Not executed so far) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rapture disc working pressure : 325 kPa	■Pressure (at 12:00 on 7 April) D/W ; 0.1055MPa-abs S/C; 0.1720MPa-abs ■Started ventilation through hardened line (at 9:20 on 13 March) PCV design pressure : 384 kPa PCV max pressure for use : 427 kPa Rapture disc working pressure : 310 kPa		■Negative pressure kept by SGTS	■Negative pressure kept by SGTS	
	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 CUW	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 4500 mm (at 12:00 on 7 April) ■No Roof due to explosion on the operation floor ■Watering by concrete pumping vehicle (Fresh Water) (called the Elephant) ·31 March 13:03-13:57 ·31 March 14:28-16:04 · 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.	■SFP water level uncertain (No water level meter) ■SFP temperature 51.0℃ (at 12:00 on 7 April) ■Skimmer suge tank level 5500 mm (at 12:00 on 7 April) ■Roof remained, however blowout panel worked ■Fresh water injection to SFP trough the existing FPC line and temprary line ·28 March 16:30-18:25 ·30 March 19:05-23:50 (Switched to fire engine pump due to some trouble in electric motor driven pump) · 1 April 14:56-17:05 · 4 April 11:05-13:37 · 7 April 13:00- ■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 tempetature uncertain (Unable to measure because of lack of power supply) ■Skimmer suge tank level No measurement ■No roof due to explosion on the operation floor ■Water spray with new special pumping vehicle (call Zebra-improved) ·27 March 12:34-14:36 (Sea Water) ·29 March 14:17-18:18 (Fresh Water) ·31 March 16:30-19:33 (Fresh Water) · 2 April 09:52-12:54 (Fresh Water) · 4 April 17:03-19:19 (Fresh Water) · 7 April 06:53- (Fresh Water) ■ Check the condition of FPC lines ·No abnormal condition on the strainer ·Piping seems to be stuffed (on 3 April)	■SFP water level : Uncertain ■SFP water temperature, gauge out of order (at 11:10 on 24 March and later) ■Skimmer suge tank level 4300 mm (at 17:00 on 7 April) ■No roof due to explosion at the operational floor ■Installation alternation pump for RHRS ■Watering by concrete pumping vehicle (called as Giraffe) ·25 March 19:05-22:07 (Sea water) ·27 March 16:55-19:25 (Fresh water) ·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. Checking condition of R/B with a camera & Watering were conducted (5 April 17:35-18:22)	■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 ■SFP Water temp: [illegible]℃ (at 17:00 on 7 April) ■Secondary containment is intact with roof of R/B	■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 ■SFP Water temp: 21.0℃ (at 12:00 on 7 April) ■Secondary containment is intact with roof of R/B	■SFP water temperature 28 ℃ at 07:45 on 7 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)	□Preparing to water feeding with electric motor pumps. (Target day : 9 April)		□Preparing for water transfer by electric motor pump (Target day : 9 April)	□Preparing for water transfer by electric motor (Target day : 9 April) □Watering with the Elephant (scheduled on 7 April 18:00 - 23:00) □Leak cheking on FPC strainer (schedulled on 5 April)	□Transportaion of fresh water by tank truck to fill Pure Water Tank No.3	□Transportaion of fresh water by tank truck to fill Pure Water Tank No.3	

High Voltage AC Power Supply	Current Status	■430V P/C 2C connected to local distribution network of Tohoku EPC (at 15:46 on 20 March) ■Equipments of MUW 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 (MP5-8) were restored	■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	■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. ■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 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	■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) ■6.9kV emergency bus 6C is powered by ordinary transmission line and startup transformer ■Emergency diesel generator 6B in service (Emergency bus 6D is energized) ■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.	■Temporary power for common pool was restored at 15:30 on 24th March
	planned work (Next Activities of Electric Power Supply Team)	□Test on the newly installed motor for MUW pump was disturbed by the high radiation level □Plan to restore air conditioning system of MCR □Plan to cleanup puddle in the switch gear & power center area in the basement	□Restration of ・Illumination of MCR ・Air conditioning system of MCR ・CAMS (Hydrogen detector)	□Restoration work for MUWC & MUWD withheld due to the high radiation level □Schedule for powering to loads is pending		□Laying temporary power cable for SLC (B)	□Investigating cable laying work for monitoring posts	□Investigating the power restoration work for I & C and illumination
DC Power Supply	Current Status	■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 ■Common DC125V has been powered at 18:30 on 31 March	■Part of I & C equipments were powered by temporary battety to monitor plant status ・Batteries for reactor level guages 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 battety to monitor plant status	■Part of I & C equipments were powered by temporary battety to monitor plant status ■DC 24 Charger 5B-1 has been powered on 31 March	■Part of I & C equipments were powered by temporary battety 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 ・Started at 22:30 on 6 April; suspended due to crack of instrument pipe at 22:54 ・Restarted at 01:31 on 7 April ・2nd N2 gas providing equipment was started at 02:33 on 7 April	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas (Confirming the line for N2 gas injection) ■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 pan drainage duct. It is hoped that this mitigates the concentrated of Hydrogen gas	■Measurement for hydrogen gas accumulating in PCV ・Considering the injection of N2 gas (Confirming the line for N2 gas injection)		■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	■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	
	Next Works Planned (Next Activities)		□Measurement for hydrogen gas accumulating in PCV ・Injection of N2 gas □Water jet pump is ready at off-site stock yard however lifting machine is	□Measurement for hydrogen gas accumulating in PCV ・Injection of N2 gas				□Prevention of hydrogen gas explosion Some drilling work is planned on the ceiling (roof ?) using a remote drilling device

Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water transfer H/W → CST (3 April 13:55-) ■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) 106 cm (at 7:30 on 7 April) ・Remote monitoring measurement of water level in the trench was established (on 7 April)	■Draining water in T/B Water trabsfer (H/W → CST) (2 April 17:10 -) ・By two pumps (5 April 15:40 -) ・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 March) ・Water level ((from top edge of grating to water surface) 104 cm (at 7:50 on 7 April) ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Operation "Beaver" ・Water seeping through a layer of gravel was confirmed by investigation of water flow route. ・Injection of liquid chemical to prevent leaks was conducted. ・It had been confirmed that the leak was stopped. (at 05:38 on 7 April) ・A rubber board was attached over the crack. (at 12:15 on 8 April)	■Draining water in T/B Water trabsfer (CST → SPT surge tank) (28 March 17:40 - 31 March 08:37) ■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) 126 cm (at 7:00 on 7 April) ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・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)	■Draining water ・Water transfer RHR pump area & CS pump area → S/C (4 April) ・Suspended by large amount of water, considering draining water ・Discharge water in sub-drain to the sea (4 April 21:00 -)	■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 ・Discharge water in sub-drain to the sea (4 April 21:00 -)	■Draining water ・Concentrated RW → sea (4 April 19:03 -) ■Discharging water in sub-drain of Unit 5&6 to the sea ・6 discharging pumps were added (at 17:25 on 5 April) ・1 sub-drain pump of Unit 6 stopped (at 18:37 on 5 April) ■Discharged water Unit 5: 53 m^3 (at 16:24 on 8 April) Unit 6: 221.4 m^3 (at 18:40 on 8 April)
	Next Works Planned	□Draining water in T/B ・Considering transferring the highly contaminated water to concentrated RW	□Insertion of metal panel in front of screen pump building (scheduled on 5 April after work for shutting off the leak) □ Draining water in T/B ・Considering transferring the highly contaminated water to concentrated RW	□Water transfer, H/W → CST (scheduled on 7 April) □Considering transferring the highly contaminated water to concentrated RW	□ Work for shutting off the leak ・Pouring concrete to clog cracks on sea water piping (scheduled on 5 April)			□ Repair of boundary / Prevention of leaks from boundary of buildings before storing highly contaminated water in concentrated RW (scheduled until 11 April)
Others	Current Status	■Barge ・Water transfer: Barge No.1 → Filtered water tank 1 April 15:58 - 16:25 2 April 10:20 - 16:40 ・Water transfer: Barge No.2 → Barge No.1, (3 April 09:52 - 11:15) ・Barge No.2 arrived at dock (at 12:03 on 4 April) ■Air Borne Contamination Control ・Test sprinkling was conducted at mountain side of the common pool (1 April on)						
	Next Works Planned	□Barge ・Water transfer: Barge No.1 → Filtered water tank □Air Borne Contamination Control ・Real operation of the sprinking will be performed 2 weeks later.						

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 7, 2011- TC Briefing. (All times JST)

The priorities are 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 to reduce the radiation levels so that work can continue
- Containing the spread of radioactive materials.

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

- Trails of white vapor are intermittently being seen coming out of the units 1, 2, 3, and 4 reactor buildings.
- Disposal of radioactive water and radiation levels of water in the turbine building basements as well as debris around the plant continue to delay work to restore cooling functions.
- N2 purging started at 22:30 in Unit 1 last night, but had to be stopped because of a cracked instrument pipe. The N2 purge was resumed in at 0131 this morning. We will attach graphs that show unit 1 temperature and pressures. Update from the INPO/NRC-RST call it was stated that after the purge began, pressure in the drywell increased higher than expected so TEPCO reduced N2 generation to 2 not 3 N2 generator units and will purge for 4 and not 6 days.
- The water level in the Unit 2 turbine buildings trench has increased by 5 cm or (2 inches) since the sealant was injected into the ground around the Unit 2 trench to stop water flowing from the crack in the intake structure to the sea.
- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening.
- You will see on the daily update that TEPCO has outlined its long-term water treatment and desalinization plans. I have sent the Japanese version of this plan to INPO for translation and we hope to be able to share it shortly.

<u>Unit Status</u>

- In Unit 1, non-borated fresh water injection into the main feedwater line continues at 6 cubic meters/hr (goal is to reduce flow to 4 cubic meters/hr, which is equivalent to the decay heat rate 14 days after shutdown.) Reactor pressure indicators A and B continue to show increasing pressure. A has increased to .375 MPa g, (54.39 psig) and B has increased to .758 MPa g (109.94 psig). Feedwater nozzle temperature increased since the start of nitrogen injection, however in the last couple of hours it is trending down. The latest reading was indicating 223.8 degrees centigrade or (433 degrees Fahrenheit.) Reactor vessel lower temperature has also increased slightly and is

reading 116.2 degrees Centigrade or (241 degrees Fahrenheit.) Drywell pressure has increased to .165 MPa abs or (23.93 psia). However, torus pressure is constant at .150 MPa abs or (21.76 psia.) Dose rates in the U1 Drywell and Torus increased to 31.7 Sv/Hr or (3,170 Rem/hr and 12.9 Sv/Hr or (1,290 Rem/hr) respectively.

- Transfer of water from the Unit 1 condenser hotwell to the CST continues.
- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection line continues at 8 cubic meters/hr, (goal is to reduce flow to 7 cubic meters/hr, which is equivalent to the decay heat rate 14 days after shutdown.) Unit 2 reactor and drywell pressure remain stable. Feedwater nozzle temperature has increased to 143.6 degrees centigrade or (290 degrees Fahrenheit.) Dose rates in the U2 Drywell and Torus continue to decrease. The drywell dose rates are at 30.5 Sv/hr or (3,050 Rem/hr) and the dose rate in the Torus has decreased to .794 Sv/hr or (79.4 Rem/hr.)
- Injection of water into the Unit 2 spent fuel pool was conducted this afternoon. The temperature in the Unit 2 spent fuel pool is 51 degrees centigrade or (124 degrees Fahrenheit.)
- Transfer of water from the Unit 2 condenser hotwell to the CST continues.
- 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. Unit 3 pressures are stable. Feedwater nozzle temperature has increased to 88.3 degrees centigrade or (191 degrees Fahrenheit) and reactor vessel lower temperature has decreased and is at 112.3 degrees Centigrade or (234 degrees Fahrenheit.) Dose rates in the U3 Drywell and Torus continue to drop. The drywell is at 19.3 Sv/hr (1,930 Rem/hr) and the dose rate in the Torus is .768 Sv/hr or (76.8 Rem/hr.)
- Preparations are continuing to transfer water from the Unit 3 condenser hotwell to the CST.
- Spraying of the Unit 3 spent fuel pool was conducted this morning.
- Spraying of the Unit 4 spent fuel pools started at 1800 this evening and will continue until approximately 23:00 hours.

<u>Dose Rates</u>

- Overall site dose rates are continuing to decrease and we have not seen an increase in dose rate since the nitrogen purge was started.
- Plutonium 238, 239 and 240 were reconfirmed in soil sample taken on March 25 and March 28. Maximum values are similar to sample results seen on March 21 and March 22.

From: ET07 Hoc
Sent: Thursday, April 07, 2011 10:36 AM
To: FOIA Response.hoc Resource
Subject: FW: Courtesy Notification from GE-Hitachi (b)(4)

From: Lewis, Robert
Sent: Thursday, April 07, 2011 10:21 AM
To: Caniano, Roy
Cc: ET07 Hoc; PMT07 Hoc
Subject: RE: Courtesy Notification from GE-Hitachi (b)(4)

Roy

(b)(5)

From: Caniano, Roy
Sent: Thursday, April 07, 2011 9:05 AM
To: Lewis, Robert
Subject: FW: Courtesy Notification from GE-Hitachi (b)(4)

(b)(5)

From: Evans, Robert
Sent: Wednesday, April 06, 2011 5:22 PM
To: Caniano, Roy
Subject: FW: Courtesy Notification from GE-Hitachi (b)(4)

Sorry, I was not aware that you will be in the office on Thursday...

From: Evans, Robert
Sent: Wednesday, April 06, 2011 5:13 PM
To: Spitzberg, Blair; Cain, Chuck; Ryder, Christopher
Cc: Schlapper, Gerald
Subject: Courtesy Notification from GE-Hitach (b)(4)

(b)(4)

B6/39

(b)(4)

Williamson, Edward

From: Williamson, Edward
Sent: Thursday, April 07, 2011 12:14 PM
To: Miller, Charles
Cc: Spencer, Mary; Harris, Brian
Subject: Topics Raised by Task Force
Attachments: Japan Task Force---- Legal Talking Points on Reasonable Assurance and Adeguate Protection.docx; Japan Task Force-Public Meeting Policy.docx; s-11-007.pdf

Charlie:

FYI, I am attaching a couple of legal topical papers that I and my staff have created in response to a couple of preliminary questions or issues raised by the Task Force.

Ed

Edward L. Williamson
Assistant General Counsel for Operating Reactors
Office of the General Counsel
U.S. Nuclear Regulatory Commission

Phone 301 -415-1143

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B6/40

Legal Talking Points on Reasonable Assurance of Adequate Protection – How Safe is Safe Enough

(b)(5)

(b)(5)

(b)(5)

Edward L. Williamson
Assistant General Counsel
for Operating Reactors
Office of the General Counsel

Withhold Ex. 5

(b)(5)

Edward L. Williamson
Assistant General Counsel
for Operating Reactors
Office of the General Counsel

Official Use Only--Attorney-Client Privilege

Attachment 2

From: Morris, Scott
Sent: Friday, April 08, 2011 1:36 AM
To: ET07 Hoc
Subject: FW: draft matrix (b)(5)
Attachments: (b)(5)

From: Temple, Jeffrey
Sent: Thursday, April 07, 2011 6:25 PM
To: Virgilio, Martin
Cc: Morris, Scott; McDermott, Brian; LIA06 Hoc; LIA08 Hoc
Subject: draft matrix (b)(5)

Marty

As promised at our 0900 call this morning, attached is a draft matrix of action items assigned to NRC (and DOE items when we a stake in the item). I have tried as best as I can to list the action items verbatim, and describe how we processed the tasks assigned to us. Many tasks are ongoing tasks.

Please let me know if this is what you are looking for.

(b)(5)
(b)(5)

Feel free to call me if you have any questions or you or the Chairman would like additional information.

Jeff Temple
Response Program Manager
NSIR/DPR/IR/Ops Center
Cell phone (b)(6)

BG/41

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

From: RST01 Hoc
Sent: Friday, April 08, 2011 8:06 PM
To: RST03 Hoc; RST07 Hoc; RST06 Hoc
Subject: FW: Integrated document from Trish Milligan
Attachments: PARs for Deputies Meeting Rev0 (3).docx

Forwarding draft composite doc for consideration.

From: Hoc, PMT12
Sent: Friday, April 08, 2011 7:45 PM
To: RST01 Hoc
Subject: FW: Integrated document from Trish Milligan

Here's the combine document that includes the stability information for you to mark up as appropriate.

Sandi
PMT-PAAD

From: Cool, Donald
Sent: Friday, April 08, 2011 4:40 PM
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. As discussed, it requires additional work to clearly integrate the RST stability criteria as trigger points or logic permissive for actions or decisions.

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

BG/42

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From:	Blamey, Alan
Sent:	Friday, April 08, 2011 7:00 AM
To:	RST01 Hoc
Cc:	FOIA Response.hoc Resource
Subject:	Review of Option B
Attachments:	Option B Recommendations -Combo 0630 4-05 version.docx
Follow Up Flag:	Follow up
Flag Status:	Flagged

We have reviewed the option B document and provided some comments.

B6/43

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

(b)(5)

(b)(5)

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(b)(5)

(b)(5)

(b)(5)

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

(b)(5)

(b)(5)

From: LIA02 Hoc
Sent: Friday, April 08, 2011 7:51 AM
To: LIA02 Hoc; Doane, Margaret; Mamish, Nader
Cc: Abrams, Charlotte; Smiroldo, Elizabeth; Bloom, Steven; Schwartzman, Jennifer; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Tobin, Jennifer; Mayros, Lauren; Young, Francis; Ramsey, Jack; Henderson, Karen; English, Lance; Shepherd, Jill; Baker, Stephen; Emche, Danielle; Fragoyannis, Nancy; LIA03 Hoc; Stahl, Eric; Owens, Janice; Fehst, Geraldine; Foggie, Kirk; Breskovic, Clarence
Subject: RE: One Page Summary March 8, 2011 Should Read APRIL!

Please note that the document date should read April not March.

From: LIA02 Hoc
Sent: Friday, April 08, 2011 7:31 AM
To: Doane, Margaret; Mamish, Nader
Cc: Abrams, Charlotte; Smiroldo, Elizabeth; Bloom, Steven; Schwartzman, Jennifer; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Tobin, Jennifer; Mayros, Lauren; Young, Francis; Ramsey, Jack; Henderson, Karen; English, Lance; Shepherd, Jill; Baker, Stephen; Emche, Danielle; Fragoyannis, Nancy; LIA03 Hoc; Stahl, Eric; Owens, Janice; Fehst, Geraldine; Foggie, Kirk; Breskovic, Clarence; LIA02 Hoc
Subject: One Page Summary March 8, 2011

~~OFFICIAL USE ONLY~~

Attached is One Page Summary for March 8, 2011.

~~OFFICIAL USE ONLY~~

B6/44

Friday, March 8, 2011
For the morning Chairman brief read-out

Daily activities remain the same for the NRC Japan Team. The team continues holding its daily meetings with TEPCO and NISA. The level of dialog between the Japan Team and its Japanese counterparts continues to be effective, with a high-level of technical exchange.

Regarding the April 7, 2011 earthquake (7.1 M), there have not been any significant consequences to Fukushima Daiichi. Onagawa nuclear power station only has one power line into the site. NISA/TEPCO asserted that they do not anticipate any issues with providing additional diesel fuel to the site and confirmed that all cooling functions are operating onsite. Northern Japan is facing significant power outage issues.

Eric and Danielle continue to work with the Embassy, NRC Japan Team, NRC Headquarters, the Consortium partners and the Government of Japan (GOJ) to capture and update nuclear related assistance requests. These have been consolidated by the Embassy into the "GOJ Request List." The Embassy will own the list moving forward and will continue to work with the GOJ to hone the requests.

Danielle and Eric had dinner with Nakagawa-san, JNES, on April 7. During dinner, Nakagawa explained that about 60 JNES staff have temporarily relocated with NISA to work for them directly. This includes about 50 technical staff and staff from his international office, who are working to liaison with international counterparts, IAEA, press, and complete translations. In total, JNES is working on a variety of issues for NISA and is extremely busy (b)(5)

(b)(5)

Attached document notes the lifting of shipping restriction on raw milk and environmental monitoring information. These were provided at the Cabinet meeting on April 7, 2008.

Baca, Bernadette

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Friday, April 08, 2011 12:46 AM
To: Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; michael.call@nrc.gov
Subject: FW: Latest Plant Data for Unit #1
Attachments: April7.2011plantdata.pdf; April8.2011unit1data2.pdf; April8RPVPCVtempdata.pdf

All,
At 3pm will be discussing more [redacted] (b)(4)
Al

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

-----Original Message-----
From: 松尾　俊弘 [mailto:matsuo.toshihiro@tepco.co.jp]
Sent: Friday, April 08, 2011 1:21 PM
To: Hochevar, Albert R. (INPO)
Cc: 渡辺　沖; 佐藤　隆; 久持康平様
Subject: Latest Plant Data for Unit #1

Dear Mr. Hochevar,

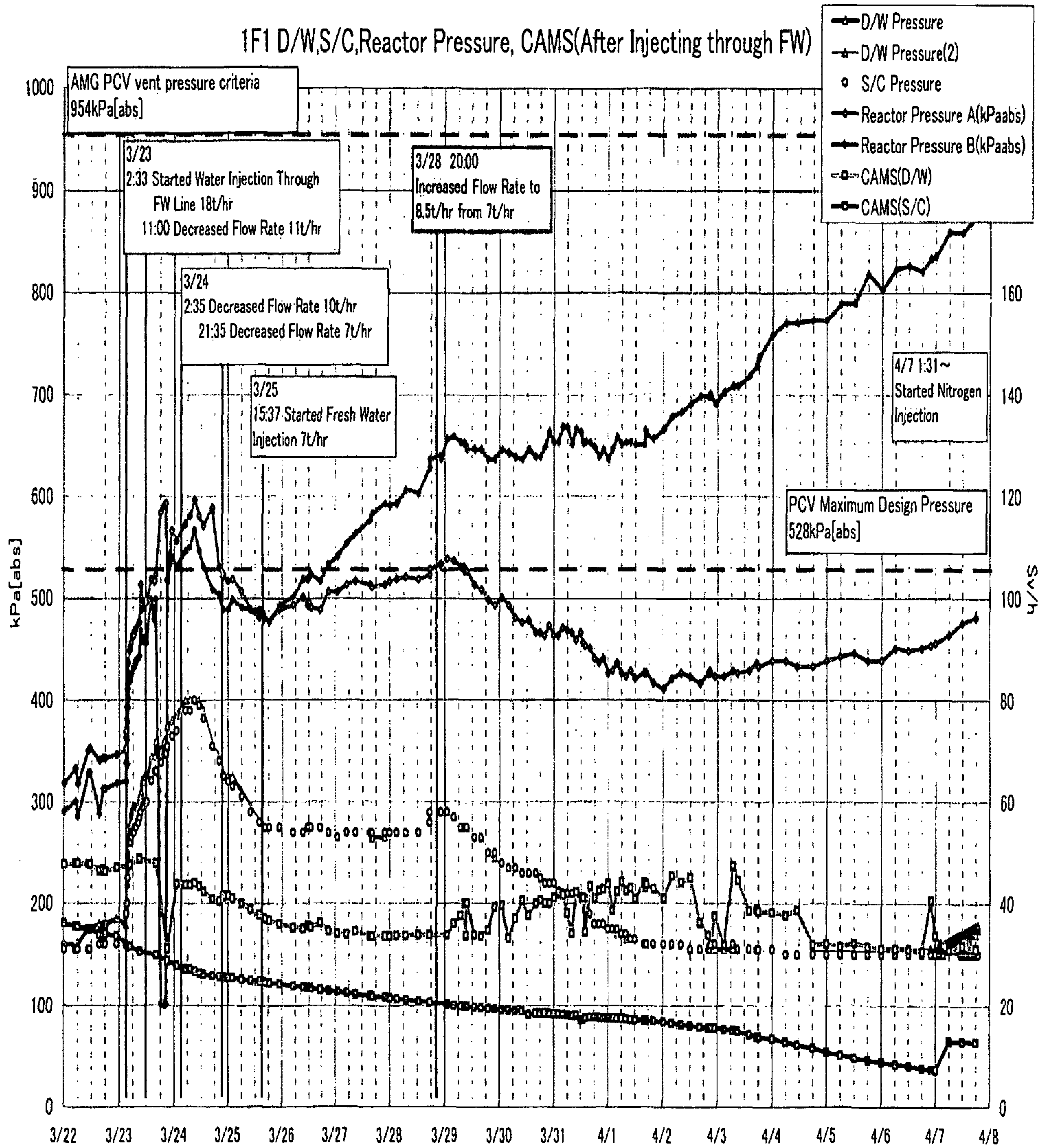
Thank you very much for your help everyday.
Please attached find the unit 1 latest plant data.

Regard,

Toshihiro Matsuo

B6/45

intended recipient of this e-mail, please notify the sender immediately by return e-mail and permanently delete the original and any copy or printout of this e-mail and any attachments.
Thank you.


1F1 D/W,S/C,Reactor Pressure, CAMS(After Injecting through FW)
D/W Pressure
D/W Pressure(2)
S/C Pressure
Reactor Pressure A(kPaabs)
Reactor Pressure B(kPaabs)
CAMS(D/W)
CAMS(S/C)
AMG PCV vent pressure criteria 954kPa[abs]
3/23 2:33 Started Water Injection Through FW Line 18t/hr 11:00 Decreased Flow Rate 11t/hr
3/24 2:35 Decreased Flow Rate 10t/hr 21:35 Decreased Flow Rate 7t/hr
3/25 15:37 Started Fresh Water Injection 7t/hr
3/28 20:00 Increased Flow Rate to 8.5t/hr from 7t/hr
4/7 1:31~ Started Nitrogen Injection
PCV Maximum Design Pressure 528kPa[abs]
kPa[abs]
Sv/h
1000
900
800
700
600
500
400
300
200
100
0
160
140
120
100
80
60
40
20
0
3/22
3/23
3/24
3/25
3/26
3/27
3/28
3/29
3/30
3/31
4/1
4/2
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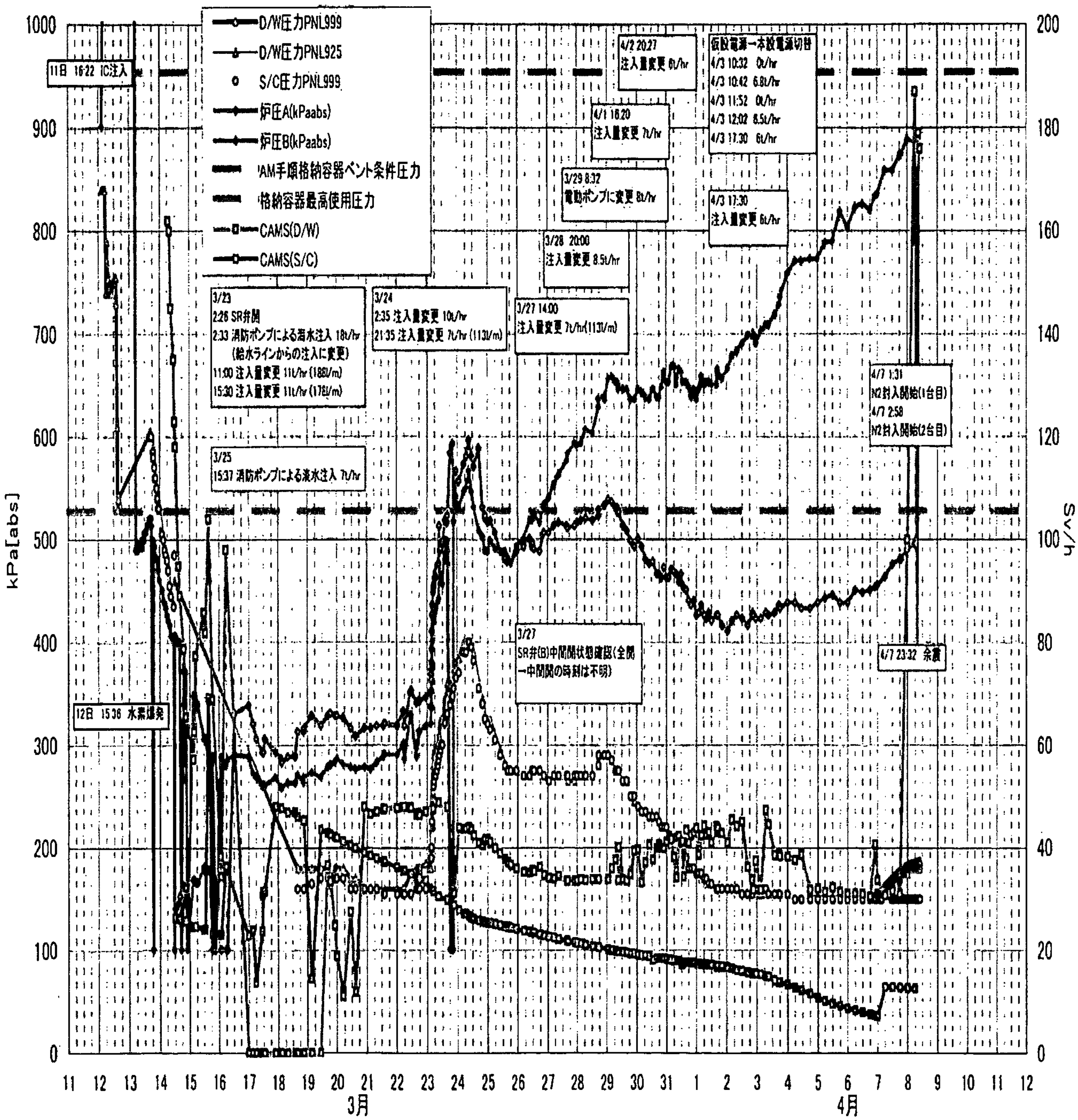
4/4
4/5
4/6
4/7
4/8

1F1 D/W,S/C,炉圧力/CAMS



Baca, Bernadette

From:	Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent:	Friday, April 08, 2011 8:28 AM
To:	Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject:	Japan Update for Friday, April 8

From INPO for your information.

FUKUSHIMA DAIICHI

Status as of 6pm (JST) April 8, 2011. (All times JST)

The priorities are as follows:

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

Highlights for today include the following:

- Trails of white vapor are intermittently being seen coming out of the Units 1, 2, 3, and 4 reactor buildings.
- Disposal of radioactive water and radiation levels of water in the turbine building basements as well as debris around the plant continue to delay work to restore cooling functions.
- Nitrogen purging of Unit 1 continues.
- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening. Drainage of the Unit's 5 and 6 underground ground water pits will be completed on Saturday.
- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening. Following completion of pumping, workers will check the radwaste facility for cracks that might have been caused by the earthquake.

Unit Status

Unit 1

- Non-borated fresh water injection into the main feedwater line continues at 6 cubic meters/hr. Reactor pressure indicators A and B continue to show increasing pressure. Reactor pressure indicator A has increased to 57.29 psig and B has increased to 115.01 psig. Feedwater nozzle temperature is currently reading 476 degrees Fahrenheit. Reactor vessel lower temperature has also increased slightly and is reading 247 degrees Fahrenheit. Drywell pressure has increased to 26.83 psia and torus pressure has increased to 22.48 psia.

B6/46

- Transfer of water from the Unit 1 condenser hotwell to the condensate storage tank (CST) has been slowed because of problems with the pump. Completion date of water transfer has not been fixed.

Unit 2

- Injection of non-borated fresh water using the low pressure coolant injection has been reduced to 7 cubic meters/hr, (equal to the goal and equivalent to the decay heat rate 14 days after shutdown.) Unit 2 reactor and drywell pressure remains stable. Feedwater nozzle temperature has decreased to 286 degrees Fahrenheit. Dose rates in the Unit 2 drywell and torus continue to decrease. The drywell dose rates are at 2,940 Rem/hr and the dose rate in the torus has decreased to 76.5 Rem/hr.

- The temperature in the Unit 2 spent fuel pool is 127 degrees Fahrenheit. The Unit 2 spent fuel pool is being sprayed this evening from 1700-1900.

- Transfer of water from the Unit 2 condenser hotwell to the CST continues and it is estimated that this transfer will be completed Saturday morning.

Unit 3

- Injection of non-borated fresh water using the low pressure coolant injection line continues at 7 cubic meters/hr (equal to the goal and equivalent to the decay heat rate 14 days after shutdown.) Unit 3 pressures are stable. Feedwater nozzle temperature has increased slightly to 192 degrees Fahrenheit and reactor vessel lower temperature has decreased and is at 231 degrees Fahrenheit. Dose rates in the U3 drywell and torus continue to drop. The drywell is at 1,880 Rem/hr and the dose rate in the torus is 73.8 Rem/hr.

- Preparations are continuing to transfer water from the Unit 3 condenser hotwell to the CST.

Dose Rates

- Overall site dose rates are continuing to decrease and we have not seen an increase in dose rate since the nitrogen purge was started.

Update: As a result of the earthquake last night

Onagawa Nuclear Power Station

- Remains in cold shutdown

- One off-site power line is available. Units 1, 2, 3 are operating in residual heat removal (RHR) shutdown cooling mode. One spent fuel pool cooling pump for each unit tripped, however they were immediately restarted by operators.

- It was reported in the news that there was a leak in a spent fuel pool at Onagawa as a result of the earthquake. While there was no leak, a small amount of water splashed out of the pool due to the wave action caused by the earthquake.

Higashidori Nuclear Power Station

- Remains in cold shutdown

- Off-site power was not available and the Emergency Diesel Generators automatically started. At 3:30 pm (JST) on April 8 one off-site power line was restored to service. One spent fuel pool pump tripped, however it was immediately restarted by operators.

Chris King
Manager, Communications Services // INPO
kingjc@inpo.org // W (770) 644-8865 // C (b)(6)

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Baca, Bernadette

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Friday, April 08, 2011 8:33 AM
To: Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject: FW: April 8 briefing notes and excel spreadsheet
Attachments: TEPCO Sumarry Rev.74 Final April 8.xls; Spinnato speaking notes 6 pm briefing April 8.doc

For your information

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

BG/47

FUKUSHIMA DAIICHI

The priorities are 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 to reduce the radiation levels so that work can continue
- Containing the spread of radioactive materials.

Highlights for today include the following:

- Trails of white vapor are intermittently being seen coming out of the units 1, 2, 3, and 4 reactor buildings.
- Disposal of radioactive water and radiation levels of water in the turbine building basements as well as debris around the plant continue to delay work to restore cooling functions.
- N2 purging of Unit 1 continues.
- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening. Drainage of the unit's 5 and 6 underground ground water pits will be completed on Saturday.
- The discharge of radioactive water from the radwaste facility to the sea continues and will be completed this evening. Following completion of pumping, workers will check the radwaste facility for cracks that might have been caused by the earthquake.
- The release of slightly contaminated water from units 5 and 6 ground water pits to the sea will be completed on Saturday.

Unit Status

- In Unit 1, non-borated fresh water injection into the main feedwater line continues at 6 cubic meters/hr. Reactor pressure indicators A and B continue to show increasing pressure. A has increased to .395 MPa g, (57.29 psig) and B has increased to .793 MPa g (115.01 psig). Feedwater nozzle temperature is currently reading 246.6 degrees centigrade or (476 degrees Fahrenheit.) Reactor vessel lower temperature has also increased slightly and is reading 119.4 degrees Centigrade or (247 degrees Fahrenheit.) Drywell pressure has increased to .185 MPa abs or (26.83 psia) and torus pressure has increased to.155 MPa abs or (22.48 psia.) Dose rates in the U1 Drywell increased significantly to 187 Sv/Hr or (18,700 Rem/hr) as of 6 am this morning, but have decreased to 68.3 Sv/Hr or (6,830 Rem/hr.) Dose rates in the Torus decreased slightly to 12.2 Sv/Hr or (1,220 Rem/hr.)
- Transfer of water from the Unit 1 condenser hotwell to the CST has been slowed because of problems with the pump. Completion date of water transfer has not been fixed.

- In Unit 2, injection of non-borated fresh water using the low pressure coolant injection has been reduced to 7 cubic meters/hr, (= to the goal and equivalent to the decay heat rate 14 days after shutdown.) Unit 2 reactor and drywell pressure remains stable. Feedwater nozzle temperature has decreased to 141.2 degrees centigrade or (286 degrees Fahrenheit.) Dose rates in the U2 Drywell and Torus continue to decrease. The drywell dose rates are at 29.4 Sv/hr or (2,940 Rem/hr) and the dose rate in the Torus has decreased to .765 Sv/hr or (76.5 Rem/hr.)

- The temperature in the Unit 2 spent fuel pool is 53 degrees centigrade or (127 degrees Fahrenheit.) The Unit 2 spent fuel pool is being sprayed this evening from 1700-1900.

- Transfer of water from the Unit 2 condenser hotwell to the CST continues and it is estimated that this transfer will be completed on Saturday morning.

- 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.) Unit 3 pressures are stable. Feedwater nozzle temperature has increased slightly to 88.8 degrees centigrade or (192 degrees Fahrenheit) and reactor vessel lower temperature has decreased and is at 110.7 degrees Centigrade or (231 degrees Fahrenheit.) Dose rates in the U3 Drywell and Torus continue to drop. The drywell is at 18.8 Sv/hr (1,880 Rem/hr) and the dose rate in the Torus is .738 Sv/hr or (73.8 Rem/hr.)

- Preparations are continuing to transfer water from the Unit 3 condenser hotwell to the CST.

<u>Dose Rates</u>

- Overall site dose rates are continuing to decrease and we have not seen an increase in dose rate since the nitrogen purge was started.

Update: As a result of the earthquake last night

Onagawa NPS—remains in cold shutdown

One off-site power line is available. Unit 1, 2, 3 are operating in RHR shutdown cooling mode. Once Fuel Pool Cooling pump for each unit tripped, however they were immediately restarted by operators.

It was reported in the news report that there was a leak in a spent fuel pool at Onagawa as a result of the earthquake. While there was no leak, a small amount of water that sloshed out of the pool due to the wave action caused by the earthquake.

Higashidori NPS-- remains in cold shutdown

Off-site power was not available and the Emergency Diesel Generators automatically started. At 3:30 on April 8 one off-site power line was restored to service. One FPC pump tripped, however it was immediately restarted by operators.

~~Not for Release~~

Fukushima-Daiichi Current Status and Planned Work

7 April at 20:00 & 8 April at 14:00 (Rev-74)

		1F1	1F2	1F3	1F4	1F5	1F6	[illegible]
[illegible]	Current Status	■All CRs are kept inserted in the core ■70% of the core is estimated to be damaged (at 15:00 on 15 March)	■All CRs are kept inserted in the core ■30% of the core is estimated to be damaged (at 15:00 on 15 March)	■All CRs are kept inserted in the core ■25% of the core is estimated to be damaged (at 12:00 on 14 March)	■All fuel assemblies are stored in SFP ■Gate between SFP & reactor cavity closed (for core shroud replacement work) [illegible]	■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 (at [illegible] on 20 March)	■Long term outage (1 month) ■RPV bolted up ■Cold shutdown (at 19:27 on 20 March)	
		CAMS (at 12:00 on 8 April) D/W [illegible] S/C [illegible]	CAMS (at 12:00 on 8 April) D/W [illegible] S/C [illegible]	CAMS (at 12:00 on 8 April) D/W [illegible] S/C [illegible]				
	[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	Current Status	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	
		■RPV Dome Pressure (at 12:00 on 8 April) [illegible] MPa g (Range A) [illegible] MPa g (Range B) ■Reactor Water Level (at 12:00 on 8 April) TAF [illegible] mm (Fuel Range, Range A) TAF [illegible] mm (Fuel Range, Range B) ■RPV Metal Temperature (at 12:00 on 8 April) Feed water nozzle: [illegible] °C Bottom of RPV: [illegible] °C	■RPV Dome Pressure (at 12:00 on 8 April) [illegible] MPa g (Range A) [illegible] MPa g (Range B) ■Reactor Water Level (at 12:00 on 8 April) TAF [illegible] mm (Fuel Range, Range A) TAF [illegible] mm (Fuel Range, Range B) ■RPV Metal Temperature (at 12:00 on 8 April) Feed water nozzle: [illegible] °C Bottom of RPV: [illegible]	■RPV Dome Pressure (at 12:00 on 8 April) [illegible] MPa g (Range A) [illegible] MPa g (Range B) ■Reactor Water Level (at 12:00 on 8 April) TAF [illegible] mm (Fuel Range, Range A) TAF [illegible] mm (Fuel Range, Range B) ■RPV Metal Temperature (at 12:00 on 8 April) Feed water nozzle: [illegible] °C [illegible] °C		■RPV Dome Pressure (at 11:00 on 8 April) [illegible] MPa ■Reactor Water Level (at 11:00 on 8 April) TAF [illegible] mm ■Coolant Temperature (at 11:00 on 8 April) [illegible] °C	■RPV Dome Pressure (at 11:00 on 8 April) [illegible] MPa ■Reactor Water Level (at 11:00 on 8 April) TAF [illegible] mm ■Coolant Temperature (at 11:00 on 8 April) [illegible] °C	

Not for Release

	Next Works Planned Activities of Cooling Water Supply Period	□Switch the motor driven pump to M/P pump (The work was suspended due to high radiation environment around M/P in the turbine building). □Water flow will be reduced to 6m³ that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off site power & related equipments	□Switch the temporary motor driven pump to M/P pump (The work was suspended due to high radiation environment around M/P in the turbine building). □Water flow will be reduced to 7m³ that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) □RHR ordinary operation in SHC mode after restoring off site power & related equipments	□Establish remote monitoring measurement of water level in T/B □Switch the motor driven pump to M/P pump (The work was suspended because of high radiation environment around M/P in the turbine building). Preparing to drain the high radiation water □Water flow will be reduced to 7m³ that is commensurate to the decay heat 14 days after shut down (Long Term Cooling Measure) RHR ordinary operation in SHC mode after restoring off site power & related equipments				
Containment Vessel (Cooling and Containment)	Current State	■Pressure [illegible] April) D/W: [illegible] S/C: [illegible] ■Started ventilation through hardened line [illegible] • D/W [illegible] pressure [illegible] D/W [illegible] pressure [illegible] Rupture disc working pressure [illegible]	■Pressure (at 12:00 on 6 April) D/W: 0.100 MPa abs S/C: Down Scale (Broken) ■Start to vent ventilation through hardened line [illegible] D/W design pressure [illegible] D/W max pressure [illegible] Rupture disc working pressure [illegible]	■Pressure (at 12:00 on 6 April) D/W: 0.105MPa abs S/C: 0.172MPa abs ■Started ventilation through hardened line (at 9:20 on 15 March) D/W design pressure [illegible] D/W max pressure for [illegible] Rupture disc working pressure [illegible]		■Negative pressure kept by SGTS	■Negative pressure kept by SGTS	
	Next Works Planned (PCV Integrity)	[illegible] • [illegible] • [illegible] • [illegible] [illegible] restoring off site power • [illegible] • [illegible] [illegible] [illegible] [illegible] [illegible]	[illegible]					
Spent Fuel Pool (SFP) (Water Make-up and Water Supply)	Current State	■SFP water level [illegible] ■SFP temperature [illegible] ■Skimmer surge tank level [illegible] ■[illegible] ■[illegible] • [illegible] • [illegible] • 2 April [illegible] The [illegible]	■SFP water level [illegible] ■SFP temperature [illegible] (at 12:00 on 6 April) ■Skimmer surge tank level [illegible] (at 12:00 on 6 April) ■[illegible] ■[illegible] • [illegible] • [illegible] [illegible] • 1 April [illegible] • 1 April [illegible] • 2 April [illegible] ■[illegible] [illegible]	■SFP water level [illegible] ■SFP [illegible] ■[illegible] ■[illegible] ■[illegible] • [illegible] March [illegible] • [illegible] March [illegible] • [illegible] March [illegible] • [illegible] April [illegible] • [illegible] April [illegible] • [illegible] April [illegible] ■ Check the condition of [illegible] • No abnormal condition on the [illegible] • [illegible] seems to be [illegible] April)	■SFP water level [illegible] ■SFP water temperature [illegible] ■Skimmer surge tank level [illegible] April) ■[illegible] ■[illegible] ■[illegible] • [illegible] • 3 April [illegible] • [illegible] April [illegible] ■ Check [illegible] • No abnormal condition on the [illegible] • [illegible] April) ■The [illegible] Unit 4 ■Watering with the Elephant • 5 April [illegible] • 7 April [illegible]	■[illegible] • [illegible] ■[illegible] • [illegible] • [illegible] ■SFP water level [illegible] ■SFP water temp [illegible] April) ■[illegible] [illegible]	■[illegible] • [illegible] ■[illegible] • [illegible] • [illegible] ■SFP water level [illegible] ■SFP water temp [illegible] April) ■[illegible] [illegible]	■SFP water temperature [illegible] ■[illegible] [illegible] ■Water [illegible] [illegible] ■[illegible] [illegible]
	planned work (Next Activities of FPC Team)	□Preparing to water feeding with electric motor pumps (Target day - 9 April)		□Preparing for water transfer by electric motor pump (Target day - 9 April) □Water spray with Zebra improved (scheduled on 6 April 17:00- for about 2 hours)	□Preparing for water transfer by electric motor (Target day - 9 April)			

High Voltage & Power Supply	Current Status	■480V P/C 2C connected to local distribution network of Tohoku EPC (at 15:49 on 20 March) ■Equipments of MCC tested for short circuit and ground but in fail on 21 March ■120V I & C main bus powered at 01:49 on 23 March ■Illumination of MCR restored at 11:30 on 24 March ■Monitoring posts (MPS [illegible]) were restored	■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 16:30 on 21 March ■Illumination is restored in main control room at 16:46 on 26 March	■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 ・Total electric charge of the motor (water vehicle (on Earth) and Chill) was completed at 11:28 on 18 March ・Installation 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 ・Installation of cables were completed on 21 March ■1/3 MY [illegible]-2 has been powered at 22:10 on 22 March ■1/3 MY [illegible] 1 has been powered at 22:21 on 22 March ■120V I & C main bus powered at 22:20 on 22 March ■Illumination is restored in main control room at 22:43 on 22 March ■1/3 MY [illegible] has been powered on 25 March ■1/3 MY [illegible] has been powered on 25 March	■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 (Yonomori line (L.2)) ■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 ■Investigation cable laying work for monitoring posts (MP 1, 2 [illegible]) on 28 March ■1/8 MY [illegible] has been powered on [illegible] March	■Temporary power supply achieved utilising the non-damaged part of 66kV off-site power transmission line (Yonomori line (L.2)) ■6.9kV emergency bus 6C is powered by ordinary transmission line and startup transformer ■Emergency diesel generator 6B is in service (Emergency bus 6D is energized) ■Non safety grade buses of 6A and 6B are unavailable ■Temporary pump (RHRS) 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 (MP [illegible]) were restored	■Temporary power for common pool was restored at 15:30 on 24th March
	Planned work (Next Activities of Electric Power Supply Team)	[illegible] will be installed after [illegible] 1.5	[illegible] for [illegible]	[illegible] will be installed [illegible] from 1.5		Laying temporary power cable for [illegible]	Investigation cable laying work for monitoring posts	Investigating the power [illegible] work for I & C and illumination
DC power Supply	Current Status	■Part of I & C equipment was powered by temporary battery [illegible] plant status	■Part of I & C equipment were powered by temporary battery to monitor plant status ■[illegible] has been powered [illegible]	■[illegible] temporary battery to monitor plant status ・[illegible] ■[illegible]	■Part of I & C equipment [illegible] by temporary battery [illegible] status	■Part of I & C equipment [illegible] temporary battery to monitor plant status ■[illegible] has been powered [illegible]	■Part of I & C equipment were powered by temporary battery to monitor plant status	
	Next Works Planned (Next Activities of Electric Power Supply Team)							
Countermeasures against Hydrogen	Current Status	■[illegible] hydrogen gas accumulation [illegible] ・[illegible] the injection of N2 gas ■Injection of N2 gas is in progress [illegible]	■Considering the injection of N2 gas into PCV ■Generation of hydrogen gas at the top part of the reactor building is not confirmed ・[illegible] that [illegible] was leaked through the [illegible] It is hoped that this mitigates the concentration of hydrogen gas	■[illegible] the injection of N2 gas into PCV		■Holes (3 holes) were drilled on the ceiling part (50 mm thick) of the reactor building on 18 March to release hydrogen gas and to avoid explosion	■Holes (3 holes) were drilled on the ceiling part (50 mm thick) of the reactor building on 18 March to release hydrogen gas and to avoid explosion	
	Next Works Planned (Next Activities)		[illegible] ready at off-site work yard, however lifting method is not available					Prevention of hydrogen gas explosion from drilling which is planned on the ceiling [illegible] using a remote drilling device

Turbine Building Water Draining	Current Status	■Draining water in T/B ・Water transfer R/T → CST (2 April 13:53~) ■Draining water in Trench ・Radiation level of the water surface in the trench: 0.4 mSv/h on 23 March ・Water level (from top edge of grating to water surface) 106 cm (at 7:00 on 7 April) ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water in T/B Water transfer (R/T → CST) (2 April 17:10 ~) ・By two pumps (5 April 15:10 ~) ・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 25 April) ・Water level (from top edge of grating to water surface) 104 cm (at 7:00 on 7 April)→Rise of water level (1cm) was confirmed (at 29:30 on 6 April): watching the water level continuously ・Remote monitoring measurement of water level in the trench was established (on 2 April) ■Measures "Leaks" ・Investigation of water flow route and insertion of liquid chemical to prevent leaks was conducted It had been confirmed that the leak was stopped (at 05:38 on 6 April) rubber board was placed over the [illegible] (at 11:55 on 6 April) Injection of liquid chemical to prevent leaks (conducted on 6 April)	■Draining water in T/B Water transfer (CST → SPT surge tank) (24 March 17:40 ~ 31 March 08:37) ・R/T is full. Link 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) 126 cm (at 7:00 on 7 April) ・Remote monitoring measurement of water level in the trench was established (on 2 April)	■Draining water ・Water transfer (Concentrated RW → T/B) (2 April 11:25 ~ 4 April 09:22, suspended) ・Water transfer pumps were added (1 → 3 pumps: 3 Apr 10:00 ~ 4 Apr 09:22, suspended due to high water level in the trench) ■Work for shutting off the leak to pit ・Concrete was poured (25m³) to plug pit [illegible] embedded restraining work	■Draining water ・Water transfer RCW pump area & CS pump area → S/C (4 April)	■Draining water ・Water transfer (T/B base floor → R/B) (1 April 13:40 ~ 2 April 10:00) ・Suspended by large amount of water: considering draining water	■Draining water ・Concentrated RW → sea (4 April 19:03 ~) ■Discharging water in sub-drain of Unit 5&6 to the sea ・6 discharging pumps were added (at 17:25 on 5 April) ・1 sub-drain pump of Unit 6 stopped (at 18:37 on 5 April) ■Discharged water Unit 5: 503m³ (at 18:38 on 6 April) Unit 6: 233.6m³ (at 15:10 on 6 April) ■Draining water from main process building was completed ■Draining water from temporary building was started (on 8 April)
	Next Works Planned	Draining water in T/B ・Considering transferring the highly contaminated water to [illegible]	Insertion of [illegible] (scheduled on 10 April) Draining water in T/B ・[illegible] transfer to the highly contaminated water to [illegible]	Water transfer: [illegible] [illegible] transferring the highly contaminated water [illegible]	Work for shutting off the [illegible]			[illegible]
Others	Current Status	■Barge ・Water transfer: Barge [illegible] ([illegible] water tank) [illegible] [illegible] [illegible] [illegible] ■[illegible] ・[illegible]						
	Next Works Planned	Barge Water transfer: Barge [illegible] ([illegible] water tank) [illegible] ・[illegible]						

Abbreviation

CRMS Continuous Area radiation Monitor System
CST Condensate Storage Tank
[illegible] Flow for Safety Clean Up Water System
D/W Dry Well
ECCS Emergency Core Cooling System
FP Fire Protection
MS Main Steam
M/C Metal 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
SDB Self Defense Base
SFP Spent Fuel Pool
SGTS Stand by Gas Treatment System
SHC Shut Down Cooling
SLC Stand by Liquid Control

Baca, Bernadette

From: Hochevar, Albert R. (INPO) [HochevarAR@INPO.org]
Sent: Friday, April 08, 2011 8:27 AM
To: Hochevar, Albert R. (INPO); Blamey, Alan; Bernhard, Rudolph; Miller, Marie; Gauntt, Randall O; Salay, Michael; Collins, Elmo; Hay, Michael; 'richard.kondo@crbard.com'; michael.call@nrc.gov
Subject: FW: Latest Isotopic Analysis
Attachments: Isotopic Analysis img-408173331.pdf

For your information,

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

B69/48

(b)(4)

(b)(4)

(b)(4)

From: GE Hitachi Nuclear Response Team (GE Power & Water) <GE.HitachiNuclearResponseTeam@ge.com>
Sent: Friday, April 08, 2011 1:15 PM
To: RST01 Hoc
Subject: Q419 GEH Comments for NRC Criterion to Establish Stable Conditions
Attachments: Q419 NRC Criterion to Establish Stable Conditions - FINAL RESPONSE.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Please find the attached comments.

Thank you,
GEH Team

B6/49

Question 419 NRC Criterion to Establish Stable Conditions

(b)(4)

(b)(4)

Lee, Richard

From: Lee, Richard
Sent: Friday, April 08, 2011 2:46 PM
To: Powers, Dana; 'dapower@sandia.gov'; 'Dana Powers'
Subject: FW: Suggestions on filling reactor cavity

fyi

From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Thursday, April 07, 2011 9:28 PM
To: DL-NERT-All; DL-NITsolutions
Subject: FW: Suggestions on filling reactor cavity

From: Gambone, Robert L (INPO) [mailto:GamboneRL@INPO.org]
Sent: Thursday, April 07, 2011 6:11 PM
To: Kelly, John E (NE)
Cc: Ellis, Jim; Webster, Bill E (INPO); Purcell, Richard T. (INPO)
Subject: Suggestions on filling reactor cavity

John, below are some options that the industry has developed to possibly fill the reactor cavity and remove energy from the drywell head.

(b)(4)

BG/50

(b)(4)

Rob Gambone
VP, Plant Operations Division
INPO
770-644-8713 work
(b)(6) *cell* EX 6
GamboneRL@inpo.org

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Thank you.

From:	RST01 Hoc
Sent:	Friday, April 08, 2011 2:43 PM
To:	RST08 Hoc; RST07 Hoc; RST09 Hoc; RST06 Hoc
Subject:	FW: ERC 1100 Daily Call 4-8-11.docx
Attachments:	ERC 1100 Daily Call 4-8-11.docx

From: Reandeau, Michael A. (INPO) [mailto:ReandeauMA@inpo.org]
Sent: Friday, April 08, 2011 2:43 PM
To: RST01 Hoc
Cc: INPOERCTech
Subject: ERC 1100 Daily Call 4-8-11.docx

A copy of the 4/8 1100 EST conference call agenda with action items is attached.

Mike Reandeau
INPO ERC Technical Lead

B6/51

4/8/2011

1100 – Technical Refocus Meeting – Led by INPO Tech Lead

1. Review agenda for the call:
2. Discuss the Status of Open Actions
   a. RST Assessment proposed Rev.2 (NRC RST lead)
   b. Status of structural integrity of U4 SFP (GEH lead)
3. Review new action items discussed during the call.
4. Adjourn

Action Items from 4/8/2011 1100 EST Conference Call:

1. Comments due to the RST from all parties for a proposed **RST Assessment of Fukushima Daiichi Units** revision 2. Target for a revision 2 to be issued is Tuesday, April 12.
2. RST to distribute information to the consortium relative to evaluations of U1/2/3 PCV water levels.

From: HOO Hoc
Sent: Friday, April 08, 2011 8:43 PM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Fax from unknown sender.
Attachments: File1.PDF

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

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Friday, April 08, 2011 8:32 PM
To: HOO Hoc
Subject: Fax from unknown sender.

RECEIVE NOTIFICATION FOR JOB 00018119

Notice for: HOO1

Remote ID: Received at: 04/08/2011 20:30

Pages: 16

Routed by:

Routed at: 04/08/2011 20:30

B6/52

4/8/11; 2020 EDT

From: T. E. Roberts

To: T. G. Vavoso

Attached are two tables and supporting information that were prepared by the Bettis and Knolls Atomic Power Laboratories. This information is provided to the US NRC Reactor Safety Team for their information and use in preparing assessments of plant status. While the information is based on the best information currently available to the Naval Reactors (NR) program regarding Fukushima Daiichi plant conditions, it has not been reviewed by the US NRC, the industry consortium, DOE, or any other agency outside of the NR program. Therefore, all users of this information should recognize it is not an official US Government assessment of the Fukushima Site. Such assessments come from the US NRC and the industry consortium.

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ► 16

To Tom VaVega	From G. Sut
Dept./Agency Naval Reactors	Phone #
Fax # 301-816-5151	Fax # 202 781 6730

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

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(b)(5)

(b)(5)

(b)(5)

(b)(5)

[redacted]

Quayle, Lisa

From: RST01 Hoc
Sent: Saturday, April 09, 2011 7:55 PM
To: Blamey, Alan
Cc: 'gardla@inpo.org'; RST03 Hoc; Ali, Syed; Call, Michel; Casto, Chuck; Collins, Elmo; Emche, Danielle; Giessner, John; Jackson, Todd; Monninger, John; Bernhard, Rudolph; Salay, Michael; Scott, Michael; Sheikh, Abdul; Stahl, Eric; Taylor, Robert; Ulses, Anthony; US-AID Disaster Team; Way, Ralph
Subject: RE: FINAL REV. 1 Option B Recommendations
Attachments: Option B Recommendations -Combo 2100 4-09 version.docx

Please see the attached email to address your request.

Kerri
RST Coordinator

From: Blamey, Alan
Sent: Saturday, April 09, 2011 8:10 AM
To: RST01 Hoc
Cc: 'gardla@inpo.org'
Subject: FW: FINAL REV. 1 Option B Recommendations

(b)(5)

(b)(

From: RST01 Hoc
Sent: Saturday, April 09, 2011 5:45 AM
To: Blamey, Alan; Ali, Syed; Call, Michel; Casto, Chuck; Collins, Elmo; Emche, Danielle; Giessner, John; Jackson, Todd; Monninger, John; NRC Team at USAID; Bernhard, Rudolph; Salay, Michael; Scott, Michael; Sheikh, Abdul; Stahl, Eric; Taylor, Robert; Way, Ralph
Cc: FOIA Response.hoc Resource
Subject: FW: FINAL REV. 1 Option B Recommendations

From: RST08 Hoc
Sent: Saturday, April 09, 2011 4:26 AM
To: RST01 Hoc; RST06 Hoc; Hoc, RST16
Subject: FINAL REV. 1 Option B Recommendations

Attached please find the Final Rev. 1 Option B document. This is the April 8th 2200 document completed on swing shift with minor editorial nits and formatting from Mids.

Please pass this along to the Site Team. It is my understanding that this document is intended to be shared with NISA

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

B6/53

[redacted]
(301) 816-5516

From: ~~RST01 Hoc~~
Sent: Saturday, April 09, 2011 6:24 AM
To:

(b)(6)

Cc: FOIA Response.hoc Resource
Subject: ~~FW:~~ Purpose: Request for Re-review of the attached document
Attachments: FINAL - Simplified Stability for Simplified Discussion with NISA.docx

---

From: RST06 Hoc
Sent: Saturday, April 09, 2011 6:03 AM
To: RST01 Hoc
Subject: Purpose: Request for Re-review of the attached document

Frank, please forward this e-mail to the Industry e-mail group and the site team (including Chuck and Elmo).

Purpose: Request for Re-review of the attached document (previously reviewed earlier this week).

Request that all involved entities confirm that any comments that they have made on this document have been satisfactorily incorporated so that it can be shared by the site team with NISA.

This is a high priority request because of the priority that NISA has placed on it in their discussions with the US.

Background:

NISA has made several requests for NRC thoughts on conditions for "stability." The RST had worked with its peers on a stability document over the last week. As of 4/9/11, it has been decided to merge the "stability" paper with a paper on PAG to create a broader scope "Composite" paper for use in getting US Govt alignment on reentry recommendations.

This new composite paper will involve some very challenging coordination with other agencies because of the policy issues associated with post-accident dose standards.

(b)(5)

B6/54

(b)(5)

Thanks,

Fred Brown
On-shift RST Director

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

(b)(5)

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

(b)(5)

From: Roberts, Thomas E CIV SEA 08 NR (b)(6)
Sent: Saturday, April 09, 2011 2:18 PM
To: RST03 Hoc
Subject: FW: Purpose: Request for Re-review of the attached document

---

From: Roberts, Thomas E CIV SEA 08 NR
Sent: Sat 4/9/2011 7:35 AM
To (b)(6)
'Elmo.Collins@nrc.gov'; 'Danielle.Emche@nrc.gov'; 'John.Giessner@nrc.gov'; 'Todd.Jackson@nrc.gov'; 'John.Monninger@nrc.gov'; 'RMTPACTSU_ELNRC@ofda.gov'; 'Rudolph.Bernhard@nrc.gov'; 'Michael.Salay@nrc.gov'; 'Michael.Scott@nrc.gov'; 'Abdul.Sheikh@nrc.gov'; 'Eric.Stahl@nrc.gov'; 'Robert.Taylor@nrc.gov'; 'Ralph.Way@nrc.gov'; 'RST09.Hoc@nrc.gov'; Kepple, Alan C CIV NAVSEA, 08; 'BMPC_ECC.Contractor@unnpp.gov'; Bingman, Bruce M CIV SEA 08 NR; 'RST08.Hoc@nrc.gov'; 'alice.caponiti@nuclear.energy.gov'; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; 'dmodeen@epri.com'; 'EventResponse@epri.com'; 'GE.HitachiNuclearResponseTeam@ge.com'; Szeto, Gordon CIV SEA 08 NR; 'Vincent.Holahan@nrc.gov'; 'inpoerc@inpo.org'; 'inpoerctech@inpo.org'
Cc: 'FOIAResponse.hoc.Resource@nrc.gov'
Subject: Re: Purpose: Request for Re-review of the attached document

(b)(5)

Thanks,
Tom Roberts

From: RST01 Hoc <RST01.Hoc@nrc.gov>
To: Ali, Syed <Syed.Ali@nrc.gov>; Blamey, Alan <Alan.Blamey@nrc.gov>; Call, Michel <Michel.Call@nrc.gov>; Casto, Chuck <Chuck.Casto@nrc.gov>; Collins, Elmo <Elmo.Collins@nrc.gov>; Emche, Danielle <Danielle.Emche@nrc.gov>; Giessner, John <John.Giessner@nrc.gov>; Jackson, Todd <Todd.Jackson@nrc.gov>; Monninger, John <John.Monninger@nrc.gov>; NRC Team at USAID <RMTPACTSU_ELNRC@ofda.gov>; Bernhard, Rudolph <Rudolph.Bernhard@nrc.gov>; Salay, Michael <Michael.Salay@nrc.gov>; Scott, Michael <Michael.Scott@nrc.gov>; Sheikh, Abdul <Abdul.Sheikh@nrc.gov>; Stahl, Eric <Eric.Stahl@nrc.gov>; Taylor, Robert <Robert.Taylor@nrc.gov>; Way, Ralph <Ralph.Way@nrc.gov>; RST09 Hoc <RST09.Hoc@nrc.gov>; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts <BMPC_ECC.Contractor@unnpp.gov>; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc <RST08.Hoc@nrc.gov>; Caponiti DOE <alice.caponiti@nuclear.energy.gov>; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen <dmodeen@epri.com>; EPRI Event Response Center <EventResponse@epri.com>; GE Hitachi NucResponseTeam <GE.HitachiNuclearResponseTeam@ge.com>; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent <Vincent.Holahan@nrc.gov>; INPO ERC <inpoerc@inpo.org>; INPOERCTECH <inpoerctech@inpo.org>;

B6/55

[redacted] (b)(6) >; Joel Pero (Bettis) <joel.pero.contractor@unnpp.gov>; Johne Kelly <johne.kelly@nuclear.energy.gov>; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL) <lela.doyle.contractor@unnpp.gov>; Richard Stark <Richard.Stark@nuclear.energy.gov>; Rob Versluis <ROB.VERSLUIS@nuclear.energy.gov>; Hoc, RST16 <RST16.Hoc@nrc.gov>; RST01B Hoc <RST01B.Hoc@nrc.gov>; RST03 Hoc <RST03.Hoc@nrc.gov>; RST07 Hoc <RST07.Hoc@nrc.gov>; Russell Morales <MoralesRA@state.gov>; Sal Golub <sal.golub@nuclear.energy.gov>; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Cc: FOIA Response.hoc Resource <FOIAResponse.hoc.Resource@nrc.gov>
Sent: Sat Apr 09 06:23:48 2011
Subject: FW: Purpose: Request for Re-review of the attached document

From: RST06 Hoc
Sent: Saturday, April 09, 2011 6:03 AM
To: RST01 Hoc
Subject: Purpose: Request for Re-review of the attached document

Frank, please forward this e-mail to the Industry e-mail group and the site team (including Chuck and Elmo).

Purpose: Request for Re-review of the attached document (previously reviewed earlier this week).

Request that all involved entities confirm that any comments that they have made on this document have been satisfactorily incorporated so that it can be shared by the site team with NISA.

This is a high priority request because of the priority that NISA has placed on it in their discussions with the US.

Background:

[redacted] (b)(5)

(b)(5)

Thanks,

Fred Brown

On-shift RST Director

From: Roberts, Thomas E CIV SEA 08 NR <thomas.e.roberts@navy.mil>
Sent: Saturday, April 09, 2011 2:45 PM
To: RST03 Hoc
Subject: Fw: ERC 1100 Daily Call 4-6-11.docx
Attachments: Unit 4 Explosion Assessment - rev 2 04.06.11 With Cover.pdf

---

From: RST01 Hoc <RST01.Hoc@nrc.gov>
To: RST09 Hoc <RST09.Hoc@nrc.gov>; Kepple, Alan C CIV NAVSEA, 08; Bettis Contacts <BMPC_ECC.Contractor@unnpp.gov>; Bingman, Bruce M CIV SEA 08 NR; RST08 Hoc <RST08.Hoc@nrc.gov>; Caponiti DOE <alice.caponiti@nuclear.energy.gov>; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; EPRI Dave Modeen <dmodeen@epri.com>; EPRI Event Response Center <EventResponse@epri.com>; GE Hitachi NucResponseTeam <GE.HitachiNuclearResponseTeam@ge.com>; Szeto, Gordon CIV SEA 08 NR; Holahan, Vincent <Vincent.Holahan@nrc.gov>; INPO ERC <inpoerc@inpo.org>; INPOERCTECH <inpoerctech@inpo.org>; (b)(6) Joel Pero (Bettis) <joel.pero.contractor@unnpp.gov>; Johne Kelly <johne.kelly@nuclear.energy.gov>; Steinhurst, Laurel A CIV SEA 08 NR; Lela Doyle (KAPL) <lela.doyle.contractor@unnpp.gov>; Richard Stark <Richard.Stark@nuclear.energy.gov>; Rob Versluis <ROB.VERSLUIS@nuclear.energy.gov>; Hoc, RST16 <RST16.Hoc@nrc.gov>; RST01B Hoc <RST01B.Hoc@nrc.gov>; RST03 Hoc <RST03.Hoc@nrc.gov>; RST07 Hoc <RST07.Hoc@nrc.gov>; Russell Morales <MoralesRA@state.gov>; Sal Golub <sal.golub@nuclear.energy.gov>; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Sent: Thu Apr 07 10:24:21 2011
Subject: FW: ERC 1100 Daily Call 4-6-11.docx

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

RST Coordinator

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

Thank you for the opportunity to comment on documents.

(b)(5)

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

Thanks,

B6/56

Alice

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

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Wednesday, April 06, 2011 1:48 PM
To: (b)(6)
(b)(6)
Subject: FW: ERC 1100 Daily Call 4-6-11.docx

From INPO this morning.

RST Coordinator

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

(b)(4)

Stu/Mike,

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

Mike Reandeau

INPO ERC Technical

Pre-decisional
April 6, 2011

Japan Accident Response
National Laboratory Analysis Record

(b)(4)

Input Information/References: None

NE Review/Date: 4/6/11

Pre-decisional
April 6, 2011

ATT

Assessment of the Possible Causes of the Unit 4 Building Explosion

(b)(4)

Pre-decisional
April 6, 2011

(b)(4)

Pre-decisional
April 6, 2011

(b)(4)

(b)(4)

Pre-decisional
April 6, 2011

(b)(4)

Pre-decisional
April 6, 2011

Assessment of Hydrogen from Unit 3 Transferred Through Stack Vent Lines

(b)(4)

Pre-decisional
April 6, 2011

(b)(4)

Baca, Bernadette

From:	Gard, Lee A (INPO) [GardLA@INPO.org]
Sent:	Saturday, April 09, 2011 1:05 AM
To:	Blamey, Alan; Collins, Elmo; michael.call@nrc.gov; Hay, Michael; 'richard.kondo@crbard.com'; Bernhard, Rudolph
Subject:	FW: REACTOR VESSEL UNIT 4 QUESTIONS

Here is part answer to a question you had asked earlier.
best regards,

Lee Gard

From: Rossi, Richard (GE Power & Water) [mailto[redacted]]
Sent: Saturday, April 09, 2011 1:20 PM
To: Hochevar, Albert R. (INPO); Gard, Lee A (INPO)
Cc: Schneider Gregg
Subject: Fwd: REACTOR VESSEL UNIT 4 QUESTIONS

FYI From the GEH project director for 1F4 RIR.

Rich Rossi
(b)(6)

Begin forwarded message:

> **From:** "Hinds, Carl E. (GE Power & Water)" <Carl.Hinds@ge.com>
> **Date:** April 9, 2011 7:19:50 AM GMT+09:00
> **To:** "Rossi, Richard (GE Power & Water)" <Richard1.ROSSI@ge.com>
> **Subject: Re: REACTOR VESSEL UNIT 4 QUESTIONS**
>
> (b)(4)
>
> ---
>
> **From**: Rossi, Richard (GE Power & Water)
> **To**: Hochevar, Albert R. (INPO) <HochevarAR@INPO.org>
> **Cc**: Gard, Lee A (INPO) <GardLA@INPO.org>; GE Hitachi Nuclear Response Team (GE Power & Water); Hinds, Carl E. (GE Power & Water)
> **Sent**: Fri Apr 08 17:47:38 2011
> **Subject**: Re: REACTOR VESSEL UNIT 4 QUESTIONS
>
> (b)(4)
>
> Rich Rossi
> (b)(6)
>
> On Apr 8, 2011, at 11:05 PM, "Hochevar, Albert R. (INPO)" <HochevarAR@INPO.org> wrote:

BG/57

Rich,

(b)(4)

Thanks,
Al

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

From: RST01 Hoc
Sent: Sunday, April 10, 2011 3:18 AM
To: RST07 Hoc; RST10 Hoc; Hoc, RST16; RST06 Hoc
Subject: FW: IAEA distributed documents
Attachments: NISA_press_release_84_japanese.pdf; Image_of_drain_water_in_turbine_building.pdf; Monitoring_data(0837).pdf

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From: OST01 HOC
Sent: Sunday, April 10, 2011 3:08 AM
To: PMT11 Hoc; PMT02 Hoc; Hoc, PMT12; RST01 Hoc
Subject: FW: IAEA distributed documents

From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Sunday, April 10, 2011 3:06 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: IAEA distributed documents

From: Kenagy, W David[SMTP:KENAGYWD@STATE.GOV]
Sent: Sunday, April 10, 2011 2:51:08 AM
To: Kenagy, W David; vince.mcclelland@nnsa.doe.gov; Rodriguez, Veronica; ann.heinrich@nnsa.doe.gov; HOO Hoc; HOO2 Hoc; Huffman, William; decair.sara@epamail.epa.gov; timothy.greten@dhs.gov; maria.marinissen@hhs.gov; (b)(6) ; doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; james.kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shaffer, Mark R; nitops@nnsa.doe.gov; Skypek, Thomas M; (b)(6) ; clark.ray@epamail.epa.gov; Stern, Warren; DeLaBarre, Robin; Burkart, Alex R; Metz, Patricia J; Fladeboe, Jan P; Withers, Anne M; Lowe, Thomas J; Lewis, Brian M; SES-O_OS; EAP-J-Office-DL; O'Brien, Thomas P; Lane, Charles D; Conlon, John N; Foughty, Michael A; Mahaffey, Charles; (b)(6) Jih, Rongsong; (b)(6) Cutler, Kirsten B
Subject: RE: IAEA distributed documents
Auto forwarded by a Rule

BG1/58

2011/4/10 8:37

測定場所　①事務本館北(2号機より北西約0.5キロ)　②体育館付近(MP−5東側)(2号機より西北西約0.9キロ)
③西門付近 (MP−5付近)(2号機より西約1.1キロ)　④正門付近前(MP−6付近)(2号機より西南西約1.0キロ)
⑤免震棟前(2号機より北西約0.5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

4月10日　福島第一(1F)

測定場所		③											
時間		0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50
MC	測定値(μSv/h)	47.9	47.8	47.8	47.8	47.6	47.7	47.7	47.7	47.7	47.7	47.6	47.7
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	620	-	-	620	-	-	623	-	-	622	-	-
	⑦正門(μSv/h)	87	-	-	86	-	-	85	-	-	86	-	-
	③西門(μSv/h)	37	-	-	38	-	-	38	-	-	37	-	-
風向		南	北北西	西北西	西南西	西南西	南西	西南西	西南西	南南西	南西	南西	南
風速(m/s)		0.4	0.3	0.4	0.4	0.6	0.6	0.4	0.4	0.2	0.3	0.4	0.3

測定場所													
時間		2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MC	測定値(μSv/h)	47.6	47.6	47.6	47.6	47.4	47.4	47.4	47.4	47.5	47.3	47.3	47.2
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	623	-	-	621	-	-	621	-	-	618	-	-
	⑦正門(μSv/h)	86	-	-	88	-	-	86	-	-	87	-	-
	③西門(μSv/h)	37	-	-	37	-	-	37	-	-	37	-	-
風向		西北西	北西	西	北西	西北西	西北西	西	西	西南西	北西	西	西北西
風速(m/s)		0.5	0.4	2.0	0.3	0.4	0.4	0.5	0.4	0.5	0.6	0.6	0.5

測定場所		③											
時間		4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50
MC	測定値(μSv/h)	47.3	47.4	47.3	47.2	47.3	47.2	47.2	47.2	47.2	47.2	47.2	47.1
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	622	-	-	621	-	-	619	-	-	619	-	-
	⑦正門(μSv/h)	85	-	-	86	-	-	86	-	-	85	-	-
	⑨西門(μSv/h)	37	-	-	37	-	-	37	-	-	37	-	-
風向		西北西	西	西	西	西南西	南西	西南西	西	西南西	西南西	西	西
風速(m/s)		0.5	0.5	0.8	0.9	0.7	0.7	0.8	0.7	0.6	0.5	0.6	0.7

測定場所													
時間		6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MC	測定値(μSv/h)	47.1	47.1	47.1	47.0	47.1	47.0	47.1					
	中性子	ND	ND	ND	ND	ND	ND	ND					
可搬	⑥本館南(μSv/h)	622	-	-	622	-	-	621					
	⑦正門(μSv/h)	87	-	-	86	-	-	86.					
	⑨西門(μSv/h)	38	-	-	37	-	-	37					
風向		西	西	西北西	南西	西南西	西	北西					
風速(m/s)		0.6	0.8	0.7	0.6	0.6	0.5	0.5					

測定場所		③											
時間		8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50
MC	測定値(μSv/h)												
	中性子												
可搬	⑥本館南(μSv/h)												
	⑦正門(μSv/h)												
	③西門(μSv/h)												
風向													
風速(m/s)													

測定場所													
時間		10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MC	測定値(μSv/h)												
	中性子												
可搬	⑥本館南(μSv/h)												
	⑦正門(μSv/h)												
	③西門(μSv/h)												
風向													
風速(m/s)													

4月9日　　福島第一(1F)

測定場所　①事務本館北(2号機より北西約0.5キロ)　②体育館付近(MP−5東側)(2号機より西北西約0.9キロ)
③西門付近 (MP-5付近)(2号機より西約1.1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1.0キロ)
⑤免震棟前(2号機より北西約0.5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

測定場所		③																							
時間		12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
MC	測定値(μSv/h)	49.4	49.3	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.1	49.2	49.1	48.8	48.8	48.7	48.4	48.3	48.4	48.5	48.5	48.6	48.6	48.5	48.6
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	627	-	-	625	-	-	622	-	-	623	-	-	621	-	-	614	-	-	616	-	-	618	-	-
	⑦正門(μSv/h)	87	-	-	89	-	-	88	-	-	87	-	-	88	-	-	86	-	-	86	-	-	87	-	-
	⑨西門(μSv/h)	39	-	-	39	-	-	39	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-
風向		北北西	北東	北西	北東	北西	北東	北東	東	東	北東	北東	北北東	北北東	北西	北	北東	北東	東	北北東	北東	北東	北東	北東	北北東
風速(m/s)		0.6	0.7	0.9	1.1	0.6	0.6	0.6	1.9	0.7	0.9	0.8	1.0	0.8	0.7	0.8	4.0	6.3	3.9	2.0	1.1	1.7	7.1	6.7	3.1

測定場所		③																							
時間		16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MC	測定値(μSv/h)	48.5	48.5	48.5	48.4	48.4	48.3	48.4	48.6	48.5	48.4	48.3	48.3	48.2	48.2	48.2	48.2	48.2	48.3	48.2	48.1	48.3	48.2	48.1	48.1
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	618	-	-	621	-	-	622	-	-	622	-	-	618	-	-	625	-	-	623	-	-	620	-	-
	⑦正門(μSv/h)	87	-	-	87	-	-	87	-	-	87	-	-	87	-	-	87	-	-	87	-	-	87	-	-
	③西門(μSv/h)	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-
風向		北東	東北東	北北東	北北東	北東	北北東	北東	北東	北東	西	北東	北北東	北東	北東	北東	北東	北東	北東	北	北北西	北北東	北	北東	南西
風速(m/s)		3.1	1.5	0.7	0.6	0.5	0.5	0.6	0.6	0.7	0.9	0.4	0.4	1.6	6.0	6.6	6.5	6.5	0.4	0.3	0.4	0.5	0.6	0.6	0.5

測定場所		③																							
時間		20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MC	測定値(μSv/h)	48.2	48.0	48.1	48.1	48.0	47.9	48.0	48.0	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.8	47.8	47.8	47.7	47.8	47.8	47.8	47.6
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	626	-	-	625	-	-	623	-	-	623	-	-	622	-	-	621	-	-	620	-	-	621	-	-
	⑦正門(μSv/h)	87	-	-	86	-	-	87	-	-	86	-	-	86	-	-	86	-	-	86	-	-	86	-	-
	⑨西門(μSv/h)	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-	38	-	-
風向		北西	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北東	北	南西
風速(m/s)		0.7	3.9	6.4	6.8	6.5	6.6	6.5	6.4	6.4	6.4	6.5	6.6	6.4	5.8	6.1	5.9	6.1	5.8	6.1	5.7	6.1	6.0	4.6	0.6

2011/4/10 8:37

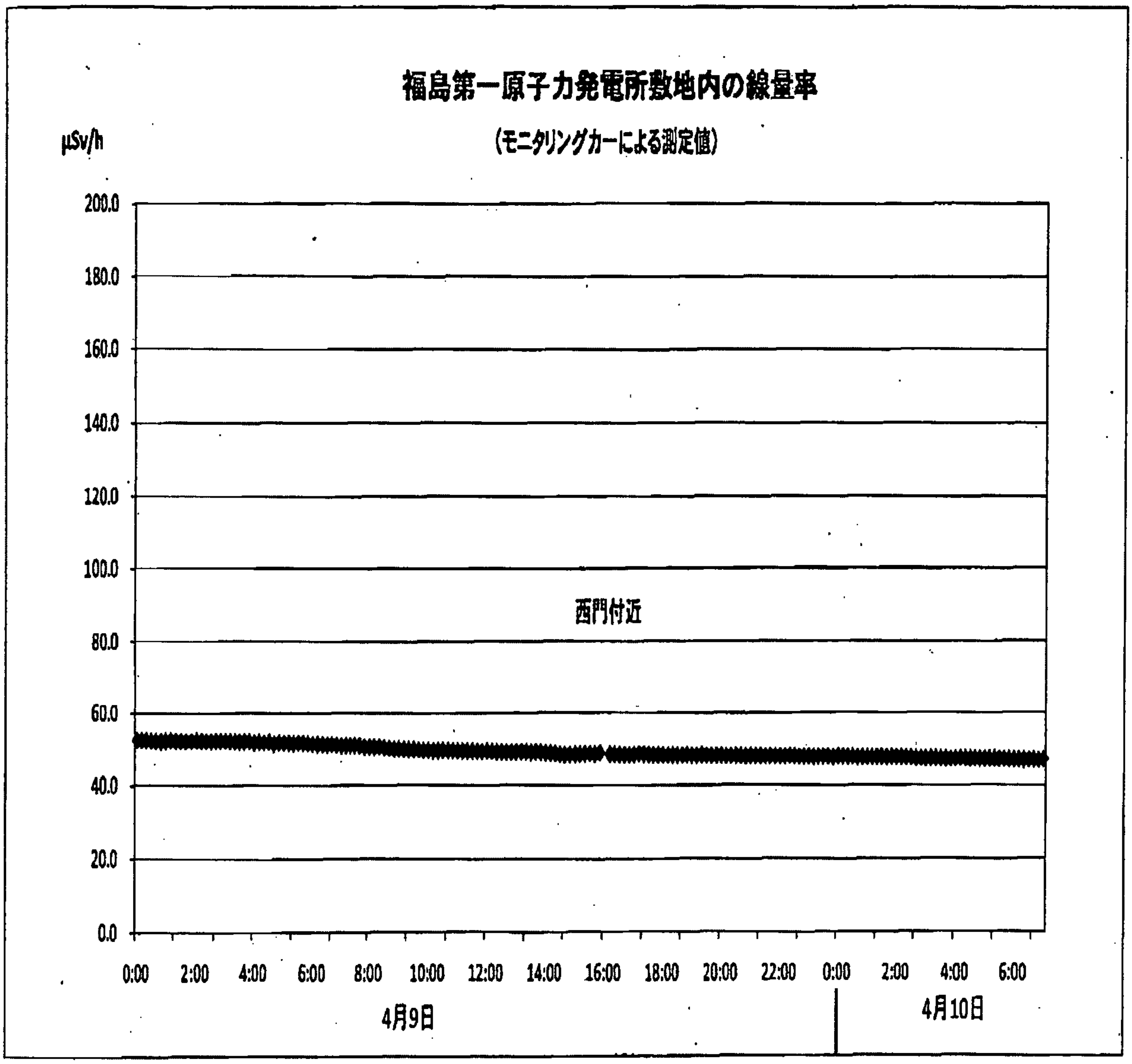
測定場所　①事務本館北(2号機より北西約0.5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0.9キロ)
③西門付近(MP-5付近)(2号機より西約1.1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1.0キロ)
⑤免震棟前(2号機より北西約0.5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

4月9日　福島第一(1F)

測定場所		③																							
時間		0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MC	測定値(μSv/h)	52.5	52.5	52.5	52.3	52.2	52.1	52.2	52.3	52.2	52.2	52.1	52.2	52.3	52.2	52.1	52.1	52.2	52.2	52.1	52.1	52.0	52.0	52.0	52.1
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	651	-	-	651	-	-	651	-	-	654	-	-	651	-	-	652	-	-	655	-	-	655	-	-
	⑦正門(μSv/h)	92	-	-	91	-	-	90	-	-	92	-	-	92	-	-	92	-	-	92	-	-	91	-	-
	③西門(μSv/h)	40	-	-	40	-	-	40	-	-	40	-	-	41	-	-	41	-	-	41	-	-	41	-	-
風向		北	北北西	北	北東	西北西	北	西北西	北北西	西	北北西	北北西	北西	北	西北西	北西	西北西	西北西	北西	北北東	北西	北西	北西	東	北北西
風速(m/s)		1.1	1.2	0.8	1.0	0.9	0.8	0.8	0.9	0.7	0.9	0.8	0.7	0.7	0.8	0.7	0.9	1.1	1.1	1.1	1.0	1.2	1.0	0.9	0.9

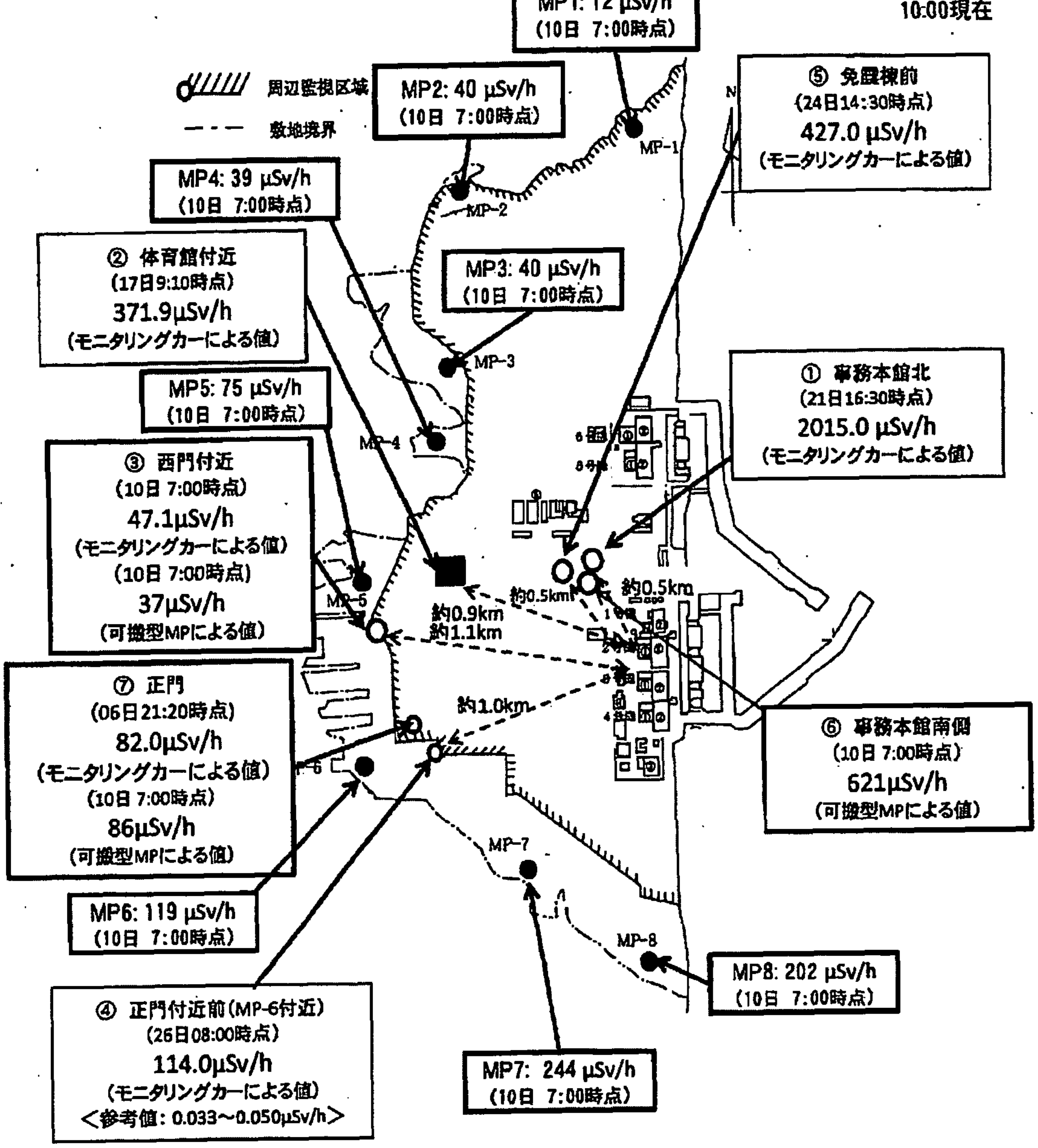
測定場所		③																							
時間		4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MC	測定値(μSv/h)	51.7	51.9	51.8	51.9	51.4	51.8	51.7	51.8	51.6	51.7	51.7	51.5	51.3	51.3	51.2	51.1	51.2	51.1	50.9	50.9	50.9	50.9	50.9	50.6
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	653	-	-	654	-	-	655	-	-	651	-	-	650	-	-	649	-	-	643	-	-	643	-	-
	⑦正門(μSv/h)	91	-	-	91	-	-	91	-	-	91	-	-	91	-	-	91	-	-	91	-	-	89	-	-
	③西門(μSv/h)	41	-	-	41	-	-	41	-	-	40	-	-	40	-	-	40	-	-	40	-	-	40	-	-
風向		西	北西	北	北西	西	北	西	西	北西	北西	北西	北北西	北西	西北西	西	西北西	北西	西	北西	北西	北西	北北西	西	西北西
風速(m/s)		1.1	1.2	1.1	0.8	1.1	0.9	1.0	1.0	1.1	1.3	1.1	1.1	1.3	1.1	1.1	0.9	1.0	0.8	1.0	1.2	1.0	1.0	1.2	1.2

測定場所		③																							
時間		8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MC	測定値(μSv/h)	50.6	50.6	50.6	50.3	50.1	49.9	49.9	49.8	49.8	49.8	49.7	49.6	49.6	49.5	49.5	49.6	49.5	49.5	49.4	49.4	49.4	49.4	49.3	49.3
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	644	-	-	637	-	-	630	-	-	627	-	-	627	-	-	626	-	-	626	-	-	626	-	-
	⑦正門(μSv/h)	90	-	-	89	-	-	88	-	-	89	-	-	87	-	-	88	-	-	86	-	-	87	-	-
	③西門(μSv/h)	40	-	-	39	-	-	39	-	-	39	-	-	39	-	-	39	-	-	39	-	-	38	-	-
風向		西	西	西北西	西	北西	西	北西	北西	北西	北西	北北西	北西	北北西	北北西	北西	北北西	北北西	北北西	北北西	北北西	北北西	北	北	北
風速(m/s)		1.0	1.0	1.1	1.3	1.2	1.1	1.1	0.8	1.2	1.1	1.0	1.2	2.9	1.3	1.1	1.6	0.9	0.9	1.0	0.9	0.7	0.7	0.8	0.7


福島第一原子力発電所敷地内の線量率
(モニタリングカーによる測定値)
μSv/h
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
西門付近
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00
2:00
4:00
6:00
4月9日
4月10日

福島第一原子力発電所

2011/4/10
10:00現在



福島第一原子力発電所 モニタリングポスト空間線量率(μSv/h)

測定日時	MP-1	MP-2	MP-3	MP-4	MP-5	MP-6	MP-7	MP-8
2011/4/9 21:10	12	40	40	40	77	121	248	205
2011/4/9 21:20	12	40	40	40	77	121	247	205
2011/4/9 21:30	12	40	40	40	77	121	247	205
2011/4/9 21:40	12	40	40	39	77	121	247	205
2011/4/9 21:50	12	40	40	39	77	121	247	205
2011/4/9 22:00	12	40	40	39	77	121	247	205
2011/4/9 22:10	12	40	40	39	77	121	247	205
2011/4/9 22:20	12	40	40	39	77	121	247	205
2011/4/9 22:30	12	40	40	39	77	121	247	204
2011/4/9 22:40	12	40	40	39	77	121	247	204
2011/4/9 22:50	12	40	40	39	77	121	247	204
2011/4/9 23:00	12	40	40	39	77	121	247	204
2011/4/9 23:10	12	40	40	39	77	121	246	204
2011/4/9 23:20	12	40	40	39	77	121	246	204
2011/4/9 23:30	12	40	40	39	77	121	246	204
2011/4/9 23:40	12	40	40	39	77	121	246	204
2011/4/9 23:50	12	40	40	39	77	121	246	204
2011/4/10 0:00	12	40	40	39	77	121	246	204
2011/4/10 0:10	12	40	40	39	77	120	246	204
2011/4/10 0:20	12	40	40	39	77	120	246	204
2011/4/10 0:30	12	40	40	39	77	120	246	204
2011/4/10 0:40	12	40	40	39	77	120	246	204
2011/4/10 0:50	12	40	40	39	77	120	246	204
2011/4/10 1:00	12	40	40	39	77	120	246	204
2011/4/10 1:10	12	40	40	39	77	120	246	204
2011/4/10 1:20	12	40	40	39	77	120	246	204
2011/4/10 1:30	12	40	40	39	77	120	246	204
2011/4/10 1:40	12	40	40	39	77	120	246	204
2011/4/10 1:50	12	40	40	39	77	120	246	204
2011/4/10 2:00	12	40	40	39	76	120	246	204
2011/4/10 2:10	12	40	40	39	76	120	245	204
2011/4/10 2:20	12	40	40	39	76	120	245	204
2011/4/10 2:30	12	40	40	39	76	120	245	204
2011/4/10 2:40	12	40	40	39	76	120	245	204
2011/4/10 2:50	12	40	40	39	76	120	245	204
2011/4/10 3:00	12	40	40	39	76	120	246	204
2011/4/10 3:10	12	40	40	39	76	120	245	204
2011/4/10 3:20	12	40	40	39	76	120	245	204
2011/4/10 3:30	12	40	40	39	76	120	245	204
2011/4/10 3:40	12	40	40	39	76	119	245	203
2011/4/10 3:50	12	40	40	39	75	119	244	203
2011/4/10 4:00	12	40	40	39	76	119	244	203
2011/4/10 4:10	12	40	40	39	75	119	244	203
2011/4/10 4:20	12	40	40	39	76	119	244	203
2011/4/10 4:30	12	40	40	39	75	119	244	203
2011/4/10 4:40	12	40	40	39	75	119	244	203
2011/4/10 4:50	12	40	40	39	75	119	244	203
2011/4/10 5:00	12	40	40	39	75	119	244	203
2011/4/10 5:10	12	40	40	39	75	119	244	203
2011/4/10 5:20	12	40	40	39	75	119	244	203
2011/4/10 5:30	12	40	40	39	75	119	244	203
2011/4/10 5:40	12	40	40	39	75	119	244	203
2011/4/10 5:50	12	40	40	39	75	119	244	203
2011/4/10 6:00	12	40	40	39	75	119	244	202
2011/4/10 6:10	12	40	40	39	75	119	244	202
2011/4/10 6:20	12	40	40	39	75	119	244	202
2011/4/10 6:30	12	40	40	39	75	119	244	202
2011/4/10 6:40	12	40	40	39	75	119	244	202
2011/4/10 6:50	12	40	40	39	75	119	244	202
2011/4/10 7:00	12	40	40	39	75	119	244	202

2011/4/10 8:38

福島第二(2F) (事業者のモニタリングポスト)

4月10日 モニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MP1(μSv/h)	3.441	3.447	3.461	3.439	3.423	3.439	3.438	3.456	3.456	3.459	3.436	3.437	3.450	3.446	3.437	3.445	3.433	3.449	3.434	3.445	3.427	3.438	3.442	3.462
MP2(μSv/h)	2.580	2.572	2.570	2.557	2.575	2.564	2.583	2.597	2.592	2.579	2.576	2.575	2.559	2.580	2.564	2.559	2.560	2.577	2.577	2.557	2.572	2.592	2.591	2.636
MP3(μSv/h)	3.722	3.709	3.723	3.715	3.713	3.724	3.724	3.727	3.710	3.703	3.705	3.711	3.698	3.724	3.705	3.711	3.700	3.713	3.711	3.688	3.697	3.709	3.716	3.742
MP4(μSv/h)	2.900	2.887	2.904	2.884	2.887	2.900	2.899	2.900	2.918	2.908	2.883	2.897	2.893	2.900	2.896	2.897	2.894	2.896	2.890	2.887	2.874	2.897	2.891	2.925
MP5(μSv/h)	2.917	2.915	2.898	2.897	2.910	2.888	2.930	2.911	2.924	2.923	2.918	2.889	2.905	2.913	2.906	2.899	2.908	2.900	2.893	2.878	2.890	2.900	2.901	2.955
MP6(μSv/h)	2.830	2.825	2.818	2.825	2.823	2.827	2.830	2.823	2.835	2.833	2.829	2.824	2.832	2.824	2.839	2.821	2.812	2.830	2.817	2.808	2.795	2.835	2.828	2.830
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北	北	北	北	北	北	北北東	北	北	北北東	北北東	北北東	北北東	北北東	北	北	北北東	北東	北北東	北北東	北北東	北	北	北
風速(m/s)	3.6	3.5	2.3	2.9	2.0	1.7	3.5	3.8	2.3	3.2	4.6	3.6	4.2	4.4	3.1	6.0	0.8	2.2	3.4	4.7	3.5	3.3	5.4	6.5

4月10日 モニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MP1(μSv/h)	3.440	3.430	3.427	3.427	3.409	3.431	3.423	3.414	3.409	3.417	3.407	3.398	3.416	3.409	3.415	3.400	3.402	3.409	3.389					
MP2(μSv/h)	2.581	2.560	2.558	2.548	2.551	2.555	2.554	2.560	2.554	2.548	2.543	2.555	2.549	2.540	2.542	2.531	2.547	2.536	2.540					
MP3(μSv/h)	3.705	3.692	3.672	3.693	3.678	3.671	3.689	3.686	3.674	3.693	3.693	3.683	3.667	3.676	3.667	3.673	3.666	3.661	3.664					
MP4(μSv/h)	2.894	2.890	2.873	2.883	2.874	2.868	2.867	2.881	2.861	2.874	2.865	2.873	2.885	2.871	2.871	2.875	2.854	2.870	2.866					
MP5(μSv/h)	2.926	2.886	2.888	2.893	2.892	2.883	2.888	2.870	2.864	2.887	2.872	2.891	2.865	2.875	2.868	2.873	2.879	2.877	2.859					
MP6(μSv/h)	2.843	2.823	2.819	2.809	2.804	2.798	2.820	2.804	2.809	2.795	2.778	2.807	2.807	2.802	2.792	2.794	2.794	2.800	2.806					
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測					
風向	北	北	北	北	北北西	北北西	北	北北西	北北西	北	北北西	北北西	北	北	北	北北西	北	北	北					
風速(m/s)	5.1	4.1	4.1	4.4	2.7	3.1	3.4	2.9	3.0	3.1	2.4	2.2	2.8	2.3	3.2	2.2	3.1	3.2	3.5					

4月10日 モニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MP1(μSv/h)																								
MP2(μSv/h)																								
MP3(μSv/h)																								
MP4(μSv/h)																								
MP5(μSv/h)																								
MP6(μSv/h)																								
MP7(μSv/h)																								
風向																								
風速(m/s)																								

2011/4/10 8:38

福島第二(2F)(事業者のモニタリングポスト)

4月9日 モニタリングポスト	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
MP1(μSv/h)	3.396	3.390	3.394	3.408	3.409	3.431	3.421	3.409	3.408	3.421	3.418	3.429	3.413	3.418	3.477	3.465	3.458	3.454	3.456	3.438	3.442	3.429	3.428	3.451
MP2(μSv/h)	2.477	2.469	2.482	2.474	2.480	2.496	2.517	2.512	2.525	2.523	2.610	2.509	2.524	2.540	2.611	2.598	2.579	2.576	2.568	2.560	2.570	2.565	2.569	2.566
MP3(μSv/h)	3.652	3.638	3.662	3.631	3.627	3.640	3.670	3.658	3.671	3.680	3.702	3.702	3.676	3.712	3.748	3.740	3.712	3.709	3.717	3.688	3.719	3.705	3.694	3.712
MP4(μSv/h)	2.790	2.787	2.793	2.782	2.784	2.802	2.793	2.810	2.820	2.807	2.837	2.836	2.838	2.857	2.896	2.900	2.879	2.871	2.868	2.868	2.869	2.882	2.856	2.866
MP5(μSv/h)	2.741	2.740	2.736	2.733	2.729	2.718	2.745	2.771	2.781	2.772	2.784	2.801	2.802	2.823	2.862	2.898	2.878	2.860	2.865	2.874	2.868	2.874	2.866	2.852
MP6(μSv/h)	2.692	2.686	2.679	2.676	2.677	2.685	2.705	2.711	2.721	2.719	2.739	2.739	2.745	2.767	2.808	2.835	2.826	2.825	2.825	2.827	2.812	2.813	2.819	2.829
MP7(μSv/h)	1.960	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北東	北北東	北	北	北	北	北	北北東	北	北	北	北	北	北	北	北	北	北	北北東	北北東	北北東	北東	北東	北東
風速(m/s)	6.0	5.3	4.8	4.4	4.4	3.9	3.8	3.7	3.5	3.9	4.6	5.2	6.2	5.8	6.5	6.1	5.4	3.5	4.0	4.0	3.6	3.8	4.2	3.7

4月9日 モニタリングポスト	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MP1(μSv/h)	3.432	3.433	3.443	3.427	3.437	3.425	3.438	3.447	3.456	3.456	3.440	3.458	3.470	3.460	3.466	3.450	3.441	3.459	3.482	3.509	3.491	3.487	3.507	3.487
MP2(μSv/h)	2.575	2.562	2.565	2.561	2.562	2.573	2.574	2.622	2.634	2.646	2.666	2.645	2.607	2.611	2.600	2.607	2.623	2.607	2.625	2.676	2.669	2.663	2.649	2.613
MP3(μSv/h)	3.693	3.686	3.695	3.710	3.691	3.691	3.737	3.777	3.801	3.786	3.783	3.786	3.773	3.764	3.765	3.756	3.770	3.772	3.762	3.782	3.794	3.803	3.790	3.783
MP4(μSv/h)	2.881	2.882	2.871	2.857	2.876	2.884	2.873	2.945	2.983	2.946	2.973	2.955	2.935	2.931	2.916	2.924	2.927	2.948	2.948	2.935	2.933	2.972	2.967	2.949
MP5(μSv/h)	2.855	2.860	2.867	2.872	2.851	2.852	2.868	2.938	2.967	2.965	2.979	2.998	2.953	2.964	2.947	2.924	2.949	2.945	2.948	2.958	2.970	3.001	2.973	2.953
MP6(μSv/h)	2.820	2.810	2.821	2.821	2.800	2.818	2.823	2.856	2.889	2.882	2.905	2.890	2.878	2.857	2.869	2.863	2.872	2.858	2.873	2.879	2.907	2.902	2.911	2.900
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北東	北北東	北北東	北北東	北	北	北	北北東	北	北北東	北北東	北北東	北北東	北	北北東	北	北北東	北	北	北	北	北	北	北
風速(m/s)	3.4	3.8	4.4	4.2	4.2	4.6	5.5	5.2	5.2	5.4	3.9	4.3	4.1	4.8	4.3	4.6	4.4	4.3	4.5	4.3	4.5	3.8	4.6	5.2

4月9日 モニタリングポスト	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MP1(μSv/h)	3.477	3.459	3.468	3.477	3.457	3.449	3.453	3.477	3.445	3.444	3.454	3.454	3.470	3.485	3.472	3.453	3.447	3.434	3.450	3.445	3.449	3.449	3.440	3.434
MP2(μSv/h)	2.610	2.603	2.592	2.591	2.588	2.590	2.594	2.588	2.566	2.579	2.572	2.582	2.574	2.622	2.611	2.576	2.578	2.577	2.582	2.578	2.565	2.561	2.574	2.577
MP3(μSv/h)	3.768	3.759	3.753	3.764	3.753	3.743	3.743	3.728	3.729	3.741	3.721	3.736	3.719	3.734	3.727	3.716	3.723	3.722	3.726	3.720	3.717	3.708	3.722	3.707
MP4(μSv/h)	2.917	2.907	2.907	2.919	2.919	2.926	2.928	2.915	2.912	2.902	2.892	2.907	2.912	2.922	2.918	2.906	2.896	2.886	2.890	2.908	2.898	2.899	2.906	2.895
MP5(μSv/h)	2.931	2.931	2.931	2.923	2.920	2.931	2.920	2.910	2.920	2.913	2.907	2.904	2.909	2.907	2.921	2.905	2.903	2.895	2.901	2.901	2.895	2.905	2.905	2.898
MP6(μSv/h)	2.884	2.870	2.851	2.852	2.837	2.850	2.849	2.847	2.841	2.834	2.828	2.847	2.848	2.840	2.856	2.855	2.823	2.832	2.829	2.830	2.836	2.817	2.831	2.832
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北	北	北	北	北北東	北	北	北	北	北北西	北	北	北	北	北	北北西	北北西	北	北	北	西	北	北	北
風速(m/s)	4.7	3.7	4.1	3.2	3.2	4.4	3.6	4.2	4.0	3.9	5.0	3.4	3.2	3.3	3.3	4.1	4.6	5.7	4.6	2.7	2.8	2.3	2.5	3.4

福島第二(2F)(事業者のモニタリングポスト)

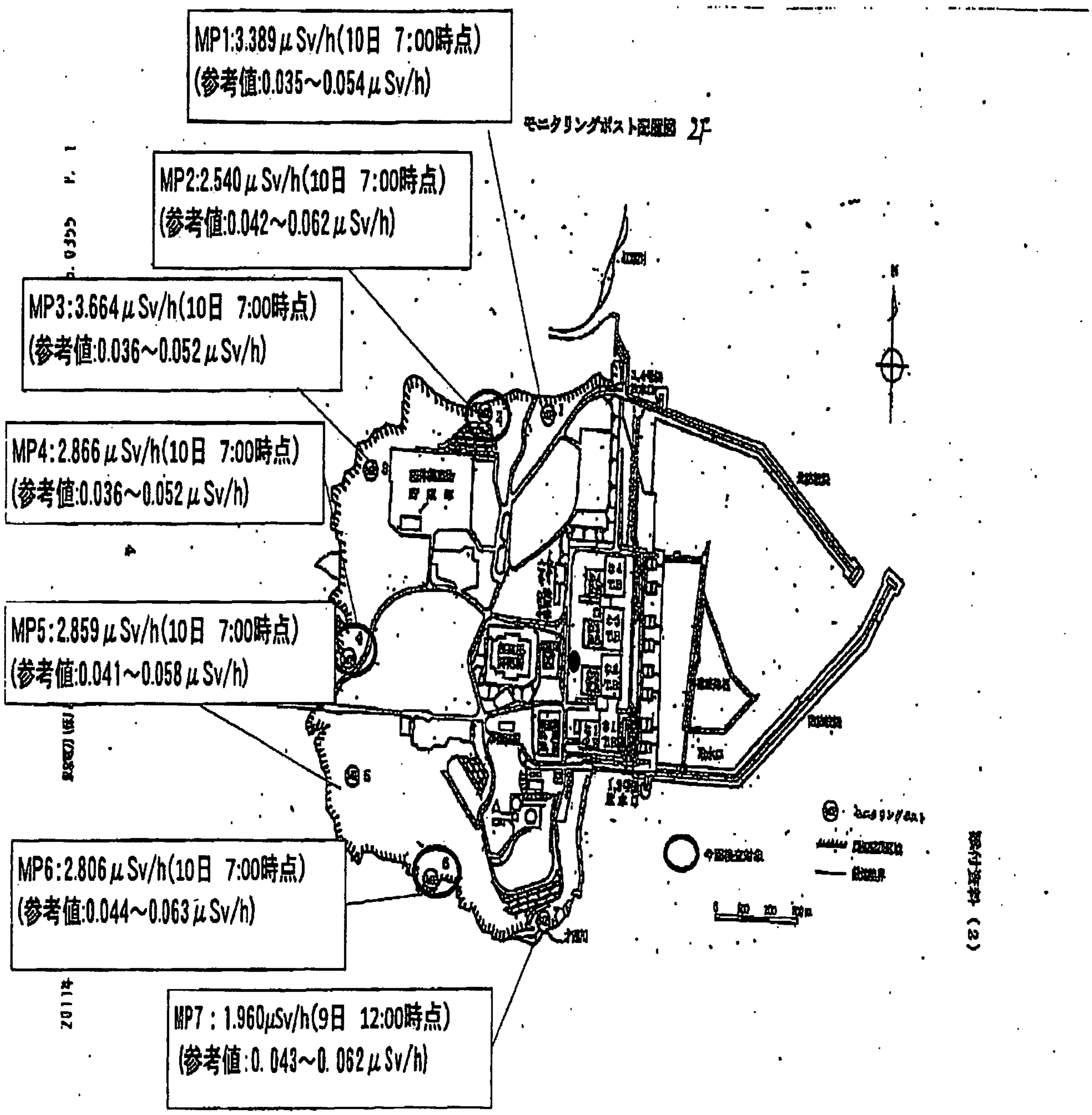
4月9日																								
モニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MP1(μSv/h)	3.544	3.536	3.520	3.523	3.536	3.526	3.526	3.527	3.521	3.526	3.519	3.533	3.528	3.530	3.520	3.519	3.516	3.524	3.511	3.522	3.524	3.522	3.526	3.525
MP2(μSv/h)	2.598	2.595	2.589	2.600	2.596	2.587	2.580	2.586	2.588	2.588	2.586	2.586	2.585	2.582	2.587	2.588	2.583	2.593	2.585	2.569	2.581	2.583	2.578	2.585
MP3(μSv/h)	3.796	3.791	3.795	3.814	3.797	3.785	3.786	3.785	3.799	3.787	3.788	3.784	3.781	3.782	3.767	3.785	3.780	3.765	3.779	3.780	3.783	3.755	3.765	3.766
MP4(μSv/h)	2.889	2.897	2.896	2.880	2.880	2.888	2.884	2.885	2.879	2.889	2.885	2.883	2.880	2.881	2.870	2.876	2.877	2.883	2.876	2.882	2.870	2.875	2.877	2.872
MP5(μSv/h)	2.851	2.849	2.836	2.846	2.853	2.837	2.838	2.850	2.835	2.832	2.848	2.837	2.833	2.841	2.841	2.845	2.840	2.848	2.847	2.832	2.827	2.833	2.840	2.835
MP6(μSv/h)	2.848	2.820	2.828	2.829	2.831	2.839	2.820	2.825	2.805	2.828	2.833	2.812	2.815	2.828	2.832	2.820	2.818	2.823	2.824	2.822	2.815	2.817	2.810	2.815
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北西	北北西	北	北	北	北	北	北	北	北北西	北北西	北北西	北北西	北	北	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西
風速(m/s)	7.4	7.7	6.6	5.7	7.1	6.1	6.5	7.9	5.6	5.9	6.2	5.7	5.8	7.2	8.0	6.8	6.1	6.7	7.5	7.7	7.1	6.8	6.6	6.2

4月9日																								
モニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:60
MP1(μSv/h)	3.525	3.506	3.500	3.499	3.510	3.510	3.485	3.500	3.503	3.496	3.489	3.502	3.484	3.486	3.495	3.472	3.487	3.467	3.478	3.480	3.483	3.467	3.469	3.474
MP2(μSv/h)	2.584	2.572	2.568	2.559	2.572	2.575	2.567	2.578	2.562	2.566	2.552	2.561	2.547	2.554	2.545	2.547	2.645	2.560	2.545	2.554	2.538	2.555	2.531	2.524
MP3(μSv/h)	3.773	3.781	3.778	3.749	3.770	3.775	3.758	3.767	3.763	3.761	3.749	3.735	3.741	3.757	3.748	3.737	3.734	3.743	3.731	3.733	3.730	3.720	3.733	3.717
MP4(μSv/h)	2.874	2.860	2.877	2.878	2.866	2.863	2.866	2.863	2.877	2.863	2.863	2.868	2.860	2.851	2.850	2.848	2.855	2.844	2.862	2.846	2.834	2.845	2.839	2.841
MP5(μSv/h)	2.829	2.836	2.819	2.823	2.840	2.821	2.841	2.823	2.811	2.829	2.827	2.812	2.808	2.813	2.814	2.794	2.791	2.799	2.801	2.801	2.792	2.786	2.797	2.791
MP6(μSv/h)	2.814	2.802	2.799	2.803	2.811	2.810	2.812	2.808	2.802	2.802	2.792	2.794	2.799	2.792	2.794	2.779	2.777	2.775	2.788	2.771	2.781	2.776	2.779	2.786
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北西	北北西	北北西	北	北北西	北	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西
風速(m/s)	7.1	5.2	5.7	7.0	6.5	7.3	4.6	6.5	8.5	9.0	7.3	8.2	8.0	8.6	8.7	6.9	7.9	7.4	7.9	7.6	7.0	6.9	6.6	6.9

4月9日																								
モニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MP1(μSv/h)	3.460	3.466	3.465	3.442	3.448	3.439	3.431	3.413	3.422	3.423	3.406	3.395	3.406	3.403	3.407	3.407	3.415	3.408	3.402	3.406	3.406	3.388	3.401	3.405
MP2(μSv/h)	2.540	2.531	2.522	2.533	2.518	2.497	2.504	2.499	2.497	2.497	2.481	2.490	2.476	2.476	2.484	2.481	2.496	2.477	2.476	2.473	2.481	2.472	2.477	2.477
MP3(μSv/h)	3.720	3.717	3.712	3.703	3.716	3.699	3.690	3.691	3.674	3.670	3.675	3.665	3.663	3.682	3.657	3.654	3.653	3.656	3.645	3.650	3.648	3.652	3.647	3.649
MP4(μSv/h)	2.838	2.839	2.827	2.826	2.832	2.822	2.810	2.818	2.798	2.804	2.792	2.800	2.789	2.782	2.800	2.799	2.795	2.789	2.798	2.791	2.783	2.784	2.792	2.791
MP5(μSv/h)	2.780	2.785	2.783	2.779	2.776	2.775	2.750	2.761	2.742	2.728	2.764	2.737	2.729	2.741	2.735	2.740	2.742	2.747	2.726	2.736	2.726	2.733	2.734	2.726
MP6(μSv/h)	2.758	2.762	2.758	2.751	2.745	2.726	2.726	2.729	2.724	2.709	2.704	2.713	2.694	2.694	2.692	2.686	2.691	2.700	2.696	2.683	2.686	2.687	2.687	2.682
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北西	北	北北西	北北西	北北西	北北西	北	北北西	北西	北北西	北北西	北	北	北	北	北	北	北北西	北	北	北	北	北	北北東
風速(m/s)	6.6	9.4	7.2	9.4	8.6	8.8	9.7	7.6	7.7	14.8	6.9	7.3	17.4	8.0	8.5	8.0	7.3	6.7	7.0	5.2	5.0	4.7	5.8	4.4

福島第二原子力発電所

2011/4/10
10:00現在



各発電所等の環境モニタリング結果

単位：μSv/h

通常の平常値の範囲	会社名	発電所名	4月9日 0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
0.023~0.027	北海道電力㈱	泊発電所	0.030	0.031	0.031	0.031	0.031	0.030	0.031	0.031	0.030	0.031	0.031	0.030
0.024~0.080	東北電力㈱	女川原子力発電所	0.37	0.37	0.37	0.37	0.37	0.37	0.38	0.37	0.37	0.37	0.36	0.38
0.012~0.080		東通原子力発電所	0.017	0.017	0.017	0.016	0.017	0.017	0.017	0.017	0.017	0.018	0.017	0.018
0.033~0.050	東京電力㈱	福島第一原子力発電所※	52.5	52.2	52.3	52.1	51.7	51.7	51.3	50.9	50.6	49.9	49.6	49.4
0.036~0.052		福島第二原子力発電所	3.785	3.788	3.781	3.779	3.773	3.758	3.741	3.731	3.720	3.690	3.663	3.645
0.011~0.159		柏崎刈羽原子力発電所	0.087	0.067	0.066	0.070	0.071	0.071	0.069	0.072	0.071	0.071	0.069	0.077
0.036~0.053	日本原子力発電㈱	東海第二発電所	0.432	0.432	0.436	0.434	0.430	0.433	0.430	0.431	0.431	0.424	0.422	0.421
0.039~0.110		敦賀発電所	0.075	0.078	0.077	0.078	0.081	0.085	0.088	0.084	0.080	0.078	0.080	0.076
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.045	0.046	0.049	0.050	0.047	0.048	0.049	0.052	0.048	0.050	0.053	0.055
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.038	0.040	0.040	0.043	0.046	0.046	0.048	0.053	0.044	0.039	0.034	0.032
0.028~0.130	中国電力㈱	島根原子力発電所	0.030	0.030	0.029	0.029	0.028	0.029	0.029	0.029	0.030	0.029	0.031	0.029
0.070~0.077	関西電力㈱	美浜発電所	0.073	0.073	0.075	0.076	0.079	0.084	0.085	0.080	0.078	0.077	0.078	0.073
0.045~0.047		高浜発電所	0.044	0.045	0.047	0.048	0.051	0.053	0.054	0.053	0.047	0.044	0.043	0.042
0.036~0.040		大飯発電所	0.036	0.036	0.037	0.040	0.045	0.049	0.051	0.047	0.041	0.039	0.038	0.035
0.011~0.080	四国電力㈱	伊方発電所	0.014	0.014	0.014	0.014	0.015	0.013	0.014	0.014	0.014	0.014	0.014	0.014
0.023~0.087	九州電力㈱	玄海原子力発電所	0.027	0.028	0.028	0.026	0.025	0.025	0.028	0.028	0.027	0.027	0.028	0.025
0.034~0.120		川内原子力発電所	0.037	0.039	0.039	0.036	0.036	0.037	0.037	0.036	0.039	0.037	0.035	0.037
0.009~0.089	日本原燃(株)	六ヶ所 再処理事業所	0.018	0.017	0.018	0.017	0.016	0.016	0.017	0.017	0.017	0.017	0.016	0.017
0.009~0.071		六ヶ所 埋設事業所	0.022	0.022	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.022	0.023

※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

通常の平常値の範囲	会社名	発電所名	4月9日 12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0.023~0.027	北海道電力㈱	泊発電所	0.031	0.031	0.031	0.031	0.030	0.031	0.031	0.031	0.031	0.031		
0.024~0.080	東北電力㈱	女川原子力発電所	0.36	0.36	0.38	0.38	0.36	0.36	0.35	0.35	0.35	0.35		
0.012~0.080		東通原子力発電所	0.024	0.025	0.025	0.025	0.019	0.017	0.017	0.018	0.017	0.017		
0.033~0.050	東京電力㈱	福島第一原子力発電所※	49.4	49.2	48.8	48.5	48.5	48.4	48.2	48.2	48.2	48.0		
0.036~0.052		福島第二原子力発電所	3.652	3.670	3.678	3.717	3.693	3.737	3.773	3.762	3.768	3.743		
0.011~0.159		柏崎刈羽原子力発電所	0.080	0.081	0.072	0.068	0.085	0.085	0.084	0.085	0.084	0.084		
0.036~0.053	日本原子力発電㈱	東海第二発電所	0.419	0.420	0.421	0.419	0.420	0.418	0.417	0.417	0.413	0.414		
0.039~0.110		敦賀発電所	0.075	0.073	0.074	0.073	0.075	0.074	0.074	0.074	0.075	0.074		
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.054	0.053	0.054	0.049	0.045	0.044	0.043	0.043	0.044	0.043		
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.032	0.032	0.032	0.032	0.032	0.033	0.032	0.032	0.032	0.033		
0.028~0.130	中国電力㈱	島根原子力発電所	0.028	0.030	0.030	0.030	0.029	0.031	0.031	0.030	0.033	0.029		
0.070~0.077	関西電力㈱	美浜発電所	0.073	0.073	0.072	0.071	0.073	0.071	0.073	0.073	0.072	0.073		
0.045~0.047		高浜発電所	0.042	0.042	0.042	0.043	0.042	0.042	0.042	0.042	0.043	0.042		
0.036~0.040		大飯発電所	0.035	0.035	0.034	0.034	0.034	0.034	0.035	0.034	0.035	0.035		
0.011~0.080	四国電力㈱	伊方発電所	0.014	0.014	0.015	0.014	0.014	0.013	0.014	0.014	0.014	0.014		
0.023~0.087	九州電力㈱	玄海原子力発電所	0.025	0.025	0.028	0.025	0.028	0.027	0.027	0.028	0.025	0.025		
0.034~0.120		川内原子力発電所	0.037	0.037	0.038	0.037	0.038	0.036	0.039	0.036	0.036	0.038		
0.009~0.089	日本原燃(株)	六ヶ所 再処理事業所	0.019	0.024	0.025	0.025	0.018	0.017	0.018	0.018	0.018	0.018		
0.009~0.071		六ヶ所 埋設事業所	0.029	0.031	0.030	0.031	0.025	0.023	0.023	0.022	0.022	0.022		

※1 福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。
※2 中部電力(株)からの4月1日12時データより、宇宙線寄与分を加算しない値で報告を受けています。

4月9日 21時現在

東京電力福島第一原子力発電所敷地内の核種分析結果

採取場所：1F南放水口付近(1～4u放水口から南側約330m地点)
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月31日 8:40		3月31日 14:00		4月1日 8:20		4月1日 14:00		③周辺監視区域外の水中の濃度限度(Bq/cm³)
	1F南放水口付近(1～4u放水口から南側約330m地点)		1F南放水口付近(1～4u放水口から南側約330m地点)		1F南放水口付近(1～4u放水口から南側約330m地点)		1F南放水口付近(1～4u放水口から南側約330m地点)		
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	
I-131	7.4E+01	1900	8.7E+01	2200	7.1E+01	1800	3.8E+01	950	4.0E-02
Cs-134	2.1E+01	350	2.5E+01	420	2.2E+01	370	1.1E+01	180	6.0E-02
Cs-137	2.1E+01	230	2.5E+01	280	2.2E+01	240	1.1E+01	120	9.0E-02

核種	4月2日 8:30		4月2日13:20		4月3日 8:40		4月3日 13:50		③周辺監視区域外の水中の濃度限度(Bq/cm³)
	1F南放水口付近(1～4u放水口から南側約330m地点)		1F南放水口付近(1～4u放水口から南側約330m地点)		1F南放水口付近(1～4u放水口から南側約330m地点)		1F南放水口付近(1～4u放水口から南側約330m地点)		
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	
I-131	6.0E-01	15	4.4E-01	11	2.9E+01	720	2.5E+01	630	4.0E-02
Cs-134	1.1E+00	18	5.1E-01	8.4	1.1E+01	190	1.0E+01	170	6.0E-02
Cs-137	1.1E+00	12	5.1E-01	5.6	1.1E+01	130	1.0E+01	110	9.0E-02

採取場所：1F南放水口付近（1～4u放水口から南側約330m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	4月4日 9:00 1F南放水口付近(1～4u放水口から南側約330m地点)		4月4日 14:20 1F南放水口付近(1～4u放水口から南側約330m地点)		4月5日 8:55 1F南放水口付近(1～4u放水口から南側約330m地点)		4月5日 14:10 1F南放水口付近(1～4u放水口から南側約330m地点)		③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
I-131	1.1E+01	280	4.1E+01	1000	1.6E+01	400	1.1E+01	280	4.0E-02
Cs-134	5.1E+00	85	1.9E+01	320	7.7E+00	130	5.3E+00	88	6.0E-02
Cs-137	5.1E+00	57	1.9E+01	210	7.8E+00	87	5.4E+00	60	9.0E-02

核種	4月6日 8:30 1F南放水口付近(1～4u放水口から南側約330m地点)		4月6日 14:05 1F南放水口付近(1～4u放水口から南側約330m地点)		4月7日 8:30 1F南放水口付近(1～4u放水口から南側約330m地点)		4月7日 14:00 1F南放水口付近(1～4u放水口から南側約330m地点)		③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
I-131	3.2E+00	80	3.7E+00	93	2.2E+00	55	1.7E+00	43	4.0E-02
Cs-134	2.1E+00	35	2.4E+00	40	1.7E+00	28	1.8E+00	30	6.0E-02
Cs-137	2.0E+00	22	2.5E+00	28	1.7E+00	19	1.8E+00	20	9.0E-02

採取場所：1F南放水口付近（1～4u放水口から南側約330m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	4月8日 8:55 1F南放水口付近(1～4u放水口から南側約330m地点) ①放射能濃度 (Bq/cm³)	4月8日 8:55 水中濃度限度に対する割合 (①/③)	4月8日 13:55 1F南放水口付近(1～4u放水口から南側約330m地点) ①放射能濃度 (Bq/cm³)	4月8日 13:55 水中濃度限度に対する割合 (①/③)					③周辺監視区域外の水中の濃度限度 (Bq/cm³)
I-131	1.9E+01	480	1.9E+00	48					4.0E-02
Cs-134	1.2E+01	200	1.9E+00	32					6.0E-02
Cs-137	1.2E+01	130	1.9E+00	21					9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

採取場所：1F 5～6放水口北側（5～6u放水口から北側約30m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月31日 8:20 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	3月31日 13:40 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	4月1日 8:40 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	4月1日 14:15 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
I-131	4.5E+01	1100	8.3E+01	2100	1.2E+02	3000	7.5E+01	1900	4.0E-02
Cs-134	1.2E+01	200	2.6E+01	430	3.7E+01	620	2.4E+01	400	6.0E-02
Cs-137	1.2E+01	130	2.6E+01	290	3.7E+01	410	2.5E+01	280	9.0E-02

核種	4月2日 8:50 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	4月2日 13:40 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	4月3日 9:00 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	4月3日 14:05 1F5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
I-131	5.3E+01	1300	3.3E+01	820	1.2E+01	300	9.6E+00	240	4.0E-02
Cs-134	2.1E+01	350	1.3E+01	220	5.0E+00	83	3.7E+00	62	6.0E-02
Cs-137	2.1E+01	230	1.3E+01	150	5.0E+00	56	3.7E+00	41	9.0E-02

採取場所：1F 5~6放水口北側(5~6u放水口から北側約30m地点)
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	4月4日 9:25		4月4日 14:40		4月5日 9:15		4月5日 14:30		③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	1F 5~6放水口北側(5~6u放水口から北側約30m地点)		1F 5~6放水口北側(5~6u放水口から北側約30m地点)		1F 5~6放水口北側(5~6u放水口から北側約30m地点)		1F 5~6放水口北側(5~6u放水口から北側約30m地点)		
	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
I-131	5.3E+00	130	5.3E+00	130	2.4E+01	600	1.6E+01	400	4.0E-02
Cs-134	2.3E+00	38	2.5E+00	42	1.3E+01	220	7.5E+00	130	6.0E-02
Cs-137	2.3E+00	26	2.6E+00	29	1.3E+01	140	7.7E+00	86	9.0E-02

核種	4月6日 8:55		4月6日 14:25		4月7日 8:50		4月7日 14:20		③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	1F 5~6放水口北側(5~6u放水口から北側約30m地点)		1F 5~6放水口北側(5~6u放水口から北側約30m地点)		1F 5~6放水口北側(5~6u放水口から北側約30m地点)		1F 5~6放水口北側(5~6u放水口から北側約30m地点)		
	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
I-131	2.4E+01	600	4.1E+01	1000	1.1E+02	2800	3.2E+01	800	4.0E-02
Cs-134	1.4E+01	230	2.3E+01	380	6.7E+01	1100	2.0E+01	330	6.0E-02
Cs-137	1.4E+01	160	2.4E+01	270	6.8E+01	760	2.0E+01	220	9.0E-02

採取場所：1F 5~6放水口北側(5~6u放水口から北側約30m地点)
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	4月8日 9:15 1F 5~6放水口北側(5~6u放水口から北側約30m地点)		4月8日 14:25 1F 5~6放水口北側(5~6u放水口から北側約30m地点)						③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)					
I-131	5.0E+01	1300	4.6E+01	1200					4.0E-02
Cs-134	3.4E+01	570	2.9E+01	480					6.0E-02
Cs-137	3.4E+01	380	2.9E+01	320					9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

東京電力福島第二原子力発電所敷地内の核種分析結果

採取場所：2F北放水口付近(3、4号放水口付近)(1Fから約10km)
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

検出核種(半減期)	3月31日 10:00 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		4月1日 9:50 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		4月2日 9:55 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		4月3日 9:35 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	
I-131	1.5E+00	38	1.1E+00	28	5.4E-01	14.0	2.8E-01	6.9	4.0E-02
Cs-134	3.6E-01	6.0	3.0E-01	5.0	1.7E-01	2.9	9.9E-02	1.7	6.0E-02
Cs-137	3.6E-01	4.0	2.9E-01	3.2	1.8E-01	2.0	9.2E-02	1.0	9.0E-02

検出核種(半減期)	4月4日 9:50 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		4月5日 9:45 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		4月6日 9:05 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		4月7日 9:55 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)		③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合	
I-131	5.5E-01	13.8	3.1E+00	78	2.2E+00	55	1.8E+00	45.0	4.0E-02
Cs-134	2.2E-01	3.7	1.4E+00	23.3	1.1E+00	18	9.8E-01	16.0	6.0E-02
Cs-137	2.4E-01	2.7	1.4E+00	15.6	1.1E+00	12	1.0E+00	11.0	9.0E-02

※ ○.○E−○とは、○.○×10−○と同じ意味である。

採取場所:2F北放水口付近(3、4号放水口付近)(1Fから約10km)
採取方法:海水をくみ上げ採取
測定方法:試料500mlをGe半導体検出器で測定
測定時間:1,000秒

検出核種(半減期)	4月8日 9:05 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)								③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)							
I-131	1.4E+00	35							4.0E-02
Cs-134	9.0E-01	15							6.0E-02
Cs-137	8.8E-01	9.8							9.0E-02

検出核種(半減期)									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

※ 0.0E-0とは、0.0×10-0と同じ意味である。

採取場所:2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)
採取方法:海水をくみ上げ採取
測定方法:試料500mlをGe半導体検出器で測定
測定時間:1, 000秒

検出核種(半減期)	3月31日 9:15 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		4月1日 9:00 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		4月2日 9:00 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		4月3日 8:50 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	
I-131	8. 0E-01	20	8. 3E-01	21	1.4E-01	3.5	7.9E-02	2.0	4.0E-02
Cs-134	1. 6E-01	2. 7	2. 0E-01	3. 3	5.1E-02	0.86	1.8E-02	0.3	6.0E-02
Cs-137	1. 8E-01	2. 0	1. 9E-01	2. 1	4.4E-02	0.49	2.8E-02	0.3	9.0E-02

核種	4月4日 8:40 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		4月5日 8:50 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		4月6日 8:35 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		4月7日 9:10 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)		③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	
I-131	7. 1E-02	1. 8	3.7E+00	92.5	2. 6E+00	65	2.0E+00	50.0	4.0E-02
Cs-134	2. 0E-02	0. 33	1.4E+00	23.33	1. 1E+00	18	1.0E+00	17.0	6.0E-02
Cs-137	2. 5E-02	0. 28	1.4E+00	15.56	1. 1E+00	12	9.9E-01	11.0	9.0E-02

※ 0.0E−0とは、0.0×10−0と同じ意味である。

採取場所:2F岩沢海岸付近(1,2号放水口から南側に約7,000m地点)
採取方法:海水をくみ上げ採取
測定方法:試料500mlをGe半導体検出器で測定
測定時間:1,000秒

検出核種 (半減期)	4月8日 8:10 2F岩沢海岸付近(1,2号放水口から南側に約7,000m地点)								③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
	①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)							
I-131	1.2E+00	30							4.0E-02
Cs-134	6.6E-01	11							6.0E-02
Cs-137	6.7E-01	7.4							9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

※ ○.○E−○とは、○.○×10−○と同じ意味である。

海水核種分析結果＜沿岸＞

採取場所	1F 5~6放水口北側 (5,6u放水口から北側に約30m地点)				1F 南放水口付近 (1~4u放水口から南側に約330m地点)				2F 北放水口付近 (3,4u放水口付近) (1Fから約10km地点)		2F 岩沢海岸付近 (1,2u放水口から南側に約7km地点) (1Fから約16km地点)		②炉規則告示濃度限度 Bq/cm³ (別表第2第六欄周辺監視区域外の水中の濃度限度)
試料採取日時刻	平成23年4月8日 9時15分		平成23年4月8日 14時25分		平成23年4月8日 8時55分		平成23年4月8日 13時55分		平成23年4月8日 9時05分		平成23年4月8日 8時10分		
検出核種 (半減期)	①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	
I-131 (約8日)	5.0E+01	1,300	4.6E+01	1,200	1.9E+01	480	1.9E+00	48	1.4E+00	35	1.2E+00	30	4E-02
Cs-134 (約2年)	3.4E+01	570	2.9E+01	480	1.2E+01	200	1.9E+00	32	9.0E-01	15	6.6E-01	11	6E-02
Cs-137 (約30年)	3.4E+01	380	2.9E+01	320	1.2E+01	130	1.9E+00	21	8.8E-01	9.8	6.7E-01	7.4	9E-02

※ O.OE−Oとは、O.O×１０$^{-O}$と同じ意味である。

東京電力福島第二原子力発電所敷地内の核種分析結果

採取場所:1F敷地沖合約15km付近
測定方法:試料500mlを福島第二へ運搬し, Ge半導体検出器で測定
測定時間:1, 000秒

核種	4月2日 14:03 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月2日 14:03 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月3日 12:39 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月3日 12:39 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月4日 12:29 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月4日 12:29 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月5日 13:33 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月5日 13:33 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm³)
I-131	1.1E-01	2.7	1.5E-01	3.7	1.9E-01	4.8	1.9E-01	4.8	4.0E-02
Cs-134	2.3E-02	0.39	3.4E-02	0.57	5.2E-02	0.87	7.6E-02	1.3	6.0E-02
Cs-137	2.6E-02	0.29	3.9E-02	0.43	6.4E-02	0.71	7.7E-02	0.86	9.0E-02

核種	4月5日 15:45 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月5日 15:45 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月6日 11:38 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月6日 11:38 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月6日 12:29 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月6日 12:29 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月7日 9:36 1F敷地沖合約15km付近 ①放射能濃度 (Bq/cm³)	4月7日 9:36 1F敷地沖合約15km付近 水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm³)
I-131	1.0E-01	2.5	2.3E-01	5.8	2.1E-01	5.3	9.9E-02	2.5	4.0E-02
Cs-134	4.9E-02	0.8	1.2E-01	2.00	8.9E-02	1.5	4.2E-02	0.7	6.0E-02
Cs-137	4.5E-02	0.50	1.3E-01	1.4	1.0E-01	1.1	4.2E-02	0.47	9.0E-02

※ ０.０E−０とは、０.０×１０−０と同じ意味である。

採取場所：2F敷地沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し、Ge半導体検出器で測定
測定時間：1，000秒

検出核種(半減期)	4月2日 13:35 2F敷地沖合約15km付近		4月3日 12:20 2F敷地沖合約15km付近		4月4日 12:10 2F敷地沖合約15km付近		4月5日 13:15 2F敷地沖合約15km付近		③周辺監視区域外の水中の濃度限度(Bq/cm^3)
	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	
I-131	1.1E-01	2.8	7.7E-02	1.9	8.5E-02	2.1	7.2E-02	1.8	4.0E-02
Cs-134	1.9E-02	0.32			2.7E-02	0.45	2.3E-02	0.38	6.0E-02
Cs-137	2.5E-02	0.28	1.8E-02	0.20	1.9E-02	0.21			9.0E-02

核種	4月5日 16:14 2F敷地沖合約15km付近		4月6日 12:12 2F敷地沖合約15km付近		4月6日 12:52 2F敷地沖合約15km付近		4月7日 9:08 2F敷地沖合約15km付近		③周辺監視区域外の水中の濃度限度(Bq/cm^3)
	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	
I-131	9.6E-02	2.4	9.2E-02	2.3	2.5E-02	0.63	4.0E-02	1.0	4.0E-02
Cs-134	2.5E-02	0.42	3.7E-02	0.62			1.1E-02	0.2	6.0E-02
Cs-137	2.2E-02	0.24	3.7E-02	0.41			1.3E-02	0.1	9.0E-02

※ ○.○E−○とは、○.○×10−○と同じ意味である。

採取場所：2F敷地沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し，Ge半導体検出器で測定
測定時間：1，000秒

検出核種 (半減期)	4月7日 10:24 2F敷地沖合約15km付近 ①放射能濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)							③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
I-131	4.6E-02	1.20							4.0E-02
Cs-134	1.9E-02	0.3							6.0E-02
Cs-137	1.9E-02	0.2							9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

※ ０.０E−０とは、０.０×１０−０と同じ意味である。

採取場所：岩沢海岸沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し，Ge半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	4月2日 13:12 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月2日 13:12 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月3日 12:02 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月3日 12:02 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月4日 11:55 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月4日 11:55 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月5日 13:00 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月5日 13:00 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
I-131	7.6E-02	1.9	4.6E-02	1.1	4.7E-02	1.2	6.0E-02	1.5	4.0E-02
Cs-134							1.8E-02	0.3	6.0E-02
Cs-137									9.0E-02

核種	4月5日 16:53 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月5日 16:53 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月6日 12:44 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月6日 12:44 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月6日 13:15 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月6日 13:15 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	4月7日 8:43 岩沢海岸沖合約15km付近 ①放射能濃度 (Bq/cm^3)	4月7日 8:43 岩沢海岸沖合約15km付近 水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
I-131	1.8E-01	4.5			2.4E-02	0.6	5.3E-02	1.3	4.0E-02
Cs-134	3.1E-01	5.2							6.0E-02
Cs-137	3.2E-01	3.8							9.0E-02

※ ０.０E−０とは、０.０×１０−０と同じ意味である。

採取場所：岩沢海岸沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し，Ge半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	4月7日 9:52 岩沢海岸沖合約15km付近 ①放射能濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)							③周辺監視区域外の水中の濃度限度(Bq/cm^3)
I-131	5.6E-02	1.40							4.0E-02
Cs-134	2.2E-02	0.4							6.0E-02
Cs-137									9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

※ O.OE−Oとは、O.O×10−Oと同じ意味である。

採取場所：請戸川沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し，Ge半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	4月5日 13:48 請戸川沖合約15km付近		4月6日 11:10 請戸川沖合約15km付近		4月6日 11:54 請戸川沖合約15km付近		4月7日 10:02 請戸川沖合約15km付近		③周辺監視区域外の水中の濃度限度（Bq/cm^3）
	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	
I-131	2.0E-01	5.0	4.2E-01	11	3.8E-01	9.5	1.6E-01	4.0	4.0E-02
Cs-134	6.5E-02	1.1	1.9E-01	3.2	1.8E-01	3.0	9.3E-02	1.6	6.0E-02
Cs-137	7.1E-02	0.79	2.0E-01	2.2	1.9E-01	2.1	8.100E-02	0.9	9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

※ 0.0E−0とは、0.0×10−0と同じ意味である。

採取場所：広野町沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し，Ge半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	4月5日 12:44 広野町沖合約15km付近 ①放射能濃度（Bq/cm³）	4月5日 12:44 広野町沖合約15km付近 水中濃度限度に対する割合（①/③）	4月6日 13:18 広野町沖合約15km付近 ①放射能濃度（Bq/cm³）	4月6日 13:18 広野町沖合約15km付近 水中濃度限度に対する割合（①/③）	4月6日 13:37 広野町沖合約15km付近 ①放射能濃度（Bq/cm³）	4月6日 13:37 広野町沖合約15km付近 水中濃度限度に対する割合（①/③）	4月7日 8:14 広野町沖合約15km付近 ①放射能濃度（Bq/cm³）	4月7日 8:14 広野町沖合約15km付近 水中濃度限度に対する割合（①/③）	③周辺監視区域外の水中の濃度限度（Bq/cm³）
I-131	9.8E-02	2.5	3.1E-02	0.78			3.0E-02	0.8	4.0E-02
Cs-134	5.7E-02	1.0	1.2E-02	0.20			8.5E-03	0.1	6.0E-02
Cs-137	5.9E-02	0.66	1.4E-02	0.16			7.3E-03	0.1	9.0E-02

核種	4月7日 9:15 広野町沖合約15km付近 ①放射能濃度（Bq/cm³）	4月7日 9:15 広野町沖合約15km付近 水中濃度限度に対する割合（①/③）							③周辺監視区域外の水中の濃度限度（Bq/cm³）
I-131	4.8E-02	1.20							4.0E-02
Cs-134	2.8E-02	0.47							6.0E-02
Cs-137	2.4E-02	0.27							9.0E-02

※ ○.○E−○とは、○.○×10−○と同じ意味である。

採取場所：南相馬市沖合約15km付近
測定方法：試料500mlを福島第二へ運搬し，Ge半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	4月5日 14:03 南相馬市沖合約15km付近		4月6日 10:41 南相馬市沖合約15km付近		4月6日 11:30 南相馬市沖合約15km付近		4月7日 10:30 南相馬市沖合約15km付近		③周辺監視区域外の水中の濃度限度（Bq/cm^3）
	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	
I-131	5.7E-02	1.4	6.6E-02	1.7	2.4E-02	0.60	3.7E-01	9.3	4.0E-02
Cs-134			4.5E-02	0.75			2.0E-01	3.3	6.0E-02
Cs-137	1.8E-02	0.2	4.6E-02	0.51			2.1E-01	2.3	9.0E-02

核種									③周辺監視区域外の水中の
I-131									4.0E-02
Cs-134									6.0E-02
Cs-137									9.0E-02

※ 0.0E−0とは、0.0×10−0と同じ意味である。

福島第一 物揚場前および2号機、4号機スクリーン海水核種分析結果

採取場所	1F 物揚場前海水		1F 2号機スクリーン海水		1F 4号機スクリーン海水		②炉規則告示濃度限度Bq/cm³（別表第2第六欄周辺監視区域外の水中の濃度限度）
試料採取日時刻	平成23年4月8日 7時15分		平成23年4月8日 9時00分		平成23年4月8日 8時50分		
検出核種（半減期）	①試料濃度（Bq/cm³）	倍率（①/②）	①試料濃度（Bq/cm³）	倍率（①/②）	①試料濃度（Bq/cm³）	倍率（①/②）	
I-131（約8日）	4.7E+02	12,000	9.3E+02	23,000	3.8E+02	10,000	4E-02
Cs-134（約2年）	3.4E+02	5,700	6.3E+02	11,000	2.6E+02	4,300	6E-02
Cs-137（約30年）	3.5E+02	3,900	6.3E+02	7,000	2.6E+02	2,900	9E-02

※ ○.○E+○とは、○.○×10$^{+○}$と同じ意味である。
※ その他の核種については評価中

1. 採取・測定条件

試料採取	場所	福島第一 西門			
	日時	3/31 2:00～2:20	4/1 2:00～2:20	4/2 2:00～2:20	4/3 2:03～2:23
	採取方法	モニタリングカーにてダスト採取			
	風向・風速	WSW 0.8m/s (2:00現在)	WNW 0.9m/s (2:00現在)	NW 0.4m/s (2:00現在)	WNW 0.6m/s (2:10現在)
試料測定	日時	3/31 12:26～	4/1 10:39～	4/2 10:28～	4/3 16:36～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析			
	測定時間	1,000s			

2. 結果

	核種	3/31採取分		4/1採取分		4/2採取分		4/3採取分		③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	6.4E-04	0.64	2.5E-04	0.25	4.3E-04	0.43	2.3E-04	0.23	1.0E-03
	Cs-134	4.2E-05	0.02	3.6E-05	0.02	3.9E-05	0.02	2.8E-05	0.01	2.0E-03
	Cs-137	4.5E-05	0.02	3.4E-05	0.01	3.7E-05	0.01	3.1E-05	0.01	3.0E-03
粒子状	I-131	1.9E-04	0.19	1.1E-04	0.11	2.1E-04	0.21	1.1E-04	0.11	1.0E-03
	Cs-134	3.3E-05	0.02	2.0E-05	0.01	1.9E-05	0.01	1.6E-05	0.01	2.0E-03
	Cs-137	3.6E-05	0.01	2.0E-05	0.01	2.0E-05	0.01	1.6E-05	0.01	3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一　西門			
	日時	4/4 2:22～2:42	4/5 2:02～2:22	4/6 2:00～2:20	4/7 2:00～2:20
	採取方法	モニタリングカーにてダスト採取			
	風向・風速	WNW 0.7m/s (2:30現在)	W 0.6m/s (2:10現在)	W 0.6m/s (2:00現在)	WSW 0.6m/s (2:00現在)
試料測定	日時	4/4 13:11～	4/5 13:13～	4/6 11:22～	4/7 12:28～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析			
	測定時間	2,000s	1,000s	1,000s	揮発性1,000s 粒子状2,000s

2. 結果

	核種	4/4採取分		4/5採取分		4/6採取分		4/7採取分		③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	2.0E-04	0.20	4.2E-04	0.42	2.0E-04	0.20	7.8E-04	0.78	1.0E-03
	Cs-134	2.5E-05	0.01	2.1E-05	0.01	ND	-	7.5E-06	0.00	2.0E-03
	Cs-137	2.8E-05	0.01	2.1E-05	0.01	ND	-	ND	-	3.0E-03
粒子状	I-131	1.0E-04	0.10	2.2E-04	0.22	6.7E-05	0.07	1.7E-04	0.17	1.0E-03
	Cs-134	1.5E-05	0.01	3.1E-05	0.02	9.3E-06	0.00	1.5E-04	0.08	2.0E-03
	Cs-137	1.6E-05	0.01	3.1E-05	0.01	7.7E-06	0.00	1.5E-04	0.05	3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ O.OE−Oとは、O.O×10^{-O}と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一 西門		
	日時	4/8 2:01～2:21		
	採取方法	モニタリングカーにてダスト採取		

2. 結果

	核種	4/8採取分								③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)							
揮発性	I-131	2.1E-04	0.21							1.0E-03
	Cs-134	1.3E-05	0.01							2.0E-03
	Cs-137	1.4E-05	0.00							3.0E-03
粒子状	I-131	8.7E-05	0.09							1.0E-03
	Cs-134	9.6E-06	0.00							2.0E-03
	Cs-137	9.0E-06	0.00							3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ O.OE−Oとは、O.O×10^{-O}と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1					
	日時	3/31 10:07~10:15	3/31 14:45~14:53	4/1 10:41~10:49	4/1 15:54~16:02	4/2 9:36~9:44	4/2 15:38~15:46
	採取方法	モニタリングカーにてダスト採取					
試料測定	日時	3/31 13:02~	3/31 18:21~	4/1 12:59~	4/1 18:18~	4/2 11:09~	4/2 17:48~
	測定方法	Ge半導体型核種分析装置にて分析					
	測定時間	1000s	1000s	1000s	1000s	1000s	1000s

2. 結果

	核種	3/31採取分①		3/31採取分②		4/1採取分①		4/1採取分②		4/2採取分①		4/2採取分②		③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	1.6E-04	0.16	1.5E-04	0.15	1.1E-04	0.11	1.1E-04	0.11	9.2E-05	0.09	6.9E-05	0.07	1.0E-03
	Cs-134	6.9E-05	0.03	6.8E-05	0.03	5.2E-05	0.03	4.6E-05	0.02	4.9E-05	0.02	ND	-	2.0E-03
	Cs-137	7.3E-05	0.02	6.9E-05	0.02	5.3E-05	0.02	5.1E-05	0.02	5.6E-05	0.02	2.0E-05	0.01	3.0E-03
粒子状	I-131	1.3E-04	0.13	7.8E-05	0.08	4.8E-05	0.05	5.3E-05	0.05	5.3E-05	0.05	3.7E-05	0.04	1.0E-03
	Cs-134	7.3E-05	0.04	4.2E-05	0.02	2.8E-05	0.01	3.3E-05	0.02	2.8E-05	0.01	3.2E-05	0.02	2.0E-03
	Cs-137	7.1E-05	0.02	4.3E-05	0.01	2.9E-05	0.01	3.0E-05	0.01	2.9E-05	0.01	3.3E-05	0.01	3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、$○.○\times10^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1					
	日時	4/3 10:26～10:34	4/3 16:19～16:27	4/4 9:29～9:37	4/4 16:06～16:14	4/5 9:13～9:21	4/5 16:04～16:12
	採取方法	モニタリングカーにてダスト採取					
試料測定	日時	4/3 19:37～	4/3 17:40～	4/4 10:39～	4/4 18:08～	4/5 10:26～	4/5 19:08～
	測定方法	Ge半導体型核種分析装置にて分析					
	測定時間	揮発性1000s 粒子状2000s	1000s	1000s	2000s	1000s	2000s

2. 結果

	核種	4/3採取分①		4/3採取分②		4/4採取分①		4/4採取分②		4/5採取分①		4/5採取分②		③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	3.9E-05	0.04	8.2E-05	0.08	4.2E-05	0.04	5.4E-05	0.05	3.8E-05	0.04	6.8E-05	0.07	1.0E-03
	Cs-134	ND	-	4.1E-05	0.02	ND	-	3.7E-05	0.02	ND	-	3.2E-05	0.02	2.0E-03
	Cs-137	ND	-	4.5E-05	0.02	ND	-	3.8E-05	0.01	ND	-	3.7E-05	0.01	3.0E-03
粒子状	I-131	2.9E-05	0.03	3.7E-05	0.04	2.3E-05	0.02	3.9E-05	0.04	5.1E-05	0.05	3.4E-05	0.03	1.0E-03
	Cs-134	2.2E-05	0.01	2.8E-05	0.01	ND	-	2.5E-05	0.01	2.4E-05	0.01	2.2E-05	0.01	2.0E-03
	Cs-137	2.1E-05	0.01	2.2E-05	0.01	ND	-	2.5E-05	0.01	2.1E-05	0.01	2.0E-05	0.01	3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10^−○と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1			
	日時	4/6 9:29～9:41	4/6 15:50～15:58	4/7 9:43～9:50	4/7 16:09～16:17
	採取方法	モニタリングカーにてダスト採取			
	風向・風速	−	−	−	−
試料測定	日時	4/6 12:28～	4/6 20:34～	4/7 11:08～	4/7 19:40～
	測定方法	Ge半導体型核種分析装置にて分析			
	測定時間	1000s	揮発性1000s 粒子状2000s	1000s	1000s

2. 結果

	核種	4/6採取分① ①放射能濃度(Bq/cm3)	4/6採取分① 空気中濃度限度に対する割合(①/③)	4/6採取分① ①放射能濃度(Bq/cm3)	4/6採取分① 空気中濃度限度に対する割合(①/③)	4/7採取分② ①放射能濃度(Bq/cm3)	4/7採取分② 空気中濃度限度に対する割合(①/③)	4/7採取分② ①放射能濃度(Bq/cm3)	4/7採取分② 空気中濃度限度に対する割合(①/③)	③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
揮発性	I-131	5.7E-05	0.06	ND	-	3.1E-05	0.03	1.6E-05	0.02	1.0E-03
	Cs-134	3.4E-05	0.02	ND	-	1.0E-05	0.01	ND	-	2.0E-03
	Cs-137	3.8E-05	0.01	ND	-	1.4E-05	0.00	ND	-	3.0E-03
粒子状	I-131	4.5E-05	0.05	3.0E-05	0.03	1.0E-05	0.01	5.8E-05	0.06	1.0E-03
	Cs-134	2.4E-05	0.01	1.8E-05	0.01	ND	-	2.5E-05	0.01	2.0E-03
	Cs-137	2.9E-05	0.01	1.9E-05	0.01	ND	-	2.6E-05	0.01	3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1			
	日時	4/8 9:33～9:41	4/8 15:28～15:36		
	採取方法	モニタリングカーにてダスト採取			

2. 結果

	核種	4/8採取分①		4/8採取分②						③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)					
揮発性	I-131	2.6E-05	0.03	1.6E-05	0.02					1.0E-03
	Cs-134	ND	-	ND	-					2.0E-03
	Cs-137	ND	-	ND	-					3.0E-03
粒子状	I-131	1.5E-05	0.02	1.0E-05	0.01					1.0E-03
	Cs-134	ND	-	ND	-					2.0E-03
	Cs-137	ND	-	ND	-					3.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

発電所敷地内における空気中放射性物質の核種分析結果

採取場所		1F 西門		2F MP－1 (参考)				②放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm³) ※
試料採取日時刻		平成23年4月8日 2時01分～2時21分		平成23年4月8日 9時33分～9時41分		平成23年4月8日 15時28分～15時36分		
検出核種 (半減期)		①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	①試料濃度 (Bq/cm³)	倍率 (①/②)	
揮発性	I-131 (約8日)	2.1E-04	0.21	2.6E-05	0.03	1.6E-05	0.02	1E-03
	Cs-134 (約2年)	1.3E-05	0.01	ND	-	ND	-	2E-03
	Cs-137 (約30年)	1.4E-05	0.00	ND	-	ND	-	3E-03
粒子状	I-131 (約8日)	8.7E-05	0.09	1.5E-05	0.02	1.0E-05	0.01	1E-03
	Cs-134 (約2年)	9.6E-06	0.00	ND	-	ND	-	2E-03
	Cs-137 (約30年)	9.0E-06	0.00	ND	-	ND	-	3E-03

(b)(4)

News Release

経済産業省
Ministry of Economy, Trade and Industry

平成２３年４月１０日
原子力安全・保安院

地震被害情報（第８４報）
（４月１０日０８時３０分現在）

原子力安全･保安院が現時点で把握している東京電力(株)福島第一原子力発電所、福島第二原子力発電所、東北電力㈱女川原子力発電所、日本原子力発電（株）東海第二、電気、ガス、熱供給、コンビナート被害の状況は、以下のとおりです。

前回からの変更点は以下のとおり。

１．原子力発電所関係

○福島第一原子力発電所

・４号機について、使用済燃料プール冷却のため、コンクリートポンプ車による放水（約 90t）を実施（4 月 9 日 17:07～19:24）。

・５号機及び６号機サブドレンピットにある低レベルの地下水の排出終了（約 1300t）（4 月 9 日 18:52）。

・4 月 9 日午前 9 時 19 分、水処理建屋において全面マスク着用でケーブル処理作業を行っていた協力企業社員 1 名の気分が悪くなり、建屋の外にある蓋のずれたマンホールに足を踏み入れて負傷したため、病院へ搬送しました。診断の結果、「右膝挫傷」「右膝内側側副靱帯損傷疑い」と診断。なお、身体サーベイの結果、汚染はないことが確認された。

２．産業保安関係

別紙参照

（別紙）

1　発電所の運転状況【自動停止号機数：１０基】

〇東京電力(株)福島第一原子力発電所（福島県双葉郡大熊町及び双葉町）

（１）運転状況

１号機（46 万 kW）（自動停止）

２号機（78 万 4 千 kW）（自動停止）

３号機（78 万 4 千 kW）（自動停止）

４号機（78 万 4 千 kW）（定検により停止中）

５号機（78 万 4 千 kW）（定検により停止中、3 月 20 日 14:30 冷温停止）

６号機（110 万 kW）（定検により停止中、3 月 20 日 19:27 冷温停止）

（２）モニタリングの状況

別添参照

（３）主なプラントパラメーター（4 月 10 日 6:00 現在）

	１号機	２号機	３号機	４号機	５号機	６号機
原子炉圧力*1 [MPa]	0.511(A) 0.949(B)	0.081(A) 0.076(D)	0.092(A) 0.024(C)	—	0.108	0.106
原子炉格納容器圧力 (D/W) [kPa]	195	95	106.1	—	—	—
原子炉水位*2 [mm]	-1550(A) -1600(B)	-1450(A) 不明 (B)	-1900(A) -2250(B)	—	2086	1559
原子炉格納容器内 S/C 水温 [℃]	—	—	—	—	—	—
原子炉格納容器内 S/C 圧力 [kPa]	165	計器不良	171.7	—	—	—
使用済燃料プール水温度 [℃]	計器不良	48.0	計器不良	計器不良	35.2	29.0
備　考	4/10 6:00 現在の値	4/10 6:00 現在の値	4/10 6:00 現在の値	4/10 現在	4/10 6:00 現在の値	4/10 6:00 現在の値

＊１：絶対圧に換算

＊２：燃料頂部からの数値

（４）各プラントの状況

＜１号機関係＞

・原子力災害対策特別措置法第１５条（非常用炉心冷却装置注水不能）通報（3 月 11 日 16:36）

・ベント開始※（3月12日10:17）
・１号機の原子炉圧力容器内に消火系ラインを用いて海水注入開始（3月12日20:20）→一時中断（3月14日1:10）
・１号機で爆発音。（3月12日15:36）
・消火系に加え、給水系を使うことにより炉心への注水量を増量（2m^3/h→18m^3/h）（3月23日2:33）。その後、給水系のみに切替（約11m^3/h）（3月23日9:00）
・中央制御室の照明復帰（3月24日11:30）
・原子炉圧力容器へ淡水注入開始。（3月25日15:37）
・タービン建屋地下の溜まり水を測定した結果、主な核種として^{131}I（ヨウ素）が2.1×10^{5}Bq/cm^3、^{137}Cs（セシウム）が1.8×10^{6}Bq/cm^3、検出された。
・消防ポンプによる淡水の原子炉圧力容器への注入を仮設電動ポンプに切り替え（3月29日8:32）
・タービン建屋地下の溜まり水を、3月24日17時頃から復水器へ移送開始。復水器の水位が満水に近いことが確認されたため、復水器への排水を停止（3月29日7:30）。タービン建屋地下の溜まり水を復水器へ移送する準備のため、復水貯蔵タンクの水を、サプレッションプール水サージタンク（A）へ移送開始（3月31日12:00）し、移送先をサプレッションプール水タンクへ（B）に切り替えた後（3月31日15：25）、移送を再開し、終了した（4月2日15:26）
・使用済燃料プールについて、コンクリートポンプ車が約90t放水（淡水）（3月31日13:03～16:04）。コンクリートポンプ車による放水位置の確認のため、試験放水（4月2日17:16～17:19）
・タービン建屋の一部の照明が点灯（4月2日）
・原子炉圧力容器への淡水の注水に用いている電動ポンプの電源を仮設電源から外部電源に切り替えるため、一時的に消防ポンプに切り替えて原子炉へ淡水の注入を実施（4月3日10:42～11:52）
・原子炉圧力容器への淡水注入を外部電源に切り替え（4月3日12:02）
・タービン建屋地下の溜まり水を復水器へ移送する準備のため、復水器の水を復水貯蔵タンクへ移送開始（4月3日13:55）
・原子炉格納容器内での水素燃焼の可能性を下げることを目的として、原子炉格納容器への窒素封入操作開始（4月6日22:30）
・原子炉格納容器への窒素封入開始を確認（4月7日1:31）
・原子炉格納容器への窒素封入を高純度窒素発生装置に切替(4月9日4:10)
・引き続き白煙の吐出確認（4月10日6:30現在）
・原子炉圧力容器へ淡水注入中（4月10日8:00現在）

※従来、「ベント操作」と記載していたものを、他の資料と表記を統一。

＜２号機関係＞

・原子力災害対策特別措置法第１５条（非常用炉心冷却装置注水不能）通報（3 月 11 日 16:36）
・ベント開始※（3 月 13 日 11:00）
・３号機の建屋の爆発に伴い、原子炉建屋ブローアウトパネル開放（3 月 14 日 11:00 過ぎ）
・原子炉圧力容器の水位が低下傾向（3 月 14 日 13:18）。原子力災害対策特別措置法第１５条事象（原子炉冷却機能喪失）である旨、受信（3 月 14 日 13:49）
・原子炉圧力容器内に消火系ラインを用いて海水注入作業開始(3 月 14 日 16:34)
・原子炉圧力容器の水位が低下傾向（3 月 14 日 22:50）
・ベント開始※（3 月 15 日 0:02）
・２号機で爆発音するとともに、サプレッションプール（圧力抑制室）の圧力低下(3 月 15 日 6:10)。同室に異常が発生したおそれ(3 月 15 日 6:20 頃)
・外部送電線から予備電源変電設備までの受電を完了し、そこから負荷側へのケーブル敷設を実施（3 月 19 日 13:30）
・使用済燃料プールに海水を 40 t 注入（冷却系配管に消防車のポンプを接続）(3 月 20 日 15:05～17:20)
・パワーセンター受電（3 月 20 日 15:46）
・白煙が発生（3 月 21 日 18:22）
・白煙はほとんど見えない程度に減少（3 月 22 日 7:11 現在）
・使用済燃料プールに海水を 18 t 注入（3 月 22 日 16:07～17:01）
・使用済燃料プールに、使用済燃料プール冷却系を用いて海水を注入（3 月 25 日 10:30～12:19）
・原子炉圧力容器への淡水注入開始（3 月 26 日 10:10）
・中央制御室の照明復帰（3 月 26 日 16:46）
・消防ポンプによる淡水の原子炉圧力容器への注入を仮設電動ポンプに切り替え（3 月 27 日 18:31）
・3 月 27 日に東京電力(株)が発表した福島第一原子力発電所２号機タービン建屋地下階溜まり水の測定結果について、^{134}I（ヨウ素）の測定値に誤りがあるとの判断を踏まえた再度の採取及び分析・評価の結果、^{134}I（ヨウ素）を含むガンマ核種の濃度については、検出限界値未満であることの報告（3 月 28 日 0:07）
・消防ポンプによる海水の使用済燃料プールへの注入を仮設電動ポンプによる淡水に切り替え注入（3 月 29 日 16:30～18:25）
・30 日 9:25 より使用済燃料プールへの注入をしていたところ、仮設電動ポンプの不調が同日 9:45 に確認されたため、消防ポンプによる切り替えを

行ったが、ホースの亀裂が確認（3月30日12:47、13:10）されたため、注入を中断。淡水注水を再開（3月30日19:05～23:50）

・使用済燃料プールに、使用済燃料冷却系を用いて仮設電動ポンプにより淡水を約70t注入（4月1日14:56～17:05）

・タービン建屋地下の溜まり水を復水器へ移送する準備のため、復水貯蔵タンクの水をサプレッションプール水サージタンクへ移送（3月29日16:45～4月1日11:50）

・取水口付近にある電源ケーブルを収めているピット内に、1,000mSv/hを超える水が溜まっていること及びピット側面のコンクリート部分に長さ約20cmの亀裂があり、当該部分より、水が海に流出していることを確認（4月2日9:30頃）。止水処置のため、コンクリートを注入（4月2日16:25、19:02）

・タービン建屋地下の溜まり水を復水器へ移送する準備のため、復水器の水を復水貯蔵タンクへ移送開始（4月2日17:10）

・トレンチ立坑及びタービン建屋地下１階の水位を監視するためのカメラを設置（4月2日）

・タービン建屋の一部の照明が点灯（4月2日）

・原子炉圧力容器への淡水の注水に用いている電動ポンプの電源を仮設電源から外部電源に切り替えるため、一時的に消防ポンプに切り替えて原子炉へ淡水の注入を実施（4月3日10:22～12:06）

・原子炉圧力容器への淡水注入を外部電源に切り替え（4月3日12:12）

・２号機バースクリーン近傍にあるピット内に溜まっている水の海水への流出を防止する措置として、取水電源トレンチの天端を破砕し、おがくず（3kg/袋）20袋、高分子吸収材（100g/袋）80袋、裁断処理した新聞紙（大きいゴミ袋）3袋を投入（4月3日13:47～14:30）

・トレーサー（乳白色の入浴剤）約13kgを海水配管トレンチ立坑から投入（4月4日7:08～7:11）

・使用済燃料プールに、使用済燃料冷却系を用いて仮設電動ポンプによる淡水（約70ｔ）を注入（4月4日11:05～13:37）

・２号機バースクリーン近傍のピット周辺に２箇所の穴を開け、トレーサーを注入し、亀裂部から海に流出していることを確認（4月5日14:15）。ピット周辺に開けた穴に水流出防止のための凝固剤（水ガラス）注入開始(4月5日15:07)。水の流出が止まったことを確認(4月6日5:38頃)。また、タービン建屋の水位については、上昇してないことを確認。さらに、流出していた箇所について、ゴム板と治具（つっかえ棒）により止水の対策を実施（4月6日13:15完了）

・復水器の水を復水貯蔵タンクに移送するポンプを１台増設（計２台30m³/h）（4月5日15:40頃）

・使用済燃料プール冷却系から使用済燃料プールに淡水注水（約36t）（4

月7日13:39～14:34)
・復水器から復水貯蔵タンクへの移送完了（4月9日13:10)
・引き続き白煙の吐出確認（4月10日6:30現在）
・原子炉圧力容器へ淡水注入中（4月10日8:00現在）

＜３号機関係＞
・原子力災害対策特別措置法第１５条（非常用炉心冷却装置注水不能）通報（3月13日5:10)
・ベント開始※（3月13日8:41)
・原子炉圧力容器内に消火系ラインから真水注入開始（3月13日11:55)
・原子炉圧力容器内に消火系ラインから海水注入開始(3月13日13:12)
・３号機及び１号機の注入をくみ上げ箇所の海水が少なくなったため停止(3月14日1:10)
・３号機の海水注入を再開(3月14日3:20)
・ベント開始※（3月14日5:20)
・格納容器圧力が異常上昇(3月14日7:44)。原子力災害対策特別措置法第１５条事象である旨、受信（3月14日7:52)
・１号機と同様に原子炉建屋付近で爆発（3月14日11:01)
・白い湯気のような煙が発生（3月16日8:30頃)
・格納容器が破損しているおそれがあるため、中央制御室（共用）から作業員退避（3月16日10:45)。その後、作業員は中央制御室に復帰し、注水作業再開（3月16日11:30)
・自衛隊ヘリにより３号機への海水の投下を４回実施(3月17日9:48、9:52、9:58、10:01)
・警察庁機動隊が放水のため現場到着（3月17日16:10)
・自衛隊消防車により放水（3月17日19:35)
・警察庁機動隊による放水（3月17日19:05～19:13)
・自衛隊消防車５台が放水（3月17日19:35、19:45、19:53、20:00、20:07)
・自衛隊消防車６台（6t放水／台）が放水（3月18日14時前～14:38)
・米軍消防車１台が放水（3月18日14:45終了）
・東京消防庁ハイパーレスキュー隊が放水（3月20日3:40終了）
・格納容器内圧力が上昇（3月20日11:00、320kPa)。圧力下げるための準備を進めていたが、直ちに放出を必要とする状況ではないと判断し、圧力監視を継続（3月21日12:15、120kPa)
・ケーブル引き込みの現地調査（3月20日11:00～16:00)
・東京消防庁ハイパーレスキュー隊が３号機の使用済燃料プールに放水（3月20日21:30～3月21日3:58)
・灰色がかった煙が発生（3月21日15:55頃)
・煙が収まっていることを確認（3月21日17:55)

・灰色がかった煙は白みがかった煙に変化し終息に向かっていると思われる（3月22日7:11現在）
・東京消防庁及び大阪市消防局が放水（約180t）（3月22日15:10～16:00）
・中央制御室の照明復帰（3月22日22:43）
・使用済燃料プールに使用済燃料プール冷却系から海水35t注入（3月23日11:03～13:20）。海水約120t注入（3月24日5:35頃～16:05頃）
・原子炉建屋からやや黒色がかった煙が発生（3月23日16:20頃）。3月23日23:30頃及び3月24日4:50頃に確認したところ止んでいる模様。
・タービン建屋1階及び地下1階において、ケーブル敷設作業を行っていた作業員が踏み入れた水について調査した結果、水表面の線量率は約400mSv/h、採取水のガンマ線核種分析の結果、試料の濃度は各核種合計で約3.9×10^{6}Bq/cm^{3}であった。
・東京消防庁の支援を受けた川崎市消防局が放水（3月25日13:28～16:00）
・原子炉圧力容器へ淡水注入開始（3月25日18:02）
・コンクリートポンプ車（50t/h）が約100t放水（3月27日12:34～14:36）
・タービン建屋地下の溜まり水を復水器へ移送する準備のため、復水貯蔵タンクの水をサプレッションプール水サージタンクへ移送（3月28日17:40～3月31日8:40頃）
・消防ポンプによる淡水の原子炉圧力容器への注入を仮設電動ポンプに切り替え（3月28日20:30）
・コンクリートポンプ車(50t/h)が淡水約100t放水(3月29日14:17～18:18)
・コンクリートポンプ車(50t/h)が淡水約105t放水(3月31日16:30～19:33)
・コンクリートポンプ車(50t/h)が淡水約75t放水（4月2日9:52～12:54）
・タービン建屋の一部の照明が点灯（4月2日）
・トレンチ立坑の水位を監視するためのカメラを設置（4月2日）
・原子炉圧力容器への淡水の注水に用いている電動ポンプの電源を仮設電源から外部電源に切り替えるため、一時的に消防ポンプに切り替えて原子炉へ淡水の注入を実施（4月3日10:03～12:16）
・原子炉圧力容器への淡水注入を外部電源に切り替え（4月3日12:18）
・コンクリートポンプ車(50t/h)が淡水約70t放水（4月4日17:03～19:19）
・コンクリートポンプ車（50t/h）が淡水約70t放水(4月7日06:53～08:53)
・コンクリートポンプ車（50t/h）が淡水約75t放水(4月8日17:06～20:00)
・引き続き白煙の吐出確認（4月10日6:30現在）
・原子炉圧力容器へ淡水注入中。(4月10日8:00現在)

＜4号機関係＞
・原子炉圧力容器のシュラウド工事中のため、原子炉圧力容器内に燃料はなし。

・使用済燃料プール水温度が上昇（3 月 14 日 4:08 時点 84℃）
・オペレーションエリアの壁が一部破損していることを確認（3 月 15 日 6:14）
・火災発生。（3 月 15 日 9:38）事業者によると、自然に火が消えていることを確認（3 月 15 日 11:00 頃）
・火災が発生（3 月 16 日 5:45 頃）。事業者は現場での火災は確認できず（3 月 16 日 6:15 頃）
・自衛隊が使用済燃料プールへ放水（3 月 20 日 9:43）
・ケーブル引き込みの現地調査（3 月 20 日 11:00～16:00）
・自衛隊が使用済燃料プールへ放水（3 月 20 日 18:30 頃～19:46）
・自衛隊消防車 13 台が使用済燃料プールに放水（3 月 21 日 6:37～8:41）
・パワーセンターまでのケーブル敷設工事完了（3 月 21 日 15:00 頃）
・パワーセンター受電（3 月 22 日 10:35）
・コンクリートポンプ車（50t/h）が約 150 t 放水（3 月 22 日 17:17～20:32）
・コンクリートポンプ車（50t/h）が約 130 t 放水（3 月 23 日 10:00～13:02）
・コンクリートポンプ車（50t/h）が約 150 t 放水（3 月 24 日 14:36～17:30）
・コンクリートポンプ車（50t/h）が約 150 t 放水（3 月 25 日 19:05～22:07）
・使用済燃料プールに、使用済燃料プール冷却系を用いて海水を注入（3 月 25 日 6:05～10:20）
・コンクリートポンプ車(50t/h)が約 125t 放水（3 月 27 日 16:55～19:25）
・中央制御室の照明復帰（3 月 29 日 11:50）
・コンクリートポンプ車(50t/h)が淡水約 140t 放水(3 月 30 日 14:04～18:33)
・コンクリートポンプ車(50t/h)が淡水約 180t 放水(4 月 1 日 8:28～14:14)
・タービン建屋の一部の照明が点灯（4 月 2 日）
・4 月 2 日より、集中環境施設プロセス主建屋の建屋内にたまった水を４号機のタービン建屋内に移送していたところ、4 月 3 日より３号機のトレンチの立坑の水位が上昇したため、経路は不明であるものの念のため移送を中断（4 月 4 日 9:22）
・コンクリートポンプ車(50t/h)が淡水約 180t 放水(4 月 3 日 17:14～22:16)
・コンクリートポンプ車（50t/h)が淡水約 20t 放水（4 月 5 日 17:35～18:22)
・コンクリートポンプ車（50t/h)が淡水約 38 t 放水（4 月 7 日 18:23～19:40)
・コンクリートポンプ車(50t/h) が淡水約 90 t 放水(4 月 9 日 17:07～19:24)
・引き続き白煙の吐出確認（4 月 10 日 6:30 現在）

＜５号機，６号機関係＞
・６号機の非常用ディーゼル発電機（D/G）１台目（B）は運転により電力供給。復水補給水系（MUWC）を用いて原子炉圧力容器及び使用済燃料プールへ注水。
・６号機の非常用ディーゼル発電機（D/G）２台目（A）起動（3 月 19 日

4:22)

・５号機の残留熱除去系（RHR）ポンプ（C）（3月19日5:00）及び６号機の残留熱除去系（RHR）ポンプ（B）（3月19日22:14）が起動し、除熱機能回復。使用済燃料プールを優先的に冷却（電源：６号の非常用ディーゼル発電機）（3月19日5:00）
・５号機、冷温停止（3月20日14:30）
・６号機、冷温停止（3月20日19:27）
・５号機及び６号機、起動用変圧器まで受電（3月20日19:52）
・５号機、電源を非常用ディーゼル発電機から外部電源に切り替え（3月21日11:36）
・６号機、電源を非常用ディーゼル発電機から外部電源に切り替え（3月22日19:17）
・５号機の仮設の残留熱除去海水系（RHRS）ポンプが、仮設から本設の電源への切り替えの際、自動停止（3月23日17:24）
・５号機の仮設の残留熱除去海水系（RHRS）ポンプの修理が完了（3月24日16:14）し、冷却を再開（3月24日16:35）
・６号機の仮設の残留熱除去海水系（RHRS）ポンプが、仮設から本設の電源へ切り替え（3月25日15:38、15:42）
・５号機及び６号機サブドレンピットにある低レベルの地下水（約1,500t）を放水口経由で海へ放出開始（4月4日21:00）
・５号機及び６号機サブドレンピットにある低レベルの地下水を放水口経由で海へ放出（5号機　4月4日21:00～4月8日　12:14(約950t),6号機　4月4日21:00～4月9日　18:52(約393t))。

＜使用済燃料共用プール＞
・3月18日6:00過ぎ、プールはほぼ満水であることを確認
・共用プールに注水（3月21日10:37～15:30）
・電源供給を開始（3月24日15:37）し、冷却を開始（3月24日18:05）
・4月9日7:50時点でのプール水温度は32℃程度

＜その他＞
・南放水口付近の海水核種分析の結果、^{131}I（ヨウ素）が7.4×10^1Bq/cm^3（周辺監視区域外の水中濃度限度の1850.5倍）検出された（3月26日14:30）（3月29日に計測した結果、水中濃度限度の3,355.0倍となった。（3月29日13:55）一方、１F放水口北側の海水核種分析の結果、^{131}I（ヨウ素）が4.6×10^1Bq/cm^3（同1,262.5倍）検出された。（3月29日14:10））
・１～３号機タービン建屋外のトレンチ（配管を布設しているトンネル状の地下構造物）の立坑に水が溜まっていることを確認。水表面の線量は、１号機が0.4mSv/h、２号機が1,000mSv/h以上、３号機はがれきがあり測

定できず（3月27日15:30頃）。1号機立坑内の溜留水を仮設ポンプにて集中環境施設プロセス主建屋の貯槽に移送し、立坑内の水位が上端から約-0.14mから約-1.14mに減少（3月31日9:20～11:25）

・福島第一原子力発電所の敷地内（5地点）の土壌から、3月21日及び3月22日に採取した試料の中に、^{238}Pu（プルトニウム）、^{239}Pu（プルトニウム）、^{240}Pu（プルトニウム）を検出（3月28日23:45東京電力発表）。検出されたプルトニウムの濃度は、過去の大気圏内核実験において国内で観測されたフォールアウト（放射性降下物）と同様、通常の環境レベルで人体に問題となるものではない。
・3号機建屋外において、残留熱除去海水系配管のフランジを取り外した際、協力企業作業員3名が、配管に溜まった水を被ったが、水を拭き取った結果、身体への放射性物質の付着はなかった（3月29日12:03）
・3月28日、集中環境施設プロセス主建屋で水溜まりを確認し、放射能分析の結果、3月29日管理区域内で総量約1.2×10^1Bq/cm^3、非管理区域で総量2.2×10^1Bq/cm^{3}の放射能を検出した。
・南放水口付近の海水核種分析の結果、^{131}I（ヨウ素）が1.8×10^2Bq/cm^3（周辺監視区域外の水中濃度限度の4385.0倍）検出された。（3月30日13:55）
・原子炉等の冷却に使用する淡水を積んだ米軍のはしけ船（1号船）1隻が海上自衛隊の艦船にえい航され、福島第一原子力発電所専用港に接岸（3月31日15:42）。はしけ船（1号船）からろ過水タンクへ淡水を移送開始（4月1日15:58）。その後、ホースの不具合により中断（4月1日16:25）したが、4月2日に注水を再開（4月2日10:20～16:40）
・発電所敷地境界付近に設置している本設モニタリングポスト（No.1～8）が復旧（3月31日）。測定値については1日1回の予定。
・共用プールの山側の約500m^{2}の範囲に飛散防止剤の試験散布の吹きつけを実施（4月1日15:00～16:05）
・2隻目の原子炉等の冷却に使用する淡水を積んだ米軍のはしけ船（2号船）が海上自衛隊の艦船にえい航され、福島第一原子力発電所専用港に接岸（4月2日9:10）
・米軍のはしけ船（2号船）からはしけ船（1号船）へ淡水を移送（3日09:52～11:15）
・集中環境施設プロセス主建屋内の低レベル滞留水については、放水口南側海域から1台目のポンプによる放出を開始（4月4日19:03）し、更に全10台のポンプによる放出を実施（4月4日19:07）
・福島第一原子力発電所の敷地内の土壌から、3月25日（4地点）及び3月28日（3地点）に採取した試料（合計7検体）の中に、^{238}Pu（プルトニウム）、^{239}Pu（プルトニウム）、^{240}Pu（プルトニウム）を検出（4月6日18:30東京電力発表）。検出されたプルトニウムの濃度は、前回（3月28日公表）と同様に過去の大気圏内核実験において国内で観測されたフォ

ールアウト（放射性降下物）と同程度であり、通常の環境レベルで人体に問題となるものではない

・専用港内からの汚染水の流出を防止するため、発電所南側防波堤周辺で大型土のうを用いた止水工事を実施（4月5日15:00～16:30）

・共用プール山側の約600㎡の範囲に、地面の放射性物質の飛散を防ぐ飛散防止剤を試験的に散布（4月5日、4月6日）

・雑固体廃棄物減容処理建屋内の低レベル滞留水については、放水口南側海域から５台のポンプによる放水を実施(4月6日17:20～4月7日18:20)

・タービン建屋内の溜まり水の集中廃棄物処理施設への排水準備のため、２～４号機のタービン建屋の外壁に孔あけを実施（4月7日)。

・共用プール山側の約680m^{2}の範囲に、地面の放射性物質の飛散を防ぐ飛散防止剤を試験的に散布（4月8日)。

・4月7日11:32に発生した宮城県沖の地震により、中断していた集中環境施設における排水作業を再開（4月8日14:30)。

○東京電力(株)福島第二原子力発電所（福島県双葉郡楢葉町及び富岡町）

（１）運転状況

１号機（110万kW)（自動停止、3月14日17:00冷温停止）
２号機（110万kW)（自動停止、3月14日18:00冷温停止）
３号機（110万kW)（自動停止、3月12日12:15冷温停止）
４号機（110万kW)（自動停止、3月15日7:15冷温停止）

（２）モニタリングポスト等の指示値

別添参照

（３）主なプラントパラメーター（4月10日6:00現在）

	単位	１号機	２号機	３号機	４号機
原子炉圧力*1	MPa	0.15	0.13	0.10	0.17
原子炉水温	℃	25.3	25.1	33.5	29.6
原子炉水位*2	mm	9346	10396	7802	8785
原子炉格納容器内 ｻﾌﾟﾚｯｼｮﾝﾌﾟｰﾙ水温	℃	23	24	26	30
原子炉格納容器内 ｻﾌﾟﾚｯｼｮﾝﾌﾟｰﾙ圧力	kPa (abs)	105	105	111	110
備　考		冷温停止中	冷温停止中	冷温停止中	冷温停止中

＊１：絶対圧に換算

＊２：燃料頂部からの数値

（４）各プラントの状況

＜１号機関係＞

・3月30日17:56頃、１号機において、タービン建屋の１階の電源盤から煙が上がっていたが、電気の供給を切ったところ、煙の発生が止まった。

消防署により、19:15 当該事象は電源盤の異常であり、火災ではないと判断された。

・１号機の原子炉を冷却する残留熱除去系（Ｂ）の電源が、外部電源に加え非常用電源からも受電可能となり、全号機において、残留熱除去系（Ｂ）のバックアップ電源（非常用電源）を確保（3 月 30 日 14:30）

（５）その他異常等に関する報告

・１号機にて原子力災害対策特別措置法第１０条通報（3 月 11 日 18:08）
・１、２、４号機にて同法第１０条通報（3 月 11 日 18:33）
・１号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生（3 月 12 日 5:22）
・２号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生（3 月 12 日 5:32）
・４号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生（3 月 12 日 6:07）

○東北電力(株)女川原子力発電所（宮城県牡鹿郡女川町、石巻市）

（１）運転状況

１号機（52 万 4 千 kW）（自動停止、3 月 12 日 0:58 冷温停止）
２号機（82 万 5 千 kW）（自動停止、地震時点で冷温停止）
３号機（82 万 5 千 kW）（自動停止、3 月 12 日 1:17 冷温停止）

（２）モニタリングポスト等の指示値

MP２付近（敷地最北敷地境界）：
約 0.36μSv/h（4 月 9 日 16:00）（約 0.37μSv/h（4 月 7 日 16:00））

（３）その他異常に関する報告

・タービン建屋地下１階の発煙は消火確認（3 月 11 日 22:55）
・原子力災害対策特別措置法第１０条通報（3 月 13 日 13:09）

２　産業保安

○電気（4 月 10 日 8:30 現在）

・東北電力（4 月 9 日 22:00 現在）

停電戸数：約 16 万戸　（4 月 7 日午後 11 時 32 分頃発生した宮城県沖を震源とする地震による停電戸数を含む。）

停電地域：岩手県　一部地域で停電（約３万戸）
宮城県　一部地域で停電（約９万３千戸）
福島県　一部地域で停電（約３万６千戸）

・東京電力

停電は 3 月 19 日 1:00 までに復旧済（延べ停電戸数　約 405 万戸）

・北海道電力

停電は 3 月 12 日 14:00 までに復旧済　（延べ停電戸数　約 3 千戸）

・中部電力

停電は3月12日17:11に復旧済　（延べ停電戸数　約4百戸）
・電源開発（4月9日5:10現在）
北本連系線　送電再開

［参考情報］現在停止中の発電所（原子力発電所を除く）
・東京電力（4月9日22:00現在）※地震により停止中の発電所
広野火力発電所　２，４号機
常陸那珂火力発電所　１号機
鹿島火力発電所　６号機
・東北電力（4月9日22:00現在）
仙台火力発電所　４号機
新仙台火力発電所　１，２号機
原町火力発電所　１，２号機

○都市ガス（4月9日20:30現在）
・供給停止戸数※約20万戸（延べ供給停止戸数　約50万戸）
※供給停止戸数には、家屋倒壊等が確認された戸数を含む。
（１）一般ガス（4月9日20:30現在）
死亡事故：地震との関係も含め原因詳細調査中。
・盛岡ガス（盛岡市）死者1名、負傷者10名
3月14日08:00　デパートの地下での爆発
・東部ガス（いわき市）死者1名
3月12日11:30　一般住宅での漏えいガスに着火

北海道、山形県、秋田県においては、供給停止の報告はない。
各社の供給停止状況は以下の通り。（家屋倒壊等が確認された戸数は含まない。）
・仙台市営ガス　121,561戸供給停止
（４月７日午後１１時３２分頃発生した宮城県沖を震源とする地震による供給停止戸数を含む。）
・塩釜ガス（塩釜市）1,777戸供給停止
・釜石ガス（釜石市）1,557戸供給停止
・常磐共同ガス（いわき市）3,358戸供給停止
・常磐都市ガス（いわき市）177戸供給停止
・気仙沼市営ガス（気仙沼市）303戸供給停止
・石巻ガス（石巻市）8,542戸供給停止
（２）簡易ガス（4月9日20:30現在）
各社の供給停止状況は以下の通り。（家屋倒壊等が確認された戸数は含まない。）

・釜石瓦斯（釜石市）450 戸供給停止
（上閉伊郡大槌町）390 戸供給停止
・カメイ（東松島市）66 戸供給停止
・いわきガス（いわき市）112 戸供給停止
・三重商会（大船渡市）12 戸供給停止
・名取岩沼農業協同組合（岩沼市）163 戸供給停止
・ガス＆ライフ（東松島市）341 戸供給停止
・鳴瀬ガス（東松島市）87 戸供給停止

○熱供給（4 月 9 日 20:30 現在）
・小名浜配湯（いわき市小名浜）供給停止

○ＬＰガス（3 月 27 日 15:30 現在）
死亡事故：地震との関係も含め原因詳細調査中
・福島県いわき市　死者１名
3 月 13 日午前中　共同住宅でガス爆発

○コンビナート（3 月 27 日 15:30 現在）
・コスモ石油千葉製油所（千葉県市原市）
ＬＰＧ貯槽の支柱が折れ、破損。ガス漏れ火災。
重傷者１名、軽傷５名。3 月 21 日午前鎮火。
・JX 日鉱日石エネルギー(株)仙台製油所（宮城県仙台市）
出荷設備エリアで爆発、火災が発生。3 月 15 日午後鎮火。

３　原子力安全・保安院等の対応

【3 月 11 日】

１４：４６　地震発生と同時に原子力安全・保安院に災害対策本部設置
１５：４２　福島第一原子力発電所にて原子力災害対策特別措置法第１０条通報
１６：３６　福島第一原子力発電所１、２号機にて事業者が同法第１５条事象（非常用炉心冷却装置注水不能）発生判断（16:45 通報）
１８：０８　福島第二原子力発電所１号機にて原子力災害対策特別措置法第１０条通報
１８：３３　福島第二原子力発電所１、２、４号機にて原子力災害対策特別措置法第１０条通報
１９：０３　緊急事態宣言（政府原子力災害対策本部及び同現地対策本部設置）
２０：５０　福島県対策本部は、福島第一原子力発電所１号機の半径２ｋｍの住人に避難指示を出した。（２ｋｍ以内の住人は 1,864 人）
２１：２３　内閣総理大臣より、福島県知事、大熊町長及び双葉町長に対し、東京電力(株)福島第一原子力発電所で発生した事故に関し、原子

力災害対策特別措置法第１５条第３項の規定に基づく指示を出した。

・福島第一原子力発電所から半径３ｋｍ圏内の住民に対する避難指示。

・福島第一原子力発電所から半径１０ｋｍ圏内の住民に対する屋内退避指示。

２４：００　池田経済産業副大臣現地対策本部到着

【3月12日】

０：４９　福島第一原子力発電所１号機にて事業者が同法第１５条事象（格納容器圧力異常上昇）発生判断（01:20 通報）

５：２２　福島第二原子力発電所１号機にて事業者が原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生判断（6:27 通報）

５：３２　福島第二原子力発電所２号機にて事業者が原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生判断（6:27 通報）

５：４４　総理指示により福島第一原子力発電所の１０ｋｍ圏内に避難指示

６：０７　福島第二原子力発電所４号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生

６：５０　原子炉等規制法第６４条第３項の規定に基づき、福島第一原子力発電所第１号機及び第２号機に設置された原子炉格納容器内の圧力を抑制することを命じた。

７：４５　内閣総理大臣より、福島県知事、広野町長、楢葉町長、富岡町長及び大熊町長に対し、東京電力(株)福島第二原子力発電所で発生した事故に関し、原子力災害対策特別措置法第１５条第３項の規定に基づく指示を出した。

・福島第二原子力発電所から半径３ｋｍ圏内の住民に対する避難指示。

・福島第二原子力発電所から半径１０ｋｍ圏内の住民に対する屋内退避指示。

１７：００　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

１７：３９　内閣総理大臣が福島第二原子力発電所の避難区域

・福島第二原子力発電所から半径１０ｋｍ圏内の住民に対する避難を指示。

１８：２５　内閣総理大臣が福島第一原子力発電所の避難区域

・福島第一原子力発電所から半径２０ｋｍ圏内の住民に対する避難を指示。

１９：５５　福島第一原子力発電所１号機の海水注入について総理指示

２０：０５　総理指示を踏まえ、原子炉等規制法第６４条第３項の規定に基づき、福島第一原子力発電所第１号機の海水注入等を命じた。

２０：２０　福島第一原子力発電所１号機の海水注入を開始

【3月13日】

５：３８　福島第一原子力発電所３号機にて原子力災害対策特別措置法第１５条事象（全注水機能喪失）である旨、受信。
当該サイトについて、東京電力において現在、電源及び注水機能の回復と、ベントのための作業を実施中。

９：０１　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

９：０８　福島第一原子力発電所３号機の圧力抑制及び真水注入を開始

９：２０　福島第一原子力発電所３号機の耐圧ベント弁開放

９：３０　福島県知事、大熊町長、双葉町長、富岡町長、浪江町長に対し、原子力災害対策特別措置法に基づき、放射能除染スクリーニングの内容について指示

１３：０９　女川原子力発電所にて原子力災害対策特別措置法第１０条通報

１３：１２　福島第一原子力発電所３号機の注入を真水から海水に切り替え

１４：３６　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月14日】

１：１０　福島第一原子力発電所１号機及び３号機の注入をくみ上げ箇所の海水が少なくなったため停止。

３：２０　福島第一原子力発電所３号機の海水注入を再開

４：４０　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

５：３８　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

７：５２　福島第一原子力発電所３号機にて原子力災害対策特別措置法第１５条事象（格納容器圧力異常上昇）である旨、受信

１３：２５　福島第一原子力発電所２号機にて原子力災害対策特別措置法第１５条事象（原子炉冷却機能喪失）である旨、受信

２２：１３　福島第二原子力発電所にて原子力災害対策特別措置法第１０条通報

２２：３５　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月15日】

０：００　国際原子力機関（IAEA）専門家派遣の受け入れを決定
　IAEA 天野事務局長による原子力発電所の被害に関する専門家派遣の意向を受け、原子力安全・保安院は IAEA による知見ある専門家の派遣を受け入れることとした。なお、実際の受け入れ日程等については、今後調整を行う

０：００　米国原子力規制委員会（NRC）専門家派遣の受け入れを決定
７：２１　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信
７：２４　（独）日本原子力研究開発機構東海研究開発センター核燃料サイクル工学研究所にて原子力災害対策特別措置法第１０条通報
７：４４　（独）日本原子力研究開発機構原子力科学研究所にて原子力災害対策特別措置法第１０条通報
８：５４　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信
１０：３０　経済産業大臣が原子炉等規制法に基づき、４号機の消火及び再臨界の防止、２号機の原子炉内への早期注水及びドライウェルのベントの実施について指示
１０：５９　今後の事態の長期化を考慮し、現地対策本部の機能を福島県庁内へ移転することを決定。
１１：００　内閣総理大臣が福島第一原子力発電所の避難区域
・炉内の状況を考慮して、新たに福島第一原子力発電所から半径２０ｋｍ圏～３０ｋｍ圏内の住民に対する屋内退避を指示
１６：３０　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信
２２：００　経済産業大臣が原子炉等規制法に基づき、４号機の使用済燃料プールへの注水の実施を指示
２３：４６　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月18日】

１３：００　文部科学省にて、福島第一、第二原子力発電所の緊急時における全国的モニタリング調査の強化を決定
１５：５５　原子炉等規制法第６２条の３に基づき、東京電力(株)福島第一原子力発電所第１・２・３・４号機における事故故障等（原子炉建屋内の放射性物質の非管理区域への漏えい）の報告を受理
１６：４８　原子炉等規制法第６２条の３に基づき、日本原子力発電(株)東海第二発電所における事故故障等(非常用ディーゼル発電機２Ｃ海水ポンプ用電動機の故障）の報告を受理

【3月19日】

７：４４　６号機の非常用ディーゼル発電機２台目（Ａ）起動
５号機の残留熱除去系（RHR）ポンプ（Ｃ）が起動し、使用済燃料プールの冷却を開始(電源：６号機の非常用ディーゼル発電機))の旨を受信
８：５８　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月20日】
２３：３０　原子力災害対策現地本部から、放射能除染スクリーニングレベルの基準を以下のとおり変更する旨、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に指示

【3月21日】
７：４５　原子力災害対策現地本部から「安定ヨウ素剤の服用について」として、安定ヨウ素剤の服用は、本部の指示を受け、医療関係者の立ち会いのもとで服用するものであり、個人の判断で服用しない旨の指示を、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出

１６：４５　原子力災害対策現地本部長から「屋内退避圏内での暖房器具の使用に係る換気について」として、一酸化炭素中毒等の防止の観点及び被ばく低減の観点から、屋内において換気を必要とする暖房器具を使用する場合の対応について屋内退避圏内の住民に周知する旨の指示を福島県知事及び市町村長（いわき市、田村市、南相馬市、広野町、川内村、浪江町、葛尾村、飯舘村）宛に発出。

１７：５０　原子力災害対策本部長から、ホウレンソウ及びカキナ、原乳について当分の間、出荷を控えるよう、関係事業者等に要請することの指示を福島県、茨城県、栃木県及び群馬県の各知事宛に発出。

【3月22日】
１６：００　原子力安全委員会緊急技術助言組織から、3月22日付け東京電力の「海水分析結果について」に関する原子力安全・保安院からの助言依頼について、回答（助言）を受理。

【3月25日】
原子力安全・保安院は、東京電力株式会社に対し、3月24日に発生した福島第一原子力発電所３号機タービン建屋における作業員の被ばくに関し、再発防止の観点から、直ちに放射線管理を見直し、改善するよう、口頭で指示。

【3月28日】
原子力安全・保安院は、東京電力株式会社に対し、3月27日に東京電力(株)が発表した福島第一原子力発電所２号機タービン建屋地下階溜まり水の測定に係る評価の誤りについて、再発防止を図るよう、口頭で指示。

１３：５０　原子力安全・保安院は、原子力安全委員会臨時会議助言（福島第一発電所２号機タービン建屋地下１階の滞留水について）を受け、東京電力株式会社に対し、海水モニタリングポイントの追加や地下水モニタリングの実施について、口頭で指示。

原子力安全・保安院は、東京電力(株)に対し、タービン建屋の屋外で確認された水に係る報告が遅れたことに対し、重要な情報については、社内の情報伝達をスムーズにするとともに、適時適切に報告が行われるように指導。

【3月29日】

１１：１６　原子炉等規制法第６２条の３及び電気関係報告規則第３条に基づき、東北電力(株)女川原子力発電所における事故故障等（津波による２号機原子炉補機冷却水ポンプ(B)等の故障及び１号機補助ボイラー重油タンクの倒壊）についての報告を受理。

原子力災害被災者支援の体制強化のため、経済産業大臣をチーム長とする「原子力被災者生活支援チーム」の設置、関係市町村への訪問等を実施。

原子力災害現地対策本部は、２０－３０ｋｍ圏内の地域住民等に向けた、ニュースレター第１号を公表。

【3月30日】

各電気事業者等に対し、平成23年福島第一・第二原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施に係る指示文書を発出し、手交。

【3月31日】

原子力安全・保安院は、東京電力(株)に対し、3月31日の福島第二原子力発電所への街宣車の進入について、核物質防護等に係る対策に万全を期すよう口頭で指示。

原子力安全・保安院は、東京電力(株)に対し、作業員の放射線管理に万全を期すように注意喚起。

原子力災害現地対策本部は、２０－３０ｋｍ圏内の地域住民等に向けた、ニュースレター第２号を公表。

【4月 1日】

原子力安全・保安院は、東京電力(株)に対し、核種分析結果の誤りについて以下の３点について適切な対応をとるように厳重注意。

・核種分析の過去の評価結果について、どの核種について評価の誤りがあるかを明らかにし、すみやかに再評価を行うこと。
・評価の誤りが発生した原因を調査するとともに、再発防止の徹底を行うこと。
・評価結果の誤り等については判明した段階で、早急に連絡を行うこと。

【4月 2日】

福島第一原子力発電所２号機取水口付近からの放射性物質を含む液体の海への流出について、サンプリングした液体の核種分析

を実施すること、２号機周辺に今回漏えいが発見され施設と同様の箇所がないか確認すること及び当該施設周辺においてより多くの場所で水を採取しモニタリングを強化することを口頭により指示。

【4月 4日】

緊急やむ得ない措置として、海洋放出を実施するに当たっての助言を原子力安全委員会に求め、東京電力(株)に対し、現在実施している海洋モニタリングを着実に実施するとともに、さらに強化（測定ポイントの増加、実施頻度の増大）することにより、海洋放出による放射性物質の拡散による影響を調査・確認し、情報公開に努めること、併せて、海洋への放出を可能な限り低減するための方策を強化することを指示。

【4月 5日】

福島第一原子力発電所から環境に影響を与える可能性のある放射性物質の放出に伴う措置に係る地方公共団体への事前の通報連絡について、指示文書を発出。

【4月6日】

１号機原子炉格納容器への窒素封入を実施するに当たって、原子力安全・保安院から東京電力に対して以下の３点について指示（4月6日12:40)。①プラントパラメーターを適切に管理し、その変化に応じて安全を確保するための措置が適切に講じられるようにすること。②当該作業に従事する作業員の安全を確保する体制等を確立し実施すること。③窒素封入により当該原子炉格納容器内の気体が外部に漏出する可能性が否定できないことから、モニタリングを確実に実施し、更に強化することにより、窒素封入に伴う放射性物質の放出及び拡散による影響を調査及び確認し、情報公開に努めること。

【4月7日】

原子力災害現地対策本部は、２０～３０ｋｍ圏内の地域住民等に向けた、ニュースレター第３号を公表（4月7日）

【4月9日】

原子力安全・保安院は、4月7日23時32分頃に発生した宮城県沖地震により、東北電力(株)東通原子力発電所１号機において全ての非常用ディーゼル発電機が動作可能でない状態に陥った事象を受け、各電気事業者等へ「非常用発電設備の保安規定上の取扱いについて」の指示文書を発出。

注）第83報に記載されていなかったものを今回記載。

<被ばくの可能性（4月8日8:00現在）>

１．住民の被ばく

（１）二本松市福島県男女共生センターにおいて、双葉厚生病院からの避難者約60名を含む133名の測定を行い、13,000cpm以上の23名に除染を実施した。

（２）この他、福島県が用意した民間バスで、双葉厚生病院から川俣町済生会川俣病院へ移動した35名については、県対策本部は被ばくしていないと判断。

（３）バスにより避難した双葉町の住民約100名について、100名のうち、9名について測定した結果、以下の通りだった。県外(宮城県)に分かれて避難したが、その後合流して二本松市福島男女共生センターへ移動。

カウント数	人数
18,000cpm	１名
30,000～36,000cpm	１名
40,000cpm	１名
40,000cpm弱※	１名
ごく小さい値	５名

※（１回目の測定では100,000cpmを超え、その後靴を脱いで測定した結果計測されたもの)

（４）3月12日から3月15日にかけて、大熊町のオフサイトセンターにおいて、スクリーニングを開始。現在までに162名が検査済み。初め除染の基準値を6,000cpmとし、110名が6,000cpm未満、41名が6,000cpm以上の値を示した。後に基準値を13,000cpmと引き上げた際には、８名が13,000cpm未満、３名が13,000cpm以上の値を示した。

検査を受けた162名のうち、５名が除染処置を施した後、病院へ搬送された。

（５）福島県において、避難した１０ｋｍ圏内の入院患者と病院関係者の避難を実施。関係者のスクリーニングを行った結果、3名について除染後も高い数値が検出されたため、第２次被ばく医療機関へ搬送。この搬送に関係した消防職員60名のスクリーニングで3名について、バックグランドの２倍以上程度の放射線が検出されたため、60名に対し除染を行った。

（６）福島県は3月13日からスクリーニングを開始。避難所を巡回、保健所等13ヶ所（常設）で実施中。4月6日までに133,972人に対し実施。そのうち、100,000cpm以上の値を示した者は102人であったが、100,000cpm以上の数値を示した者についても脱衣等をし、再計測したところ、100,000cpm以下に減少し、健康に影響を及ぼす事例はみられなかった。

２．従業員等の被ばく

福島第一原子力発電所で作業していた従業員で100mSvを超過した作業員は、

計21名。

なお、当該作業員3名のうち、2名については、両足の皮膚に放射性物質の付着を確認し、ベータ線熱傷の可能性があると判断されたことから、3月24日に福島県立医科大学附属病院へ搬送し、その後、3月25日に作業員3名とも千葉県にある放射線医学総合研究所に到着。検査の結果、2人の足の被ばく量は2～3Svと推定され、足及び内部被ばく共に治療が必要となるレベルではなかったが、3名とも、入院して経過を見ることとなった。3月28日正午頃3名の方がすべて退院した。

また、4月1日11:35頃、米軍のはしけ船のホース手直し作業のために岸から船に乗り込む際、作業員1名が海に落下した。すぐに周囲の作業員に救助され、けが及び外部汚染はなかったが、念のため、ホールボディカウンタによる内部取り込みの確認を行う予定。

3．その他

（1）福島第一原発で作業していた自衛隊員4名が爆発により負傷。うち、1名は放医研に搬送され、検査の結果、外傷のみで、被ばくによる健康被害はないと判断され、3月17日に退院。防衛省において、その他自衛官の被ばくは確認されず。

（2）警察官について、警察庁において2名の除染の実施を確認。異常の報告はなし。

（3）3月24日、川俣町保健センター等において、1～15歳までの66名の小児に対する甲状腺の検査を実施。問題となるレベルではなかった。

（4）3月26日～3月27日、いわき市保健所において、0～15歳までの137名の小児に対する甲状腺の検査を実施。問題となるレベルではなかった。

（5）3月28日～3月30日、川俣町公民館及び飯舘村役場において、0～15歳までの946名の小児に対する甲状腺の検査を実施。問題となるレベルではなかった。

<放射能除染スクリーニングレベルに関する指示>

（1）3月20日、原子力災害対策現地本部から、放射能除染スクリーニングレベルの基準を以下のとおり変更する旨、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に指示。

旧：γ線サーベイメーターにより40ベクレル/c㎡または6,000cpm

新：1マイクロシーベルト／時（10cm離れた場所での線量率）またはこれに相当する100,000cpm

<避難時における安定ヨウ素剤投与の指示>

（1）3月16日、原子力災害対策現地本部から、「避難区域（半径２０ｋｍ）からの避難時における安定ヨウ素剤投与の指示」を県知事及び市町村（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出。

（2）3月21日、原子力災害対策現地本部から「安定ヨウ素剤の服用について」として、安定ヨウ素剤の服用は、本部の指示を受け、医療関係者の立ち会いのもとで服用するものであり、個人の判断で服用しない旨の指示を、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出。

＜負傷者の状況（4月10日8:00現在）＞

1．3月11日の地震による福島第一原子力発電所の負傷者
- 社員２名（軽傷、既に仕事復帰）
- 協力会社２名（うち１名両足骨折で入院中）
- 死亡２名（地震発生後から東京電力（株）の社員２名が行方不明となり、捜査を継続してきたが、3月30日午後、４号機タービン建屋地下一階において当該社員２名が発見され、4月2日までに死亡が確認された。）

2．3月12日の福島第一原子力発電所１号機の爆発による負傷者
- １号機付近で爆発と発煙が発生した際に４名（社員２名、協力会社２名）が１号タービン建屋付近（管理区域外）で負傷。川内診療所で診療。社員２名は既に仕事復帰。協力会社の２名は自宅療養中。

3．3月14日の福島第一原子力発電所３号機の爆発による負傷者
- 社員４名（既に仕事復帰）
- 協力会社３名（既に仕事復帰）
- 自衛隊４名（うち１名は内部被ばくの可能性を考慮し、「（独）放射線医学総合研究所」へ搬送。診察の結果内部被ばくはなし。3月17日退院）

4．その他の被害
- 3月11日の地震発生の際に、福島第二原子力発電所において、協力会社の１名（クレーンオペレータ）が死亡。（タワークレーンが折れ、オペレータルームがつぶれ、頭に当たった模様。）
- 3月12日に急病人１名発生（脳梗塞、救急車搬送、入院中）
- 3月12日に管理区域外にて社員１名が左胸の痛みを訴えて救急車を要請（意識あり、現在、自宅療養中。）
- 3月13日に社員２名が中央制御室での全面マスク着用中に不調を訴え、福島第二の産業医の受診を受けるべく搬送（１名は既に仕事復帰、残り１名は自宅療養中）

・3月22日、23日に共用プールで仮設電源盤の作業中に協力会社の２名が負傷し、産業医のいる福島第二原子力発電所へ搬送。（１名は既に仕事復帰、残り１名は自宅療養中）
・4月7日午後、福島第一原子力発電所構内北側の土捨て場において、土のう作りをしていた作業員１名が体調不良になったため、Ｊビレッジに搬送し、身体サーベイにより汚染なしを確認した後、救急車にていわき市立共立病院に搬送された。4月8日、「脱水、一過性意識消失」と診断。
・4月9日午前9時19分、水処理建屋において全面マスク着用でケーブル処理作業を行っていた協力企業社員１名の気分が悪くなり、建屋の外にある蓋のずれたマンホールに足を踏み入れて負傷したため、病院へ搬送しました。診断の結果、「右膝挫傷」「右膝内側側副靱帯損傷疑い」と診断。なお、身体サーベイの結果、汚染はないことが確認された。

＜住民避難の状況（4月8日8:00現在）＞
3月15日11:00、内閣総理大臣の指示により、福島第一原子力発電所半径２０ｋｍから３０ｋｍ圏内の住民に対して、屋内退避を指示。その旨を福島県及び関係自治体へ連絡。
福島第一原子力発電所２０ｋｍ圏外及び福島第二原子力発電所１０ｋｍ圏外への避難は、措置済。
・福島第一原子力発電所２０ｋｍから３０ｋｍ圏内の屋内退避について、徹底中。
・福島県と連携して、屋内退避圏内の住民の生活支援等を実施。
・3月28日、官房長官から福島第一原子力発電所から半径２０ｋｍ圏内の立ち入り規制の継続について発言。同日、原子力災害現地対策本部から関係市町村に対して、２０ｋｍ圏内の避難地域への立入禁止について通知。

＜飲食物への指示＞
原子力災害対策本部長より、福島県、茨城県、栃木県、群馬県、千葉県の知事に対して、以下の品目について、当分の間、出荷等を控えるよう指示。
また、原子力災害対策本部は、出荷制限等の発動・解除の考え方については、原子力安全委員会の助言も踏まえ、以下のように整理した。
・出荷制限・解除の対象区域は、汚染区域の拡がりや集荷実態等を踏まえ、市町村単位など県を分割した区域ごとに行うことも可能とする
・暫定規制値を超えた品目の出荷制限については、汚染の地域的拡がりを勘案しつつ総合的に判断
・出荷制限の解除は、福島第一原子力発電所の状況を勘案しつつ、約１週間ごと検査を行い、３回連続で暫定規制値を下回った品目・区域に対して実施
・だたし、原子力発電所から放射性物質の放出が継続している間は、解除後も引き続き約１週間ごとに検査を実施

（1）出荷制限・摂取制限品目（4月8日16:00現在）

都道府県	出荷制限品目	摂取制限品目
福島県	非結球性葉菜類、結球性葉菜類、アブラナ科の花蕾類（ホウレンソウ、キャベツ、ブロッコリー、カリフラワー、小松菜、茎立菜、信夫冬菜、アブラナ、ちぢれ菜、山東菜、紅菜苔、カキナなど）、カブ、原乳（喜多方市、磐梯町、猪苗代町、三島町、会津美里町、下郷町及び南会津町を除く）	非結球性葉菜類、結球性葉菜類及びアブラナ科の花蕾類（ホウレンソウ、キャベツ、ブロッコリー、カリフラワー、小松菜、茎立菜、信夫冬菜、アブラナ、アブラナ、ちぢれ菜、山東菜、紅菜苔、カキナなど）
茨城県	ホウレンソウ、カキナ、パセリ、原乳	
栃木県	ホウレンソウ、カキナ	
千葉県	・香取市及び多古町において産出されたホウレンソウ ・旭市において採取されたホウレンソウ、チンゲンサイ、シュンギク、サンチュ、セルリー及びパセリ	

（2）水道水の飲用制限の要請（4月8日16:00現在）

制限範囲	水道事業（対象自治体）
利用するすべての住民	なし
乳児 ・対応を継続している水道事業	飯舘村飯舘簡易水道事業（福島県飯舘村）
・対応を継続している水道用水供給事業	なし

<屋内退避圏内での暖房器具の使用に係る換気についての指示>

3月21日、原子力災害対策現地本部長から「屋内退避圏内での暖房器具の使用に係る換気について」として、一酸化炭素中毒等の防止の観点及び被ばく低

減の観点から、屋内において換気を必要とする暖房器具を使用する場合の対応について屋内退避圏内の住民に周知する旨の指示を福島県知事及び市町村長（いわき市、田村市、南相馬市、広野町、川内村、浪江町、葛尾村、飯舘村）宛に発出。

<消防機関の活動状況>

- 3月22日11:00～14:00頃：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による設営を指導。
- 3月23日8:30～9:30、13:30～14:30：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による運用を指導。

（本発表資料のお問い合わせ）
原子力安全・保安院
原子力安全広報課：吉澤、小山田
電話：０３－３５０１－１５０５
　　　０３－３５０１－５８９０

From: Crane, Randall M. (INPO) <CraneRM@inpo.org>
Sent: Sunday, April 10, 2011 7:03 PM
To: GE Hitachi Nuclear Response Team (GE Power & Water); RST01 Hoc
Cc: INPO EmergencyResponseCtr (INPO); INPOERCTech
Subject: Q418 Japan Structural Team Report Review Comments
Attachments: Q418 Japan Structural Team Report Comments - FINAL (2).doc

Follow Up Flag: Follow up
Flag Status: Flagged

From: Crane, Randall M. (INPO) **On Behalf Of** INPOERCTech
Sent: Sunday, April 10, 2011 2:15 PM
To: Maddox, James E. (INPO)
Subject: Q418 Japan Structural Team Report Review Comments

(b)(4)

Randall M. Crane, Sr. Evaluator
Emergency Response Center Technical Coordinator
Equipment Reliability/Materials
Institute of Nuclear Power Operations

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770 644-8022 (ERC)
770 644-8712 (desk)
(b)(6) (cell)

B6/59

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Thank you.

From: RST01 Hoc
Sent: Sunday, April 10, 2011 9:38 AM
To: RST06 Hoc
Subject: FW: Naval Reactors recommendations for securing water pool leak
Attachments: Naval Reactors Document on Water Pool Leaks.docx

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From: RST01 Hoc
Sent: Friday, April 08, 2011 4:00 AM
To: RST01 Hoc; Blamey, Alan; Bernhard, Rudolph
Subject: RE: Naval Reactors recommendations for securing water pool leak

OK to provide to TEPCO/NISA.

From: RST01 Hoc
Sent: Sunday, April 03, 2011 11:49 PM
To: Taylor, Robert; Scott, Michael
Subject: FW: Naval Reactors recommendations for securing water pool leak

FYI, this Naval Reactors document has been sent to the industry consortium for discussion during the 0300 phone conference.

From: RST01 Hoc
Sent: Sunday, April 03, 2011 7:57 PM
To: (b)(6)

(b)(6)

The RST intends to provide the attached information to our Japan site team at the 0300 (EDT) call on 4/4. Please provide any feedback or comments (if any) before then.

This is a lower priority request, not intended to take away from other ongoing efforts.

Thanks,
Eric Thomas
NRC RST

B6/60

(b)(5)

(b)(5)

(b)(5)

From: ET02 Hoc
Sent: Sunday, April 10, 2011 6:42 PM
To: ET07 Hoc
Subject: FW: URGENT: Notice (10 April 2011)

From: ET01 Hoc
Sent: Sunday, April 10, 2011 6:42:18 PM
To: ET02 Hoc
Subject: FW: URGENT: Notice (10 April 2011)
Auto forwarded by a Rule

From: LIA08 Hoc
Sent: Sunday, April 10, 2011 6:42:17 PM
To: Hoc, PMT12; RST01 Hoc; ET07 Hoc; ET02 Hoc; ET05 Hoc; ET01 Hoc
Subject: FW: URGENT: Notice (10 April 2011)
Auto forwarded by a Rule

FYI

From: LIA03 Hoc
Sent: Sunday, April 10, 2011 6:40 PM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: URGENT: Notice (10 April 2011)

From: LIA02 Hoc
Sent: Sunday, April 10, 2011 6:40 PM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: URGENT: Notice (10 April 2011)

From: Hinds, Lynda J [mailto:HindsLJ@state.gov] **On Behalf Of** Tokyo Staff Assistant
Sent: Sunday, April 10, 2011 6:40 PM
To: (b)(6)

(b)(6)

BG/61

(b)(6)

Subject: FW: URGENT: Notice (10 April 2011)

Lynda Hinds
Staff Assistant
(03) 3224- 5370

From: PROTOCOLOFFICE-EM [mailto:protocoloffice-em@mofa.go.jp]
Sent: Sunday, April 10, 2011 7:03 PM
To: PROTOCOLOFFICE-EM
Subject: URGENT: Notice (10 April 2011)

URGENT (18:30) Sunday,10 April 2011

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

TEPCO has confirmed that discharge of low-level radioactive water in the waste processing facility of Fukushima Dai-ichi Nuclear Power Plant into the sea was finished at 17:40 today. Total amount of low-level radioactive water discharged from the plant is about 10,390 tons and total radioactivity released through the discharge is about 150 billion bq.

TEPCO is going to issue a press release on this matter soon.

Details will follow in due course.

Contact: International Nuclear Energy Cooperation Division, Tel 03-5501-8227

From: Hoc, PMT12
Sent: Sunday, April 10, 2011 2:02 PM
To: RST06 Hoc
Subject: PARs for Deputies Meeting Rev13 Trish Milligan and RST input 04-09-11
Attachments: PARs for Deputies Meeting Rev13 Trish Milligan and RST input 04-09-11.docx

Hello from PMT. This is version 14 of the Composite paper [redacted] (b)(5) Please do that and return to PMT12. Thanks.

BG/62

5

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

From: RST01 Hoc
Sent: Sunday, April 10, 2011 7:04 PM
To: RST06 Hoc
Subject: FW: Japan Earthquake 10 April 2011 0600 EDT Situation Report
Attachments: image001.jpg

FYI...

From: OST01 HOC
Sent: Sunday, April 10, 2011 6:58 PM
To: LIA08 Hoc; RST01 Hoc; FOIA Response.hoc Resource
Subject: FW: Japan Earthquake 10 April 2011 0600 EDT Situation Report

fyi.

From: HOO Hoc
Sent: Sunday, April 10, 2011 6:55 PM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Japan Earthquake 10 April 2011 0600 EDT Situation Report

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
United States Nuclear Regulatory Commission
Protecting People and the Environment

From: Richard L Garwin [mailto:rlg2@us.ibm.com]
Sent: Sunday, April 10, 2011 6:08 PM
To: [redacted]
Cc: (b)(6)

(b)(6)

B6/63

(b)(6)

Subject: Re: Japan Earthquake 10 April 2011 0600 EDT Situation Report

I am dismayed that the most useful information in these reports comes from the media.

For instance, "The utility firm is now working to lay hoses between the turbine buildings and the facility. Holes have already been bored in the walls of the buildings, but work to install the hoses has yet to begin."
Sunday, April 10, 2011 07:30 +0900 (JST) http://www3.nhk.or.jp/daily/english/10_03.html (0600 4/10 SITREP)

We should be getting this information directly from TEPCO or the Japanese government, if we have a cooperative working relationship with them.

On Secretary Chu's "Experts Group" we are considering how to bore holes in thick concrete. It would be useful to know where and how holes have been bored in the walls of the buildings at Fukushima Daiichi.

Dick Garwin

From: RST06 Hoc
Sent: Sunday, April 10, 2011 2:44 AM
To: RST10 Hoc
Subject: Criterion to Establish Stable Conditions - NRC DRAFT 4_10_0100.docx
Attachments: Criterion to Establish Stable Conditions - NRC DRAFT 4_10_0100.docx

B6/64

4, 5

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

(b)(5)

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(b)(5)

From: RST01 Hoc
Sent: Sunday, April 10, 2011 8:32 AM
To: RST06 Hoc; RST07 Hoc; RST09 Hoc
Subject: FW: Criterion to Establish Stable Conditions - NRC DRAFT 4_10_0300.docx

Please review for applicability.

From: Golub, Sal [mailto:sal.golub@nuclear.energy.gov]
Sent: Sunday, April 10, 2011 8:02 AM
To [redacted] (b)(6)

[redacted] (b)(6)

Subject: Re: Criterion to Establish Stable Conditions - NRC DRAFT 4_10_0300.docx

A few thoughts for consideration:

[redacted] (b)(5)

Sal

From: RST01 Hoc <RST01.Hoc@nrc.gov>
To [redacted] (b)(6)

[redacted] (b)(6)

BG/65

<Chuck.Casto@nrc.gov>; Collins, Elmo <Elmo.Collins@nrc.gov>; Emche, Danielle <Danielle.Emche@nrc.gov>; Giessner, John <John.Giessner@nrc.gov>; Jackson, Todd <Todd.Jackson@nrc.gov>; Monninger, John <John.Monninger@nrc.gov>; Bernhard, Rudolph <Rudolph.Bernhard@nrc.gov>; Salay, Michael <Michael.Salay@nrc.gov>; Scott, Michael <Michael.Scott@nrc.gov>; Sheikh, Abdul <Abdul.Sheikh@nrc.gov>; Stahl, Eric <Eric.Stahl@nrc.gov>; Taylor, Robert <Robert.Taylor@nrc.gov>; Ulses, Anthony <Anthony.Ulses@nrc.gov>; US-AID Disaster Team <DART_PACTSU@ofda.gov>; Way, Ralph <Ralph.Way@nrc.gov>
Sent: Sun Apr 10 05:04:54 2011
Subject: Criterion to Establish Stable Conditions - NRC DRAFT 4_10_0300.docx

Please find attach the latest draft "Criterion to Establish Stable Conditions." The document is being developed in response to multiple requests from NISA.

It is an improvement over the version distributed yesterday. The current version incorporates the feedback received from DOE/NE and NR during the April 9 telecon (swing shift) as well as the comments from the NRC Japan site team.

RST is working to develop a final document for transmittal to NISA soon. We would appreciate review and comments ASAP.

RST

4,5

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

From: RST01 Hoc
Sent: Sunday, April 10, 2011 6:03 AM
To: Blamey, Alan
Cc: RST01 Hoc; RST06 Hoc
Subject: RE: Option B Paper Final.
Attachments: OUO - Option B Recommendations FINAL 4-10-2011.docx; OUO - Option B Recommendations FINAL 4-10-2011.pdf

Alan,

Note that we have made a slight modification by designating the paper OUO. PDF and Word versions are attached.

RST

From: Blamey, Alan
Sent: Sunday, April 10, 2011 4:32 AM
To: RST01 Hoc
Subject: Option B Paper Final.

Please find the attached final version of the Option B paper. This paper will be transmitted to NISA this evening.

B6/66

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

(b)(5)

OFFICIAL USE ONLY

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(b)(5)

2100 EDT Saturday, April 09, 2011

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(b)(5)

2100 EDT Saturday, April 09, 2011

OIP_ITServices Resource

From: LIA02 Hoc
Sent: Sunday, April 10, 2011 4:07 PM
To: Mamish, Nader; Doane, Margaret; LIA03 Hoc
Cc: Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen; Emche, Danielle; Fragoyannis, Nancy; LIA03 Hoc; Stahl, Eric; Owens, Janice; Fehst, Geraldine; Foggie, Kirk; Breskovic, Clarence; LIA08 Hoc; LIA06 Hoc
Subject: OUO: Transition Report April 10, 0600-1530

OFFICIAL USE ONLY

TRANSITION REPORT FOR APRIL 10, 0630 - 1530
Elizabeth to Gerri

Updates during Shift

- A draft paper prepared by the Site Team's Michel Hay, entitled "NRC Response to Fukushima Event," (subject line "Global Assessment") was forwarded to a number of stakeholders. LIA02 provided edits, then forwarded the draft to International Liaisons for their review and comment. This document does not yet include RST input, but that is in the works. Action: track comments and status of report. Send IAEA Liaison final draft.

  - **Fourth Team to Japan.** Members for team#4 will leave this week. Brian Wittick left on 4/9; Steve Garchow (RIV), Heather Gepford (RII), Tony Huffert (RES), Jeff Mitman (NRR), Carl Moore (RIII), and Steve Reynolds (RIII) will leave on 4/12. A heads up was sent from Karen Jackson on 4/10 noting that USAID was not working over the weekend, and normally needs 4 days to process travel. USAID is the funding source. **Action:** Contact USAID and tell them (as per request from Marty Virgilio) that all 6 travelers who are yet to be departed are to be considered "emergent" (sic) and to please expedite their travel. Monitor USAID for response; inform team#4 travelers of results. Added Team #4 additional emergency contact information to both the Japan Traveler Contact/Emergency contact information file. Was contacted by several of the travelers with checklist questions and general info, esp. related to arranging travel. Put them in touch with Mary Carter of OIP and others who can help coordinate and answer questions. Forwarded requests for blackberries to Karen Jackson; they are being processed. Also update Team#4 grid as requested traveler information comes in. Other travelers may emerge.

- **Coordination of IAEA and U.S. Efforts.** While the IAEA's Incident and Emergency Centre (IEC) has not agreed to be a formal "clearinghouse" (i.e., actively reaching out to all IAEA member states requesting that all assistance efforts be coordinated through the IEC), they are tracking all offers for assistance via a database that was posted on ENAC last week. For the effort to be effective, they need input from countries, and they do not have anything from the United States. The State Department is the lead in the "Consortium." INPO is the lead on equipment issues. Although US Embassy Tokyo had established a tracking system to compile assistance requests from the Japanese and offers from USG entities, INPO had been separately tracking equipment requests (see INPO item below). The Embassy and INPO tracking have been merged. On April 5th, LT received the latest equipment request matrices from USAID, originated by the Tokyo embassy. During April 5th conference call, OMB indicated to LT that they intend to start approving all finances for equipment purchases for Japan.

- **Watch schedule is changing in Ops Center.** The line organization will be involved more, and work in the Ops Center will include fewer people (6 people). An overall report defining changes to the Watch schedule and strategy is being developed by the ET. Outlook has been changed so that all three International Desk computers receive all email sent to each computer. There are folders for the other computers. This will capture all the messages and allow us to avoid checking more than one computer. **ACTION:** The OIP checklist will need to be changed regarding whom to contact for obtaining blackberries, laptops, etc., as Karen Jackson on ET02 Hoc will no longer be that person (someone within OIS should be identified by management). Karen said a transfer plan should be set up such that the blackberries remain in Japan, but get reset using new travelers' email accounts from our end as team members are replaced.

B6/67

- **Mailbox size limits**. Team requested verification that mailboxes had size limits increased due to difficulties sending emails. On 4/7 received response from Joe Turner/OIS that email box sizes for those in Japan are being monitored daily for max capacity. **Action:** Notified Joe Turner about Team#4 travelers. Notify Joe Turner as new travelers are identified to leave for Japan.

- **Plant Status Updates.** James Whitney, NSIR has requested that all of the "Plant Status" news releases on ENAC be sent to him to assist other government agencies in their analysis of the situation. **Action:** Send james.whitney@nrc.gov "plant status updates" on ENAC as they come in (sent during day shift on 4/10).

- **TEPCO Earthquake Info.** Vince Holahan, the NRC staff member embedded with PACCOM, has requested to be on the distribution list for the Japanese earthquake info sent from TEPCO. **Action:** Please forward these emails to Vince.Holahan@nrc.gov as they are received (sent during day shift on 4/10).

- **Request to Share RST Document with Foreign Governments:** The Governments of Canada, the UK and Finland have requested that the RST share their "Stability Document," which they have discussed during their daily call with these governments. The request was forwarded to the ET, who is assessing what information is contained in the document before deciding on whether or not to share the document. The document is still in draft (awaiting interagency comments). PMT was given permission to read the draft document to conference call members. Release of this document will be addressed as part of the process being developed to address the release of a document to NY Times. **Action:** Continue to follow. **UPDATE (correction)**: The RST Stability Document was not released to Mark Shaffer (as was previously reported). When the RST Stability Report section is completed, the final draft should be sent to Mark Shaffer, along with the requestors from Canada, UK, and Finland, as well as the Japan team.

- **1 Pager for Margie's Morning Meeting** – Danielle/Eric requested that the draft be sent to them to add to it overnight. They will send back updates via email. **Action:** Work off of the draft sent back from them. A final is in the works for the 4/10/11 one-pager, including Danielle's additions. (In future iterations, if they don't send back any updates overnight, then work off of the draft completed.)

Future Actions/OPEN ITEMS

- **News Reports on IAEA "Recommendation" to Extend Evacuation Zone:** News media is reporting that the IAEA has called on Japan to extend the evacuation zone around Fukushima, based on abnormal levels of radiation detected in a village outside the current evacuation zone. This was neither a special announcement nor a formal recommendation from the IAEA. Instead, the reports result from information provided at the March 30 IAEA technical briefing, at which DDG Denis Flory reported on the location of the abnormal radiation levels and noted that they were located outside the evacuation zone. When asked a direct question about whether the IAEA was recommending that Japan extend the zone, DDG Flory stated only that the IAEA was encouraging the "counterpart" to "carefully assess the situation." Full summary of technical briefing here: http://iaea.org/newscenter/news/tsunamiupdate01.html, relevant paragraph is the fourth paragraph under item #2, "Radiation Monitoring." Jen Schwartzman verified with Mark Shaffer that no formal announcement has come from IAEA in this regard.

- **Deputies Committee Decisions and Action Items:** SECY has been sending summaries of the Deputies Committee meetings as they are received and the LT Director/Coordinator have been tracking any actions pertinent to the LT. There are currently no international liaison tasks resulting from these meetings but the LT Director will inform us if this changes. **Action:** Mark Shaffer would like to see the summaries.

- **Translators.** 24/7 translation coverage in the HOC has been suspended. Mike Call who is in Japan until 4/16 speaks Japanese. At HQ there is a Japanese foreign assignee and other options available. Also, Tony Nakanishi may be available to provide translation assistance. USAID is paying for an NRC-dedicated translator in Tokyo. If we need items translated and cannot get assistance from within NRC, we can rely on them. **Action:** If in need of USAID translation support, fax the document to +81-3-3224-5538 and send a scanned (PDF) copy to the Japan site team as a backup.

- **INPO:** All equipment requests are now going through INPO. They are consolidating all available information. Contact information for INPO is 770-644-8118 or email at inpoercassistance@inpo.org.

- **NRC Health Unit request:** The NRC team members were given KI before they left. At this time the guidance is to not take the KI while on duty in Tokyo. However, due to the still-fluid nature of the environmental hazards posed by radioactive isotopes, there is still the possibility that KI could be required at some point. Should it become necessary to have the NRC team take the KI, the LIA02/LIA03 international liaisons would be responsible for receiving the advice from ADM/Dr. Cadoux and to get the information to the team immediately.

- **Daily calls with UK/France/Canada.** Calls will take place at 0930 with RST and PMT to discuss reactor-related and radiation-related information, respectively, with regulatory representatives from these three countries. Everyone should call into the HOO to be connected. Finland and the IAEA may also participate on an intermittent basis. **The new number to call into is (b)(6) and the pin is (b)(6) NOTE: There is no call on the weekends.**

- **Daily NRC Japan Team – RST/PMT Call.** The time of the call varies. As of 4/5 it was **2100** with RST and PMT have been notified of the call and international liaison should plan on participating (OIP staff in Japan don't necessarily participate). All parties should call into **301-816-5120** and use pass-code (b)(6)

- **Laptop shuffling in Japan.** Some laptops (the blue-top ones) still have difficulty printing so the ground team has requested the assistance of CSC in "re-assigning" the laptops that work well to the members of the 3rd team (since the 2nd team members leave Japan by 4/13). **ACTION:** No action for OIP but we may be requested to assist if there are any difficulties. We should also note that if future teams go to Japan, they should take non-blue-top or personal laptops to make it easier to connect to the Embassy printer.

- **Update Japan Traveler Information Document on LIA02 with Return Team info** – from LT Director please update the traveler table as NRC Japan Travel Team members return to U.S. **ACTION:** Await reply emails from returned travelers and update the Document on LIA02.

- **Announcement of French nuclear safety meeting in May:** Reuters is reporting that Sarkozy has announced plans for a high-level meeting of "G20 nuclear industry officials" in Paris in May 2011 "to define international nuclear safety standards." The article states that Sarkozy "declared this [meeting] would lay the groundwork for the IAEA high-level meeting on June 20-24. We are seeking additional information on this announcement from official channels. Message sent to Eric at 0400 inquiring whether he has heard anything via his French contacts (noting that ASN will be meeting with the NRC Team in the next day or two). Report any new information learned to OIP management and ET. The policy to delay meeting will be articulated by DOS high level representatives at a G-20 meeting in Abu Dhabi the week of April 4. The French announced their intent to convene this meeting, and stated that the Japanese Prime Minister is supportive. **ACTION:** OIP will continue to interact with interagency as appropriate and update ET.

DAILY ACTIONS/REMINDERS

- International updates must be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
- The 3-12 PM shift should try and work on the one pager and the 7 AM – 3 PM should finalize and send to Margie. Please include information from email from Danielle and Eric. Margie reminds us that the write-up should not contain technical details, which are already captured in other reports, and should be marked "Official Use Only – Foreign Government Information."
- Both shifts are responsible for sending all emails to the FOIA email address. Open new email, copy previous day's emails as an attachment and send to FOIA Response.hoc@nrc.gov. Also it would be helpful to mark the red flag on the right to show which emails were sent.
- The international team should sit in on calls with the ET and team leader (Chuck or Dan) to take notes and provide a short summary of what was discussed via email to OIP reps on Japan Team. The Chairman's briefing has been moved to 0800 while he is in Vienna, April 4-6, and will involve a three way call with Casto, ET, and Chairman. [Japan 13 hours ahead, Vienna 6 hours ahead]
- Prior to any international call you set up, please make sure you contact the HOOs to let them know that you are going to have an international call.
- Reminder to Keep Mark Shaffer in-the-loop at shaffermr@state.gov, regardless of time of day, regardless of whether he is in the office or asleep. Especially cc Mark on all communication to IAEA.
- Reminder to keep ISN/NESS on the distribution list for the NRC Japan situation reports ISN-NESS-DL@state.gov.
- Keep RST and PMT updated on who is currently in Japan on NRC team.
- Please make sure to keep the NRC Japan travelers list updated (check the last updated date) and post a new copy on LIA02 cabinet as changes occur.
- OIP has been tasked with providing IAEA ENAC daily summary to Commissioner's TAs and EDO POC. OIP is also being asked to place a cover page on this report indicating the sensitivity of the information. The document will be provided by email.

OIP_ITServices Resource

From: LIA02 Hoc
Sent: Saturday, April 09, 2011 11:35 PM
To: Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen; Emche, Danielle; Fragoyannis, Nancy; LIA03 Hoc; Stahl, Eric; Owens, Janice; Fehst, Geraldine; Foggie, Kirk; Breskovic, Clarence; LIA08 Hoc; LIA06 Hoc
Cc: Mamish, Nader; Doane, Margaret; LIA02 Hoc
Subject: OUO: Transition Report April 9 1530-2400

~~OFFICIAL USE ON~~LY

TRANSITION REPORT FOR APRIL 9, 1530 - 2400
Gerri to Elizabeth

Updates during Shift

- A draft paper prepared by the Site Team's Michel Hay, subject line "NRC Response to Fukushima Event," was forwarded to LIA02 by the LT Coordinator for OIP and LIA02 review and comment. LIA02 provided edits, then forwarded the draft to International Liaisons for their review and comment. Action: track comments and status of report.

  - **Fourth Team to Japan.** Members for team#4 will leave this week. Brian Wittick left on 4/9; Steve Garchow (RIV), Heather Gepford (RII), Tony Huffert (RES), Jeff Mitman (NRR), Carl Moore (RIII), and Steve Reynolds (RIII) will leave on 4/12. Additional travelers may be identified to leave on 4/14. USAID is the funding source. **Action:** Added Team #4 list of travelers and emergency contact information to both the Japan Traveler List, and Japan Traveler Contact/Emergency contact information file. Both files are located on LIA02 desktop. Pending action: Update Team#4 grid as requested traveler information comes in.

- **Coordination of IAEA and U.S. Efforts.** While the IAEA's Incident and Emergency Centre (IEC) has not agreed to be a formal "clearinghouse" (i.e., actively reaching out to all IAEA member states requesting that all assistance efforts be coordinated through the IEC), they are tracking all offers for assistance via a database that was posted on ENAC last week. For the effort to be effective, they need input from countries, and they do not have anything from the United States. The State Department is the lead in the "Consortium." INPO is the lead on equipment issues. Although US Embassy Tokyo had established a tracking system to compile assistance requests from the Japanese and offers from USG entities, INPO had been separately tracking equipment requests (see INPO item below). The Embassy and INPO tracking have been merged. On April 5th, LT received the latest equipment request matrices from USAID, originated by the Tokyo embassy. During April 5th conference call, OMB indicated to LT that they intend to start approving all finances for equipment purchases for Japan.

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B67/68

document before deciding on whether or not to share the document. The document is still in draft (awaiting interagency comments). PMT was given permission to read the draft document to conference call members. Release of this document will be addressed as part of the process being developed to address the release of a document to NY Times. **Action:** Continue to follow. **UPDATE**: A copy of the RST Stability Document was released to Mark and he was instructed not to release it to any other organization and that it was for his use only.

- **1 Pager for Margie's Morning Meeting** – Danielle/Eric requested that the draft be sent to them to add to it overnight. They will send back updates via email. **Action:** Work off of the draft sent back from them. If they don't send back any updates overnight, then work off of the draft completed.

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OIP_ITServices Resource

From: LIA02 Hoc
Sent: Saturday, April 09, 2011 3:32 PM
To: LIA02 Hoc; Mamish, Nader; Doane, Margaret
Cc: Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen; Emche, Danielle; Fragoyannis, Nancy; LIA03 Hoc; Stahl, Eric; Owens, Janice; Fehst, Geraldine; Foggie, Kirk; Breskovic, Clarence; LIA08 Hoc; LIA06 Hoc
Subject: OUO: Transition Report-Apr 9- 6:30-1530

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TRANSITION REPORT FOR APRIL 9, 0630- 1530

Mugeh to Gerri

Updates during Shift

- **Fourth Team to Japan.** Members for team#4 will leave this week. Brian Wittick left on 4/9; Steve Garchow (RIV), Heather Gepford (RII), Tony Huffert (RES), Jeff Mitman (NRR), Carl Moore (RIII), and Steve Reynolds (RIII) will leave on 4/12. Additional travelers may be identified to leave on 4/14. USAID is the funding source. **Action:** Added Team #4 list of travelers and emergency contact information to both the Japan Traveler List, and Japan Traveler Contact/Emergency contact information file. Both files are located on LIA02 desktop.

- **Coordination of IAEA and U.S. Efforts.** While the IAEA's Incident and Emergency Centre (IEC) has not agreed to be a formal "clearinghouse" (i.e., actively reaching out to all IAEA member states requesting that all assistance efforts be coordinated through the IEC), they are tracking all offers for assistance via a database that was posted on ENAC last week. For the effort to be effective, they need input from countries, and they do not have anything from the United States. The State Department is the lead in the "Consortium." INPO is the lead on equipment issues. Although US Embassy Tokyo had established a tracking system to compile assistance requests from the Japanese and offers from USG entities, INPO had been separately tracking equipment requests (see INPO item below). The Embassy and INPO tracking have been merged. On April 5th, LT received the latest equipment request matrices from USAID, originated by the Tokyo embassy. During April 5th conference call, OMB indicated to LT that they intend to start approving all finances for equipment purchases for Japan.

- **Mailbox size limits.** Team requested verification that mailboxes had size limits increased due to difficulties sending emails. On 4/7 received response from Joe Turner/OIS that email box sizes for those in Japan are being monitored daily for max capacity. **Action:** Notified Joe Turner about Team#4 travelers. Notify Joe Turner as new travelers are identified to leave for Japan.

- **Plant Status Updates.** James Whitney, NSIR has requested that all of the "Plant Status" news releases on ENAC be sent to him to assist other government agencies in their analysis of the situation. **Action:** Send james.whitney@nrc.gov "plant status updates" on ENAC as they come in (sent during day shift on 4/9).

- **TEPCO Earthquake Info.** Vince Holahan, the NRC staff member embedded with PACCOM, has requested to be on the distribution list for the Japanese earthquake info sent from TEPCO. **Action:** Please forward these emails to Vince.Holahan@nrc.gov as they are received.

- **Request to Share RST Document with Foreign Governments:** The Governments of Canada, the UK and Finland have requested that the RST share their "Stability Document," which they have discussed during their daily call with these governments. The request was forwarded to the ET, who is assessing what information is contained in the document before deciding on whether or not to share the document. The document is still in draft (awaiting interagency comments). PMT was given permission to read the draft document to conference call members. Release of this document will be addressed as part of the process being developed to address the release of a document to NY Times. **Action:** Continue to follow. **UPDATE**: A copy of the RST Stability Document was released to Mark and he was instructed not to release it to any other organization and that it was for his use only.

B6/69

- **1 Pager for Margie's Morning Meeting** – Danielle/Eric requested that the draft be sent to them to add to it overnight. They will send back updates via email. **Action:** Work off of the draft sent back from them. If they don't send back any updates overnight, then work off of the draft completed.

Future Actions/OPEN ITEMS

- **News Reports on IAEA "Recommendation" to Extend Evacuation Zone:** News media is reporting that the IAEA has called on Japan to extend the evacuation zone around Fukushima, based on abnormal levels of radiation detected in a village outside the current evacuation zone. This was neither a special announcement nor a formal recommendation from the IAEA. Instead, the reports result from information provided at the March 30 IAEA technical briefing, at which DDG Denis Flory reported on the location of the abnormal radiation levels and noted that they were located outside the evacuation zone. When asked a direct question about whether the IAEA was recommending that Japan extend the zone, DDG Flory stated only that the IAEA was encouraging the "counterpart" to "carefully assess the situation." Full summary of technical briefing here: http://iaea.org/newscenter/news/tsunamiupdate01.html, relevant paragraph is the fourth paragraph under item #2, "Radiation Monitoring." Jen Schwartzman verified with Mark Shaffer that no formal announcement has come from IAEA in this regard.

- **Deputies Committee Decisions and Action Items:** SECY has been sending summaries of the Deputies Committee meetings as they are received and the LT Director/Coordinator have been tracking any actions pertinent to the LT. There are currently no international liaison tasks resulting from these meetings but the LT Director will inform us if this changes. **Action:** Mark Shaffer would like to see the summaries.

- **Translators.** 24/7 translation coverage in the HOC has been suspended. Mike Call who is in Japan until 4/16 speaks Japanese. At HQ there is a Japanese foreign assignee and other options available. Also, Tony Nakanishi may be available to provide translation assistance. USAID is paying for an NRC-dedicated translator in Tokyo. If we need items translated and cannot get assistance from within NRC, we can rely on them. **Action:** If in need of USAID translation support, fax the document to +81-3-3224-5538 and send a scanned (PDF) copy to the Japan site team as a backup.

- **INPO:** All equipment requests are now going through INPO. They are consolidating all available information. Contact information for INPO is 770-644-8118 or email at inpoercassistance@inpo.org.

- **NRC Health Unit request:** The NRC team members were given KI before they left. At this time the guidance is to not take the KI while on duty in Tokyo. However, due to the still-fluid nature of the environmental hazards posed by radioactive isotopes, there is still the possibility that KI could be required at some point. Should it become necessary to have the NRC team take the KI, the LIA02/LIA03 international liaisons would be responsible for receiving the advice from ADM/Dr. Cadoux and to get the information to the team immediately.

- **Daily calls with UK/France/Canada.** Calls will take place at 0930 with RST and PMT to discuss reactor-related and radiation-related information, respectively, with regulatory representatives from these three countries. Everyone should call into the HOO to be connected. Finland and the IAEA may also participate on an intermittent basis. **The new number to call into is (b)(6) and the pin is (b)(6) NOTE: There is no call on the weekends.**

- **Daily NRC Japan Team – RST/PMT Call.** The time of the call varies. As of 4/5 it was **2100** with RST and PMT have been notified of the call and international liaison should plan on participating (OIP staff in Japan don't necessarily participate). All parties should call into **301-816-5120** and use pass-code (b)(6)

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Description of Content for Release Grouping: **BA (RIE) BC (WIP)**

BA Documents: **Total Documents = 137**

BA 1-5
USAID ; March 22-23, 2011

BA 6-50
Carol Greenwood; March 11-April 20, 2011

BA 51-100
United States State Department- DOD- Japan-related documents; March 13-21, 2011

BA 101-105
Jonna Weaver- Japan Related

BA 106-137
Rebecca Schmidt- Japan Related

BC Documents **Total Documents =470**

BC 1-20
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BC 21-174
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BC 175-176
Department of Defense- OSD Consult

BC 177-223
United States State Department- DOD- Japan-related documents; March 13-21, 2011

BC 224-288
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