

## Ramsey, Kevin

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**From:** HOO Hoc  
**Sent:** Friday, March 11, 2011 7:00 PM  
**To:** Ramsey, Kevin; LIA04 Hoc; LIA02 Hoc; LIA12 Hoc; LIA01 Hoc; LIA11 Hoc; McCree, Victor  
**Subject:** IAEA News  
**Attachments:** News\_Releases\_No10[1][1].pdf

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United States Nuclear Regulatory Commission  
Protecting People and the Environment

7/1

March 12, 2011  
Nuclear and Industrial Safety Agency

Seismic Damage Information(the 10<sup>th</sup> Release)  
(As of 4:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Oki)

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale
  - <Area of Seismic Intensity Larger Than and Including 4>
  - 7: Northern Miyagi Prefecture
  - 6+: Northern and southern Ibaraki Prefecture
  - 5+: Sanpachi-Kamikita Aomori Prefecture
  - 5: Chuetsu, Niigata Prefecture
  - <Municipality of Seismic Intensity Larger than and Including 4>
  - 6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture
  - 6-: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.
  - 5-: Kariwa-village, Niigata Prefecture
  - 4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari-village, Hokkaido

1. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 03:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture )

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.

-Cable from electric power source cars are under connecting work(as of 04:00, March 12)

Pressure in the Confinement Vessel has arisen. The pressure could have arisen to 840kPa as compared to the design pressure of 400kPa.

c. Fukushima-Daini Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ni, Units 1,2 and 4)

(\*A heightened alert condition)

### 3. Industrial Safety

#### ○Electricity

\* Tokyo Electric Power Co. (as of 04:19, March 12, 2011)

Scale of loss of electrical power: 1,540 thousand houses

Power loss area:

Gunma Pref.: Oizumi-machi, Tatebayashi-cho

Ibaraki Pref.: Whole area,

Tochigi Pref.: Whole area of eastern part, Utsunomiya-shi, Ashikaga-shi,  
Sano-shi,

Chiba Pref.: Katori-shi, Yachimata-shi, Yamatake-shi

Saitama Pref.: Konosu-shi, Gyoda-shi

Yamanashi Pref.: Hokuto-shi, Fuji Yoshida-shi

\* Tohoku Electric Power Co. (as of 22:00, March 11, 2011)



Scale of loss of electrical power: approx.4,400 thousand houses

Power loss area:

Aomori Pref.: Whole area

Iwate Pref.: Whole area,

Akita Pref: Whole area

Miyagi Pref: whole area

Yamagata Pref: Almost whole area

Fukushima Pref: Some area

\* Hokkaido Electric Power Co. (as of 20:00, March 11, 2011)

Scale of loss of electrical power:560 houses, maximum number:  
approx:3,000 as of 19:00

\*Chubu Electric Power Co. (as of 22:50, March 11, 2011)

Scale of loss of electrical power: 30 houses(Nagano prefecture),

○General Gas(as of 03:00, March 12)

The Japan Gas Association is preparing to dispatch an advance unit to Sendai-shi upon request from Sendai-shi.

Sendai-city municipal Gas, Kesenuma-city municipal Gas, Ishimaki Gas have trouble contacting.The Japan Gas Association

confirmed that there are no supply disruption in the supply area of city gas in Hokkaido, Aomori, Yamagata, and Akita prefecture.

\* Tokyo Gas Co.

Hitachi branch: 30,008 houses are in supply disruption. There is no damage in equipment, however, equipment in inoperable due to loss of power. Walkdown unit of eight person departed at 18:30, March11. Time of recovery is not certain.

Inspection teams were dispatched to this area.

-time of restoration(not certain)

Eastern part of Joso: 453 houses were in supply disruption in Ushiku (supply restarted at 17:10, March11)

471 houses were in supply disruption in Ushiku-kariya cho(supply restarted at 22:36

March 11)

77 houses are in supply disruption in  
Ryuugasaki(supply restarted at 16:20, March 11)

40 houses are in supply disruption in Nishi-ku,  
Yokohama-shi(supply restarted at 17:29, March 11)

Gas leaked from a Nozzle of an LNG tank at Sodegaura but no  
ignition(supply restarted at 17:29, March 11)

Gas Bureau of Sendai-shi: whole supply disruption (approx.360 thousand  
houses)

\*Shiogama Gas Co.: 12,000 houses are in supply disruption

\*Kamaishi Gas Co. : 10,000 houses are in supply disruption. First floor of this  
Gas facility sank.

\*Hatano Gas Co.: 330 houses are in supply disruption

\*Keiyo Gas Co.: Leakage occurred at 5 locations of middle pressure conduit

Leakage occurred at many parts of Low pressure conduits

2,377 houses are in supply disruption.

Supply is disrupted in Yachio-shi

\*Kuju Kurityo Gas Co: Approx 258 houses are in supply disruption.

\*Atsugi Gas Co: leakage occurred at 1 location of middle pressure conduit.

\*Fukushima Gas Co.: Approx 2,726 houses are in supply disruption(which  
are equal to a quarter of whole customer in this region)

\*Tohoku Gas(part of Shirakawa-shi): 300 houses are in supply disruption

\*Tokiwa Kyodo Gas(Iwaki-shi): 15,000 houses are in supply disruption

\*Tobu Gas(Tsuchiura-shi): 7,500 houses are in supply disruption

\*Tosai Gas(Kasukabe-shi) Gas leakage occurred from conduit. 150 houses in  
apartment are in supply disruption

\*Odawara Gas(Odawara-shi)

leakage occurred at 1 location of low pressure branch conduit and 3 locations  
of ex-core inner conduit and has restored at 21:30 11 March. Other areas are  
under investigation.

○Community Gas(as of 03:00, March 12)

Severe damage has not been reported to Japan Community Gas Association  
so far. No information is available about the damage in North part of Ibaraki  
prefecture.

\*Tokyo Gas energy(North part of Ibaraki): Factory stopped supply to 943 houses in Nakago-New Town due to the leakage from pipe.

\*Satoh Kosan (based in Iwatsuki-ku, Saitama City) Iwatsuki-housing complex: Gas leakage occurred from conduit. Factory stopped the supply. Currently gas is temporarily supplied by gas cylinder to 451 sites.

\*Syutoken Gas(based in Sakura-City) Chitose-housing complex:1,320 houses are in supply disruption

\*Kashima Marui Gas(Kamisu-shi): 527 houses are in supply disruption. ime of recovery is not certain.

\*Imaichi Gas: Gas leakage occurred from conduit at the simple gas complex in Nikko-shi: 240 houses were in gas supply disruption.

\*Nihon Gas: Gas leakage occurred from conduit at simple gas complex in the jurisdiction: 76 houses in Nasu-karasuyama-shi, 97 houses in Inashiki-shi, 594 houses in Tokai-mura, Natsu-gun,370 houses in Yita-shi, and 3299 houses in Itako-shi were in gas supply disruption.

These areas othan than Itako-shi will be restored on March 12. It will take long before restoration in Hinode housing complex in Itako-shi due to soil liquifaction. 212 houses in Noda-shi were in gas supply disruption. This area was restored in March 11.

○Gas conduit Operators(as of 03:00, March12)

\*JX Nikko Nisseki Energy: Hachinohe LNG Station

Premise, electric room and in-house electricity generator equipment, were flooded by the 2<sup>nd</sup> wave of tsunami and the gas supply was stopped.

○Heat supply(as of 00:00)

\*Yamagata Netsu Kyokyu(Yamagata-shi): Stopped heat supply

\*"HITACHI NETSU ENERGY"(Hitachi City): stopped heat supply due to the electrical outage at 15:19, March11.

\*"CHIBA NETSU KYOKYU"(Chiba-city): stopped freezer, etc. at 16:19, March 11. Supply was stopped and walkdown is conducted at 16:19, March 11.

\*"NISHI-IKEBUKURO NETSU KYOKYU": stopped freezer and boiler at 15:45, March 11.

\*"TOKYO NETSU KYOKYU";

-stopped boiler in Takeshiba and Yurakutyo areas at 15:20, March 11

-stopped supply to one of the building complex at Hikarigaoka for approx. 3 hours due to the leakage of pipe at 21:35, March 11

\*"Yokohama Business Park NETSU KYOKYU (Hodogaya-ku, Yokohama city)

15:50 Stopped steam and cold water supply to PREZZO building

16:20 recovered by temporary repair

○Complex

\*Cosmo Oil factory Chiba branch

A column of Butane Butylene storage was broken. Fire occurred due to gas leakage. One person suffered serious-injury, 2 persons suffered minor injury.

\*JX Nippon Oil&Energy Corporation Sendai oil factory(sendai-city, Miyagi prefecture)

-Fire occurred from explosion of low temperature LPG tank(as of 22:40, March 11)

#### 4. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency

Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters - issued a directive regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must be evacuate.

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Oookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

## 2. Summary of Damage(Earthquake at Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Friday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37; East Longitude: 138.6), 10km deep, M6.6

### (3) Seismic Intensity in Japanese Scale

<Area of Seismic Intensity>

5-: Kashiwazaki-shi, Niigata prefecture and Kariha-villege, Niigata prefecture.

### 1. Status of operation at Power Stations(NumNumber of automatic shutdown(units):10 (as of 3:30, March 12)

a. Kashiwazaki-Kariha Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

#### (1) The status of operation

Unit1(1,100MW): Keep operation

Unit2(1,100MW): in periodic inspection outage

Unit3(1,100MW): in periodic inspection outage

Unit4(1,100MW): in periodic inspection outage

Unit5(1,356MW): Keep operation

Unit6(1,356MW): Keep operation

#### (2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings:No

#### (3) Report concerning other malfunction

Report of fire: No

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Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087

**Ramsey, Kevin**

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**From:** Operations Center Bulletin  
**Sent:** Friday, March 11, 2011 3:04 PM  
**To:** Operations Center Bulletin  
**Subject:** \*\*\*NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES\*\*

**Importance:** High

**THIS IS NOT A DRILL.**

The NRC and other Federal agencies are closely following an emergency occurring outside of the United States. Press releases about NRC actions are posted on [www.nrc.gov](http://www.nrc.gov). Information is also available on the NRC External Blog at: <http://public-blog.nrc-gateway.gov>. Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200

Two important reminders:

It is possible that some of us will be requested by colleagues in another country to provide technical advice and assistance during this emergency. It is essential that all such communications be handled through the NRC Operations Center. Any assistance to a foreign government or entity must be coordinated through the NRC Operations Center and the U.S. Department of State (DOS). If you receive such a request, contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) immediately.

If you receive information regarding this or any emergency (foreign or domestic) and you are not certain that the NRC's Incident Response Operations Officer is already aware of that information, you should contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) and provide that information.

No response to this message is required.

**THIS IS NOT A DRILL**

X/2



## Freeman, Eric

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**From:** Freeman, Eric  
**Sent:** Friday, March 11, 2011 7:33 AM  
**To:** Horn, Brian; Aguilar, Santiago; Tuttle, Glenn; Ward, Steven; Ditto, David; Pham, Tom  
**Subject:** FW: Japan initiates emergency protocol after earthquake

Not sure if you've seen this yet

**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 6:40 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan initiates emergency protocol after earthquake

Japan initiates emergency protocol after earthquake

11 March 2011

Nuclear Engineering International

Onagawa, Fukushima Daiichi, Fukushima Daini and Tokai nuclear power stations have automatically shut down following a magnitude 8.8 earthquake off the northeast coast of the largest island of Japan, Honshu.

All four operating plants on that coast have automatically shut down, or SCRAMmed, according to Japan Atomic Information Forum (JAIF). Higashidori 1, which is also located on Honshu's northeast coast, was shut down for a periodic inspection.

The earthquake struck at 2:45pm local time. A 6:45 pm local time report from the Japan Nuclear and Industrial Safety Agency contained more information of damage and other problems in a site-by-site report.

-A CO2 fire has broken out at Onagawa nuclear power station.

-Utility TEPCO has requested the establishment of a nuclear emergency response programme for Fukushima Daiichi 1&3 and Fukushima Daini 1.

JAIF reported that Fukushima Daiichi 1, 2 and 3 automatically shut down; units 4, 5 and 6 were in maintenance outages. Fukushima Daini 1, 2, 3 and 4 automatically shut down.

JAIF has reported that TEPCO sent the emergency report because emergency diesel generators at the two sites are out of order. It said that there is no report that the radiation was detected out of the site. It said that an emergency headquarters has been set up and will issue information hourly.

JAIF also reported that the Rokkasho reprocessing facility was being powered by emergency diesel generators. No other unusual events or radiation leaks have been reported. Nuclear power stations at Hamaoka, Kashiwazaki-Kariwa and Tomari are continuing normal operation, according to JAIF.

After an accident occurs at a nuclear power plant, the licensee must notify the national Nuclear and Industrial Safety Agency by law.

A minister in its controlling organisation, the Ministry of Economy, Trade and Industry, notifies the prime minister's office. The central nuclear emergency response headquarters (NERHQ) of the national government issues a nuclear emergency declaration, which also includes instructions about preventative measures. It

x/3

receives technical advice from the Nuclear Safety Commission. The NERHQ sends a specialist and the NSC sends a commissioner to the site.

After the emergency declaration is received, the local office of the national government's NERHQ arranges prevention measures based on factors including facility information, climate and monitoring.

Nuclear emergency response operations are coordinated in one of 20 so-called off-site centres spread across Japan, which are close to, but not inside, nuclear facilities. The off-site centre's role is to be the main centre of information, incident analysis, and emergency plan organisation and direction. Two or three senior specialists for nuclear emergency preparedness work in each OFC. In normal conditions, the specialists work as nuclear power safety inspectors, checking plant operation from the viewpoint of regulation. During an emergency, the specialists organize prevention measures as a secretariat and report it to a joint council for nuclear emergency response. The joint council includes not only the local office of the national government's NERHQ and the senior specialists, but also representatives of the Nuclear Safety Commission and prefectural and municipal NERHQs.

The joint council devises instructions to residents for evacuation and/or sheltering. It also instructs the emergency services and coast guard, self-defence force, Japan Nuclear Energy Safety Organisation (JNES), the National Institute of Radiological Sciences, the Japan Atomic Energy Agency, and other bodies.

JNES has constructed a dedicated high-speed network system connecting the 20 off-site centres and other agencies called Emergency Preparedness Response Network (EPRNet). It includes video conferencing systems, e-mail, telephone, fax, and connections to a meteorological information service, a plant information collection, diagnosis, prognosis and analytical prediction tool (called ERSS), and an emergency environmental dose prediction tool (called SPEEDI).

**Ramsey, Kevin**

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**From:** ANS Broadcasts [broadcasts@ans.org]  
**Sent:** Friday, March 11, 2011 9:14 PM  
**To:** Ramsey, Kevin  
**Subject:** Go to ANSNUCLEARCAFE.ORG for Japan's Nuclear Plant Status

The ANS Nuclear Cafe blog is posting the latest links to information about the status of Japan's Nuclear Power Plants. Go to <http://ansnuclearcafe.org/> for a collection of sources covering Japan's earthquake and Tsunami.

X/4

## **Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 6:34 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan's Tepco shuts seven nuclear units after earthquake

This is an older message but gives a more complete picture of the reactor situation when the earthquake hit.

Japan's Tepco shuts seven nuclear units after earthquake  
Singapore (Platts)--11Mar2011/555 am EST/1055 GMT

Japan's Tokyo Electric Power Company has shut a total of seven nuclear units at two of its nuclear power plants in Fukushima prefecture after a 8.9-magnitude earthquake struck northeastern Japan off the main Honshu island Friday, a company spokesman said.

At its 4.4 GW Fukushima Daini plant, units 1, 2 and 3 (460 MW, 784 MW and 784 MW respectively) were operating during the earthquake and have all been shut, the spokesman said.

Units 4, 5 and 6 (784 MW, 784 MW and 1.1 GW respectively) were all offline for maintenance.

At the Fukushima Daiichi plant, all four 1.1 GW units were running during the earthquake and were subsequently stopped, he added.

At Tepco's Kashiwazaki-Kariwa nuclear plant in the northwest, units 2, 3 and 4 were already offline for inspections, while units 1, 5, 6 and 7 were operating during the earthquake and are still operating, the spokesman said.

Tepco released a statement at 1630 Tokyo time (0730 GMT) confirming the outages, and adding: "At all the nuclear power stations, monitoring posts, which monitor radiation through exhaust stacks have shown normal values. In other words, at the present, no radiation leaks have been confirmed."

The company said that 4.05 million households had lost power as a result of the earthquake.

The earthquake struck at a depth of 10 km, off Sanriku in Miyagi prefecture at around 2:46 pm (0546 GMT), the Japan Meteorological Agency said.

The agency also issued a tsunami warning for Honshu's Pacific coast, warning of waves up to 3 meters high.

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 6:13 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan Update: Emergency Cooling System Working at Quake-hit Fukushima Plant

**Emergency Cooling System Working at Quake-hit Fukushima Plant**

Tokyo Kyodo World Service 1047 GMT 11 Mar 11

Tokyo, March 11 Kyodo -- An emergency cooling system was activated at the No. 1 reactor of the Fukushima No. 2 nuclear plant after a powerful earthquake hit northern Japan on Friday, the industry ministry said.

The operator, Tokyo Electric Power Co., notified the ministry of the move, the ministry said, adding monitors outside the facility have detected no abnormalities.

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**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 6:11 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan: Fukushima 1 & 2 cooling system problems

According to NHK TV news (Japan Broadcasting Corporation) the Fukushima 1 & 2 reactors are experiencing reactor cooling problems after diesel generator failures but also saying there is no cause for alarm even though the government has declared a "nuclear emergency situation".

X/7

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 5:31 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan: media reports government has decided to declare a nuclear power emergency situation

#### Fire at Tohoku Elec Onagawa nuclear plant

TOKYO, March 11 (Reuters) - A fire broke out at Tohoku Electric Power Co's Onagawa nuclear plant in northeastern Japan following Friday's major earthquake, Kyodo news agency said.

Prior to the Kyodo report, the company had said it had not received information on whether there had been any problems at the nuclear power plant after the disaster.

Separately, Fukushima Prefecture, the site of a Tokyo Electric Power nuclear power plant, said on Friday the plant's reactor cooling system was functioning, denying an earlier report that it was malfunctioning.

Japanese media reported that the government had decided to declare a nuclear power emergency situation, which occurs if there is confirmation of radioactivity leaks from a nuclear power plant or a reactor cooling system breaks down.

X/8

## **Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 4:34 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan: Fukushima diesel generator failure

### **Devastating earthquake hits Japan Financial Times**

By Jonathan Soble in Tokyo, Rahul Jacob in Hong Kong and agencies  
Published: March 11 2011 06:30 | Last updated: March 11 2011 08:15

Japan was reeling Friday after an 8.9 magnitude earthquake hit the northeast of the country, causing many injuries, fires and a 12m tsunami along parts of the country's coastline.

Japan was braced for further tsunamis to hit in the coming hours. Its Pacific coast was badly affected and the country was bracing for waves at least 20 foot high. The country's northern region was expecting a significant number of casualties and a tsunami warning was issued by several countries including Russia, Indonesia, Mexico and Taiwan. "People in Japan should exercise the spirit of solidarity and act fast," said Japan's prime minister Naoto Kan appealing for calm, "we ask you to act in such a way to minimise the damage."

In Sendai, the closest large city to the quake's epicentre, oil storage tanks caught fire and the tsunami flooded the airport, sending staff and passengers onto the roof. Outside the city, television helicopters captured a vast moving blanket of water, mud, debris, cars and unmoored houses -- some of them on fire -- spreading across rice fields. Residents of several Sendai districts and smaller cities and towns in Miyagi and neighbouring Aomori were ordered to leave their homes.

The governor of Miyagi prefecture, where Sendai is located, asked for Self Defence Forces soldiers to be deployed to assist rescue efforts.

The quake was strongly felt in Tokyo, where there were isolated reports of mostly superficial damage. Thousands of people milled in parks and squares in the city's skyscraper districts after fleeing tall buildings. Transport systems were brought to a standstill and mobile phone service failed -- though many people managed to communicate using the city's numerous public wireless internet points.

In the two hours following the earthquake, there were 12 significant aftershocks of at least 5.9 magnitude, which continued to shake buildings and cause damage. The most severe of these measured 7.1.

Precise numbers of dead and injured were not immediately available. NHK relayed sporadic reports of casualties, including more than a dozen elderly people believed to be trapped under the collapsed roof of a nursing home in northern Japan. About five people are reported dead in that incident.

"The building shook for what seemed a long time and many people in the newsroom grabbed their helmets and some got under their desks," Reuters correspondent Linda Sieg said in Tokyo.

"It was probably the worst I have felt since I came to Japan more than 20 years ago."

In crowded central Tokyo in areas such as Shinjuku and Marunouchi, thousands of people rushed out of skyscrapers into parks and squares.

The Japanese utility Hokuriku Electric Company said that all three of its nuclear reactors at its Onagawa plant in northern Japan had shut down automatically. NHK showed ceiling panels inside Ibaraki airport, Japan's newest regional airport north of Tokyo, collapsing during the quake.

Tokyo Electric Power (Tepco) reported that 4.5m homes lost power in the capital area, and many northern districts were without electricity entirely. A nuclear plant in Fukushima prefecture operated by Tepco shut down automatically, but at least one diesel generator needed to cool its reactors failed, though Tepco said safety had not been compromised.

Tokyo Stock Exchange headquarters were rocked by the quake but its trading system kept functioning. The Nikkei 225 closed down 1.7 per cent at 10,254.43. The yen dropped to a two week low against the dollar.

Equity markets across the region sold off. Hong Kong's Hang Seng fell 1.5 per cent while Sydney's S&P ASX 200 fell 1.2 per cent.

Public broadcaster NHK showed flames and black smoke billowing from a building in Odaiba, a Tokyo suburb, and bullet trains to the north of the country were halted, Reuters reports.

Black smoke was also pouring out of an industrial area in Yokohama's Isogo area. TV footage showed boats, cars and trucks floating in water after a tsunami hit the town of Kamaichi in northern Japan. An overpass, location unknown, appeared to have collapsed into the water.

x/9



Kyodo news agency said there were reports of fires in the city of Sendai in the northeast. Passengers on a subway line in Tokyo screamed and grabbed other passengers' hands. The shaking was so bad it was hard to stand, said Reuters reporter Mariko Katsumura. Earthquakes are common in Japan, one of the world's most seismically active areas. The country accounts for about 20 per cent of the world's earthquakes of magnitude 6 or greater.

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**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 2:37 AM  
**To:** Breskovic, Clarence  
**Subject:** Powerful quake rocks northern Japan - Onagawa reactor automatically shuts down

Friday, March 11, 2011

## **Powerful quake rocks northern Japan**

Kyodo News

A powerful earthquake with a magnitude of 7.9 rocked northeastern Japan on Friday, measuring the highest level intensity of 7 on the Japanese seismic scale, in Miyagi Prefecture, the Japan Meteorological Agency said.

Local police said many people were injured in the 2:46 p.m. quake, with reports of fires coming not only from the prefectural capital of Sendai but also from Tokyo, some 300 kilometers from Sendai, where a prolonged and powerful temblor was also felt.

The Metropolitan Police Department said many people were injured when part of the Kudan Kaikan hall in Chiyoda Ward in central Tokyo collapsed.

The agency issued a rare warning of huge tsunami for the Pacific coastal region including Iwate Prefecture. Public broadcaster NHK said a large number of cars were washed away into the sea when a tsunami hit the Kamaishi port in Iwate Prefecture.

In Kyodo News' Sendai office, part of the ceiling collapsed and bookshelves and office equipment toppled over.

Fires occurred across a wide area, including at an ironworks in Chiba Prefecture.

Onagawa nuclear power plant in Miyagi Prefecture automatically halted operations following the quake. Its operator, Tohoku Electric Power Co., was checking whether any damage was caused.

A major blackout occurred across a wide area of northeastern Japan.

The quake affected the nation's key transportation systems, including Narita airport, which shut its runways for safety checks.

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USGS earthquake map:

[http://earthquake.usgs.gov/earthquakes/recenteqsww/Maps/10/140\\_35.php](http://earthquake.usgs.gov/earthquakes/recenteqsww/Maps/10/140_35.php)

<http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/usc0001xka.php#details>

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X/10

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 2:44 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan: Onagawa and Fukushima plants shut down

**Nuclear Plants Shut Down in Miyagi, Fukushima**

Tokyo *Kyodo World Service* 0707 GMT 11 Mar 11

Tokyo, March 11 Kyodo -- (EDS: ADDING INDUSTRY MINISTRY INFO, INFO ON HOKKAIDO, FIXING OPERATOR) Nuclear plants on the Pacific coast in Miyagi and Fukushima prefectures have been automatically shut down Friday following a powerful earthquake that hit a wide area in northeastern Japan, the operators said.

There were no immediate reports from monitoring posts of fires or other abnormalities near the nuclear plants after the 2:46 p.m. quake, the industry ministry said.

The suspended power plants were the Onagawa plant in Miyagi Prefecture, operated by Tohoku Electric Power Co., and the Fukushima No. 1 and No. 2 plants in the adjacent Fukushima Prefecture, run by Tokyo Electric Power Co., according to the companies.

Tokyo Electric also said it kept operating the Kashiwazaki-Kariwa nuclear plant on the Sea of Japan coast in Niigata Prefecture, while Hokkaido Electric Power Co. reported no problems at its Tomari No. 1, No. 2 and No. 3 plants in the northernmost main island.

There were no immediate signs of any problems at the Hamaoka nuclear plant on the Pacific coast in Shizuoka Prefecture, southwest of Tokyo, the prefectural government said.

-----  
More USGS data:

**Magnitude 7.1 - OFF THE EAST COAST OF HONSHU, JAPAN**

**2011 March 11 06:25:50 UTC**

<http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/usc0001xig.php#details>

X/11

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 2:50 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan: Onagawa map and details

<http://world-nuclear.org/NuclearDatabase/reactordetails.aspx?id=27570&rid=CA833697-1FFF-4CBB-B729-74C88B99295B>

X/12

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 3:29 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan earthquake: Government Says No radioactive leaks at Tohoku nuke plants

Govt: No radioactive leaks at Tohoku nuke plants

The government's Nuclear and Industrial Safety Agency says no abnormal levels of radiation have been reported at four nuclear power plants in the quake-hit Tohoku region.

Power companies have suspended the operation of the plants and are checking their safety.  
NHK News, Friday, March 11, 2011 15:34 +0900 (JST)

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 3:38 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan earthquake/tsunami - more reactors shut down

### **Powerful Quake Hits Northeastern Japan**

Tokyo, March 11 (Jiji Press) -- An extremely powerful earthquake hit the northeastern Japan region of Tohoku at 2:46 p.m. Friday (5:46 a.m. GMT).

The quake, which also rocked a wide range of areas including Tokyo, eastern Japan, measured 7, the upper limit of the Japanese seismic intensity scale, in northern Miyagi Prefecture in the Tohoku region. Its magnitude was estimated at 7.9, the Meteorological Agency said.

The agency issued a heightened tsunami alert to residents in the prefectures of Iwate, Miyagi and Fukushima along the Pacific coast.

A tsunami with an estimated height of more than 10 meters reached the shore of Miyagi Prefecture, the agency said.

The focus of the quake is located off Miyagi Prefecture and is 10 kilometers deep.

**Tohoku Electric Power Co. halted its Onagawa nuclear power plant, according to the industry ministry's Nuclear and Industrial Safety Agency.**

**Tokyo Electric Power Co. officials said the No. 1 to No. 3 reactors of its first Fukushima nuclear plant was shut down automatically.**

**Operations of the firm's second Fukushima plant's No. 1 to No. 4 reactors were also suspended.**

**Japan Atomic Power Co. halted its Tokai nuclear power plant in Ibaraki Prefecture.**

According to Miyagi police, many portions of the Tohoku Expressway were damaged.

The Tokyo Fire Department reported several injuries in central Tokyo and fires in 10 places including Daiba and Ikebukuro.

Tohoku Electric said power outage affects all areas in Aomori, Akita and Iwate Prefectures and almost all areas in Yamagata and Miyagi Prefectures.

X/14

**Wegner, Mary**

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**From:** Breskovic, Clarence  
**Sent:** Friday, March 11, 2011 4:06 AM  
**To:** Breskovic, Clarence  
**Subject:** Japan: No Radiation Leaks Or Abnormalities - 11 reactors shut down

**No Radiation Leaks Or Abnormalities in Quake-hit Japan: Prime Minister Kan**

Tokyo, March 11 Kyodo -- (EDS: RECASTING) Japan has detected no abnormalities such as radiation leakage at nuclear power plants in the country, Prime Minister Naoto Kan said Friday, following a powerful earthquake and aftershocks that hit a wide area on the Pacific coast of the northeastern region.

A total of 11 nuclear reactors were automatically shut down at the Onagawa plant, Fukushima No. 1 and No. 2 plants and Tokai No. 2 plant, the industry ministry said, adding there were no immediate reports from monitoring posts of fires or other abnormalities near the nuclear plants after the 2:46 p.m. quake.

Kan told a press conference, "Parts of nuclear plants were automatically shut down but we haven't confirmed any effects induced by radioactive materials outside the facilities." Tokyo Electric Power Co., which operates the Fukushima plants, said it kept operating the Kashiwazaki-Kariwa nuclear plant on the Sea of Japan coast in Niigata Prefecture, while Hokkaido Electric Power Co. reported no problems at its Tomari No. 1, No. 2 and No. 3 plants on the northernmost main island.

There were no immediate signs of any problems at the Hamaoka nuclear plant on the Pacific coast in Shizuoka Prefecture, southwest of Tokyo, the prefectural government said.

X/15

**Nosek, Andrew**

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**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:48 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

Yes. Batteries as well as other things. You were speculating RCIC was not running because the reports about the core heating up. I haven't seen a good indication of anything contrary to that yet.

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:44 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

RCIC is the thing we were talking about on the phone. You said that the turbine driven pump probably needs batteries to run.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:42 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

That statement makes me think that RCIC is not running.

Is RCIC part of the ECCS?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:39 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

had been steadily increasing over the time that its emergency core cooling systems had not been active

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:36 PM  
**To:** Wagner, Brian; Mills, Daniel  
**Subject:** RE:

X/16



What part of that statement makes you think they got RCIC going?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

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**From:** Wagner, Brian  
**Sent:** Friday, March 11, 2011 3:31 PM  
**To:** Mills, Daniel; Nosek, Andrew  
**Subject:** RE:

Or maybe they just took a little while to align it.

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:20 PM  
**To:** Wagner, Brian; Nosek, Andrew  
**Subject:**

pressure inside the containment of Reactor 1 at Fukushima-Daichi had been steadily increasing over the time that its emergency core cooling systems had not been active. The Tokyo Electric Power Company reported at 0200 local time (1700 GMT) that pressure had increased beyond reference levels, but was within engineered limits, the WNA added.

Does that mean the RCIC was not working and now is?

[http://www.world-nuclear-news.org/RS\\_Massive\\_earthquake\\_hits\\_Japan\\_1103111.html?je](http://www.world-nuclear-news.org/RS_Massive_earthquake_hits_Japan_1103111.html?je)

## **Nosek, Andrew**

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**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:56 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

News reports are saying that the air force was flying in diesel generators, and Japan is reporting they didn't need them to avert core damage (I think?)

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:55 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

That's how I interpreted it, but given the fact that many of these reports are translations, it's hard to know what was meant.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:52 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

Oh I see. "Over the time the ECCS system had not been active", as in, it is active now?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:45 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

Hopefully the diesels are running and everything is in a safe state.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:42 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

That statement makes me think that RCIC is not running.

Is RCIC part of the ECCS?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:39 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

had been steadily increasing over the time that its emergency core cooling systems had not been active

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:36 PM  
**To:** Wagner, Brian; Mills, Daniel  
**Subject:** RE:

What part of that statement makes you think they got RCIC going?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Wagner, Brian  
**Sent:** Friday, March 11, 2011 3:31 PM  
**To:** Mills, Daniel; Nosek, Andrew  
**Subject:** RE:

Or maybe they just took a little while to align it.

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:20 PM  
**To:** Wagner, Brian; Nosek, Andrew  
**Subject:**

pressure inside the containment of Reactor 1 at Fukushima-Daichi had been steadily increasing over the time that its emergency core cooling systems had not been active. The Tokyo Electric Power Company reported at 0200 local time (1700 GMT) that pressure had increased beyond reference levels, but was within engineered limits, the WNA added.

Does that mean the RCIC was not working and now is?

[http://www.world-nuclear-news.org/RS\\_Massive\\_earthquake\\_hits\\_Japan\\_1103111.html?je](http://www.world-nuclear-news.org/RS_Massive_earthquake_hits_Japan_1103111.html?je)

## Satorius, Mark

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**From:** Collins, Elmo  
**Sent:** Friday, March 11, 2011 4:46 AM  
**To:** Virgilio, Martin  
**Cc:** Howell, Art; Weber, Michael; Borchardt, Bill; Leeds, Eric; Boger, Bruce; Dricks, Victor; Uselding, Lara; Doane, Margaret; Wiggins, Jim; Evans, Michele; Weil, Jenny; Powell, Amy; Kennedy, Kriss; Maier, Bill; Miller, Charles; Dean, Bill; McCree, Victor; Satorius, Mark; Howell, Linda  
**Subject:** Addl info: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT  
**Attachments:** image001.jpg

Marty

We do plan an update phone call at 8 am EST on a HOO bridge to review collected information about progress across Pacific. Region IV plans to lead the brief regarding potential impact on RIV licensees.

For material licensees, we have a couple of portable gage licensees in Guam and American Samoa. A number of licensees in Hawaii.

News reports show earthquake/tsunami impacts in Japan including a nuclear power plant.

Diablo has design features for a tsunami wave. We'll discuss site design features and licensee actions on the call.

Elmo

---

**From:** HOO Hoc  
**To:** HOO Hoc  
**Sent:** Fri Mar 11 05:09:33 2011  
**Subject:** HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

Diablo Canyon declared a Notice of Unusual Event at 0123 PST due to a Tsunami Warning for the coastal areas of California as a result of a 8.9 magnitude earthquake off the coast of Japan. The Agency remains in the NORMAL response mode as of 0452 EST.

Joe O'Hara  
Headquarters Operations Officer  
U.S. Nuclear Regulatory Commission  
Phone: 301-816-5100  
Fax: 301-816-5151  
email: [hoo.hoc@nrc.gov](mailto:hoo.hoc@nrc.gov)  
secure e-mail: [hoo1@nrc.sgov.gov](mailto:hoo1@nrc.sgov.gov)



X/17

## **Cartwright, William**

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**From:** Pannier, Stephen  
**Sent:** Friday, March 11, 2011 11:33 AM  
**To:** Thomas, Eric  
**Subject:** Fukushima Daini information

Today at 2:46PM, turbines and reactors of Tokyo Electric Power Company's Fukushima Daini Nuclear Power Station Units 1 to 4 (Boiling Water Reactor, rated output 1,100 Megawatts) that had been operating at rated power automatically shutdown due to the Miyagiken-oki Earthquake.

Currently, reactor water level for Units 1 to 4 is maintained by injecting water into the reactors by the Reactor Core Isolation Cooling System. The reactors are maintained at a subcritical condition.

For Unit 1, the emergency core cooling system automatically started up due to increase in the reactor containment pressure assumed to be caused by leakage of reactor coolant in the reactor containment.

Hence, at 5:35PM, it was decided that a specific incident stipulated in Article 10, Clause 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness \*1 has occurred.

Impact to safety and external environment:

Water level to cool the irradiated nuclear fuel in the reactor core is maintained at this moment.

Indication of the monitoring posts installed in the periphery of the power station is no different from usual and thus no radiation impact to the external environment is confirmed at this moment.

We will continue to monitor in detail the possibility of discharge of radioactive material from exhaust stacks and coolant water discharge canal.

---

**From:** Thomas, Eric  
**Sent:** Friday, March 11, 2011 11:13 AM  
**To:** Brown, Frederick  
**Cc:** Thorp, John; Garmon-Candelaria, David; Bernardo, Robert; Haskell, Russell; Pannier, Stephen  
**Subject:** Earthquake Update as of 11 am

Fred,

I have been monitoring the phone and email traffic as best I can this morning. There is a lot of repetition so I think it may be useful to summarize the salient points every couple of hours. Here is what I have as of 11:00. I am going over to the Ops Center to see what I can pickup on the 11:00 and 11:45 calls. Based on the amount of traffic going around, you may find it useful (or not) to forward this to ET/LT members.

---

The following information was gathered from several different sources. The best online source of information we have noted thus far is the Tokyo Electric Power Company (TEPCO) website: <http://www.tepco.co.jp/en/index-e.html> which is issuing hourly press releases on the status of its facilities.

1. A magnitude 8.9 earthquake occurred approximately 80 km east of Onagawa NPP and 150 km NE of Fukushima Daichi. USGS believes the quake may have actually been a 7.9. 5 aftershocks measuring between 6.2 and 7.1 on the Richter Scale have been reported.

X/18

## Weber, Michael

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**From:** Weber, Michael  
**Sent:** Friday, March 11, 2011 7:22 AM  
**To:** Sheron, Brian  
**Subject:** RESPONSE - Japanese Earthquake

Thanks. We'll have a call at 0800 through the Ops Center with Region IV regarding plant & material status. We're also inviting OPA to participate in anticipation of media interest. We're getting conflicting reports about events in Japan.

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

**From:** Sheron, Brian  
**Sent:** Friday, March 11, 2011 7:13 AM  
**To:** Weber, Michael; Virgilio, Martin  
**Cc:** Leeds, Eric; Grobe, Jack  
**Subject:** FW: Japanese Earthquake  
**Importance:** High

FYI.

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

**From:** Richards, Stuart  
**Sent:** Friday, March 11, 2011 6:36 AM  
**To:** Hogan, Rosemary; Kammerer, Annie; Murphy, Andrew  
**Cc:** Sheron, Brian; Case, Michael; Uhle, Jennifer  
**Subject:** Japanese Earthquake  
**Importance:** High

Rosemary/Annie/Andy

I'm sure you have heard about the 8.9 earthquake off the coast of Japan.

It resulted in a large tsunami on the Japanese coast. There is a report of problems at a Japanese nuclear plant.

We should be prepared to brief on our tsunami research. Maybe also seismic.

Additionally the tsunami wave is predicted to hit the coast of California in a few hours. Although the news reports that no damage is expected, we may be called on to comment on the impact on San Onofre and Diablo Canyon.

Thanks  
Stu

X/19

## **Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Friday, March 11, 2011 9:40 AM  
**To:** ET01 Hoc  
**Subject:** Fw: Quake/tsunami talking points  
**Attachments:** 3\_11\_QUAKE\_talk\_pts.docx

---

**From:** Burnell, Scott  
**To:** Weber, Michael  
**Sent:** Fri Mar 11 09:31:10 2011  
**Subject:** FW: Quake/tsunami talking points

Mike;

Eliot suggested sending these along to you.

Scott

---

**From:** Burnell, Scott  
**Sent:** Friday, March 11, 2011 9:28 AM  
**To:** Screnci, Diane; Sheehan, Neil; Hannah, Roger; Ledford, Joey; Chandrathil, Prema; Mitlyng, Viktoria; Dricks, Victor; Uselding, Lara; Harrington, Holly; McIntyre, David; Couret, Ivonne; Weil, Jenny  
**Cc:** Batkin, Joshua; Monninger, John; Brenner, Eliot  
**Subject:** Quake/tsunami talking points

All;

These are to be used consistent with the Chairman's direction to OPA to keep the public informed of our activities but NOT to get in front of our Japanese counterparts concerning events in that country.

Scott

X/20

# OPA

## TALKING POINTS

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### **MARCH 11, 2011 JAPAN EARTHQUAKE AND WEST COAST TSUNAMI**

*As of 4/4/2011 11:02 AM*

- The Nuclear Regulatory Commission is following events on the U.S. West Coast and U.S. Pacific interests in the wake of the March 11 earthquake in Japan and associated tsunami.
- The NRC resident inspector at the Diablo Canyon nuclear power plant on the central California coast is on site and keeping track of the plant's response to the tsunami warning for that area. The plant is operating normally but has declared an Unusual Event; plant employees are taking preplanned actions to prepare for the predicted tsunami effects.
- The San Onofre nuclear power plant on the southern California coast is operating normally and is in the tsunami advisory area.



- The Humboldt Bay spent fuel storage site on the northern California coast is in the tsunami warning area; site personnel have informed the NRC they are prepared for possible effects.
- The tsunami is expected to miss NRC-regulated nuclear materials sites in Hawaii and Alaska; the NRC remains in contact with these facilities.

**Taylor, Renee**

---

**From:** Borchardt, Bill  
**Sent:** Friday, March 11, 2011 2:51 PM  
**To:** Leeds, Eric  
**Subject:** Re: Update

Thanks Eric.  
Bill Borchardt  
Via blackberry

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

**From:** Leeds, Eric  
**To:** Borchardt, Bill  
**Cc:** Weber, Michael; Virgilio, Martin  
**Sent:** Fri Mar 11 14:28:10 2011  
**Subject:** Update

We held a cmr TA brief at 1 pm. Not much more than what I told you on the phone. They asked a lot of questions about the japanese nukes that we don't have answers to. Fukushima daiichi units 1 and 2 seem to be having issues with insufficient cooling and loss of emergency pwr but we have no other info. They brought in a temp diesel to the site. We have provided a sit rep to dhs and opa has talking points

X/21

**Rebstock, Paul**

---

**From:** opa administrators [opa@nrc.gov]  
**Sent:** Friday, March 11, 2011 3:40 PM  
**To:** Rebstock, Paul  
**Subject:** NRC Continues to Track Earthquake and Tsunami Issues  
**Attachments:** 11-043.pdf

X/22



# NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-043

March 11, 2011

## NRC CONTINUES TO TRACK EARTHQUAKE AND TSUNAMI ISSUES

Senior officials at U.S. Nuclear Regulatory Commission headquarters in Rockville, Md., are following events related to the Japanese earthquake and subsequent tsunami. In addition, the agency's regional office in Arlington, Texas, will continue to monitor the Diablo Canyon Power Plant's handling of a notice of unusual event (NOUE) at the site, near San Luis Obispo, Calif., for the duration of the event.

"We offer our condolences to all those in Japan affected by these tragedies," said NRC Chairman Gregory Jaczko. "The NRC is ready to provide whatever assistance we can to our Japanese counterparts, should there be a specific request. We're closely coordinating with other federal agencies."

Friday's tsunami warning, issued after an estimated 8.9 magnitude earthquake occurred off the eastern Japanese coast, prompted Pacific Gas and Electric Co. (PG&E), operator of the Diablo Canyon two-reactor plant, to declare a precautionary NOUE at 4:23 a.m. EST Friday. PG&E has reported both reactors have remained online throughout the event. While PG&E has reported only minor tsunami-related effects, the plant is well-protected against tsunami conditions as required by NRC regulations. NRC staff at the plant are keeping track of the plant's response during the event and remain in close contact with plant operators.

Nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area.

In addition to the Diablo Canyon plant, the NRC is following events at the San Onofre nuclear power plant, the Humboldt Bay spent fuel storage site and NRC-regulated nuclear materials sites in Hawaii and Alaska to name a few. Personnel at all those sites have informed the NRC conditions remain safe.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's Web site.

**Murphy, Andrew**

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**From:** Richards, Stuart  
**Sent:** Friday, March 11, 2011 2:40 PM  
**To:** Hogan, Rosemary; Murphy, Andrew; Kammerer, Annie  
**Subject:** FW: Press Release: NRC Monitors Notice of Unusual Event at Diablo Canyon Power Plant, Tsunami Issues  
**Attachments:** 11-042.docx

Fyi  
Stu

---

**From:** OPA Resource  
**Sent:** Friday, March 11, 2011 11:59 AM  
**To:**  
**Subject:** Press Release: NRC Monitors Notice of Unusual Event at Diablo Canyon Power Plant, Tsunami Issues

Attached for immediate posting and release.

Office of Public Affairs  
US Nuclear Regulatory Commission  
301-415-8200  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)

X/23



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-042

March 11, 2011

### NRC MONITORS NOTICE OF UNUSUAL EVENT AT DIABLO CANYON POWER PLANT, TSUNAMI ISSUES

The U.S. Nuclear Regulatory Commission, through its regional office in Arlington, Tex., is monitoring a notice of unusual event (NOUE) at the Diablo Canyon Power Plant, located near San Luis Obispo, Calif. Senior NRC officials are working at the agency's Rockville, Md., headquarters to coordinate NRC activities with respect to the Japanese earthquake and subsequent tsunami.

"The NRC is closely monitoring this situation as it unfolds with respect to nuclear facilities within the United States. NRC staff is working closely with its resident inspectors who are on site to ensure safe operations," said NRC Chairman Gregory Jaczko.

Pacific Gas and Electric Co. (PG&E), operator of the Diablo Canyon two-reactor plant, declared a precautionary NOUE Unusual Event at 4:23 a.m. EST today after receiving a tsunami warning from the West California Emergency Management Agency. The tsunami warning was generated after an estimated 8.9 magnitude earthquake occurred off the eastern Japanese coast.

The licensee reported the Diablo Canyon plant is stable and both units remain on line. The plant is well protected against tsunami conditions as required by NRC regulations. The NRC has staff at the plant keeping track of the plant's response.

Nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area.

In addition to the Diablo Canyon plant, the NRC is also monitoring the San Onofre nuclear power plant, the Humboldt Bay spent fuel storage site and NRC-regulated nuclear materials sites in Hawaii and Alaska to name a few. Site personnel have informed the NRC they are prepared for possible tsunami effects.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's Web site.

**Nosek, Andrew**

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**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 4:49 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

BBC is reporting radiation levels at reactor are 1000x normal. I feel like crying.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 4:46 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

<http://www.tepco.co.jp/en/press/corp-com/release/index-e.html>

There was a triple SBO.

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

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**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 4:45 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

<http://www.reuters.com/article/2011/03/11/japan-quake-tepco-pressure-idUSLHE7EB00R20110311>

I assume they are talking about containment pressure. They should stay below the Primary Containment Pressure Limit which is higher than design pressure, but I don't know if it's 2.1x design pressure, any idea? The attachment discusses venting. AJ is your PRA buddy still confident?

Apparently they have evacuated people out to 10km.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 4:05 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

Not in a BWR. In a ABWR, it is. <http://papaya.nrc.gov/104B/>

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

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**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 4:03 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

I think that makes sense, RCIC isn't ECCS?

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 4:00 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

I don't think RCIC is part of the ECCS. RCIC starts on a low-low level, and it exhausts to the suppression pool. Could that be why containment pressure went up?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

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**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:55 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

That's how I interpreted it, but given the fact that many of these reports are translations, it's hard to know what was meant.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:52 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:

Oh I see. "Over the time the ECCS system had not been active", as in, it is active now?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:45 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

Hopefully the diesels are running and everything is in a safe state.

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:42 PM  
**To:** Mills, Daniel; Wagner, Brian  
**Subject:** RE:



[http://www.world-nuclear-news.org/RS Massive earthquake hits Japan 1103111.html?je](http://www.world-nuclear-news.org/RS_Massive_earthquake_hits_Japan_1103111.html?je)

## Ramsey, Kevin

---

**From:** Joe Colvin [president@ans.org]  
**Sent:** Saturday, March 12, 2011 8:34 PM  
**To:** Ramsey, Kevin  
**Subject:** Update on Japan Situation  
**Attachments:** ANS Japan Backgrounder.pdf

Dear ANS Members:

I'm sure you are aware of the rapidly developing situation in Japan. The ANS is working on multiple fronts to collect credible information on the incident, and distribute that information through mainstream and social media outlets.

We have communicated with our counterparts at the Atomic Energy Society of Japan to offer any technical or other assistance which may be of help.

We have set up a special page on the ANS blog (<http://ansnuclearcafe.org>) to aggregate media reports and provide additional information when we consider it to be credible.

We are also working to organize television appearances and other media availabilities for our members so that some of the misinformation that has been presented by anti-nuclear groups can be rebutted with facts. Our goal is not necessarily to be the first on the air, but to be the most credible.

Attached you will find some talking points, along with our current analysis of the sequence of events at Fukushima I-1. I encourage you to talk to your social networks to ensure that people have the right facts and the proper perspective on this incident.

Let me know what other actions our Society should be taking during this nuclear incident.

My thoughts and prayers go out to the people of Japan.

Respectfully,

Joe Colvin

X/25

## **American Nuclear Society Backgrounder: Japanese Earthquake/Tsunami; Problems with Nuclear Reactors**

**3/12/2011 5:22 PM EST**

**To begin, a sense of perspective is needed... right now, the Japanese earthquake/tsunami is clearly a catastrophe; the situation at impacted nuclear reactors is, in the words of IAEA, an "Accident with Local Consequences."**

The Japanese earthquake and tsunami are natural catastrophes of historic proportions. The death toll is likely to be in the thousands. While the information is still not complete at this time, the tragic loss of life and destruction caused by the earthquake and tsunami will likely dwarf the damage caused by the problems associated with the impacted Japanese nuclear plants.

### **What happened?**

Recognizing that information is still not complete due to the destruction of the communication infrastructure, producing reports that are conflicting, here is our best understanding of the sequence of events at the Fukushima I-1 power station.

- The plant was immediately shut down (scrammed) when the earthquake first hit. The automatic power system worked.
- All external power to the station was lost when the sea water swept away the power lines.
- Diesel generators started to provide backup electrical power to the plant's backup cooling system. The backup worked.
- The diesel generators ceased functioning after approximately one hour due to tsunami induced damage, reportedly to their fuel supply.
- An Isolation condenser was used to remove the decay heat from the shutdown reactor.
- Apparently the plant then experienced a small loss of coolant from the reactor.
- Reactor Core Isolation Cooling (RCIC) pumps, which operate on steam from the reactor, were used to replace reactor core water inventory, however, the battery-supplied control valves lost DC power after the prolonged use.
- DC power from batteries was consumed after approximately 8 hours.
- At that point, the plant experienced a complete blackout (no electric power at all).
- Hours passed as primary water inventory was lost and core degradation occurred (through some combination of zirconium oxidation and clad failure).

- Portable diesel generators were delivered to the plant site.
- AC power was restored allowing for a different backup pumping system to replace inventory in reactor pressure vessel (RPV).
- Pressure in the containment drywell rose as wetwell became hotter.
- The Drywell containment was vented to outside reactor building which surrounds the containment.
- Hydrogen produced from zirconium oxidation was vented from the containment into the reactor building.
- Hydrogen in reactor building exploded causing it to collapse around the containment.
- The containment around the reactor and RPV were reported to be intact.
- The decision was made to inject seawater into the RPV to continue to the cooling process, another backup system that was designed into the plant from inception.
- Radioactivity releases from operator initiated venting appear to be decreasing.

#### **Can it happen here in the US?**

- While there are risks associated with operating nuclear plants and other industrial facilities, the chances of an adverse event similar to what happened in Japan occurring in the US is small.
- Since September 11, 2001, additional safeguards and training have been put in place at US nuclear reactors which allow plant operators to cool the reactor core during an extended power outage and/or failure of backup generators – “blackout conditions.”

#### **Is a nuclear reactor "meltdown" a catastrophic event?**

- Not necessarily. Nuclear reactors are built with redundant safety systems. Even if the fuel in the reactor melts, the reactor's containment systems are designed to prevent the spread of radioactivity into the environment. Should an event like this occur, containing the radioactive materials could actually be considered a "success" given the scale of this natural disaster that had not been considered in the original design. The nuclear power industry will learn from this event, and redesign our facilities as needed to make them safer in the future.

**What is the ANS doing?**

ANS has reached out to The Atomic Energy Society of Japan (AESJ) to offer technical assistance.

ANS has established an incident communications response team.

This team has compiling relevant news reports and other publicly available information on the ANS blog, which can be found at [ansnuclearcafe.org](http://ansnuclearcafe.org).

The team is also fielding media inquiries and providing reporters with background information and technical perspective as the events unfold.

Finally, the ANS is collecting information from publicly available sources, our sources in government agencies, and our sources on the ground in Japan, to better understand the extent and impact of the incident.

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Saturday, March 12, 2011 12:31 AM  
**To:** Franovich, Mike  
**Subject:** RESPONSE - Youtube video - Fukushima

Thanks, Mike. I'll watch it at home.

---

**From:** Franovich, Mike  
**Sent:** Saturday, March 12, 2011 12:27 AM  
**To:** Morris, Scott  
**Cc:** Weber, Michael  
**Subject:** FW: Youtube video - Fukushima

Scott,

Youtube has a video of the waves hitting the plant. It is about 60 percent into the video where they have footage that appears to be date 3/11/11. Yep you will need to forward to your home account to see this video. There is a shorter version of the video if you search on Fukushima Nuclear ECCS. Tied with the aerial shots available on the web showing the damage, you get a sense of the impact.

<http://www.youtube.com/watch?v=8Ea7hTMIw9U>

Mike

X/26

## Weber, Michael

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**From:** Weber, Michael  
**Sent:** Saturday, March 12, 2011 1:03 AM  
**To:** LIA05 Hoc  
**Cc:** Morris, Scott; Dorman, Dan  
**Subject:** FYI - Two comments from tonight

---

**From:** Giitter, Joseph  
**To:** Weber, Michael  
**Sent:** Sat Mar 12 00:49:38 2011  
**Subject:** Fw: Two comments from tonight

Mike- Please see the second item.

---

**From:** Polickoski, James  
**To:** Giitter, Joseph; Nelson, Robert  
**Cc:** Markley, Michael  
**Sent:** Fri Mar 11 23:44:17 2011  
**Subject:** Two comments from tonight

Joe,

Two quick comments from tonight that I'll pass to you for what it's worth:

1. First, the lack of awareness of the TEPCO press releases is disconcerting considering the level of detail below:

"Fukushima Daini Nuclear Power Station:

Units 1 to 4: shutdown due to earthquake

\* The national government has instructed evacuation for those local residents within 3km radius of the periphery and indoor standby for those local residents between 3km and 10km radius of the periphery.

\* At present, we have decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. These measures are considered to be implemented in Units 1 to 4 and accordingly, we have reported and/or noticed the government agencies concerned."

This is the second major call without the awareness level.

2. Next, though I understand, the US response is currently "engineering" support, I hope that USAID and DOS are not forgetting the in-country and established US nuclear infrastructure presence at the Yokosuka Naval Base. To be a nuclear aircraft carrier capable port requires large capital assets to support emergencies and ship engineering maintenance periods (EDG's, demins, etc.). Equipment that would most certainly be useful to the area north of the base is already in country and is already quality certified as nuclear grade. More importantly it's owned by US resources that can physically move it there with the aircraft and amphib carrier assets in theater. I know this may seem obvious, and I apologize if I am speaking out of turn, but the urgency of this issue compelled me to write this email.

Thanks for listening,  
Jim

X/27

**Taylor, Renee**

---

**From:** Borchardt, Bill  
**Sent:** Saturday, March 12, 2011 7:40 AM  
**To:** Doane, Margaret  
**Subject:** Re: Message from Mr. Sogabe

Thanks  
Bill Borchardt  
Via blackberry

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

**From:** Doane, Margaret  
**To:** Mamish, Nader; Borchardt, Bill; Foggie, Kirk  
**Sent:** Sat Mar 12 07:38:19 2011  
**Subject:** Fw: Message from Mr. Sogabe

Are you aware of this note. The message also went to the Chairman.  
Margie

Sent from an NRC Blackberry  
Margaret Doane

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

**From:** [iwamoto-akiko@jnes.go.jp](mailto:iwamoto-akiko@jnes.go.jp) <[iwamoto-akiko@jnes.go.jp](mailto:iwamoto-akiko@jnes.go.jp)>  
**To:** Doane, Margaret  
**Cc:** Jaczko, Gregory; [sato-tatsuo@jnes.go.jp](mailto:sato-tatsuo@jnes.go.jp) <[sato-tatsuo@jnes.go.jp](mailto:sato-tatsuo@jnes.go.jp)>; [sogabe-katsuhiro@jnes.go.jp](mailto:sogabe-katsuhiro@jnes.go.jp) <[sogabe-katsuhiro@jnes.go.jp](mailto:sogabe-katsuhiro@jnes.go.jp)>; [tomita-kazuhide@jnes.go.jp](mailto:tomita-kazuhide@jnes.go.jp) <[tomita-kazuhide@jnes.go.jp](mailto:tomita-kazuhide@jnes.go.jp)>  
**Sent:** Sat Mar 12 06:24:17 2011  
**Subject:** Message from Mr. Sogabe

Dear Ms. Doane,

President of JNES, Mr. Sogabe, thanks you for your transmitting the warm thoughts and expression from Mr. Jaczko. It is indeed terrible disaster and we are very sorry for the victims of the earthquakes and tsunamis.

We also appreciate your offer of support. For the time being, we feel we grasp well the situation, but it is very encouraging that the experienced American experts are ready to support us.

As for BWR experts, we have already enough support from Japanese BWR vendors, but your kind offer reassures us. In case we will need further expertise, we will let you know.

Right now, we are working hard to have the situation under control. This is the worst event that we ever had in our country, but we hope to get through the challenge.

We will, of course, try to share the information on the event with you as far as we can spare our efforts for that.

With best regards,

\*\*\*\*\*

Akiko Iwamoto  
Assistant Director  
Office of International Programs

x/28



Japan Nuclear Safety Organization (JNES) Tel. +81-3-4511-1911 (direct) Fax. +81-3-4511-1998  
Email: [iwamoto-akiko@jnes.go.jp](mailto:iwamoto-akiko@jnes.go.jp)

\*\*\*\*\*

**Taylor, Renee**

---

**From:** Borchardt, Bill  
**Sent:** Saturday, March 12, 2011 4:23 PM  
**To:** Doane, Margaret  
**Subject:** Re: Two things

Thanks for the correction. Call my cell if you have a chance.  
Bill Borchardt  
Via blackberry

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

**From:** Doane, Margaret  
**To:** Borchardt, Bill  
**Cc:** Ramsey, Jack  
**Sent:** Sat Mar 12 15:48:53 2011  
**Subject:** Two things

1) Tony Ullstes is on a chartered flight, not military. He's with Fairfax and LA Disaster teams.  
2) We sent offers of assistance to both NISA and JNES. They have replied very kindly that at this time they are adequately staffed with expertise to address the issues. They appreciate the offer and knowing that we are there if they need anything.  
Margie

Sent from an NRC Blackberry  
Margaret Doane

X/29

## Taylor, Renee

---

**From:** Borchardt, Bill  
**Sent:** Saturday, March 12, 2011 10:12 PM  
**To:** Weber, Michael  
**Subject:** Re: Response - Q&As

Yes  
Bill Borchardt  
Via blackberry

---

**From:** Weber, Michael  
**To:** Borchardt, Bill  
**Sent:** Sat Mar 12 20:56:36 2011  
**Subject:** Response - Q&As

Thanks. Something is missing in the additional info in answer 6. You on shift?

---

**From:** Borchardt, Bill  
**To:** Weber, Michael  
**Sent:** Sat Mar 12 20:35:55 2011  
**Subject:** Fw: Q&As

Fyi  
Bill Borchardt  
Via blackberry

---

**From:** Harrington, Holly  
**To:** Jaczko, Gregory  
**Cc:** Brenner, Eliot; Hayden, Elizabeth; Borchardt, Bill  
**Sent:** Sat Mar 12 20:16:11 2011  
**Subject:** RE: Q&As

This version deletes per below, and adds information to question 7 per Bill Borchardt

---

**From:** Jaczko, Gregory  
**Sent:** Saturday, March 12, 2011 8:13 PM  
**To:** Harrington, Holly  
**Cc:** Brenner, Eliot; Hayden, Elizabeth; Borchardt, Bill  
**Subject:** Re: Q&As

Let's delete the non public piece related to new reactors. The public statement is all we need for that item at this time

---

**From:** Harrington, Holly  
**To:** Jaczko, Gregory  
**Cc:** Brenner, Eliot; Hayden, Elizabeth  
**Sent:** Sat Mar 12 19:57:42 2011  
**Subject:** Q&As

These are the current Q&As with both answers suitable for the public and additional technical information. We expect these will continue to evolve.

X/30

Holly Harrington

**Taylor, Renee**

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**From:** Borchardt, Bill  
**Sent:** Saturday, March 12, 2011 11:08 PM  
**To:** HOO Hoc  
**Subject:** Fw: Update on Japan Situation  
**Attachments:** ANS Japan Backgrounder.pdf

Please print the backgrounder.  
Bill Borchardt  
Via blackberry

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

**From:** Grobe, Jack  
**To:** Brenner, Eliot  
**Cc:** Jaczko, Gregory; Borchardt, Bill; Virgilio, Martin; Weber, Michael; Leeds, Eric  
**Sent:** Sat Mar 12 22:18:57 2011  
**Subject:** Fw: Update on Japan Situation

Eliot,

Not sure if you have seen this. Thought you would be interested in what the ANS is saying.

Jack  
Jack Grobe, Deputy Director, NRR

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

**From:** Joe Colvin <[president@ans.org](mailto:president@ans.org)>  
**To:** Grobe, Jack  
**Sent:** Sat Mar 12 19:31:59 2011  
**Subject:** Update on Japan Situation

Dear ANS Members:

I'm sure you are aware of the rapidly developing situation in Japan. The ANS is working on multiple fronts to collect credible information on the incident, and distribute that information through mainstream and social media outlets.

We have communicated with our counterparts at the Atomic Energy Society of Japan to offer any technical or other assistance which may be of help.

We have set up a special page on the ANS blog (<http://ansnuclearcafe.org>) to aggregate media reports and provide additional information when we consider it to be credible.

We are also working to organize television appearances and other media availabilities for our members so that some of the misinformation that has been presented by anti-nuclear groups can be rebutted with facts. Our goal is not necessarily to be the first on the air, but to be the most credible.

Attached you will find some talking points, along with our current analysis of the sequence of events at Fukushima I-1. I encourage you to talk to your social networks to ensure that people have the right facts and the proper perspective on this incident.

Let me know what other actions our Society should be taking during this nuclear incident.

2/31

My thoughts and prayers go out to the people of Japan.

Respectfully,

Joe Colvin

**Rebstock, Paul**

---

**From:** opa administrators [opa@nrc.gov]  
**Sent:** Saturday, March 12, 2011 3:46 PM  
**To:** Rebstock, Paul  
**Subject:** \*RESEND\*NRC Experts Deploy to Japan as Part of U.S. Government Response  
**Attachments:** 11-045.pdf

X/32



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-045

March 12, 2011

### NRC EXPERTS DEPLOY TO JAPAN AS PART OF U.S. GOVERNMENT RESPONSE

Two officials from the U.S. Nuclear Regulatory Commission with expertise in boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the federal government agency primarily responsible for providing assistance to countries recovering from disaster.

“We have some of the most expert people in this field in the world working for the NRC and we stand ready to assist in any way possible,” said Chairman Gregory Jaczko.

The NRC has stood up its Maryland-based headquarters Operations Center since the beginning of the emergency in Japan, and is operating on a 24-hour basis.

The NRC will not provide information on the status of that country’s nuclear power plants. Check the NRC web site or blog for the latest information on NRC actions. Other sources of information include:

USAID -- [www.usaid.gov](http://www.usaid.gov)

U.S. Dept. of State -- [www.state.gov](http://www.state.gov)

FEMA -- [www.fema.gov](http://www.fema.gov)

White House -- [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute -- [www.nei.org](http://www.nei.org)

International Atomic Energy Agency -- [www.iaea.org/press/](http://www.iaea.org/press/)

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC’s website at [www.nrc.gov](http://www.nrc.gov).

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.



**Ramsey, Kevin**

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**From:** Nuclear Advocacy Network [NANinfo@nuclearadvocacynetwork.org]  
**Sent:** Saturday, March 12, 2011 12:06 PM  
**To:** Ramsey, Kevin  
**Subject:** Information on the Japanese earthquake and reactors in that region



A [dedicated page](#) on NEI's website provides current information on the status of Japan's nuclear plants in the wake of the country's earthquake. Included are links to information from the Japan Industry Forum (JAIF), Japan's Nuclear and Industrial Safety Agency (NISA), Tokyo Electric Power Company and Tokohu Electric Power Company. Also provided on the web page is a link to NEI's fact sheet, "Nuclear Plants Designed and Constructed to Withstand Earthquakes".

NEI will provide periodic updates on the current status of events in Japan and on tsunami preparations for West Coast nuclear facilities.

[Click here to unsubscribe.](#)

x/3.3

**Ramsey, Kevin**

---

**From:** Operations Center Bulletin  
**Sent:** Saturday, March 12, 2011 4:20 PM  
**To:** OST02 HOC  
**Subject:** NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States

**THIS IS NOT A DRILL.**

The NRC and other Federal agencies are continuing to follow an emergency occurring outside of the United States. Press releases about NRC actions are posted on [www.nrc.gov](http://www.nrc.gov). Information is also available on the NRC External Blog at: <http://public-blog.nrc-gateway.gov>. Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200

Two important reminders:

It is possible that some of us will be requested by colleagues in another country to provide technical advice and assistance during this emergency. It is essential that all such communications be handled through the NRC Operations Center. Any assistance to a foreign government or entity must be coordinated through the NRC Operations Center and the U.S. Department of State (DOS). If you receive such a request, contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) immediately.

If you receive information regarding this or any emergency (foreign or domestic) and you are not certain that the NRC's Incident Response Operations Officer is already aware of that information, you should contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) and provide that information.

No response to this message is required.

**THIS IS NOT A DRILL**

X/3.4

**Ramsey, Kevin**

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**From:** Operations Center Bulletin  
**Sent:** Sunday, March 13, 2011 11:12 AM  
**To:** OST02 HOC  
**Subject:** FW: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States

**THIS IS NOT A DRILL**

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response to the events in Japan. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's Headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC Incident Responders at Headquarters have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from the NRC with expertise on boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the Federal government agency primarily responsible for providing assistance to countries recovering from disasters.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety significant structures, systems, and components be designed to take in account the most severe natural phenomena historically estimated for the site and surrounding area.

The NRC will **not** provide information on the status of Japan's nuclear power plants. For the latest information on NRC actions see the NRC's web site at [www.nrc.gov](http://www.nrc.gov) or blog at <http://public-blog.nrc-gateway.gov>.

**Two important reminders:**

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**Other Sources of Information:**

USAID – [www.usaid.gov](http://www.usaid.gov)  
U.S. Department of State – [www.state.gov](http://www.state.gov)  
FEMA – [www.fema.gov](http://www.fema.gov)  
White House – [www.whitehouse.gov](http://www.whitehouse.gov)  
Nuclear Energy Institute – [www.nei.org](http://www.nei.org)  
International Atomic Energy Agency – [www.iaea.org/press](http://www.iaea.org/press)

No response to this message is required.

X/35

**THIS IS NOT A DRILL**

**Rebstock, Paul**

---

**From:** opa administrators [opa@nrc.gov]  
**Sent:** Saturday, March 12, 2011 2:27 PM  
**To:** Rebstock, Paul  
**Subject:** NRC Experts Deploy to Japan as Part of U.S. Government Response  
**Attachments:** 11-045.pdf

X/36



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-045

March 12, 2011

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U.S. Dept. of State -- [www.state.gov](http://www.state.gov)

FEMA -- [www.fema.gov](http://www.fema.gov)

White House -- [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute -- [www.nei.org](http://www.nei.org)

International Atomic Energy Agency -- [www.iaea.org/press/](http://www.iaea.org/press/)

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**From:** RST01 Hoc  
**To:** Case, Michael; Skeen, David; Ruland, William; Hiland, Patrick; Brown, Frederick; Dudes, Laura; Rini, Brett; Alter, Peter; Hasselberg, Rick; Morlang, Gary; Collins, Frank; Thomas, Eric; Cheok, Michael; Circle, Jeff; Dube, Donald; Brown, Eva; Circle, Jeff; Esmaili, Hossein; Dube, Donald; Laur, Steven; Schaperow, Jason; Fuller, Edward; Salay, Michael; Kolb, Timothy; Shea, James; Isom, James; Bloom, Steven; Padovan, Mark; Williams, Joseph; Williams, Donna; Hart, Ken; Dozier, Jerry  
**Subject:** Protracted RST Watch Bill - Extended to Friday March 18th  
**Date:** Sunday, March 13, 2011 9:47:18 PM

### **RST Members...**

**We have been instructed to expand the list of RST responders that we are pulling into shift work. The shifts have been extended until Friday night. Here is the proposed watch bill. PLEASE DROP BY THE RST ROOM OR CALL THE RST ON-DUTY COORDINATOR AT 301-816-5100 WITH ISSUES AND CONCERNS. Don't call Rick - He'll be sleeping!!!!**

### **Reactor Safety Team Protracted Event Staffing for Japanese Earthquake Response**

<b>Team Position</b>	<b>RST Director</b>	<b>RST Coordinator</b>	<b>Accident Analyst</b>	<b>BWR Expert</b>	<b>RST Communicator</b>
03/13/11 <b>Day</b> 0700 - 1500	Pat Hiland	Peter Alter	Jeff Circle	Tim Kolb	Joe Williams
03/13/11 <b>Swing</b> 1500 - 2300	Fred Brown	R. Hasselberg	Hossein Esmaili	C. Norton	Ken Hart
03/13/11 <b>Mid</b> 2300 - 0700	Dave Skeen	Mike Morlang	Mike Cheok	Eva Brown	none
03/14/11 <b>Day</b> 0700 - 1500	Laura Dudes	Peter Alter	Jeff Circle	Tim Kolb	Steve Bloom
03/14/11 <b>Swing</b> 1500 - 2300	Bill Ruland	R. Hasselberg	Don Dube	C. Norton	Mark Padovan
03/14/11 <b>Mid</b> 2300 - 0700	Mike Case	Brett Rini	Steve Laur	Eva Brown	Jerry Dozier
03/15/11 <b>Day</b> 0700 - 1500	Dave Skeen	Peter Alter	Jeff Circle	Jim Shea	Donna Williams
03/15/11 <b>Swing</b> 1500 - 2300	Fred Brown	Frank Collins	Hossein Esmaili	C. Norton	Jim Isom
03/15/11 <b>Mid</b> 2300 - 0700	Pat Hiland	Mike Morlang	J. Schaperow	Eva Brown	Ken Hart
03/16/11 <b>Day</b> 0700 - 1500	Laura Dudes	R. Hasselberg	Ed Fuller	Tim Kolb	Joe Williams
03/16/11 <b>Swing</b> 1500 - 2300	Bill Ruland	Eric Thomas	Mike Salay	C. Norton	Steve Bloom
03/16/11 <b>Mid</b> 2300 - 0700	Mike Case	Brett Rini	Mike Cheok	Eva Brown	Mark Padovan
03/17/11 <b>Day</b> 0700 - 1500	Dave Skeen	Frank Collins	Don Dube	Jim Shea	Donna Williams
03/17/11 <b>Swing</b> 1500 - 2300	Fred Brown	Mike Morlang	Steve Laur	C. Norton	Jerry Dozier
03/17/11 <b>Mid</b> 2300 - 0700	Pat Hiland	Eric Thomas	Jeff Circle	Eva Brown	Ken Hart
03/18/11 <b>Day</b> 0700 - 1500	Laura Dudes	Peter Alter	Hossein Esmaili	Tim Kolb	Jim Isom
03/18/11 <b>Swing</b> 1500 - 2300	Bill Ruland	Brett Rini	J. Schaperow	C. Norton	Steve Bloom

X/37

**Ross, Robin**

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**From:** Grobe, Jack  
**Sent:** Sunday, March 13, 2011 11:06 PM  
**To:** 'frederick.schiffley@exeloncorp.com'  
**Subject:** Re: TEPCO Earthquake Information Update as of March 14 - Fukushima Daini Unit 1 Restoration from the specific incident stipulated in article 15 clause 1

Thanks.  
Jack Grobe, Deputy Director, NRR

---

**From:** frederick.schiffley@exeloncorp.com <frederick.schiffley@exeloncorp.com>  
**To:** Grobe, Jack  
**Sent:** Sun Mar 13 18:15:17 2011  
**Subject:** Fw: TEPCO Earthquake Information Update as of March 14 - Fukushima Daini Unit 1 Restoration from the specific incident stipulated in article 15 clause 1

Jack,

I assume you are getting these.

Ted Schiffley  
Chairman, BWR Owners' Group (BWROG)  
Sent from my Blackberry Wireless Device.

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

**From:** 松尾 建次 <matsuo.kenji@wash.tepco.com>  
**To:** matsuo.kenji@tepco.co.jp <matsuo.kenji@tepco.co.jp>  
**Sent:** Sun Mar 13 17:08:16 2011  
**Subject:** TEPCO Earthquake Information Update as of March 14 - Fukushima Daini Unit 1 Restoration from the specific incident stipulated in article 15 clause 1

Dear Friends,

Fukushima Daini unit 1 has restored from the specific incident stipulated in article 15, clause 1,  
after it recovered core cooling and achieved cold shutdown.

Contacts:

TEPCO Washington Office 202-457-0790

Kenji Matsuo, General Manager

X/38



Yuichi Nagano, Deputy General Manager,

Masayuki Yamamoto, Manager, Nuclear Power Programs

=====

At 2:48 pm, March 11th 2011, Unit 1 of Fukushima Daini Nuclear Power Station of Tokyo Electric Power Company (Boiling Water Reactor, rated output 1,100 Megawatts) shut down due to the Tohoku-Chihou-Taiheiyou-Oki Earthquake.

After the shut down, in order to cool down the nuclear reactor, we have injected water into the reactor by Reactor Core Isolation Cooling System, and at 3:48 am, March 12th, we started to inject water by Make-up Water Condensate System.

Then, at 5:22am, March 12th, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 5:22am, March 12th, it was determined that a specific incident stipulated in article 15, clause 1 has occurred. (already announced on March 12th, 2011)

In Unit 1, restoration work in reactor cooling function to achieve reactor cold shutdown has been completed and the cooling of the reactor has been initiated at 1:24 am, March 14th. At that moment, it is determined that the specific incidence stipulated in article 15, clause 1 was restored as the water temperature in suppression chamber was below 100 degree Celsius. We will continue to monitor the status of the plant.

In Unit 2 and 4, we will continue the restoration work in reactor cooling function to achieve reactor cold shutdown. (Unit 3 has achieved reactor cold shutdown on March 12th.)

(Safety / Impact to the environment)

In Unit 1, we have not conducted the measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials).

Indication from monitoring posts installed at the site boundary did not show any difference from ordinary level.

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please notify the sender immediately and permanently delete the original and any copy of this e-mail and any printout. Thank You. \*\*\*\*\*

**Rebstock, Paul**

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**From:** opa administrators [opa@nrc.gov]  
**Sent:** Sunday, March 13, 2011 3:34 PM  
**To:** Rebstock, Paul  
**Subject:** NRC Sees No Radiation at Harmful Levels Reaching U.S. From Damaged Japanese Nuclear Power Plants  
**Attachments:** 11-046.pdf



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200  
Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-046

March 13, 2011

### **NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S. FROM DAMAGED JAPANESE NUCLEAR POWER PLANTS**

The Nuclear Regulatory Commission is coordinating with the Department of Energy and other federal agencies in providing whatever assistance the Japanese government requests as they respond to conditions at several nuclear power plant sites following the March 11 earthquake and tsunami. The NRC has sent two boiling-water reactor experts to Japan as part of a U.S. Agency for International Development team.

In response to nuclear emergencies, the NRC works with other U.S. agencies to monitor radioactive releases and predict their path. All the available information indicates weather conditions have taken the small releases from the Fukushima reactors out to sea away from the population. Given the thousands of miles between the two countries, Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

During a nuclear event the NRC has requirements to protect populations around reactors. For instance, the U.S. evacuation standard at 10 miles is roughly equivalent to the 20-kilometer distance recommended in some instances in Japan. The United States also uses sheltering in place and potassium iodide, protective measures also available in Japan.

The NRC will not comment on hour-to-hour developments at the Japanese reactors. This is an ongoing crisis for the Japanese who have primary responsibility.

###

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**Rebstock, Paul**

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**From:** opa administrators [opa@nrc.gov]  
**Sent:** Sunday, March 13, 2011 5:23 PM  
**To:** Rebstock, Paul  
**Subject:** Revised -NRC Sees No Radiation at Harmful Levels Reaching U.S. From Damaged Japanese Nuclear Power Plants  
**Attachments:** 11-046.pdf

X/40



# NRC NEWS

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Blog: <http://public-blog.nrc-gateway.gov>

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March 13, 2011

(Revised)

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In response to nuclear emergencies, the NRC works with other U.S. agencies to monitor radioactive releases and predict their path. All the available information indicates weather conditions have taken the small releases from the Fukushima reactors out to sea away from the population. Given the thousands of miles between the two countries, Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

During a nuclear event the NRC has requirements to protect populations around reactors. For instance, the U.S. evacuation standard at 10 miles is roughly equivalent to the 20-kilometer distance recommended in Japan. The United States also uses sheltering in place and potassium iodide, protective measures also available in Japan. United States citizens in Japan are encouraged to follow the protective measures recommended by the Japanese government. These measures appear to be consistent with steps the United States would take.

The NRC will not comment on hour-to-hour developments at the Japanese reactors. This is an ongoing crisis for the Japanese who have primary responsibility.

###

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**Rebstock, Paul**

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**From:** opa administrators [opa@nrc.gov]  
**Sent:** Monday, March 14, 2011 4:47 PM  
**To:** Rebstock, Paul  
**Subject:** Japanese Government Asks for Assistance with Reactor Events; U.S. Government and NRC  
Preparing Response  
**Attachments:** 11-047.pdf



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200  
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Blog: <http://public-blog.nrc-gateway.gov>

No. 11-047

March 14, 2011

### **JAPANESE GOVERNMENT ASKS FOR ASSISTANCE WITH REACTOR EVENTS; U.S. GOVERNMENT AND NRC PREPARING RESPONSE**

The Japanese government has formally asked for assistance from the United States as it continues to respond to nuclear power plant cooling issues triggered by an earthquake and tsunami on March 11. As part of a larger U.S. government response, the NRC is considering possible replies to the request, which includes providing technical advice.

Included in a U.S. Agency for International Development (USAID) team dispatched earlier to Japan to assist with the disaster are two boiling-water reactor (BWR) experts from the NRC. They are currently in Tokyo offering technical assistance. USAID is the federal government agency primarily responsible for providing help to countries recovering from a disaster.

The NRC has been monitoring the Japanese reactor events via its Headquarters Operations Center in Rockville, Md., on a 24-hour-a-day basis.

The NRC will not comment on hour-to-hour developments at the Japanese reactors. This is an ongoing crisis for the Japanese who have primary responsibility.

###

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## **Weber, Michael**

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**From:** Weber, Michael  
**Sent:** Monday, March 14, 2011 3:46 PM  
**To:** Leeds, Eric  
**Cc:** Hudson, Jody; Tracy, Glenn; Cohen, Miriam  
**Subject:** Response - Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks, Eric. It would be useful to ensure that we capture these in the Knowledge Center.

---

**From:** Leeds, Eric  
**To:** Grobe, Jack; Virgilio, Martin; Weber, Michael  
**Cc:** Nguyen, Quynh; Ruland, William; Skeen, David; Brown, Frederick; Brenner, Eliot; Collins, Elmo; Dean, Bill; Satorius, Mark; McCree, Victor; Schmidt, Rebecca; Boger, Bruce  
**Sent:** Mon Mar 14 15:38:43 2011  
**Subject:** FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI – I've asked Quynh Nguyen to work with the Ops Center to create a share-point site to house our Q&As from the Japanese quake and tsunami. Attached is a list of Q&As we created during the last tsunami, which we should consider. The regions requested Q&As to support their EOC meetings next week with members of the public. I'd like to have something completed by the end of the week for the regions.

Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1270

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**From:** Boger, Bruce  
**Sent:** Monday, March 14, 2011 9:21 AM  
**To:** Leeds, Eric  
**Subject:** FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI—this is a knowledge management challenge. We've collected information in the past, but we have to drag it out and it's not available in the Ops center.

---

**From:** King, Mark  
**Sent:** Monday, March 14, 2011 7:23 AM  
**To:** Boger, Bruce; Brown, Frederick; Thorp, John  
**Cc:** Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

I think the attached is what Bruce is referring to – a natural phenomena limitations document. See attached.

---

**From:** Boger, Bruce  
**Sent:** Monday, March 14, 2011 7:20 AM  
**To:** Brown, Frederick; King, Mark; Thorp, John  
**Cc:** Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Great. Thanks. This is a start. I still remember something that was created to provide some plant-specific protection information. (e.g., Diablo Canyon has some tsunami protection). I believe we explored west coast plants for tsunamis and east coast plants for hurricane flooding protection. If you can't find it easily (or if

X/42

Bruce's gray matter failed again), please reach out to the west coast plant PMs to see what tsunami protection they have. I suspect we'll receive some cards and letters. Thanks again.

---

**From:** Brown, Frederick  
**Sent:** Monday, March 14, 2011 7:10 AM  
**To:** King, Mark; Thorp, John  
**Cc:** Thomas, Eric; Boger, Bruce  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks Mark

---

**From:** King, Mark  
**Sent:** Monday, March 14, 2011 7:08 AM  
**To:** Thorp, John; Boger, Bruce  
**Cc:** Brown, Frederick; Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We had a NUREG issued on this subject back in March 2009.

**TSUNAMI HAZARD ASSESSMENT AT NUCLEAR POWER PLANT SITES IN THE UNITED STATES OF AMERICA**

Click link to view: **[NUREG/CR-6966]**

<http://pbadupws.nrc.gov/docs/ML0915/ML091590193.pdf>

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**From:** Thorp, John  
**Sent:** Monday, March 14, 2011 6:57 AM  
**To:** Boger, Bruce  
**Cc:** Brown, Frederick; King, Mark; Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet

We'll look for it; If we don't find it quickly, we'll start producing one. (Mark King, please start looking)

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Thanks,

John

---

**From:** Boger, Bruce  
**Sent:** Monday, March 14, 2011 6:48 AM  
**To:** Thorp, John  
**Cc:** Brown, Frederick  
**Subject:** Tsunami Fact Sheet

I seem to recall that OpE developed a tsunami fact sheet? Should we dust it off?

### Nuclear Power Plant Design for Natural Phenomena

The NRC regulations require that nuclear power plants be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, and tsunamis. Nuclear power plant design reflects consideration of the most severe natural phenomena that have been historically reported for the plant site and surrounding area. The design also provides sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated. Additionally, the design considers the appropriate combinations of the effects of the natural phenomena with the effects of normal and accident conditions at the plant.

Each nuclear power plant is, therefore, designed to a specific magnitude or strength of a natural phenomenon that is appropriate for the plant site and surrounding area. For example, a nuclear power plant in Texas or Florida (where earthquakes are of small magnitude and rarely occur) would not be designed for the same earthquake loading as a nuclear power plant in California (where earthquakes are more severe and common).

The attached table shows some examples of design values of natural phenomena for the Waterford Steam Electric Station, Unit 3 (Waterford-3), the River Bend Station (River Bend), South Texas Project, Units 1 and 2 (STP), Wolf Creek Generating Station, Unit 1 (Wolf Creek), Diablo Canyon Nuclear Power Plant, Units 1 and 2 (Diablo Canyon), Duane Arnold Energy Center (Duane Arnold), and Grand Gulf Nuclear Station, Unit 1 (Grand Gulf).

TABLE 1 - Comparison of Plant-Specific Design Values for Selected Natural Phenomena

PLANT	EARTHQUAKE (ground acceleration, g)		TORNADO WIND SPEED (mph)		SUSTAINED WIND (mph)	FLOOD height above grade (ft)	TSUNAMI/Storm Surge height above grade (ft)
	SSE <sup>1</sup> (horz.)	SSE (vert.)	Translational Speed (mph)	Tangential Speed (mph)			
Waterford-3	0.10	0.07	60	300	200 at 30 ft.	15.5	14.5
River Bend	0.15	0.10	70	290	100 at 30 ft.	N/A <sup>2</sup>	N/A <sup>3</sup>
STP	0.10	0.07g	70	290	125 at 30 ft.	23	N/A <sup>3</sup>
Wolf Creek	0.20/ 0.12 <sup>4</sup>	0.20/ 0.12 <sup>4</sup>	70	290	100 at 30 ft.	N/A <sup>2</sup>	N/A <sup>5,6</sup>
Diablo Canyon	0.20	0.13	43	157	80 <sup>7</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Duane Arnold	0.12	0.10	60	300	105-145 <sup>8</sup>	12	N/A <sup>5</sup>
Grand Gulf	0.15	0.10	70	290	90 at 30 ft.	N/A <sup>2</sup>	N/A <sup>3</sup>

<sup>1</sup> Safe Shutdown Earthquake

<sup>2</sup> Maximum flood level or tsunami/storm surge is below grade

<sup>3</sup> Tsunami is not a credible event in the Gulf Coast

<sup>4</sup> Power-block/non-power-block

<sup>5</sup> Not a coastal plant

<sup>6</sup> Remote from large bodies of water

<sup>7</sup> Gust factor of 1.1 will apply

<sup>8</sup> Depending on height

**Esmaili, Hossein**

**From:** Lee, Richard  
**Sent:** Monday, March 14, 2011 7:29 AM  
**To:** RES\_DSA\_FSTB  
**Cc:** Voglewede, John  
**Subject:** FW: Talking Points on Implications of Fukushima Accident to U.S. Nuclear Plants  
**Attachments:** ANS Talking Points - 2011-03-13 R1\_2.pdf

fyi

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

**From:** Joe Colvin [<mailto:president@ans.org>]  
**Sent:** Monday, March 14, 2011 1:11 AM  
**To:** Lee, Richard  
**Subject:** Talking Points on Implications of Fukushima Accident to U.S. Nuclear Plants

Dear ANS Members:

Over the last two days, the ANS Crisis Communications team has been very proactive and has handled a multitude of media and press calls. ANS spokespersons have participated in national television, radio and press interviews providing the views of the nuclear science and technology experts within the Society. We are particularly grateful to Dr. Dale Klein who has given tremendous support to the Society and the public in response to the events at Fukushima.

We have begun fielding media inquiries about the implications of the problems at Fukushima on the US program. We have prepared the attached talking points to assist responders to this line of questions. The talking points are consistent with the talking points prepared by the Nuclear Energy Institute (NEI) on the same subject.

Thank you all for your strong support!

Joe

X/43

The predominance of ANS members reside in the U.S. As we interact with our family, neighbors and citizens in our communities many questions will come based on news coverage of the nuclear power plant situation in Japan. These talking points key on the theme 'could it happen in the U.S.?' \*

### ANS Member Talking Points

#### Implications to U.S. nuclear energy program from the Japanese earthquake

It is premature for the technical community to draw conclusions from the earthquake and tsunami tragedy in Japan with regard to the U.S. nuclear energy program. Many opposed to nuclear power will try to use this event to call for changes in the U.S. Japan is facing beyond a "worst case" disaster since we, the technical community, did not hypothesize an event of this magnitude. Thus far, even the most seriously damaged of Japan's 54 reactors have not released radiation at levels that would harm the public. That is testament to the way professionals in our profession operate: our philosophy of defense in-depth, excellent designs, high standards of construction, conduct of operations, and most important the effectiveness of employees in following emergency preparedness planning.

The Nuclear Science and Technology (NS&T) community takes very seriously our commitment to safe operation of any nuclear facility and will incorporate lessons learned based on this experience into our safety and operating procedures. The ANS will facilitate the sharing of technical information so that these lessons receive wide distribution and be archived for future stewards of this technology. Some points to remember from this week:

- Nuclear power plants have proven their value to society in Japan, the United States and elsewhere. They provide large amounts of base load electricity on an around-the-clock basis, and they do so cost-effectively with the lowest electricity production costs of any large energy source. Both Japan and the United States have benefited greatly from nuclear energy; it has been instrumental in the nations' economic success over the past half century and their high standard of living.
- Our hallmark as a NS&T organization is to incorporate operating experience and lessons learned. When we fully understand the facts surrounding the event in Japan, we will share, document and use those insights to make NS&T even safer.
- Nuclear energy has been and will continue to be a key element in meeting America's energy needs. The nuclear industry sets the highest standards for safety and, through our focus on continuous learning; we will incorporate lessons learned from the events in Japan. The dominant factors determining technology used for new generation will be demand for new generation, the competitiveness of nuclear energy in comparison with other sources of electricity generation, and the continued safe operation of U.S. nuclear power plants.

- There has not been a rush to judgment on the part of U.S. policymakers during the first few days of this situation. We believe that is due in part to the recognition on their part that nuclear energy must continue to play a key role in a diversified energy portfolio that strengthens U.S. energy security and fuels economic growth.

\* The genesis of this document is the NEI "Talking Points - Implications to U.S. nuclear energy program of the Japanese earthquake" dated March 13, 2011

## **Weber, Michael**

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**From:** Weber, Michael  
**Sent:** Monday, March 14, 2011 3:17 PM  
**To:** Leeds, Eric  
**Subject:** Response - Confirmation of names for Japan

Outstanding! Thanks, Eric.

---

**From:** Leeds, Eric  
**To:** Collins, Elmo; Satorius, Mark; McCree, Victor; Dean, Bill; Sheron, Brian; Tracy, Glenn; Hudson, Jody; Johnson, Michael; Miller, Charles; Haney, Catherine; Zimmerman, Roy; Stewart, Sharon; Virgilio, Martin; Weber, Michael; Borchardt, Bill; Mamish, Nader; Doane, Margaret; Muesle, Mary  
**Cc:** Boger, Bruce; Grobe, Jack; Ruland, William; Meighan, Sean  
**Sent:** Mon Mar 14 13:11:15 2011  
**Subject:** Confirmation of names for Japan

Folks –

Thanks so much for your help – we have a strong database of names/expertise to support the Japanese. For this first wave, we are sending Chuck Casto, John Monninger, Tony Nakanishi, Tim Kolb, Jack Foster and Richard Devercelly. I believe that Bruce Boger has contacted all those going to join Tony Ulsis and Jim Trapp in Japan.

I imagine that at some point we may need to send a second wave of responders to relieve our first wave. We will let you know as soon as we know if this needs to be done. We are also sensitive not to over-burden any one office.

Thanks again for your support!

Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1270

X/44



**From:** Boger, Bruce  
**To:** Meighan, Sean  
**Subject:** Fw: 2 From NMSS available with BWR Experience  
**Date:** Monday, March 14, 2011 9:44:14 AM

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**From:** Haney, Catherine  
**To:** Leeds, Eric; Grobe, Jack; Boger, Bruce  
**Sent:** Mon Mar 14 08:15:08 2011  
**Subject:** 2 From NMSS available with BWR Experience

Lawrence is a licensed operator on this type of plant (SOP 3938). He also taught degraded core cooling post TMI.

Aby has severe accident experience for this type of unit.

I don't know if I'll be able to listen in to the 9:30 call. Just wanted you to know both are available if you need them to go to Japan.

X/45

**From:** Boger, Bruce  
**To:** Dean, Bill  
**Subject:** RE: Possible support to Japan  
**Date:** Monday, March 14, 2011 10:58:00 AM

---

Thanks, Bill.

---

**From:** Dean, Bill  
**Sent:** Monday, March 14, 2011 10:57 AM  
**To:** Meighan, Sean  
**Cc:** Wilson, Peter; Clifford, James; Roberts, Darrell; Lorson, Raymond; Collins, Daniel; Weerakkody, Sunil; Leeds, Eric; Boger, Bruce; Lew, David  
**Subject:** Possible support to Japan

Region I has several individuals that may be suited to assist as discussed in a conference call with Eric Leeds this morning.

Below are staff for consideration regarding the ongoing events in Japan.

For support on severe accident mitigation. All are knowledgeable of SAMAs and B.5.b strategies. All have considerable BWR backgrounds. These are the three Region I Senior reactor analysts.

1. Bill Cook
2. Wayne Schmidt
3. Chris Cahill

Also, Ray Lorson and Blake Welling, who have been SRIs at BWRs have indicated a willingness to support this initiative.

For expertise on radiological health effects and plume modeling.

1. Ron Nimitz
2. Jim Noggle (worked at Fukushima in the 1980's)

For expertise on incident response

1. Ray McKinley (former BWR 4 SRO)

*Bill*

X/4.6

## Satorius, Mark

---

**From:** Meighan, Sean  
**Sent:** Monday, March 14, 2011 10:07 AM  
**To:** Satorius, Mark  
**Subject:** RE: RIII Japanese Mission nominees

Received.

Thank you.

Very Respectfully  
Sean

---

**From:** Satorius, Mark  
**Sent:** Monday, March 14, 2011 11:01 AM  
**To:** Meighan, Sean  
**Cc:** Boger, Bruce; Leeds, Eric  
**Subject:** RIII Japanese Mission nominees

Sean – I have 2 names. They are listed below w/ as much of a bio as I have thru my own knowledge of the individuals. More info in a couple of hours, if it is relevant:

Mark Ring – Div of Reactor Projects Br Chief for many years. Responsible for Dresden and Quad, I consider him one of the agency's best on BWR 3 and 4's qual in our emerg response org in rst, pmt, and response coordination

Jim McGhee – SRI Quad, former SRO BWR and BWR examiner. Former licensee Ops and Maint mana at entergy BWRs.

X/47

**From:** Boger, Bruce  
**To:** Satorius, Mark  
**Subject:** RE: RIII Japanese Mission nominees  
**Date:** Monday, March 14, 2011 11:04:00 AM

---

Thanks, Mark.

---

**From:** Satorius, Mark  
**Sent:** Monday, March 14, 2011 11:01 AM  
**To:** Meighan, Sean  
**Cc:** Boger, Bruce; Leeds, Eric  
**Subject:** RIII Japanese Mission nominees

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Jim McGhee – SRI Quad, former SRO BWR and BWR examiner. Former licensee Ops and Maint mana at entergy BWRs.

X/48

## Satorius, Mark

---

**From:** Boger, Bruce  
**Sent:** Monday, March 14, 2011 10:05 AM  
**To:** Satorius, Mark  
**Subject:** RE: RIII Japanese Mission nominees

Thanks, Mark.

---

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**To:** Meighan, Sean  
**Cc:** Boger, Bruce; Leeds, Eric  
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Jim Mcghee – SRI Quad, former SRO BWR and BWR examiner. Former licensee Ops and Maint mana at entergy BWRs.

X/49

**From:** Ruland, William  
**To:** Meighan, Sean  
**Subject:** FW:  
**Date:** Monday, March 14, 2011 10:54:00 AM

---

To add to his information.

---

**From:** Giitter, Joseph  
**Sent:** Monday, March 14, 2011 10:39 AM  
**To:** Ruland, William  
**Subject:** RE:

BWR expertise (shift manager for many years at a BWR 4, resident inspector at a BWR 6 (Grand Gulf)).

---

**From:** Ruland, William  
**Sent:** Monday, March 14, 2011 10:04 AM  
**To:** Giitter, Joseph  
**Subject:** RE:

Norton based on what?

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**From:** Giitter, Joseph  
**Sent:** Monday, March 14, 2011 9:47 AM  
**To:** Ruland, William  
**Subject:**

Recommend Chuck Norton to support Japan. I would be willing to go as well (source term, incident response, but not a BWR expert--other than the TTC series many years ago).

Joseph G. Giitter  
Director  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

X/50

**From:** Grobe, Jack  
**To:** Meighan, Sean  
**Subject:** Fw: NRC Support for Japan  
**Date:** Monday, March 14, 2011 9:44:43 AM

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Jack Grobe, Deputy Director, NRR

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**From:** McCree, Victor -  
**To:** Grobe, Jack - -  
**Sent:** Mon Mar 14 09:28:15 2011  
**Subject:** FW: NRC Support for Japan

---

**From:** McCree, Victor  
**Sent:** Monday, March 14, 2011 9:18 AM  
**To:** Leeds, Eric  
**Cc:** Virgilio, Martin  
**Subject:** NRC Support for Japan

Eric,

Here's a brief list of Region II folks that you may want to consider for providing EOC support to the ongoing nuclear events in Japan:

1. **Rudy Bernhard**, Senior Reactor Analyst, Senior Resident Inspector at Grand Gulf; GE SRO Certification at Dresden, Hatch and River Bend; General Electric Construction/Pre-op/Start-up Testing/ and Operations, Browns Ferry Restart support.
2. **Bruno Caballero**, Senior Operator Licensing Examiner, former SRO at Browns Ferry (BWR4/Mark 1)
3. **Len Wert**, SRI Browns Ferry and Hatch (BWR4/Mark 1)
4. **Chuck Casto**, former licensed SRO at Browns Ferry (BWR4/Mark 1)
5. **Joel Munday**, former licensed SRO at Brunswick ((BWR4/Mark 1), SRI at Hatch (BWR4/Mark 1)

Vic

4/51

**From:** Grobe, Jack  
**To:** Haney, Catherine  
**Subject:** Re: 2 From NMSS available with BWR Experience  
**Date:** Monday, March 14, 2011 10:27:58 AM

---

Not necessarily. Eric just wanted to know if we would have to get a quick turnaround for a new passport on the proposed folks. Nader indicated that we could get 24 hour turnaround on an expired passport if necessary. Eric asked that in addition to technical quals if we include whether the passport was current.

Jack Grobe, Deputy Director, NRR

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**From:** Haney, Catherine  
**To:** Grobe, Jack  
**Sent:** Mon Mar 14 10:20:05 2011  
**Subject:** RE: 2 From NMSS available with BWR Experience

Will do.

Does this mean there is high likelihood they will be going?

---

**From:** Grobe, Jack  
**Sent:** Monday, March 14, 2011 9:46 AM  
**To:** Meighan, Sean; Haney, Catherine  
**Subject:** Fw: 2 From NMSS available with BWR Experience

Cathy

Please also get Sean passport information.  
Jack Grobe, Deputy Director, NRR

---

**From:** Haney, Catherine  
**To:** Leeds, Eric; Grobe, Jack; Boger, Bruce  
**Sent:** Mon Mar 14 08:15:08 2011  
**Subject:** 2 From NMSS available with BWR Experience

Lawrence is a licensed operator on this type of plant (SOP 3938). He also taught degraded core cooling post TMI.

Aby has severe accident experience for this type of unit.

I don't know if I'll be able to listen in to the 9:30 call. Just wanted you to know both are available if you need them to go to Japan.

X/52



**From:** Boger, Bruce  
**To:** Ruland, William  
**Subject:** RE: Proposed folks to Japan from DSS  
**Date:** Monday, March 14, 2011 11:03:44 AM

---

Thanks, Bill.

---

**From:** Ruland, William  
**Sent:** Monday, March 14, 2011 9:29 AM  
**To:** Boger, Bruce  
**Subject:** Proposed folks to Japan from DSS

1. Tony Nakanishi - BWR analysis guy, spent fuel pool criticality, speaks Japanese
2. Tony Mendiola - BWR qualified examiner (dated) , SRO certified by GE, Navy Nuke

X/53

## **Weber, Michael**

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**From:** Weber, Michael  
**Sent:** Monday, March 14, 2011 7:59 PM  
**To:** Borchardt, Bill  
**Cc:** LIA05 Hoc; ET01 Hoc; Powell, Amy; Schmidt, Rebecca; Dorman, Dan  
**Subject:** Response - UPDATE re: interagency briefing tomorrow at 1pm

Got it. Liaison Team - note the assignment and initiate a coordinated set of talking points that we can present to Bill tomorrow morning. Please arrange a briefing for Bill tomorrow morning in the Ops Center.

ET Support - please create a log to keep track of assignments and track through to completion. Add this assignment to the list.

Thanks

---

**From:** Borchardt, Bill  
**To:** HOO Hoc; Grobe, Jack; Dorman, Dan; Weber, Michael  
**Cc:** Powell, Amy; Schmidt, Rebecca; Batkin, Joshua; Virgilio, Martin; Rihm, Roger  
**Sent:** Mon Mar 14 16:58:23 2011  
**Subject:** FW: UPDATE re: interagency briefing tomorrow at 1pm

I request the ET in the Ops Center to prepare talking points for my use during this meeting. I would also like an updated status report Tues AM. You might want to start with the briefing sheet Marty used to brief congressional staff this afternoon.

---

**From:** Powell, Amy  
**Sent:** Monday, March 14, 2011 4:15 PM  
**To:** Borchardt, Bill  
**Cc:** Schmidt, Rebecca; Batkin, Joshua; Taylor, Renee; Virgilio, Martin  
**Subject:** UPDATE re: interagency briefing tomorrow at 1pm

Bill –

We just got some additional information about tomorrow's interagency briefing that the White House is arranging with both Senate and House Leadership and Committees. The briefing will be at **1pm on the Senate side (room TBD)**. There will be one briefing that will include staff from both the House and Senate; with both chambers in session, I would not be surprised if a few Members came as well.

Either Becky or I will go down with you – I'll pass along additional information as I get it.

Thanks,  
Amy

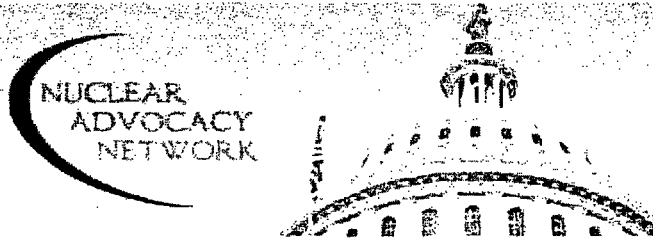
Amy Powell  
Associate Director  
U. S. Nuclear Regulatory Commission  
Office of Congressional Affairs  
Phone: 301-415-1673

X/54

**Ramsey, Kevin**

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**From:** Nuclear Advocacy Network [NANinfo@nuclearadvocacynetwork.org]  
**Sent:** Monday, March 14, 2011 2:44 PM  
**To:** Ramsey, Kevin  
**Subject:** Update: Information on the Japanese earthquake and reactors in that region



A [dedicated page](#) on NEI's website provides current information on the status of Japan's nuclear plants in the wake of the country's earthquake. Included are links to information from the Japan Industry Forum (JAIF), Japan's Nuclear and Industrial Safety Agency (NISA), Tokyo Electric Power Company and Tokohu Electric Power Company.

Resources available on the web page include [FAQs on the Japanese Nuclear Energy Situation](#) and other fact sheets. NAN would also like to provide the [ANS Talking Points](#) to assist in your responses to inquiries and encourage you to visit [www.ansnuclearcafe.org](http://www.ansnuclearcafe.org).

[Click here to unsubscribe](#)

X/55

**Pires, Jose**

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**From:** Pires, Jose  
**Sent:** Monday, March 14, 2011 3:46 PM  
**To:** Pires, Jose; Kammerer, Annie; Ake, Jon  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I  
**Attachments:** Mark I Containments.xlsx

Herman told me that of all the BWR Mark I reactors only 6 are like the ones in Fukushima, the BWR-3 version. Attached is the table with two tabs: one with the 5 US BWR-3 Mark I and the other with all of them. Millstone 1 is closed. Even the BWR-3 may differ from those in Japan (for example, security upgrades).

---

**From:** Pires, Jose  
**Sent:** Monday, March 14, 2011 3:32 PM  
**To:** Pires, Jose; Kammerer, Annie; Ake, Jon  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I

With the table.

---

**From:** Pires, Jose  
**Sent:** Monday, March 14, 2011 3:28 PM  
**To:** Pires, Jose; Kammerer, Annie; Ake, Jon  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I

Annie,

Hernando prepared this table of BWR Mark I reactors in the US. It includes various information including dates of OLs and CPs as well OBE and SSE information as well as design pressure and accident pressure capacity. Thanks,

Jose.

---

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Annie,

Attached is some information on the design for some of the affected Japanese plants.

Slide 2 says that for Fukushima 1 (unit 1) the PGA was 0.17 g. The National Bureau of Standards damage report for the 1978 Miyagiken-Oki earthquake, NBS SP 592, says that the design basis for that reactor was 0.18 g (and it used the Taft record from the 1952 Kern County earthquake response spectra – design was by Blume's company - an author of the NBS report is Peter Ianev who worked for John Blume at the time of the NBS report).

X/56

Slide 10 has values for the seismic design basis loads for other plants (Onagawa, Fukushima 1 and 2 included). It went up since the 1965 design for unit 1. I do not know if unit 1 was upgraded (meaning the mechanical and electrical equipment because the buildings tend to be strong enough).

Slide 30. The first sentence on slide 30 is interesting. It says that the greatest impact of seismic requirements is on mechanical and electrical equipment. I tend to agree with that.

We will try to corroborate the information above with other sources. A comparison of these with PGA's from SHAKECAST may show that the 0.48 g covers the recorded PGA at some sites and not be far from those at other sites.

We are getting a list of US BWR Mark I reactors with their locations and some design parameters (design pressure, OBE and SSE).

Thanks,

Jose.

---

**From:** Kammerer, Annie

**Sent:** Monday, March 14, 2011 12:20 PM

**To:** Hiland, Patrick

**Cc:** Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David; Munson, Clifford; Ake, Jon

**Subject:** RE: Japanese Earthquake Questions

Pat,

I currently have about 17 pages of questions that we should have pulled together in a pretty useful form later today.

Attached, please see a list of unanswered engineering type questions that I pulled from the larger Q&A document. If you can get your guys working on these it would be very helpful. I am hoping to publish a version at about 4 or 5 today. So, if I can get something on these by perhaps 3 or 4, that would be great. Otherwise, we will note that we are working on it.

FYI, Jon Ake and Cliff Munson are working on a separate set of the seismic questions.

Also, I don't have any questions on Seismic PRA, which is a hot topic with industry lately (as evidenced by the recent letter from NEI asserting that SPRA is too undeveloped). I have asked Nilesch to develop some Q&As that we may see coming from industry to us as a result of all of this. Those are not likely to make it into the version I want to get out today, but we can add later.

Annie

---

**From:** Hiland, Patrick

**Sent:** Monday, March 14, 2011 11:05 AM

**To:** Kammerer, Annie

**Cc:** Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David

**Subject:** RE: Japanese Earthquake Questions

NRR/DE has Kamal (seismic structures) to review specific questions. I also have several very experienced structural design engineers on staff (George Thomas & Farhead Farzam) If electrical, I have qualified staff and George Wilson that can help.

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DRESDEN 2	COMMONWEALTH	BWR	SARGENT & LUNDY	GE	9 MI E OF MORRIS, ILL	3	15-Apr-65	10-Jan-66 T		22-Dec-69 ROCK			.10	.067	.2	.133	STEEL	MARK I	158236	0	16	77	135-150	281
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PILGRIM 1	BOSTON EDISON	BWR	BECHTEL	GE	4 MI SE OF PLYMOUTH,	1	30-Jun-67	26-Aug-68 T		15-Sep-72 SOIL			.08	.053	.15	.10	STEEL	MARK I	0	0				
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QUAD CITIES 2	COMMONWEALTH	BWR	SARGENT & LUNDY	GE	20 MI NE OF MOLINE,	3	12-Sep-66	15-Feb-67 T		14-Dec-72 ROCK			.12	.08	.24	.16	STEEL	MARK I	0	0				

[illegible]

## Hogan, Rosemary

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**Sent:** Monday, March 14, 2011 3:46 PM  
**To:** Pires, Jose; Kammerer, Annie; Ake, Jon  
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X/57



To: Kammerer, Annie

Cc: Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David

Subject: RE: Japanese Earthquake Questions

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From: Kammerer, Annie

Sent: Monday, March 14, 2011 10:49 AM

To: Case, Michael; Skeen, David; Hiland, Patrick

Cc: Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer

Subject: RE: Japanese Earthquake Questions

I have compiled a set of questions from all available sources, which I think are pretty complete. I am organizing them now and I have cliff and jon helping me with some of the answers. I've pulled from the questions we got at kashiwazaki, the questions we have that have come in, the GI-199 com plan, the DCNPP com plan, and other places.

I do have a request from RIV to pull a Q&A list for SONGS. If I brainstorm a list can I get help with answers?

What kind of experts do you have?

From: Case, Michael

Sent: Monday, March 14, 2011 7:51 AM

To: Skeen, David; Hiland, Patrick

Cc: Murphy, Andrew; Pires, Jose; Kammerer, Annie; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer

Subject: Japanese Earthquake Questions

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**Cc:** Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David

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DRESDEN 3	COMMONWEALTH	BWR	SARGENT & LUNDY	GE	9 MI E OF MORRIS, ILL	3
MONTICELLO	NORTHERN STATES	BWR	BECHTEL	GE	30 MI NW OF	3
PILGRIM 1	BOSTON EDISON	BWR	BECHTEL	GE	4 MI SE OF PLYMOUTH,	1
QUAD CITIES 1	COMMONWEALTH	BWR	SARGENT & LUNDY	GE	20 MI NE OF MOLINE, ILL	3
QUAD CITIES 2	COMMONWEALTH	BWR	SARGENT & LUNDY	GE	20 MI NE OF MOLINE, ILL	3

APPL DATE	CP DATE	LICENSED	OL DATE	FDN TYPE	SPECTRA	ROBE HOR	ROBE VERT	SSE HOR	SSE VERT
15-Apr-65	10-Jan-66	T	22-Dec-69	ROCK		.10	.067	.2	.133
10-Jan-66	14-Oct-66	T	02-Mar-71	ROCK		.10	.067	.2	.133
12-Aug-66	19-Jun-67	T	09-Jan-81	SOIL		.06	.004	.12	.08
30-Jun-67	26-Aug-68	T	15-Sep-72	SOIL		.08	.053	.15	.10
31-May-66	15-Feb-67	T	14-Dec-72	ROCK		.12	.08	.24	.16
12-Sep-66	15-Feb-67	T	14-Dec-72	ROCK		.12	.08	.24	.16

CTMT CAT	CTMT TYPE	CT VOL FT3	CT VOL FT4	CT OP PRES	CT AC PRES	CT OP TEMP	CT AC TEMP
STEEL	MARK I	158236	0	16	77	135-150	281
STEEL	MARK I	158236	0	16	77	135-150	281
STEEL	MARK I	0	0				
STEEL	MARK I	0	0				
STEEL	MARK I	0	0				
STEEL	MARK I	0	0				

**Pires, Jose**

---

**From:** Pires, Jose  
**Sent:** Tuesday, March 15, 2011 8:44 AM  
**To:** Ake, Jon; Kammerer, Annie  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I

We are going to compare this with another database that we have (for all reactors not just BWRs).

By the way, not all Mark 1 reactors at Fukushima are BWR-3. Only unit 1 was a BWR-3. The other units are BWR-4. It may not be useful at this stage to separate the Mark 1 reactors in the 3, 4, 5 categories.

I would like to read the current version of the Q&As after a meeting this morning with NSIR.

Thanks,

Jose.

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

**From:** Ake, Jon  
**Sent:** Monday, March 14, 2011 11:06 PM  
**To:** Pires, Jose; Kammerer, Annie  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I

Jose et al.,  
here is a another sheet to have if needed, it has summary of CEUS plants with OBE, SSE, IPEEE review level spectra etc,  
cheers-  
jon

---

**From:** Pires, Jose  
**Sent:** Monday, March 14, 2011 3:46 PM  
**To:** Pires, Jose; Kammerer, Annie; Ake, Jon  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I

Herman told me that of all the BWR Mark I reactors only 6 are like the ones in Fukushima, the BWR-3 version. Attached is the table with two tabs: one with the 5 US BWR-3 Mark I and the other with all of them. Millstone 1 is closed. Even the BWR-3 may differ from those in Japan (for example, security upgrades).

**From:** Pires, Jose  
**Sent:** Monday, March 14, 2011 3:32 PM  
**To:** Pires, Jose; Kammerer, Annie; Ake, Jon  
**Cc:** Graves, Herman; Hogan, Rosemary; Candra, Hernando  
**Subject:** RE: Japanese Earthquake Questions -= Table of BWRs Mark I

With the table.

**From:** Pires, Jose  
**Sent:** Monday, March 14, 2011 3:28 PM

X/58

To: Pires, Jose; Kammerer, Annie; Ake, Jon  
Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando  
Subject: RE: Japanese Earthquake Questions == Table of BWRs Mark I

Annie,

Hernando prepared this table of BWR Mark I reactors in the US. It includes various information including dates of OLs and CPs as well OBE and SSE information as well as design pressure and accident pressure capacity.  
Thanks,

Jose.

From: Pires, Jose  
Sent: Monday, March 14, 2011 2:29 PM  
To: Kammerer, Annie; Ake, Jon  
Cc: Graves, Herman; Hogan, Rosemary  
Subject: RE: Japanese Earthquake Questions

Annie,

Attached is some information on the design for some of the affected Japanese plants.

Slide 2 says that for Fukushima 1 (unit 1) the PGA was 0.17 g. The National Bureau of Standards damage report for the 1978 Miyagiken-Oki earthquake, NBS SP 592, says that the design basis for that reactor was 0.18 g (and it used the Taft record from the 1952 Kern County earthquake response spectra – design was by Blume's company - an author of the NBS report is Peter Ianev who worked for John Blume at the time of the NBS report).

Slide 10 has values for the seismic design basis loads for other plants (Onagawa, Fukushima 1 and 2 included). It went up since the 1965 design for unit 1. I do not know if unit 1 was upgraded (meaning the mechanical and electrical equipment because the buildings tend to be strong enough).

Slide 30. The first sentence on slide 30 is interesting. It says that the greatest impact of seismic requirements is on mechanical and electrical equipment. I tend to agree with that.

We will try to corroborate the information above with other sources. A comparison of these with PGA's from SHAKECAST may show that the 0.48 g covers the recorded PGA at some sites and not be far from those at other sites.

We are getting a list of US BWR Mark I reactors with their locations and some design parameters (design pressure, OBE and SSE).

Thanks,

Jose.

From: Kammerer, Annie  
Sent: Monday, March 14, 2011 12:20 PM  
To: Hiland, Patrick  
Cc: Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David; Munson, Clifford; Ake, Jon  
Subject: RE: Japanese Earthquake Questions

Pat,



I currently have about 17 pages of questions that we should have pulled together in a pretty useful form later today.

Attached, please see a list of unanswered engineering type questions that I pulled from the larger Q&A document. If you can get your guys working on these it would be very helpful. I am hoping to publish a version at about 4 or 5 today. So, if I can get something on these by perhaps 3 or 4, that would be great. Otherwise, we will note that we are working on it.

FYI, Jon Ake and Cliff Munson are working on a separate set of the seismic questions.

Also, I don't have any questions on Seismic PRA, which is a hot topic with industry lately (as evidenced by the recent letter from NEI asserting that SPRA is too undeveloped). I have asked Nilesch to develop some Q&As that we may see coming from industry to us as a result of all of this. Those are not likely to make it into the version I want to get out today, but we can add later.

Annie

From: Hiland, Patrick  
Sent: Monday, March 14, 2011 11:05 AM  
To: Kammerer, Annie  
Cc: Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David  
Subject: RE: Japanese Earthquake Questions

NRR/DE has Kamal (seismic structures) to review specific questions. I also have several very experienced structural design engineers on staff (George Thomas & Farhead Farzam) If electrical, I have qualified staff and George Wilson that can help.

From: Kammerer, Annie  
Sent: Monday, March 14, 2011 10:49 AM  
To: Case, Michael; Skeen, David; Hiland, Patrick  
Cc: Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer  
Subject: RE: Japanese Earthquake Questions

I have compiled a set of questions from all available sources, which I think are pretty complete. I am organizing them now and I have cliff and jon helping me with some of the answers. I've pulled from the questions we got at kashiwazaki, the questions we have that have come in, the GI-199 com plan, the DCNPP com plan, and other places.

I do have a request from RIV to pull a Q&A list for SONGS. If I brainstorm a list can I get help with answers?

What kind of experts do you have?

From: Case, Michael  
Sent: Monday, March 14, 2011 7:51 AM  
To: Skeen, David; Hiland, Patrick  
Cc: Murphy, Andrew; Pires, Jose; Kammerer, Annie; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer  
Subject: Japanese Earthquake Questions

Hi guys. I don't know where we stand on the seismic related questions after Sunday's day shift activities (I assume Annie was able to continue). Nevertheless, I have access to some more experts here this morning. If there are residual activities, just let me know and we'll get them working.

**From:** Astwood, Heather  
**To:** Williams, Shawn  
**Subject:** RE: Reimbursable Travel  
**Date:** Monday, March 14, 2011 3:25:00 PM

---

Ok thanks – I was just checking to make sure this was not a special case that we wanted to keep track of separately.

You always respond so quickly! Very helpful.

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

---

**From:** Williams, Shawn  
**Sent:** Monday, March 14, 2011 3:24 PM  
**To:** Astwood, Heather  
**Subject:** RE: Reimbursable Travel

I'm sure Steve will respond back to use Other Foreign Country Reimbursable Travel – J7026. In our revised procedure, there are only three reimbursable travel codes: Korea, IAEA and all Others.

---

**From:** Astwood, Heather  
**Sent:** Monday, March 14, 2011 3:18 PM  
**To:** Dorsey, Cynthia; Dembek, Stephen; Williams, Shawn; Schwartzman, Jennifer  
**Cc:** Foggie, Kirk; Stahl, Eric  
**Subject:** FW: Reimbursable Travel

Hello,

You guys seem to be the ones that could answer this question. If NRR staff are traveling to Japan and it will be reimbursed by Japan do they still use Other Foreign Country Reimbursable Travel – J7026 code or is there going to be a special one set up for this situation?

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

---

**From:** Heida, Bruce  
**Sent:** Monday, March 14, 2011 3:05 PM

X/59

**Rini, Brett**

---

**From:** Sheron, Brian  
**Sent:** Monday, March 14, 2011 2:08 PM  
**To:** Johnson, Michael; Holahan, Gary  
**Cc:** Leeds, Eric; Virgilio, Martin; Borchardt, Bill; Grobe, Jack; Boger, Bruce; Williams, Donna; Wiggins, Jim  
**Subject:** RE: Recommendation for proactive action by NRC in light of Japan events

It would be nice if the industry was even more proactive, by having NEI send us a letter says something to the effect that in the wake of the Japanese disaster here is a list of all the things the commercial U.S. nuclear licensees are doing. Hopefully this would be the kind of stuff Gary mentioned, and maybe other stuff as well.

---

**From:** Johnson, Michael  
**Sent:** Monday, March 14, 2011 2:02 PM  
**To:** Holahan, Gary  
**Cc:** Leeds, Eric; Virgilio, Martin; Borchardt, Bill; Grobe, Jack; Boger, Bruce; Sheron, Brian; Williams, Donna; Wiggins, Jim  
**Subject:** RE: Recommendation for proactive action by NRC in light of Japan events

Thanks Gary. NRR's lead of course. I like the idea using this as an opportunity to highlight the importance of previous requirements/actions as a proactive step. We will need to think about the correct vehicle. I also like having industry involved up front in whatever we decide to do.

---

**From:** Holahan, Gary  
**Sent:** Monday, March 14, 2011 1:55 PM  
**To:** Johnson, Michael  
**Cc:** Leeds, Eric; Virgilio, Martin; Borchardt, Bill; Grobe, Jack; Boger, Bruce; Sheron, Brian; Williams, Donna; Wiggins, Jim  
**Subject:** Recommendation for proactive action by NRC in light of Japan events

Mike,

The events in Japan reinforce the importance of preparedness for the unexpected. In that light, I suggest that NRC take some form of proactive step to reinforce both the Severe Accident Management Guidelines and the 50.54 (hh) (formerly B.5.b) protection for "Loss of Large Area of the plant from fires and explosions".

50.54 (hh) seems particularly relevant, stating "Each licensee shall develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire..."

The NRC could issue Orders, Bulletins, or letters on an expedited basis (in the next few days) to require or encourage licensees to confirm their readiness to implement the severe accident management guidance and strategies under 50.54 (hh). This would not involve any new requirements, but would simply reinforce the existing requirements.

I recommend that we coordinate this activity with the industry to ensure their full and early cooperation. This would be similar to the level of cooperation we undertook for the security bulletins following 9/11.

Gary

X/600

That statement makes me think that RCIC is not running.

Is RCIC part of the ECCS?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:39 PM  
**To:** Nosek, Andrew; Wagner, Brian  
**Subject:** RE:

had been steadily increasing over the time that its emergency core cooling systems had not been active

---

**From:** Nosek, Andrew  
**Sent:** Friday, March 11, 2011 3:36 PM  
**To:** Wagner, Brian; Mills, Daniel  
**Subject:** RE:

What part of that statement makes you think they got RCIC going?

AJ Nosek  
U.S. Nuclear Regulatory Commission  
Division of Systems Analysis  
(301)251-7476

---

**From:** Wagner, Brian  
**Sent:** Friday, March 11, 2011 3:31 PM  
**To:** Mills, Daniel; Nosek, Andrew  
**Subject:** RE:

Or maybe they just took a little while to align it.

---

**From:** Mills, Daniel  
**Sent:** Friday, March 11, 2011 3:20 PM  
**To:** Wagner, Brian; Nosek, Andrew  
**Subject:**

pressure inside the containment of Reactor 1 at Fukushima-Daichi had been steadily increasing over the time that its emergency core cooling systems had not been active. The Tokyo Electric Power Company reported at 0200 local time (1700 GMT) that pressure had increased beyond reference levels, but was within engineered limits, the WNA added.

Does that mean the RCIC was not working and now is?

## Hogan, Rosemary

---

**From:** Kammerer, Annie  
**Sent:** Monday, March 14, 2011 12:20 PM  
**To:** Hiland, Patrick  
**Cc:** Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David; Munson, Clifford; Ake, Jon  
**Subject:** RE: Japanese Earthquake Questions

Pat,

I currently have about 17 pages of questions that we should have pulled together in a pretty useful form later today.

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Annie

---

**From:** Hiland, Patrick  
**Sent:** Monday, March 14, 2011 11:05 AM  
**To:** Kammerer, Annie  
**Cc:** Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer; Case, Michael; Skeen, David  
**Subject:** RE: Japanese Earthquake Questions

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---

**From:** Kammerer, Annie  
**Sent:** Monday, March 14, 2011 10:49 AM  
**To:** Case, Michael; Skeen, David; Hiland, Patrick  
**Cc:** Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer  
**Subject:** RE: Japanese Earthquake Questions

I have compiled a set of questions from all available sources, which I think are pretty complete. I am organizing them now and I have cliff and jon helping me with some of the answers. I've pulled from the questions we got at kashiwazaki, the questions we have that have come in, the GI-199 com plan, the DCNPP com plan, and other places.

I do have a request from RIV to pull a Q&A list for SONGS. If I brainstorm a list can I get help with answers?

What kind of experts do you have?

X/6/1

**Ward, Steven**

---

**From:** tomclements329@cs.com  
**Sent:** Monday, March 14, 2011 10:49 AM  
**To:** tomclements329@cs.com  
**Subject:** MOX Alert - TVA, Energy Northwest & Exploding Japanese MOX Reactor

**MOX Alert - Energy Northwest and TVA MOX Plans & Exploding Japanese MOX Reactor**

Energy Northwest, TVA and DOE officials have remained virtually silent about secret plans to use experimental weapons-grade plutonium fuel (MOX) in the Columbia Generating Station. It is noted that the Fukushima Daiichi Unit 3 exploding reactor is partially loaded with a first batch of reactor-grade MOX, thus making radioactive release potentially worse. Weapons-grade MOX has never even been tested in a boiling water reactor (BWR) and DOE is planning to use it in the GE Mark I design (Browns Ferry and Fukushima Daiichi 1-3 reactors) and GE Mark II (CGS). We will continue efforts to reveal information about this program to the US public.

Tom Clements  
Friends of the Earth

top of homepage - Salem, OR

<http://salem-news.com/>

<http://salem-news.com/articles/march142011/nuke-reactor-wash.php>

**Mar-14-2011 03:05**

**Secret Plan Exposed to Use Surplus Weapons Plutonium in Washington State Nuclear Reactor**

**Salem-News.com**

FOIA Documents Reveal Energy Northwest Plans Plutonium Fuel (MOX) Experiments While Seeking to Control Information Leaks to the Media.

See original Feb. 3, 2011 news release on Friends of the Earth website:

Secret Plan Exposed to Use Surplus Weapons Plutonium in Washington State Nuclear Reactor

<http://www.foe.org/secret-plan-exposed-use-surplus-weapons-plutonium-washington-state-nuclear-reactor>

###

distributed nationally:

from Experts Comment on U.S. Implications of Japanese Reactor Crisis

March 14, 2011

<http://www.foe.org/experts-comment-us-implications-japanese-reactor-crisis>

MOX section:

**As in Japan's Fukushima Unit 3, the use of plutonium fuel (MOX) in U.S. reactors poses special radiation and safety risks.** One of the Japanese reactors under risk of continued fuel melting or explosion is now operating for the first time with part of the core being plutonium fuel. This plutonium mixed oxide (MOX) fuel, shipped from Europe and inserted in Fukushima Unit 3 in September 2010, poses greater risks than traditional uranium fuel. MOX, made from plutonium which is capable of being used in nuclear weapons, is harder to control during reactor operation and results in a more serious radiation release in the event of an accident. The plutonium in the MOX is a result of the reprocessing of

X162

Japanese spent fuel and that reprocessing program. MOX use has long been opposed by public interest groups due to safety, cost and non-proliferation concerns.

Tom Clements, Southeastern nuclear campaign coordinator, Friends of the Earth, said: "In the U.S., the Department of Energy is considering use of MOX fuel in the Tennessee Valley Authority's Browns Ferry reactors, of the same aging Mark I boiling water reactor design as Fukushima Unit 3. Analysis by the Tennessee Valley Authority of unsafe MOX fuel made from surplus weapons plutonium must be halted and the \$850 million request related to this in President Obama's FY2012 must be rejected. The cost of the MOX plant now under construction at the Department of Energy's Savannah River Site has skyrocketed from \$1.4 billion in FY 2004 to \$4.9 billion in FY 2009 and has become a program driven by special interests that profit from it."

See [http://www.fissilematerials.org/blog/2011/03/us\\_plutonium\\_disposition\\_.html](http://www.fissilematerials.org/blog/2011/03/us_plutonium_disposition_.html) and <http://www.foe.org/secret-plan-exposed-use-surplus-weapons-plutonium-washington-state-nuclear-reactor>.

Contact Tom Clements at 803-834-3084 (landline).

**Ward, Steven**

---

**From:** Institute of Nuclear Materials Management [info@inmm.org]  
**Sent:** Monday, March 14, 2011 2:35 PM  
**To:** Ward, Steven  
**Subject:** INMM Asks for Donations to Red Cross in Support of Japan

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Connecting the Leaders in Nuclear Materials Management

Institute of Nuclear Materials Management

**INMM**

March 14, 2011

## INMM Extends Condolences and Support to Japan

The Institute of Nuclear Materials Management wishes to express its condolences and sympathies to the people of Japan, to the government of Japan, and to the members of the INMM Japan Chapter during the aftermath of the earthquake and subsequent tsunami that struck Japan on Friday, March 11.

The loss of life and the physical devastation to Japan are a great tragedy. We offer our support to all those affected directly and indirectly by these disasters and the subsequent crisis at the Fukushima Daiichi nuclear power plant.

The INMM Japan Chapter is one of INMM's most active and largest Regional Chapters, and recently celebrated its 30th Anniversary. The 135 members of the Japan Chapter are not only our respected colleagues but our dear friends, and we offer our support to them during this difficult time.

We encourage anyone wishing to help the victims of the earthquake and tsunami to make a donation to the Red Cross through:

- The [American Red Cross Web site](#)
- The [Japanese Red Cross Web site](#)
- Or by texting REDCROSS to 90999 to give \$10 for Japan Earthquake and Pacific Tsunami relief

Thank you for your generosity.

Sincerely,

Scott Vance  
President, Institute of Nuclear Materials Management

X/63





Institute of Nuclear Material Management  
111 Deer Lake Road, Suite 100, Deerfield, Illinois 60015  
To unsubscribe, please [click here](#)



Ani, Suzanne

---

**From:** DC NAYGN [dcnaygn@gmail.com]  
**Sent:** Monday, March 14, 2011 7:59 AM  
**To:** dcnaygn@gmail.com  
**Subject:** Information on the Japanese earthquake and reactors in that region

To: DC NA-YGN Members

Courtesy of Women in Nuclear

A dedicated page on NEI's website provides current information on the status of Japan's nuclear plants in the wake of the country's earthquake. Included are links to information from the Japan Industry Forum (JAIF), Japan's Nuclear and Industrial Safety Agency (NISA), Tokyo Electric Power Company and Tokohu Electric Power Company. Also provided on the web page is a link to NEI's fact sheet, "Nuclear Plants Designed and Constructed to Withstand Earthquakes".

NEI will provide periodic updates on the current status of events in Japan and on tsunami preparations for West Coast nuclear facilities.

**Rebstock, Paul**

---

**From:** opa administrators [opa@nrc.gov]  
**Sent:** Monday, March 14, 2011 5:08 PM  
**To:** Rebstock, Paul  
**Subject:** Media Advisory-Chairman Jaczko White House Briefing  
**Attachments:** MA\_03-14-2011\_WHBrief.pdf

x/65



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200

Washington, D.C. 20555-0001

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Blog: <http://public-blog.nrc-gateway.gov>

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March 14, 2011

### \*\*\*MEDIA ADVISORY\*\*\*

#### NOTE TO EDITORS

U.S. Nuclear Regulatory Commission Chairman Gregory B. Jaczko briefed reporters at the White House today along with Deputy Energy Secretary Dan Poneman. This briefing will constitute the NRC's sole media appearance for Monday and we direct attention to the White House's transcript of the Chairman's remarks.

## Lee, Richard

---

**From:** Gibson, Kathy  
**Sent:** Monday, March 14, 2011 8:31 PM  
**To:** Lee, Richard; Elkins, Scott; Hoxie, Chris; Santiago, Patricia; Bush-Goddard, Stephanie; Zaki, Tarek  
**Cc:** Scott, Michael  
**Subject:** Re: OpsCenter

No not at this point.

As I understand it, Tony Ulses and Jim Trapp from Region 1 have gone to Japan and Chuck Casto, John Monninger, Tony Nakanishi, Tim Kolb, Jack Foster and Richard Devercelly are going.

Besides Hossein and Mike, Tony Huffert, Casper Sun and Jason Schaperow have been on shifts at the Ops Center. Anybody else from DSA?

Thanks!

----- Original Message -----  
**From:** Lee, Richard  
**To:** Gibson, Kathy  
**Sent:** Mon Mar 14 20:13:07 2011  
**Subject:** RE: OpsCenter

Kathy:

Thanks, I will let them know. Do you whether Charlie or Jason is heading to Japan?

Richard

---

**From:** Gibson, Kathy  
**Sent:** Monday, March 14, 2011 7:31 PM  
**To:** Lee, Richard  
**Cc:** Elkins, Scott; Hoxie, Chris; Scott, Michael; Zaki, Tarek; Uhle, Jennifer  
**Subject:** Re: OpsCenter

Thanks Richard! And Mike and Hossein too!

----- Original Message -----  
**From:** Lee, Richard  
**To:** Gibson, Kathy  
**Cc:** Elkins, Scott; Hoxie, Chris; Scott, Michael; Zaki, Tarek  
**Sent:** Mon Mar 14 18:17:34 2011  
**Subject:** RE: OpsCenter

Mika Salay and Hossein Esmaili have already been assigned to staff the Ops Center since this weekend.

-----Original Message-----  
**From:** Gibson, Kathy  
**Sent:** Monday, March 14, 2011 5:56 PM  
**To:** Lee, Richard; Elkins, Scott; Hoxie, Chris; Scott, Michael; Zaki, Tarek  
**Subject:** OpsCenter  
**Importance:** High

Who do we have that can perform the duties of BWR severe accident analyst for the Ops Center?

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Monday, March 14, 2011 2:47 PM  
**To:** Gibson, Kathy  
**Subject:** RE: Are you calling Sandia?

Jennifer knows. Zero from RES. A sore point upstairs.

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

**From:** Gibson, Kathy  
**Sent:** Monday, March 14, 2011 2:15 PM  
**To:** Scott, Michael  
**Subject:** Are you calling Sandia?

Do you know who the 6 NRC staff are going to Japan?

X/67

## Lee, Richard

**From:** Farmer, Mitchell T. [mailto:farmer@anl.gov]  
**Sent:** Monday, March 14, 2011 9:52 AM  
**To:** Tinkler, Charles  
**Cc:** Basu, Sudhamay; Gavrilas, Mirela; Lee, Richard  
**Subject:** RE: Fukushima

Hi Charlie,

I just wanted to send you a note and let you know that I'm a little concerned about the spent fuel storage pools for Units 1 and 3 for the reasons we've talked about over the years. I know you've probably thought of this but it's a stressful time and I just want to make sure the people you've deployed are thinking about this.

I doubt they have access inside the building due to radiation levels so I'm going to make a suggestion which may or may not be nieve, but given the circumstances I'll make it anyway. I know you can get the aerial lifts that can go up at least 10 stories. I was thinking you could send a brave individual up on that with a fire hose on the exterior of the building with an alarming TLD so that he would know if the radiation level was getting to high. You would use the exterior of the secondary containment as shielding. He could place the hose over the exposed wall and then wire tire that to one of the ibeams so that it doesn't blow off when you start deluge over the edge and onto the deck. The wire tie is imparitive as it'll blow back when you start the pump. If they have an extra fire pump that could push water head to 10 stories, you could get some water over the top and into the pool. This might take 1/2 hour or so to execute and so if the dose rate stays below 20 R/hour this could be pulled off.

I hope you don't mind me making suggestions and if it is problematic, please don't hesitate to let me know. Mirela has my cell phone; call me 24/7 if I can be of any assistance. As you know, you have resources here at the lab and I'm sure management would approve of us supporting you know.

Best Regards,  
Mitch

ps. I wish we were further along on that remote sensing project for the RCIC that we just started for you; that could be quite helpful now.

---

**From:** Tinkler, Charles [mailto:Charles.Tinkler@nrc.gov]  
**Sent:** Saturday, March 12, 2011 1:18 PM  
**To:** Farmer, Mitchell T.  
**Subject:** RE: Fukushima

Thanks Mitch, right now I don't know exactly why they are unable to use their isolation condenser or inject water. Thanks for the reminder on flooding. I appreciate your offer.

---

**From:** Farmer, Mitchell T. [mailto:farmer@anl.gov]  
**Sent:** Friday, March 11, 2011 7:43 PM  
**To:** Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard  
**Cc:** Grandy, Christopher; 'corradin@cae.wisc.edu'  
**Subject:** Fukushima

Hi Mirela, Charlie, Sud, Richard,

Don't know if you are out there. I've been watching the situation at Fukushima and don't like what I'm seeing, at least based on the news reports I have access to. I don't know how long a BWR can go w/o emergency core cooling and not sustain significant core damage but it seems like we're well into that time domain. Is there anything that can be done to



help? I don't know, I'm searching. The one thing we learned from MCCI though: if you fear vessel failure and you have any means to flood the cavity then you should do that. They have siliceous concrete in Japan; too much interaction ex-vessel w/o water and coolability is lost. Let me know if there is anything I can do.

Mitch

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Tuesday, March 15, 2011 5:14 PM  
**To:** Ruland, William; Bahadur, Sher  
**Subject:** THANKS

That was quite a surprise this morning. I would once again like to thank you both for your support in putting me in for the award. It's a true honor and means a lot to me.

To be honest, I've been pretty depressed about that Japanese business, so you gave me a lift today.

Thanks again.

Mike

X/69

**From:** Dean, Bill  
**To:** Boger, Bruce  
**Subject:** Re: Possible support to Japan  
**Date:** Tuesday, March 15, 2011 10:24:31 PM

---

No worries bruce. Sorry I was unavailable when you called.

Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Boger, Bruce  
**To:** Dean, Bill  
**Sent:** Tue Mar 15 10:04:02 2011  
**Subject:** RE: Possible support to Japan

Bill, I believe we had some phone calls pass in the afternoon. As you know, Pete fixed me up when folks started to push me for an immediate answer. Thanks, Bruce

---

**From:** Dean, Bill  
**Sent:** Monday, March 14, 2011 10:57 AM  
**To:** Meighan, Sean  
**Cc:** Wilson, Peter; Clifford, James; Roberts, Darrell; Lorson, Raymond; Collins, Daniel; Weerakkody, Sunil; Leeds, Eric; Boger, Bruce; Lew, David  
**Subject:** Possible support to Japan

Region I has several individuals that may be suited to assist as discussed in a conference call with Eric Leeds this morning.

Below are staff for consideration regarding the ongoing events in Japan.

For support on severe accident mitigation. All are knowledgeable of SAMAs and B.5.b strategies. All have considerable BWR backgrounds. These are the three Region I Senior reactor analysts.

1. Bill Cook
2. Wayne Schmidt
3. Chris Cahill

Also, Ray Lorson and Blake Welling, who have been SRIs at BWRs have indicated a willingness to support this initiative.

For expertise on radiological health effects and plume modeling.

1. Ron Nimitz
2. Jim Noggle (worked at Fukushima in the 1980's)

For expertise on incident response

1. Ray McKinley (former BWR 4 SRO)

X/70

*Bill*

## Dentel, Glenn

---

**From:** Trapp, James  
**Sent:** Tuesday, March 15, 2011 7:27 AM  
**To:** Dentel, Glenn  
**Subject:** FW: 08:40 Mar 15 - Running Update on Japan Emergency (running file attached)

Interesting stuff!

---

**From:** Cherry, Ronald C [CherryRC@state.gov]  
**Sent:** Monday, March 14, 2011 7:43 PM  
**To:** Alan Remick; Aleshia Duncan; Duncan, Aleshia D; Trapp, James; James Trapp (BB); Mears, Jeremy M; Morales, Russell A; Nesheiwat, Julia; Ulses, Anthony; Uchida, Koichi  
**Subject:** FW: 08:40 Mar 15 - Running Update on Japan Emergency (running file attached)

This email is UNCLASSIFIED.

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08:40 Mar 15 - Running Update on Japan Emergency (running file attached)

0840

08:14 March 15, 2011 (Core Exposed at #2 Fukushima Daiichi) NHK on line: A NISA official at a press conference before 8:00 am noted that the fuel core was exposed about 2.7 meters above the water level in reactor No. 2 of Fukushima Daiichi. The length of fuel core exposed is about half the entire length. Right after the sound of an explosion was heard, the amount of radiation was measured at 965.5 microSv. Afterward, the amount decreased to 882 microSV, according to the NISA official.

08:04 March 15, 2011 (GOJ: Blast Heard At #2 Reactor at Fukushima Daiichi) Kyodo reported the sound of a blast was heard Tuesday morning at the troubled No. 2 reactor of the quake-hit Fukushima No. 1 nuclear power plant (Fukushima Daiichi), the government said. The incident occurred at 6:10 a.m. and is feared to have damaged the reactor's pressure-suppression system, the Nuclear and Industrial Safety Agency said, citing a report from the plant's operator Tokyo Electric Power Co. NHK on line reported at 08:04 NISA (Nuclear Safety Agency) noted that at 6:10 there was a sound of explosion in the reactor No. 2 of Fukushima Daiichi at a press conference. CCS Edano assured that no dramatic increase of radiation around the facility. CCS Edano revealed that there was some damage in an equipment connected to the reactor containment vessels called suppression pool. It is possible that the function to contain radiation is not working efficiently, Edano indicated.

**Aaron P. Forsberg**  
Economic Officer  
U.S. Embassy Tokyo  
Tel. (03) 3224-5035  
Fax (03) 3224-5019  
E-mail: [ForsbergAP@state.gov](mailto:ForsbergAP@state.gov)

This email is UNCLASSIFIED.

**From:** RST01 Hoc  
**To:** Hiland, Patrick; Brown, Frederick; Skeen, David; Dudes, Laura; Ruland, William; Case, Michael; Alter, Peter; Hasselberg, Rick; Rini, Brett; Berry, Rollie; Collins, Frank; Morlang, Gary; Schoenebeck, Greg; Kowalczyk, Jeffrey; Sloan, Scott; Circle, Jeff; Esmaili, Hossein; Cheok, Michael; Ward, Leonard; Laur, Steven; Salay, Michael; Schaperow, Jason; Fuller, Edward; Marksberry, Don; Kolb, Timothy; Norton, Charles; Brown, Eva; Shea, James; Vick, Lawrence; Brown, Michael; Williams, Joseph; Hart, Ken; Bloom, Steven; Padovan, Mark; Williams, Donna; Isom, James; Dozier, Jerry; Thorp, John; Kugler, Andrew  
**Subject:** Protracted Event Staffing for Reactor Safety Team Staffing for Japanese Earthquake.doc  
**Date:** Tuesday, March 15, 2011 9:29:50 PM  
**Attachments:** Protracted Event Staffing for Reactor Safety Team Staffing for Japanese Earthquake.doc

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Please see attached RST staffing schedule thru 3/19 swing shift

X/72

### Reactor Safety Team Protracted Event Staffing for Japanese Earthquake Response

Team Position	RST Director	RST Coordinator	Accident Analyst	BWR Expert	RST Communicator
03/13/11 Day 0700 - 1500	Pat Hiland	Peter Alter	Jeff Circle	Tim Kolb	Joe Williams
03/13/11 Swing 1500 - 2300	Fred Brown	R. Hasselberg	Hossein Esmaili	Chuck Norton	Ken Hart
03/13/11 Mid 2300 - 0700	Dave Skeen	Brett Rini (C)	Mike Cheek (C)	Eva Brown (C)	none
03/14/11 Day 0700 - 1500	Laura Dudes	Peter Alter	Jeff Circle	Tim Kolb	Steve Bloom
03/14/11 Swing 1500 - 2300	Bill Ruland (C)	R. Berry (C)	Len Ward (C)	Chuck Norton (C)	Mark Padovan
03/14/11 Mid 2300 - 0700	Mike Case (C)	R. Berry (C)	Steve Laur (C)	Eva Brown (C)	Ken Hart (C)
03/15/11 Day 0700 - 1500	Dave Skeen (C)	R. Hasselberg (C)	Jeff Circle (C)	Jim Shea Peter Alter (C) –	Donna Williams ©
03/15/11 Swing 1500 - 2300	Fred Brown ©	Frank Collins (C)	Michael Salay (C)	Chuck Norton (C)	Jim Isom
03/15/11 Mid 2300 - 0700	Pat Hiland	Mike Morlang (C)	J. Schaperow N/A (Move)	Eva Brown (C)	Ken Hart ©
03/16/11 Day 0700 - 1500	Dave Skeen (C)	R. Hasselberg ©	Ed Fuller (C)	Larry Vick ©	Joe Williams ©
03/16/11 Swing 1500 - 2300	Bill Ruland	Mike Morlang (C)	Hossein Esmaili ©	Chuck Norton (C)	Steve Bloom ©
03/16/11 Mid 2300 - 0700	Mike Case	Rollie Berry (C)	Mike Salay?	Eva Brown (C)	Mark Padovan
03/17/11 Day 0700 - 1500	Laura Dudes (?)	Frank Collins (C)	Jeff Circle (C)	Jim Shea (Peter Alter?)	Donna Williams
03/17/11 Swing 1500 - 2300	Fred Brown	Schoenebeck (C)	Steve Laur	C. Norton (C)	Jerry Dozier
03/17/11 Mid 2300 - 0700	Pat Hiland	Rollie Berry (C)	TBD	Eva Brown (C)	John Thorp (C)
03/18/11 Day 0700 - 1500	Laura Dudes	Peter Alter	Hossein Esmaili	<del>Tim Kolb (N/A)</del> Jim Shea?	Jim Isom
03/18/11 Swing 1500 - 2300	Bill Ruland	G.Schoenebeck ©	J. Schaperow	C. Norton	
03/18/11 Mid 2300 - 0700		Rollie Berry (C)	Don Marksberry?	Mike Brown, Frank Collins,	Andy Kugler
03/19/11 Day 0700 - 1500		Jeff Kowalczyk, Scott Sloan, Greg			

		Schoenebeck			
03/19/11 <b>Swing</b> 1500 - 2300					



**Ramsey, Kevin**

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**From:** ANS Broadcasts [broadcasts@ans.org]  
**Sent:** Tuesday, March 15, 2011 10:38 PM  
**To:** Ramsey, Kevin  
**Subject:** ANS Public Information: Japan Nuclear Reactors  
**Attachments:** Fact React\_1.pdf; Responding to inaccurate information in the news media.pdf

-----  
**1. SERVE AS A MEDIA CONTACT**

**2. HELP CORRECT INACCURATE AND/OR MISLEADING NEWS REPORTS**

**3. SEND US YOUR THOUGHTS, ANECDOTES, SUGGESTIONS OR EXPERTISE TO SHARE ON THE ONGOING JAPAN SITUATION**

-----

Dear ANS Member,

Many of you have told us you are frustrated when you see someone on TV, in a newspaper, or the Internet, claiming to be a "nuclear expert" sharing inaccurate and misleading information about the situation in Japan or nuclear energy generally. **You can do something about it!**

We have established [Japanfacts@ans.org](mailto:Japanfacts@ans.org) to serve as a centralized communications email address for ANS member communications to ANS Headquarters on the Japan situation. ANS staff will make sure the proper person gets your email.

**SERVE AS A MEDIA CONTACT**

There is an **URGENT NEED** for ANS members who can serve as media contacts. The need is particularly urgent for experts on radiation and human health effects, but we are also seeking people who can speak to reactor design and operation, licensing and safety issues, and crisis response activities.

Email [Japanfacts@ans.org](mailto:Japanfacts@ans.org) with **MEDIA** in the subject line-include your name, city/state, phone numbers, area of expertise, and any additional information you think we should know

**HELP CORRECT INACCURATE AND/OR MISLEADING NEWS REPORTS**

**Directly engage** local news media when you read, hear, or view reports that contain technical information about nuclear energy topics that are not factually correct. See the **guidance document** attached that provides some "rules of the road" for talking with the news media.

**Inform the ANS Public Information Committee about what you've communicated** to the news media and the outcome, if any. **Send your reports to** [Japanfacts@ans.org](mailto:Japanfacts@ans.org) with **FACT REACT** in the subject line.

**Ask for help if you need it.** We have cadre of specialists in TV, print and social media who are talking round the clock on how to best address news media coverage of the situation in Japan. **Email** [Japanfacts@ans.org](mailto:Japanfacts@ans.org) with **HELP** in the subject line.

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## ANS RESOURCES

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Thank you all for your efforts in supporting the nuclear community during these challenging times. Our professional responsibility is to provide credible information based on the information on hand, realizing that this information may be incomplete and/or evolving.

Sincerely,

Candace Davison  
Chair, ANS Public Information Committee

Dan Yurman  
Social Media rep, Public Information Committee  
Email: [djysrv@gmail.com](mailto:djysrv@gmail.com) Twitter: @djysrv  
Mobile: 208-521-5726

Laura Scheele  
American Nuclear Society  
Communications & Outreach  
Email: [lscheele@ans.org](mailto:lscheele@ans.org) Twitter: @lscheele  
Phone: (708) 579-8224

- 
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Phone: (708) 579-8224

## **Responding to inaccurate information in the news media**

Take it as a given that in dealing with the technical complexities of the nuclear crisis in Japan, the mainstream news media is going to make mistakes. You can do something about it, but you must use proven methods to do so.

It is OK to reach out to local or national news media using email or telephone, but don't hit the keyboard or keypad before you assemble the facts.

First, ask yourself, "am I technically qualified to really address this issue?" Assuming the answer is yes, assemble a brief set of one-liners that explain your expertise. Use plain English.

Next, tackle the issue at hand. What's factually wrong with the news media report? What facts are needed to make it correct?

Assemble the facts in a rough order of descending order of importance. Keep an eye on the big picture. Do not get wrapped up in hair splitting details.

Write your response using the active voice and in talking points format. Remember, general assignment reporters will not follow detailed technical arguments. You must keep it simple.

Be sure to include your contact information and a summary of your expertise at the end of the talking points.

Once you have your talking points prepared, you are ready to contact the reporter or their editor by email or phone.

## **How talk to a journalist**

Do not argue with a journalist. Stick to the facts.

Communicating with journalists makes a difference. It does not have to be perfect. When you write to journalists, be factual, not rhetorical. Do not personally attack them; that's more likely to convince them that they're in the right. Address them in the language that most journalists are trained to understand - plain English.

Remember, you are responding as expert and viewer. **You are NOT responding on behalf of ANS or your employer.**

Please send us a copy of your emails or notes about telephone conversations (published and unpublished) to [japanfact@ans.org](mailto:japanfact@ans.org).

## Writing letters to the editor

Letters that are intended for publication should usually be drafted more carefully. Here are some tips to keep in mind:

Make one point (or at most two) in your letter, email, or fax. State the point clearly, ideally in the first sentence.

Make your letter timely. If you are not addressing a specific article, editorial or letter that recently appeared in the paper you are writing to, then try to tie the issue you want to write about to a recent event.

Familiarize yourself with the coverage and editorial position of the paper to which you are writing. Refute or support specific statements, address relevant facts that are ignored, but do avoid blanket attacks on the media in general or the newspaper in particular.

Check the letter specifications of the newspaper to which you are writing. Length and format requirements vary from paper to paper. (Generally, roughly two short paragraphs are ideal.) You also must include your name, signature, address and phone number.

Be sure to say something, even one sentence, about your technical expertise, in the letter. You can provide more but don't expect it to be published.

Look at the letters that appear in your paper. Is a certain type of letter usually printed?

Support your facts. If the topic you address is controversial, consider sending documentation along with your letter. But don't overload the editors with too much info.

Keep your letter brief. Type it whenever possible.

Find others to write letters when possible. This will show that other individuals in the community are concerned about the issue. If your letter doesn't get published, perhaps someone else's on the same topic will.

Monitor the paper for your letter. If your letter has not appeared within a week or two, follow up with a call to the editorial department of the newspaper.

An increasing number of broadcast news programs (60 Minutes, All Things Considered, etc.) also solicit and broadcast "letters to the editor." Don't forget these outlets.

Remember, you are responding as expert and viewer. **You are NOT responding on behalf of ANS or your employer.**

Please send us a copy of your letters (published and unpublished) to [japanfacts@ans.org](mailto:japanfacts@ans.org).

## **How to Write an Op-Ed**

Op-eds are longer than letters to the editor, and there is more competition for space. You may want to call the paper for length requirements (usually 600-800 words).

Try to write on a controversial issue being covered at that time. If you can use a professional title that suggests authority, do so. If you work for an organization, get permission to sign the op-ed as a representative of that organization.

Feel free to send it to papers far from where you live, but avoid sending it to two newspapers in the same "market." (Sending to the San Francisco Examiner and the Seattle Times is OK, but not to the Examiner and the San Francisco Chronicle.)

"National" newspapers like the New York Times, Los Angeles Times, Washington Post, Christian Science Monitor and USA Today generally do not accept op-eds that are also being offered to other papers. But you can easily submit the same piece to five or ten local dailies in different regions—greatly increasing your chances of being published.

Assure the op-ed editor in your cover letter that the piece has not been submitted to any other paper in their market. If, on the other hand, you sent it to only one paper, let that paper know you are offering them an exclusive.

In writing op-eds, avoid excessive rhetoric. State the subject under controversy clearly. You are trying to persuade a middle-of-the-road readership. If you rely on facts not commonly found in mainstream media, cite your sources.

Try to think of a catchy title. If you don't, the paper will be more likely to run its own—which may not emphasize your central message. (Even if you do write your own headline, don't be surprised if it appears under a different one.)

Be prepared to shorten and re-submit your article as a letter to the editor in case it does not get accepted as an op-ed.

**From:** [Gavrilas, Mirela](#)  
**To:** [Farmer, Mitchell T.](#)  
**Cc:** [Case, Michael](#)  
**Subject:** RE: Fukushima  
**Date:** Tuesday, March 15, 2011 10:49:34 AM

---

Mitch,

Can you send me your cell phone number again?

Thanks,  
M.

---

**From:** Farmer, Mitchell T. [mailto:[farmer@anl.gov](mailto:farmer@anl.gov)]  
**Sent:** Tuesday, March 15, 2011 9:58 AM  
**To:** Tinkler, Charles  
**Cc:** Basu, Sudhamay; Gavrilas, Mirela; Lee, Richard  
**Subject:** RE: Fukushima

Still worried about pools in 1-3, and whether or not they can gain access to these or the cooling water connections to these pools given the state of the plants. I was thinking about the approach for getting water into these a little more and would suggest that this could be done as an unmanned operation if you attached a pipe to the lift that was off sufficient length to clear the wall of the damaged exterior wall adjacent to the deck of the pool. With a 90 degree elbow on it, you could direct water down into (or at least towards) the pool. The operator could articulate the lift platform with the attached pipe over the wall remotely and once in position you could add water with a fire pump through an attached fire hose.

I don't know if this is helpful but it can't hurt. Although I feel somewhat knowledgeable about accident progression and accident management planning for the reactor, I wonder if the SAMGs also call for keeping track of the spent fuel pool while you are dealing with the reactor situation. If not, this could be a constructive lesson learned.

Again, let me know if you want me to stop.

Mitch

---

**From:** Farmer, Mitchell T.  
**Sent:** Monday, March 14, 2011 8:52 AM  
**To:** 'Tinkler, Charles'  
**Cc:** 'Sud Basu'; Gavrilas, Mirela; Lee, Richard  
**Subject:** RE: Fukushima

Hi Charlie,

I just wanted to send you a note and let you know that I'm a little concerned about the spent fuel storage pools for Units 1 and 3 for the reasons we've talked about over the years. I know you've probably thought of this but it's a stressful time and I just want to make sure the people you've deployed are thinking about this.

I doubt they have access inside the building due to radiation levels so I'm going to make a suggestion which may or may not be naive, but given the circumstances I'll make it anyway. I know you can get

X/74



the aerial lifts that can go up at least 10 stories. I was thinking you could send a brave individual up on that with a fire hose on the exterior of the building with an alarming TLD so that he would know if the radiation level was getting to high. You would use the exterior of the secondary containment as shielding. He could place the hose over the exposed wall and then wire tie that to one of the ibeams so that it doesn't blow off when you start deluge over the edge and onto the deck. The wire tie is imparitive as it'll blow back when you start the pump. If they have an extra fire pump that could push water head to 10 stories, you could get some water over the top and into the pool. This might take 1/2 hour or so to execute and so if the dose rate stays below 20 R/hour this could be pulled off.

I hope you don't mind me making suggestions and if it is problematic, please don't hesitate to let me know. Mirela has my cell phone; call me 24/7 if I can be of any assistance. As you know, you have resources here at the lab and I'm sure management would approve of us supporting you know.

Best Regards,  
Mitch

ps. I wish we were further along on that remote sensing project for the RCIC that we just started for you; that could be quite helpful now.

---

**From:** Tinkler, Charles [mailto:Charles.Tinkler@nrc.gov]  
**Sent:** Saturday, March 12, 2011 1:18 PM  
**To:** Farmer, Mitchell T.  
**Subject:** RE: Fukushima

Thanks Mitch, right now I don't know exactly why they are unable to use their isolation condenser or inject water. Thanks for the reminder on flooding. I appreciate your offer.

---

**From:** Farmer, Mitchell T. [mailto:farmer@anl.gov]  
**Sent:** Friday, March 11, 2011 7:43 PM  
**To:** Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard  
**Cc:** Grandy, Christopher; 'corradin@cae.wisc.edu'  
**Subject:** Fukushima

Hi Mirela, Charlie, Sud, Richard,

Don't know if you are out there. I've been watching the situation at Fukushima and don't like what I'm seeing, at least based on the news reports I have access to. I don't know how long a BWR can go w/o emergency core cooling and not sustain significant core damage but it seems like we're well into that time domain. Is there anything that can be done to help? I don't know, I'm searching. The one thing we learned from MCCI though: if you fear vessel failure and you have any means to flood the cavity then you should do that. They have silieeous concrete in Japan; too much interaction ex-vessel w/o water and coolability is lost. Let me know if there is anything I can do.

Mitch

**From:** [Gavrilas, Mirela](#)  
**To:** [Farmer, Mitchell T.](#)  
**Cc:** [Case, Michael](#); [Gibson, Kathy](#)  
**Subject:** RE: Fukushima  
**Date:** Tuesday, March 15, 2011 4:56:16 PM

---

Thank you, Mitch: Good thinking.

M.

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**From:** Farmer, Mitchell T. [mailto:[farmer@anl.gov](mailto:farmer@anl.gov)]  
**Sent:** Tuesday, March 15, 2011 4:54 PM  
**To:** Tinkler, Charles  
**Cc:** Basu, Sudhamay; Gavrilas, Mirela; Lee, Richard; Grandy, Christopher  
**Subject:** RE: Fukushima

Steve noticed in a washington post article a few minutes ago that from satellite photos they observed steam rising from the spent fuel pool at Unit 3 on Monday. Just thought you should know.

I wanted to try to put this in perspective not knowing much. Sensible heat is about 15 % of the total heat to boil, so if it took 3 days to start boiling, that would mean it would take 20 days to completely boil dry in the whole pool. Assuming that the total pool height is filled 1/3 of the way by the assemblies, with 2/3 of the water layer on top, then the time to boil down to the tops of the assemblies is of the order of  $(2/3) \times 20$  days or 13 days. This is a groping calculation but I know very little like total decay heat level in the pool and the initial water volume and height.

Mitch

---

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**Subject:** Fukushima

Hi Mirela, Charlie, Sud, Richard,

Don't know if you are out there. I've been watching the situation at Fukushima and don't like what I'm seeing, at least based on the news reports I have access to. I don't know how long a BWR can go w/o emergency core cooling and not sustain significant core damage but it seems like we're well into that time domain. Is there anything that can be done to help? I don't know, I'm searching. The one thing we learned from MCCI though: if you fear vessel failure and you have any means to flood the cavity then you should do that. They have siliceous concrete in Japan; too much interaction ex-vessel w/o water and coolability is lost. Let me know if there is anything I can do.

Mitch

## Lee, Richard

**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Tuesday, March 15, 2011 7:27 PM  
**To:** Tinkler, Charles  
**Cc:** Basu, Sudhamay; Gavrilas, Mirela; Lee, Richard; Grandy, Christopher  
**Subject:** RE: Fukushima

I'm sure you know the fire's back in unit 4. As I noted to you earlier Charlie, I heard they did a full core unload into the pool for unit 4 so they could do maintenance on the reactor. I don't know if that's true but at this point I'd have to assume that it is. So, Unit 4 pool has a full core load in it and needs full attention. I think there are a couple of days of time on the other units, but this one needs full attention. Even if they can get up to the stairwell opening and aim a fire hose over towards the pool that would be a great help; use the stairwell as shielding. That's easy for me to say setting here at my computer. I also heard there were holes in the upper structure from the earlier hydrogen explosion in unit 4. It would be really nice if they could use an aerial lift that could go up to the opening with the hose attachment without personnel involved, I don't think this helicopter concept will work. Also, a good soldier with the appropriate weapon could probably make an appropriate opening in the exterior building adjacent to the pool so that a fire hose could be dropped in near or in the pool. I suspect at this time that radiation levels are far too high for near approach. Lifts are available that can go up to 150'; I've pasted in reference for one below (this isn't the greatest but I wanted to confirm that a lift was available). I'm sure they have one somewhere like this in Japan, maybe more compact. Limited data I have indicates the total height of the confinement structure is about 45 m or 150 ft so that this one could reach top of the structure. Sorry, I'm grasping at straws but this needs to be stabilized. I feel a bit helpless here.

<http://www.aerialliftequipment.com/inventory.php?id=226>

Mitch

---

**From:** Farmer, Mitchell T.  
**Sent:** Tuesday, March 15, 2011 3:54 PM  
**To:** 'Tinkler, Charles'  
**Cc:** 'Sud Basu'; Gavrilas, Mirela; 'Lee, Richard'; Grandy, Christopher  
**Subject:** RE: Fukushima

Steve noticed in a Washington Post article a few minutes ago that from satellite photos they observed steam rising from the spent fuel pool at Unit 3 on Monday. Just thought you should know.

I wanted to try to put this in perspective not knowing much. Sensible heat is about 15 % of the total heat to boil, so if it took 3 days to start boiling, that would mean it would take 20 days to completely boil dry in the whole pool. Assuming that the total pool height is filled 1/3 of the way by the assemblies, with 2/3 of the water layer on top, then the time to boil down to the tops of the assemblies is of the order of  $(2/3) \times 20$  days or 13 days. This is a groping calculation but I know very little like total decay heat level in the pool and the initial water volume and height.

Mitch

---

**From:** Farmer, Mitchell T.  
**Sent:** Tuesday, March 15, 2011 8:58 AM  
**To:** 'Tinkler, Charles'  
**Cc:** 'Sud Basu'; Gavrilas, Mirela; 'Lee, Richard'  
**Subject:** RE: Fukushima

Still worried about pools in 1-3, and whether or not they can gain access to these or the cooling water connections to these pools given the state of the plants. I was thinking about the approach for getting water into these a little more and would suggest that this could be done as an unmanned operation if you attached a pipe to the lift that was off sufficient

X/76

length to clear the wall of the damaged exterior wall adjacent to the deck of the pool. With a 90 degree elbow on it, you could direct water down into (or at least towards) the pool. The operator could articulate the lift platform with the attached pipe over the wall remotely and once in position you could add water with a fire pump through an attached fire hose.

I don't know if this is helpful but it can't hurt. Although I feel somewhat knowledgeable about accident progression and accident management planning for the reactor, I wonder if the SAMGs also call for keeping track of the spent fuel pool while you are dealing with the reactor situation. If not, this could be a constructive lessons learned.

Again, let me know if you want me to stop.

Mitch

---

**From:** Farmer, Mitchell T.  
**Sent:** Monday, March 14, 2011 8:52 AM  
**To:** 'Tinkler, Charles'  
**Cc:** 'Sud Basu'; Gavrilas, Mirela; Lee, Richard  
**Subject:** RE: Fukushima

Hi Charlie,

I just wanted to send you a note and let you know that I'm a little concerned about the spent fuel storage pools for Units 1 and 3 for the reasons we've talked about over the years. I know you've probably thought of this but it's a stressful time and I just want to make sure the people you've deployed are thinking about this.

I doubt they have access inside the building due to radiation levels so I'm going to make a suggestion which may or may not be viable, but given the circumstances I'll make it anyway. I know you can get the aerial lifts that can go up at least 10 stories. I was thinking you could send a brave individual up on that with a fire hose on the exterior of the building with an alarming TLD so that he would know if the radiation level was getting to high. You would use the exterior of the secondary containment as shielding. He could place the hose over the exposed wall and then wire tie that to one of the beams so that it doesn't blow off when you start deluge over the edge and onto the deck. The wire tie is imperative as it'll blow back when you start the pump. If they have an extra fire pump that could push water head to 10 stories, you could get some water over the top and into the pool. This might take 1/2 hour or so to execute and so if the dose rate stays below 20 R/hour this could be pulled off.

I hope you don't mind me making suggestions and if it is problematic, please don't hesitate to let me know. Mirela has my cell phone; call me 24/7 if I can be of any assistance. As you know, you have resources here at the lab and I'm sure management would approve of us supporting you know.

Best Regards,  
Mitch

ps. I wish we were further along on that remote sensing project for the RCIC that we just started for you; that could be quite helpful now.

---

**From:** Tinkler, Charles [mailto:Charles.Tinkler@nrc.gov]  
**Sent:** Saturday, March 12, 2011 1:18 PM  
**To:** Farmer, Mitchell T.  
**Subject:** RE: Fukushima

Thanks Mitch, right now I don't know exactly why they are unable to use their isolation condenser or inject water. Thanks for the reminder on flooding. I appreciate your offer.

---

**From:** Farmer, Mitchell T. [mailto:farmer@anl.gov]  
**Sent:** Friday, March 11, 2011 7:43 PM  
**To:** Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard  
**Cc:** Grandy, Christopher; 'corradin@cae.wisc.edu'  
**Subject:** Fukushima

Hi Mirela, Charlie, Sud, Richard,

Don't know if you are out there. I've been watching the situation at Fukushima and don't like what I'm seeing, at least based on the news reports I have access to. I don't know how long a BWR can go w/o emergency core cooling and not sustain significant core damage but it seems like we're well into that time domain. Is there anything that can be done to help? I don't know, I'm searching. The one thing we learned from MCCI though: if you fear vessel failure and you have any means to flood the cavity then you should do that. They have siliceous concrete in Japan; too much interaction ex-vessel w/o water and coolability is lost. Let me know if there is anything I can do.

Mitch

**From:** Chang, Richard  
**To:** Tinkler, Charles  
**Subject:** FYI- FW: GRS request for MELCOR input deck for Mark 1  
**Date:** Wednesday, March 16, 2011 1:02:00 PM

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**From:** Gibson, Kathy  
**Sent:** Wednesday, March 16, 2011 12:59 PM  
**To:** Dehn, Jeff; Santiago, Patricia; Sangimino, Donna-Marie; Scott, Michael; Chang, Richard  
**Subject:** Re: GRS request for MELCOR input deck for Mark 1

I'm doing an interview so I can't engage on this for about a half hour. Please hold the presses until I've had a chance to talk to Brian about Charlie's and Sandia's concerns and come up with a sensible path forward to respond to these requests.

Thanks

---

**From:** Dehn, Jeff  
**To:** Santiago, Patricia; Sangimino, Donna-Marie; Scott, Michael; Gibson, Kathy; Chang, Richard  
**Sent:** Wed Mar 16 12:53:04 2011  
**Subject:** FW: GRS request for MELCOR input deck for Mark 1

FYI, this just came in. Brian's already been in touch w/ Diane @ NEA and the Director General of GRS (Dr. Weiss) about providing the SORCA analysis. I'll be following up with OIP shortly.

Thanks,  
Jeff

---

**From:** Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]  
**Sent:** Wednesday, March 16, 2011 12:47 PM  
**To:** Astwood, Heather; Schwartzman, Jennifer; Dehn, Jeff; Sangimino, Donna-Marie  
**Subject:** FYI: GRS request for MELCOR input deck for Mark 1

Dear all –

I want to keep you informed for requests or exchanges with NEA/NRC, especially if it high level.

GRS was asking for fast action to help combat the shutdown of seven reactors in Germany in wake of the Japan events. Dr. Weiss, director general of GRS, (through the German NEA employee in our division) was making the request.

Since it was Director General of GRS and a counterpart of Brian Sheron on the CSNI board, I sent the request directly to Brian and Bill Borchardt.

Brian (below) responded quickly with help for GRS. And they are very grateful to the NRC.

Best regards,

X/177





**Diane Jackson**, Nuclear Safety Specialist  
Nuclear Safety Division, OECD Nuclear Energy Agency (NEA)  
Tel.: +33 (0)1 45 24 10 55, [Diane.Jackson@oecd.org](mailto:Diane.Jackson@oecd.org)

---

**From:** Weiß, Frank-Peter Prof. Dr. [mailto:Frank-Peter.Weiss@grs.de]  
**Sent:** Wednesday, March 16, 2011 15:51  
**To:** JACKSON Diane, NEA/SURN; Brian.Sheron@nrc.gov; Jennifer.Uhle@nrc.gov  
**Cc:** BREEST Axel, NEA/SURN  
**Subject:** AW: GRS request for MELCOR input deck for Mark 1

Thank you all!

Yes, we are interested in the results of the Peach Bottom SOARCA results!

Regards

Frank-Peter

**Prof. Dr. rer. nat. Frank-Peter Weiss**

Wissenschaftlich-technischer Geschäftsführer / Scientific-technical Director  
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH  
Forschungszentrum, Boltzmannstr. 14  
85748 Garching bei München / near Munich  
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Tel.: +49 89 32004-100  
Fax: +49 89 32004-500  
E-mail: [Frank-Peter.Weiss@grs.de](mailto:Frank-Peter.Weiss@grs.de)  
Internet: <http://www.grs.de>

Vorsitzender des Aufsichtsrates: Parl. Staatssekretärin Ursula Heinen-Esser  
Geschäftsführer: Prof. Dr. Frank-Peter Weiß, Hans J. Steinhauer  
Registergericht: Amtsgericht Koeln, HRB 7665 Sitz der Gesellschaft: Köln

Disclaimer

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**Von:** Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]  
**Gesendet:** Mittwoch, 16. März 2011 15:44  
**An:** Brian.Sheron@nrc.gov; Jennifer.Uhle@nrc.gov  
**Cc:** Weiß, Frank-Peter Prof. Dr.; Axel.BREEST@oecd.org  
**Betreff:** RE: GRS request for MELCOR input deck for Mark 1

Dear Brian –

Thank you for the quick response. Yes, Dr. Weiss would very much appreciate the SOARCA results for Peach Bottom.

Best regards,



**Diane Jackson**, Nuclear Safety Specialist  
Nuclear Safety Division, OECD Nuclear Energy Agency (NEA)  
Tel.: +33 (0)1 45 24 10 55, [Diane.Jackson@oecd.org](mailto:Diane.Jackson@oecd.org)

---

**From:** Sheron, Brian [mailto:Brian.Sheron@nrc.gov]  
**Sent:** Wednesday, March 16, 2011 15:21  
**To:** JACKSON Diane, NEA/SURN; Borchardt, Bill; Uhle, Jennifer  
**Cc:** REIG Javier, NEA/SURN; DUNN LEE Janice, NEA  
**Subject:** RE: GRS request for MELCOR input deck for Mark 1

Diane, Kathy Gibson said that we are checking with the Peach Bottom plant to see if we can release the Peach Bottom MELCOR deck, since it is proprietary.

However, we have already completed consequence analyses for Peach Bottom as part of SOARCA. Would GRS be interested in the SOARCA Results, since the severe accident analyses are already done?

## Gibson, Kathy

---

**From:** Gibson, Kathy  
**Sent:** Wednesday, March 16, 2011 2:17 PM  
**To:** Zigh, Ghani  
**Subject:** Re: Spent Fuel Experiments

We have multiple requests from multiple parties for a plethora of information. This request is in the que. Will talk with you about this when I can.

Thanks

---

**From:** Zigh, Ghani  
**To:** Gibson, Kathy; Scott, Michael  
**Sent:** Wed Mar 16 14:01:31 2011  
**Subject:** FW: Spent Fuel Experiments

What is our decision on sharing the BWR zirc fire data with GE and NEI.  
They are classified as OUO documents.

---

**From:** Durbin, Samuel [<mailto:sdurbin@sandia.gov>]  
**Sent:** Wednesday, March 16, 2011 1:57 PM  
**To:** Zigh, Ghani  
**Subject:** FW: Spent Fuel Experiments

---

**From:** Saito, Earl F. (GE Power & Water) [<mailto:Earl.Saito@gnf.com>]  
**Sent:** Wednesday, March 16, 2011 11:35 AM  
**To:** Durbin, Samuel; Rochau, Gary; Lindgren, Eric; Gauntt, Randall O  
**Cc:** Bonano, Evaristo Jose; Sorenson, Ken B  
**Subject:** RE: Spent Fuel Experiments

Thanks

---

**From:** Durbin, Samuel [<mailto:sdurbin@sandia.gov>]  
**Sent:** Wednesday, March 16, 2011 1:20 PM  
**To:** Rochau, Gary; Lindgren, Eric; Gauntt, Randall O  
**Cc:** Saito, Earl F. (GE Power & Water); Bonano, Evaristo Jose; Sorenson, Ken B  
**Subject:** RE: Spent Fuel Experiments

Gary,

Attached are the three relevant papers that were published in the ANS Transactions - Winter Meeting 2006 / Volume 95. Your will note that the two papers based on the Sandia testing were heavily redacted at the instruction of the NRC. The test information is generally considered Official Use Only. We will need to receive permission from the NRC to release more substantial reports.

Sam

*Samuel Durbin II*  
Sandia National Laboratories  
Advanced Nuclear Fuel Cycle Technologies, Organization 6223  
PO Box 5800 - MS 0747  
Albuquerque, NM 87185-0747  
Office: (505) 284-7850

Fax: (505) 844-2348

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au, Gary  
esday, March 16, 2011 10:32 AM  
, Samuel; Lindgren, Eric; Gauntt, Randall O  
ito Ph. D. ([earl.saito@ge.com](mailto:earl.saito@ge.com)); Bonano, Evaristo Jose  
Spent Fuel Experiments

Sam, Eric, and Randy,

Earl Saito of GE-Hitachi has contacted me regarding some information on your Spent Fuel experiments, in particular, the BWR experiments. GE, as you can imagine, is trying to gather information on spent fuel pool issues for BWRs.

Can you please send the publically released papers you have written to "prime the pump"? I am sure there is material that you cannot share at this time, but I am looking at our NDA agreements to determine what latitude we may have, if any.

Gary E, Rochau, Manager  
Advanced Nuclear Concepts  
Nuclear Energy and Global Security Technologies Center  
6585/2104, Organization 6771  
P.O. Box 5800, MS-1136  
Sandia National Laboratories  
Albuquerque, New Mexico 87105-1136  
Phone: (505)845-7543  
Fax: (505)284-4276

Ani, Suzanne

---

**From:** NEIGA@nei.org  
**Sent:** Wednesday, March 16, 2011 2:01 PM  
**To:** Ani, Suzanne  
**Subject:** \*\*Update 1:15pm March 16\*\* Information on the Japanese Earthquake and Reactors in that Region



**UPDATE AS OF 1:15 P.M. EDT, WEDNESDAY, MARCH 16:**

NEI has posted an updated version of the fact sheet Used Nuclear Fuel Storage at the Fukushima Daiichi Nuclear Power Plant. Also available is a new fact sheet called Industry Taking Action to Ensure Continued Safety at U.S. Nuclear Energy Plants.

As always, please go to <http://resources.nei.org/japan> for the latest updates.

Click [here](#) to unsubscribe

X/19

## **Ward, Steven**

---

**From:** Ward, Steven  
**Sent:** Wednesday, March 16, 2011 11:10 AM  
**To:** 'Mary Beth Nikitin'  
**Subject:** RE: FW: Australian Embassy - event

Mary Beth,

Try NRC's Office of Congressional Affairs (OCA). You can also try our Office of Public Affairs (OPA), but their lines might be more tied up with the public. I'm also including some links to press releases from NRC describing some technical assistance activities. These might actually answer your questions without making any calls (could save you a bunch of time on hold). NRC has also recently put out a SitRep that should be distributed among federal agencies. I'll forward that to you in another email.

NRC Press Releases <http://www.nrc.gov/reading-rm/doc-collections/news/2011/#mar>

Office of Congressional Affairs (OCA)

Raeann Shane , Senior Federal /External Affairs Officer  
Phone: 301-415-1699 \* Email: [Raeann.Shane@nrc.gov](mailto:Raeann.Shane@nrc.gov)

These are the OCA Administrative Assistants, they should know who is actually in today (we are staffing 24/7 so it's not business as usual)  
Jeannette Quesenberry 301-415-7380  
Nancy Belmore 301-415-1776

Office of Public Affairs Mainline 301-415-8200

Hope something hear helps. If not I have other contacts!

Steve

---

**From:** Mary Beth Nikitin [<mailto:MNIKITIN@crs.loc.gov>]  
**Sent:** Wednesday, March 16, 2011 10:53 AM  
**To:** Ward, Steven  
**Subject:** Re: FW: Australian Embassy - event

Hello, Steve, I am trying to get a clear picture of US nuclear-related technical assistance to Japan for the crisis at Fukushima. Do you know whom I should contact at NRC about this? It is for a time-sensitive congressional request.  
THANKS,  
Mary Beth

Mary Beth Nikitin  
Analyst in WMD Nonproliferation  
Foreign Affairs, Defense and Trade Division  
Congressional Research Service  
(202) 707-7745  
[MNikitin@crs.loc.gov](mailto:MNikitin@crs.loc.gov)

>>> "Ward, Steven" <[Steven.Ward@nrc.gov](mailto:Steven.Ward@nrc.gov)> 3/15/2011 6:36 PM >>>

X1 80

FYI This may be of interest to some of you or some of your colleagues. It is short notice though to RSVP. Kevin Witt from ANS received this today and sent it to me in case anyone is interested. -Steve

---

**From:** Witt, Kevin  
**Sent:** Tuesday, March 15, 2011 4:42 PM  
**To:** Ward, Steven  
**Subject:** FW: Australian Embassy - event

---





**From:** Paul-Adler (Washington) [<mailto:Paul.Adler@austrade.gov.au>]  
**Sent:** Tuesday, March 15, 2011 4:41 PM  
**To:** Witt, Kevin  
**Subject:** Australian Embassy - event

Kevin,

The Australian Ambassador to the U.S. is hosting a reception on the evening of March 31<sup>st</sup> at the Australian Embassy in DC. The topic is the Future of Extended Nuclear Deterrence in Asia and the speaker is Professor Andrew O'Neil, Director, Griffith Asia Institute, Griffith University, Queensland. The reception starts at 6:30pm and the location is 1601 Massachusetts Ave, NW. I am contacting you because of your interest and involvement with the local ANS chapter. For anyone who would like to attend I need their name, title, organization, email address and phone number by 11:30 am tomorrow, Wednesday.

Regards,

Paul

Paul Adler  
Australian Trade Commission | Embassy of Australia  
1601 Massachusetts Ave NW | Washington DC 20036  
 [paul.adler@austrade.gov.au](mailto:paul.adler@austrade.gov.au) |  202 797 3157 |  202 250 9249 |  202 797 3300

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## **Bonaccorso, Amy**

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**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 12:18 PM  
**To:** Harrington, Holly; Janbergs, Holly  
**Cc:** Deavers, Ron  
**Subject:** RE: Public Q Response?

Okay – that helps. I got a few emails forwarded from Holly and was set to ignore them – but can send this response.

Thanks,

Amy

---

**From:** Harrington, Holly  
**Sent:** Wednesday, March 16, 2011 12:02 PM  
**To:** Janbergs, Holly  
**Cc:** Deavers, Ron; Bonaccorso, Amy  
**Subject:** RE: Public Q Response?

We appreciate the suggestions of folks with idea to resolve the situation in Japan. 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.

---

**From:** Janbergs, Holly  
**Sent:** Wednesday, March 16, 2011 11:51 AM  
**To:** Harrington, Holly  
**Subject:** Public Q Response?

I am getting a lot of public comments from folks who are offering ideas and so forth to try and help with the situation in Japan, particularly involving the use of liquid nitrogen. I can give them a generic “thanks, we’re looking into it” answer, but I thought it might be helpful to work out a response with someone technical to give them a fuller answer. Would that be okay? If so, whom should I work with?

Beth Janbergs  
Public Affairs Assistant  
301-415-8211



**Bonaccorso, Amy**

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**From:** Operations Center Bulletin  
**Sent:** Wednesday, March 16, 2011 12:51 PM  
**To:** Operations Center Bulletin  
**Subject:** UPDATE: NRC IS RESPONDING TO JAPANESE EVENTS

**THIS IS NOT A DRILL**

**The Office of Public Affairs is expecting a large volume of calls from media and the general public regarding the latest statements from the State Department and the NRC regarding the situation in Japan. ALL CALLS from media or the general public on this topic must be referred to Regional Public Affairs or the 301-415-8200 number for HQ employees.**

**THIS IS NOT A DRILL**

**\*\*\*\*\*Event Information is Attached\*\*\*\*\***

The NRC is responding to an event.

Please contact the NRC Executive Support Team if necessary at 301-816-5100 or reply to this e-mail.

## Bonaccorso, Amy

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**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 1:44 PM  
**To:** Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** FW: Call from DHS

Holly:

Don't know how to answer this one. Any idea who I should send it to?

Thanks,

Amy

---

**From:** Janbergs, Holly  
**Sent:** Wednesday, March 16, 2011 1:42 PM  
**To:** Bonaccorso, Amy  
**Subject:** FW: Call from DHS

---

**From:** Akstulewicz, Brenda  
**Sent:** Wednesday, March 16, 2011 10:12 AM  
**To:** Janbergs, Holly  
**Subject:** Call from DHS

Walter Collins

DHS – NCS

703-235-5080

Confirm radiation model we are using regarding Japan

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209  
[brenda.akstulewicz@nrc.gov](mailto:brenda.akstulewicz@nrc.gov)



## **Bonaccorso, Amy**

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 11:41 AM  
**To:** Deavers, Ron  
**Subject:** RE: Media Question

Interesting. Thanks for passing along.

---

**From:** Deavers, Ron  
**Sent:** Wednesday, March 16, 2011 11:37 AM  
**To:** Deavers, Ron  
**Cc:** Bonaccorso, Amy  
**Subject:** FW: Media Question

Per Holly - ignoring media calls

---

**From:** Akstulewicz, Brenda  
**Sent:** Wednesday, March 16, 2011 11:24 AM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Subject:** Media Question

Jack Dante  
ABC News, DC  
202-222-7662

Wants confirmation that things are definitely taking a turn for the worse.

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209  
[brenda.akstulewicz@nrc.gov](mailto:brenda.akstulewicz@nrc.gov)



## Bonaccorso, Amy

---

**From:** Deavers, Ron  
**Sent:** Wednesday, March 16, 2011 11:36 AM  
**To:** Harrington, Holly  
**Cc:** Bonaccorso, Amy  
**Subject:** RE: Media Question

Ok, thanks.

---

**From:** Harrington, Holly  
**Sent:** Wednesday, March 16, 2011 11:36 AM  
**To:** Deavers, Ron  
**Subject:** RE: Media Question

Ignore. It's a media call

---

**From:** Deavers, Ron  
**Sent:** Wednesday, March 16, 2011 11:34 AM  
**To:** Harrington, Holly  
**Cc:** Bonaccorso, Amy  
**Subject:** FW: Media Question

Holly,

Thanks for language to respond to this.

Ron

---

**From:** Akstulewicz, Brenda  
**Sent:** Wednesday, March 16, 2011 11:24 AM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Subject:** Media Question

Jack Dante  
ABC News, DC  
202-222-7662

Wants confirmation that things are definitely taking a turn for the worse.

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209  
[brenda.akstulewicz@nrc.gov](mailto:brenda.akstulewicz@nrc.gov)



**Bonaccorso, Amy**

---

**From:** Akstulewicz, Brenda  
**Sent:** Wednesday, March 16, 2011 9:19 AM  
**To:** Deavers, Ron; Bonaccorso, Amy; Landau, Mindy; Brenner, Eliot; Burnell, Scott; Chandrathil, Prema; Couret, Ivonne; Dricks, Victor; Hannah, Roger; Harrington, Holly; Hayden, Elizabeth; Janbergs, Holly; Ledford, Joey; McIntyre, David; Mitlyng, Viktoria; Screnci, Diane; Shannon, Valerie; Sheehan, Neil; Uselding, Lara  
**Subject:** New Admin Support at HQ

Hi Everyone!

FYI –

Deanna Royer, who is Frank's admin. assist in NRO, has kindly agreed to help us out. She comes highly recommended and eager to help!

Any questions, please let me know.

Thanks,  
B

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209  
[brenda.akstulewicz@nrc.gov](mailto:brenda.akstulewicz@nrc.gov)



## **Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Wednesday, March 16, 2011 9:00 AM  
**To:** Akstulewicz, Brenda; Shannon, Valerie; Landau, Mindy; Ellmers, Glenn; Janbergs, Holly; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Cc:** Bonaccorso, Amy; Deavers, Ron  
**Subject:** Public Inquiries

For today, if you get public inquiries via phone that you do not want to or can't get to, please take a message and forward to:

[Ron.deavers@nrc.gov](mailto:Ron.deavers@nrc.gov) and [amy.bonaccorso@nrc.gov](mailto:amy.bonaccorso@nrc.gov) .

You may also forward e-mail messages to these two addresses as well.

Pls cc Brenda and myself

X/87

**Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Wednesday, March 16, 2011 8:57 AM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Need me?

Yes come here

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

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 8:37 AM  
**To:** Harrington, Holly  
**Subject:** Re: Need me?

I am in the ops center now- should I come to your office?

Don't know if Q and As are finalized...do you know? Neil has a copy.

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

**From:** Harrington, Holly  
**To:** Bonaccorso, Amy  
**Sent:** Wed Mar 16 08:27:44 2011  
**Subject:** RE: Need me?

Yes please come in to opA

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

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 7:16 AM  
**To:** Harrington, Holly  
**Subject:** Need me?

I am leaving a little late and need some caffeine, so probably will be able to be at WF at 830. I usually roll into CH St at 800.

X/88

**Lee, Richard**

---

**From:** Esmaili, Hossein  
**Sent:** Wednesday, March 16, 2011 9:34 AM  
**To:** Armstrong, Kenneth  
**Cc:** Lee, Richard  
**Subject:** FW: Request for info

**Importance:** High

Ken,

OpCenter: RST team member and I am currently taking shifts since last weekend.  
Japan: No (my experience is in code development and calculations - and they need operational and system experience at this point).  
Expertise: Code development and applications for thermal hydraulics and severe accident analysis

hossein

---

**From:** Gibson, Kathy  
**Sent:** Wednesday, March 16, 2011 8:58 AM  
**To:** RES\_DSA  
**Subject:** Request for info

It seems I need to clarify my information request.

Please let Ken know 3 things:

Are you willing to work in the Ops Center (if asked)? If so what shifts?

Are you willing to go to Japan (if asked)?

We need this by noon.

What is your area of expertise?



**Lee, Richard**

---

**From:** Wagner, Katie  
**Sent:** Wednesday, March 16, 2011 11:58 AM  
**To:** Armstrong, Kenneth  
**Cc:** Lee, Richard  
**Subject:** FW: Request for info

**Importance:** High

Ken,

I just got into the office and saw this email. I have not read through the entire email yet, but will send a basic response now since info. is needed before noon and I have a meeting at noon.

1) Yes willing to work in the Ops Center. Day or night shifts are fine. I operate well at night.

2) No, at this point in time.

3) Area of expertise:

- written and oral communications (i.e. general support)
- have completed the PWR series in Chattanooga

Thanks,  
Katie

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

**From:** Gibson, Kathy  
**Sent:** Wednesday, March 16, 2011 8:59 AM  
**To:** RES\_DSA  
**Subject:** Request for info  
**Importance:** High

It seems I need to clarify my information request.

Please let Ken know 3 things:

Are you willing to work in the Ops Center (if asked)? If so what shifts?

Are you willing to go to Japan (if asked)?

We need this by noon.

What is your area of expertise?

X/90

## **Bonaccorso, Amy**

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 8:20 AM  
**To:** Sheron, Brian; Flory, Shirley  
**Cc:** Donaldson, Leslie; Valentin, Andrea; Kardaras, Tom  
**Subject:** Re: TELEPHONE CALL TO RETURN

I had the same thought....

But- this is business email, not personal, and he speaks in public enough that his name is known in that context.

Next time, probably better to refer people to Exelon's Public Affairs though. I'll ask OPA here when there is a minute...they are busy.

Thanks,  
Amy

---

**From:** Sheron, Brian  
**To:** Bonaccorso, Amy; Flory, Shirley  
**Cc:** Donaldson, Leslie; Valentin, Andrea; Kardaras, Tom  
**Sent:** Wed Mar 16 07:38:19 2011  
**Subject:** RE: TELEPHONE CALL TO RETURN

In retrospect, I'm wondering if we should be giving out phone numbers and other contact information of private citizens to the press.

---

**From:** Bonaccorso, Amy  
**Sent:** Tuesday, March 15, 2011 6:29 PM  
**To:** Flory, Shirley  
**Cc:** Donaldson, Leslie; Valentin, Andrea; Kardaras, Tom; Sheron, Brian  
**Subject:** RE: TELEPHONE CALL TO RETURN

Hi Shirley:

I just called her and gave her his email address. She already managed to get his phone number.

Thanks,

Amy

---

**From:** Flory, Shirley  
**Sent:** Tuesday, March 15, 2011 4:37 PM  
**To:** Bonaccorso, Amy  
**Subject:** TELEPHONE CALL TO RETURN  
**Importance:** High

Amy:

This afternoon we received a telephone call (voicemail) from Elizabeth Crocker (617-365-2707) of Newsweek. Sam Walker suggested she call Brian. She is trying to locate Ed Frederick. She thinks he participated in a TMI program here several years ago. Brian says you are the one that probably could help her.

Thanks – Shirley 301-251-7400

## Bonaccorso; Amy

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 3:22 PM  
**To:** LIA04 Hoc  
**Cc:** Deavers, Ron  
**Subject:** FW: Rad Info

Good afternoon:

I am responding to questions from the public and was advised to send this one on to you – it's from the state of Hawaii.

Thank you,

Amy

---

**From:** Harrington, Holly  
**Sent:** Wednesday, March 16, 2011 3:19 PM  
**To:** Bonaccorso, Amy  
**Cc:** Deavers, Ron; Nguyen, Quynh  
**Subject:** RE: Rad Info

Please e-mail questions from state officials to [lia04.hoc@nrc.gov](mailto:lia04.hoc@nrc.gov)

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 1:59 PM  
**To:** Harrington, Holly  
**Cc:** Deavers, Ron; Nguyen, Quynh  
**Subject:** FW: Rad Info

Holly:

Any idea how we should respond to this one? The person is from Hawaii state gov. I guess I could say that we are not the agency responsible for such screenings and leave it there, but want to make sure there isn't something I am missing.

Thanks,

Amy

---

**From:** OST05 Hoc  
**Sent:** Wednesday, March 16, 2011 12:51 PM  
**To:** Deavers, Ron; Bonaccorso, Amy; Nguyen, Quynh  
**Cc:** Harrington, Holly; Akstulewicz, Brenda; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michael; Turtill, Richard; Virgilio, Rosetta  
**Subject:** FW: Rad Info

See email Q below from Hawaii relative to checking planes from Japan for radiation

---

**From:** Maier, Bill  
**Sent:** Wednesday, March 16, 2011 12:19 PM

**To:** Jeff Eckerd  
**Subject:** RE: Rad Info

Jeff,

NRC does not have a take on this concern as we are not the agency responsible for deciding whether or not to conduct such screenings. I will forward your question up to our Headquarters responders so that they may direct it to the appropriate group/agency.

Bill Maier

---

**From:** Jeff Eckerd [<mailto:jeffrey.eckerd@doh.hawaii.gov>]  
**Sent:** Tuesday, March 15, 2011 9:28 PM  
**To:** Maier, Bill  
**Subject:** Rad Info

Aloha, Bill!

Does NRC have any take on whether planes departing from Japan should be checked for radiation contamination? I'm not sure if you guys have received any calls yet, but we are getting inquiries. Contamination should be very low, if any and is also dependent upon where the aircraft departs from. I just wanted to make sure we are all on the same page and not sending out mixed messages. Please advise.

Thanks!

jeff



**HAWAII STATE DEPARTMENT OF HEALTH**  
HEALTHY PEOPLE - HEALTHY COMMUNITIES - HEALTHY ISLANDS

Jeffrey M. Eckerd, Acting Program Manager  
State of Hawaii - Dept. of Health  
Indoor and Radiological Health Branch  
591 Ala Moana Blvd., Rm. 133  
Honolulu, HI 96813  
Ph. (808) 586-4700 FAX (808) 586-5838  
E-mail: [jeffrey.eckerd@doh.hawaii.gov](mailto:jeffrey.eckerd@doh.hawaii.gov)

**Bonaccorso, Amy**

---

**From:** LIA04 Hoc  
**Sent:** Wednesday, March 16, 2011 3:49 PM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Cc:** OST05 Hoc; McNamara, Nancy  
**Subject:** FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

**Importance:** High

Ron and Amy:

You may wish to touch base with our PMT folks for insights. I can't help on this.

Richard Turtill  
State Liaison – Liaison Team  
Incident Response Center

---

**From:** McNamara, Nancy  
**Sent:** Wednesday, March 16, 2011 3:24 PM  
**To:** LIA04 Hoc; OST05 Hoc  
**Subject:** Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP  
**Importance:** High

1. How is it that the NRC has always defined the emergency planning zone to be out to 10 miles based on worse case scenarios, yet they just recommended a 50 mile evacuation?
2. What does a PAR out to 50 miles say about the current 10 mile EPZ used here in the United States?

x193

**Bonaccorso, Amy**

---

**From:** OST05 Hoc  
**Sent:** Wednesday, March 16, 2011 2:54 PM  
**To:** LIA04 Hoc; LIA12 Hoc; LIA07 Hoc; LIA01 Hoc; LIA02 Hoc; LIA03 Hoc; LIA05 Hoc; LIA06 Hoc; LIA08 Hoc; LIA09 Hoc; LIA10 Hoc; LIA11 Hoc  
**Cc:** Harrington, Holly; Akstulewicz, Brenda; Deavers, Ron; Bonaccorso, Amy  
**Subject:** PUBLIC INQUIRY CONTACTS IN OPA

In the event you have not already received this message, per NRC's Office of Public Affairs, please forward by email any public Qs and contact information you receive and are unable to answer to the following individuals - [Ron.Deavers@nrc.gov](mailto:Ron.Deavers@nrc.gov) and [Amy.Bonaccorso@nrc.gov](mailto:Amy.Bonaccorso@nrc.gov) - with a cc to Holly. [Harrington@nrc.gov](mailto:Harrington@nrc.gov) and [Brenda.Akstulewicz@nrc.gov](mailto:Brenda.Akstulewicz@nrc.gov)

Rosetta  
State Liaison  
NRC Operations Center

1194

## Beasley, Benjamin

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**From:** Beasley, Benjamin  
**Sent:** Wednesday, March 16, 2011 3:35 PM  
**To:** Killian, Lauren  
**Cc:** Kauffman, John  
**Subject:** FW: As per MSNBC investigative reporter

Lauren,

Is there a Q&A in the Comm Plan that addresses Doug's question?

Ben

---

**From:** Tift, Doug  
**Sent:** Wednesday, March 16, 2011 3:24 PM  
**To:** Manoly, Kamal; Scales, Kerby  
**Cc:** Wilson, George; Munson, Clifford; Beasley, Benjamin; Chokshi, Nilesh; Nguyen, Quynh; McNamara, Nancy; Gray, Mel  
**Subject:** RE: As per MSNBC investigative reporter

Thanks, that helps.

But is the reporters statement that our data shows that Indian Point Unit 3 is the plant in the US with the highest risk of suffering core damage from an earthquake an accurate conclusion from our data?

I seem to recall discussions where it was mentioned that the GI-199 data is only valid in aggregate for the nuclear industry, and is not enough data to draw any conclusion about any one reactor site. Is that true?

-Doug

---

**From:** Manoly, Kamal  
**Sent:** Wednesday, March 16, 2011 3:19 PM  
**To:** Scales, Kerby  
**Cc:** Wilson, George; Munson, Clifford; Beasley, Benjamin; Chokshi, Nilesh; Nguyen, Quynh; Tift, Doug; McNamara, Nancy  
**Subject:** RE: As per MSNBC investigative reporter

Kerby,

The list in GI-199 Comm Plan (Q/A23) identifies the plants by name only that are in the continue category for GI-199 (Delta CDF) to request additional information via a generic communication. The GI-199 applies only to plants in Eastern and Central US. The list provided for the top 10 contains interpretation of **total** CDF based on information provided to the reporter concerning all plants in the US. That is why you see Diablo in the list of 10 even though Diablo is not a GI-199 plant.

Kamal

---

**From:** Scales, Kerby  
**Sent:** Wednesday, March 16, 2011 1:47 PM  
**To:** Manoly, Kamal  
**Cc:** Wilson, George; Munson, Clifford; Beasley, Benjamin; Chokshi, Nilesh  
**Subject:** FW: As per MSNBC investigative reporter

Kamal,

Can you review the list below and respond back to George and copy me?

Thanks,

---

**From:** Nguyen, Quynh  
**Sent:** Wednesday, March 16, 2011 1:39 PM  
**To:** Scales, Kerby  
**Cc:** Tift, Doug; Meighan, Sean  
**Subject:** FW: As per MSNBC investigative reporter

Can you get somebody to check this quickly?

Thanks,  
Q

---

**From:** Tift, Doug  
**Sent:** Wednesday, March 16, 2011 12:56 PM  
**To:** OST05 Hoc; LIA04 Hoc; Nguyen, Quynh  
**Cc:** McNamara, Nancy  
**Subject:** FW: As per MSNBC investigative reporter

Please see below list. I think this is referring to GI 199, but the list of plants is completely different from the list in our GI 199 Comm Plan. Did the reporter mis-interpret the GI 199 documents? If so, where did they go wrong?

See Q23:

[http://www.internal.nrc.gov/communications/plans/active/CommPlan\\_Generic\\_Issue199.pdf](http://www.internal.nrc.gov/communications/plans/active/CommPlan_Generic_Issue199.pdf)

-Doug

---

**From:** Giarrusso, John (CDA) [<mailto:John.Giarrusso@state.ma.us>]  
**Sent:** Wednesday, March 16, 2011 11:48 AM  
**To:** McNamara, Nancy; Tift, Doug  
**Subject:** Fw: As per MSNBC investigative reporter

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**From:** DeNicola, Fran (CDA) [<mailto:Fran.Denicola@state.ma.us>]  
**Sent:** Wednesday, March 16, 2011 11:00 AM  
**To:** [john.giarrusso@state.ma.us](mailto:john.giarrusso@state.ma.us) <[John.Giarrusso@state.ma.us](mailto:John.Giarrusso@state.ma.us)>; Viveiros, John L. (CDA) <[John.L.Viveiros@state.ma.us](mailto:John.L.Viveiros@state.ma.us)>; [peter.judge@state.ma.us](mailto:peter.judge@state.ma.us) <[Peter.Judge@state.ma.us](mailto:Peter.Judge@state.ma.us)>; [linda.lecuyer@state.ma.us](mailto:linda.lecuyer@state.ma.us) <[Linda.Lecuyer@state.ma.us](mailto:Linda.Lecuyer@state.ma.us)>  
**Subject:** As per MSNBC investigative reporter

## The top 10

Here are the 10 nuclear power sites with the highest risk of suffering core damage from an earthquake, showing their NRC risk estimates based on 2008 and 1989 geological data. (The full list of 104 reactors is below.)

1. Indian Point 3, Buchanan, N.Y.: 1 in 10,000 chance each year. Old estimate: 1 in 17,241. Increase in risk: 72 percent.



2. Pilgrim 1, Plymouth, Mass.: 1 in 14,493. Old estimate: 1 in 125,000. Increase in risk: 763 percent.
3. Limerick 1 and 2, Limerick, Pa.: 1 in 18,868. Old estimate: 1 in 45,455. Increase in risk: 141 percent.
4. Sequoyah 1 and 2, Soddy-Daisy, Tenn.: 1 in 19,608. Old estimate: 1 in 102,041. Increase in risk: 420 percent.
5. Beaver Valley 1, Shippingport, Pa.: 1 in 20,833. Old estimate: 1 in 76,923. Increase in risk: 269 percent.
6. Saint Lucie 1 and 2, Jensen Beach, Fla.: 1 in 21,739. Old estimate: N/A.
7. North Anna 1 and 2, Louisa, Va.: 1 in 22,727. Old estimate: 1 in 31,250. Increase in risk: 38 percent.
8. Oconee 1, 2 and 3, Seneca, S.C.: 1 in 23,256. Old estimate: 1 in 100,000. Increase in risk: 330 percent.
9. Diablo Canyon 1 and 2, Avila Beach, Calif.: 1 in 23,810. Old estimate: N/A.

Advertise | AdChoices

10. Three Mile Island, Middletown, Pa.: 1 in 25,000. Old estimate: 1 in 45,455. Increase in risk: 82 percent.

Rini, Brett

---

**From:** Sheron, Brian  
**Sent:** Wednesday, March 16, 2011 2:05 PM  
**To:** Dion, Jeanne  
**Subject:** FW: Planning for upcoming, short notice Commission meeting  
**Attachments:** Scheduling NoteMar2011\_JapaneseEvent agh 3-16-2011.docx

Here 'tis.....

---

**From:** Ruland, William  
**Sent:** Wednesday, March 16, 2011 1:19 PM  
**To:** Williams, Donna; Uhle, Jennifer; Sheron, Brian; Moore, Scott; Miller, Charles; Brenner, Eliot; Haney, Catherine; Dorman, Dan; Wiggins, Jim; Evans, Michele; Doane, Margaret; Mamish, Nader  
**Cc:** Johnson, Michael; Holahan, Gary; Leeds, Eric; Grobe, Jack; Howe, Allen  
**Subject:** Planning for upcoming, short notice Commission meeting

Folks,

Attached find a early draft of a scheduling note for a Commission meeting that may be held as early as this coming Monday, March 21<sup>st</sup>. NRR has been assigned as the lead to pull the meeting together. As you could imagine, this will take some effort. To help with coordination, please provide me a contact so that we can draw on your expertise and help to make this happen. Alan Howe, currently deputy director of DORL, has the lead to pull this together.

I know you have many questions. I'd ask for your patience as we try to get this done. I'll keep you updated through the contact that you provide to us.

Thank you very much.

Bill Ruland

## SCHEDULING NOTE

**Title:** BRIEFING ON JAPANESE EVENT and US RESPONSE (Public?)

**Purpose:** To provide the Commission a status on the recent event in Japan, and to provide an overview of staff actions to date, early planned actions

**Scheduled:** March XX, 2011  
9:00 am

**Duration:** Approx. 2 hours

**Location:** Commissioners' Conference Room OWFN

**Participants:** **Presentation**

**NRC Staff Panel** **50 mins.\***

**Bill Borchardt**, Executive Director for Operations **15 mins.\***  
Topic: Overview of Japanese Event and U.S. response

**Mike Weber**, Deputy Executive Director Materials, Waste, Research, State, Tribal and Compliance Programs **10 mins.\***  
Topic: Potential consequences; what will be seen in U.S.

**Marty Virgilio**, Deputy Executive Director for Reactor and Preparedness Programs **10 mins.\***  
Topic: Situation assessment for U.S. reactors and applicants

**Elliot Brenner**, OPA **5 mins.\***  
Topic: Communication Challenges

**Eric Leeds**, Director, NRR **10 mins.\***  
Topic: Path forward; Near term and longer term

**Commission Q & A** **30 mins.**

**Discussion – Wrap-up** **5 mins.**

**Break** **10 mins.**

**Closed session**

**Strategy and agenda planning**

Documents:  
Staff background material due to SECY: March \_\_, 2011.

Slides due to SECY: March \_\_, 2011.

**Rini, Brett**

---

**From:** Sheron, Brian  
**Sent:** Wednesday, March 16, 2011 1:49 PM  
**To:** Case, Michael; Coe, Doug; Correia, Richard; Gibson, Kathy; Lui, Christiana; Richards, Stuart; Sangimino, Donna-Marie; Scott, Michael; Uhle, Jennifer; Valentin, Andrea  
**Subject:** FW: NRR Actions: near-term  
**Importance:** High

FYI.

---

**From:** Leeds, Eric  
**Sent:** Wednesday, March 16, 2011 1:14 PM  
**To:** Virgilio, Martin; Weber, Michael  
**Cc:** Borchardt, Bill; Boger, Bruce; Grobe, Jack; Ruland, William; Johnson, Michael; Sheron, Brian; Evans, Michele  
**Subject:** NRR Actions: near-term  
**Importance:** High

Please see below. NRR has assembled a team, led by an SES manager to evaluate near term actions for the agency's response to the Japanese event. At this time, we are considering inspection as well as a generic communication and a review of "sensitive" licensing actions". I will keep you informed as we go forward. I have discussed the current situation in Japan with the RAs and our preliminary thoughts for regulatory actions going forward.

We have also prepared a scheduling note for the commission meeting for next week. We will send it to you.

Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1270

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**From:** Brown, Frederick  
**Sent:** Wednesday, March 16, 2011 11:32 AM  
**To:** Leeds, Eric; Boger, Bruce; Grobe, Jack  
**Subject:** FW: Action: Consider potential on-site activities in near-term  
**Importance:** High

FYI

---

**From:** Brown, Frederick  
**Sent:** Wednesday, March 16, 2011 11:17 AM  
**To:** Roberts, Darrell; Clifford, James; Croteau, Rick; Jones, William; Croteau, Rick; Darrell Roberts; James Clifford; Jones, William; Kennedy, Kriss; Shear, Gary; Troy Pruett; West, Steven  
**Cc:** Vogel, Anton; Wilson, Peter; Miller, Chris; Weerakkody, Sunil; O'Brien, Kenneth; Reynolds, Steven; Munday, Joel; Moorman, James; Christensen, Harold; Westreich, Barry  
**Subject:** Action: Consider potential on-site activities in near-term  
**Importance:** High

On the DRA call today, I'm going to float the potential for either a smart sample or a TI to look at the following areas:

- Licensee verification of 50.54(hh)(2) current status and readiness;
- Licensee verification of SBO current status and readiness consistent with their coping strategy;
- Licensee verification of Internal and External Flooding design features consistency with their licensing basis; and
- Licensee verification that their 50.54(hh)(2) equipment would survive a seismic event undamaged.

If you have thoughts, I'd like to hear them, and you may want to prep your DRAs.

Thanks,  
Fred

**Dion, Jeanne**

---

**From:** Rivera-Lugo, Richard  
**Sent:** Wednesday, March 16, 2011 11:42 AM  
**To:** Dion, Jeanne  
**Subject:** RE: Tsunami Related Reports 3

LOL! Thanks! ☺

Let me know if there is anything else that I can help you with.

Richie

*Richard Rivera-Lugo*, EIT, MEM  
Technical Assistant (Acting)  
U.S. Nuclear Regulatory Commission – HQ  
RES/DE  
Ph. 301-251-7652  
Fax 301-251-7420  
Mail M.S. C5C07M  
E-mail [Richard.Rivera-Lugo@nrc.gov](mailto:Richard.Rivera-Lugo@nrc.gov)



Please consider the Environment before printing this e-mail.

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**From:** Dion, Jeanne  
**Sent:** Wednesday, March 16, 2011 11:41 AM  
**To:** Rivera-Lugo, Richard  
**Subject:** RE: Tsunami Related Reports 3

Thanks! You rock!

---

**From:** Rivera-Lugo, Richard  
**Sent:** Wednesday, March 16, 2011 11:41 AM  
**To:** Dion, Jeanne  
**Subject:** Tsunami Related Reports 3

The report from NOAA is too big to send over email, but here is a direct link from our SharePoint site where you can download it.

[http://portal.nrc.gov/edo/res/de/sgseb/Tsunami%20Generation%20and%20Propagation%20Modeling/Interim%20Products/NOAA%20nrc\\_finalreport%20AMk.pdf](http://portal.nrc.gov/edo/res/de/sgseb/Tsunami%20Generation%20and%20Propagation%20Modeling/Interim%20Products/NOAA%20nrc_finalreport%20AMk.pdf)

Also, here are the links that contain the basic information on the referenced contracts.

N6401 – NOAA

[http://portal.nrc.gov/edo/res/de/sgseb/Lists/seismic\\_projects/DispForm.aspx?ID=20&Source=http%3A%2F%2Fportal%2Enrc%2Egov%2Fedo%2Fres%2Fde%2Fsgseb%2FLists%2FSeismic%2520Projects%2FAIItems%2Easpx%3FPaged%3DTRUE%26p%5FTitle%3DN6180%253a%2520IAEA%2520Extra%252dBudgetary%2520Program%2520%2528EBP%2529%2520on%2520Seismic%2520Hazard%26p%5FID%3D15%26View%3D%257bFD7DDE04%252d8E30%252d4E69%252d94A9%252dB4A3AF782DE7%257d%26PageFirstRow%3D11](http://portal.nrc.gov/edo/res/de/sgseb/Lists/seismic_projects/DispForm.aspx?ID=20&Source=http%3A%2F%2Fportal%2Enrc%2Egov%2Fedo%2Fres%2Fde%2Fsgseb%2FLists%2FSeismic%2520Projects%2FAIItems%2Easpx%3FPaged%3DTRUE%26p%5FTitle%3DN6180%253a%2520IAEA%2520Extra%252dBudgetary%2520Program%2520%2528EBP%2529%2520on%2520Seismic%2520Hazard%26p%5FID%3D15%26View%3D%257bFD7DDE04%252d8E30%252d4E69%252d94A9%252dB4A3AF782DE7%257d%26PageFirstRow%3D11)

N6480 – USGS

[http://portal.nrc.gov/edo/res/de/sgseb/Lists/seismic\\_projects/DispForm.aspx?ID=5&Source=http%3A%2F%2Fportal%2Enrc%2Egov%2Fedo%2Fres%2Fde%2Fsgseb%2FLists%2FSeismic%2520Projects%2FAIItems%2Easpx%3FPaged%3DTRUE%26p%5FTitle%3DN6180%253a%2520IAEA%2520Extra%252dBudgetary%2520Pr](http://portal.nrc.gov/edo/res/de/sgseb/Lists/seismic_projects/DispForm.aspx?ID=5&Source=http%3A%2F%2Fportal%2Enrc%2Egov%2Fedo%2Fres%2Fde%2Fsgseb%2FLists%2FSeismic%2520Projects%2FAIItems%2Easpx%3FPaged%3DTRUE%26p%5FTitle%3DN6180%253a%2520IAEA%2520Extra%252dBudgetary%2520Pr)

49.8

Hope this helps!

Richie

*Richard Rivera-Lugo*, EIT, MEM

Technical Assistant (Acting)

U.S. Nuclear Regulatory Commission – HQ

RES/DE

Ph. 301-251-7652

Fax 301-251-7420

Mail M.S. C5C07M

E-mail [Richard.Rivera-Lugo@nrc.gov](mailto:Richard.Rivera-Lugo@nrc.gov)



Please consider the Environment before printing this e-mail.



**Dion, Jeanne**

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**From:** Dion, Jeanne  
**Sent:** Wednesday, March 16, 2011 11:49 AM  
**To:** Sheron, Brian  
**Subject:** Tsunami RES documents  
**Attachments:** FW: Quick Question regarding any Published RES Documents Related to Tsunamis  
**Importance:** High

Brian,  
Rosemary is out of the office- as well as both the seismologists (Annie and Rool) in her branch.

R1 (Sunil Weerakkody) requested RES documents on Tsunamis to support a public meeting. See attached.

These reports are what Richie Rivera has provided- Do you want to review them? Or can I send them both over to R1?

USGS- "Evaluation of Tsunami sources with potential impact the US Atlantic and Gulf coasts- an updated report to the NRC" ML 0829601962

USGS- "The current state of knowledge regarding potential Tsunami sources affecting U.S. Atlantic and Gulf Coasts- a report to the NRC" ML072920474

I'll come up to discuss

Jeanne

X/99

**Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Wednesday, March 16, 2011 8:28 AM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Need me?

Yes please come in to opA

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

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 7:16 AM  
**To:** Harrington, Holly  
**Subject:** Need me?

I am leaving a little late and need some caffeine, so probably will be able to be at WF at 830. I usually roll into CH St at 800.

X/100

**Dion, Jeanne**

---

**From:** Sheron, Brian  
**Sent:** Wednesday, March 16, 2011 9:17 PM  
**To:** Sangimino, Donna-Marie  
**Cc:** Valentin, Andrea; Dion, Jeanne  
**Subject:** RE: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing

Agreed.

---

**From:** Sangimino, Donna-Marie  
**Sent:** Wednesday, March 16, 2011 4:53 PM  
**To:** Sheron, Brian  
**Cc:** Valentin, Andrea; Dion, Jeanne  
**Subject:** RE: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing

Brian,

After discussing the options within the IPT, I'd like to suggest that we (Wendy, Jeff and I) not staff the op center or OIP. Jeff is going to the CNS meeting in Vienna the first two weeks of April, Wendy is pressed with a variety of foreign travel and international agreement tickets and I'm just returning from the PMDA rotation trying to get back up to speed on outstanding international issues. I will defer to your judgment – if you deem it appropriate that RES pony up a body for international support we will adjust and do so.

Thanks

Donna-Marie

**From:** Sheron, Brian  
**Sent:** Wednesday, March 16, 2011 10:35 AM  
**To:** Sangimino, Donna-Marie  
**Cc:** Valentin, Andrea; Dion, Jeanne  
**Subject:** RE: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing

Send me the names. We are getting two requests from two different sources, and I'm not sure they are talking to each other.

**From:** Sangimino, Donna-Marie  
**Sent:** Wednesday, March 16, 2011 9:52 AM  
**To:** Sheron, Brian  
**Cc:** Valentin, Andrea; Dion, Jeanne  
**Subject:** FW: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing  
**Importance:** High

Brian,

As discussed at our 845, I'll forward proposed names suitable for assisting OIP and the international liaison position at the Ops Ctr to Jeanne by 3pm today.

Donna-Marie

X/101

From: Williams, Shawn  
Sent: Wednesday, March 16, 2011 9:34 AM  
To: ICWG  
Subject: FW: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing  
Importance: High

fyi

From: Muessele, Mary  
Sent: Wednesday, March 16, 2011 9:32 AM  
To: Evans, Michele; Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight; Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald  
Cc: Williams, Shawn; Andersen, James; Ramsey, Jack  
Subject: Additional Staff requirements outside Ops Center Long Term Staffing  
Importance: High

OPA and OIP expect large call volumes today and in the next few weeks given expected news from Japan. OIP is looking for names of people who have desk officer or other OIP or international experience to assist them in the event that current staff cannot meet the work demands for call inquiries as well as ongoing international work. Please provide Shawn Williams and I a list of names that could serve to help OIP in this capacity and their general availability over the next week and month. It is difficult to determine the need level at this time, but as in the Op Center, it is anticipated OIP will have for an additional month. We would like the list of names by COB today.

Thanks

Mary

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

From: Evans, Michele  
Sent: Tuesday, March 15, 2011 5:53 PM  
To: Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Muessele, Mary; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight;

From: Williams, Shawn  
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To: ICWG  
Subject: FW: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing  
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fyi

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Cc: Williams, Shawn; Andersen, James; Ramsey, Jack  
Subject: Additional Staff requirements outside Ops Center Long Term Staffing  
Importance: High

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Thanks  
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Mary Muessele  
Assistant for Operations - Acting  
Office of the Executive Director for Operations U.S. Nuclear Regulatory Commission  
301-415-1703 office  
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Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald  
Subject: Follow-up from 4 pm teleconference on Ops Center Long Term Staffing

Everyone,

Please find attached 1) a list of current positions being staffed in the Ops Center and 2) the staff identified as available to support in Japan.

Regarding additional staff available to support in the ops center, the primary needs are for the specialized positions on the PMT and anyone with previous international experience in OIP.

Regarding support in Japan, please provide any updates/changes to the list by COB March 17. The target time frame for sending these staff members is March 27-April 9, so please consider that when considering staff to put on the list.

Thanks for your support.

Michele

**Scott, Michael**

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**From:** Scott, Michael  
**Sent:** Wednesday, March 16, 2011 8:16 AM  
**To:** 'Jim C Kinsey'  
**Cc:** Reckley, William  
**Subject:** FW: NGNP Project Call on March 16?

FYI. Looks like no RES support for this call. Sorry.

Mike

---

**From:** Zaki, Tarek  
**Sent:** Wednesday, March 16, 2011 1:49 AM  
**To:** Scott, Michael  
**Cc:** Rubin, Stuart; Basu, Sudhamay; Kelly, Joseph  
**Subject:** RE: NGNP Project Call on March 16?

Mike;

Stu, Sud, Joe and I will be at the dust workshop in the morning, unless you need me at the office. The workshop will end at noon so unless Stu decides to join by BB, RES will not be able to support the call. NRO may be able to support the call since not all of them are at the workshop, not sure.

We will have our NARB standup meeting at 1:30pm as scheduled.

Thanks,  
Tarek

---

**From:** Scott, Michael  
**Sent:** Tuesday, March 15, 2011 8:55 PM  
**To:** 'Jim C Kinsey'; Williams, Joseph  
**Cc:** Reckley, William; Basu, Sudhamay; Rubin, Stuart; Zaki, Tarek  
**Subject:** RE: NGNP Project Call on March 16?

Jim:

Copying Stu Rubin and Tarek Zaki, in case they can support. Otherwise RES cannot for reasons you stated. I don't know about NRR.

Mike

---

**From:** Jim C Kinsey [<mailto:Jim.Kinsey@inl.gov>]  
**Sent:** Tuesday, March 15, 2011 2:47 PM  
**To:** Scott, Michael; Williams, Joseph  
**Cc:** Reckley, William; Basu, Sudhamay; [Janelle.Zamore@nnsa.doe.gov](mailto:Janelle.Zamore@nnsa.doe.gov)  
**Subject:** NGNP Project Call on March 16?

Mike, Joe,

Based on NRC response activities related to events in Japan, along with NRO and RES staff attendance at the HTGR dust workshop, will NRC still be able to support our regular bi-weekly NGNP project call, or should we cancel for tomorrow (March 16)?

X/102

Thanks

Jim

✕



**Lee, Richard**

**From:** M.T. Leonard [mtl@dycoda.com]  
**Sent:** Wednesday, March 16, 2011 12:41 PM  
**To:** Esmaili, Hossein  
**Cc:** Lee, Richard; Salay, Michael; Randy Gauntt; Chang, Richard  
**Subject:** Re: Peach Bottom Deck

Hossein --

There are versions of the BWR/4 Mark I model to choose from. Some for 1.8.5; others for 1.8.6. Richard Chang asked me about this earlier today. Perhaps a phone discussion about the options would help. Pls coordinate with Chang and Randy Gauntt.

Mark

Sent on the Now Network from my Sprint® BlackBerry

---

**From:** "Esmaili, Hossein" <Hossein.Esmaili@nrc.gov>  
**Date:** Wed, 16 Mar 2011 12:27:06 -0400  
**To:** mtl@dycoda.com<mtl@dycoda.com>  
**Cc:** Lee, Richard<Richard.Lee@nrc.gov>; Salay, Michael<Michael.Salay@nrc.gov>  
**Subject:** FW: Peach Bottom Deck

Hi Mark,

Richard asked me to contact you if you have any information about the item below since Larry does not know and Randy is not available now.

Thanks

hossein

---

**From:** Salay, Michael  
**Sent:** Wednesday, March 16, 2011 10:06 AM  
**To:** Gauntt, Randall O; Humphries, Larry Laron  
**Cc:** Lee, Richard; Esmaili, Hossein  
**Subject:** Peach Bottom Deck  
**Importance:** High

Randy, Larry,

We have received a request from GRS for the Peach Bottom deck. Richard mentioned that the SOARCA deck contains safeguards information so we cannot provide. Are there other Peach Bottom decks (e.g. that used MSIV) that do not contain safeguards information?

Please get back to me as soon as possible.

Randy – I just left a phone message with you to the same effect.

Thank you,  
-Mike

X/103

Michael Salay  
United States Nuclear Regulatory Commission  
Washington, DC 20555  
MS: C3-C07M  
[michael.salay@nrc.gov](mailto:michael.salay@nrc.gov)  
tel: 301-251-7543  
fax: 301-251-7436

## **Bonaccorso, Amy**

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**From:** McIntyre, David  
**Sent:** Wednesday, March 16, 2011 4:31 PM  
**To:** Bonaccorso, Amy  
**Cc:** Deavers, Ron  
**Subject:** RE: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

I also gave it to the LT.

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 4:31 PM  
**To:** McIntyre, David  
**Cc:** Deavers, Ron  
**Subject:** RE: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

Dave:

Thanks for the help with this. I like the response.

Unless someone has an issue with it – I'm assuming this response will close this one out – since Nancy is cc'ed and she originally sent the Q out.

Thanks again,

Amy

---

**From:** McIntyre, David  
**Sent:** Wednesday, March 16, 2011 4:22 PM  
**To:** Bonaccorso, Amy  
**Cc:** Deavers, Ron; Turtill, Richard; Screnci, Diane; Uselding, Lara; Hannah, Roger; Harrington, Holly; Brenner, Eliot; McNamara, Nancy; Mitlyng, Viktoria  
**Subject:** RE: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

Suggest this:

The 10-mile EPZ reflects the area expected to be affected by design basis accidents at nuclear power plants, and we are confident that it would be adequate even for severe accidents. However, the 10-mile zone was always considered a base for emergency response that could be expanded if the situation warranted. The situation in Japan, with four reactors experiencing exceptional difficulties simultaneously, creates the need to expand the EPZ beyond the normal 10-mile radius.

We have said from the beginning of this crisis that the NRC would analyze this situation for any lessons that can be derived to improve our oversight of U.S. nuclear power plants. Emergency protection planning will be part of that review.

Dave Mc, OPA

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 4:04 PM  
**To:** McIntyre, David  
**Cc:** Deavers, Ron

X/104

**Subject:** FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP  
**Importance:** High

Dave:

Holly told me I should forward this to you.

---

**From:** Bonaccorso, Amy  
**Sent:** Wednesday, March 16, 2011 3:52 PM  
**To:** Burnell, Scott  
**Cc:** Deavers, Ron  
**Subject:** FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP  
**Importance:** High

Scott:

Are you downstairs?

I don't know anyone on the PMT. We're isolated from all of the teams with specialized knowledge up here.

---

**From:** LIA04 Hoc  
**Sent:** Wednesday, March 16, 2011 3:49 PM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Cc:** OST05 Hoc; McNamara, Nancy  
**Subject:** FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP  
**Importance:** High

Ron and Amy:

You may wish to touch base with our PMT folks for insights. I can't help on this.

Richard Turtill  
State Liaison – Liaison Team  
Incident Response Center

---

**From:** McNamara, Nancy  
**Sent:** Wednesday, March 16, 2011 3:24 PM  
**To:** LIA04 Hoc; OST05 Hoc  
**Subject:** Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP  
**Importance:** High

1. How is it that the NRC has always defined the emergency planning zone to be out to 10 miles based on worse case scenarios, yet they just recommended a 50 mile evacuation?
2. What does a PAR out to 50 miles say about the current 10 mile EPZ used here in the United States?

**Bonaccorso, Amy**

---

**From:** Shawna Kuhns [skuhns@firstcapitalmtg.com]  
**Sent:** Wednesday, March 16, 2011 4:51 PM  
**To:** Bonaccorso, Amy  
**Cc:** Deavers, Ron  
**Subject:** RE: REPLY: Public Inquiry

Ok,  
Thank You,

*Shawna Kuhns*  
*Loan Officer*  
*NMLS# 460497*  
*Direct 310.986.0774*  
[skuhns@firstcapitalmtg.com](mailto:skuhns@firstcapitalmtg.com)

---

**From:** Bonaccorso, Amy [<mailto:amy.Bonaccorso@nrc.gov>]  
**Sent:** Wednesday, March 16, 2011 1:50 PM  
**To:** Shawna Kuhns  
**Cc:** Deavers, Ron  
**Subject:** REPLY: Public Inquiry

Dear Ms. Kuhns:

A question from you was forwarded to me. I heard that you have a daughter in Asia and are concerned for her.

We are directing public inquiries with regard to concern for loved ones overseas to the State Department, Consular Services at 202-647-7004.

Thank you,

Amy

X/105

## Bonaccorso, Amy

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**From:** McIntyre, David  
**Sent:** Wednesday, March 16, 2011 6:33 PM  
**To:** McNamara, Nancy; LIA04 Hoc; Deavers, Ron; Bonaccorso, Amy  
**Cc:** OST05 Hoc; Screnci, Diane; Burnell, Scott  
**Subject:** RE: News Article

Thanks. OPA folks have been working this piece of junk all day.

---

**From:** McNamara, Nancy  
**Sent:** Wednesday, March 16, 2011 6:32 PM  
**To:** LIA04 Hoc; McIntyre, David; Deavers, Ron; Bonaccorso, Amy  
**Cc:** OST05 Hoc; Screnci, Diane  
**Subject:** RE: News Article

It was written by an MSNBC investigative reporter.

---

**From:** LIA04 Hoc  
**Sent:** Wednesday, March 16, 2011 6:30 PM  
**To:** McIntyre, David; Deavers, Ron; Bonaccorso, Amy  
**Cc:** OST05 Hoc; Screnci, Diane; McNamara, Nancy  
**Subject:** FW: News Article

This is fyi from RI. I've placed Diane on cc although it was provided to her.

**Nancy:** What is the source of this article? NYTimes, Web Blog of some kind ????

---

**From:** McNamara, Nancy  
**Sent:** Wednesday, March 16, 2011 6:25 PM  
**To:** LIA04 Hoc; OST05 Hoc; Harrington, Holly  
**Subject:** News Article

This is the article that is generating a lot of concern/discussion w/NY. Since this is Region I, I will pass along to Diane Screnci, OPA, Region I. For now, we've talked w/NY and they are good.

## What are the odds? US nuke plants ranked by quake risk

What are the odds that a nuclear emergency like the one at Fukushima Dai-ichi could happen in the central or eastern United States? They'd have to be astronomical, right? As a pro-nuclear commenter on msnbc.com put it this weekend, "There's a power plant just like these in Omaha. If it gets hit by a tsunami...."

It turns out that the U.S. Nuclear Regulatory Commission has calculated the odds of an earthquake causing catastrophic failure to a

X/106

nuclear plant here. Each year, at the typical nuclear reactor in the U.S., there's a 1 in 74,176 chance that the core could be damaged by an earthquake, exposing the public to radiation. That's 10 times more likely than you winning \$10,000 by buying a ticket in the Powerball multistate lottery, where the chance is 1 in 723,145.

And it turns out that the nuclear reactor in the United States with the highest risk of core damage from a quake is not the Diablo Canyon Power Plant, with its twin reactors tucked between the California coastline and the San Andreas Fault.

It's not the San Onofre Nuclear Generating Station, a four-hour drive down the Pacific coast at San Clemente, surrounded by fault lines on land and under the ocean.

It's not on the Pacific Coast at all. It's on the Hudson River.

One in 10,000

The reactor with the highest risk rating is 24 miles north of New York City, in the village of Buchanan, N.Y., at the Indian Point Energy Center. There, on the east bank of the Hudson, Indian Point nuclear reactor No. 3 has the highest risk of earthquake damage in the country, according to new NRC risk estimates provided to msnbc.com.

So much for San Andreas: Reactors in East, Midwest, South have highest chance of damage

A ranking of the 104 nuclear reactors is shown at the bottom of this article, listing the NRC estimate of risk of catastrophic failure caused by earthquake.

The chance of a core damage from a quake at Indian Point 3 is estimated at 1 in 10,000 each year. Under NRC guidelines, that's right on the verge of requiring "immediate concern regarding adequate protection" of the public. The two reactors at Indian Point generate up to one-third of the electricity for New York City. The second reactor, Indian Point 2, doesn't rate as risky, with 1 chance in 30,303 each year.

The plant with the second highest risk? It's in Massachusetts. Third? Pennsylvania. Then Tennessee, Pennsylvania again, Florida, Virginia and South Carolina. Only then does California's Diablo Canyon appear on the list, followed by Pennsylvania's Three Mile Island.

Overall, the new estimates mean that nuclear power plants built in the areas usually thought of as earthquake zones, such as the California coastline, are no longer those with the highest risk of damage from an earthquake.

Other plants in the East, South and Midwest, where the design standards may have been lower because the earthquake risk was thought to be low, have moved to the top of the NRC's danger list.

The chance ranges from Indian Point's 1 in 10,000, all the way up to 1 in 500,000 each year at the Callaway plant in Fulton, Missouri.

#### Playing the odds

The NRC, the federal agency responsible for nuclear power safety, says the odds are in the public's favor. "Operating nuclear power plants are safe," the NRC said when it reported the new risk estimates.

Every plant is designed with a margin of safety beyond the strongest earthquake anticipated in that area, the NRC says.

But the NRC also says the margin of safety has been reduced.

In the 35 years since Indian Point 3 got its license to operate in 1976, the same era when most of today's U.S. nuclear reactors were built, geologists have learned a lot about the dangers of earthquakes in the eastern and central U.S.

No one alive now has memories of the South Carolina quakes of 1886, which toppled 14,000 chimneys in Charleston and were felt in 30 states. Or the New Madrid quakes of 1811-1812 in Missouri and Arkansas — the big one made the Mississippi River run backward for a time.

But the geologists and seismologists remember, learning their history from rocks, and steadily raising their estimates of the risk of severe quakes. New faults are found, and new computer models change predictions for how the ground shakes. The latest estimates are drawn from the 2008 maps of the U.S. Geological Survey. Of special note, the USGS said, was an allowance for waves of large earthquakes in the New Madrid fault area roughly centered on the Missouri Bootheel, as well as inclusion of offshore faults near Charleston, S.C., and new data from the



mountains of East Tennessee. With each new map, the areas of negligible risks have receded.

Based on those new maps, the NRC published in August 2010 new estimates of the earthquake risk at nuclear power reactors in the eastern and central states. Besides the proximity, severity and frequency of earthquakes, the new estimates take into account the design standards used at each plant, along with the type of rock or soil it's built on. This week, the NRC provided additional data to msnbc.com for the relatively few reactors in the Western states, allowing a ranking to be made of all 104 reactors with the latest data.

The top 10

Here are the 10 nuclear power sites with the highest risk of suffering core damage from an earthquake, showing their NRC risk estimates based on 2008 and 1989 geological data. (The full list of 104 reactors is below.)

1. Indian Point 3, Buchanan, N.Y.: 1 in 10,000 chance each year. Old estimate: 1 in 17,241. Increase in risk: 72 percent.

advertisement U.S. Geological Survey Based on 1982 data, a map of earthquake damage risk in the continental United States. The highest risk areas are red, yellow and purple. U.S. Geological Survey Based on 1969 data, a map of earthquake damage risk in the continental United States. The highest risk areas are red and yellow.

2. Pilgrim 1, Plymouth, Mass.: 1 in 14,493. Old estimate: 1 in 125,000. Increase in risk: 763 percent.

3. Limerick 1 and 2, Limerick, Pa.: 1 in 18,868. Old estimate: 1 in 45,455. Increase in risk: 141 percent.

4. Sequoyah 1 and 2, Soddy-Daisy, Tenn.: 1 in 19,608. Old estimate: 1 in 102,041. Increase in risk: 420 percent.

5. Beaver Valley 1, Shippingport, Pa.: 1 in 20,833. Old estimate: 1 in 76,923. Increase in risk: 269 percent.

6. Saint Lucie 1 and 2, Jensen Beach, Fla.: 1 in 21,739. Old estimate: N/A.

7. North Anna 1 and 2, Louisa, Va.: 1 in 22,727. Old estimate: 1 in 31,250. Increase in risk: 38 percent.

8. Oconee 1, 2 and 3, Seneca, S.C.: 1 in 23,256. Old estimate: 1 in 100,000. Increase in risk: 330 percent.

9. Diablo Canyon 1 and 2, Avila Beach, Calif.: 1 in 23,810. Old estimate: N/A.

10. Three Mile Island, Middletown, Pa.: 1 in 25,000. Old estimate: 1 in 45,455. Increase in risk: 82 percent.

A rising risk

Northeast of Chattanooga, Tenn., the Tennessee Valley Authority's Sequoyah 1 and 2 nuclear plants had been thought to have a risk of core damage from an earthquake happening once every 102,041 years. The new estimate is once every 19,608 years.

That kind of change was typical. Out of 104 reactors, the risk estimate declined at only eight. (There were 19 for which no older estimate was available for comparison.)

The increase in risk is so rapid that an NRC research task force in September sent two recommendations to NRC management:

First, it is time to move the issue over from the research staff to the regulatory staff, moving from study to action.

Second, start figuring out whether some nuclear power plants need a "backfit," or additional construction to protect them from earthquakes.

Another indication of how fast the risk estimates rose: The median, or middle value out of all 104 reactors, a measure of the risk at the typical plant, is now at a 1 in 74,176 chance each year of core damage from a quake. In the old estimate, it was 1 in 263,158. In other words, the estimated risk, though still low by NRC standards, has more than tripled.

What happens next?

This NRC process began in 2005 when its staff recommended taking a look at updated seismic hazards. It was late 2008 before NRC advertisement

staff started working with a contractor, Electric Power Research Institute, on the design of a study. Overall, it took five years and three months from the staff recommendation until the seismic task force submitted its report in August 2010.

One problem is a lack of data about the nuclear reactors themselves. The NRC task force said the agency has detailed data on

what it calls plant fragility — the probability that the expected earthquake would damage the reactor's core — for only one-third of the nation's nuclear plants. That's because only the plants that had been thought to be in areas of higher seismic risk had done detailed studies. For the rest, the scientists had to estimate from other information submitted by plant operators.

Now the NRC is playing catch-up.

An NRC spokesman, Scott Burnell, said Tuesday that the NRC is preparing a letter to send to certain nuclear plants, asking them for the more detailed data on equipment, soil conditions and seismic preparedness. Then the plants and NRC staff will have an opportunity to analyze that data.

That process could stretch into 2012, Burnell said. Then the NRC will have to decide, he said, "where the ability to respond to seismic events can be improved."

In the middle of that process, perhaps late this year, a new round of geologic data will come out. That will be folded into new calculations.

Industry is "addressing that issue"  
The nuclear power industry is watching this process. A document distributed to the public by the industry's Nuclear Energy Institute on Sunday, after the Japanese plant emergency began, referred to this NRC study and the possibility of changes, saying, "The industry is working with the NRC to develop a methodology for addressing that issue."

The industry statement did not mention that the study increased the estimates of earthquake risk for nearly every nuclear power plant in the U.S.

(One of the leading nuclear power companies, General Electric, which designed the reactors at Fukushima, is a part owner of NBCUniversal, which co-owns msnbc.com through a joint venture with Microsoft.)

Good odds or bad?  
How much risk is too much? Is a roller coaster safe only if no one ever dies? If one passenger dies every 100 years? Every year?

When the NRC saw that the new earthquake maps had pushed the level of risk into the range between 1 in 100,000 and the more

likely 1 in 10,000, that change was enough to study the issue further, the task force said in its report. But because the risks didn't go beyond 1 in 10,000, "there was no immediate concern regarding adequate protection." The advertisement

new estimates put Indian River right at that boundary, and a few others in reach.

By comparison, the chance of winning the grand prize in the next Powerball lottery: 1 in 195,249,054.

Ranking of nuclear reactors by earthquake damage risks

Here are the 104 nuclear power reactors in the United States, ranked by the NRC's estimate of the risk each year that an earthquake would cause damage to the reactor's core, releasing radiation.

Notes: Data come from the NRC's study of August 2010 on reactors in the central and eastern states, supplemented by data provided by the NRC to msnbc.com in March 2011. The table shows the risks calculated separately from 1989 and 2008 earthquake data from the U.S. Geological Survey. Ranks and changes in risk are calculated by msnbc.com. For the reactors in the western states, and a few others, the 1989 estimate was not provided to msnbc.com, so no change is calculated. The information in this list is also available in an Excel spreadsheet file. (See resources, below.)

Rank. Reactor, nearby city, state: Chance of event each year from 2008 data. Old estimate from 1989. Change in risk.

1. Indian Point 3, Buchanan, N.Y.: 1 in 10,000 chance each year. Old estimate: 1 in 17,241. Change in risk: 72 percent.

2. Pilgrim 1, Plymouth, Mass.: 1 in 14,493 chance each year. Old estimate: 1 in 125,000. Change in risk: 763 percent.

3. Limerick 1, Limerick, Pa.: 1 in 18,868 chance each year. Old estimate: 1 in 45,455. Change in risk: 141 percent.

3. Limerick 2, Limerick, Pa.: 1 in 18,868 chance each year. Old estimate: 1 in 45,455. Change in risk: 141 percent.

5. Sequoyah 1, Soddy-Daisy, Tenn.: 1 in 19,608 chance each year. Old estimate: 1 in 102,041. Change in risk: 420 percent.

5. Sequoyah 2, Soddy-Daisy, Tenn.: 1 in 19,608 chance each year. Old estimate: 1 in 102,041. Change in risk: 420 percent.
7. Beaver Valley 1, Shippingport, Pa.: 1 in 20,833 chance each year. Old estimate: 1 in 76,923. Change in risk: 269 percent.
8. Saint Lucie 1, Jensen Beach, Fla.: 1 in 21,739 chance each year. Old estimate: N/A. Change in risk: N/A.
8. Saint Lucie 2, Jensen Beach, Fla.: 1 in 21,739 chance each year. Old estimate: N/A. Change in risk: N/A.
10. North Anna 1, Louisa, Va.: 1 in 22,727 chance each year. Old estimate: 1 in 31,250. Change in risk: 38 percent.
10. North Anna 2, Louisa, Va.: 1 in 22,727 advertisement chance each year. Old estimate: 1 in 31,250. Change in risk: 38 percent.
12. Oconee 1, Seneca, S.C.: 1 in 23,256 chance each year. Old estimate: 1 in 100,000. Change in risk: 330 percent.
12. Oconee 2, Seneca, S.C.: 1 in 23,256 chance each year. Old estimate: 1 in 100,000. Change in risk: 330 percent.
12. Oconee 3, Seneca, S.C.: 1 in 23,256 chance each year. Old estimate: 1 in 100,000. Change in risk: 330 percent.
15. Diablo Canyon 1, Avila Beach, Calif.: 1 in 23,810 chance each year. Old estimate: N/A. Change in risk: N/A.
15. Diablo Canyon 2, Avila Beach, Calif.: 1 in 23,810 chance each year. Old estimate: N/A. Change in risk: N/A.
17. Three Mile Island 1, Middletown, Pa.: 1 in 25,000 chance each year. Old estimate: 1 in 45,455. Change in risk: 82 percent.
18. Palo Verde 1, Wintersburg, Ariz.: 1 in 26,316 chance each year. Old estimate: N/A. Change in risk: N/A.
18. Palo Verde 2, Wintersburg, Ariz.: 1 in 26,316 chance each year. Old estimate: N/A. Change in risk: N/A.
18. Palo Verde 3, Wintersburg, Ariz.: 1 in

26,316 chance each year. Old estimate: N/A.  
Change in risk: N/A.

18. Summer, Jenkinsville, S.C.: 1 in 26,316  
chance each year. Old estimate: 1 in 138,889.  
Change in risk: 428 percent.

22. Catawba 1, York, S.C.: 1 in 27,027 chance  
each year. Old estimate: 1 in 33,333. Change in  
risk: 23 percent.

22. Catawba 2, York, S.C.: 1 in 27,027 chance  
each year. Old estimate: 1 in 33,333. Change in  
risk: 23 percent.

24. Watts Bar 1, Spring City, Tenn.: 1 in 27,778  
chance each year. Old estimate: 1 in 178,571.  
Change in risk: 543 percent.

25. Indian Point 2, Buchanan, N.Y.: 1 in 30,303  
chance each year. Old estimate: 1 in 71,429.  
Change in risk: 136 percent.

26. Duane Arnold, Palo, Iowa: 1 in 31,250  
chance each year. Old estimate: N/A. Change  
in risk: N/A.

27. McGuire 1, Huntsville, N.C.: 1 in 32,258  
chance each year. Old estimate: 1 in 35,714.  
Change in risk: 11 percent.

27. McGuire 2, Huntsville, N.C.: 1 in 32,258  
chance each year. Old estimate: 1 in 35,714.  
Change in risk: 11 percent.

29. Farley 1, Columbia, Ala.: 1 in 35,714  
chance each year. Old estimate: 1 in 263,158.  
advertisement  
Change in risk: 637 percent.

29. Farley 2, Columbia, Ala.: 1 in 35,714  
chance each year. Old estimate: 1 in 263,158.  
Change in risk: 637 percent.

31. Quad Cities 1, Cordova, Ill.: 1 in 37,037  
chance each year. Old estimate: 1 in 71,429.  
Change in risk: 93 percent.

31. Quad Cities 2, Cordova, Ill.: 1 in 37,037  
chance each year. Old estimate: 1 in 71,429.  
Change in risk: 93 percent.

33. River Bend 1, St. Francisville, La.: 1 in  
40,000 chance each year. Old estimate: 1 in  
370,370. Change in risk: 826 percent.

34. Peach Bottom 2, Delta, Pa.: 1 in 41,667  
chance each year. Old estimate: 1 in 120,482.

Change in risk: 189 percent.

34. Peach Bottom 3, Delta, Pa.: 1 in 41,667 chance each year. Old estimate: 1 in 120,482. Change in risk: 189 percent.

36. Crystal River 3, Crystal River, Fla.: 1 in 45,455 chance each year. Old estimate: 1 in 192,308. Change in risk: 323 percent.

36. Seabrook 1, Seabrook, N.H.: 1 in 45,455 chance each year. Old estimate: 1 in 114,943. Change in risk: 153 percent.

36. Beaver Valley 2, Shippingport, Pa.: 1 in 45,455 chance each year. Old estimate: 1 in 188,679. Change in risk: 315 percent.

39. Perry 1, Perry, Ohio: 1 in 47,619 chance each year. Old estimate: 1 in 1,176,471. Change in risk: 2371 percent.

39. Columbia 1, Richland, Wash.: 1 in 47,619 chance each year. Old estimate: N/A. Change in risk: N/A.

41. Waterford 3, Killona, La.: 1 in 50,000 chance each year. Old estimate: 1 in 833,333. Change in risk: 1567 percent.

42. Dresden 2, Morris, Ill.: 1 in 52,632 chance each year. Old estimate: 1 in 434,783. Change in risk: 726 percent.

42. Dresden 3, Morris, Ill.: 1 in 52,632 chance each year. Old estimate: 1 in 434,783. Change in risk: 726 percent.

42. Monticello, Monticello, Minn.: 1 in 52,632 chance each year. Old estimate: 1 in 38,462. Change in risk: -27 percent.

45. Wolf Creek 1, Burlington, Kansas: 1 in 55,556 chance each year. Old estimate: 1 in 400,000. Change in risk: 620 percent.

46. San Onofre 2, San Clemente, Calif.: 1 in 58,824 chance each year. Old estimate: N/A. Change in risk: N/A.

46. San Onofre 3, San Clemente, Calif.: 1 in 58,824 chance each year. Old estimate: N/A. Change in risk: N/A.

advertisement

48. Millstone 3, Waterford, Conn.: 1 in 66,667 chance each year. Old estimate: 1 in 100,000. Change in risk: 50 percent.

48. Brunswick 1, Southport, N.C.: 1 in 66,667 chance each year. Old estimate: 1 in 263,158. Change in risk: 295 percent.

48. Brunswick 2, Southport, N.C.: 1 in 66,667 chance each year. Old estimate: 1 in 263,158. Change in risk: 295 percent.

48. Robinson 2, Hartsville, S.C.: 1 in 66,667 chance each year. Old estimate: 1 in 370,370. Change in risk: 456 percent.

52. Oyster Creek, Forked River, N.J.: 1 in 71,429 chance each year. Old estimate: 1 in 126,582. Change in risk: 77 percent.

53. Fort Calhoun, Fort Calhoun, Neb.: 1 in 76,923 chance each year. Old estimate: N/A. Change in risk: N/A.

53. Ginna, Ontario, N.Y.: 1 in 76,923 chance each year. Old estimate: 1 in 238,095. Change in risk: 210 percent.

53. Susquehanna 1, Salem Township, Pa.: 1 in 76,923 chance each year. Old estimate: 1 in 416,667. Change in risk: 442 percent.

53. Susquehanna 2, Salem Township, Pa.: 1 in 76,923 chance each year. Old estimate: 1 in 416,667. Change in risk: 442 percent.

57. Calvert Cliffs 2, Lusby, Md.: 1 in 83,333 chance each year. Old estimate: 1 in 116,279. Change in risk: 40 percent.

57. D.C. Cook 1, Bridgman, Mich.: 1 in 83,333 chance each year. Old estimate: N/A. Change in risk: N/A.

57. D.C. Cook 2, Bridgman, Mich.: 1 in 83,333 chance each year. Old estimate: N/A. Change in risk: N/A.

57. Grand Gulf 1, Port Gibson, Miss.: 1 in 83,333 chance each year. Old estimate: 1 in 106,383. Change in risk: 28 percent.

57. Kewaunee, Kewaunee, Wis.: 1 in 83,333 chance each year. Old estimate: 1 in 71,429. Change in risk: -14 percent.

62. Millstone 2, Waterford, Conn.: 1 in 90,909 chance each year. Old estimate: 1 in 156,250. Change in risk: 72 percent.

62. Salem 1, Hancocks Bridge, N.J.: 1 in 90,909 chance each year. Old estimate: 1 in 172,414.



Change in risk: 90 percent.

62. Salem 2, Hancocks Bridge, N.J.: 1 in 90,909 chance each year. Old estimate: 1 in 172,414. Change in risk: 90 percent.

62. Point Beach 1, Two Rivers, Wis.: 1 in 90,909 chance each year. Old estimate: 1 in 76,923. Change in risk: -15 percent.

62. Point Beach 2, Two Rivers, Wis.: 1 in advertisement  
90,909 chance each year. Old estimate: 1 in 76,923. Change in risk: -15 percent.

67. Turkey Point 3, Homestead, Fla.: 1 in 100,000 chance each year. Old estimate: N/A. Change in risk: N/A.

67. Turkey Point 4, Homestead, Fla.: 1 in 100,000 chance each year. Old estimate: N/A. Change in risk: N/A.

67. Calvert Cliffs 1, Lusby, Md.: 1 in 100,000 chance each year. Old estimate: 1 in 142,857. Change in risk: 43 percent.

70. Vermont Yankee, Vernon, Vt.: 1 in 123,457 chance each year. Old estimate: 1 in 434,783. Change in risk: 252 percent.

71. Braidwood 1, Braceville, Ill.: 1 in 136,986 chance each year. Old estimate: 1 in 1,785,714. Change in risk: 1204 percent.

71. Braidwood 2, Braceville, Ill.: 1 in 136,986 chance each year. Old estimate: 1 in 1,785,714. Change in risk: 1204 percent.

73. Vogtle 1, Waynesboro, Ga.: 1 in 140,845 chance each year. Old estimate: 1 in 384,615. Change in risk: 173 percent.

73. Vogtle 2, Waynesboro, Ga.: 1 in 140,845 chance each year. Old estimate: 1 in 384,615. Change in risk: 173 percent.

75. Cooper, Brownville, Neb.: 1 in 142,857 chance each year. Old estimate: N/A. Change in risk: N/A.

76. Davis-Besse, Oak Harbor, Ohio: 1 in 149,254 chance each year. Old estimate: 1 in 625,000. Change in risk: 319 percent.

77. Palisades, Covert, Mich.: 1 in 156,250 chance each year. Old estimate: N/A. Change in risk: N/A.

78. South Texas 1, Bay City, Texas: 1 in 158,730 chance each year. Old estimate: 1 in 1,298,701. Change in risk: 718 percent.

78. South Texas 2, Bay City, Texas: 1 in 158,730 chance each year. Old estimate: 1 in 1,298,701. Change in risk: 718 percent.

80. FitzPatrick, Scriba, N.Y.: 1 in 163,934 chance each year. Old estimate: 1 in 833,333. Change in risk: 408 percent.

81. Byron 1, Byron, Ill.: 1 in 172,414 chance each year. Old estimate: 1 in 1,470,588. Change in risk: 753 percent.

81. Byron 2, Byron, Ill.: 1 in 172,414 chance each year. Old estimate: 1 in 1,470,588. Change in risk: 753 percent.

83. Surry 1, Surry, Va.: 1 in 175,439 chance each year. Old estimate: 1 in 123,457. Change in risk: -30 percent.

83. Surry 2, Surry, Va.: 1 in 175,439 chance each year. Old estimate: 1 in 123,457. Change advertisement in risk: -30 percent.

85. Nine Mile Point 2, Scriba, N.Y.: 1 in 178,571 chance each year. Old estimate: 1 in 1,000,000. Change in risk: 460 percent.

86. Browns Ferry 2, Athens, Ala.: 1 in 185,185 chance each year. Old estimate: 1 in 625,000. Change in risk: 238 percent.

86. Browns Ferry 3, Athens, Ala.: 1 in 185,185 chance each year. Old estimate: 1 in 625,000. Change in risk: 238 percent.

88. Nine Mile Point 1, Scriba, N.Y.: 1 in 238,095 chance each year. Old estimate: 1 in 1,724,138. Change in risk: 624 percent.

88. Fermi 2, Toledo, Ohio: 1 in 238,095 chance each year. Old estimate: 1 in 625,000. Change in risk: 163 percent.

90. Arkansas Nuclear 1, London, Ark.: 1 in 243,902 chance each year. Old estimate: 1 in 1,063,830. Change in risk: 336 percent.

90. Arkansas Nuclear 2, London, Ark.: 1 in 243,902 chance each year. Old estimate: 1 in 1,063,830. Change in risk: 336 percent.

92. Comanche Peak 1, Glen Rose, Texas: 1 in 250,000 chance each year. Old estimate: 1 in 833,333. Change in risk: 233 percent.

92. Comanche Peak 2, Glen Rose, Texas: 1 in 250,000 chance each year. Old estimate: 1 in 833,333. Change in risk: 233 percent.

94. Browns Ferry 1, Athens, Ala.: 1 in 270,270 chance each year. Old estimate: 1 in 1,000,000. Change in risk: 270 percent.

95. Prairie Island 1, Welch, Minn.: 1 in 333,333 chance each year. Old estimate: 1 in 714,286. Change in risk: 114 percent.

95. Prairie Island 2, Welch, Minn.: 1 in 333,333 chance each year. Old estimate: 1 in 714,286. Change in risk: 114 percent.

97. La Salle 1, Marseilles, Ill.: 1 in 357,143 chance each year. Old estimate: 1 in 1,851,852. Change in risk: 419 percent.

97. La Salle 2, Marseilles, Ill.: 1 in 357,143 chance each year. Old estimate: 1 in 1,851,852. Change in risk: 419 percent.

97. Hope Creek 1, Hancocks Bridge, N.J.: 1 in 357,143 chance each year. Old estimate: 1 in 909,091. Change in risk: 155 percent.

100. Clinton, Clinton, Ill.: 1 in 400,000 chance each year. Old estimate: 1 in 370,370. Change in risk: -7 percent.

101. Shearon Harris 1, New Hill, N.C.: 1 in 434,783 chance each year. Old estimate: 1 in 277,778. Change in risk: -36 percent.

102. Hatch 1, Baxley, Ga.: 1 in 454,545 chance each year. Old estimate: 1 in 1,351,351. Change in risk: 197 percent.

advertisement

102. Hatch 2, Baxley, Ga.: 1 in 454,545 chance each year. Old estimate: 1 in 1,351,351. Change in risk: 197 percent.

104. Callaway, Fulton, Mo.: 1 in 500,000 chance each year. Old estimate: N/A. Change in risk: N/A.

A few words about the data (Where's Richter?)

The NRC's risk estimates are not based on the usual layman's language of the magnitude scale (the old Richter scale or its replacement, the moment magnitude scale). Magnitude

shows the earthquake's energy released. That is a measure of power.

But a nuclear plant may be close to the epicenter of a quake, or far from it. And some types of seismic waves are more jarring than others.

Instead, these risk estimates consider how violently the ground will shake at the nuclear plant, considered a better indication of how much damage it will cause. That shaking can be affected by the depth, distance from the epicenter, and the frequencies of waves that the quake emits. The shaking is expressed in a unit called peak ground acceleration, in terms of the acceleration caused by the Earth's gravity. This is a measure of intensity.

Often these two ways of measuring earthquakes are roughly in synch, but sometimes not. For example:

The 2010 Haiti earthquake, magnitude 7.0, rated only "severe" on the intensity scale, the third rung from the top, with peak ground acceleration of 0.5 times the Earth's gravity.

The 2010 Chile earthquake, with a much higher magnitude of 8.8, was one step

advertisement How much radiation is dangerous?

higher in terms of intensity, "violent," with peak ground acceleration of 0.65

times gravity.

The 2010 Christchurch or Canterbury earthquake in New Zealand, similar to Haiti at magnitude 7.1, was at the top of the intensity scale, "extreme," with a peak ground acceleration of 1.26 times gravity.

Besides the peak acceleration, the NRC made other estimates for each nuclear plant, based on different types of earthquakes.

From all these estimates, the NRC calculated a worst case, which it called the "weakest link." Msnbc.com ranked the plants by that worst case, which is the same number the NRC staff highlights in its report, and the only number it provided for the reactors in the western states.

Resources

These links open in a new window.

Earthquake history of each state, from the USGS.

A USGS brochure describing the changes in the 2008 seismic hazard maps. PDF file.

The NRC report with new earthquake risk estimates, "Generic Issue 199 (GI-199), Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants, Safety/Risk Assessment," August 2010. PDF file. Note: Data for individual reactors are in appendix D.

An NRC fact sheet from November 2010, "Seismic Issues for Existing Nuclear Power Plants."

The NRC database of active nuclear reactors in the U.S. Each reactor name links to technical and safety documents.

Industry response to questions about the situation in Japan. PDF file.

A scientific paper describing the New Madrid earthquake, and what can be learned by melding modern science with writings from long ago.

A brochure with a table comparing values for magnitude and peak ground acceleration.

The ranking of 104 nuclear plants by risk, by msnbc.com from NRC data, in an Excel spreadsheet file.

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A look at the worst earthquakes in recorded history, in loss of human life. (These figures do not include the March 11, 2011, temblor off eastern Japan, the death toll of which is still not known.) Sources: United States Geological Survey, Encyclopedia Britannica advertisement

1: Shensi, China, Jan. 23, 1556

Magnitude about 8, about 830,000 deaths.

This earthquake occurred in the Shaanxi province (formerly Shensi), China, about 50 miles east-northeast of Xi'an, the capital of Shaanxi. More than 830,000 people are estimated to have been killed. Damage extended as far away as about 270 miles northeast of the epicenter, with reports as far as Liuyang in Hunan, more than 500 miles away. Geological effects reported with this

earthquake included ground fissures, uplift, subsidence, liquefaction and landslides. Most towns in the damage area reported city walls collapsed, most to all houses collapsed and many of the towns reported ground fissures with water gushing out.

## 2: Tangshan, China, July 27, 1976

Magnitude 7.5. Official casualty figure is 255,000 deaths. Estimated death toll as high as 655,000.

Damage extended as far as Beijing. This is probably the greatest death toll from an earthquake in the last four centuries, and the second greatest in recorded history.

## 3: Aleppo, Syria, Aug. 9, 1138

Magnitude not known, about 230,000 deaths.

Contemporary accounts said the walls of Syria's second-largest city crumbled and rocks cascaded into the streets. Aleppo's citadel collapsed, killing hundreds of residents. Although Aleppo was the largest community affected by the earthquake, it likely did not suffer the worst of the damage. European Crusaders had constructed a citadel at nearby Harim, which was leveled by the quake. A Muslim fort at Al-Atarib was destroyed as well, and several smaller towns and manned forts were reduced to rubble. The quake was said to have been felt as far away as Damascus, about 220 miles to the south. The Aleppo earthquake was the first of several occurring between 1138 and 1139 that devastated areas in northern Syria and western Turkey.

## 4: Sumatra, Indonesia, Dec. 26, 2004

advertisement Advertise | AdChoices Keystone / Getty Images 1976: Workers start rebuilding work following earthquake damage in the Chinese city of Tangshan, 100 miles east of Pekin, with a wrecked train carriage behind them. (Photo by Keystone/Getty Images)

Magnitude 9.1, 227,898 deaths.

This was the third largest earthquake in the world since 1900 and the largest since the 1964 Prince William Sound, Alaska temblor. In total, 227,898 people were killed or were missing and presumed dead and about 1.7 million people were displaced by the earthquake and subsequent tsunami in 14 countries in South Asia and East Africa. (In January 2005, the death toll was 286,000. In April 2005, Indonesia reduced its estimate for

the number missing by over 50,000.)

5: Haiti, Jan 12, 2010

According to official estimates, 300,000 were also injured, 1.3 million displaced, 97,294 houses destroyed and 188,383 damaged in the Port-au-Prince area and in much of southern Haiti. This includes at least 4 people killed by a local tsunami in the Petit Paradis area near Leogane. Tsunami waves were also reported at Jacmel, Les Cayes, Petit Goave, Leogane, Luly and Anse a Galets.

6: Damghan, Iran, Dec. 22, 856

Magnitude not known, about 200,000 deaths.

This earthquake struck a 200-mile stretch of northeast Iran, with the epicenter directly below the city of Damghan, which was at that point the capital city. Most of the city was destroyed as well as the neighboring areas. Approximately 200,000 people were killed.

7: Haiyuan, Ningxia , China, Dec. 16, 1920

7.8 magnitude, about 200,000 deaths.

This earthquake brought total destruction to the Lijunbu-Haiyuan-Ganyanchi area. Over 73,000 people were killed in Haiyuan County. A landslide buried the village of Sujiahe in Xiji County. More than 30,000 people were killed in Guyuan County. Nearly all the houses collapsed in the cities of Longde and Huining. About 125 miles of surface faulting was seen from Lijunbu through Ganyanchi to Jingtai. There were large numbers of landslides and ground cracks throughout the epicentral area. Some rivers were dammed, others changed course.

advertisement Getty Images / Getty Images MEULABOH, INDONESIA - DECEMBER 29: In this handout photo taken from a print via the Indonesian Air Force, the scene of devastation in Meulaboh, the town closest to the Sunday's earthquake epicentre, is pictured from the air on December 29, 2004, Meulaboh, Aceh Province, Sumatra, Indonesia. The western coastal town in Aceh Province, only 60 kilometres north-east of the epicentre, has been the hardest hit by Sunday's underwater earthquake in the Indian Ocean. Officials expected to find at least 10,000 killed which would amount to a quarter of Meulaboh's population. Three-quarters of Sumatra's western coast was destroyed and some towns were totally wiped out after the tsunamis that followed the earthquake. (Photo by Indonesian Air Force via Getty Images) Advertise | AdChoices

8: Ardabil, Iran, March. 23, 893

Magnitude not known, about 150,000 deaths

The memories of the massive Damghan earthquake (see above) had barely faded when only 37 years later, Iran was again hit by a

huge earthquake. This time it cost 150,000 lives and destroyed the largest city in the northwestern section of the country. The area was again hit by a fatal earthquake in 1997.

9: Kanto, Japan, Sept. 1, 1923

7.9 magnitude, 142,800 deaths.

This earthquake brought extreme destruction in the Tokyo-Yokohama area, both from the temblor and subsequent firestorms, which burned about 381,000 of the more than 694,000 houses that were partially or completely destroyed. Although often known as the Great Tokyo Earthquake (or the Great Tokyo Fire), the damage was most severe in Yokohama. Nearly 6 feet of permanent uplift was observed on the north shore of Sagami Bay and horizontal displacements of as much as 15 feet were measured on the Boso Peninsula.

This earthquake brought extreme destruction in the Tokyo-Yokohama area, both from the temblor and subsequent firestorms, which burned about 381,000 of the more than 694,000 houses that were partially or completely destroyed. Although often known as the Great Tokyo Earthquake (or the Great Tokyo Fire), the damage was most severe in Yokohama. Nearly 6 feet of permanent uplift was observed on the north shore of Sagami Bay and horizontal displacements of as much as 15 feet were measured on the Boso Peninsula.

10: Ashgabat, Turkmenistan, Oct. 5, 1948

7.3 magnitude, 110,000 deaths.

This quake brought extreme damage in Ashgabat (Ashkhabad) and nearby villages, where almost all the brick buildings collapsed, concrete structures were heavily damaged and freight trains were derailed. Damage and casualties also occurred in the Darreh Gaz area in neighboring Iran. Surface rupture was observed both northwest and southeast of Ashgabat. Many sources list the casualty total at 10,000, but a news release from the newly independent government on Dec. 9, 1988, advised that the correct death toll was 110,000. (Turkmenistan had been part of the Soviet Union, which tended to downplay the death tolls from man-made and natural disasters.)





**Raione, Richard**

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**From:** Jones, Henry  
**Sent:** Wednesday, March 16, 2011 2:40 PM  
**To:** Raione, Richard; Bagchi, Goutam  
**Cc:** Chokshi, Nilesh  
**Subject:** Q&A QUESTIONS  
**Attachments:** Questions for incident response center3-15-11 3am\_HJ.doc

My input is highlighted in bold blue. Goutam's name is highlighted in bold red where I believe his expertise is required (especially regarding existing plants and NRC regulations).

Henry

Henry Jones, Ph.D.  
Hydrologist  
Hydrologic Engineering Branch, Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop: T-7E18  
11545 Rockville Pike, Rockville, MD 20852  
Tel: (301) 415-1463  
E-mail: [Henry.Jones@nrc.gov](mailto:Henry.Jones@nrc.gov) (NEW)

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X1107

Ani, Suzanne

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**From:** NEIGA@nei.org  
**Sent:** Wednesday, March 16, 2011 2:01 PM  
**To:** Ani, Suzanne  
**Subject:** \*\*Update 1:15pm March 16\*\* Information on the Japanese Earthquake and Reactors in that Region



**UPDATE AS OF 1:15 P.M. EDT, WEDNESDAY, MARCH 16:**

NEI has posted an updated version of the fact sheet Used Nuclear Fuel Storage at the Fukushima Daiichi Nuclear Power Plant. Also available is a new fact sheet called Industry Taking Action to Ensure Continued Safety at U.S. Nuclear Energy Plants.

As always, please go to <http://resources.nei.org/japan> for the latest updates.

Click [here](#) to unsubscribe.

x/108

## Dion, Jeanne

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**From:** Sheron, Brian  
**Sent:** Wednesday, March 16, 2011 10:35 AM  
**To:** Sangimino, Donna-Marie  
**Cc:** Valentin, Andrea; Dion, Jeanne  
**Subject:** RE: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing

Send me the names. We are getting two requests from two different sources, and I'm not sure they are talking to each other.

---

**From:** Sangimino, Donna-Marie  
**Sent:** Wednesday, March 16, 2011 9:52 AM  
**To:** Sheron, Brian  
**Cc:** Valentin, Andrea; Dion, Jeanne  
**Subject:** FW: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing  
**Importance:** High

Brian,

As discussed at our 845, I'll forward proposed names suitable for assisting OIP and the international liaison position at the Ops Ctr to Jeanne by 3pm today.

Donna-Marie

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**From:** Williams, Shawn  
**Sent:** Wednesday, March 16, 2011 9:34 AM  
**To:** ICWG  
**Subject:** FW: Request for staff that can support OIP .... Additional Staff requirements outside Ops Center Long Term Staffing  
**Importance:** High

fyi

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**From:** Muessle, Mary  
**Sent:** Wednesday, March 16, 2011 9:32 AM  
**To:** Evans, Michele; Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight; Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald  
**Cc:** Williams, Shawn; Andersen, James; Ramsey, Jack  
**Subject:** Additional Staff requirements outside Ops Center Long Term Staffing  
**Importance:** High

OPA and OIP expect large call volumes today and in the next few weeks given expected news from Japan. OIP is looking for names of people who have desk officer or other OIP or international experience to assist them in the event that current staff cannot meet the work demands for call inquiries as well as ongoing international work. Please provide Shawn Williams and I a list of names that could serve to help OIP in this capacity and their general availability over the next week and month. It is difficult to determine the need level at this time, but as in the Op Center, it is anticipated OIP will have for an additional month. We would like the list of names by COB today.

Thanks

Mary

Mary Muessle

Assistant for Operations - Acting

Office of the Executive Director for Operations

U.S. Nuclear Regulatory Commission

301-415-1703 office

301-415-2700 fax

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**From:** Evans, Michele

**Sent:** Tuesday, March 15, 2011 5:53 PM

**To:** Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Muessle, Mary; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight; Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald.

**Subject:** Follow-up from 4 pm teleconference on Ops Center Long Term Staffing

Everyone,

Please find attached 1) a list of current positions being staffed in the Ops Center and 2) the staff identified as available to support in Japan.

Regarding additional staff available to support in the ops center, the primary needs are for the specialized positions on the PMT and anyone with previous international experience in OIP.

Regarding support in Japan, please provide any updates/changes to the list by COB March 17. The target time frame for sending these staff members is March 27-April 9, so please consider that when considering staff to put on the list.

Thanks for your support.

*Michele*

**Lee, Richard**

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**From:** Kammerer, Annie  
**Sent:** Wednesday, March 16, 2011 5:29 PM  
**To:** RES Distribution  
**Subject:** sharepoint site where latest and greatest seismic Q&As can be found moving forward

Please see the file that contains the latest document at...

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

We will be updating this daily or almost daily in the foreseeable future. So please go to this site if you'd like to see the latest.

The site gives RES the credit since we're the lead and started it; but there is a big team supporting this that includes staff from RES, NRO, NRR and the regions.

Annie

## Lee, Richard

**From:** Gibson, Kathy  
**Sent:** Wednesday, March 16, 2011 5:55 PM  
**To:** Zigh, Ghani; Scott, Michael  
**Cc:** Tinkler, Charles; Lee, Richard; Santiago, Patricia  
**Subject:** Re: BWR Zirc Fire Experiment

Charlie also talked to Sandia and they told him that NEI and GE asked for a list of reports that are relevant to SFP zirc fire. Charlie told them to go ahead and provide the list. I suspect GE and/or NEI will then ask us for some or all of the docs on the list.

Richard sent an email to OGC to ask about releasing OUO docs and waiting to hear back.

We will keep working it until we have the relevant information to make a decision about what to release and to whom.

---

**From:** Zigh, Ghani  
**To:** Gibson, Kathy; Scott, Michael  
**Sent:** Wed Mar 16 16:30:23 2011  
**Subject:** BWR Zirc Fire Experiment

Kathy,  
I did talk to Sandia. They are going to inquire more about the information that both NEI and GE are looking for. They may refer them to us.  
The bottom line is that no information about zirc fire will be exchanged without our knowledge.  
I also told SNL that we may prepare a fact sheet that we can give to GE and NEI. The information sheet will have enough information to indicate that zirc fire is possible.  
Thanks

*Ghani Zigh*

## Lee, Richard

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**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Thursday, March 17, 2011 9:15 AM  
**To:** Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
**Cc:** 'corradin@cae.wisc.edu'  
**Subject:** RE: Assesment of cooling requirements for Fukushima units 1-3

Hi everyone,

I want to make two final sugestions that I thought of this morning and I'm sending it to you in hopes that it can be factored into the accident management at the site ASAP. My hand calculations below indicated that at the fire pumping rate of 30 T/hour through the cores (?) outlet core temp on unit 1 should go subcooled today. However, it's going to be another week at least for units 2-3. I've also heard about salt crystalization concerns, and that may be detrimental to flow passages through the core/core debris. So, if they are getting more equipment on site, it would be very beneficial to double the pumping capacity for units 2/3 to try to get those subcooled ASAP. This would: 1) decrease crystalization rate of salt and 2) really reduce source term from the cores. Then, the only steaming you should be able to see from the plants would be the spent fuel pools which they are attacking now. This would help clarify some of the aerial data from units 2-3 iof the only steam source were the pools.

Second, I don't know if the drywell plugs are still in place, but if you flood the drywell to the extent that it fills out the top, then some of the water spilling onto the deck would make it into the SFP??

This is my last direct contact, we now have to go through DOE, but I want to get info out as fast as possible so that it can help if viable.

Praying for the Japanese,  
Mitch

---

er, Mitchell T.  
y, March 14, 2011 1:31 PM  
. Charles'; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
FW: Assesment of cooling requirements for Fukushima units 1-3

FYI.  
Mitch

---

er, Mitchell T.  
y, March 14, 2011 1:22 PM  
. Christopher; Khalil, Hussein S.; Peters, Mark T.; Sattelberger, Alfred P.  
n@cae.wisc.edu'; Seidensticker, Ralph W.  
Assesment of cooling requirements for Fukushima units 1-3

All,

I did a few back of the envelope calculations to scope out what the cooling requirements will be at Fukushima units 1-3 in the event that they are not able to reestablish power to the site and, thereby, normal cooling functions at these plants.

The limited information I have suggests that they are supplying 30 MT/hour of seawater to unit 1, and so I'll assume that the same is currently going to units 2 and 3. To put this in perspective, that amount of cooling flow can remove 2.8 MW while remaining subcooled at atmospheric conditions, and up to 21.7 MW if this amount of water is completely boiled off. Ideally, you would like to get to subcooled outlet core conditions so you'll stop forming steam and then you can stop the venting that is causing concern right now.

That amount of heat removal needs to be compared to the decay heat levels in these reactors to determine when subcooled conditions can be reached. Unit 1 was 460 Mwe and Units 2- 3 were 784 Mwe per Chris's previous email. Thus, I estimate the thermal power levels of these reactors to be 1200 MWt and 2000 MWt, respectively. After three days (or currently), the power level for a U core would fall to about 0.4 % assuming that the reactors had operated for 200 full-power days before the earthquake (a little higher for the MOX core but I don't have data to assess that). Thus, decay heat in Unit 1 is now about 4.8 MW and for Units 2/3 it's about 8 MWt. Thus, I suspect they're still venting steam at all three units. I then looked at the times when the decay heat will fall below the level at which subcooling can be achieved (ie 2.8

X/112



MWt core decay heat level) and for unit 1 that is 6 days total (ie 3 days from now) and for units 2 and 3 it will be about 16 days (ie 13 more days).

This is a worst case scenario that assumes they can't get electricit back to the site and establish normal cooling function; ie they have to rely on sea water injection. Also, I assumed 200 full power days; the power level could be less or a little more if I overestimated/underestimated operation times.

As far as coolability of the degraded cores, my opinion is that units 1 and 3 are in coolable configurations; it's been 3 days now and if the configuraiton was not coolable the material most likely would have failed the reactor pressure vessel. I guess the jury is still out on Unit 2; I think the entire core has gone dry at least once. The good news is that the decay heat is way down from what it was a few hours after the accident was initiated.

Mitch

**From:** Bonaccorso, Amy  
**To:** Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** Any emails from OPA Resource?  
**Date:** Thursday, March 17, 2011 9:51:00 AM

---

Jenny is willing to help with that if you need it.... I am not seeing anything come in and have a feeling that there are some there.

xf113

## **Bonaccorso, Amy**

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**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 9:59 AM  
**To:** Bonaccorso, Amy  
**Cc:** Deavers, Ron  
**Subject:** RE: Here in rm O17C04 a and b

Mindy will fix this

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

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 9:40 AM  
**To:** Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** RE: Here in rm O17C04 a and b

Hi Holly:

Right now, we are trying to teach Christian and Jenny a little bit but we only have access to two computers and phones.

Ron is at 3689.

He's so good on the phone!

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

**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 9:36 AM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Here in rm O17C04 a and b

Thank you. Can you give me ron's number, too?

Check in with me periodically. Let me now how it's going, number of calls, any problems, etc.

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

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 7:57 AM  
**To:** Harrington, Holly  
**Subject:** Here in rm O17C04 a and b

My phone is 301-415-1822 and there is a seat for Ron in here.

**Reeves, Rosemary**

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**From:** Reeves, Rosemary  
**Sent:** Thursday, March 17, 2011 9:15 AM  
**To:** 'Reeves, Steven'  
**Subject:** Updated news on Japan Nuclear Tragedy  
**Attachments:** Talking Points Two Pager 031711 0700 EDT.docx

Steve,

This is a sensitive document. Please be selective with whom you share it. (It says 2 pager, but is actually a 3 pager.)

RR

## Reeves, Rosemary

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**From:** Hiltz, Thomas  
**Sent:** Thursday, March 17, 2011 8:47 AM  
**To:** Adams, Mary; Bartlett, Matthew; Guardiola, Maria; Liu, Tilda; Mattern, Kevin; Reeves, Rosemary; Reilly, Breeda  
**Subject:** FW: FOR OFFICIAL USE ONLY : 0700 Talking Points Update  
**Attachments:** Talking Points Two Pager. 031711. 0700 EDT.docx

FYI

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**From:** Tschiltz, Michael  
**Sent:** Thursday, March 17, 2011 8:23 AM  
**To:** Smith, Brian; Habighorst, Peter; Hiltz, Thomas; Silva, Patricia; Bailey, Marissa; Johnson, Robert; Campbell, Larry  
**Subject:** FOR OFFICIAL USE ONLY : 0700 Talking Points Update

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Attached .. please feel free to share with your staff with the precaution that this is O.U.O.. Also, inquiries from outside the agency should be referred to the Office of Public Affairs.

Thanks, Mike

---

**From:** LIA07 Hoc  
**Sent:** Thursday, March 17, 2011 7:27 AM  
**To:** LIA07 Hoc; Borchardt, Bill; Virgilio, Martin; Weber, Michael; Jaczko, Gregory; Pace, Patti; Speiser, Herald; Gibbs, Catina; Leeds, Eric; Haney, Catherine; Sheron, Brian; Johnson, Michael; Walker, Dwight; Flory, Shirley; Ostendorff, William; Svinicki, Kristine; Apostolakis, George; Magwood, William  
**Subject:** 0700 Talking Points Update

Please find attached a 0700 NRC talking points. This update corrects a statement in the 0600 talking points regarding the US State Department's actions for its employees in Japan.

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

Thank you,

-Jim

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

NRC "Talking Points" – Current as of March 17, 2011, 0600 EDT

Reactor Status

- Fukushima Daiichi Units 1 - 6
  - TEPCO is working to restore site power and anticipates restoration to Units 2,5, and 6 today and Units 1, 3, and 4 tomorrow.

Unit 1

- Core damage occurred due to insufficient cooling water caused by loss of offsite power and onsite diesel generators following the tsunami
- As of 2200 JST (0900 EDT) on March 14, it is reported that sea water is being injected with reported stable cooling
- Containment described as "functional"
- Hydrogen explosion from overheated fuel-water reaction has damaged reactor building (secondary containment)
- The spent fuel pool level is unknown
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- Core cooling is via the core spray header.

Unit 2

- Core damage occurred due to insufficient cooling water caused by loss of offsite power and onsite diesel generators following the tsunami
- Reactor Core Isolation Cooling (RCIC) has failed
- Secondary containment: Cut hole in the side of the reactor building superstructure to reduce likelihood of hydrogen gas buildup
- Sea water injection restarted with core cooling reported as not stable
- Primary containment is intact
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- The spent fuel pool level is unknown. Some water is available as evidenced by steam emanating from hole.

Unit 3

- Core damage due to insufficient cooling water caused by loss of offsite power and onsite diesel generators following the tsunami
- Sea water is being injected with reported stable cooling
- Hydrogen explosion from overheated fuel-water reaction has severely damaged reactor building (secondary containment)
- Primary containment described as "functional"
- The spent fuel pool level is possibly drained – some evidence of steam.
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- Unit 3 is currently TEPCO's priority (unclear whether reactor or spent fuel pool)
- Water cannon should be onsite soon (as of 0400 EDT)

Unit 4

- Unit was in a refueling outage at the time of the event and core was off loaded to the SFP
- First fire in the reactor building was a small generator lube oil fire. IAEA reports that fire was put out at 2200 EDT, March 14.
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- Second fire began at 1645 EDT, March 15, 2011 in reactor building. Fuel reported to be uncovered.
- Radiation level outside Unit 4 reported to be 30R/hour following second fire.

- High radiation dose rates measured between Units 3 and 4, source is suspected to be the Unit 4 spent fuel pool.
- The spent fuel pool's ability to retain water is in doubt, no steam – likely dry.

#### Unit 5

- The reactor is defueled.
- IAEA Reports Temperature of pool at 64.5 degrees C at 1500 EDT, March 16, 2011.
- Unit 5 diesel generator is providing power to cool Units 5 and 6 spent fuel pools.

#### Unit 6

- The reactor is defueled.
- IAEA Reports Temperature of pool at 61.0 degrees C at 1300 EDT, March 16, 2011.
- Power to cool the Unit 6 spent fuel pool is being provided by the Unit 5 diesel generator.

#### Other Japanese Nuclear Sites:

- Fukushima Daiichi Units 1 - 4: As of 7:15 am on March 15 (Japan), Tepco press release reports reactors in cold shutdown and offsite power available.
- Onagawa Units 1 - 3: shutdown, stable, turbine building basement fire extinguished.
- Kashiwazaki Kariwa Nuclear Power Station (Advanced Reactors): Units 1, 5, 6, 7: normal operation / Units 2 to 4: regular outage
- Rokkasho: all units continue safe operations without malfunctions, impacts from earthquake quickly mitigated (emergency diesel generators used, spilt SFP liquid drained and recovered in liquid waste treatment)

#### Protective Action Recommendations

- For Fukushima Daiichi site, Japanese national government issued a protective action recommendation that instructed evacuation for local residents within a 20km radius of the site boundary and sheltering in place out to 30km for residents who stayed behind
- Japan has imposed no-fly zone (30km radius, altitude unlimited) over Daiichi plants.
- A RASCAL run at 06:54AM (EDT) on March 16, 2011 for hypothetical combined core based on the following assumptions: Units 2 & 3 each, 33% core melt & no containment; Unit 4, full core offload 100% melt in the Spent Fuel Pool (SFP) with no roof; wind direction from West Northwest blowing out to the ocean. Results: PAG exceeded at 50 miles (80.5 km) with TEDE of 24.0 rem, and CDE thyroid of 130 rem.
- Based upon the degrading situation at the Daiichi plant, the US NRC recommends that Americans within 50 miles of the Daiichi plant to evacuate the area.
- The US State Department has approved voluntary authorized departure of family members at the U.S. Embassy in Tokyo, the U.S. Consulate in Nagoya and the Foreign Service Institute in Yokohama.

#### Meteorological Conditions:

Forecast meteorological data for the 24 hour period (until 1200 EDT on March 17, 2011) indicates wind headed offshore (from NW).

#### General Talking Points

- TEPCO and US Forces in Japan (USFJ) are working together to allocate firefighting and heavy equipment capable of pumping seawater from the ocean into containment.
  - TEPCO appears to be supplying water by helicopter and water cannon.
  - A list of additional equipment to provide for accident mitigation has been developed by NRC and provided to USAID.
  - Five portable pumps arrived at the Daiichi facility Thursday (1130 SST) from Yokota Air Force Base. Additional equipment to connect pumps is being coordinated.
- Disaster Assistance Response Team arrived Sunday:

- 11 NRC staff are in Tokyo with the Ambassador and getting information from Japanese officials.
- NRC continues to develop projections of the accident's progression, dose estimates and Q&As, including those addressing the safety of reactors in operation in the US.
- Government of Japan has accepted US offer to conduct aerial/ground monitoring and also requested potassium iodide tablets. DOE Aerial Measurement Teams have completed fly over the Daiichi site. Awaiting results.
- The NRC has been asked to provide recommendations for solutions to the spent fuel pool issues during conference call with NISA and TEPCO.



**Bonaccorso, Amy**

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**From:** Akstulewicz, Brenda  
**Sent:** Thursday, March 17, 2011 9:36 AM  
**To:** Bonaccorso, Amy  
**Subject:** RE: 17th fl touchdown #

thanks Amy!

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**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 8:53 AM  
**To:** Akstulewicz, Brenda  
**Subject:** 17th fl touchdown #

I am at 415-1822.

X/116

**From:** Bonaccorso, Amy  
**To:** Cianci, Sandra; Taylor, Renee; Garland, Stephanie; Hasan, Nasreen  
**Cc:** Muessle, Mary; Deavers, Ron; Landau, Mindy; Harrington, Holly  
**Subject:** RE: Amy Bonaccorso and Ron Deavers (OEDO Touchdown Station- for Public Inquiries)  
**Date:** Thursday, March 17, 2011 9:37:00 AM

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Folks:

If you get calls from people with solutions to the crisis, OPA is asking the first person who picks up the phone to say something like this:

We appreciate the suggestions of folks with ideas to resolve the situation in Japan. 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.

We are not calling people back on these suggestions.

Thank you,

Amy

---

**From:** Cianci, Sandra  
**Sent:** Thursday, March 17, 2011 8:49 AM  
**To:** Taylor, Renee; Garland, Stephanie; Hasan, Nasreen  
**Cc:** Muessle, Mary; Deavers, Ron; Bonaccorso, Amy; Landau, Mindy  
**Subject:** Amy Bonaccorso and Ron Deavers (OEDO Touchdown Station- for Public Inquiries)  
**Importance:** High

Ladies,

If we receive calls from the public please take a message, and email the information to Amy and Ron.

- Name, purpose or inquiry, and phone number

Please inform the caller we will provide their information/inquiry to the appropriate staff, not a guarantee they will receive a call back.

Amy and Ron will determine if a call back is necessary.

Thanks

*Sandy Cianci*  
Administrative Assistant to Marty Virgilio, DEDR  
Office of the Executive Director for Operations  
O-17 H13

X/117

301-415-1714

sandra.cianci@nrc.gov

**From:** Mr. Brady  
**To:** Bonaccorso, Amy  
**Subject:** Re: [http://www.epa.gov/narel/radnet/pdf/navigating\\_radnet.htm](http://www.epa.gov/narel/radnet/pdf/navigating_radnet.htm)  
**Date:** Thursday, March 17, 2011 9:06:41 AM

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Amy,

Thank you for the link. May we all be very healthy and to those who want to be as well, help them become healthy in all aspects of life. We can teach them to fish for themselves rather than just give them fish and make them dependent.

Take care, Pat

On Thu, Mar 17, 2011 at 6:01 AM, Bonaccorso, Amy <[amy.Bonaccorso@nrc.gov](mailto:amy.Bonaccorso@nrc.gov)> wrote:

Good morning Pat:

Thanks for your call – The link is in the subject line.

Thanks,

Amy

X/118

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Cc:** [Deavers, Ron](#)  
**Subject:** RE: sharepoint site where latest and greatest seismic Q&As can be found moving forward  
**Date:** Thursday, March 17, 2011 9:35:43 AM

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Sure, if you feel comfortable using it

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**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 8:11 AM  
**To:** Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** FW: sharepoint site where latest and greatest seismic Q&As can be found moving forward

There is a 59 pager here on with Seismic Q&A with public responses. It says Official Use only – but I am assuming we can use these responses for callers because it does say “public responses.” Is that right? Just checking. There is some good stuff in there.

---

**From:** Kammerer, Annie  
**Sent:** Wednesday, March 16, 2011 5:29 PM  
**To:** RES Distribution  
**Subject:** sharepoint site where latest and greatest seismic Q&As can be found moving forward

Please see the file that contains the latest document at...

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

We will be updating this daily or almost daily in the foreseeable future. So please go to this site if you'd like to see the latest.

The site gives RES the credit since we're the lead and started it; but there is a big team supporting this that includes staff from RES, NRO, NRR and the regions.

Annie

x/1119

**Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 9:36 AM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Here in rm O17C04 a and b

Thank you. Can you give me ron's number, too?

Check in with me periodically. Let me now how it's going, number of calls, any problems, etc.

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

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 7:57 AM  
**To:** Harrington, Holly  
**Subject:** Here in rm O17C04 a and b

My phone is 301-415-1822 and there is a seat for Ron in here.

## **Bonaccorso, Amy**

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**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 10:02 PM  
**To:** Hayden, Elizabeth; Burnell, Scott; Harrington, Holly; McIntyre, David; Couret, Ivonne; Shannon, Valerie; Janbergs, Holly; Akstulewicz, Brenda; Wittick, Susan; Royer, Deanna; Bonaccorso, Amy; Deavers, Ron; Tobin, Jennifer; Taylor, Robert; Steger (Tucci), Christine; Ghneim, Munira; Widomski, Michael  
**Subject:** kudos to all

Four hours ago, the chairman called me to tell me to go home and get some rest. So, here I sit in a hotel room finishing up my emails and listening to some guy from Burson-Marstetler hustle me for business. I finally told him I had to get off the line because I had something important to do. (he made some good points that perhaps we can use going forward, but I don't think I'll hire him.)

What I had to do was tell you what the chairman also said to me. He told me that he thought Public Affairs was doing a great job in dealing with all the issues being thrown at us. I always agree with the chairman, well most of the time, and this happens to be one of them.

Not only have OPAers pitched in with long days and long nights, others in the agency have now come to our aid and it is making our collective job much easier. In fact, we are now bringing in some additional help and I suspect when all the paperwork is done you may recognize at least one of the names.

I am so honored to be working with such a bunch of professionals. I can go out with the chairman on his many rounds and know without fail that the job is getting done.

As reporters, many of us had front row seats at history. Today, we are part of making history and it is a time we will never forget. The days will continue to be long, but hopefully we can start giving folks some time off. One thing to remember: This is a marathon, not a sprint. (Yeah, how many times have you heard that metaphor used?) Pace yourself. Take time to go outside and enjoy the spring, feel the sun on your face, and come back knowing you are doing a damn fine job.

I thank you.

Eliot

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** RE: Availability for Friday and Weekend  
**Date:** Thursday, March 17, 2011 6:19:49 PM

---

Let's chat in the morning. Can I ever thank you enough?? People are very grateful for what you and Ron and the others are doing.

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:03 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** Availability for Friday and Weekend

Holly:

Amy Bonaccorso – Available on Friday and the Weekend

Jenny Tobin: She is at the Ops Center from 3:00-11:00pm tomorrow, so she could possibly come from noon to 3:00 pm. She also says that questions can be forwarded to her in the Ops Center, where she may be able to handle them. At the Ops Center over the weekend and can answer emails from there.

Christiane: Not available on Friday. She could come on Saturday or Sunday, and next Tuesday.

Ron: He is only available for half the day tomorrow. He has some things to do for his primary job. He could come either in the morning or the afternoon until 5:00pm tomorrow. He is not available over the weekend. May be able to come on Monday.

Thanks,

Amy

X/122



**From:** [OPA Resource](#)  
**To:** [Deavers, Ron](#); [Bonaccorso, Amy](#)  
**Subject:** FW: NRC Doc 11-050 ; dtd 16 Mar 2011  
**Date:** Thursday, March 17, 2011 6:21:58 PM  
**Importance:** High

---

**From:** Mahon, John (IHS/HQ) [mailto:[John.Mahon@ihs.gov](mailto:John.Mahon@ihs.gov)]  
**Sent:** Thursday, March 17, 2011 12:01 PM  
**To:** OPA Resource  
**Subject:** NRC Doc 11-050 ; dtd 16 Mar 2011  
**Importance:** High

Thank you for update ... can I assume the Alaska assessment includes the Aleutian Islands? We have Tribes in those locations who are expressing concern about radiation fall-out and affects. Thank you.

JD Skip Mahon  
Emergency Preparedness Coordinator  
DHHS/Indian Health Service HQ  
301.443.8680  
[John.mahon@ihs.gov](mailto:John.mahon@ihs.gov)

X/123

**From:** Deavers, Ron  
**To:** OPA Resource; Bonaccorso, Amy  
**Subject:** RE: Radiation Question  
**Date:** Thursday, March 17, 2011 7:23:35 PM

---

Can't respond, not enough info

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

From: OPA Resource  
Sent: Thursday, March 17, 2011 6:23 PM  
To: Deavers, Ron; Bonaccorso, Amy  
Subject: FW: Radiation Question

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

From: uid no body [<mailto:nobody@www.nrc.gov>]  
Sent: Thursday, March 17, 2011 10:55 AM  
To: OPA Resource  
Subject: Radiation Question

Below is the result of your feedback form. It was submitted by  
(vikingman90) on Thursday, March 17, 2011 at 10:55:18  
-----

comments: is there a public web site where we can check radiation levels from Govt. installed detectors.  
Such as in Los Angeles CA.

contactName:

phone:  
-----

X/124

## **Bonaccorso, Amy**

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 6:23 PM  
**To:** Harrington, Holly  
**Subject:** RE: Availability for Friday and Weekend

Lol! No problem. It's a real FEMA flashback for me.

Ron is a real pro on the phone. He's got that laid back, non-bureaucratic, "you can trust me" tone.

I'm doing the best I can and I feel really guilty when I have to forward anything to you....so I am really sorry if anything comes into your inbox when you have bigger fish to fry. Sometimes, these people get very technical.

I'll be in tomorrow – I am still working some stuff at Church Street.

---

**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 6:20 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Availability for Friday and Weekend

Let's chat in the morning. Can I ever thank you enough?? People are very grateful for what you and Ron and the others are doing.

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:03 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** Availability for Friday and Weekend

Holly:

Amy Bonaccorso – Available on Friday and the Weekend

Jenny Tobin: She is at the Ops Center from 3:00-11:00pm tomorrow, so she could possibly come from noon to 3:00 pm. She also says that questions can be forwarded to her in the Ops Center, where she may be able to handle them. At the Ops Center over the weekend and can answer emails from there.

Christiane: Not available on Friday. She could come on Saturday or Sunday, and next Tuesday.

Ron: He is only available for half the day tomorrow. He has some things to do for his primary job. He could come either in the morning or the afternoon until 5:00pm tomorrow. He is not available over the weekend. May be able to come on Monday.

Thanks,

Amy

**From:** Harrington, Holly  
**To:** Bonaccorso, Amy  
**Subject:** RE: Availability for Friday and Weekend  
**Date:** Thursday, March 17, 2011 5:59:17 PM

---

Ill get you help

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 5:16 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** FW: Availability for Friday and Weekend

Re-sending – didn't sound like you got it. I am sure you are swamped with email.

We won't be fully staffed tomorrow.

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:03 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** Availability for Friday and Weekend

Holly:

Amy Bonaccorso – Available on Friday and the Weekend

Jenny Tobin: She is at the Ops Center from 3:00-11:00pm tomorrow, so she could possibly come from noon to 3:00 pm. She also says that questions can be forwarded to her in the Ops Center, where she may be able to handle them. At the Ops Center over the weekend and can answer emails from there.

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Ron: He is only available for half the day tomorrow. He has some things to do for his primary job. He could come either in the morning or the afternoon until 5:00pm tomorrow. He is not available over the weekend. May be able to come on Monday.

Thanks,

Amy

X/126

**From:** [OPA Resource](#)  
**To:** [Janbergs, Holly](#)  
**Cc:** [OPA Resource](#)  
**Subject:** OPA Mailbox  
**Date:** Thursday, March 17, 2011 6:06:45 PM

---

Bethany,

I'll go through the incoming emails from A-N you go through those starting with O-Z sound good to you?

Send:

All media inquiries to Ivonne

Citizen requests for information go to:

[ron.deavers@nrc.gov](mailto:ron.deavers@nrc.gov)

[amy.bonaccorso@nrc.gov](mailto:amy.bonaccorso@nrc.gov)

let me know if you have ?'s

**Office of Public Affairs**  
US Nuclear Regulatory Commission  
301-415-8200  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)

X/127

**From:** Deavers, Ron  
**To:** Bonaccorso, Amy; Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** FW: Susan Pickering - Senior Manager of Nuclear Safety Technology Group of Sandia National Laboratories  
**Date:** Thursday, March 17, 2011 3:40:54 PM

---

calling

---

**From:** Ghneim, Munira  
**Sent:** Thursday, March 17, 2011 3:26 PM  
**To:** Deavers, Ron  
**Subject:** Susan Pickering - Senior Manager of Nuclear Safety Technology Group of Sandia National Laboratories

Organization - Nuclear Safety Technology Group of Sandia National Laboratories  
Contact – Susan Pickering  
Phone – 505-284-4800  
Email – sypicke@sandia.gov  
Request – For emergency technology information

Thank you,  
Munira Ghneim  
Contract Secretary  
Office of Information Services  
301-415-1170

x/128

**From:** Tobin, Jennifer  
**To:** Bonaccorso, Amy  
**Subject:** RE: Call  
**Date:** Thursday, March 17, 2011 3:47:12 PM

---

calling

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 3:37 PM  
**To:** Tobin, Jennifer  
**Cc:** Deavers, Ron  
**Subject:** FW: Call

Here ya go

---

**From:** Shannon, Valerie  
**Sent:** Thursday, March 17, 2011 3:35 PM  
**To:** Bonaccorso, Amy; Deavers, Ron  
**Subject:** Call

Name: Matt Arno, Health Physicist  
From: Fox Fire Scientific (consulting firm)  
Phon: 817-995-676  
E-mail: [Arno@foxfirescientific.com](mailto:Arno@foxfirescientific.com)  
Re: Japan

Val

X/129

**From:** Harrington, Holly  
**To:** Deavers, Ron  
**Cc:** Bonaccorso, Amy  
**Subject:** RE: Susan Pickering - Senior Manager of Nuclear Safety Technology Group of Sandia National Laboratories  
**Date:** Thursday, March 17, 2011 3:52:54 PM

---

We'll handle here

---

**From:** Deavers, Ron  
**Sent:** Thursday, March 17, 2011 3:50 PM  
**To:** Harrington, Holly  
**Cc:** Bonaccorso, Amy  
**Subject:** FW: Susan Pickering - Senior Manager of Nuclear Safety Technology Group of Sandia National Laboratories  
**Importance:** High

Holly,

Susan (and Sandia) are getting request fro information that require approval from OPA to release.

---

**From:** Ghneim, Munira  
**Sent:** Thursday, March 17, 2011 3:26 PM  
**To:** Deavers, Ron  
**Subject:** Susan Pickering - Senior Manager of Nuclear Safety Technology Group of Sandia National Laboratories

Organization - Nuclear Safety Technology Group of Sandia National Laboratories  
Contact - Susan Pickering  
Phone 505-284-4806  
Email - sypicke@sandia.gov  
Request - For emergency technology information

Thank you,  
Munira Ghneim  
Contract Secretary  
Office of Information Services  
301-415-1170

X/130



**From:** Bonaccorso, Amy  
**To:** Steger (Tucci), Christine  
**Subject:** EPA Website for monitoring radiation: RadNet  
**Date:** Thursday, March 17, 2011 4:20:00 PM

---

Not sure if we should be giving this out much at this point because the technical people I am with are telling me the info isn't at the right level – I'm going to review now.

<http://cdx.epa.gov>

4131

**From:** Steger (Tucci), Christine  
**To:** Bonaccorso, Amy  
**Subject:** RE: FYI - concerns about Radnet not being public friendly  
**Date:** Thursday, March 17, 2011 4:33:31 PM

---

OK thanks – I had already sent someone there – we will see if he calls back

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:30 PM  
**To:** Steger (Tucci), Christine  
**Subject:** Fw: FYI - concerns about Radnet not being public friendly

Fyi

---

**From:** Bonaccorso, Amy  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Sent:** Thu Mar 17 16:28:16 2011  
**Subject:** FYI - concerns about Radnet not being public friendly

Holly:

Christianne just explained to me.....

RadNet isn't all it's cracked up to be. People have to go through a registration process and the Web site does not give dose. It gives a lot of highly technical information that the public would have no chance of interpreting. We had someone go to that site and email us back with the info for an interpretation...so essentially he was going around in a circle...

It also doesn't give info about EPA's monitoring of milk, etc.

It's what is available – but I guess we just need to be careful about promoting it as a public friendly Web site with a lot of information that is easy to understand.

Thanks,

Amy

X1132

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Cc:** [Tobin, Jennifer](#); [Ridge, Christianne](#); [Deavers, Ron](#)  
**Subject:** RE: FYI - concerns about Radnet not being public friendly  
**Date:** Thursday, March 17, 2011 4:58:59 PM

---

I know. Radnet, quite honestly, sucks

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:28 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** FYI - concerns about Radnet not being public friendly

Holly:

Christianne just explained to me.....

RadNet isn't all it's cracked up to be. People have to go through a registration process and the Web site does not give dose. It gives a lot of highly technical information that the public would have no chance of interpreting. We had someone go to that site and email us back with the info for an interpretation...so essentially he was going around in a circle...

It also doesn't give info about EPA's monitoring of milk, etc.

It's what is available – but I guess we just need to be careful about promoting it as a public friendly Web site with a lot of information that is easy to understand.

Thanks,

Amy

X/133

## **Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 5:00 PM  
**To:** Bonaccorso, Amy; Deavers, Ron; Tobin, Jennifer; Ridge, Christianne  
**Cc:** Akstulewicz, Brenda; Steger (Tucci), Christine; Ghneim, Munira  
**Subject:** RE: How long can everyone stay?

Fantastic! Thank you all. I wish I'd been up to say that in person.

Amy – did you go a head count for tomorrow?

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:37 PM  
**To:** Deavers, Ron; Tobin, Jennifer; Ridge, Christianne  
**Cc:** Harrington, Holly; Akstulewicz, Brenda; Steger (Tucci), Christine; Ghneim, Munira  
**Subject:** RE: How long can everyone stay?

Okay – I'll leave in a few then. We have coverage until 7.

---

**From:** Deavers, Ron  
**Sent:** Thursday, March 17, 2011 4:34 PM  
**To:** Bonaccorso, Amy; Tobin, Jennifer; Ridge, Christianne  
**Cc:** Harrington, Holly  
**Subject:** RE: How long can everyone stay?

I am here until 7:00 PM

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:33 PM  
**To:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Cc:** Harrington, Holly  
**Subject:** How long can everyone stay?

I need to return to the office at some point to take care of 2 items.

I thought it would be good for Holly to know how long everyone is staying though.

Thanks,

Amy

## **Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 5:08 PM  
**To:** Sheehan, Neil; Taylor, Robert; Steger (Tucci), Christine; Deavers, Ron; Ghneim, Munira; Janbergs, Holly; Wittick, Susan; Widomski, Michael; Shannon, Valerie; Bonaccorso, Amy; Deavers, Ron; Ridge, Christianne; Tobin, Jennifer; Medina, Veronika; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David  
**Subject:** Schedule for Friday

If anyone has heart burn, please let me know.

We'll work on weekend scheduling tomorrow. I will get it to you much earlier than this . . .

### Friday

Eliot: 7:30/?

Holly: 8:30-?

Beth: morning-?

### Op Center:

Neil 6 a.m. - ??

Dave: 8 a.m. – 6 p.m

Rob: 11 to 7 p.m.

Michael Widomski: 8-6 (loan from FEMA/general support in Op Center)

Scott: 1 p.m. -9 p.m.

### Phones:

Brenda: 7:30 – 6 p.m.

Christine 8-5

Munira: 8-5

Deanna Royer: 8-5 (loan from)

### Misc.

Susan Wittick: 8:15 a.m. to 5 p.m. (loan from OCA)

Bethany: 8 a.m. – 6 p.m.

Val: 6:45 – 4:30 p.m

### Media Desk:

Ivonne: 9-7

Veronkia: 7:15 to noon (loan from ADM)

Public Inquiries Desk (on 17<sup>th</sup> floor) (times approximate; not sure you schedules)

Amy Bonoccorso: 8 a.m. - 4:30 p.m. (loan)

Ron Deavers 8:30 – 7 pm.

Jenny Tobin – 8:30-6:30 (loan)

Christianne Ridge (loan) ???

## **Bonaccorso, Amy**

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 5:16 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** FW: Availability for Friday and Weekend

Re-sending – didn't sound like you got it. I am sure you are swamped with email.

We won't be fully staffed tomorrow.

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 4:03 PM  
**To:** Harrington, Holly  
**Cc:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron  
**Subject:** Availability for Friday and Weekend

Holly:

Amy Bonaccorso – Available on Friday and the Weekend

Jenny Tobin: She is at the Ops Center from 3:00-11:00pm tomorrow, so she could possibly come from noon to 3:00 pm. She also says that questions can be forwarded to her in the Ops Center, where she may be able to handle them. At the Ops Center over the weekend and can answer emails from there.

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Ron: He is only available for half the day tomorrow. He has some things to do for his primary job. He could come either in the morning or the afternoon until 5:00pm tomorrow. He is not available over the weekend. May be able to come on Monday.

Thanks,

Amy

**From:** Bonaccorso, Amy  
**To:** [robert.sanchez@linclightingelectrical.com](mailto:robert.sanchez@linclightingelectrical.com)  
**Subject:** REPLY: Solution to cool Japan reactor!  
**Date:** Thursday, March 17, 2011 3:06:00 PM  
**Importance:** High

---

Hello Mr. Sanchez:

We appreciate the suggestions of folks with ideas to resolve the situation in Japan. 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:** Robert Sanchez [mailto:[robert.sanchez@linclightingelectrical.com](mailto:robert.sanchez@linclightingelectrical.com)]  
**Sent:** Thursday, March 17, 2011 1:25 PM  
**To:** CMROSTENDORFF Resource  
**Subject:** Solution to cool Japan reactor!  
**Importance:** High

William,

I hope this reaches you, and I hope I'm not just wasting your time. Their efforts in Japan on cooling the spent fuel suggests to me that this "pool" is outdoors. They tried to reach it with water cannons which also suggests to me that the safe distance needed is not too far for what I suggest. I believe that helicopters can bring in hoses and direct them to the pool(s). They would have to be weighted of course to anchor them. And from a safer distance pump water through them. I hope this helps!

**Robert Sanchez**  
Journeyman Electrician |  
Linc Lighting and Electrical |  
An **ABM** Company  
Work: | Mobile: | Fax: | Other:  
Email: [robert.sanchez@linclightingelectrical.com](mailto:robert.sanchez@linclightingelectrical.com) | <http://www.thelincgroup.com>

---

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X/137



**From:** Bonaccorso, Amy  
**To:** Deavers, Ron  
**Subject:** FW: Solution to cool Japan reactor!  
**Date:** Thursday, March 17, 2011 3:06:00 PM  
**Importance:** High

---

Sent standard verbiage.

**From:** Akstulewicz, Brenda  
**Sent:** Thursday, March 17, 2011 3:00 PM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Subject:** FW: Solution to cool Japan reactor!  
**Importance:** High

**From:** Herr, Linda  
**Sent:** Thursday, March 17, 2011 2:50 PM  
**To:** OPA Resource  
**Cc:** Akstulewicz, Brenda; Shannon, Valerie; Brenner, Eliot; Bozin, Sunny; Franovich, Mike; Herr, Linda; Kock, Andrea; Nieh, Ho; Warnick, Greg; Zorn, Jason  
**Subject:** FW: Solution to cool Japan reactor!  
**Importance:** High

Hello!

Ho requested that I forward this to OPA for response.

Many thanks,  
Linda

**From:** CMROSTENDORFF Resource  
**Sent:** Thursday, March 17, 2011 2:21 PM  
**To:** Herr, Linda  
**Subject:** FW: Solution to cool Japan reactor!  
**Importance:** High

**From:** Robert Sanchez [mailto:robert.sanchez@linclightingelectrical.com]  
**Sent:** Thursday, March 17, 2011 1:25 PM  
**To:** CMROSTENDORFF Resource  
**Subject:** Solution to cool Japan reactor!  
**Importance:** High

William,

I hope this reaches you, and I hope I'm not just wasting your time. Their efforts in Japan on cooling the spent fuel suggests to me that this "pool" is outdoors. They tried to reach it with water cannons which also suggests to me that the safe distance needed is not too far for what I suggest. I believe that helicopters can bring in hoses and direct them to the pool(s). They would have to be

X/138

weighted of course to anchor them. And from a safer distance pump water through them. I hope this helps!

**Robert Sanchez**

Journeyman Electrician |

Linc Lighting and Electrical | ,

An **ABM** Company

Work: | Mobile: | Fax: | Other:

Email: [robert.sanchez@linclightingelectrical.com](mailto:robert.sanchez@linclightingelectrical.com) | <http://www.thelincgroup.com>

---

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**From:** Bonaccorso, Amy  
**To:** Deavers, Ron  
**Subject:** FW: Solution to cool Japan reactor!  
**Date:** Thursday, March 17, 2011 3:02:00 PM  
**Importance:** High

---

I got it.

---

**From:** Akstulewicz, Brenda  
**Sent:** Thursday, March 17, 2011 3:00 PM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Subject:** FW: Solution to cool Japan reactor!  
**Importance:** High

---

**From:** Herr, Linda  
**Sent:** Thursday, March 17, 2011 2:50 PM  
**To:** OPA Resource  
**Cc:** Akstulewicz, Brenda; Shannon, Valerie; Brenner, Eliot; Bozin, Sunny; Franovich, Mike; Herr, Linda; Kock, Andrea; Nieh, Ho; Warnick, Greg; Zorn, Jason  
**Subject:** FW: Solution to cool Japan reactor!  
**Importance:** High

Hello!

Ho requested that I forward this to OPA for response.

Many thanks,  
Linda

---

**From:** CMROSTENDORFF Resource  
**Sent:** Thursday, March 17, 2011 2:21 PM  
**To:** Herr, Linda  
**Subject:** FW: Solution to cool Japan reactor!  
**Importance:** High

---

**From:** Robert Sanchez [mailto:robert.sanchez@linlightingelectrical.com]  
**Sent:** Thursday, March 17, 2011 1:25 PM  
**To:** CMROSTENDORFF Resource  
**Subject:** Solution to cool Japan reactor!  
**Importance:** High

William,

I hope this reaches you, and I hope I'm not just wasting your time. Their efforts in Japan on cooling the spent fuel suggests to me that this "pool" is outdoors. They tried to reach it with water cannons which also suggests to me that the safe distance needed is not too far for what I suggest. I believe that helicopters can bring in hoses and direct them to the pool(s). They would have to be

X/139

weighted of course to anchor them. And from a safer distance pump water through them. I hope this helps!

**Robert Sanchez**

Journeyman Electrician |

Linc Lighting and Electrical | ,

An **ABM** Company

Work: | Mobile: | Fax: | Other:

Email: [robert.sanchez@linclightingelectrical.com](mailto:robert.sanchez@linclightingelectrical.com) | <http://www.thelincgroup.com>

---

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**From:** Bonaccorso, Amy  
**To:** Tobin, Jennifer; Ridge, Christianne  
**Subject:** FW: Screening at Airports and State inquiries  
**Date:** Thursday, March 17, 2011 2:58:00 PM

---

**From:** LIA04 Hoc

**Sent:** Wednesday, March 16, 2011 6:58 PM

**To:** OST05 Hoc; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Cc:** Piccone, Josephine; LIA11 Hoc; LIA01 Hoc; LIA05 Hoc; Akstulewicz, Brenda; Deavers, Ron; Nguyen, Quynh; Bonaccorso, Amy; Virgilio, Rosetta; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Satorius, Mark

**Subject:** Screening at Airports and State inquiries

We have received several requests through the RSLOs regarding the screening of planes/passengers/baggage landing in the U.S. from Japan. We have a contact, Helen Sterling (202-344-2433), with DHS/Customs and Border Protection.

They (DHS/CBP) are developing a sheet on just this topic she anticipates will be released tomorrow. As soon as the State Liaison receives her document, which she indicates will be releasable to the public, we will forward to everyone on to: and cc:

**RSLOs: Inquiries have come in from several States, including HI (Eckerd) and TN (Crosslin).**

Richard Turtill  
State Liaison – Liaison Team  
Incident Response Center

X/140

**From:** Bonaccorso, Amy  
**To:** Tobin, Jennifer; Ridge, Christianne; Deavers, Ron; Bonaccorso, Amy  
**Cc:** Harrington, Holly; Akstulewicz, Brenda  
**Subject:** Public Phone Call Team Contact Information  
**Date:** Thursday, March 17, 2011 11:14:55 AM

---

Jennifer Tobin – 17C4 – x3589  
Christianne Ridge – 17C2b – x1805  
Ron Deavers – 17A1 - x2589  
Amy Bonaccorso – 17C4 - x1822

X/141

**Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 11:05 AM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Update

You are to delegate stuff. You two are the two POCs for now and then you send work around as you see fit. OK?

I was told they had computers and phones now

---

**From:** Bonaccorso, Amy  
**Sent:** Thursday, March 17, 2011 10:43 AM  
**To:** Harrington, Holly  
**Subject:** Update

Holly:

I'm trying to get Jenny involved....I'm going to forward some emails to her...but not sure how to get Christian involved because all of the emails are still being sent to me and Ron. Ron is taking a break and Jenny is logged in at the desk he was working from. I guess I could just let Christian sit at my desk when something comes in.

At some point, we should start having stuff going to Jenny and Christian too – but without their own computer/phone, it's hard to make that transition.

**From:** Bonaccorso, Amy  
**To:** Tobin, Jennifer  
**Subject:** FW: Permission to forward public inquiries on radiation health questions  
**Date:** Thursday, March 17, 2011 10:47:00 AM

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**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 10:46 AM  
**To:** Landau, Mindy; Bonaccorso, Amy; Deavers, Ron; Janbergs, Holly; Akstulewicz, Brenda; Shannon, Valerie; Steger (Tucci), Christine; Widomski, Michael; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David; Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara  
**Subject:** Permission to forward public inquiries on radiation health questions

We have permission from the CDC to forward radiation health-related public callers to:

1-800-CDC-INFO

Do not post this, however. Internal use only

x/143



**From:** Harrington, Holly  
**To:** Bonaccorso, Amy  
**Subject:** FW: Touchdown Stations  
**Date:** Thursday, March 17, 2011 11:05:32 AM

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**From:** Harrington, Holly  
**Sent:** Thursday, March 17, 2011 10:44 AM  
**To:** Akstulewicz, Brenda  
**Subject:** FW: Touchdown Stations

For the gals answering the phones, if necessary

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**From:** Landau, Mindy  
**Sent:** Thursday, March 17, 2011 10:27 AM  
**To:** Harrington, Holly  
**Cc:** Wyatt, Melissa; Muesle, Mary  
**Subject:** Touchdown Stations

Holly,

The following touchdown stations/offices all have working computers and phones and are available now:

O-17C2b – x1805  
O-17C4a – x1822  
O-17C4b – x3589  
O-17A1 – x2589  
O-17H19 – x3108

Mindy S. Landau  
Deputy Assistant for Operations  
Communication and Performance Improvement  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555  
301-415-8703  
mindy.landau@nrc.gov

x1144

**Dion, Jeanne**

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**From:** Chokshi, Niles  
**Sent:** Thursday, March 17, 2011 4:21 PM  
**To:** Tadesse, Rebecca; Graves, Herman  
**Cc:** Hogan, Rosemary; Rivera-Lugo, Richard; Csontos, Aladar; Richards, Stuart; Case, Michael; Dion, Jeanne  
**Subject:** RE: TSUNAMI QUESTION

Rebecca,

Can you tell me in what connection you needed these slides? The reason I am asking is that we (RES. NRO, and NRR) have put together an extensive document of Qs and As on seismic and tsunami. This may be very useful to you. This is work in progress, but is being utilized by the senior management.

Also, the last side on seismic hazard does not belong to this presentation. I will send you a final presentation that I used in India.

Thanks,

Niles

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**From:** Tadesse, Rebecca  
**Sent:** Thursday, March 17, 2011 4:12 PM  
**To:** Graves, Herman  
**Cc:** Hogan, Rosemary; Rivera-Lugo, Richard; Csontos, Aladar; Richards, Stuart; Case, Michael; Chokshi, Niles; Dion, Jeanne  
**Subject:** RE: TSUNAMI QUESTION

Herman,

Thank you so much for getting me the information quickly.

Thanks  
Rebecca

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**From:** Graves, Herman  
**Sent:** Thursday, March 17, 2011 4:08 PM  
**To:** Tadesse, Rebecca  
**Cc:** Hogan, Rosemary; Rivera-Lugo, Richard; Csontos, Aladar; Richards, Stuart; Case, Michael; Chokshi, Niles; Dion, Jeanne  
**Subject:** TSUNAMI QUESTION

Ms. Tadesse (Rebecca),

As discussed with you and Al Csontos this afternoon I have attached a set of slides prepared by myself and Niles Chokshi that may answer any questions Commissioner Magwood has on tsunamis. Please note that the slide were prepared in 2005.

The NUREG/CR-6996 is entitled "Tsunami Hazard Assessment at Nuclear Power Plant Sites in the United States of America," published March 2009.

Feel free to contact me if there anymore questions.

X/1145

~~~~~

**Herman L. Graves, P. E., F. ACI**

Sr. Structural Engineer

USNRC-RES

Mail Stop : C-5A24M

Telephone: 301.251.7625

Fax: 301-251-7425

email: [Herman.Graves@NRC.GOV](mailto:Herman.Graves@NRC.GOV)

~~~~~

*"The contents of this message are mine personally and do not necessarily reflect any position of NRC"*

**From:** Astwood, Heather  
**To:** Williams, Shawn  
**Cc:** Regan, Christopher; McGinty, Tim; Boger, Bruce; Leeds, Eric; Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Rodriguez, Veronica; Azeem, Almas; Cartwright, William; Cusumano, Victor; Fields, Leslie; Heida, Bruce; Meighan, Sean; Nguyen, Quynh; Roquecruz, Carla; Susco, Jeremy; Titus, Brett; Valentine, Nicholee  
**Subject:** RE: Volunteers for assistance to OIP (NRO and NRR will provide additional names shortly)  
**Date:** Thursday, March 17, 2011 11:16:59 AM

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Shawn – As requested, here is the list for NRR staff available to support OIP.

Jim Vail - Div of Risk Assessment

Jeremy Susco – Div of License Renewal - available after the 28th

Sean Meighan - industry radiological protection / RP emergency planning experience.

Masters in Health Physics.

In addition, all of the NRR International team has volunteered. However, only one International team member could be used at a time. Would request part time shifts rotated between members if needed. Jon Hopkins is the primary.

Jon Hopkins – International Team

Heather Astwood – International team

Lauren Quinones – international team – would not be able to start until after April 18<sup>th</sup>.

**Travel to Japan**

Mike Cullingford – International Liaison

Jon Hopkins – International team

thanks

**Heather Astwood**

International Team Leader

Office of Nuclear Reactor Regulation

U.S. Nuclear Regulatory Commission

301-415-1075

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**From:** Williams, Shawn  
**Sent:** Thursday, March 17, 2011 8:49 AM  
**To:** Ramsey, Jack; Mamish, Nader  
**Cc:** Andersen, James; Muessle, Mary; Rosales-Cooper, Cindy; Johnson, Michael; Astwood, Heather  
**Subject:** Volunteers for assistance to OIP (NRO and NRR will provide additional names shortly)

Jack, Nader,

Below is a consolidated list for volunteers to help out in OIP received thus far (NRO and NRR will provide their input shortly). It is understood that no paperwork will be required.

**RES:**

Donna- Marie Sangimino Jeff Dehn (recognizing only one can be provided)

X/146

FSME:

- Michelle Killian, MSSA, did a rotation to OIP.
- John Buckley, DWMEP, available starting 3/20/11 (prefers OIP vs. Ops Center)
- Diana Diaz-Toro, DWMEP, available starting 3/17/11, subject to her being available to support Eagle Rock hearing when that occurs).
- Dominick Orlando, DWMEP- available starting 3/17/11 at 1 PM.

NMSS:

Brittain Hill, HLWRS SL PhD

Jim Rubenstone, HLWRS Branch Chief, PhD

Bret Leslie, HLWRS PhD

NSIR:

John Tomlinson	Consultant - DSP
Oleg Bukharin	Sr. Security Specialist
Albert Tardiff	Sr. Security Specialist
	Security Project
Clyde Ragland	Manager
Stella Opara	Cyber Security Spec.
Amanda Nerret	Security Specialist
Mark Resner	Sr. Security Specialist
Perry Pederson	Cyber Security Spec

OEDO:

Shawn Williams

Brian Wittick

Leigh Trocine (After Ops. Center tour with USAID)

Region III: None

**Other volunteers for Ops Center support and/or travel Japan, that may be the same volunteers as above:**

Region 1:

- (1) Protective Measures Team; Assuming a four week window, we would can provide trained health physicists qualified in dose assessments to cover one position. Mike Reichard and Jack McFadden can alternate weeks.
- (2) Todd Jackson would be available for to support the Japan team. He is an experienced health physicists with extensive industry and NRC experience.

NSIR:

Tim Harris, Doug Huyck, and Craig Erlanger to support Ops Center staff.

FSME:

**POTENTIAL TRAVEL TO SUPPORT TEAM IN JAPAN**

- John Buckley, DWMEP (available for 2 weeks starting 3/27/11)
- Diana Diaz Toro, DWMEP (available for 2 weeks starting 3/27/11- subject to her being available to support Eagle Rock hearing).

**POTENTIAL OPS CENTER SUPPORT**

- Andrew Carrera, DILR, Radiotoxicity
- Solomon Sahle, DILR, Sampling (previous State experience on Emergency Response Teams).
- Bob Webber, PBPA, LT Coordinator
- John Buckley, DWMEP, (starting 3/20/11) LT International Liaison (would prefer OIP vs. Ops Center duty)
- Diana Diaz Toro- DWMEP, LT International Liaison, starting 3/17/11 (subject to her being available to support Eagle Rock hearing when that occurs).
- Dominick Orlando, DWMEP- Liaison Team, starting 1 PM 3/17/11.
- Harry Felsher, DWMEP- Liaison Team-Federal, available at certain times/dates.

#### **PREVIOUS RASCAL EXPERIENCE**

- Janine Katanic, MSSA, who is based in RIV.
- Rateb (Boby) Abu-Eid, DWMEP, (starting 3/27/11)
- Duane Schmidt, DWMEP, (starting 3/17/11)

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**From:** Muessle, Mary

**Sent:** Wednesday, March 16, 2011 9:32 AM

**To:** Evans, Michele; Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight; Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald

**Cc:** Williams, Shawn; Andersen, James; Ramsey, Jack

**Subject:** Additional Staff requirements outside Ops Center Long Term Staffing

**Importance:** High

OPA and OIP expect large call volumes today and in the next few weeks given expected news from Japan. OIP is looking for names of people who have desk officer or other OIP or international experience to assist them in the event that current staff cannot meet the work demands for call inquiries as well as ongoing international work. Please provide Shawn Williams and I a list of names that could serve to help OIP in this capacity and their general availability over the next week and month. It is difficult to determine the need level at this time, but as in the Op Center, it is anticipated OIP will have for an additional month. We would like the list of names by COB today.

Thanks

Mary

Mary Muesle

Assistant for Operations - Acting

Office of the Executive Director for Operations

U.S. Nuclear Regulatory Commission

301-415-1703 office

301-415-2700 fax

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**From:** Evans, Michele

**Sent:** Tuesday, March 15, 2011 5:53 PM

**To:** Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Muesse, Mary; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight; Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald

**Subject:** Follow-up from 4 pm teleconference on Ops Center Long Term Staffing

Everyone,

Please find attached 1) a list of current positions being staffed in the Ops Center and 2) the staff identified as available to support in Japan.

Regarding additional staff available to support in the ops center, the primary needs are for the specialized positions on the PMT and anyone with previous international experience in OIP.

Regarding support in Japan, please provide any updates/changes to the list by COB March 17. The target time frame for sending these staff members is March 27-April 9, so please consider that when considering staff to put on the list.

Thanks for your support.

*Michele*

**From:** RST01 Hoc  
**To:** RST01 Hoc; Hiland, Patrick; Brown, Frederick; Skeen, David; Dudes, Laura; Ruland, William; Case, Michael; Alter, Peter; Hasselberg, Rick; Rini, Brett; Berry, Rolie; Collins, Frank; Morlang, Gary; Schoenebeck, Greg; Kowalczyk, Jeffrey; Sloan, Scott; Circle, Jeff; Esmaili, Hossein; Cheok, Michael; Ward, Leonard; Laur, Steven; Salay, Michael; Schaperow, Jason; Fuller, Edward; Marksberry, Don; Kolb, Timothy; Norton, Charles; Brown, Eva; Shea, James; Vick, Lawrence; Brown, Michael; Williams, Joseph; Hart, Ken; Bloom, Steven; Padovan, Mark; Williams, Donna; Isom, James; Dozier, Jerry; Thorp, John; Kugler, Andrew  
**Subject:** Protracted Event Staffing for Reactor Safety Team Staffing for Japanese Earthquake.doc  
**Date:** Thursday, March 17, 2011 7:05:32 PM  
**Attachments:** Protracted Event Staffing for Reactor Safety Team Staffing for Japanese Earthquake.doc

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All,

As you may be aware, the EOC is preparing extended EOC staffing. Attached is the most current draft of the watchbill which extends through 3/26/2011. We are a couple shy for this weekend, but more importantly there are significant gaps to fill for next week. Please review and if your schedule permits let an RST Coordinator know if you have availability to support. Thanks in advance for your help.

Greg Schoenebeck

X1147



### Reactor Safety Team Protracted Event Staffing for Japanese Earthquake Response

Team Position	RST Director	RST Coordinator	Accident Analyst	BWR Expert	RST Communicator
03/13/11 <b>Day</b> 0700 - 1500	Pat Hiland	Peter Alter	Jeff Circle	Tim Kolb	Joe Williams
03/13/11 <b>Swing</b> 1500 - 2300	Fred Brown	R. Hasselberg	Hossein Esmaili	Chuck Norton	Ken Hart
03/13/11 <b>Mid</b> 2300 - 0700	Dave Skeen	Brett Rini (C)	Mike Cheok (C)	Eva Brown (C)	none
03/14/11 <b>Day</b> 0700 - 1500	Laura Dudes	Peter Alter	Jeff Circle	Tim Kolb	Steve Bloom
03/14/11 <b>Swing</b> 1500 - 2300	Bill Ruland (C)	R. Berry (C)	Len Ward (C)	Chuck Norton (C)	Mark Padovan
03/14/11 <b>Mid</b> 2300 - 0700	Mike Case (C)	R. Berry (C)	Steve Laur (C)	Eva Brown (C)	Ken Hart (C)
03/15/11 <b>Day</b> 0700 - 1500	Dave Skeen (C)	R. Hasselberg (C)	Jeff Circle (C)	Jim Shea Peter Alter (C) –	Donna Williams ©
03/15/11 <b>Swing</b> 1500 - 2300	Fred Brown ©	Frank Collins (C)	Michael Salay (C)	Chuck Norton (C)	Jim Isom
03/15/11 <b>Mid</b> 2300 - 0700	Pat Hiland	Mike Morlang (C)	J. Schaperow N/A (Move)	Eva Brown (C)	Ken Hart ©
03/16/11 <b>Day</b> 0700 - 1500	Dave Skeen (C)	R. Hasselberg ©	Ed Fuller (C)	Larry Vick ©	Joe Williams ©
03/16/11 <b>Swing</b> 1500 - 2300	Bill Ruland	G. Schoenebeck (C)	Hossein Esmaili ©	Chuck Norton (C)	Steve Bloom ©
03/16/11 <b>Mid</b> 2300 - 0700	Mike Case	Rollie Berry (C)	Mike Salay	Eva Brown (C)	Mark Padovan
03/17/11 <b>Day</b> 0700 - 1500	Laura Dudes (?)	Frank Collins (C)	Jeff Circle (C)	Jim Shea (Peter Alter?)	Donna Williams
03/17/11 <b>Swing</b> 1500 - 2300	Fred Brown	Schoenebeck (C)	Steve Laur	C. Norton (C)	Frank Collins/John Thorp
03/17/11 <b>Mid</b> 2300 - 0700	Pat Hiland	Rollie Berry (C)	Mike Salay (C)	Eva Brown (C)	John Thorp (C)
03/18/11 <b>Day</b> 0700 - 1500	Laura Dudes	Peter Alter	Hossein Esmaili	Jim Shea?	Jim Isom
03/18/11 <b>Swing</b> 1500 - 2300	Bill Ruland	G.Schoenebeck ©	J. Schaperow	C. Norton	Ken Hart ©
03/19/11 <b>Mid</b> 2300 - 0700	Jennifer Uhle	Rollie Berry ©	Don Marksberry	Mike Brown	Andy Kugler (C )
03/19/11 <b>Day</b> 0700 - 1500	Laura Dudes	Scott Sloan		Peter Alter ( C )	Joe Williams ©

03/19/11 <b>Swing</b> 1500 - 2300	Dave Skeen	Oleg Bukhrin (c)	Ed Fuller (C )	Chuck Norton ( C )	
03/20/11 <b>Mid</b> 2300 - 0700	Jennifer Uhle	Frank Collins ( c )	Mike Salay (C )		
03/20/11 <b>Day</b> 0700 - 1500	Laura Dudes	Peter Alter ( C )		Larry Vick (C )	
03/20/11 <b>Swing</b> 1500 - 2300	Dave Skeen	Eric Thomas ( c )		Chuck Norton (C )	
03/21/11 <b>Mid</b> 2300 - 0700	Jennifer Uhle	Mike Morlang ( C )		Mike Brown (C )	
03/21/11 <b>Day</b> 0700 - 1500	Fred Brown	Peter Alter ( C )	Jeff Circle ©		Joe Williams (C )
03/21/11 <b>Swing</b> 1500 - 2300	Dave Skeen	Greg Schoenebeck ©		Chuck Norton (C )	
03/22/11 <b>Mid</b> 2300 - 0700	Jennifer Uhle	Frank Collins ©		Mike Brown (C )	
03/22/11 <b>Day</b> 0700 - 1500	Fred Brown	Rick Hasselberg ©	Ed Fuller (C )		Steve Bloom ©
03/22/11 <b>Swing</b> 1500 - 2300	Dave Skeen	Mike Morlang ©		Chuck Norton (C )	
03/23/11 <b>Mid</b> 2300 - 0700	Brian Holian	Oleg Bukhrin (c)		Mike Brown (C )	
03/23/11 <b>Day</b> 0700 - 1500	Fred Brown	Eric Thomas ( c )	Jeff Circle ©	Larry Vick (C )	Joe Williams (C )
03/23/11 <b>Swing</b> 1500 - 2300	Bill Ruland	Greg Schoenebeck ©		Chuck Norton (C )	Ken Hart ©
03/24/11 <b>Mid</b> 2300 - 0700	Brian Holian	Frank Collins ©			
03/24/11 <b>Day</b> 0700 - 1500	Fred Brown	Rick Hasselberg ©	Jeff Circle ©		
03/24/11 <b>Swing</b> 1500 - 2300	Bill Ruland	Brett Rini ©		Chuck Norton (C )	
03/25/11 <b>Mid</b> 2300 - 0700	Brian Holian				
03/25/11 <b>Day</b> 0700 - 1500	Pat Hiland	Eric Thomas ( c )			Donna Williams (c )
03/25/11 <b>Swing</b> 1500 - 2300	Bill Ruland	Brett Rini ©			
03/26/11 <b>Mid</b> 2300 - 0700	Brian Holian	Frank Collins ©			

**From:** [Gavrilas, Mirela](#)  
**To:** [Case, Michael](#); [Gibson, Kathy](#)  
**Subject:** FW: Assesment of cooling requirements for Fukushima units 1-3  
**Date:** Thursday, March 17, 2011 9:23:45 AM

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fyi

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

From: Michael Corradini [<mailto:corradini@engr.wisc.edu>]  
Sent: Thursday, March 17, 2011 9:23 AM  
To: Farmer, Mitchell T.  
Cc: Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
Subject: RE: Assesment of cooling requirements for Fukushima units 1-3

Mitch - I agree with your analysis. I am doing RASCAL calcs about dose effects.

--

Michael Corradini, Chair  
Engineering Physics  
University of Wisconsin  
(608)263-1648 [Fax: 3-7451]  
[corradini@engr.wisc.edu](mailto:corradini@engr.wisc.edu)  
<http://www.engr.wisc.edu/ep>

Quoting "Farmer, Mitchell T." <[farmer@anl.gov](mailto:farmer@anl.gov)>:

> Hi everyone,  
>  
> I want to make two final sugestions that I thought of this morning  
> and I'm sending it to you in hopes that it can be factored into the  
> accident management at the site ASAP. My hand calculations below  
> indicated that at the fire pumping rate of 30 T/hour through the  
> cores (?) outlet core temp on unit 1 should go subcooled today.  
> However, it's going to be another week at least for units 2-3. I've  
> also heard about salt crystalization concerns, and that may be  
> detrimental to flow passages through the core/core debris. So, if  
> they are getting more equipment on site, it would be very beneficial  
> to double the pumping capacity for units 2/3 to try to get those  
> subcooled ASAP. This would: 1) decrease crystalization rate of salt  
> and 2) really reduce source term from the cores. Then, the only  
> steaming you should be able to see from the plants would be the  
> spent fuel pools which they are attacking now. This would help  
> clarify some of the aerial data from units 2-3 iof the only steam  
> source were the pools.  
>  
> Second, I don't know if the drywell plugs are still in place, but if  
> you flood the drywell to the extent that it fills out the top, then  
> some of the water spilling onto the deck would make it into the SFP??  
>  
> This is my last direct contact, we now have to go through DOE, but I  
> want to get info out as fast as possible so that it can help if  
> viable.  
>  
> Praying for the Japanese,  
> Mitch  
> \_\_\_\_\_

X1148



> From: Farmer, Mitchell T.  
> Sent: Monday, March 14, 2011 1:31 PM  
> To: 'Tinkler, Charles'; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
> Subject: FW: Assesement of cooling requirements for  
> Fukushima units 1-3  
>  
>  
> FYI.  
> Mitch  
>  


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> From: Farmer, Mitchell T.  
> Sent: Monday, March 14, 2011 1:22 PM  
> To: Grandy, Christopher; Khalil, Hussein S.; Peters, Mark T.;  
> Sattelberger, Alfred P.  
> Cc: 'corradin@cae.wisc.edu'; Seidensticker, Ralph W.  
> Subject: Assesement of cooling requirements for Fukushima units 1-3  
>  
> All,  
>  
> I did a few back of the envelope calculations to scope out what the  
> cooling requirements will be at Fukushima units 1-3 in the event  
> that they are not able to reestablish power to the site and,  
> thereby, normal cooling functions at these plants.  
>  
> The limited information I have suggests that they are supplying 30  
> MT/hour of seawater to unit 1, and so I'll assume that the same is  
> currently going to units 2 and 3. To put this in perspective, that  
> amount of cooling flow can remove 2.8 MW while remaining subcooled  
> at atmospheric conditions, and up to 21.7 MW if this amount of water  
> is completely boiled off. Ideally, you would like to get to  
> subcooled outlet core conditions so you'll stop forming steam and  
> then you can stop the venting that is causing concern right now.  
>  
> That amount of heat removal needs to be compared to the decay heat  
> levels in these reactors to determine when subcooled conditions can  
> be reached. Unit 1 was 460 Mwe and Units 2- 3 were 784 Mwe per  
> Chris's previous email. Thus, I estimate the thermal power levels  
> of these reactors to be 1200 MWt and 2000 MWt, respectively. After  
> three days (or currently), the power level for a U core would fall  
> to about 0.4 % assuming that the reactors had operated for 200  
> full-power days before the earthquake (a little higher for the MOX  
> core but I don't have data to assess that). Thus, decay heat in  
> Unit 1 is now about 4.8 MW and for Units 2/3 it's about 8 MWt. Thus,  
> I suspect they're still venting steam at all three units. I then  
> looked at the times when the decay heat will fall below the level at  
> which subcooling can be achieved (ie 2.8 MWt core decay heat level)  
> and for unit 1 that is 6 days total (ie 3 days from now) and for  
> units 2 and 3 it will be about 16 days (ie 13 more days).  
>  
> This is a worst case scenario that assumes they can't get electricit  
> back to the site and establish normal cooling function; ie they have  
> to rely on sea water injection. Also, I assumed 200 full power  
> days; the power level could be less or a little more if I  
> overestimated/underestimated operation times.  
>  
> As far as coolability of the degraded cores, my opinion is that  
> units 1 and 3 are in coolable configurations; it's been 3 days now  
> and if the configuraition was not coolable the material most likely  
> would have failed the reactor pressure vessel. I guess the jury is  
> still out on Unit 2; I think the entire core has gone dry at least

> once. The good news is that the decay heat is way down from what it  
> was a few hours after the accident was initiated.  
>  
> Mitch  
>  
>

**See, Kenneth**

---

**From:** Khanna, Meena  
**Sent:** Thursday, March 17, 2011 11:00 PM  
**To:** See, Kenneth  
**Subject:** Re: Q&A for Flooding

Thanks so much Ken

---

**From:** See, Kenneth  
**To:** Khanna, Meena; Wescott, Rex; Jones, Henry; Raione, Richard; Wilson, George; Chokshi, Niles; Karas, Rebecca; Cook, Christopher  
**Sent:** Thu Mar 17 21:52:29 2011  
**Subject:** Q&A for Flooding

Meena,

See attached document. I stole some text from the document Rex sent out (Thanks Rex!).

I fully expect this document to change as comments are considered, etc.

Ken

Kenneth R. See, P.E.  
Senior Hydrologist  
U.S. Nuclear Regulatory Commission  
Division of Site and Environmental Reviews  
Hydrologic Engineering Branch  
(301)415-1508  
[kenneth.see@nrc.gov](mailto:kenneth.see@nrc.gov)

## **Lee, Richard**

---

**From:** Dehn, Jeff  
**Sent:** Thursday, March 17, 2011 7:04 PM  
**To:** LIA02 Hoc; Schwartzman, Jennifer; LIA03 Hoc; Lee, Richard  
**Cc:** Sangimino, Donna-Marie; Wagner, Katie; Calvo, Antony; Eisenberg, Wendy  
**Subject:** RE: NHK-TV, Japan

All,

This sounds like the OECD/NEA Sandia Lower Head Failure Project:  
<http://www.oecd-nea.org/jointproj/sandia-lower-head.html>

Related Research Information Letter (ML032390022 - Publicly available)  
<http://pbadupws.nrc.gov/docs/ML0323/ML032390022.pdf>

The article in the original request implies SNL has video of the experiment, and they may be the best to contact directly:  
<http://www.sandia.gov/news/resources/contacts/index.html>

I'll follow up with RES staff more fully to identify a knowledgeable contact within SNL as well.

Thanks,  
Jeff

Jeff Dehn

International Relations Specialist  
Office of Nuclear Regulatory Research (RES)  
US Nuclear Regulatory Commission  
[jeff.dehn@nrc.gov](mailto:jeff.dehn@nrc.gov)  
301-251-7672

---

**From:** LIA02 Hoc  
**Sent:** Thursday, March 17, 2011 6:34 PM  
**To:** Dehn, Jeff; Calvo, Antony; Eisenberg, Wendy  
**Cc:** LIA03 Hoc; Schwartzman, Jennifer; Sangimino, Donna-Marie  
**Subject:** FW: NHK-TV, Japan  
**Importance:** High

RES International Team Friends –

Please see the email chain below concerning a Japanese request, through NEA, for information about Sandia testing done in 2000. Do you think you can find this information?

Many thanks,  
Eric Stahl (and the HOC International Liaisons)

---

**From:** Schwartzman, Jennifer  
**Sent:** Thursday, March 17, 2011 6:23 PM  
**To:** LIA02 Hoc; LIA03 Hoc

**Subject:** FW: NHK-TV, Japan

**Importance:** High

This is a request from Janice Dunn Lee and the NEA. It is probably right for RES but I'd feel better if all inquiries came thru the Ops Center.

---

**From:** Janice.DUNNLEE@oecd.org [Janice.DUNNLEE@oecd.org]

**Sent:** Thursday, March 17, 2011 5:40 PM

**To:** Schwartzman, Jennifer

**Subject:** Fw: NHK-TV, Japan

Jen,

See messages below. Somehow it rings a bell with me. If not too much trouble, could you see if Research might know something about it. Thanks.

Janice

---

**From:** GAS Serge, NEA/RE

**Sent:** Thursday, March 17, 2011 09:20 PM

**To:** CLAPPER Maureen [United States]; DUNN LEE Janice, NEA

**Subject:** FW: NHK-TV, Japan

Hi Maureen and Janice,

I have requested infos internally; it looks like a joint project but if it rings a bell to any of your colleagues, that would be of help. NHK is one of the main Japan's TV channel.

Thanks in advance.

Serge

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

From: TURCHI Elodie, PAC/WASH

Sent: Thursday, March 17, 2011 21:00

To: GAS Serge, NEA/RE; FISHER Helen, PAC/COM

Cc: RUMPF Matthias, PAC/WASH

Subject: FW: NHK-TV, Japan

Hi Helen and Serge,

I just received a call from Hiro from NHK, Science and Nature regarding experiments done at Sandia Lab in 2000, which were sponsored by the OECD. Please see below email for further details and note that he is on deadline.

Kind regards,  
Elodie

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

From: yuhong hiro koh [mailto:hkoh@earthlink.net]

Sent: Thursday, March 17, 2011 3:35 PM

To: TURCHI Elodie, PAC/WASH

Subject: NHK-TV, Japan

Dear Elodie,



Thank you for accommodating me over the phone just now.  
We would like to obtain FOOTAGE and REPORT of the  
2000, Oct 23 experiment the OECD had requested Sandia to  
conduct. Please see below the news release from Sandia.  
<http://www.sandia.gov/media/NewsRel/NR2000/vessel.htm>

I don't have a name of the experiment, but it was to see how  
string the reactor vessels are to pressure and and blasts.  
Again, we have a Friday night deadline for the special edition  
program we are putting together on the situation at Fukushima.  
I would sincerely and greatly appreciate your help.  
Thank you,  
Hiro

--

Yuhong Hiro Koh  
NHK, Science & Nature  
Tel: US ++1 310-502-4506  
Fax: US ++1 310-539-3021  
e: [s02709-koh@nhk.or.jp](mailto:s02709-koh@nhk.or.jp)  
[hkoh@earthlink.net](mailto:hkoh@earthlink.net)  
Homepage: <http://www.nhk.or.jp>  
English: <http://www.nhk.or.jp/nhkworld/index.html>

---

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Ward, Steven

From: CDMC [newsletter@chinadecisionmakers.com]  
Sent: Thursday, March 17, 2011 6:26 AM  
To: Ward, Steven  
Subject: Praying for Japanese Disaster-China Nuclear Energy Congress 2011

If you cannot see this email, please [click here](#)



May 12-13, 2011 [Beijing, China]

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**中国核能国际大会2011**



## Current Status of Fukushima Daiichi NPPs

Unit	Status
1	<ul style="list-style-type: none"><li>· Reactor cold shutdown, stable water level, offsite power is available</li><li>· No refrigerant is leaked in the reactor contaminant vessel</li><li>· Maintain average water temperature at 100°C in the pressure restraint</li></ul>
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From TEPCO Press Release 13:00 PM Mar. 15

All units at the Fukushima Daiichi, Onagawa, and Tokai nuclear power plants are in a safe and stable condition.

Japan's top government spokesperson says the radiation level at the quake-hit nuclear power plant in Fukushima Prefecture,

north of Tokyo, rose briefly on Wednesday morning.

The fuel rod exposure at Fukushima Daiichi number 2 reactor is potentially the most serious event so far at the plant.

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**Given the apparent severity of the events at Fukushima, the organizing committee decides to set up some sort of special session(s) at Beijing to help share the initial lessons learned.**

■ **Related Speakers:**

LIU Hua, Director, National Nuclear Safety Administration(NNSA)

Chris Lanzit, Senior Advisor on China, American Society of Mechanical Engineers (ASME)

IAEA's speakers are invited by the organizing committee to give our audience a full scene of what happened in FUKUSHIMA.

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**Exhibit at CNEC 2011 and meet with:**

Policy Makers

China Nuclear Troika

Domestic EPC Contractor

Chinese Uranium Traders

Large equipment providers

Utilities

If you are interested in sponsorship, exhibit & speaking opportunities, please contact us at [cnec@cdmc.org.cn](mailto:cnec@cdmc.org.cn)

Please, do not hesitate to contact us with any questions that you may have, and we look forward to welcoming you at the event!

Sincerely,

Michael LIU

Project Director

China Nuclear Energy Congress 2011

T: +8621-6840-7631

E: [michaell@cdmc.org.cn](mailto:michaell@cdmc.org.cn)

--> **Register to attend China  
Nuclear Energy Congress 2011**

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## Lee, Richard

**From:** Gibson, Kathy  
**Sent:** Thursday, March 17, 2011 9:36 AM  
**To:** Tinkler, Charles; Lee, Richard  
**Cc:** Sheron, Brian; Uhle, Jennifer  
**Subject:** Fw: Assesement of cooling requirements for Fukushima units 1-3

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

**From:** Gavrilas, Mirela  
**To:** Case, Michael; Gibson, Kathy  
**Sent:** Thu Mar 17 09:23:42 2011  
**Subject:** FW: Assesement of cooling requirements for Fukushima units 1-3

fyi

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

**From:** Michael Corradini [mailto:corradini@engr.wisc.edu]  
**Sent:** Thursday, March 17, 2011 9:23 AM  
**To:** Farmer, Mitchell T.  
**Cc:** Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
**Subject:** RE: Assesement of cooling requirements for Fukushima units 1-3

Mitch - I agree with your analysis. I am doing RASCAL calcs about dose effects.

--

Michael Corradini, Chair  
Engineering Physics  
University of Wisconsin  
(608)263-1648 [Fax: 3-7451]  
corradini@engr.wisc.edu  
<http://www.engr.wisc.edu/ep>

Quoting "Farmer, Mitchell T." <farmer@anl.gov>:

> Hi everyone,  
>  
> I want to make two final sugestions that I thought of this morning and  
> I'm sending it to you in hopes that it can be factored into the  
> accident management at the site ASAP. My hand calculations below  
> indicated that at the fire pumping rate of 30 T/hour through the  
> cores (?) outlet core temp on unit 1 should go subcooled today.  
> However, it's going to be another week at least for units 2-3. I've  
> also heard about salt crystalization concerns, and that may be  
> detrimental to flow passages through the core/core debris. So, if they  
> are getting more equipment on site, it would be very beneficial to  
> double the pumping capacity for units 2/3 to try to get those  
> subcooled ASAP. This would: 1) decrease crystalization rate of salt  
> and 2) really reduce source term from the cores. Then, the only  
> steaming you should be able to see from the plants would be the spent  
> fuel pools which they are attacking now. This would help clarify some  
> of the aerial data from units 2-3 iof the only steam source were the  
> pools.

X/152

>  
> Second, I don't know if the drywell plugs are still in place, but if  
> you flood the drywell to the extent that it fills out the top, then  
> some of the water spilling onto the deck would make it into the SFP??  
>  
> This is my last direct contact, we now have to go through DOE, but I  
> want to get info out as fast as possible so that it can help if  
> viable.  
>  
> Praying for the Japanese,  
> Mitch  
>  


---

> From: Farmer, Mitchell T.  
> Sent: Monday, March 14, 2011 1:31 PM  
> To: 'Tinkler, Charles'; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
> Subject: FW: Assesement of cooling requirements for  
> Fukushima units 1-3  
>  
>  
> FYI.  
> Mitch  
>  


---

> From: Farmer, Mitchell T.  
> Sent: Monday, March 14, 2011 1:22 PM  
> To: Grandy, Christopher; Khalil, Hussein S.; Peters, Mark T.;  
> Sattelberger, Alfred P.  
> Cc: 'corradin@cae.wisc.edu'; Seidensticker, Ralph W.  
> Subject: Assesement of cooling requirements for Fukushima units 1-3  
>  
> All,  
>  
> I did a few back of the envelope calculations to scope out what the  
> cooling requirements will be at Fukushima units 1-3 in the event that  
> they are not able to reestablish power to the site and, thereby,  
> normal cooling functions at these plants.  
>  
> The limited information I have suggests that they are supplying 30  
> MT/hour of seawater to unit 1, and so I'll assume that the same is  
> currently going to units 2 and 3. To put this in perspective, that  
> amount of cooling flow can remove 2.8 MW while remaining subcooled at  
> atmospheric conditions, and up to 21.7 MW if this amount of water is  
> completely boiled off. Ideally, you would like to get to subcooled  
> outlet core conditions so you'll stop forming steam and then you can  
> stop the venting that is causing concern right now.  
>  
> That amount of heat removal needs to be compared to the decay heat  
> levels in these reactors to determine when subcooled conditions can be  
> reached. Unit 1 was 460 Mwe and Units 2- 3 were 784 Mwe per Chris's  
> previous email. Thus, I estimate the thermal power levels of these  
> reactors to be 1200 MWt and 2000 MWt, respectively. After three days  
> (or currently), the power level for a U core would fall to about 0.4 %  
> assuming that the reactors had operated for 200 full-power days before  
> the earthquake (a little higher for the MOX core but I don't have data  
> to assess that). Thus, decay heat in Unit 1 is now about 4.8 MW and  
> for Units 2/3 it's about 8 MWt. Thus, I suspect they're still venting  
> steam at all three units. I then looked at the times when the decay  
> heat will fall below the level at which subcooling can be achieved (ie

> 2.8 Mwt core decay heat level) and for unit 1 that is 6 days total (ie  
> 3 days from now) and for units 2 and 3 it will be about 16 days (ie 13  
> more days).  
>  
> This is a worst case scenario that assumes they can't get electricit  
> back to the site and establish normal cooling function; ie they have  
> to rely on sea water injection. Also, I assumed 200 full power days;  
> the power level could be less or a little more if I  
> overestimated/underestimated operation times.  
>  
> As far as coolability of the degraded cores, my opinion is that units  
> 1 and 3 are in coolable configurations; it's been 3 days now and if  
> the configuraiton was not coolable the material most likely would have  
> failed the reactor pressure vessel. I guess the jury is still out on  
> Unit 2; I think the entire core has gone dry at least once. The good  
> news is that the decay heat is way down from what it was a few hours  
> after the accident was initiated.  
>  
> Mitch  
>  
>

**Lee, Richard**

---

**From:** StAmour, Norman  
**Sent:** Thursday, March 17, 2011 12:23 PM  
**To:** Lee, Richard  
**Subject:** RE: Inquiry on providing Official Use Only info.

Richard

The person in OGC responsible for SUNSI and OUO is Cathy Holzle. I would be happy to give you any help I can but she might be more helpful.

Norm

---

**From:** Lee, Richard  
**Sent:** Wednesday, March 16, 2011 2:53 PM  
**To:** StAmour, Norman  
**Cc:** Gibson, Kathy; Scott, Michael  
**Subject:** Inquiry on providing Official Use Only info.

Dear Norm:

We like to consult you on releasing Official Use Only information related to previous research we have performed on Zirconium fire related to spend fuel poll. We have request from NEI (and anticipating request from GE Hitachi) for the information, and we need a response.

Look forward to hearing from you.

Best regards,  
Richard



## Bonaccorso, Amy

---

**From:** Ciani, Sandra  
**Sent:** Thursday, March 17, 2011 8:49 AM  
**To:** Taylor, Renee; Garland, Stephanie; Hasan, Nasreen  
**Cc:** Muesle, Mary; Deavers, Ron; Bonaccorso, Amy; Landau, Mindy  
**Subject:** Amy Bonaccorso and Ron Deavers (OEDO Touchdown Station- for Public Inquiries)  
**Importance:** High

Ladies,

If we receive calls from the public please take a message, and email the information to Amy and Ron.

- Name, purpose or inquiry, and phone number

Please inform the caller we will provide their information/inquiry to the appropriate staff, not a guarantee they will receive a call back.

Amy and Ron will determine if a call back is necessary.

Thanks

*Sandy Ciani*

*Administrative Assistant to Marty Virgilio, DEDR*

*Office of the Executive Director for Operations*

*O-17 H13*

*301-415-1714*

[sandra.ciani@nrc.gov](mailto:sandra.ciani@nrc.gov)

Ward, Steven

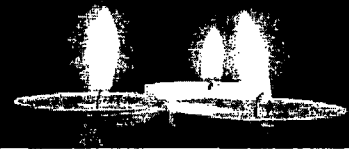
From: CDMC [newsletter@chinadecisionmakers.com]  
Sent: Thursday, March 17, 2011 6:26 AM  
To: Ward, Steven  
Subject: Praying for Japanese Disaster-China Nuclear Energy Congress 2011

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Utilities

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Please, do not hesitate to contact us with any questions that you may have, and we look forward to welcoming you at the event!

Sincerely,

Michael LIU

Project Director

China Nuclear Energy Congress 2011

T: +8621-6840-7631

E: [michael@cdmc.org.cn](mailto:michael@cdmc.org.cn)

-->>

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## Lee, Richard

**From:** Michael Corradini [corradini@engr.wisc.edu]  
**Sent:** Friday, March 18, 2011 12:13 PM  
**To:** Farmer, Mitchell T.  
**Cc:** Tinkler, Charles; Lee, Richard; Basu, Sudhamay; Gavrilas, Mirela; 'Binder, Jeffrey L.'; Grandy, Christopher; Busby, Jeremy Todd  
**Subject:** RE: Summary of sand option

I agree with Mitch! Water is useful and sand and lead drops as some suggest is really a technique I would not advise.

--

Michael Corradini, Chair  
Engineering Physics  
University of Wisconsin  
(608)263-1648 [Fax: 3-7453]  
[corradini@engr.wisc.edu](mailto:corradini@engr.wisc.edu)  
<http://www.engr.wisc.edu/ep>

Quoting "Farmer, Mitchell T." <[farmer@anl.gov](mailto:farmer@anl.gov)>:

>  
> I was thinking that if there is a hole in one of these pools it's  
> probably not that large and will eventually fill with crud if you keep  
> the water coming. It's hard to keep a reactor sump from plugging, I  
> don't know why the same principal wouldn't apply to any modest size  
> hole in a SFP. There's got to be a ton of loose material floating  
> around in there.

>  
> \_\_\_\_\_  
> From: Farmer, Mitchell T.  
> Sent: Friday, March 18, 2011 9:49 AM  
> To: 'Tinkler, Charles'; 'Lee, Richard'; 'Basu, Sudhamay';  
> Gavrilas, Mirela  
> Cc: Binder, Jeffrey L.; Grandy, Christopher  
> Subject: Summary of sand option

>  
> All,  
>  
> I know there has been a lot of discussion on whether sand should be  
> added to the SPFs and I want to take one last pass at it to and try to  
> make my thoughts clear. To summarize though, I would only resort to  
> adding sand or any other solid media into the SFPs as a very last  
> resort when the site is going to be permanently evacuated and there is  
> no longer hope of getting water into the pool. As long as there is a  
> possibility to get water in by drops and water cannons, I would keep  
> that up as long as possible given the dose limits.

>  
> The limited information that I have access to (CNN, etc.) would  
> suggest that the pools are more or less intact. The possibility of  
> developing leak(s) cannot be ruled out, but the fact that the pools  
> took several days to boil suggests that they can still hold water.  
> Furthermore, I wouldn't be surprised if the top 10 feet or so of the

X/156

> pool was sloshed out during the initial 9 mag quake and the many 6+  
> mag quakes that have occurred since. So, this could easily account for  
> the fact that the pools apparently ran dry earlier than I would have  
> thought. Here is why I don't think adding sand is a good idea:  
>  
> Although sand can trap aerosol, it is also a very good thermal  
> insulator. Thus, introduction of the sand will only exaserbate the  
> fuel heatup in the pool due to decay heat, thereby increasing fission  
> product release. In fact, the increased release may  
> actually offset any filtering benefits that the sand would offer.  
> Pumping concrete or any other type of a slurry into the pool would be  
> exceptionally detrimental, limiting heat transfer to conduction alone  
> (concretes and other refractory oxides such as MgO are all good  
> thermal insulators), and thereby negating the convection that is  
> required to remove decay heat. Although I haven't run any  
> calculations, I could actually see the fuel melting in this type of  
> insulated capsule, and that could only make things worse.  
> Furthermore, dropping sand from helicopters will probably lead to  
> mechanical damage of the fuel assemblies which would degrade  
> coolabilty more. (They clearly didn't care about this after Chernobyl  
> as the reactor was completely destroyed by the reactivity driven core  
> explosion).  
>  
> I'd keep the water going and only drop sand as a very last resort if  
> the site has to be permantly evacuated. If it comes to site  
> evacuation and sand is dropped, I'd advise to keep it coarse (several  
> mm) so that if/when water is readded, cooling won't be limited by  
> dryout heat flux limitations in the porous sand layer.  
>  
> I just saw an ANS email promoting pumping in a sand/water slurry.  
> The water will evaporate in short order, and then what is the particle  
> size of the sand that is left. If it is very fine, it will preclude  
> more water coming in.  
>  
> Mitch  
>  
>  
>  
>

**Lee, Richard**

---

**From:** Parks, Cecil V. [parkscv@ornl.gov]  
**Sent:** Friday, March 18, 2011 1:30 AM  
**To:** Lee, Richard  
**Subject:** Fukushima

Richard:

You were going to send me presentation you got from Corradini – would you please send?

We have done some decay heat (MOX vs. UO<sub>2</sub>) and inventory analyses in response to questions we have received. I will send you that info tomorrow.

Thanks,  
Cecil

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Friday, March 18, 2011 11:02 AM  
**To:** Bowman, Gregory  
**Subject:** RE: Assistance with Commission Brief

Greg:

Can you please send Brian Sheron (copy me) the latest Scheduling Note for Monday brief?

Thanks!

---

**From:** Bowman, Gregory  
**Sent:** Thursday, March 17, 2011 8:45 AM  
**To:** Sheron, Brian; Uhle, Jennifer; Gibson, Kathy; Scott, Michael  
**Subject:** FW: Assistance with Commission Brief

I learned this morning that the Commission is likely to have a meeting on Japan in the very near-term (probably Monday). There's an alignment meeting scheduled for 10:00 this morning in O-17B4. I'm guessing you probably know about the alignment meeting already, but I didn't see any RES names on the invitation, so I figured I'd double-check. The attached scheduling note provides an overview of what's going to be discussed, although my understanding is that Bill may end up doing all the talking.

---

**From:** Dion, Jeanne  
**Sent:** Wednesday, March 16, 2011 5:28 PM  
**To:** Howe, Allen; Deegan, George  
**Cc:** Moore, Scott; Piccone, Josephine; Jackson, Deborah; Turtill, Richard; Brock, Kathryn; Frazier, Alan; Wittick, Susan  
**Subject:** RE: Assistance with Commission Brief

Yes- we can. We have staff with expertise in severe accidents (SOARCA) and health effects branch.

Can you provide more information on the agenda item ("advance our understanding of safety and risk")- RES is noted as the lead for the item.

Thanks- Jeanne

---

**From:** Howe, Allen  
**Sent:** Wednesday, March 16, 2011 5:22 PM  
**To:** Deegan, George; Dion, Jeanne  
**Cc:** Moore, Scott; Piccone, Josephine; Jackson, Deborah; Turtill, Richard; Brock, Kathryn; Frazier, Alan; Wittick, Susan  
**Subject:** RE: Assistance with Commission Brief

Thanks George – Susan Wittick is coordinating for OPA.

Jeanne – can RES address the consequence projections?

Thanks - Allen

---

**From:** Deegan, George  
**Sent:** Wednesday, March 16, 2011 5:18 PM



**To:** Howe, Allen

**Cc:** Moore, Scott; Piccone, Josephine; Jackson, Deborah; Turtill, Richard; Brock, Kathryn; Frazier, Alan

**Subject:** FW: Assistance with Commission Brief

**Importance:** High

Allen- I think our two emails may have crossed with one another (see my earlier response). I think RES would be best on Consequence Projections, not FSME. We may have some input to provide regarding Communication Challenges (since we serve in a liaison capability with States). If you'd like, I can check with our folks and see if they can develop some talking points to support Eliot's part of the presentation.

---

**From:** Howe, Allen

**Sent:** Wednesday, March 16, 2011 5:09 PM

**To:** Dion, Jeanne; Williams, Donna; Bajwa, Chris; Wittick, Susan; Shropshire, Alan; VandenBerghe, John; Deegan, George; Milligan, Patricia

**Cc:** Meighan, Sean; Hall, Randy; Boska, John

**Subject:** Assistance with Commission Brief

**Importance:** High

I am looking for assistance to pull together background information, slides, key messages, talking points and possible Q&A for the Commission briefing on the Japan event. The briefing is likely to happen Monday. Looks like a busy weekend. A rough draft outline is attached with leads for the areas. Please keep in mind that the meeting will be public and the information will be at a fairly high level. If you know of a point of contact that is best suited to address the information, please let me know.

I am working to schedule a meeting tomorrow afternoon @1:30 to flesh this out. I will send out a scheduler with a bridge line.

Thanks - Allen

**See, Kenneth**

---

**From:** Wilson, George  
**Sent:** Friday, March 18, 2011 5:32 AM  
**To:** See, Kenneth  
**Subject:** RE: Q&A for Flooding

Thanks, I greatly appreciate the help

**From:** See, Kenneth  
**Sent:** Thursday, March 17, 2011 9:52 PM  
**To:** Khanna, Meena; Wescott, Rex; Jones, Henry; Raione, Richard; Wilson, George; Chokshi, Niles; Karas, Rebecca; Cook, Christopher  
**Subject:** Q&A for Flooding

Meena,

See attached document. I stole some text from the document Rex sent out (Thanks Rex!).

I fully expect this document to change as comments are considered, etc.

Ken

Kenneth R. See, P.E.  
Senior Hydrologist  
U.S. Nuclear Regulatory Commission  
Division of Site and Environmental Reviews  
Hydrologic Engineering Branch  
(301)415-1508  
[kenneth.see@nrc.gov](mailto:kenneth.see@nrc.gov)

X/159

## Rebstock, Paul

---

**From:** Cathy Hawes [cmh2@nrc.gov]  
**Sent:** Friday, March 18, 2011 6:17 PM  
**To:** Rebstock, Paul  
**Subject:** IN 2011-05 Tohoku-Taiheiyou-Oki Earthquake Effects on Japanese Nuclear Power Plants (ML110760432)  
**Attachments:** ML110760432.pdf

Attached is an PDF version Information Notice 2011-05, Tohoku-Taiheiyou-Oki Earthquake Effects On Japanese Nuclear Power Plants, dated March 18, 2011, (ML110760432), that has been posted to the NRR GCC Web, along with the URL for Web access to generic communications files on the NRC Homepage:  
[http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/2011/.](http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/2011/)

To subscribe or unsubscribe send an email to [lyris@nrc.gov](mailto:lyris@nrc.gov) , no subject, and use one of the following commands in the message portion:

subscribe gc-nrr (first and last name)  
unsubscribe gc-nrr (first and last name)

thanks  
Cathy

X/160

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

March 18, 2011

NRC INFORMATION NOTICE 2011-05: TOHOKU-TAIHEIYOU-OKI EARTHQUAKE  
EFFECTS ON JAPANESE NUCLEAR POWER  
PLANTS

## ADDRESSEES

All holders of or applicants for operating licenses for nuclear power reactors under the provision of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of or applicants for a standard design certification, standard design approval, manufacturing license, limited work authorization, early site permits or combined license issued under 10 CFR Part 52, "Licenses, Certifications and Approvals for Nuclear Power Plants."

## PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees of effects of the Tohoku-Taiheiyu-Okai Earthquake on nuclear power plants in Japan. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. Suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

## DESCRIPTION OF CIRCUMSTANCES

The following summary of events is provided based on the best information available at this time. The situation in Japan regarding recovery efforts for the Fukushima Daiichi Nuclear Power Station continues to evolve on an hourly basis.

On March 11, 2011, the Tohoku-Taiheiyu-Okai Earthquake occurred near the east coast of Honshu, Japan. This magnitude 9.0 earthquake and the subsequent tsunami caused significant damage to at least four of the six units of the Fukushima Daiichi nuclear power station as the result of a sustained loss of both the offsite and on-site power systems. Efforts to restore power to emergency equipment have been hampered or impeded by damage to the surrounding areas due to the tsunami and earthquake.

ML110760432

Units 1 through 3, which had been operating at the time of the earthquake, scrambled automatically, inserting their neutron absorbing control rods to ensure immediate shutdown of the fission process. Following the loss of electric power to normal and emergency core cooling systems and the subsequent failure of back-up decay heat removal systems, water injection into the cores of all three reactors was compromised, and reactor water levels could not be maintained. Tokyo Electric Power Company (TEPCO), the operator of the plant, resorted to injecting sea water and boric acid into the reactor vessels of these three units, in an effort to cool the fuel and ensure the reactors remained shutdown. However, the fuel in the reactor cores became partially uncovered. Hydrogen gas built up in Units 1 and 3 as a result of exposed, overheated fuel reacting with water. Following gas venting from the primary containment to relieve pressure, hydrogen explosions occurred in both units and damaged the secondary containments. It appears that primary containments for Units 1 and 3 remain functional, but the primary containment for Unit 2 may be damaged. TEPCO cut a hole in the side of the Unit 2 secondary containment to prevent hydrogen buildup following a sustained period when there was no water injection into the core.

In addition, Units 3 and 4 have low spent fuel pool (SFP) water levels. Efforts continue to supply seawater to the SFPs for Units 1 through 4 using various methods. At this time, the integrity of the SFPs for Units 3 and 4 is unknown.

Fukushima Daiichi Units 4 through 6 were shutdown for refueling outages at the time of the earthquake. The fuel assemblies for Unit 4 had been offloaded from the reactor core to the SFP. The SFPs for Units 5 and 6 appear to be intact, but the temperature of the pool water appears to be increasing. Emergency power is available to provide cooling water flow through the SFPs for Units 5 and 6.

The Japanese Government ordered an evacuation out to 20 km for the area surrounding Fukushima Daiichi. Residents out to 30 km were ordered to shelter in place.

The damage to Fukushima Daiichi nuclear power station appears to have been caused by initiating events outside of the design basis for the facilities.

## **BACKGROUND**

10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 2, "Design Bases for Protection against Natural Phenomena," or similar appropriate requirements in the licensing basis for a reactor facility, requires that structures, systems, and components (SSCs) important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches without loss of capability to perform their safety functions. The design bases for these SSCs reflect: (1) appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) the importance of the safety functions to be performed.

As a result of the terrorist events of September 11, 2001, the NRC issued EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (the ICM Order) dated February 25, 2002. The ICM Order, which is designated as Safeguards Information (SGI), modified then-operating licenses for commercial power reactor facilities to require compliance with specified interim safeguards and security compensatory measures. Section B.5.b of the ICM Order requires licensees to adopt mitigation strategies using readily available resources to maintain or restore core cooling, containment, and SFP cooling capabilities to cope with the loss of large areas of the facility due to large fires and explosions from any cause, including beyond-design-basis aircraft impacts.

By letter, dated February 25, 2005, the NRC staff provided guidance for implementing Section B.5.b of the ICM Order. This guidance, designated as SGI, included best practices for mitigating losses of large areas of the plant and measures to mitigate fuel damage and minimize releases. Following issuance of the B.5.b Phase 1 Guidance, the NRC staff conducted inspections at operating reactor sites using Temporary Instruction (TI) 2515/164 (SGI) and subsequently TI 2515/168 (SGI) to ensure compliance with Section B.5.b of the ICM Order.

In December 2006, the Nuclear Energy Institute (NEI) issued NEI 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guideline." NEI 06-12 is designated for Official Use Only – Security Related Information (OUO-SRI). The NRC endorsed NEI 06-12, Revision 2, by letter dated December 22, 2006, also designated OUO-SRI, as an acceptable means for developing and implementing the mitigation strategies requirement in Section B.5.b of the ICM Order. NEI 06-12, Revision 2, provides guidance for implementing a set of strategies intended to maintain or restore core cooling, containment, and SFP cooling capabilities under the circumstances associated with the loss of a large area of the plant due to explosions or fire. NEI 06-12 provides guidance in the following areas:

- Adding make-up water to the SFP,
- Spraying water on the spent fuel,
- Enhanced initial command and control activities for challenges to core cooling and containment, and
- Enhanced response strategies for challenges to core cooling and containment.

The specific strategies covered in NEI 06-12, Revision 2, were developed based on the results of assessments conducted at currently licensed power reactor facilities for the purpose of enhancing plant specific mitigation capability for damage conditions caused by a large explosion or fire. These assessments identified a wide spectrum of potential plant specific strategies. NEI 06-12, Revision 2, specifies one set of strategies applicable to all pressurized-water reactors and another set applicable to all boiling-water reactors. Both sets are derived from the results of the plant specific assessments.

The B.5.b Phase 1 Guidance and NEI 06-12, Revision 2, were used by each licensee in preparing information submitted to the NRC that describes a plant specific approach to implementing mitigating strategies and supports each plant specific license condition. The NRC staff has completed its review of the information submitted by each licensee, as well as information obtained during prior NRC inspections, and has issued an OUO-SRI safety

evaluation (SE) that documents the bases for its approval of the license condition for each facility. The SE issued for each licensee includes regulatory guidance in Section 3.0 of Appendix A, "Phase 1 Assessment," that recites the generic B.5.b Phase 1 Guidance of Reference 3, as clarified in TI 2515/168, in a form that is designated OUO-SRI rather than SGI.

By publishing new requirements in the *Federal Register* dated March 27, 2009 (74 FR 13926), the NRC amended 10 CFR Part 50, 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and 10 CFR Part 73, "Physical Protection of Plants and Materials." This rulemaking added paragraph (i) to 10 CFR 50.34, "Contents of Applications; Technical Information," and paragraph (d) to 10 CFR 52.80 "Contents of Applications; Additional Technical Information," to require submittal of a "description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions or fire as required by § 50.54(hh)(2) of this chapter." This rulemaking also added 10 CFR 50.54(hh)(2) to impose the same mitigating strategies requirements on all reactor applicants and licensees as those imposed by the ICM Order and associated license conditions. The Statement of Considerations for this rulemaking specifically noted that the requirements in 10 CFR 50.54(hh) are intended to address certain events that are the cause of large fires and explosions that affect a substantial portion of the nuclear power plant and are not limited or directly linked to an aircraft impact. In addition, the rule contemplates that the initiating event for such large fires and explosions could be any number of beyond-design basis events. Such events include natural phenomena such as those described in GDC 2 (i.e., earthquakes, tornadoes, floods, tsunamis, and seiches), without regard to the GDC 2 provisions governing the severity of natural phenomena.

NRC regulations at 10 CFR 50.63, "Loss of All Alternating Current Power," require that light-water-cooled nuclear power plants be capable of withstanding for a specified duration and recovering from a station blackout.

## DISCUSSION

The nuclear power industry has taken the actions listed below at each licensed reactor site. Additional information is available in the NEI Fact Sheet, "Industry Taking Action to Ensure Continued Safety at U.S. Nuclear Energy Plants," dated March 16, 2011, available at [www.nei.org](http://www.nei.org).

1. verification of the capability to mitigate conditions that result from severe adverse events, including the loss of significant operational and safety systems due to natural events, fires, aircraft impact and explosions
2. verification of the capability to mitigate a total loss of electric power to a nuclear power plant
3. verification of the capability to mitigate flooding and the impact of floods on systems inside and outside the plant
4. identification of the potential for loss of equipment functions during seismic events appropriate for the site and the development of mitigating strategies to address potential vulnerabilities

NRC assessment of the implications of beyond design-basis natural phenomena is continuing as more information becomes available. The NRC staff is currently developing a TI to guide staff in performing independent assessments of nuclear power plant readiness to address beyond design-basis natural phenomena under the Reactor Oversight Process. The NRC is considering additional generic communications and additional action including requesting operating plants to provide specific information relating to their facilities to enable the NRC staff to complete a regulatory assessment of beyond design basis phenomena.

## **PAPERWORK REDUCTION ACT STATEMENT**

This Information Notice does not contain any information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.).

### **Public Protection Notification**

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

## **CONTACTS**

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

**/RA/**

Laura A. Dudes, Director  
Division of Construction Inspection,  
and Operational Programs  
Office of New Reactors

**/RA/**

Timothy J. McGinty, Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Technical Contact: Eric E. Bowman, NRR  
301-415-2963  
e-mail: [Eric.Bowman@nrc.gov](mailto:Eric.Bowman@nrc.gov)

Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.



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ADAMS Accession Number: ML110760432 \* by e-mail

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OFFICIAL RECORD COPY

**Lee, Richard**

---

**From:** Wagner, Katie  
**Sent:** Friday, March 18, 2011 11:26 AM  
**To:** Lee, Richard  
**Subject:** RE: GE request for NRC materials

Ok

---

**From:** Lee, Richard  
**Sent:** Friday, March 18, 2011 11:24 AM  
**To:** Wagner, Katie  
**Cc:** Tinkler, Charles  
**Subject:** RE: GE request for NRC materials

Yes! I called Charlie to tell SNL to release the reports, and he will be the contact to answer questions (I any) from GE.

---

**From:** Wagner, Katie  
**Sent:** Friday, March 18, 2011 11:06 AM  
**To:** Lee, Richard  
**Subject:** FW: GE request for NRC materials

Is this the email?

---

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 10:10 AM  
**To:** Lee, Richard; Wagner, Katie  
**Cc:** Scott, Michael; Tinkler, Charles; Schaperow, Jason  
**Subject:** Re: GE request for NRC materials

Well done Richard thanks!

Richard, Katie - Charlie says that Sandia can email encrypted files and this may be the fastest way to transmit them to GE. If we don't have copies of the docs, please take this opportunity to get copies for NRC too. Thx

---

**From:** Lee, Richard  
**To:** Wagner, Katie  
**Cc:** Gibson, Kathy; Scott, Michael; Tinkler, Charles; Schaperow, Jason  
**Sent:** Fri Mar 18 10:05:18 2011  
**Subject:** GE request for NRC materials

REF: Marquino, Wayne (GE) e-mail to Tinkler, Charles on March 17, 2011 requesting SNL reports.

Dear Katie:

This morning I spoke to Norm St. Amor of OIG on this matter because I could not get hold of Catherine Holze. Norm said OUO materials can be released and asked me to consult with Russel Nichols (415-6874) or Donna Sealing (415-5804) of OIS on this matter.

I called Russel, and told him about GE requests for OUO materials to assist TEPCO (Japan) in responding and managing the crisis at Fukushima. He said once NRC made a determination on there is a need to know in carrying our official function, we can release the materials to GE.

Hence, we should proceed to instruct SNL to release the materials to GE.

Richard

**Lee, Richard**

---

**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Friday, March 18, 2011 11:32 AM  
**To:** Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela  
**Subject:** FW: MIT NSE Nuclear Information Hub (<http://web.mit.edu/nse/>) | Information about the incident at the Fukushima Nuclear Plants in Japan hosted by <http://web.mit.edu/nse/> :: Maintained by the students of the Department of Nuclear Science and Engineering at

I certainly hope your information sources are better than mine, but this gave me modest hope about the pools. I pray that when the power is reconnected that coolant systems for these pools can be restarted. Otherwise it's going to be a long haul.

Mitch

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

**From:** Wright, Arthur E.  
**Sent:** Friday, March 18, 2011 10:27 AM  
**To:** Yacout, Abdellatif M.; Taiwo, Temitope A.; Grandy, Christopher; Sofu, Tanju; Roglans-Ribas, Jordi; Bauer, Theodore H.; Grimm, Karl N.; Hofman, Gerard L.; Kim, Taek K.; Kim, Yeon Soo; Pointer, William D.; Rest, Jeffrey; Wiencek, Thomas; Yun, Di; Farmer, Mitchell T.  
**Subject:** MIT NSE Nuclear Information Hub (<http://web.mit.edu/nse/>) | Information about the incident at the Fukushima Nuclear Plants in Japan hosted by <http://web.mit.edu/nse/> :: Maintained by the students of the Department of Nuclear Science and Engineering at MIT

<http://mitnse.com/>

This is the best source of information I have found about the Japan nuclear accident situation (much better than the IAEA website).

Mitch... your MCCI work is alluded to, although not by program name.

Art

x/1162

## Lee, Richard

**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Friday, March 18, 2011 11:43 AM  
**To:** Tinkler, Charles; Lee, Richard; Basu, Sudhamay; Gavrilas, Mirela  
**Cc:** 'Binder, Jeffrey L.'; Grandy, Christopher; 'corradin@cae.wisc.edu'; Busby, Jeremy Todd  
**Subject:** RE: Summary of sand option

I was thinking that if there is a hole in one of these pools it's probably not that large and will eventually fill with crud if you keep the water coming. It's hard to keep a reactor sump from plugging, I don't know why the same principal wouldn't apply to any modest size hole in a SFP. There's got to be a ton of loose material floating around in there.

---

er, Mitchell T.  
March 18, 2011 9:49 AM  
, Charles'; 'Lee, Richard'; 'Basu, Sudhamay'; Gavrilas, Mirela  
Jeffrey L.; Grandy, Christopher  
Summary of sand option

All,

I know there has been a lot of discussion on whether sand should be added to the SPFs and I want to take one last pass at it to and try to make my thoughts clear. To summarize though, I would only resort to adding sand or any other solid media into the SFPs as a very last resort when the site is going to be permanently evacuated and there is no longer hope of getting water into the pool. As long as there is a possibility to get water in by drops and water cannons, I would keep that up as long as possible given the dose limits.

The limited information that I have access to (CNN, etc.) would suggest that the pools are more or less intact. The possibility of developing leak(s) cannot be ruled out, but the fact that the pools took several days to boil suggests that they can still hold water. Furthermore, I wouldn't be surprised if the top 10 feet or so of the pool was sloshed out during the initial 9 mag quake and the many 6+ mag quakes that have occurred since. So, this could easily account for the fact that the pools apparently ran dry earlier than I would have thought. Here is why I don't think adding sand is a good idea:

Although sand can trap aerosol, it is also a very good thermal insulator. Thus, introduction of the sand will only exasperbate the fuel heatup in the pool due to decay heat, thereby increasing fission product release. In fact, the increased release may actually offset any filtering benefits that the sand would offer. Pumping concrete or any other type of a slurry into the pool would be exceptionally detrimental, limiting heat transfer to conduction alone (concretes and other refractory oxides such as MgO are all good thermal insulators), and thereby negating the convection that is required to remove decay heat. Although I haven't run any calculations, I could actually see the fuel melting in this type of insulated capsule, and that could only make things worse. Furthermore, dropping sand from helicopters will probably lead to mechanical damage of the fuel assemblies which would degrade coolability more. (They clearly didn't care about this after Chernobyl as the reactor was completely destroyed by the reactivity driven core explosion).

I'd keep the water going and only drop sand as a very last resort if the site has to be permantly evacuated. If it comes to site evacuation and sand is dropped, I'd advise to keep it coarse (several mm) so that if/when water is readded, cooling won't be limited by dryout heat flux limitations in the porous sand layer.

I just saw an ANS email promoting pumping in a sand/water slurry. The water will evaporate in short order, and then what is the particle size of the sand that is left. If it is very fine, it will preclude more water coming in.

Mitch

**Esmaili, Hossein**

---

**From:** Lee, Richard  
**Sent:** Friday, March 18, 2011 3:59 PM  
**To:** Gauntt, Randall O  
**Cc:** Tinkler, Charles; Esmaili, Hossein  
**Subject:** RE: Fukushima data

Yes!

---

**From:** Gauntt, Randall O [<mailto:rogaunt@sandia.gov>]  
**Sent:** Friday, March 18, 2011 3:37 PM  
**To:** Lee, Richard; Tinkler, Charles  
**Subject:** RE: Fukushima data

Richard,  
Can this be shared with DOE?

Randy

---

**From:** Lee, Richard [<mailto:Richard.Lee@nrc.gov>]  
**Sent:** Friday, March 18, 2011 1:29 PM  
**To:** Tinkler, Charles  
**Cc:** Gauntt, Randall O  
**Subject:** FW: Fukushima data

Inventories of the Fukushima unit 4 data.

---

**From:** Gauld, Ian C. [<mailto:gauldi@ornl.gov>]  
**Sent:** Friday, March 18, 2011 2:38 PM  
**To:** Lee, Richard  
**Cc:** Parks, Cecil V.  
**Subject:** RE: Fukushima data

Richard

Here are the is Fukushima unit 4 pool data. Two source files: one for the hottest fuel with 105 day cooling, the other for 500 day fuel. These data are normalized to a metric ton of uranium. This will make it easier to convert to grams/W etc if needed, since operating power was 25 MW/t. If an assembly basis, or total inventory basis are preferred, this can be quickly changed. The metric tons of 105 day fuel in the pool is 94 t (548 assemblies = full core), and 113 t of longer cooled fuel (657 assemblies).

Also, please replace the reactor core data (file F4-reactor.txt) with the attached file. Some of the longer cooling time step were not correct.

Thanks

Ian

**Lee, Richard**

---

**From:** Wagner, Katie  
**Sent:** Friday, March 18, 2011 12:31 PM  
**To:** Gibson, Kathy; Lee, Richard  
**Subject:** Sharepoint Status Update

Kathy and Richard,

FYI, I am beginning to populate the Sharepoint site.

<http://portal.nrc.gov/edo/res/DSA/Shared%20Documents/JPN-Status-Request.aspx>

Thanks,  
Katie

X/165

**Lee, Richard**

**From:** Wagner, Katie  
**Sent:** Friday, March 18, 2011 1:05 PM  
**To:** Lee, Richard  
**Subject:** FW: GE request for NRC materials

Richard – Is the status of this item “Completed” or still “Pending”? – Thanks, Katie

---

**From:** Lee, Richard  
**Sent:** Friday, March 18, 2011 11:24 AM  
**To:** Wagner, Katie  
**Cc:** Tinkler, Charles  
**Subject:** RE: GE request for NRC materials

Yes! I called Charlie to tell SNL to release the reports, and he will be the contact to answer questions (I any) from GE.

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**Sent:** Friday, March 18, 2011 11:06 AM  
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**Subject:** FW: GE request for NRC materials

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**Cc:** Scott, Michael; Tinkler, Charles; Schaperow, Jason  
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**Cc:** Gibson, Kathy; Scott, Michael; Tinkler, Charles; Schaperow, Jason  
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Hence, we should proceed to instruct SNL to release the materials to GE.

Richard

## Lee, Richard

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 3:36 PM  
**To:** Sheron, Brian; Scott, Michael; Tinkler, Charles; Lee, Richard  
**Cc:** Uhle, Jennifer; Salay, Michael  
**Subject:** Re: Effects of salt deposition on cooling of BWR fuel assemblies

Richard Lee and Mike Salay are the cognizant staff for this issue.

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

**From:** Sheron, Brian  
**To:** Gibson, Kathy; Scott, Michael; Tinkler, Charles  
**Cc:** Uhle, Jennifer  
**Sent:** Fri Mar 18 15:29:50 2011  
**Subject:** FW: Effects of salt deposition on cooling of BWR fuel assemblies

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

**From:** Phillip.Finck@inl.gov [mailto:Phillip.Finck@inl.gov]  
**Sent:** Friday, March 18, 2011 12:27 PM  
**To:** Per F. Peterson; Pete Lyons; John Kelly  
**Cc:** SCHU; Adams, Ian; Aoki, Steven; Bob Budnitz; Sheron, Brian; DAgostino, Thomas; Dick Garwin; Dick Garwin; John.Grossenbacher@inl.gov; Hurlbut, Brandon; John Holdren; Koonin, Steven; Harold.McFarlane@inl.gov; Owens, Missy; Poneman, Daniel; Ronaldo.Szilard@inl.gov; Steve Fetter  
**Subject:** Re: Effects of salt deposition on cooling of BWR fuel assemblies

Per: we have started. Please call me.

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

**From:** "Per F. Peterson" [peterson@nuc.berkeley.edu]  
**Sent:** 03/18/2011 09:22 AM MST  
**To:** "Lyons, Peter" <Peter.Lyons@Nuclear.Energy.gov>; "Kelly, John E (NE)" <JohnE.Kelly@Nuclear.Energy.gov>  
**Cc:** SCHU <SCHU@hq.doe.gov>; "Adams, Ian" <Ian.Adams@hq.doe.gov>; "Aoki, Steven" <Steven.Aoki@nnsa.doe.gov>; Bob Budnitz <RJBudnitz@lbl.gov>; Brian Sheron <Brian.sheron@nrc.gov>; "DAgostino, Thomas" <Thomas.DAgostino@nnsa.doe.gov>; Dick Garwin <rlg2@us.ibm.com>; Dick Garwin <rgarwin@ostp.eop.gov>; John Grossenbacher; "Hurlbut, Brandon" <Brandon.Hurlbut@hq.doe.gov>; John Holdren <jholdren@ostp.eop.gov>; "Koonin, Steven" <Steven.Koonin@science.doe.gov>; Harold McFarlane; "Owens, Missy" <Missy.Owens@hq.doe.gov>; Per Peterson <peterson@nuc.berkeley.edu>; Phillip Finck; "Poneman, Daniel" <Daniel.Poneman@hq.doe.gov>; Ronaldo Szilard; Steve Fetter <Steven\_A.\_Fetter@ostp.eop.gov>  
**Subject:** Effects of salt deposition on cooling of BWR fuel assemblies

Pete and John,

It could be helpful to have someone at Sandia address the question of the impact of salt deposition on the coolability of BWR fuel assemblies by air and steam after they are uncovered by pool boil off or leakage, and get their response out to the group. A quick expert opinion from someone who has done these calculations and is familiar with the

available experimental data could be helpful in reducing our uncertainty about the risks posed by salt in the Unit 3 pool.

My intuition is that the heat generation rates for fuel that is over one year past removal from the core are much lower than for freshly discharged fuel, which is the usual focus for analysis experiments.

Because all of the fuel in the Unit 3 pool is old, it is possible that air cooling of the outside of the shrouds around the assemblies may be able to prevent heating of pins in the center of the assembly to the temperature needed to initiate zirconium oxidation.

If so, then salt is probably less of a problem because the flow area between the assembly and the rack, for low density racking, is pretty large, so it is more difficult to generate flow blockage with salt.

Some expert judgement on whether this could be the case could be very helpful.

This said, I think that we can buy significant risk reduction if we can expedite the transition to use of fresh water for spray cooling of the pool in Unit 3, where there is significant evidence that the pool may have a leak. Bringing in ship-based desalination capability thus merits serious consideration.

-Per

--

-----  
Per F. Peterson  
Professor and Chair  
Department of Nuclear Engineering  
University of California  
4153 Etcheverry Hall  
Berkeley, California 94720-1730  
peterson@nuc.berkeley.edu  
Office: (510) 643-7749 Fax: (510) 643-9685  
[http://www.nuc.berkeley.edu/People/Per\\_Peterson](http://www.nuc.berkeley.edu/People/Per_Peterson)  
-----

**From:** Evans, Michele  
**To:** Casto, Chuck; Moninger, John; Dorman, Dan  
**Cc:** Weber, Michael; Borchardt, Bill; Virgilio, Martin; Boger, Bruce; Zimmerman, Roy; Wiggins, Jim  
**Subject:** Proposed replacement staff for team in Japan  
**Date:** Friday, March 18, 2011 6:47:29 PM  
**Attachments:** 2nd Staff Deployment to Japan.docx

---

Chuck,

Based on the input you provided this morning regarding expertise for the next wave of staff going to Japan, we're proposing the attached team.

All the individuals were selected with interpersonal skills in mind and are all available to travel in the required time period.

We propose that Mike Scott and Alan Blamey depart the USA on Tuesday, in order to provide time for turnover and then enable Jim Trapp and Tony Ulises to return to the USA potentially on Saturday March 26.

The remaining individuals would leave the USA later in the week (target date is March 24), to allow time for turnover and then enable the remaining team members to return to the USA on or around March 28.

If you want to further discuss the skill sets, the staff, the timing, or any other needs please let me know. I can be on the phone in the Ops Center to discuss with you on Saturday morning as early as 7 am Washington time. Please communicate your preference with the ET in the Ops Center.

Thanks

*Michele*

X/1168

<b>Skill Set</b>	<b>Name/Office/Projected Deployment date</b>
Executive level	Dan Dorman/NMSS/March 19
Strong General Technical Knowledge combined with at least very good interpersonal skills	Mike Scott/RES/March 22 Jack Giessner/Region III/March 24
Strong Interpersonal skills combined with at least very good technical knowledge	Alan Blamey/Region II/ March 22 Rob Taylor/NRR/March 24
Protective Measures/Dose Assessment	Todd Jackson/Region I/March 23 Marie Miller/Region I/March 24
Structural Engineering Expertise	Syed Ali/RES/March 24 Abdul Sheikh/NRR/March 24
Damage Assessment Expertise	Ralph Way/NSIR/March 24
Expertise in Infrared Images	No NRC staff identified with this expertise. We are pursuing NGA resources that could support in Japan.
International Programs Expertise	Jack Ramsey/OIP/March 24 TBD/TBD/March 24

**Lee, Richard**

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**From:** Santiago, Patricia  
**Sent:** Friday, March 18, 2011 10:05 PM  
**To:** Gibson, Kathy  
**Cc:** Wagner, Katie; Lee, Richard  
**Subject:** RE: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

yes i cc'd her and told her i hit send before adding her name later and followed the request from mike thanks \_\_\_\_\_

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 9:40 PM  
**To:** Santiago, Patricia  
**Cc:** Wagner, Katie; Lee, Richard  
**Subject:** Re: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Did you work this through Katie?

\_\_\_\_\_  
**From:** Santiago, Patricia  
**To:** Tadesse, Rebecca  
**Cc:** Bubar, Patrice; Sheron, Brian; Rini, Brett; Uhle, Jennifer; Gibson, Kathy; Scott, Michael; Bowman, Gregory; Zigh, Ghani; Navarro, Carlos  
**Sent:** Fri Mar 18 18:36:08 2011  
**Subject:** NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Rebecca,

I believe the attached report is what you are requesting ---- Final BWR Sandia Fuel Project (SFP) Sandia Report.

We also have a time lapse video (OUO as well) that we can make a copy and provide Monday.

If you have additional questions, Ghani Zigh is the best person to assist.

Thanks  
Pat

**Lee, Richard**

---

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 9:40 PM  
**To:** Santiago, Patricia  
**Cc:** Wagner, Katie; Lee, Richard  
**Subject:** Re: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Did you work this through Katie?

---

**From:** Santiago, Patricia  
**To:** Tadesse, Rebecca  
**Cc:** Bubar, Patrice; Sheron, Brian; Rini, Brett; Uhle, Jennifer; Gibson, Kathy; Scott, Michael; Bowman, Gregory; Zigh, Ghani; Navarro, Carlos  
**Sent:** Fri Mar 18 18:36:08 2011  
**Subject:** NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Rebecca,

I believe the attached report is what you are requesting ---- Final BWR Sandia Fuel Project (SFP) Sandia Report.

We also have a time lapse video (OUO as well) that we can make a copy and provide Monday.

If you have additional questions, Ghani Zigh is the best person to assist.

Thanks  
Pat

## Lee, Richard

**From:** Powers, Dana A [dapower@sandia.gov]  
**Sent:** Friday, March 18, 2011 4:11 PM  
**To:** Lee, Richard  
**Subject:** RE:

Radiolytic processes will convert some of the salt into chlorox (sodium chlorate) which will kill any algae or bacteria in the water – I suppose this is good unless one put algae or bacteria in to eat radionuclides! Recall however that at TMI chlorox was put into the core to kill off growths developing on hydraulic fluids leaked into the core during defueling. It did not hurt much. Dana

---

**From:** Lee, Richard [mailto:Richard.Lee@nrc.gov]  
**Sent:** Friday, March 18, 2011 2:02 PM  
**To:** Powers, Dana A  
**Subject:**

Dear Dana:

More stuff.  
Richard

TO: Distribution  
FROM: Bob Budnitz, LBNL

### FUEL COOLABLE GEOMETRY IN THE PRESENCE OF SEA WATER

I was worried in yesterday's meeting, and remain worried, about the **effect on core cooling of the salt** in the reactor vessel(s). Let us suppose that some of the upper fuel in a given vessel is damaged, has melted, has slumped, has partially oxidized, or some combination, but the remaining lower fuel is still roughly intact in its correct geometrical configuration, namely fuel assemblies. (This assumption of partial core melting but partial core still intact is probably a correct description for all 3 of the damaged cores, Units 1, 2, and 3.) It is a major objective that this lower fuel not melt and slump! And I am worried that dense, briny, salt water down there could impede heat transfer, possibly gum up the channels, and interfere with what we call the "coolable geometry" that keeps a core assembly intact. I think that the chemistry of the brine is not necessarily that of NaCl, although it is mostly NaCl, but even minor other constituents in sea water could be a problem with coating the fuel cladding surfaces, etc.

In my view, DOE and NRC together ought to be able to identify the experts on fuel behavior and water chemistry who might know what the issues are. I could suggest starting with DON OLANDER, UC-Berkeley professor of nuclear engineering emeritus. Per Peterson is his colleague. Don at home in Berkeley is at 510-526-2418. I know of no more knowledgeable fuels person in the US, frankly. But DOE at INL has some really top people too! Ditto elsewhere, like at Argonne and Oak Ridge and Sandia.

I am also worried a lot about the coolability of whatever fuel has slumped down to the bottom of the vessel. Cooling it through its upper surface, or cooling it as it contacts the lower metal vessel, is another major objective, because lower head vessel integrity is vital. (The BWRs also have a problem of all those control-rod-rive penetrations through the lower head which are locations of weakness. These were studied 3 decades ago, after TMI, in the NRC and IDCOR-industry programs of that time.) I'd ask Bob Henry or Hans Fauske of Fauske and Associates on that melted-core-coolability issue -- the best we have on that subject, 630-323-8750. Or Dana Powers at Sandia, a member of the NRC's ACRS.



Bob Budnitz

+++++

On 3/18/2011 11:15 AM, Per F. Peterson wrote:

Also, if the pool is leaking, switching to fresh water spray can flush away any salt that has accumulated.

This is pretty urgent, in my assessment. Do any of the Navy ships have sufficient desalination capacity to support the Unit 3 and 4 pool spray effort? They will get contaminated, but this is sufficiently urgent that this could be a warranted impact. Alternatively any commercial ships with desalination capacity.

I would think that this warrants prompt action. Salt deposition is much more problematic for disable passive cooling by air than it is for water, so much less salt deposition is needed to cause problems.

Per

**From:** OPA Resource  
**To:** Ash, Darren; Barkley, Richard; Batkin, Joshua; Bell, Hubert; Belmore, Nancy; Bergman, Thomas; Bollwerk, Paul; Bonaccorso, Amy; Borchardt, Bill; Bozin, Sunny; Brenner, Eliot; Brock, Terry; Brown, Boris; Bubar, Patrice; Burnell, Scott; Burns, Stephen; Carpenter, Cynthia; Chandrathil, Prema; Clark, Theresa; Collins, Elmo; Couret, Ivonne; Crawford, Carrie; Cutler, Iris; Dacus, Eugene; Dapas, Marc; Davis, Roger; Dean, Bill; Decker, David; Dricks, Victor; Droggitis, Spiros; Flory, Shirley; Franovich, Mike; Gibbs, Catina; Haney, Catherine; Hannah, Roger; Harbuck, Craig; Harrington, Holly; Hasan, Nasreen; Hayden, Elizabeth; Holahan, Gary; Holahan, Patricia; Holian, Brian; Jacobssen, Patricia; Jaczko, Gregory; Jasinski, Robert; Jenkins, Verlyn; Johnson, Michael; Jones, Andrea; Kock, Andrea; Kotzalas, Margie; Ledford, Joey; Lee, Samson; Leeds, Eric; Lepre, Janet; Lew, David; Lewis, Antoinette; Loyd, Susan; Magwood, William; McCrary, Cheryl; McGrady-Finneran, Patricia; McIntyre, David; Mensah, Tanya; Mitlyng, Viktoria; Monninger, John; Montes, David; Nieh, Ho; Ordaz, Vonna; Ostendorff, William; Owen, Lucy; Powell, Amy; Quesenberry, Jeannette; Reddick, Darani; Regan, Christopher; Reyes, Luis; Riddick, Nicole; RidsSecyMailCenter Resource; Riley (OCA), Timothy; Rohrer, Shirley; Samuel, Olive; Satorius, Mark; Schaaf, Robert; Schmidt, Rebecca; Scott, Catherine; Screnci, Diane; Shaffer, Vered; Shane, Raeann; Sharkey, Jeffry; Sheehan, Neil; Sheron, Brian; Siurano-Perez, Osiris; Steger (Tucci), Christine; Svinicki, Kristine; Tabatabai, Omid; Tannenbaum, Anita; Taylor, Renee; Temp, WDM; Thomas, Ann; Uhle, Jennifer; Uselding, Lara; Vietti-Cook, Annette; Virgilio, Martin; Virgilio, Rosetta; Walker-Smith, Antoinette; Weaver, Doug; Weber, Michael; Weil, Jenny; Werner, Greg; Wiggins, Jim; Williams, Evelyn; Zimmerman, Roy; Zorn, Jason  
**Subject:** Media Advisory: Nuclear Regulatory Commission to Hold Public Meeting on NRC Response to Recent Japan Event  
**Date:** Friday, March 18, 2011 4:15:02 PM

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Greetings,

This was issued at approximately 3pm today via Listserve. It was not posted to the live web.

Office of Public Affairs  
US Nuclear Regulatory Commission  
301-415-8200  
opa.resource@nrc.gov

X/172

**Bonaccorso, Amy**

---

**From:** Deavers, Ron  
**Sent:** Friday, March 18, 2011 4:30 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: My availability going forward ...

Ok. Thanks

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:29 PM  
**To:** Deavers, Ron  
**Subject:** RE: My availability going forward ...

Thanks so very much for the help. I will check on the TAC. I think that is right – my boss told me I should use the Japan TAC.

Amy

---

**From:** Deavers, Ron  
**Sent:** Friday, March 18, 2011 4:25 PM  
**To:** Bonaccorso, Amy  
**Subject:** My availability going forward ...

Holly asked me to send this to you:

I have some pressing matters to attend to concerning my regular work. After brief discussion with my management,

I feel comfortable committing to the following schedule for manning the internal call center:

From next week through the first week of May 2011, Tuesday-Friday 2:00 PM to 6:00 PM

Also, can you find out if we should record our time on the call center to the new activity code: **ZG0061 - Japan Earthquake and Tsunami?**

Thanks,

Ron Deavers

X/173

## Lee, Richard

**From:** Carlson, Donald  
**Sent:** Friday, March 18, 2011 3:40 PM  
**To:** RST07 Hoc; RST01 Hoc  
**Cc:** Parks, Cecil V.; Lee, Richard; Wagner, John C.  
**Subject:** RE: assessment of the potential risk of a criticality configuration

Don Carlson (NRO), Richard Lee (RES), John Wagner (ORNL), and Cecil Parks (ORNL) concur on the following technical opinion:

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

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

**From:** Lee, Richard  
**Sent:** Friday, March 18, 2011 3:01 PM  
**To:** Wagner, John C.  
**Cc:** Carlson, Donald; Parks, Cecil V.  
**Subject:** RE: assessment of the potential risk of a criticality configuration

Great, thanks.  
Richard

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

**From:** Wagner, John C. [mailto:wagnerjc@ornl.gov]  
**Sent:** Friday, March 18, 2011 2:44 PM  
**To:** Lee, Richard  
**Cc:** Carlson, Donald; Parks, Cecil V.  
**Subject:** assessment of the potential risk of a criticality configuration

Richard,  
Cecil indicated that you were interest in having an assessment of the potential risk of a critical configuration resulting from various actions that may be taken to cool or confine the spent fuel in the spent fuel pools.

Our opinion is that criticality in the spent fuel pools is very unlikely, particularly if boron is being used, and that, if other information is correct, such as the water level in the pool at unit 4 is very low (or empty), the consequences of criticality in one of the spent fuel pools will not be significant in comparison to the consequences of the pool remaining empty/exposed. As a reminder to all, these are BWR spent fuel pools, and hence did not have borated water in them to begin with. These are our personal/professional opinions, based on the information available to us at this time, and should be treated as such.

Call if you want to discuss - 865 274 1184.

Best Regards,

x/174

John

**From:** [Harrington, Holly](#)  
**To:** [Bonaccorso, Amy](#)  
**Cc:** [Ridge, Christianne](#); [Deavers, Ron](#)  
**Subject:** RE: Clarification for use of the Tac ZG0061  
**Date:** Friday, March 18, 2011 4:38:32 PM

---

I've not been tracking that. Check with your timekeeper . . .

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:32 PM  
**To:** Harrington, Holly  
**Cc:** Ridge, Christianne; Deavers, Ron  
**Subject:** FW: Clarification for use of the Tac ZG0061

Holly – it looks like we need to use this TAC. Let us know if you learn otherwise or if we missed an update somewhere.

Thanks,

Amy

---

**From:** HRMSBulletin Resource  
**Sent:** Thursday, March 17, 2011 9:25 AM  
**To:** HRMSBulletin Resource  
**Cc:** HRMSBulletin Resource  
**Subject:** Clarification for use of the Tac ZG0061

### **Clarification for use of the TAC (ZG0061) that was established for the events in JAPAN**

This TAC (ZG0061) was established to track activity related to staff that are supporting the recent events in Japan. Managers that are performing managerial functions relating to the events in Japan should continue to use the TAC (ZM0000). In the situation where a manager is required to perform duties which would be considered different than managerial responsibilities should record their time under the new TAC ZG0061. Support staff that are performing Japan events should use TAC's that relate to their normal responsibilities. In the situation where administrative support staff is required to perform duties that would be considered different than routine administrative support responsibilities should record their time under the new TAC ZG0061.

If you have any additional questions please e-mail Jackie Jones  
[Jackie.Jones@NRC.GOV](mailto:Jackie.Jones@NRC.GOV) or Mary Matheson at [Mary.Matheson@NRC.GOV](mailto:Mary.Matheson@NRC.GOV).

X/175

**Bonaccorso, Amy**

---

**From:** Akstulewicz, Brenda  
**Sent:** Friday, March 18, 2011 4:36 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: I'm leaving for the day....

Thank YOU!

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:34 PM  
**To:** Deavers, Ron  
**Cc:** Akstulewicz, Brenda; Harrington, Holly  
**Subject:** I'm leaving for the day....

Thanks for your support!

**From:** Bonaccorso, Amy  
**To:** Harrington, Holly; Deavers, Ron  
**Cc:** Akstulewicz, Brenda  
**Subject:** Re: I'm leaving for the day....  
**Date:** Friday, March 18, 2011 4:43:58 PM

---

I will be there on Monday.

Thx,

Amy

---

**From:** Harrington, Holly  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Cc:** Akstulewicz, Brenda  
**Sent:** Fri Mar 18 16:41:41 2011  
**Subject:** RE: I'm leaving for the day....

I do need to revisit this for next week. Remind me who is in on Monday

---

**From:** Deavers, Ron  
**Sent:** Friday, March 18, 2011 4:35 PM  
**To:** Bonaccorso, Amy  
**Cc:** Akstulewicz, Brenda; Harrington, Holly  
**Subject:** RE: I'm leaving for the day....

Thanks, Amy.

Brenda, I have not been getting the calls and emails directly, I may need to be put back on the list with Amy.

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:34 PM  
**To:** Deavers, Ron  
**Cc:** Akstulewicz, Brenda; Harrington, Holly  
**Subject:** I'm leaving for the day....

Thanks for your support!

X/177



## **Bonaccorso, Amy**

---

**From:** Deavers, Ron  
**Sent:** Friday, March 18, 2011 4:44 PM  
**To:** Harrington, Holly; Bonaccorso, Amy  
**Cc:** Akstulewicz, Brenda  
**Subject:** RE: I'm leaving for the day....

I am out on Monday, I believe Amy is in

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 4:42 PM  
**To:** Deavers, Ron; Bonaccorso, Amy  
**Cc:** Akstulewicz, Brenda  
**Subject:** RE: I'm leaving for the day....

I do need to revisit this for next week. Remind me who is in on Monday

---

**From:** Deavers, Ron  
**Sent:** Friday, March 18, 2011 4:35 PM  
**To:** Bonaccorso, Amy  
**Cc:** Akstulewicz, Brenda; Harrington, Holly  
**Subject:** RE: I'm leaving for the day....

Thanks, Amy.

Brenda, I have not been getting the calls and emails directly, I may need to be put back on the list with Amy.

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 4:34 PM  
**To:** Deavers, Ron  
**Cc:** Akstulewicz, Brenda; Harrington, Holly  
**Subject:** I'm leaving for the day....

Thanks for your support!

## **Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 5:10 PM  
**To:** Shannon, Valerie; Janbergs, Holly; Akstulewicz, Brenda; Ghneim, Munira; Royer, Deanna; Couret, Ivonne; Bonaccorso, Amy; Ridge, Christianne; Steger (Tucci), Christine  
**Cc:** Hayden, Elizabeth  
**Subject:** Where to send calls and e-mails this weekend

Our public inquiry desk is closed for today. You can send emails to [Christianne.ridge@nrc.gov](mailto:Christianne.ridge@nrc.gov) , who will be in on Saturday from 10 a.m. until 2 p.m.

After 2 p.m. on Saturday, send them to [holly.janbergs@nrc.gov](mailto:holly.janbergs@nrc.gov) but they will not be looked at until Sunday

On Sunday, send them to [holly.janbergs@nrc.gov](mailto:holly.janbergs@nrc.gov) until 6 p.m.

On Monday, resume sending them to [Amy.bonaccorso@nrc.gov](mailto:Amy.bonaccorso@nrc.gov)

On Saturday, send inquiries from state, federal or international folks to Beth, who will forward them to the relevant liaison team member.

On Sunday, send them to me.

On Saturday, send media inquiries to Ivonne as usual.

On Sunday, send them to Bethany.

On Monday, resume sending them to Ivonne

Holly

**From:** Gary Cortes  
**To:** Bonaccorso, Amy  
**Subject:** Re: NRC REPLY: Call  
**Date:** Friday, March 18, 2011 5:11:17 PM

---

Amy,

Not flying from Japan, I said flying from Taiwan with a flight path going just east of Japan to catch the jet stream. They will be flying next Wednesday. I will follow your suggestion.

Thank you,

Gary

On Fri, Mar 18, 2011 at 12:36 PM, Bonaccorso, Amy <[amy.Bonaccorso@nrc.gov](mailto:amy.Bonaccorso@nrc.gov)> wrote:

Hi Gary:

I got a note saying that you had concerns about your wife, who is flying from Japan this week. I certainly understand why you are concerned.

You might want to send an email to the State Department's email address for US citizens in Japan who need assistance: [JapanEmergencyUSC@state.gov](mailto:JapanEmergencyUSC@state.gov).

We are referring questions about international travel there. You can also check with her airline.

I'm sorry I couldn't provide more information,

Thank you,

Amy

X/180

**From:** Bonaccorso, Amy  
**To:** Lee, Richard  
**Subject:** FW: Spent fuel q's deadline 1pm EST Fri  
**Date:** Friday, March 18, 2011 3:32:00 PM

---

Can you help Scott Burnell with this?

Thanks,

Amy

---

**From:** Rini, Brett  
**Sent:** Friday, March 18, 2011 3:32 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

Check with DSA, probably Richard Lee's branch.

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 2:27 PM  
**To:** Rini, Brett  
**Subject:** FW: Spent fuel q's deadline 1pm EST Fri

Brett...

Any idea who could help with this? Scott Burnell (OPA) is checking who in our research office would coordinate spent fuel studies.

Thanks,

Amy

---

**From:** Burnell, Scott  
**Sent:** Friday, March 18, 2011 2:26 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

X/181

Please!

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 2:20 PM  
**To:** Burnell, Scott  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

Do you need me to reach out to research POCs? I don't know exactly who the right person would be – but I could tap some people to find out.

---

**From:** Burnell, Scott  
**Sent:** Friday, March 18, 2011 2:17 PM  
**To:** Eli Kintisch  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

My apologies once again, Eli, it just doesn't seem to slow down...

Don't have any names @ Sandia, I'll keep checking

I'm checking who in our research office would coordinate spent fuel studies

Our Licensee Event Reports ( <https://lersearch.inl.gov/Entry.aspx> ) would include spent fuel-related events.

Here's Diaz's letter:

<http://www.nrc.gov/reading-rm/doc-collections/congress-docs/correspondence/2005/domenici-03142005.pdf>

Thanks.

Scott

---

**From:** Eli Kintisch [mailto:[ekintisch@aaas.org](mailto:ekintisch@aaas.org)]  
**Sent:** Friday, March 18, 2011 1:29 PM  
**To:** Burnell, Scott  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

Any luck? Eli

Eli Kintisch, Reporter  
Science Magazine  
202 326 6446

>>> "Burnell, Scott" <Scott.Burnell@nrc.gov> 3/17/2011 6:19 PM >>>

I'll see what I can track down, thanks.

---

**From:** Eli Kintisch [mailto:ekintisch@aaas.org]  
**Sent:** Thursday, March 17, 2011 6:17 PM  
**To:** Burnell, Scott  
**Subject:** Spent fuel q's deadline 1pm EST Fri

Scott:

1. Which researchers at Sandia perform work for NRC in this area?
2. Who is the program manager on this research, and may I speak to them for an interview?
3. Are there any publically available reports on spent fuel pool incidents that are available?
4. I was unable to find Nils Diaz response in 2004 to NAS report on spent fuel pools risk. Could you send?

thanks, e

Eli Kintisch, Reporter  
Science Magazine  
202 326 6446

>>> "Burnell, Scott" <Scott.Burnell@nrc.gov> 3/17/2011 5:49 PM >>>

Hello Eli;

I've most likely missed your deadline anyway, and I apologize – in the future it helps to put a deadline in the subject line to attract attention. In any case, I'm not aware of any publicly available modeling on spent-fuel pool incidents. Please let me know if you need anything else. Thanks.

Scott

---

**From:** Eli Kintisch [mailto:ekintisch@aaas.org]  
**Sent:** Thursday, March 17, 2011 2:18 PM  
**To:** Burnell, Scott  
**Subject:** Science mag: Are there publicly available

research studies modeling the loss of coolant from spent nuclear fuel pools that the NRC has done?

Could you send me them or refer me to them?

Deadline: 430pm today; but if we miss that, would still be useful tomorrow.

Thanks, Eli

Eli Kintisch, Reporter  
Science Magazine  
202 326 6446

X1182



Our team is ready to assist in any manner required.

Thank you for your continued support and concern.

Sincerely,

Joe  
Dr. Joseph A. Resnick, PhD, MPH, Professor Emeritus  
Executive Director

**"True Leadership, is through able example...and not by vain display of authority, power or glory" ~ Quote by 'me', NASA ISDC Convention Dinner, May 2005, Washington, D.C.**

**Please share this link with all in your email circle: [www.vansforvets.org](http://www.vansforvets.org)**

**From:** Bonaccorso, Amy  
**To:** Hayden, Elizabeth  
**Subject:** RE: Weekend Schedule  
**Date:** Friday, March 18, 2011 4:02:00 PM

---

Sure – I'll stop by before leaving for the day.

---

**From:** Hayden, Elizabeth  
**Sent:** Friday, March 18, 2011 4:02 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Weekend Schedule

Thanks, Amy.. Could you send a script to me, too?

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

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 3:24 PM  
**To:** Harrington, Holly; Buchholz, Jeri  
**Cc:** Akstulewicz, Brenda; Couret, Ivonne; Hayden, Elizabeth  
**Subject:** RE: Weekend Schedule

I just ran off some copies of our scripts for Jeri.

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:12 PM  
**To:** Buchholz, Jeri  
**Cc:** Akstulewicz, Brenda; Couret, Ivonne; Bonaccorso, Amy; Hayden, Elizabeth  
**Subject:** RE: Weekend Schedule

Thank you! I'm going to have Brenda give you the "lay of the land" about phone calls and then I'd like her to take you to Amy Bonaccorso who will give you the "lay of the land" on the Public Inquiry Desk. And Ivonne should also give you a briefing about the media desk. Beth may also have needs for yours as well. Thank you so much!!!

You will be used to fill in as necessary, if that's OK. We really aren't sure what the weekend will bring.

I will not be in until Sunday. Do you have any availability for just a few hours that day?

---

**From:** Buchholz, Jeri  
**Sent:** Friday, March 18, 2011 3:07 PM  
**To:** Harrington, Holly  
**Subject:** Re: Weekend Schedule

I will be there.  
Jeri Buchholz

X/183

---

**From:** Harrington, Holly

**To:** Screnci, Diane; Widomski, Michael <michael.widomski@dhs.gov>; Akstulewicz, Brenda; Royer, Deanna; Ghneim, Munira; Buchholz, Jeri; Anderson, Brian; Taylor, Robert; Wittick, Susan; Janbergs, Holly; Shannon, Valerie; Steger (Tucci), Christine; Bonaccorso, Amy; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David

**Sent:** Fri Mar 18 15:05:33 2011

**Subject:** Weekend Schedule

Please let me know if I did not capture your preferences correctly. Since we don't know what the day will be like, if it gets slow, people will not have to pull the full shift they're scheduled for below.

### **Saturday**

Eliot ??

Beth: 12-8

Op Center/Media:

Michael Widomski: 10-6

Scott: 9 a.m. -5 p.m.

Diane: 8-6

Ivonne: 8-5

Phones:

Brenda: 8-5

Deanna:10-2

Misc.

Jeri Buckholtz 12-7?

Public Inquiries (moving to touchdown stations on 17<sup>th</sup> floor)

One person 10 a.m. to 2 p.m.

### **Sunday:**

Eliot -- ???

Holly --

Op Center:

Dave: 10 a.m. – 6 p.m

Rob: 9 a.m. - 5

Michael Widomski: 8-6 (only if Eliot needs him for the meeting)

Brian Anderson (loan from NRO)

Phones:

Val – 8-4

Christine 1-5

Munira: 10-2 (loan from)

Other:

Susan Wittick: ???? (loan from OCA)

Bethany: 8 a.m. – 6 p.m.

Jeri Buckholtz ???

Public Inquiries (moving to touchdown stations on 17<sup>th</sup> floor)

One person 10 a.m. to 2 p.m.

**From:** Deavers, Ron  
**To:** Deavers, Ron  
**Subject:** RE: Japan Nuclear Plant Assistance Email not accepted called and LVM (EOM)  
**Date:** Friday, March 18, 2011 4:09:58 PM

---

We appreciate the suggestions of folks with ideas to resolve the situation in Japan. 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.

---

**From:** The Allied International Development Group of Companies [mailto:islandnation@aol.com]  
**Sent:** Friday, March 18, 2011 3:41 PM  
**To:** OPA Resource  
**Subject:** Japan Nuclear Plant Assistance

Please convey this message to the appropriate officials:

It is possible to quickly erect a cable and drive system for a powered and remotely operated work trolley over the reactor cores and storage pools. This task can be done by helicopters or cranes and at distances that are safely away from the radioactive plume. This system will avoid the hazards faced by dropping water and other materials by helicopter or the need to be in close proximity to use fire hoses.

Once installed, several large hoses can be easily positioned with the trolley directly over the pools and cores to pour water in safely from a distance.

Portable steel towers or lumber industry "Yarders" can serve as the anchor points of the cable system. There may be electrical transmission towers onsite that could also be utilized. A more elaborate design can take the form of an X/Y axis system whereby several cables are integrated to allow positioning anywhere over the facility.

This overhead cable and trolley system can also be used for setting prefabricated forms and concrete to encase the core and pools, surveillance, monitoring, delivery and accurate placement of sand, boron, placing lead or steel sheeting, etc. and many other urgent tasks and uses. It can be easily controlled with a simple laptop computer application and can include GPS positioning and stepper motors for accurate remote positioning. A sturdy design could have a capacity of several tons. All of the equipment is available "off-the-shelf" for

x/184

immediate use and is air transportable.

Liquid nitrogen can also be flooded in with the trolley to cool the core and pools; and when combined with water will quickly form an ice blockage. 3-6 feet of ice can be built up and will provide substantial shielding. There may be some concern about the implications for such rapid cooling or the transformation of the nitrogen, etc. but the risks of not using nitrogen are likely substantially higher. The Russian government has experience with this method and you may want to consult with them. You can also use snow making machines and irrigation systems to similar effect to inhibit the rise of the contaminated smoke and dust depending on weather conditions. Fire fighting foam may also be employed.

I also suggest laying special composite fireproof blankets that my company has designed over these areas to deprive the fire of oxygen while also keeping dust and smoke from becoming airborne.

I am available to assist you in the design and fabrication of these systems.

Feel free to contact me any time.

Best regards,

Robert Pfriender

President

Allied International Development, Ltd.

516-322-3320

Long Island, New York

[islandnation@aol.com](mailto:islandnation@aol.com)

**From:** Bonaccorso, Amy  
**To:** steve.mcgroarty@alaska.gov  
**Bcc:** Deavers, Ron; Janbergs, Holly  
**Subject:** REPLY: Japan - emergency electrical power to nuclear plants  
**Date:** Friday, March 18, 2011 3:44:00 PM

---

Hello Mr. McGroarty:

Thank you for your email.

We appreciate the suggestions of folks with ideas to resolve the situation in Japan. 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:** McGroarty, Steve J (DNR) [mailto:steve.mcgroarty@alaska.gov]  
**Sent:** Friday, March 18, 2011 3:07 PM  
**To:** OPA Resource  
**Cc:** McGroarty, Steve J (DNR)  
**Subject:** Japan - emergency electrical power to nuclear plants

I wanted to make the recommendation that emergency power could be provided to the disabled nuclear power plant with the use of portable diesel powered generator sets. These are available commercially and I would imagine that there are back-up diesel generators at all hardrock mine / mill facilities in Japan as well as at all military facilities. These could be flown to the site by helicopter and provide power to the plants.

<http://www.cat.com/power-generation>

Thanks.

Steve McGroarty

X/185

**From:** Bonaccorso, Amy  
**To:** Ridge, Christianne  
**Subject:** Saturday  
**Date:** Friday, March 18, 2011 4:26:00 PM

---

Holly will be sending you someone to train up. I copied some extra script materials and left them on the wooden cabinet in the office I've been working from if you need to give them to someone.

Thanks,

Amy

X/1186



**From:** Shannon, Valerie  
**To:** Bonaccorso, Amy  
**Subject:** RE: question  
**Date:** Friday, March 18, 2011 7:58:23 AM

---

OK Thanks!

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 7:50 AM  
**To:** Shannon, Valerie  
**Subject:** Re: question

Val:

You certainly can- unless Holly has asked you to do something else. I use it, but sometimes add a thank you or something so it doesn't come off as too stiff.

Thx,  
Amy

---

**From:** Shannon, Valerie  
**To:** Bonaccorso, Amy  
**Sent:** Fri Mar 18 07:37:59 2011  
**Subject:** question

Amy,

You had sent the following statement for us to respond to callers that have suggestions. We are wondering if we should respond with this statement to folks that are e-mailing us suggestions.

"We appreciate the suggestions of folks with ideas to resolve the situation in Japan. Please understand that the NRC has some of the most expert people in the world...."

Please let me know,

Thanks, Val

X/187

**From:** Steger (Tucci), Christine  
**To:** Janbergs, Holly; Bonaccorso, Amy  
**Subject:** RE:  
**Date:** Friday, March 18, 2011 12:43:41 PM

---

Awesome! Apparently my sass is not up to par with these folks...

---

**From:** Janbergs, Holly  
**Sent:** Friday, March 18, 2011 12:43 PM  
**To:** Steger (Tucci), Christine; Bonaccorso, Amy  
**Subject:** RE:

Please, this girl here majored in sass. Let me at them =P

---

**From:** Steger (Tucci), Christine  
**Sent:** Friday, March 18, 2011 12:42 PM  
**To:** Bonaccorso, Amy  
**Cc:** Janbergs, Holly  
**Subject:** RE:

THANK YOU BOTH! Sorry for having to forward a few impolite people – I had 4 people on hold at once.

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 12:35 PM  
**To:** Steger (Tucci), Christine  
**Cc:** Janbergs, Holly  
**Subject:** RE:

Sure.

Christine – you can send callers to Bethany at the below number too if you are overloaded.

---

**From:** Janbergs, Holly  
**Sent:** Friday, March 18, 2011 12:26 PM  
**To:** Bonaccorso, Amy  
**Subject:**

Calls needing to be forwarded can be forwarded to this number too, 415-3689, if you want?

X/1/88

**From:** Janbergs, Holly  
**To:** Bonaccorso, Amy  
**Cc:** Janbergs, Holly  
**Subject:** NYT article on public health in Japan  
**Date:** Friday, March 18, 2011 12:59:36 PM

---

<http://www.nytimes.com/2011/03/16/world/asia/16health.html>

X/189

**From:** Janbergs, Holly  
**To:** Janbergs, Holly; Bonaccorso, Amy  
**Subject:** RE: NYT article on public health in Japan  
**Date:** Friday, March 18, 2011 1:07:20 PM

---

EPA comments on radiation

[http://www.epa.gov/rpdweb00/understand/health\\_effects.html](http://www.epa.gov/rpdweb00/understand/health_effects.html)

---

**From:** Janbergs, Holly  
**Sent:** Friday, March 18, 2011 1:00 PM  
**To:** Bonaccorso, Amy  
**Cc:** Janbergs, Holly  
**Subject:** NYT article on public health in Japan

<http://www.nytimes.com/2011/03/16/world/asia/16health.html>

X/190

**From:** Janbergs, Holly  
**To:** dwatson@defiancetest.com  
**Subject:** Dose Records Request  
**Date:** Friday, March 18, 2011 1:14:55 PM

---

Mr. Watson,

I am not positive about our ability to provide you with records from your time in Japan. However, there is an NRC process for requesting dose records for any individuals monitored by an NRC licensee. You can find general information on the process here:

<http://www.nrc.gov/about-nrc/radiation/health-effects/info.html>

and file a request here:

<http://www.reirs.com/requests.htm>

The second page also contains contact information in case you have any questions.

I hope this helps!

Holly

2/19/11

**From:** [Tobin, Jennifer](#)  
**To:** [ratan.kumar@uta.edu](mailto:ratan.kumar@uta.edu)  
**Subject:** RE: Radiation Question  
**Date:** Friday, March 18, 2011 1:16:53 PM

---

Dear Mr. Kumar,  
Thank you for your inquiry. The Japanese government has recommended that some inhabitants "shelter-in-place" which means staying indoors. Overall, the sealing of the doors has very little effect on the efficiency of the sheltering in-place. I hope that answers your question.

-Jenny

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

From: [ratan.kumar@uta.edu](mailto:ratan.kumar@uta.edu) [<mailto:ratan.kumar@uta.edu>]  
Sent: Thursday, March 17, 2011 4:59 PM  
To: OPA Resource  
Subject: Radiation Question

Below is the result of your feedback form. It was submitted by  
([ratan.kumar@uta.edu](mailto:ratan.kumar@uta.edu)) on Thursday, March 17, 2011 at 16:58:32  
-----

comments: Can sealing the doors of their homes protect people in Japan?

contactName: ratan kumar

phone:  
-----

X/192

**From:** Tobin, Jennifer  
**To:** babcockd@fivestarproducts.com  
**Subject:** Your NRC Phone Inquiry  
**Date:** Friday, March 18, 2011 1:55:57 PM

---

Dear Mr. Babcock,

Thank you for your phone call. At this time there has been no indication of U.S. companies changing their plans for potential new units. They have not withdrawn their license applications from the NRC. We are proceeding in our review process of the applications that had been previously submitted. I hope that answers your question.

-Jenny

X/193

**From:** Ridge, Christianne  
**To:** Bonaccorso, Amy  
**Subject:** RE: kudos to all  
**Date:** Friday, March 18, 2011 2:16:55 PM

---

Thanks, Amy

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 9:20 AM  
**To:** Ridge, Christianne  
**Subject:** FW: kudos to all

I didn't see you on here - a nice message from the Director of OPA.

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 10:02 PM  
**To:** Hayden, Elizabeth; Burnell, Scott; Harrington, Holly; McIntyre, David; Couret, Ivonne; Shannon, Valerie; Janbergs, Holly; Akstulewicz, Brenda; Wittick, Susan; Royer, Deanna; Bonaccorso, Amy; Deavers, Ron; Tobin, Jennifer; Taylor, Robert; Steger (Tucci), Christine; Ghneim, Munira; Widomski, Michael  
**Subject:** kudos to all

Four hours ago, the chairman called me to tell me to go home and get some rest. So, here I sit in a hotel room finishing up my emails and listening to some guy from Burson-Marstetler hustle me for business. I finally told him I had to get off the line because I had something important to do. (he made some good points that perhaps we can use going forward, but I don't think I'll hire him.)

What I had to do was tell you what the chairman also said to me. He told me that he thought Public Affairs was doing a great job in dealing with all the issues being thrown at us. I always agree with the chairman, well most of the time, and this happens to be one of them.

Not only have OPAers pitched in with long days and long nights, others in the agency have now come to our aid and it is making our collective job much easier. In fact, we are now bringing in some additional help and I suspect when all the paperwork is done you may recognize at least one of the names.

I am so honored to be working with such a bunch of professionals. I can go out with the chairman on his many rounds and know without fail that the job is getting done.

As reporters, many of us had front row seats at history. Today, we are part of making history and it is a time we will never forget. The days will continue to be long, but hopefully we can start giving folks some time off. One thing to remember: This is a marathon, not a sprint. (Yeah, how many times have you heard that metaphor used?) Pace yourself. Take time to go outside and enjoy the spring, feel the sun on your face, and come back knowing you are doing a damn fine job.

I thank you.

Eliot

X/194



**From:** Ridge, Christianne  
**To:** Bonaccorso, Amy  
**Subject:** RE: Parking  
**Date:** Friday, March 18, 2011 2:17:50 PM

---

Thanks again

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 10:00 AM  
**To:** Ridge, Christianne  
**Subject:** FW: Parking

FYI – just in case this is relevant for you.

**From:** Shannon, Valerie  
**Sent:** Friday, March 18, 2011 9:59 AM  
**To:** Bonaccorso, Amy  
**Subject:** Parking

Amy,  
You do not need a parking pass for the weekend to enter the garage.  
Val

X/1195

## **Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:06 PM  
**To:** Screnci, Diane; Widomski, Michael; Akstulewicz, Brenda; Royer, Deanna; Ghneim, Munira; Buchholz, Jeri; Anderson, Brian; Taylor, Robert; Wittick, Susan; Janbergs, Holly; Shannon, Valerie; Steger (Tucci), Christine; Bonaccorso, Amy; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David  
**Subject:** Weekend Schedule

Please let me know if I did not capture your preferences correctly. Since we don't know what the day will be like, if it gets slow, people will not have to pull the full shift they're scheduled for below.

### **Saturday**

Eliot ?-?  
Beth: 12-8

Op Center/Media:  
Michael Widomski: 10-6  
Scott: 9 a.m. -5 p.m.  
Diane: 8-6  
Ivonne: 8-5

Phones:  
Brenda: 8-5  
Deanna: 10-2

Misc.  
Jeri Buckholtz 12-7?

Public Inquiries (moving to touchdown stations on 17<sup>th</sup> floor)

One person 10 a.m. to 2 p.m.

**Sunday:**

Eliot -- ???

Holly --

Op Center:

Dave: 10 a.m. – 6 p.m

Rob: 9 a.m. - 5

Michael Widomski: 8-6 (only if Eliot needs him for the meeting)

Brian Anderson (loan from NRO)

Phones:

Val – 8-4

Christine 1-5

Munira: 10-2 (loan from)

Other:.

Susan Wittick: ???? (loan from OCA)

Bethany: 8 a.m. – 6 p.m.

Jeri Buckholtz ???

Public Inquiries (moving to touchdown stations on 17<sup>th</sup> floor)

One person 10 a.m. to 2 p.m.

## Bonaccorso, Amy

---

**From:** Harrington, Holly  
**Sent:** Friday, March 18, 2011 3:12 PM  
**To:** Buchholz, Jeri  
**Cc:** Akstulewicz, Brenda; Couret, Ivonne; Bonaccorso, Amy; Hayden, Elizabeth  
**Subject:** RE: Weekend Schedule

Thank you! I'm going to have Brenda give you the "lay of the land" about phone calls and then I'd like her to take you to Amy Bonaccorso who will give you the "lay of the land" on the Public Inquiry Desk. And Ivonne should also give you a briefing about the media desk. Beth may also have needs for your as well. Thank you so much!!!

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---

**From:** Buchholz, Jeri  
**Sent:** Friday, March 18, 2011 3:07 PM  
**To:** Harrington, Holly  
**Subject:** Re: Weekend Schedule

I will be there.  
Jeri Buchholz

---

**From:** Harrington, Holly  
**To:** Screnci, Diane; Widomski, Michael <[michael.widomski@dhs.gov](mailto:michael.widomski@dhs.gov)>; Akstulewicz, Brenda; Royer, Deanna; Ghneim, Munira; Buchholz, Jeri; Anderson, Brian; Taylor, Robert; Wittick, Susan; Janbergs, Holly; Shannon, Valerie; Steger (Tucci), Christine; Bonaccorso, Amy; Brenner, Eliot; Burnell, Scott; Couret, Ivonne; Hayden, Elizabeth; McIntyre, David  
**Sent:** Fri Mar 18 15:05:33 2011  
**Subject:** Weekend Schedule

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Brenda: 8-5  
Deanna: 10-2

Misc.

Jeri Buckholtz 12-7?

Public Inquiries (moving to touchdown stations on 17<sup>th</sup> floor)

One person 10 a.m. to 2 p.m.

**From:** Tobin, Jennifer  
**To:** Harrington, Holly  
**Cc:** Bonaccorso, Amy; Deavers, Ron; Janbergs, Holly  
**Subject:** FW: Summary of IAEA press briefing 3-18-11  
**Date:** Friday, March 18, 2011 2:38:34 PM

---

Thought this might be helpful. You can check out [www.iaea.org](http://www.iaea.org) for the full text

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

From: LIA02 Hoc  
Sent: Friday, March 18, 2011 2:30 PM  
To: LIA03 Hoc; Emche, Danielle; Fragoyannis, Nancy; Stahl, Eric; Mayros, Lauren; Tobin, Jennifer; Afshar-Tous, Mugeh; Wittick, Brian; Abrams, Charlotte; Jones, Andrea; Smioldo, Elizabeth; English, Lance  
Subject: FW: Summary of IAEA press briefing 3-18-11

FYI - pls pass to anyone I missed.

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

From: Shaffer, Mark R [<mailto:ShafferMr@state.gov>]  
Sent: Friday, March 18, 2011 2:29 PM  
To: LIA02 Hoc  
Subject: Fw: Summary of IAEA press briefing 3-18-11

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

From: Cooper, Nathan J  
To: Davies, Glyn T; Wood, Robert A; Hall-Godfrey, Jennifer J; IAEA Vienna; JapanEmbassy, TaskForce; TaskForce-1  
Sent: Fri Mar 18 14:18:43 2011  
Subject: Summary of IAEA press briefing 3-18-11

The two key topics at Friday's press briefing at the IAEA on the events in Japan were GOJ's upgrading of the accident's classification on the INES scale to a 5 and the CTBTO's detection of nucleotides in Sacramento. Special Advisor Graham Andrew filled in for DG Amano again and continued his approach of sharing large quantities of information upfront. His main line was that the situation "remains serious, but there has been no significant worsening." The informational segment of the briefing contained new satellite imagery and copious charts about changes in the reactor vessel water and pressure levels. Much of this data, as well as a recap of dose level readings near Fukushima and around Japan, was presented without real-world context and veered into science lecture territory.

Further announcements:

- Special BOG meeting to be held Monday 3/21
- Diesel power has been reestablished to cool units 5 and 6, a positive development
- No problems at the common spent fuel pond building
- DG Amano met with high level GOJ officials
- Further technical and press briefing to be held Saturday 3/20
- Tokyo has no indication of cesium or iodine in atmosphere
- Int'l Civil Aviation Agency says no concern for commercial air travel

Key exchanges with the press:

Q: For a physics drop-out like me, what does this all mean? (AP Jahn)

A: The situation is non-changing and relatively stable. This is positive, because what you don't want is a rapidly changing situation. This is particularly true of units 1, 2 and 3.

X1198

Q: What does the change in INES rating from 4 to 5 mean in real terms? (CNN Matthew Chance)

A: First it is important to remember that the ratings are not made by the IAEA, but by Japan. Whether they are exactly right is not the important matter of the day--the important thing is getting water back into these reactors.

Q: Regarding the Unit 4 spent fuel pool, how close are the workers getting? And given the presence of MOX fuel, what is the risk for criticality? (Bloomberg Tyrell)

A: Criticality is not an issue in this case, providing the geometry of the fuel rods has not changed. The way the pods are set up keeps the rods from touching and prevents criticality.

Q: CTBTO reported nucleotides from this eruption of radioactivity being discovered in Sacramento, California. What is your position on this report?

A: First, we would not use the term "eruption of radioactivity." Even without an accident, you find particles in the environment. It's about when, what kind of particles and in what concentration. As of now, we have no concerns in Japan, and certainly not more remotely, for human health. The mere detection of particles is not something people should be concerned with.

---

**From:** Bonaccorso, Amy  
**To:** Janbergs, Holly; wgriffin@csulb.edu  
**Cc:** Deavers, Ron  
**Subject:** RE: Re: Diablo Plant  
**Date:** Friday, March 18, 2011 3:25:00 PM

---

That was really professional!

---

**From:** Janbergs, Holly  
**Sent:** Friday, March 18, 2011 3:23 PM  
**To:** wgriffin@csulb.edu  
**Subject:** Re: Diablo Plant

Dr. Griffin,

The NRC's mission is to ensure the safety and security of all nuclear power plants. U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes. We require that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area. The NRC then adds a margin for error to account for the limitations on historical data.

However, we are always interested in new information that can help us with our mission. We will be analyzing information that comes out of this situation in Japan, and we will be looking for lessons we can apply to U.S. plants. President Obama has also directed the agency to conduct a comprehensive review of the safety of U.S. nuclear plants, and the NRC will be doing so.

Diablo Canyon is currently undergoing a relicensing process. That process involves rigorous research and testing from both a safety and an environmental standpoint. You can view the current information on the reactor and its application here:  
<http://www.nrc.gov/reactors/operating/licensing/renewal/applications/diablo-canyon.html>  
There will be a public meeting coming up, and we always welcome comments from concerned citizens.

In addition, your senators have recently sent a letter to the NRC asking that we take a close look at Diablo Canyon and San Luis Obispo nuclear power plants. The agency understands these concerns, and we will continue to work on ensuring the safety of these locations.

Thank you,  
Holly

x/1199



**Rebstock, Paul**

---

**From:** opa administrators [opa@nrc.gov]  
**Sent:** Friday, March 18, 2011 6:29 PM  
**To:** Rebstock, Paul  
**Subject:** NRC Informs U.S. Nuclear Power Plants on Japan Earthquake's Effects  
**Attachments:** 11-052.pdf

X/200



# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-051

March 18, 2011

## **NRC INFORMS U.S. NUCLEAR POWER PLANTS ON JAPAN EARTHQUAKE'S EFFECTS**

The Nuclear Regulatory Commission has issued an Information Notice to all currently operating U.S. nuclear power plants, describing the effects of the March 11 earthquake and tsunami on Japanese nuclear power plants.

The notice provides a brief overview of how the earthquake and tsunami are understood to have disabled several key cooling systems at the Fukushima Daiichi nuclear power station, and also hampered efforts to return those systems to service. The notice is based on the NRC's current understanding of the damage to the reactors and associated spent fuel pools as of Friday, March 18.

The notice reflects the current belief that the combined effects of the March 11 earthquake and tsunami exceeded the Fukushima Daiichi plant's design limits. The notice also recounts the NRC's efforts, post-9/11, to enhance U.S. plants' abilities to cope with severe events, such as the loss of large areas of a site, including safety systems and power supplies.

The NRC expects U.S. nuclear power plants will review the entire notice to determine how it applies to their facilities and consider actions, as appropriate.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.

**From:** Shannon, Valerie  
**To:** Bonaccorso, Amy  
**Subject:** question  
**Date:** Friday, March 18, 2011 7:38:03 AM

---

Amy,

You had sent the following statement for us to respond to callers that have suggestions. We are wondering if we should respond with this statement to folks that are e-mailing us suggestions.

"We appreciate the suggestions of folks with ideas to resolve the situation in Japan. Please understand that the NRC has some of the most expert people in the world...."

Please let me know,

Thanks, Val

2/201

**From:** Bonaccorso, Amy  
**To:** Tobin, Jennifer  
**Subject:** FW: Radiation Question  
**Date:** Friday, March 18, 2011 11:24:00 AM

---

I think your technical background might help calm this person down.

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

From: Couret, Ivonne  
Sent: Thursday, March 17, 2011 7:11 PM  
To: Bonaccorso, Amy  
Subject: FW: Radiation Question

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
opa.resource@nrc.gov  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

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

From: ratan.kumar@uta.edu [<mailto:ratan.kumar@uta.edu>]  
Sent: Thursday, March 17, 2011 4:59 PM  
To: OPA Resource  
Subject: Radiation Question

Below is the result of your feedback form. It was submitted by

(ratan.kumar@uta.edu) on Thursday, March 17, 2011 at 16:58:32

-----  
comments: Can sealing the doors of their homes protect people in Japan?

contactName: ratan kumar

phone:  
-----

x/202

**From:** James Prudden  
**To:** Bonaccorso, Amy  
**Subject:** Re: Indian Point #3  
**Date:** Friday, March 18, 2011 12:14:26 PM

---

Amy:

That is comforting to know you take licensing so seriously, because then you will no doubt reach the obvious conclusion. That plant should never have been built, but we were more ignorant then. Now we know!



**James Prudden**

Group Editorial Director

**McMahon Publishing** — [www.mcmahonmed.com](http://www.mcmahonmed.com)

**McMahon Custom Media** — <http://custommedia.mcmahonmed.com>

212.957.5300, x215

On 3/18/11 12:10 PM, "Bonaccorso, Amy" <amy.Bonaccorso@nrc.gov> wrote:

Hi Mr. Prudden:

Thank you for taking the time to express your thoughts.

We take our licensing process very seriously and each plant goes through environmental and safety reviews when the license renewal application is being considered. The public has an opportunity to comment on this through all stages of the process.

Thank you,

Amy

**From:** James Prudden [<mailto:JPrudden@McMahonmed.com>]

**Sent:** Thursday, March 17, 2011 3:50 PM

**To:** NRC Allegation

**Subject:** Indian Point #3

To Whom This May Concern:

The Nuclear Regulatory Commission has recently reformulated risk estimates and found that Indian Point #3, in Buchanan, NY, carries the single highest risk for earthquake damage in the country.

This relatively old plant is now up for relicensing. One of its many problems is its proximity to major population centers and the impossibility of effecting a timely and orderly evacuation throughout the region. There is at the time of this writing a 50-mile evacuation zone around the afflicted reactors in Japan — can you imagine what it would mean if such a zone were attempted around Indian Point?

There is widespread concern over Indian Point, and it cuts across party lines. It's time to shut Indian Point down.

X/203

A handwritten signature in black ink, appearing to read "JAMES PRUDDEN". The signature is stylized with a large, looped initial "J" and a long, sweeping underline.

**James Prudden**  
62 Farrington Road  
Croton-on-Hudson, NY 10520

**From:** Janbergs, Holly  
**To:** Bonaccorso, Amy  
**Subject:** Handy Fact Sheets  
**Date:** Friday, March 18, 2011 12:34:52 PM

---

#### KI

<http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/potassium-iodide.html>

#### TMI

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html>  
<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-plant-sfty-after-tmi2.html>

#### Chernobyl

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.html>

#### Emergency Preparedness

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-emerg-plan-prep-nuc-power.html>

#### Exercises

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/force-on-force-fs.html>

#### Radiation

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html>  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0322/r1/br0322r1.pdf>

#### Seismic Issues

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-seismic-issues.html>

X/204

**From:** Janbergs, Holly  
**To:** Bonaccorso, Amy  
**Subject:** BWRs info  
**Date:** Friday, March 18, 2011 12:36:11 PM

---

<http://www.nrc.gov/reactors/bwrs.html>

X/205



**From:** Janbergs, Holly  
**To:** Sabisch, Andrew  
**Subject:** Clarification Requested: Suggestion?  
**Date:** Friday, March 18, 2011 10:46:48 AM

---

Mr. Sabisch,

OPA received information regarding a device intended to assist with the spent fuel problems in Japan. Based on e-mail traffic, it's been difficult to tell where the suggestion originated. Did this come from an NRC employee originally? Please advise.

Thank you,  
Holly Janbergs  
Public Affairs Assistant

X/206

**From:** Couret, Ivonne  
**To:** Bonaccorso, Amy  
**Subject:** RE: Nuclear Fall out Map  
**Date:** Friday, March 18, 2011 11:10:23 AM

---

Duplicate call. Ivonne

**Ivonne L. Couret**  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 11:07 AM  
**To:** Couret, Ivonne  
**Subject:** FW: Nuclear Fall out Map

Media?

---

**From:** OPA Resource  
**Sent:** Friday, March 18, 2011 9:13 AM  
**To:** Bonaccorso, Amy  
**Subject:** FW: Nuclear Fall out Map

---

**From:** Rick Ireton [<mailto:Rick@mgnonline.com>]  
**Sent:** Thursday, March 17, 2011 7:00 PM  
**To:** OPA Resource  
**Subject:** Nuclear Fall out Map

We provide News imagery for 600 US television stations. Will you be providing a map of the expected fallout area from Japan?

Thanks for your help.

Rick Ireton  
MGN Online  
[rick@mgnonline.com](mailto:rick@mgnonline.com)

X/207

**From:** .. Janbergs, Holly  
**To:** [lsheridan@riverbed.com](mailto:lsheridan@riverbed.com)  
**Subject:** Re: Radiation Measurements  
**Date:** Friday, March 18, 2011 11:16:42 AM

---

Ms. Sheridan,

I understand that you are trying to find access to real-time radiation measurements. Although the NRC has been involved in radiation monitoring, the efforts have also come from a number of U.S. agencies. The best source for information on radiation monitoring is the Environmental Protection Agency.

The EPA has a list of FAQs here:

<http://www.epa.gov/radiation/japan-faqs.html>

That list contains an explanation of how to log into and use RadNet, which is the site for their radiation monitoring database. The direct link to the database is here:

<http://cdx.epa.gov>

I hope this helps,  
Holly

X/208

**Lee, Richard**

---

**From:** Powers, Dana A [dapower@sandia.gov]  
**Sent:** Friday, March 18, 2011 1:17 PM  
**To:** Lee, Richard  
**Subject:** RE: sea water effects on FP release

As we discussed, there do not appear to be serious downsides to the use of seawater. There is salt. PSI experiments have investigated effects of salt on aqueous iodine chemistry and not seen much effect. We see  $\text{ClI}$  rather than  $\text{I}_2$  partitioning from salt solutions but iodine partitioning is about the same. There will be some organic iodide formation because of the organic in seawater. Seawater pH will typically be less than 7, but boration will change the pH presumably to a higher value and this will suppress iodine partitioning from the water into the gas phase. Any silver will precipitate, but in BWRs there is only fission product silver and this does not have a high yield. We can presume the seawater is saturated in carbon dioxide. This may precipitate any barium or strontium in the water as a carbonate. Again, we do not expect a big effect such as plugging etc. There will be enhanced corrosion of the cladding and the steel, but these are very long term effects and not of particular interest now.

I don't think we need to worry about iodine in the spent fuel pools. The fuel is old enough that we are well beyond 10 half lives for the most important iodine isotopes. The only significant iodine isotope is  $^{129}\text{I}$  which has a very long half life and consequently a minuscule radioactivity in comparison to other things such as noble gases and cesium. Dana

---

**From:** Lee, Richard [mailto:Richard.Lee@nrc.gov]  
**Sent:** Thursday, March 17, 2011 5:40 PM  
**To:** Powers, Dana A  
**Subject:** sea water effects on FP release

Dear Dana:

From today meeting at DOE with Secretary Chu and Dr. Holdren (Head of White House Office of Science and Technology Policy), questions were raised about sea water (salt, etc.,) on FP release ( $\text{Cs}$  form, iodine, ...) and what flow blockage that could be created in a short time frame (not longer term effects - corrosion of vessel, ..). Please give me a preliminary assessment on what you think.

Appreciate it. We suppose to get an answer by tomorrow. Secretary Chu is scheduled for 5 TV appearances on Sunday morning.

Thanks, Richard

## Lee, Richard

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 3:35 PM  
**To:** Lee, Richard  
**Subject:** Fw: Effects of salt deposition on cooling of BWR fuel assemblies

**Importance:** High

Is this consistent with what we said?

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

**From:** Sheron, Brian  
**To:** Gibson, Kathy; Scott, Michael; Tinkler, Charles  
**Cc:** Uhle, Jennifer  
**Sent:** Fri Mar 18 15:27:51 2011  
**Subject:** FW: Effects of salt deposition on cooling of BWR fuel assemblies

More "help."

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

**From:** Per F. Peterson [mailto:[peterson@nuc.berkeley.edu](mailto:peterson@nuc.berkeley.edu)]  
**Sent:** Friday, March 18, 2011 12:22 PM  
**To:** Lyons, Peter; Kelly, John E (NE)  
**Cc:** SCHU; Adams, Ian; Aoki, Steven; Bob Budnitz; Sheron, Brian; DAgostino, Thomas; Dick Garwin; Dick Garwin; Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Koonin, Steven; McFarlane, Harold; Owens, Missy; Per Peterson; Phil Finck; Poneman, Daniel; Rolando Szilard; Steve Fetter  
**Subject:** Effects of salt deposition on cooling of BWR fuel assemblies  
**Importance:** High

Pete and John,

It could be helpful to have someone at Sandia address the question of the impact of salt deposition on the coolability of BWR fuel assemblies by air and steam after they are uncovered by pool boil off or leakage, and get their response out to the group. A quick expert opinion from someone who has done these calculations and is familiar with the available experimental data could be helpful in reducing our uncertainty about the risks posed by salt in the Unit 3 pool.

My intuition is that the heat generation rates for fuel that is over one year past removal from the core are much lower than for freshly discharged fuel, which is the usual focus for analysis experiments.

Because all of the fuel in the Unit 3 pool is old, it is possible that air cooling of the outside of the shrouds around the assemblies may be able to prevent heating of pins in the center of the assembly to the temperature needed to initiate zirconium oxidation.

If so, then salt is probably less of a problem because the flow area between the assembly and the rack, for low density racking, is pretty large, so it is more difficult to generate flow blockage with salt.

Some expert judgement on whether this could be the case could be very helpful.

This said, I think that we can buy significant risk reduction if we can expedite the transition to use of fresh water for spray cooling of the pool in Unit 3, where there is significant evidence that the pool may have a leak. Bringing in ship-based desalination capability thus merits serious consideration.

-Per

-----  
Per F. Peterson  
Professor and Chair  
Department of Nuclear Engineering  
University of California  
4153 Etcheverry Hall  
Berkeley, California 94720-1730  
peterson@nuc.berkeley.edu  
Office: (510) 643-7749 Fax: (510) 643-9685  
[http://www.nuc.berkeley.edu/People/Per\\_Peterson](http://www.nuc.berkeley.edu/People/Per_Peterson)  
-----

**From:** Bonaccorso, Amy  
**To:** Ridge, Christianne  
**Subject:** FW: kudos to all  
**Date:** Friday, March 18, 2011 9:20:00 AM

---

I didn't see you on here - a nice message from the Director of OPA.

---

**From:** Brenner, Eliot  
**Sent:** Thursday, March 17, 2011 10:02 PM  
**To:** Hayden, Elizabeth; Burnell, Scott; Harrington, Holly; McIntyre, David; Couret, Ivonne; Shannon, Valerie; Janbergs, Holly; Akstulewicz, Brenda; Wittick, Susan; Royer, Deanna; Bonaccorso, Amy; Deavers, Ron; Tobin, Jennifer; Taylor, Robert; Steger (Tucci), Christine; Ghneim, Munira; Widomski, Michael  
**Subject:** kudos to all

Four hours ago, the chairman called me to tell me to go home and get some rest. So, here I sit in a hotel room finishing up my emails and listening to some guy from Burson-Marstetler hustle me for business. I finally told him I had to get off the line because I had something important to do. (he made some good points that perhaps we can use going forward, but I don't think I'll hire him.)

What I had to do was tell you what the chairman also said to me. He told me that he thought Public Affairs was doing a great job in dealing with all the issues being thrown at us. I always agree with the chairman, well most of the time, and this happens to be one of them.

Not only have OPAers pitched in with long days and long nights, others in the agency have now come to our aid and it is making our collective job much easier. In fact, we are now bringing in some additional help and I suspect when all the paperwork is done you may recognize at least one of the names.

I am so honored to be working with such a bunch of professionals. I can go out with the chairman on his many rounds and know without fail that the job is getting done.

As reporters, many of us had front row seats at history. Today, we are part of making history and it is a time we will never forget. The days will continue to be long, but hopefully we can start giving folks some time off. One thing to remember: This is a marathon, not a sprint. (Yeah, how many times have you heard that metaphor used?) Pace yourself. Take time to go outside and enjoy the spring, feel the sun on your face, and come back knowing you are doing a damn fine job.

I thank you.

Eliot

X/2.1.1

**From:** Bonaccorso, Amy  
**To:** Ridge, Christianne  
**Cc:** Tobin, Jennifer; Deavers, Ron; Harrington, Holly  
**Subject:** RE: Weekend Update  
**Date:** Friday, March 18, 2011 2:18:00 PM

---

Sounds good - thank you very much for the help!

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

From: Ridge, Christianne  
Sent: Friday, March 18, 2011 2:14 PM  
To: Bonaccorso, Amy  
Cc: Tobin, Jennifer; Deavers, Ron; Harrington, Holly  
Subject: RE: Weekend Update

Hi, Amy, I can do 11-3 on Saturday. I will try to arrive for 10 and can probably stay past 3 if it turns out it is necessary.

I do have a constraint that I will need to take about a 30 min break after about 4 hours.

---

From: Bonaccorso, Amy  
Sent: Friday, March 18, 2011 9:39 AM  
To: Ridge, Christianne  
Cc: Tobin, Jennifer; Deavers, Ron; Harrington, Holly  
Subject: Weekend Update

Hi Christianne:

Just talked to Holly and Beth Hayden.

Minimum, they would like one of us to do a 4 hour shift on Saturday or Sunday. We can feel things out from there. They want some coverage, but not to completely overwhelm us and drain us!

The shifts they were proposing were 10-2pm, or 11-3pm.

If you would come in on Saturday, they would be awesome.

I could take the shift on Sunday. 11:00 – 3:00 pm might be better for me since I am not a morning person, but I'll come in earlier if I can handle it.

I also said that Jenny would be in the Ops Center and could lend some support from there.

Right now, they are still sending things to me and Ron, but they will adjust that over the weekend since he is not available.

Thanks,

Amy

X/212



**From:** Burnell, Scott  
**To:** Bonaccorso, Amy  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri  
**Date:** Friday, March 18, 2011 2:25:37 PM

---

Please!

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 2:20 PM  
**To:** Burnell, Scott  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

Do you need me to reach out to research POCs? I don't know exactly who the right person would be – but I could tap some people to find out.

---

**From:** Burnell, Scott  
**Sent:** Friday, March 18, 2011 2:17 PM  
**To:** Eli Kintisch  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

My apologies once again, Eli, it just doesn't seem to slow down...

Don't have any names @ Sandia, I'll keep checking

I'm checking who in our research office would coordinate spent fuel studies

Our Licensee Event Reports ( <https://lersearch.inl.gov/Entry.aspx> ) would include spent fuel-related events.

Here's Diaz's letter:

<http://www.nrc.gov/reading-rm/doc-collections/congress-docs/correspondence/2005/domenici-03142005.pdf>

Thanks.

Scott

---

**From:** Eli Kintisch [mailto:ekintisch@aaas.org]  
**Sent:** Friday, March 18, 2011 1:29 PM  
**To:** Burnell, Scott  
**Subject:** RE: Spent fuel q's deadline 1pm EST Fri

X/213

Any luck? Eli

Eli Kintisch, Reporter  
Science Magazine  
202 326 6446

>>> "Burnell, Scott" <Scott.Burnell@nrc.gov> 3/17/2011 6:19 PM >>>

I'll see what I can track down, thanks.

---

**From:** Eli Kintisch [mailto:ekintisch@aaas.org]  
**Sent:** Thursday, March 17, 2011 6:17 PM  
**To:** Burnell, Scott  
**Subject:** Spent fuel q's deadline 1pm EST Fri

Scott:

1. Which researchers at Sandia perform work for NRC in this area?
2. Who is the program manager on this research, and may I speak to them for an interview?
3. Are there any publically available reports on spent fuel pool incidents that are available?
4. I was unable to find Nils Diaz response in 2004 to NAS report on spent fuel pools risk. Could you send?

thanks, e

Eli Kintisch, Reporter  
Science Magazine  
202 326 6446

>>> "Burnell, Scott" <Scott.Burnell@nrc.gov> 3/17/2011 5:49 PM >>>

Hello Eli;

I've most likely missed your deadline anyway, and I apologize – in the future it helps to put a deadline in the subject line to attract attention. In any case, I'm not aware of any publicly available modeling on spent-fuel pool incidents. Please let me know if you need anything else. Thanks.

Scott

---

**From:** Eli Kintisch [mailto:ekintisch@aaas.org]  
**Sent:** Thursday, March 17, 2011 2:18 PM  
**To:** Burnell, Scott  
**Subject:** Science mag: Are there publicly available

research studies modeling the loss of coolant from spent nuclear fuel pools that the NRC has done?

Could you send me them or refer me to them?

Deadline: 430pm today; but if we miss that, would still be useful tomorrow.

Thanks, Eli

Eli Kintisch, Reporter  
Science Magazine  
202 326 6446

**From:** Bonaccorso, Amy  
**To:** Harrington, Holly  
**Cc:** Ridge, Christianne  
**Subject:** Weekend Parking  
**Date:** Friday, March 18, 2011 9:40:00 AM

---

Holly:

Is it possible for me to get a weekend parking pass of some sort for White Flint? Or do I not need one?

Thanks,

Amy

X/214

**From:** Couret, Ivonne  
**To:** Brenner, Eliot; Hayden, Elizabeth; Janbergs, Holly; Harrington, Holly; Burnell, Scott; McIntyre, David; michael.widomski@dhs.gov; Taylor, Robert; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Uselding, Lara; Chandrathil, Prema; Steger (Tucci), Christine; Shannon, Valerie; Medina, Veronika; Screnci, Diane; Sheehan, Neil; Bonaccorso, Amy; Deavers, Ron  
**Subject:** ON NRC WEBSITE NOW - Commission Briefing on NRC Response to Recent Nuclear Events in Japan  
**Date:** Friday, March 18, 2011 9:40:51 AM  
**Importance:** High

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## Commission Meeting Schedule

*All meetings are held in the Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland, unless otherwise indicated.*

### Week of March 21, 2011

03/21/11 9:00 A.M. Briefing on NRC Response to Recent Nuclear Events in Japan  
(PUBLIC MEETING)  
(Contact: Office of Public Affairs, 301-415-8200)  
Webcast

<http://www.nrc.gov/public-involve/public-meetings/schedule.html>

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

x/215

**From:** Bonaccorso, Amy  
**To:** Janbergs, Holly  
**Subject:** DISASTER RESPONSES  
**Date:** Friday, March 18, 2011 9:56:00 AM

---

These are some things that I have piecemealed together for responses.

-  
-  
-  
-

### **SUGGESTIONS**

The person who picks up the phone should say this. Or, this can be emailed.

We appreciate the suggestions of folks with ideas to resolve the situation in Japan. 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.

### **SCREENING**

We have received several requests through the RSLOs regarding the screening of planes/passengers/baggage landing in the U.S. from Japan. We have a contact, Helen Sterling (202-344-2433), with DHS/Customs and Border Protection.

They (DHS/CBP) are developing a sheet on just this topic she anticipates will be released tomorrow. As soon as the State Liaison receives her document, which she indicates will be releasable to the public, we will forward to everyone on to: and cc:

**RSLOs: Inquiries have come in from several States, including HI (Eckerd) and TN (Crosslin).**

Richard Turtill  
State Liaison – Liaison Team  
Incident Response Center

### **EMAILS FROM STATE OFFICIALS**

Please e-mail questions from state officials to [lia04.hoc@nrc.gov](mailto:lia04.hoc@nrc.gov)

### **RADIATION HEALTH-RELATED Qs**

We have permission from the CDC to forward radiation health-related public callers to:

1-800-CDC-INFO

Do not post this, however. Internal use only

**CA Dep't of Health**

X/216

He can also contact the CA Dept of Health, POC at:

<http://nrc-stp.ornl.gov/asdirectory.html#CA>

### **Early Warning Detection System**

Dear Sir,

In response to your recent request for information from the United States Nuclear Regulatory Commission (U.S. NRC):

“Is it required for plants to employ the most advanced public warning capability available?”.

Each plant is required to have an early public warning system that meets U.S. NRC regulations and is tested on a routine basis. You can find out more about this subject on our Internet web site:

[www.nrc.gov](http://www.nrc.gov).

### **PHONE TEAM**

Jennifer Tobin – 17C4 – x3589

Christianne Ridge – 17C2b – x1805

Ron Deavers – 17A1 - x2589

Amy Bonaccorso – 17C4 - x1822

### **EMAIL SUBSCRIPTION**

<http://www.nrc.gov/public-involve/listserver.html>

BLOG:

<http://public-blog.nrc-gateway.gov/>

California Radiologic Health Branch

Ca Department of Radiation Safety – click on CA

<http://nrc-stp.ornl.gov/asdirectory.html>

NRC Operations Officer at 301-816-5100

**Bonaccorso, Amy**

---

**From:** Shannon, Valerie  
**Sent:** Friday, March 18, 2011 9:59 AM  
**To:** Bonaccorso, Amy  
**Subject:** Parking

Amy,  
You do not need a parking pass for the weekend to enter the garage.  
Val



**Lee, Richard**

---

**From:** Gauntt, Randall O [rogaunt@sandia.gov]  
**Sent:** Friday, March 18, 2011 3:37 PM  
**To:** Lee, Richard; Tinkler, Charles  
**Subject:** RE: Fukushima data

Richard,  
Can this be shared with DOE?

Randy

---

**From:** Lee, Richard [<mailto:Richard.Lee@nrc.gov>]  
**Sent:** Friday, March 18, 2011 1:29 PM  
**To:** Tinkler, Charles  
**Cc:** Gauntt, Randall O  
**Subject:** FW: Fukushima data

Inventories of the Fukushima unit 4 data.

---

**From:** Gauld, Ian C. [<mailto:gauldi@ornl.gov>]  
**Sent:** Friday, March 18, 2011 2:38 PM  
**To:** Lee, Richard  
**Cc:** Parks, Cecil V.  
**Subject:** RE: Fukushima data

Richard

Here are the is Fukushima unit 4 pool data. Two source files: one for the hottest fuel with 105 day cooling, the other for 500 day fuel. These data are normalized to a metric ton of uranium. This will make it easier to convert to grams/W. etc if needed, since operating power was 25 MW/t. If an assembly basis, or total inventory basis are preferred, this can be quickly changed. The metric tons of 105 day fuel in the pool is 94 t (548 assemblies = full core), and 113 t of longer cooled fuel (657 assemblies).

Also, please replace the reactor core data (file F4-reactor.txt) with the attached file. Some of the longer cooling time step were not correct.

Thanks

Ian

X/218

## Lee, Richard

**From:** Carlson, Donald  
**Sent:** Friday, March 18, 2011 2:17 PM  
**To:** Wagner, John C.  
**Cc:** Lee, Richard; Tinkler, Charles; Parks, Cecil V.; Busby, Jeremy T.  
**Subject:** RE: FW:

Our e-mail security prevents us from viewing table formats, etc. Can you do a screen shot and pdf it?

Thanks

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

**From:** Wagner, John C. [mailto:wagnerjc@ornl.gov]  
**Sent:** Friday, March 18, 2011 2:07 PM  
**To:** Carlson, Donald; Carlson, Donald  
**Cc:** Lee, Richard; Tinkler, Charles; Parks, Cecil V.; Busby, Jeremy T.  
**Subject:** FW:

Don,  
per our phone conversation, here is the table I mentioned that could be flushed out into something to support decision making. Please recognize that this was just a rough strawman for consideration of worthiness to flush out. After taking briefly with Cecil, we plan to have folks here work on flushing this out.

Best Regards,  
John

---

**From:** Wagner, John C.  
**Sent:** Friday, March 18, 2011 12:06 PM  
**To:** Parks, Cecil V.  
**Subject:**

Cecil,  
If we think there is some likelihood that entombment of the spent fuel pools will be considered and we have time to get input from experts, I think we need to develop a set of relevant characteristics that we try to optimize on. Although I cannot develop this on my own - I don't have all the needed knowledge/expertise - I can offer a strawman that could be flushed out. this is very rough. if you think I/we should flush this out, let me know asap. i have not discussed this with anyone else

Issue

Importance

Desired characteristic to consider

Near or longer term concern

Thermal

High

Maximum thermal conductivity; water or substance that supports convection best

X/219

Both

Chemical reactions with fuel/clad

High

Minimize to extent possible, no exothermic reactions

Both

Criticality safety

Medium to Low

maximize neutron absorption to extent possible; inclusion of Boron

Both

Confinement

High to Medium

Maximize confinement of contamination

Both

Post-crisis clean-up

Medium to High

Potential for airborne contamination; structural integrity

Long

Post-crisis integrity

Medium to High

Potential to continue maintaining functionality

Long

Structural

High

Minimize weight, particularly if structural integrity of pool walls and supporting structures are in question

Both

Radiation dose

Medium to Low

Maximize gamma and, to a lesser extent, neutron attenuation

Both

**From:** [OPA Resource](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** FW: Nuclear Fall out Map  
**Date:** Friday, March 18, 2011 9:12:58 AM

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**From:** Rick Ireton [mailto:[Rick@mgnonline.com](mailto:Rick@mgnonline.com)]  
**Sent:** Thursday, March 17, 2011 7:00 PM  
**To:** OPA Resource  
**Subject:** Nuclear Fall out Map

We provide News imagery for 600 US television stations. Will you be providing a map of the expected fallout area from Japan?

Thanks for your help.

Rick Ireton  
MGN Online  
[rick@mgnonline.com](mailto:rick@mgnonline.com)

X/220

**From:** Bonaccorso, Amy  
**To:** Burnell, Scott; McIntyre, David; Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** K1 Pills  
**Date:** Friday, March 18, 2011 9:01:00 AM

---

What are we telling people who want to know where to get K1? If I say there is no danger, it's still a potentially weak answer because FEMA always tells people to "be prepared."

X/221

**Bonaccorso, Amy**

---

**From:** Bonaccorso, Amy  
**Sent:** Friday, March 18, 2011 8:27 AM  
**To:** Harrington, Holly; Steger (Tucci), Christine; Akstulewicz, Brenda; Janbergs, Holly  
**Subject:** I'm in

Folks –

I am in and situated – got a huge green tea after Eliot's email. Green tea is a life source for me– it's rough without it!

Anyway – last night looked like it got crazy after I left, so I am going to review that email history to see if I need to follow up on anything and then start on today's madness.

I'm at 415-1822.

Thanks,

Amy

X/222

## Lee, Richard

---

**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Friday, March 18, 2011 1:19 PM  
**To:** Tinkler, Charles; Lee, Richard; Basu, Sudhamay; Gavrilas, Mirela  
**Cc:** Grandy, Christopher; 'Binder, Jeffrey L.'; Busby, Jeremy Todd; 'corradin@cae.wisc.edu'  
**Subject:** RE: Summary of sand option

Hello again,

I mentioned this the other day in one of my notes and it may not be feasible, but I want to mention it again. If the drywell plug on 3 has failed and is not in place for unit 4, then would completely flooding the drywell be a method to get water into the pool? Here's a note I put into a doe writeup:

- If there is evidence that the drywell plug has failed on unit 3 or is not in place for unit 4, consider flooding the drywells completely with water. When the water clears the drywell plug, then some of the water may spill into the pool and provide another method of getting water into the pools aside from through the roof.

This would of course take alot of water but if they have more pumping capability now at the site maybe it could help? Don't know. I don't know where the tarus pressure relief line is, or if it is accessible. Maybe it could be backflooded from there?

Mitch

---

**From:** Tinkler, Charles [mailto:Charles.Tinkler@nrc.gov]  
**Sent:** Friday, March 18, 2011 11:59 AM  
**To:** Farmer, Mitchell T.  
**Subject:** RE: Summary of sand option

Agreed, it is also possible that the leakage is higher up on the pool wall such that we got some initial drainage and then water loss by boiling

---

**From:** Farmer, Mitchell T. [mailto:farmer@anl.gov]  
**Sent:** Friday, March 18, 2011 11:43 AM  
**To:** Tinkler, Charles; Lee, Richard; Basu, Sudhamay; Gavrilas, Mirela  
**Cc:** 'Binder, Jeffrey L.'; Grandy, Christopher; 'corradin@cae.wisc.edu'; Busby, Jeremy Todd  
**Subject:** RE: Summary of sand option

I was thinking that if there is a hole in one of these pools it's probably not that large and will eventually fill with crud if you keep the water coming. It's hard to keep a reactor sump from plugging, I don't know why the same principal wouldn't apply to any modest size hole in a SFP. There's got to be a ton of loose material floating around in there.

---

er, Mitchell T.  
March 18, 2011 9:49 AM  
, Charles'; 'Lee, Richard'; 'Basu, Sudhamay'; Gavrilas, Mirela  
Jeffrey L.; Grandy, Christopher  
Summary of sand option

All,

I know there has been a lot of discussion on whether sand should be added to the SPFs and I want to take one last pass at it to and try to make my thoughts clear. To summarize though, I would only resort to adding sand or any other solid media into the SFPs as a very last resort when the site is going to be permanently evacuated and there is no longer hope of getting water into the pool. As long as there is a possibility to get water in by drops and water cannons, I would keep that up as long as possible given the dose limits.



The limited information that I have access to (CNN, etc.) would suggest that the pools are more or less intact. The possibility of developing leak(s) cannot be ruled out, but the fact that the pools took several days to boil suggests that they can still hold water. Furthermore, I wouldn't be surprised if the top 10 feet or so of the pool was sloshed out during the initial 9 mag quake and the many 6+ mag quakes that have occurred since. So, this could easily account for the fact that the pools apparently ran dry earlier than I would have thought. Here is why I don't think adding sand is a good idea:

Although sand can trap aerosol, it is also a very good thermal insulator. Thus, introduction of the sand will only exaserbate the fuel heatup in the pool due to decay heat, thereby increasing fission product release. In fact, the increased release may actually offset any filtering benefits that the sand would offer. Pumping concrete or any other type of a slurry into the pool would be exceptionally detrimental, limiting heat transfer to conduction alone (concretes and other refractory oxides such as MgO are all good thermal insulators), and thereby negating the convection that is required to remove decay heat. Although I haven't run any calculations, I could actually see the fuel melting in this type of insulated capsule, and that could only make things worse. Furthermore, dropping sand from helicopters will probably lead to mechanical damage of the fuel assemblies which would degrade coolabilty more. (They clearly didn't care about this after Chernobyl as the reactor was completely destroyed by the reactivity driven core explosion).

I'd keep the water going and only drop sand as a very last resort if the site has to be permantly evacuated. If it comes to site evacuation and sand is dropped, I'd advise to keep it coarse (several mm) so that if/when water is readded, cooling won't be limited by dryout heat flux limitations in the porous sand layer.

I just saw an ANS email promoting pumping in a sand/water slurry. The water will evaporate in short order, and then what is the particle size of the sand that is left. If it is very fine, it will preclude more water coming in.

Mitch

## Ramsey, Kevin

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**From:** Joe Colvin [president@ans.org]  
**Sent:** Saturday, March 19, 2011 7:52 AM  
**To:** Ramsey, Kevin  
**Subject:** Arranging In-State Meetings With Your Senators/Members of Congress  
**Attachments:** Mar 18\_Info sources2.pdf

Dear ANS Members,

We are all saddened by the catastrophic earthquake and tsunami in Japan and the resulting damage to the Fukushima Daiichi Nuclear Station. As we move forward, it is critically important that we work together to ensure that our federal policy makers have accurate information about nuclear technology and radiation.

Your Senators and Members of Congress are returning to their States and Districts next week, and I encourage you to schedule a meeting with them while they are back home. They need to know they have constituents with nuclear related technical expertise who can help them make sense of this very complex and dynamic situation in Japan.

I suggest you take these steps:

1. Find the phone numbers of your Senators' state offices by accessing their website here <[http://www.senate.gov/general/contact\\_information/senators\\_cfm.cfm](http://www.senate.gov/general/contact_information/senators_cfm.cfm)>. You can find your Member of Congress' district office by clicking here <<http://www.house.gov/zip/ZIP2Rep.html>>.

2. Call their scheduler and ask for an appointment. Let them know you are a constituent and a member of the American Nuclear Society with knowledge relevant to technical aspects of the situation in Japan. If you are offered a meeting with staff, accept.

3. Once you have an appointment, arm yourself with information. Unfortunately, we cannot provide you with up-to-date talking points since the situation itself is so fluid. Instead, your role is to help the member understand some of the many technical issues, learn about their concerns and share your expertise. Below are some reliable sources of information, which are being updated regularly:

\* American Nuclear Society Japan Page [ansnuclearcafe.org](http://ansnuclearcafe.org)

\* Nuclear Energy Institute [www.nei.org](http://www.nei.org)

\* World Nuclear News [www.world-nuclear-news.org](http://www.world-nuclear-news.org)

\* ANS Radiation Dose Chart [www.new.ans.org/pi/resources/dosechart/](http://www.new.ans.org/pi/resources/dosechart/)

\* NHK Television [www3.nhk.or.jp/nhkworld/index.html](http://www3.nhk.or.jp/nhkworld/index.html)

\* Japan Times [www.japantimes.co.jp](http://www.japantimes.co.jp)

4. On the day of the meeting,

\* Be prompt and patient. It is not uncommon for a member of Congress to be late or to have a meeting interrupted due to a crowded schedule.

\* Be grateful. Make sure you open the conversation by thanking the members/staff for his/her time, and send a handwritten thank you note afterwards.

\* Be honest. The situation in Japan is a difficult one. Don't feel the need to provide "spin." Stick to the facts as you know them and don't be afraid to say that you do not know the answer to a question. The goal is to be a technical resource for them to contact in the future and let them know your support for NS&T in general.

\* Be responsive. Make sure you follow up promptly if the member/staff has asked you to provide any additional information or analysis. Contact us at [japanfacts@ans.org](mailto:japanfacts@ans.org) if you need help.

Again, your goal is to be a technical resource to your Senators/Representative and their staffs, providing perspective and correcting misperceptions without sugarcoating the situation.

Finally, we encourage you to send ANS a message to let us know how your meeting went. Send an e-mail to [japanfacts@ans.org](mailto:japanfacts@ans.org) with the subject line "MEETING."

Any help you can give would be greatly appreciated.

Joe Colvin  
ANS President

Attachment: Information About Conditions in Japan, March 18, 2011



AMERICAN NUCLEAR SOCIETY

555 North Kensington Avenue  
La Grange Park, Illinois  
60526-5592 USA

Tel: 708/ 352-6611  
E-Mail: [NUCLEUS@ans.org](mailto:NUCLEUS@ans.org)  
<http://www.ans.org>  
Fax: 708/ 352-0499

## Information about Conditions in Japan

March 18, 2011

### Humanitarian Assistance

- American Nuclear Society Japan Relief Fund [www.ans.org/relief](http://www.ans.org/relief)
- U.S. Agency for International Development [www.usaid.gov](http://www.usaid.gov)
- U.S. State Department [www.state.gov](http://www.state.gov)
- U.S. Red Cross [www.redcross.org](http://www.redcross.org)

### News Updates on Japan's Nuclear Crisis

- American Nuclear Society [www.ans.org](http://www.ans.org)
- Nuclear Energy Institute [www.nei.org](http://www.nei.org)
- World Nuclear News [www.world-nuclear-news.org](http://www.world-nuclear-news.org)

### Understanding Radiation Measurements

- ANS Radiation Dose Chart (interactive) [www.ans.org/pi/resources/dosechart/](http://www.ans.org/pi/resources/dosechart/)
- ANS Radiation Dose Chart (in print form)  
[www.ans.org/pi/resources/dosechart/docs/dosechart.pdf](http://www.ans.org/pi/resources/dosechart/docs/dosechart.pdf)

### English Language News in Japan

- NHK Television [www3.nhk.or.jp/nhkworld/index.html](http://www3.nhk.or.jp/nhkworld/index.html)
- Japan Times [www.japantimes.co.jp](http://www.japantimes.co.jp)

## About the American Nuclear Society

The American Nuclear Society is a not-for-profit, international, scientific and educational organization. It was established by a group of individuals who recognized the need to unify the professional activities within the diverse fields of nuclear science and technology. December 11, 1954, marks the Society's historic beginning at the National Academy of Sciences in Washington, D.C. ANS has since developed a multifarious membership composed of approximately 11,000 engineers, scientists, administrators, and educators representing 1,600 plus corporations, educational institutions, and government agencies. It is governed by four officers and a board of directors elected by the membership.

**From:** Sheron, Brian  
**To:** Case, Michael; Gibson, Kathy  
**Cc:** Uhle, Jennifer  
**Subject:** FW: Deployment to Japan  
**Date:** Saturday, March 19, 2011 5:50:25 PM  
**Attachments:** 2nd Staff Deployment to Japan.docx

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**From:** Evans, Michele  
**Sent:** Saturday, March 19, 2011 11:42 AM  
**To:** Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack  
**Cc:** Cadoux, Claude; Dempsey, Jeanne; Linnerooth, Sarah; Buchholz, Jeri; Sheron, Brian; McCree, Victor; Pederson, Cynthia; Lubinski, John; Holian, Brian; Leeds, Eric; Lew, David; Lorson, Raymond; Mamish, Nader  
**Subject:** Deployment to Japan

Thank you for volunteering for deployment to Japan. This work is of highest priority for the agency and your efforts are enormously appreciated.

The plan is for Mike Scott (RES) and Alan Blamey (RII) to leave the USA on Tuesday, March 22.

The remaining team members, Jack Giessner (RIII), Rob Taylor (NRR), Todd Jackson (RI), Marie Miller (RI), Syed Ali (RES), Abdul Sheikh (NRR), Ralph Way (NSIR), and Jack Ramsey (OIP) will depart on or about March 24. The intent is that your stay will be two weeks or less, depending on how the situation in Japan evolves.

The Operations Center Liaison Team (LT) will be contacting you later today to handle the logistic for your trip. This includes items such as flights, passports, country clearances, health immunizations, international blackberry service, dosimetry and KI tablets.

In addition, HR has requested that I provide you the information below:

-Please contact NRC Health Services on Monday morning on 301-415-8400 to schedule an appointment with Dr. Cadoux for health screening and counseling. If at all possible, it is important that you meet with Dr. Cadoux face-to-face. However, if you are located in the Region or if you are notified and deployed in a very short time frame so that medical screening is not possible, this screening will be conducted by phone. Please be aware that medical services available in Tokyo are limited at this time. Additionally, working conditions are such that controlling diet, sleep, exercise, and routine may be impossible. All of these factors can impact your health. Please review any medical conditions that you may have with Dr. Cadoux so that he can provide you with advice and counseling on managing you medical condition while deployed.

-Before you deploy we recommend that you speak briefly with the NRC Employee Assistance Program counselor, Sarah Linnerooth. Sarah can be reached on 301-415-7113. While you are deployed, EAP services are available to both you and your family, including extended family members such as Grandparents. The telephone number is for EAP service is 1-800-896-0276. More information is available on the EAP on the web at [www.eapconsultants.com](http://www.eapconsultants.com). To learn more about the EAP and the services provided click on the member services tab. The NRC passcode is "nuclear". Please be sure to share

X/225

this information with your family.

At this point, I ask that you hold any questions that you may have until the LT contacts you directly. However, after that time, if you have any additional questions or concerns that have not been addressed, please call or email me.

Thank you.

*Michele Evans*

**Acting Deputy OD, NSIR**

[Michele.evans@nrc.gov](mailto:Michele.evans@nrc.gov)

BB: 240-688-6509

## Deployment of Second NRC Team to Japan as of March 19, 2011

<b>Skill Set</b>	<b>Name/Office/Projected Deployment date</b>
Executive level	Dan Dorman/NMSS/March 19
General Technical Knowledge/interpersonal skills travelling March 22	Mike Scott/RES/March 22 Alan Blamey/Region II/ March 22
General Technical Knowledge/interpersonal skills travelling March 24	Jack Giessner/Region III/March 24 Rob Taylor/NRR/March 24
Protective Measures/Dose Assessment	Todd Jackson/Region I/March 23  Marie Miller/Region I/March 24
Structural Engineering Expertise	Syed Ali/RES/March 24 Abdul Sheikh/NRR/March 24
Damage Assessment Expertise	Ralph Way/NSIR/March 24
Expertise in Infrared Images	No NRC staff identified with this expertise. We are pursuing NGA resources that could support in Japan.
International Programs Expertise	Jack Ramsey/OIP/March 24  TBD/TBD/March 24

**From:** Ridge, Christianne  
**To:** Bonaccorso, Amy  
**Subject:** text for suggestions  
**Date:** Saturday, March 19, 2011 11:52:49 AM

---

Amy, if you're checking email today, could you send me the text you've been using for folks who send recommendations about how to deal with the incident in Japan? If I don't hear from you I can work from what I remember (with the general message being - thank you, but we have experts working on it). Thanks!

X/226



**From:** [Nancy Beaudet](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** Re: REPLY: international flight path asia to US Japan nuclear emissions  
**Date:** Saturday, March 19, 2011 1:14:33 AM

---

Thanks Amy. I do think the NRC or other US Gov't agency should take the lead on these kinds of questions in concert with the CDC. One master WEB page for all info would be nice. I'm home now, but there clearly was concern about long flights through the "plume" or dispersion zone downwind of the leak. It's not advising individuals about personal travel plans. It's about providing information to concerned US citizens that may be potentially exposed. Especially since there are alternatives (ie fly via London). Even though the plume has now reached Seattle, the plume concentration will be lower going via London than the current flight path to Aisa which goes a couple hundred miles off Tokyo. The kind of answers NRC or other US gov't agency could provide or coordinate include:

- 1) the likely altitude of the plume in relationship to the altitudes of air travel (5 miles up)
- 2) are airports monitoring for radiation on incoming passengers or on aircraft at US airports that fly through the plume? If yes, and no elevated rad levels have been detected or level detected are unremarkable, that would be very reassuring to travelers.

Anyway, thx for your response. What is your job title by the way?

Nancy

On Fri, 18 Mar 2011, Bonaccorso, Amy wrote:

> Date: Fri, 18 Mar 2011 09:14:57 -0400  
> From: "Bonaccorso, Amy" <amy.Bonaccorso@nrc.gov>  
> To: "beaudet@u.washington.edu" <beaudet@u.washington.edu>  
> Subject: REPLY: international flight path asia to US Japan nuclear emissions  
>  
> Hello Ms. Beaudet:  
>  
> Yes, I understand your concerns. You should consult the State Department for warnings or advisories on international travel. There is also an email address available for US citizens requesting emergency assistance and they may have some information for you: JapanEmergencyUSC@state.gov.  
>  
> We can't really advise people on their personal travel plans and are simply encouraging people to get in contact with the State Department if they are on international travel and/or their airlines for travel restrictions if they have concerns and questions.  
>  
> I hope this helps you!  
>  
> Thank you,  
>  
> Amy  
>  
> -----Original Message-----  
> From: Nancy Beaudet [<mailto:beaudet@u.washington.edu>]  
> Sent: Thursday, March 17, 2011 2:46 AM  
> To: OPA Resource  
> Subject: international flight path asia to US Japan nuclear emissions  
>  
> Thank you for having an e-mail question system.  
>  
> Could you please address international air travel and the flight path between Asia and the US? Are you monitoring incoming flights for evidence of flying through the plume and adjusting the flight paths accordingly? I noticed on the way from Seattle to Taiwan we traveled right over Japan, and the return path crosses the plume projections on the NY Times WEB page (but I don't know the projected

X1227

elevation of the plume in relationship to the typical altitude of air travel). I'm in Vietnam on a work trip with other US colleagues, returning to the US on Sunday. We could fly home via London. Thanks for considering this request.

>

> You may want to provide a public service announcement addressing this as other international travelers may also be interested in this information.

>

> THANKS!

>

> Nancy Beaudet MS, CIH

> Industrial Hygienist

>

> Occupational and Environmental Medicine Program

> University of Washington

>

> Seattle, WA

>

>

>

>

**Rebstock, Paul**

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**From:** opa administrators [opa@nrc.gov]  
**Sent:** Saturday, March 19, 2011 3:32 PM  
**To:** Rebstock, Paul  
**Subject:** NRC Posts Updated Seismic Questions and Answers  
**Attachments:** 11-053.pdf

X1228



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-053

March 19, 2011

### NRC POSTS UPDATED SEISMIC QUESTIONS AND ANSWERS

The Nuclear Regulatory Commission has posted a series of updated seismic and tsunami questions and answers on its website. The Q&A provides basic information on earthquakes and tsunamis, details on U.S. nuclear power plant seismic design and an explanation of NRC's recent study on earthquake risk. The document is available at <http://www.nrc.gov/japan/faqs-related-to-japan.pdf>, and other NRC information related to the March 11 earthquake and tsunami is available at <http://www.nrc.gov/japan/japan-info.html>.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.

**Rebstock, Paul**

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**From:** opa administrators [opa@nrc.gov]  
**Sent:** Saturday, March 19, 2011 4:11 PM  
**To:** Rebstock, Paul  
**Subject:** - \*UPDATED\* Media Advisory: Nuclear Regulatory Commission to Hold Public Meeting on  
**Attachments:** MA\_03-18-2011\_JapanBriefing.pdf

X/229



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

March 18, 2011

### \*\*\*MEDIA ADVISORY\*\*\*

#### NUCLEAR REGULATORY COMMISSION TO HOLD PUBLIC MEETING ON NRC RESPONSE TO RECENT JAPAN EVENT

The U.S. Nuclear Regulatory Commission will be briefed by its staff on the NRC's response to the ongoing nuclear event in Japan in a public meeting on March 21 at 9 a.m. at NRC Headquarters, 11555 Rockville Pike, Rockville, Md. The commission meeting will be open to public observation and will be webcast at: <http://www.nrc.gov/public-involve/public-meetings/webcast-live.html>.

Due to limited space availability, the meeting will be set up for a C-SPAN pool camera crew. Broadcast media outlets interested in receiving the feed should contact the network pool at 202-626-7966. For still photographers, this meeting will be pooled with AP, Reuters, AFP, Bloomberg and Getty.

In order for us to try to ensure sufficient seating for reporters, please notify the Office of Public Affairs at the contact information above if you plan to attend. There will be additional space available in our auditorium on a first-come, first-serve basis.

Pool photographers will have limited space at the meeting in which to take photos. Movement must be kept to a minimum so as not to be distracting and entry into the inner well closest to the Commission briefing table is prohibited. Plan to arrive in advance of the meeting at the Marinelli Road entrance of the NRC with proper media credentials. The NRC offices are located across the street from the White Flint Metro station. Parking is available at the White Flint metro parking garage on Marinelli Road.

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.

## Ramsey, Kevin

---

**From:** Joe Colvin [president@ans.org]  
**Sent:** Saturday, March 19, 2011 7:52 AM  
**To:** Ramsey, Kevin  
**Subject:** Arranging In-State Meetings With Your Senators/Members of Congress  
**Attachments:** Mar 18\_Info sources2.pdf

Dear ANS Members,

We are all saddened by the catastrophic earthquake and tsunami in Japan and the resulting damage to the Fukushima Daiichi Nuclear Station. As we move forward, it is critically important that we work together to ensure that our federal policy makers have accurate information about nuclear technology and radiation.

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I suggest you take these steps:

1. Find the phone numbers of your Senators' state offices by accessing their website here [http://www.senate.gov/general/contact\\_information/senators\\_cfm.cfm](http://www.senate.gov/general/contact_information/senators_cfm.cfm). You can find your Member of Congress' district office by clicking here <http://www.house.gov/zip/ZIP2Rep.html>.

2. Call their scheduler and ask for an appointment. Let them know you are a constituent and a member of the American Nuclear Society with knowledge relevant to technical aspects of the situation in Japan. If you are offered a meeting with staff, accept.

3. Once you have an appointment, arm yourself with information. Unfortunately, we cannot provide you with up-to-date talking points since the situation itself is so fluid. Instead, your role is to help the member understand some of the many technical issues, learn about their concerns and share your expertise. Below are some reliable sources of information, which are being updated regularly:

\* American Nuclear Society Japan Page [ansnuclearcafe.org](http://ansnuclearcafe.org)

\* Nuclear Energy Institute [www.nei.org](http://www.nei.org)

\* World Nuclear News [www.world-nuclear-news.org](http://www.world-nuclear-news.org)

\* ANS Radiation Dose Chart [www.new.ans.org/pi/resources/dosechart/](http://www.new.ans.org/pi/resources/dosechart/)

\* NHK Television [www3.nhk.or.jp/nhkworld/index.html](http://www3.nhk.or.jp/nhkworld/index.html)

\* Japan Times [www.japantimes.co.jp](http://www.japantimes.co.jp)

4. On the day of the meeting,

X/230



## AMERICAN NUCLEAR SOCIETY

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E-Mail: [NUCLEUS@ans.org](mailto:NUCLEUS@ans.org)  
<http://www.ans.org>  
Fax: 708/ 352-0499

### Information about Conditions in Japan

March 18, 2011

#### Humanitarian Assistance

- American Nuclear Society Japan Relief Fund [www.ans.org/relief](http://www.ans.org/relief)
- U.S. Agency for International Development [www.usaid.gov](http://www.usaid.gov)
- U.S. State Department [www.state.gov](http://www.state.gov)
- U.S. Red Cross [www.redcross.org](http://www.redcross.org)

#### News Updates on Japan's Nuclear Crisis

- American Nuclear Society [www.ans.org](http://www.ans.org)
- Nuclear Energy Institute [www.nei.org](http://www.nei.org)
- World Nuclear News [www.world-nuclear-news.org](http://www.world-nuclear-news.org)

#### Understanding Radiation Measurements

- ANS Radiation Dose Chart (interactive) [www.ans.org/pi/resources/dosechart/](http://www.ans.org/pi/resources/dosechart/)
- ANS Radiation Dose Chart (in print form)  
[www.ans.org/pi/resources/dosechart/docs/dosechart.pdf](http://www.ans.org/pi/resources/dosechart/docs/dosechart.pdf)

#### English Language News in Japan

- NHK Television [www3.nhk.or.jp/nhkworld/index.html](http://www3.nhk.or.jp/nhkworld/index.html)
- Japan Times [www.japantimes.co.jp](http://www.japantimes.co.jp)

### About the American Nuclear Society

The American Nuclear Society is a not-for-profit, international, scientific and educational organization. It was established by a group of individuals who recognized the need to unify the professional activities within the diverse fields of nuclear science and technology. December 11, 1954, marks the Society's historic beginning at the National Academy of Sciences in Washington, D.C. ANS has since developed a multifarious membership composed of approximately 11,000 engineers, scientists, administrators, and educators representing 1,600 plus corporations, educational institutions, and government agencies. It is governed by four officers and a board of directors elected by the membership.



**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 8:23 PM  
**To:** Bush-Goddard, Stephanie  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Thanks!

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

**From:** Bush-Goddard, Stephanie  
**Sent:** Saturday, March 19, 2011 2:39 PM  
**To:** Scott, Michael  
**Subject:** Re: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Safe trip.

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

**From:** Scott, Michael  
**To:** Zaki, Tarek; Bano, Mahmooda; Greenwood, Carol; Wach, Lisa; Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Armstrong, Kenneth; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Sheron, Brian  
**Sent:** Sat Mar 19 10:38:46 2011  
**Subject:** DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Kathy is on shiftwork in the OPCEN, and I have been alerted that I am going to Japan on Tuesday, likely for two weeks. In the event Kathy remains on shiftwork while I am gone, Scott Elkins will be acting DSA Division Director. Kathy and I are counting on our BCs, SLs, and Front Office staff to be instrumental in helping Scott and keeping DSA's great work humming while we are out. (Heck, you probably didn't need us to begin with!)

Please expect a high tempo of info and assistance requests to continue. We have the best team going, so we will be in good hands!

Best wishes

Mike

X/231

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 2:25 PM  
**To:** Lee, Richard  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

My beloved agency is providing me those tablets - good to go! Also, I will be no closer than 140 miles to the plant.

I probably won't each much in the way of green leafy veggies while over there.

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

**From:** Lee, Richard  
**Sent:** Saturday, March 19, 2011 10:41 AM  
**To:** Scott, Michael  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Good luck. Take KI tablets with you! Whatever left over, can be sold on eBay.

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

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 10:39 AM  
**To:** Zaki, Tarek; Bano, Mahmooda; Greenwood, Carol; Wach, Lisa; Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Armstrong, Kenneth; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Sheron, Brian  
**Subject:** DSA LEADERHSIP/MANAGEMENT TEAM STATUS

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Please expect a high tempo of info and assistance requests to continue. We have the best team going, so we will be in good hands!

Best wishes

Mike

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 2:23 PM  
**To:** Santiago, Patricia  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Yep, as definite as anything is these days.

Thanks

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

**From:** Santiago, Patricia  
**Sent:** Saturday, March 19, 2011 10:45 AM  
**To:** Scott, Michael  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

So your trip is a definite?! Your/our support is surely appreciated. Thanks

---

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 10:38 AM  
**To:** Zaki, Tarek; Bano, Mahmooda; Greenwood, Carol; Wach, Lisa; Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Armstrong, Kenneth; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Sheron, Brian  
**Subject:** DSA LEADERHSIP/MANAGEMENT TEAM STATUS

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Please expect a high tempo of info and assistance requests to continue. We have the best team going, so we will be in good hands!

Best wishes

Mike

**Scott, Michael**

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**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 2:22 PM  
**To:** Hoxie, Chris  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Thanks. When I compare my background with others on the team, I feel a bit anxious whether I will measure up. But I'll certainly try!

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

**From:** Hoxie, Chris  
**Sent:** Saturday, March 19, 2011 11:36 AM  
**To:** Scott, Michael  
**Subject:** Re: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Good for you! NRC only sends its best. Take care and please help those folks in Japan. They are such a great and kind people. I would do anything I could to help them.

I will be in all week and I look forward to supporting Scott Elkins. That's my job everyday anyway.

Have a great trip!

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

**From:** Scott, Michael  
**To:** Zaki, Tarek; Bano, Mahmooda; Greenwood, Carol; Wach, Lisa; Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Armstrong, Kenneth; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Sheron, Brian  
**Sent:** Sat Mar 19 10:38:46 2011  
**Subject:** DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Kathy is on shiftwork in the OPCEN, and I have been alerted that I am going to Japan on Tuesday, likely for two weeks. In the event Kathy remains on shiftwork while I am gone, Scott Elkins will be acting DSA Division Director. Kathy and I are counting on our BCs, SLs, and Front Office staff to be instrumental in helping Scott and keeping DSA's great work humming while we are out. (Heck, you probably didn't need us to begin with!)

Please expect a high tempo of info and assistance requests to continue. We have the best team going, so we will be in good hands!

Best wishes

Mike

X/235

**Lee, Richard**

---

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 9:16 AM  
**To:** Gibson, Kathy; Santiago, Patricia; Lee, Richard; Zigh, Ghani; Coyne, Kevin  
**Subject:** TASKING FROM BRIAN SHERON

Brian advised me yesterday that he would like us to evaluate the risk benefit of pulling spent fuel out of the SFP as soon as the specific assembly heat load permits. The risk reduction could be in terms of time to boiling (I believe that would be small, since by definition fuel old enough to be put in dry storage would not contribute all that much to pool heatup), and with reduced source term in the SFP. He may have already spoken to Ghani about this. He does not want this work to interfere with crisis work, but does want the evaluation done.

Mike

Lee, Richard

---

**From:** Farmer, Mitchell T. [farmer@anl.gov]  
**Sent:** Saturday, March 19, 2011 1:01 AM  
**To:** Tinkler, Charles; Lee, Richard  
**Cc:** Basu, Sudhamay; Gavrilas, Mirela  
**Subject:** FW: Update

Hi Charlie and Richard,

Good or bad, I've asked INL/DOE to talk to you about the spent fuel state in Japan. If that is problematic you can write me off as yet another out of control lab guy/contractor and fire me the next time you see me. Wait: Farouk already did that.

Mitch

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

**From:** Farmer, Mitchell T.  
**Sent:** Friday, March 18, 2011 11:15 PM  
**To:** 'Binder, Jeffrey L.'  
**Cc:** Busby, Jeremy Todd; Grandy, Christopher; Peters, Mark T.; 'Douglas E Burns'; Peters, Mark T.  
**Subject:** RE: Update

Hi Jeff,

I've taken a look at the viewgraphs and would like to offer a few comments.

1) The opening vg describes large-scale H2 explosions in the vicinity of the SPFs that would make the already dry pools catch fire releasing FPs.

I believe the pools of concern for running dry are 3-4. The hydrogen accumulations and subsequent detonations in these buildings have already removed roof structure and so there is no place for the H2 to accumulate. Secondly, given what little data we have indicates that these pools have been dry for extended periods of time. Zr (from the zircaloy cladding) is an exceptional O getter, and so there is probably little cladding left to oxidize to form additional H2. At this point, the fuel is probably highly degraded, and may be in the form of a rubble bed. I doubt there is little cladding left, and even if there is there is no place to accumulate H2 that would be a concern. Also, if the cladding is highly oxidized then I would guess that most of the Cs and I are already gone. The extent of Ru release, which is a really bad actor in terms of radiotoxicity under air ingress scenarios such as this, is roughly proportional to the extent of UO2 reduction to U3O8 (going on memory on this), and so it is highly desirable to get these pools quenched again to stop the release of RUOx as well as less volatile fission products.

Note: the NRC and Sandia have substantial expertise, with R&D going on for years in this area and I would try to get them engaged ASAP. Please contact Charlie Tinkler and Richard Lee to get additional input on this; these folks (especially Charlie) have been working on this intensively for years and under the conditions I would really seek their input.

Frankly, in my opinion, the ball has already been dropped on SPF's number 3-4 and I would just try to get water in there ASAP to try to mitigate additional releases. I think a lot of the bad actors (Cs, I) have already left the house and now it is best to try to quench these beds and mitigate the damage. I wouldn't be worried about H2 from the SPFs in Units 1, 3 and 4 as there's no building left to accumulate it. I think for Unit 2 that might not be true but I have access to no information other than CNN.

2) The vgs also talk about H2 from ex-vessel core melt progression, specifically FCIs. What I know is that the cores in Units 1-3 have been cooled by seawater injection for several days, and if this was not the case, I would expect that there would have been additional core degradation, H2 release, H2 detonations, and possible RPV failure. 3-4 days is too long to go @ 6 MW decay heat level (what I calculate for Units 2-3) w/o something giving way inside the primary system without cooling. So, based on the steady cooling process, I have to conclude that Units 1-3 are stable and, whatever the extent of core degradation, Units 1-3 are in coolable configurations. Based on this same reasoning, I stopped worrying about H2 production from in-vessel interactions from these units several days ago.

I've also heard concerns about salt deposits in the core and in the SPFs. In the cores, in these degraded states, I'm just really happy right now that they are staying cool regardless of salt deposits that I agree are a concern. If there's evidence that the degree of core coolability is degrading, then folks can start to worry. However, right now the only course of action is to: a) get fresh water back in (don't know when that will happen) or b) keep it up w/ the salt water until (?) the core plugs w/ salt deposits. The one thing we know is that you have to keep the core cooling or (@ 6 MW decay heat level) the core will melt and then one needs to start discussing ex-vessel scenarios.

With regard to salt deposits in the SFPs, the amount of salt water that has been successfully dropped into these pools compared to what has been pumped through units 1-3 is paltry. Since Units 1-3 have not plugged due to salt water, I think that the chances of significant salt accumulation in the SFPs is completely negligible.

Finally, I've heard in other areas that there are worries about steam explosions if, e.g., the vessel were to fail with the drywell flooded. In my opinion, this is not at all a concern. It's been 7 days now since the incident, and if there is any core melt around the site it will be stiff and viscous because decay heat has dropped considerably. The chances of this exploding on drop into water are, in my opinion, nil. Certainly more detail can be added here and I can do that if you like but that is my opinion.

I hope this is somehow helpful. If someone wants to discuss this please let me know.

Mitch

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

From: Binder, Jeffrey L. [mailto:binderjl@ornl.gov]  
Sent: Friday, March 18, 2011 7:17 PM  
To: Farmer, Mitchell T.  
Subject: FW: Update

Here it is.

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

From: Ronaldo H Szilard [mailto:Ronaldo.Szilard@inl.gov]  
Sent: Friday, March 18, 2011 02:11 PM Eastern Standard Time  
To: Kothe, Douglas B.  
Cc: Binder, Jeffrey L.; Busby, Jeremy T.  
Subject: Re: Update

Yes, I am sending you the latest from Nam, take a look Keep in mind this is a worse case scenario situation

"Kothe, Douglas B." <kothe@ornl.gov>

03/18/2011 12:08 PM

To

"Ronaldo.Szilard@inl.gov" <Ronaldo.Szilard@inl.gov>, "Busby, Jeremy T." <busbyjt@ornl.gov>, "Binder, Jeffrey L." <binderjl@ornl.gov> cc

Subject

Re: Update

Wow. I did not appreciate this at all. So buildup clogs the core or the ability of the flooded core to have enough natural convection or something else?

On 3/18/11 2:04 PM, "Ronaldo.Szilard@inl.gov" <Ronaldo.Szilard@inl.gov> wrote:

>Yes, possible additional explosions on Units 1 & 3 due to salt buildup

>  
>

>----- Original Message -----

>From: "Kothe, Douglas B." [kothe@ornl.gov]

>Sent: 03/18/2011 01:48 PM AST

>To: Ronaldo Szilard; "Busby, Jeremy T." <busbyjt@ornl.gov>; "Binder, Jeffrey L." <binderjl@ornl.gov>

>Subject: Re: Update

>  
>  
>

>Timeline for actions? We are hearing that the Japanese have some sort of

>24-48 hour "window". Is this because of local winds changing (moving toward Tokyo)?

>

>Doug

>

>From: Ronaldo Szilard

><ronaldo.szilard@inl.gov<mailto:ronaldo.szilard@inl.gov>>

>Date: Fri, 18 Mar 2011 13:42:09 -0400

>To: Douglas Kothe <kothe@ornl.gov<mailto:kothe@ornl.gov>>, "Busby, Jeremy T." <busbyjt@ornl.gov<mailto:busbyjt@ornl.gov>>, Jeffrey Binder <binderjl@ornl.gov<mailto:binderjl@ornl.gov>>

>Cc: Ronaldo Szilard

><ronaldo.szilard@inl.gov<mailto:ronaldo.szilard@inl.gov>>

>Subject: Update

>  
>

>The NE Feds have set up their NE Response Team (NERT) activities. For now, the labs will be separate from this, eventually merging. NERT had their initial meeting this morning, and they are primarily initiating lists of items they are supposed to be focusing on. There are 8 cells,



>led by various NE Feds.

>I will send you the list of cell leads and their respective activities

>shortly.

**Scott, Michael**

---

**From:** Scott, Michael  
**Sent:** Sunday, March 20, 2011 9:51 AM  
**To:** Sheron, Brian  
**Cc:** Gibson, Kathy; Uhle, Jennifer  
**Subject:** MONDAY COMMISSION MEETING

Brian:

Although I was the lead for RES support for development of the presentation for the Monday Japan Commission brief, I will assume my presence at the meeting not needed unless you say otherwise.

Mike

**Lee, Richard**

---

**From:** Aissa, Mourad  
**Sent:** Sunday, March 20, 2011 9:28 AM  
**To:** Lee, Richard; Algama, Don  
**Subject:** RE: Proposal to handle dried Spent fuel pool.docx

Richard,  
Thanks for keeping us in the loop. These are interesting times.  
Mourad

---

**From:** Lee, Richard  
**Sent:** Saturday, March 19, 2011 11:13 PM  
**To:** Algama, Don; Aissa, Mourad  
**Subject:** FW: Proposal to handle dried Spent fuel pool.docx

Mourad and Don:  
For your information. Bob (from NMSS) is suggesting to introduce liquid argon to the spent fuel pool (no thermal shock to the cladding leading to cladding damage and FPs release). Presume that this will buy some time. Then, we ask as the Argon boil-off, what next?) Richard

---

**From:** Gibson, Kathy  
**Sent:** Saturday, March 19, 2011 6:36 PM  
**To:** Sheron, Brian; Lee, Richard; Scott, Michael  
**Cc:** Uhle, Jennifer  
**Subject:** Re: Proposal to handle dried Spent fuel pool.docx

That's the hope!

----- Original Message -----  
**From:** Sheron, Brian  
**To:** Gibson, Kathy; Lee, Richard; Scott, Michael  
**Cc:** Uhle, Jennifer  
**Sent:** Sat Mar 19 17:53:11 2011  
**Subject:** RE: Proposal to handle dried Spent fuel pool.docx

The TV shows them spraying tons of water on the pools. The issue may be moot.

-----Original Message-----  
**From:** Gibson, Kathy  
**Sent:** Saturday, March 19, 2011 1:11 PM  
**To:** Lee, Richard; Scott, Michael  
**Cc:** Sheron, Brian; Uhle, Jennifer  
**Subject:** Re: Proposal to handle dried Spent fuel pool.docx

Good work, guys! Thanks

----- Original Message -----  
**From:** Lee, Richard  
**To:** Gibson, Kathy; Scott, Michael  
**Sent:** Sat Mar 19 10:39:26 2011  
**Subject:** FW: Proposal to handle dried Spent fuel pool.docx

X/239

fyi

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

From: Lee, Richard  
Sent: Saturday, March 19, 2011 9:03 AM  
To: Voglewede, John; Clifford, Paul  
Cc: Blumberg, Mark  
Subject: RE: Proposal to handle dried Spent fuel pool.docx

At yesterday 1:30 pm, Charlie Tinkler, Hossein Esmaili (at the Op Center) and I participated in a conference call with the Op Center with a large group of external stakeholders (EPRI, Naval reactors, KAPL, Bettis,...), Bob brought up the idea of using liquid Ar. Charlie Tinkler mentioned that after the SNL BWR Zr-fire finished, SNL used Ar to cool those bundles, it took them 3 days to do it. It is very slow. The purpose of yesterday conference call was to formulate options paper on dealing with cooling SFP in Fukushima, and provide it to the NRC team at the U.S. Embassy in Tokyo. The position paper has been formulated after the conference call.

Using water to cool a hot intact, partial intact or debris bed will initially generate a lot of steam and most likely FP release, but it removes a lot of heat and subsequently scrubbing the FPs. LOFT FPT2 reflooding of the bundle, showed an initial pressure rise and additional FPs release.

If I understood what the Japanese TV is showing this morning (US EST), large amount of water was been sprayed at the unit.

---

From: Voglewede, John  
Sent: Saturday, March 19, 2011 8:01 AM  
To: Clifford, Paul  
Cc: Blumberg, Mark  
Subject: RE: Proposal to handle dried Spent fuel pool.docx

It is an interesting proposal but it presumes that the damage is still in the process of being done..

At a minimum, I think we should assume that the leak tightness of most of the fuel rods is gone, and that most of the rod-like geometry is also gone. The result is a rubble much like Three Mile Island. The evidence for this is the long uncover periods and the presence of cesium and iodine outside the plant.

The question at the moment is how much zirconium metal-water reaction has taken place (not just zirconium hydride reaction) because it provides most (but not all) of the heat source. If there is much zirconium metal left, it is prudent to cool it rather than inert it because even a little water provides additional oxidizing agent. If there is little zirconium metal left, it is prudent to seal the containment leakage paths rather than inert it because there is only decay heat to worry about.

From: Clifford, Paul  
Sent: Friday, March 18, 2011 10:21 AM  
To: Voglewede, John; Blumberg, Mark  
Subject: FW: Proposal to handle dried Spent fuel pool.docx

John: Your thoughts on Bob's proposal.

Mark: While Bob's proposal would maintain the fuel, it does not provide the scrubbing that water does. Your thoughts on pros/cons of Argonne w.r.t. dose.

From: Ruland, William  
Sent: Thursday, March 17, 2011 12:52 PM  
To: Clifford, Paul  
Cc: Attard, Anthony; Bahadur, Sher; Mendiola, Anthony  
Subject: FW: Proposal to handle dried Spent fuel pool.docx

A realistic proposal given the current situation?

Bill

From: Ordaz, Vonna

Sent: Thursday, March 17, 2011 12:39 PM

To: Dudes, Laura; Ruland, William; McIntyre, David

Cc: Dorman, Dan; Haney, Catherine; Einziger, Robert; Rahimi, Meraj

Subject: Proposal to handle dried Spent fuel pool.docx

Laura,

I understand that you are on duty as the RST Director today. From our shift last night, Bill Ruland and the RST staff were discussing various approaches to address the potentially dry SFP. One of our Senior Materials Experts, Bob Einziger has prepared the attached proposal to offer support on how to handle a dry SFP. He is available, if needed, and can be reached at 301-492-3283.

Thanks,  
Vonna

## Bonaccorso, Amy

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**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 9:14 AM  
**To:** Bonaccorso, Amy; Janbergs, Holly  
**Subject:** FW: USAID TPs on Japan HA  
**Attachments:** 110318 0915 EDT Japan EQ Talking Points.doc

FYI – if useful for public inquiries

---

**From:** RMTPACTSU\_ELNRC [[mailto:RMTPACTSU\\_ELNRC@ofda.gov](mailto:RMTPACTSU_ELNRC@ofda.gov)]  
**Sent:** Saturday, March 19, 2011 12:38 PM  
**To:** LIA11 Hoc; LIA01 Hoc; LIA07 Hoc; LIA02 Hoc; LIA08 Hoc; LIA12 Hoc; LIA04 Hoc; Harrington, Holly; McIntyre, David; Burnell, Scott; ET07 Hoc  
**Subject:** USAID TPs on Japan HA

**Subject:** Yes, again. TPs on Japan HA

FYI

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The Government of Japan (GoJ) National Police Agency reported 7,348 deaths, 10,947 persons missing, and 2,603 people injured due to the earthquake and tsunami as of 0500 hours EDT on March 19. In addition, the natural disasters damaged or destroyed more than 117,000 buildings and 1,300 roads.

Conditions at the Fukushima Daiichi nuclear power plant remain relatively stable as of 0500 hours EDT March 19, according to U.S. Nuclear Regulatory Commission (NRC) personnel on the RMT.

### USG ASSISTANCE

The U.S. Agency for International Development is working with agencies across the U.S. Government—including the Departments of State, Defense, and Energy and the Nuclear Regulatory Commission—to assure that we are able to provide necessary assistance to the Government of Japan in the aftermath of the devastating earthquake and tsunami.

The USAID Disaster Assistance Response Team (DART) is in Japan and working to manage the overall U.S. Government response effort in Japan in coordination with the U.S. Embassy in Tokyo.

Nuclear specialists on the DART—including 11 NRC officers, 1 DoE officer, and 1 U.S. Department of Health and Human Services (HHS) officer—are monitoring technical aspects of the nuclear issues at the Fukushima Daiichi nuclear power plant, engaging with GoJ officials on the status of the health impacts of radiation, and providing guidance to the U.S. Embassy in Tokyo on efforts to cool reactors.

DART staff continue to engage at three levels to determine any possible humanitarian needs in Japan—nationally through Japan's Ministry of Foreign Affairs (MoFA) and other GoJ contacts, locally at the prefecture level and in coordination with U.S. Forces-Japan, and through Japanese civil society organizations, including Japan Platform (JP).

On a March 18 field assessment to Miyagi Prefecture, DART staff observed that assistance is flowing in an organized manner from the national level to the evacuation center level. However, concerns that fuel shortages may limit the transport of existing relief supplies remain. To address fuel shortages, the GoJ is working to redirect 38,000 kiloliters of fuel per day—the average daily

demand before the tsunami—from oil refineries in Hokkaido and western Japan. In addition, USFJ continues to coordinate with the GoJ to ensure the availability of fuel without negatively impacting the domestic fuel economy.

The DART is working to vet requests for assistance from local prefectures and convey them to USFJ for coordination with JSDF for transportation and onward distribution. The DART notes that sufficient relief commodities are available in-country and the GoJ has not requested in-kind contributions.

On March 13, USAID's Urban Search and Rescue (USAR) teams from Fairfax County and Los Angeles County, comprising 144 personnel and 12 live search canines, arrived in Misawa, Japan and were immediately dispatched to Ofunato in Iwate prefecture.

In coordination with the Government of Japan (GoJ), the National Japanese USAR teams and our international partners, the U.S. teams made a thorough search of their assigned locations. The GoJ has indicated that the U.S. teams have completed the missions asked of them.

The U.S. USAR teams are now returning to the United States, and they should arrive on Saturday afternoon in LA and just after midnight in Fairfax.

Prior to their departure, the U.S. USAR teams transferred nearly \$145,000 in equipment to the Ofunato fire department to assist with local recovery efforts. The equipment includes 4 zodiac boat kits—containing boats, motor, fuel tanks, and paddles—16 kerosene heaters, 160 cots, and 160 sleeping bags.

For individuals and businesses who wish to help those in Japan, we encourage making a cash donation to a reputable organization working in the affected area. Nothing will get there faster or help more at this time. Visit [www.usaid.gov](http://www.usaid.gov) for more info or email [japanhelp@ofda.gov](mailto:japanhelp@ofda.gov).

## **USG Talking Points**

### **Humanitarian Response to Japan Quake**

Updated 3/19/2011 @ 0915 EDT

The Government of Japan (GoJ) National Police Agency reported 7,348 deaths, 10,947 persons missing, and 2,603 people injured due to the earthquake and tsunami as of 0500 hours EDT on March 19. In addition, the natural disasters damaged or destroyed more than 117,000 buildings and 1,300 roads.

Conditions at the Fukushima Daiichi nuclear power plant remain relatively stable as of 0500 hours EDT March 19, according to U.S. Nuclear Regulatory Commission (NRC) personnel on the RMT.

### **USG ASSISTANCE**

The U.S. Agency for International Development is working with agencies across the U.S. Government—including the Departments of State, Defense, and Energy and the Nuclear Regulatory Commission—to assure that we are able to provide necessary assistance to the Government of Japan in the aftermath of the devastating earthquake and tsunami.

The USAID Disaster Assistance Response Team (DART) is in Japan and working to manage the overall U.S. Government response effort in Japan in coordination with the U.S. Embassy in Tokyo.

Nuclear specialists on the DART—including 11 NRC officers, 1 DoE officer, and 1 U.S. Department of Health and Human Services (HHS) officer—are monitoring technical aspects of the nuclear issues at the Fukushima Daiichi nuclear power plant, engaging with GoJ officials on the status of the health impacts of radiation, and providing guidance to the U.S. Embassy in Tokyo on efforts to cool reactors.

DART staff continue to engage at three levels to determine any possible humanitarian needs in Japan—nationally through Japan's Ministry of Foreign Affairs (MoFA) and other GoJ contacts, locally at the prefecture level and in coordination with U.S. Forces-Japan, and through Japanese civil society organizations, including Japan Platform (JP).

On a March 18 field assessment to Miyagi Prefecture, DART staff observed that assistance is flowing in an organized manner from the national level to the evacuation center level. However, concerns that fuel shortages may limit the transport of existing relief supplies remain. To address fuel shortages, the GoJ is



working to redirect 38,000 kiloliters of fuel per day—the average daily demand before the tsunami—from oil refineries in Hokkaido and western Japan. In addition, USFJ continues to coordinate with the GoJ to ensure the availability of fuel without negatively impacting the domestic fuel economy.

The DART is working to vet requests for assistance from local prefectures and convey them to USFJ for coordination with JSDF for transportation and onward distribution. The DART notes that sufficient relief commodities are available in-country and the GoJ has not requested in-kind contributions.

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In coordination with the Government of Japan (GoJ), the National Japanese USAR teams and our international partners, the U.S. teams made a thorough search of their assigned locations. The GoJ has indicated that the U.S. teams have completed the missions asked of them.

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**From:** Harrington, Holly  
**To:** Bonaccorso, Amy  
**Subject:** New piece of guidance  
**Date:** Sunday, March 20, 2011 11:17:00 AM

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WE have not pulled together all relevant Japan stuff in one place on the NRC Web site, so you can try referring folks here: <http://www.nrc.gov/japan/japan-info.html> (just went live yesterday)

X/241

**Lee, Richard**

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**From:** Voglewede, John  
**Sent:** Sunday, March 20, 2011 1:45 PM  
**To:** Lee, Richard  
**Subject:** RE: Proposal to handle dried Spent fuel pool.docx

Your discussions seem more reasonable than Einziger's proposal.

Maybe it would be better to discuss with the Japanese than NMSS.

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

**From:** Lee, Richard  
**Sent:** Saturday, March 19, 2011 9:03 AM  
**To:** Voglewede, John; Clifford, Paul  
**Cc:** Blumberg, Mark  
**Subject:** RE: Proposal to handle dried Spent fuel pool.docx

At yesterday 1:30 pm, Charlie Tinkler, Hossein Esmaili (at the Op Center) and I participated in a conference call with the Op Center with a large group of external stakeholders (EPRI, Naval reactors, KAPL, Bettis,...), Bob brought up the idea of using liquid Ar. Charlie Tinkler mentioned that after the SNL BWR Zr-fire finished, SNL used Ar to cool those bundles, it took them 3 days to do it. It is very slow. The purpose of yesterday conference call was to formulate options paper on dealing with cooling SFP in Fukushima, and provide it to the NRC team at the U.S. Embassy in Tokyo. The position paper has been formulated after the conference call.

Using water to cool a hot intact, partial intact or debris bed will initially generate a lot of steam and most likely FP release, but it removes a lot of heat and subsequently scrubbing the FPs. LOFT FPT2 reflooding of the bundle, showed an initial pressure rise and additional FPs release.

If I understood what the Japanese TV is showing this morning (US EST), large amount of water was been sprayed at the unit.

---

**From:** Voglewede, John  
**Sent:** Saturday, March 19, 2011 8:01 AM  
**To:** Clifford, Paul  
**Cc:** Blumberg, Mark  
**Subject:** RE: Proposal to handle dried Spent fuel pool.docx

It is an interesting proposal but it presumes that the damage is still in the process of being done..

At a minimum, I think we should assume that the leak tightness of most of the fuel rods is gone, and that most of the rod-like geometry is also gone. The result is a rubble much like Three Mile Island. The evidence for this is the long uncover periods and the presence of cesium and iodine outside the plant.

The question at the moment is how much zirconium metal-water reaction has taken place (not just zirconium hydride reaction) because it provides most (but not all) of the heat source. If there is much zirconium metal left, it is prudent to cool it rather than inert it because even a little water provides additional oxidizing agent. If there is little zirconium metal left, it is prudent to seal the containment leakage paths rather than inert it because there is only decay heat to worry about.

**From:** Clifford, Paul  
**Sent:** Friday, March 18, 2011 10:21 AM  
**To:** Voglewede, John; Blumberg, Mark  
**Subject:** FW: Proposal to handle dried Spent fuel pool.docx

X/242

John: Your thoughts on Bob's proposal.

Mark: While Bob's proposal would maintain the fuel, it does not provide the scrubbing that water does. Your thoughts on pros/cons of Argonne w.r.t. dose.

From: Ruland, William  
Sent: Thursday, March 17, 2011 12:52 PM  
To: Clifford, Paul  
Cc: Attard, Anthony; Bahadur, Sher; Mendiola, Anthony  
Subject: FW: Proposal to handle dried Spent fuel pool.docx

A realistic proposal given the current situation?

Bill

From: Ordaz, Vonna  
Sent: Thursday, March 17, 2011 12:39 PM  
To: Dudes, Laura; Ruland, William; McIntyre, David  
Cc: Dorman, Dan; Haney, Catherine; Einziger, Robert; Rahimi, Meraj  
Subject: Proposal to handle dried Spent fuel pool.docx

Laura,

I understand that you are on duty as the RST Director today. From our shift last night, Bill Ruland and the RST staff were discussing various approaches to address the potentially dry SFP. One of our Senior Materials Experts, Bob Einziger has prepared the attached proposal to offer support on how to handle a dry SFP. He is available, if needed, and can be reached at 301-492-3283.

Thanks,  
Vonna

**Lee, Richard**

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**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 1:51 PM  
**To:** Santiago, Patricia; Elkins, Scott; Hoxie, Chris; Bush-Goddard, Stephanie; Zaki, Tarek  
**Cc:** Lee, Richard; Gibson, Kathy; Scott, Michael  
**Subject:** FW: "Status of Japan-Related Requests" Sharepoint Page

Good Afternoon All,

My branch chief, Richard Lee, has instructed me to let you all know that the "Status of Japan-Related Requests" Sharepoint page below is an available resource that is being actively maintained.

Thanks,

Katie Wagner  
General Engineer  
U.S. Nuclear Regulatory Commission  
(301) 251.7917  
[Katie.Wagner@nrc.gov](mailto:Katie.Wagner@nrc.gov)

---

**From:** Wagner, Katie  
**Sent:** Friday, March 18, 2011 4:55 PM  
**To:** Gibson, Kathy; Scott, Michael  
**Cc:** Lee, Richard; Santiago, Patricia  
**Subject:** "Status of Japan-Related Requests" Sharepoint Page

Good Afternoon All,

The Sharepoint page on the Status of Japan-Related Requests has been populated and updated:  
<http://portal.nrc.gov/edo/res/DSA/Shared%20Documents/JPN-Status-Request.aspx>

A report of requests is easily generated by clicking the "Japan Requests Status Report (EXCEL)" link near the top of the page. To ensure the generated report is current, navigate to the Data tab and click "refresh" so the excel files synchronizes the latest data. If a message pops up, click OK.

Thank you,

Katie Wagner  
General Engineer  
U.S. Nuclear Regulatory Commission  
(301) 251.7917  
[Katie.Wagner@nrc.gov](mailto:Katie.Wagner@nrc.gov)

X/243

## **Lee, Richard**

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**From:** Zigh, Ghani  
**Sent:** Monday, March 21, 2011 2:50 PM  
**To:** Santiago, Patricia; Schaperow, Jason; Navarro, Carlos; Tinkler, Charles  
**Cc:** Scott, Michael; Lee, Richard; Chang, Richard; Wagner, Katie  
**Subject:** RE: Op Center request

Yes,  
I responded to his questions.  
It was about the difference between zirc fire and Hydrocarbons fire.

---

**From:** Santiago, Patricia  
**Sent:** Monday, March 21, 2011 2:48 PM  
**To:** Schaperow, Jason; Navarro, Carlos; Tinkler, Charles  
**Cc:** Scott, Michael; Lee, Richard; Zigh, Ghani; Chang, Richard; Wagner, Katie  
**Subject:** RE: Op Center request

Brian McDermott, NSIR, may have been in the OPCEN. Ghani may have responded to this request earlier and provided him information about what the chemistry of the emissions is during a zirc fire.  
Thanks

---

**From:** Schaperow, Jason  
**Sent:** Monday, March 21, 2011 2:36 PM  
**To:** Santiago, Patricia; Gauntt, Randall O; Navarro, Carlos; Tinkler, Charles  
**Cc:** Scott, Michael; Lee, Richard; Zigh, Ghani; Bixler, Nathan E; Chang, Richard; Wagner, Katie; Pickering, Susan Y  
**Subject:** RE: Op Center request

I reported to the Ops Center at 9:00 a.m. as you requested. The RST Director (Fred Brown) said he needed me to meet with the NR rep. So I did. Who is Brian McDermott and what is he doing?

---

**From:** Santiago, Patricia  
**Sent:** Monday, March 21, 2011 11:07 AM  
**To:** Gauntt, Randall O; Navarro, Carlos; Schaperow, Jason; Tinkler, Charles  
**Cc:** Scott, Michael; Lee, Richard; Zigh, Ghani; Bixler, Nathan E; Chang, Richard; Wagner, Katie; Pickering, Susan Y  
**Subject:** RE: Op Center request

Jason did you discuss with Brian McDermott and if not, please contact him. Brian's phone number is (301) 415-2334 but you may need to call the opcen.

Thanks again all!

---

**From:** Gauntt, Randall O [<mailto:rogaunt@sandia.gov>]  
**Sent:** Monday, March 21, 2011 11:02 AM  
**To:** Navarro, Carlos; Schaperow, Jason; Tinkler, Charles  
**Cc:** Scott, Michael; Santiago, Patricia; Lee, Richard; Zigh, Ghani; Bixler, Nathan E; Chang, Richard; Wagner, Katie; Pickering, Susan Y  
**Subject:** Re: Op Center request

While the nosepieces of the assemblies are under water, the oxidation is in steam - so chemistry is like in-vessel. Most significantly, Ru release is not favored. Under pure air, Ru oxide could be evolved. Late in boildown the Zr outer canisters could air oxidize.

---

**From:** Navarro, Carlos [<mailto:Carlos.Navarro@nrc.gov>]

**Sent:** Monday, March 21, 2011 08:55 AM

**To:** Schaperow, Jason <[Jason.Schaperow@nrc.gov](mailto:Jason.Schaperow@nrc.gov)>; Tinkler, Charles <[Charles.Tinkler@nrc.gov](mailto:Charles.Tinkler@nrc.gov)>; Gauntt, Randall O

**Cc:** Scott, Michael <[Michael.Scott@nrc.gov](mailto:Michael.Scott@nrc.gov)>; Santiago, Patricia <[Patricia.Santiago@nrc.gov](mailto:Patricia.Santiago@nrc.gov)>; Lee, Richard <[Richard.Lee@nrc.gov](mailto:Richard.Lee@nrc.gov)>; Zigh, Ghani <[Ghani.Zigh@nrc.gov](mailto:Ghani.Zigh@nrc.gov)>; Bixler, Nathan E; Chang, Richard <[Richard.Chang@nrc.gov](mailto:Richard.Chang@nrc.gov)>; Wagner, Katie <[Katie.Wagner@nrc.gov](mailto:Katie.Wagner@nrc.gov)>

**Subject:** Op Center request

The Op Center requested a response to the following question to Jennifer Uhle.

"Can someone call Brian McDermott and provide him information about what the chemistry of the emissions is during a zirc fire. Please do so sometime today, preferably before lunch."

Brian's phone number is (301) 415-2334.

Please let us all know if any of you have addressed the question and what was the answer for us to follow up.

Thanks,

C.

**Lee, Richard**

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**From:** Santiago, Patricia  
**Sent:** Monday, March 21, 2011 4:07 PM  
**To:** Wagner, Katie  
**Cc:** Lee, Richard; Gibson, Kathy; Elkins, Scott  
**Subject:** RE: Requests

Katie...add this for Jason/Charlie SPB/DSA.  
thanks

---

**From:** Tinkler, Charles  
**Sent:** Monday, March 21, 2011 3:17 PM  
**To:** Santiago, Patricia; Chang, Richard; Wagner, Katie  
**Cc:** Schaperow, Jason  
**Subject:** Requests

Right now we have 2 actions we are following up

1. Clarification and assessment of potential radiological release source terms for Fukushima Units 3&4 spent fuel pools, earlier estimates were made based on earlier Peach Bottom analyses and followup is needed to address Fukushima and complete dryout and concrete attack, clarification sought by the PMT
2. We have received additional requests from Naval Reactors. These are being put on hold. Discussed with Brian Sheron

Charles Tinkler  
[Charles.Tinkler@nrc.gov](mailto:Charles.Tinkler@nrc.gov)

X/245



**Lee, Richard**

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**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 4:47 PM  
**To:** Santiago, Patricia  
**Cc:** Lee, Richard  
**Subject:** FW: Requests  
**Attachments:** image001.gif

Pat,

I have printed off today's EOB reports for Kathy and Mike and did not add the two items below because I was not sure if those were already encapsulated in item #22 on the Sharepoint. If those two are separate items, I will add them first thing tomorrow morning and put updated reports on Kathy and Mike's chairs.

Thanks,  
Katie

---

**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 4:14 PM  
**To:** Santiago, Patricia  
**Cc:** Lee, Richard  
**Subject:** RE: Requests

Pat,

If I'm understanding this correctly, the 2 listed action items in the 3:17pm email are **in addition to** this entry:

22	3/20/2011	J. Uhle (RST Director) at Ops Center for Naval Reactors ! NEW	Jennifer.Uhle@nrc.gov	Jason Schaperow x7452 Charlie Tinkler x7496	SPB	The following was requested by Naval Reactors: 1) a written position from the NRC by morning whether we believe fuel debris is likely to eat through the concrete floor of the spent fuel pool and fall into the next lower floor of the reactor building 2) our MELCOR spent fuel pool input deck for Fukushima Daiichi Unit 4 and our results of calculations with this model 3) the reports we produced over the last several years on analysis of severe spent fuel pool accidents.	The following was requested: 1) a written position from the NRC by morning whether we believe fuel debris is likely to eat through the concrete floor of the spent fuel pool and fall into the next lower floor of the reactor building 2) our MELCOR spent fuel pool input deck for Fukushima Daiichi Unit 4 and our results of calculations with this model 3) the reports we produced over the last several years on analysis of severe spent fuel pool accidents.	Pending
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I just want to make sure I've got everything straight here . . .

Thanks,  
Katie

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**From:** Santiago, Patricia  
**Sent:** Monday, March 21, 2011 4:07 PM

x/246

**To:** Wagner, Katie  
**Cc:** Lee, Richard; Gibson, Kathy; Elkins, Scott  
**Subject:** RE: Requests

Katie...add this for Jason/Charlie SPB/DSA.  
thanks

---

**From:** Tinkler, Charles  
**Sent:** Monday, March 21, 2011 3:17 PM  
**To:** Santiago, Patricia; Chang, Richard; Wagner, Katie  
**Cc:** Schaperow, Jason  
**Subject:** Requests

Right now we have 2 actions we are following up

1. Clarification and assessment of potential radiological release source terms for Fukushima Units 3&4 spent fuel pools, earlier estimates were made based on earlier Peach Bottom analyses and followup is needed to address Fukushima and complete dryout and concrete attack, clarification sought by the PMT
2. We have received additional requests from Naval Reactors. These are being put on hold. Discussed with Brian Sheron

Charles Tinkler  
[Charles.Tinkler@nrc.gov](mailto:Charles.Tinkler@nrc.gov)

## **Lee, Richard**

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**From:** Gibson, Kathy  
**Sent:** Monday, March 21, 2011 4:27 PM  
**To:** Santiago, Patricia  
**Cc:** Chang, Richard; Tinkler, Charles; Lee, Richard  
**Subject:** Re: SNL Fuku-4 Fuel Pool - MELCOR Results

We have others that can support event response. I found Mike Salay very knowledgeable and helpful re: MELCOR and source terms in Ops Center. Get Richard, Mike and Hossein involved as appropriate- especially as we move away from SOARCA developed source terms and toward Spent fuel pools.

---

**From:** Santiago, Patricia  
**To:** Gibson, Kathy  
**Cc:** Chang, Richard; Tinkler, Charles  
**Sent:** Mon Mar 21 16:12:11 2011  
**Subject:** FW: SNL Fuku-4 Fuel Pool - MELCOR Results

FYI

As priorities are event response and SOARCA, KC is required to support this event action.

I will work with Richard and talk to Susan tomorrow based on SOARCA discussions that Susan discussed this morning related to staff that were available for SOARCA when other key staff worked other projects.

Thanks

---

**From:** Tinkler, Charles  
**Sent:** Monday, March 21, 2011 3:38 PM  
**To:** kcw@dycoda.com  
**Cc:** 'Gauntt, Randall O'; Schaperow, Jason; Santiago, Patricia; Gauntt, Randall O; Adkins, Kristen  
**Subject:** RE: SNL Fuku-4 Fuel Pool - MELCOR Results

I recommend you drop all SOARCA work while we are developing a revised/improved Fukushima spent fuel pool source term. This work is in response to NRC OpCenter requests for source terms.

---

**From:** Casey Wagner [mailto:kcw@dycoda.com]  
**Sent:** Monday, March 21, 2011 3:01 PM  
**To:** Tinkler, Charles  
**Cc:** 'Gauntt, Randall O'; Schaperow, Jason  
**Subject:** RE: SNL Fuku-4 Fuel Pool - MELCOR Results

Hi Charlie,

I will give some thought on how best to do. Right now, the COR package "lower head" models a ¼" steel liner backed by concrete. Perhaps what could be done is to fail the "lower head", which is the ¼" liner and then allow anything that drops through to arrive in the CORCON cavity. I do not know whether the code will allow the CVH volume below the base plate and the "cavity" CVH volume to be the same. I would specify the surface area to be the same as the 1207 assemblies????

I am tied up with SOARCA peer review comments but will try to find some time tonight or tomorrow night.

KC

X/247

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**From:** Tinkler, Charles [mailto:Charles.Tinkler@nrc.gov]  
**Sent:** Monday, March 21, 2011 12:30 PM  
**To:** kcw@dycoda.com  
**Cc:** Gauntt, Randall O; Schaperow, Jason  
**Subject:** RE: SNL Fuku-4 Fuel Pool - MELCOR Results

To the extent you can put in a CORCON activated run without too much effort and let it grind away. Can we let it proceed as a uniform mix (not layered)?

Are you continuing the run the existing case past 21 days? Is that case conducting heat to the liner and floor?

---

**From:** kcw@dycoda.com [mailto:kcw@dycoda.com]  
**Sent:** Monday, March 21, 2011 2:23 PM  
**To:** Tinkler, Charles  
**Subject:** Re: SNL Fuku-4 Fuel Pool - MELCOR Results

These are new ones from the weekend with blockage active.

I did not include CORCON in these calcs. Once in CORCON there are many complication with debris in same spot and shifting between 2 MELCOR packages plus CORCON geometry becomes a consolidated "layer". Nevertheless, CORCON gives you access to many good models.

Do you want to pursue?

KC

Sent on the Sprint® Now Network from my BlackBerry®

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**From:** "Tinkler, Charles" <Charles.Tinkler@nrc.gov>  
**Date:** Mon, 21 Mar 2011 12:15:05 -0400  
**To:** kcw@dycoda.com<kcw@dycoda.com>  
**Cc:** Gauntt, Randall O<rogaunt@sandia.gov>; Schaperow, Jason<Jason.Schaperow@nrc.gov>  
**Subject:** RE: SNL Fuku-4 Fuel Pool - MELCOR Results

KC

Are the results shown in the plots simply a continuation of the same run provided earlier out to ~17 hrs ?

Can we not activate the CORCON model?

---

**From:** Casey Wagner [mailto:kcw@dycoda.com]  
**Sent:** Monday, March 21, 2011 10:12 AM  
**To:** 'Gauntt, Randall O'  
**Cc:** Schaperow, Jason; Tinkler, Charles; 'Pickering, Susan Y'; Gibson, Kathy; Uhle, Jennifer; ymccllel@sandia.gov  
**Subject:** SNL Fuku-4 Fuel Pool - MELCOR Results

Hi Randy,

Last week I adapted the Peach Bottom whole spent pool model that had been developed to establish boundary conditions for the B5b pool spray mitigation studies. The model correctly reflects many aspects of 1F4 (i.e., Fukushima #3 SFP) including SFP water volume, dimensions, number of assemblies in the pool, their discharge age, and decay heat. I was able to use the PB decay routines to specify exactly 548 assemblies at 105 days (3.5 kW/assembly) and

659 assemblies at 500 days (1.5 kW/assembly) for a total pool power of 3.03 MW. Note that it is nearly 2 weeks before there would be heatups. Consequently, I conclude the 1F4 pool had a small leak. This is not surprising considering the pool liner is only ¼" stainless steel and it was rocked by a 9.0 earthquake.

The enclosed MELCOR SFP model does not have all the SOARCA type enhancements on the FP release model but does include accurate flow resistance from the SFP experimental program and breakaway air oxidation derived from Argonne data and benchmarked to SFP experiments. It correctly transitions from steam oxidation to breakaway air oxidation as needed.

Here is an important point. Once debris is transferred to the CAVITY (CORCON) models, you lose all the accurate information on debris bed porosity that had been developed in the MELCOR COR package. As you know, COR gives a detailed representation of the fuel rods, particle sizes, conglomerate, material layering, and surface oxide thickness.

That is all lost when materials are transferred to the CAVITY Package (CORCON), where it suddenly forms a solid layer of dimensions specified by the cavity size. In the enclosed calculations, I did not activate CORCON but show the debris very slowly heats and nearly completely oxidizes. There will be almost no chemical oxidation potential. Furthermore, the decay heat will be extremely low relative to a reactor accident. It is hard to imagine that the low decay heat spread out over the larger dimensions of a SFP rack scale without any chemical energy could sustain a temperature above the concrete ablation temperature and ablate through 6-ft of concrete (my opinion).

The gap releases start at 16.6 hours and the Cs-137 release at 21 days is 11% (i.e., the most current calc had an RN problem, so this is from an earlier one).

Let me know if I could help in any way.

Sincerely,  
KC

---

**From:** Gauntt, Randall O [mailto:rogaunt@sandia.gov]  
**Sent:** Monday, March 21, 2011 5:21 AM  
**To:** 'Jennifer.Uhle@nrc.gov'  
**Cc:** 'Charles.Tinkler@nrc.gov'; Pickering, Susan Y; 'Jason.Schaperow@nrc.gov'; 'Kathy.Gibson@nrc.gov'; 'kcw@dycoda.com'  
**Subject:** Re: Fuku-4 Fuel Pool - MELCOR Results

Looks to like it's too cold to ablate concrete. KC's model can probably tell us this - he just did report the corcon results, probably because there were none. But I have only seen these results this morning. I somehow missed this one mail on Friday. Seems very significant.

---

**From:** Uhle, Jennifer [mailto:Jennifer.Uhle@nrc.gov]  
**Sent:** Monday, March 21, 2011 05:13 AM  
**To:** Gauntt, Randall O  
**Cc:** Tinkler, Charles <Charles.Tinkler@nrc.gov>; Pickering, Susan Y; Schaperow, Jason <Jason.Schaperow@nrc.gov>; Gibson, Kathy <Kathy.Gibson@nrc.gov>; kcw@dycoda.com <kcw@dycoda.com>  
**Subject:** RE: Fuku-4 Fuel Pool - MELCOR Results

The question Naval reactors is asking is whether the Unit 4 SFP will reach concrete ablation temperatures. Jason is talking to them today. I agree about the fact that RES/Sandia is a great team and we at NRC is trying to get the Federal family to use our source terms.

---

**From:** Gauntt, Randall O [mailto:rogaunt@sandia.gov]  
**Sent:** Monday, March 21, 2011 6:50 AM  
**To:** Uhle, Jennifer  
**Cc:** Tinkler, Charles; Pickering, Susan Y; Schaperow, Jason; Gibson, Kathy; kcw@dycoda.com  
**Subject:** RE: Fuku-4 Fuel Pool - MELCOR Results

Sorry Jennifer,  
You might have misunderstood a bit of what I said.

Wagner's latest analysis says the pool smoulders but doesn't get really hot enough owing to starvation of the Zr reaction to really light off. He didn't provide FP release, but one might expect low releases of Cs - all of any remaining noble gas perhaps. I have not seen this latest analysis. The last SFP source term that I sent in was based on a Peach Bottom Analysis and scaled for Fuku-4. The source term for this analysis that KC sent late Friday will be much lower. I was not aware that this calculation had finished.

KC - were there no FP releases?  
Can you send more results?

Randy

---

**From:** Uhle, Jennifer [Jennifer.Uhle@nrc.gov]  
**Sent:** Monday, March 21, 2011 3:28 AM  
**To:** Gauntt, Randall O  
**Cc:** Tinkler, Charles; Pickering, Susan Y; Schaperow, Jason; Gibson, Kathy  
**Subject:** RE: Fuku-4 Fuel Pool - MELCOR Results

Randy, no one is questioning NRC's analyses. We have a KAPL representative here at the Ops Center and he indicated that KAPL had done some calculations using MELCOR for the Admiral and they wanted to ask NRC's help in reviewing them. So, I contacted Jason to review the analysis and he said that you guys had done these analyses a few days ago. I asked Jason to talk to KAPL and inform them of our work so they would hopefully use our analyses. I have no idea what happened on the call with KAPL. I certainly believe our team has done the best analysis. I also would never ask KAPL to review any analyses you guys do. That is not what initiated the communication with KAPL. The Admiral and Chairman Jaczko are meeting tomorrow at 8:00 and I am informing the Chairman of our conclusions, not KAPL's. I don't even know what KAPL's were.

Jennifer

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**From:** Gauntt, Randall O [mailto:rogaunt@sandia.gov]  
**Sent:** Monday, March 21, 2011 1:17 AM  
**To:** Uhle, Jennifer  
**Cc:** Tinkler, Charles; Pickering, Susan Y  
**Subject:** FW: Fuku-4 Fuel Pool - MELCOR Results

Jennifer,  
I gather that you are drawn to evaluation KAPL analyses that were hurriedly put together last week based on cobbled up Grand Gulf decks. We have been developing and validating SFP analyses under the multi-million dollar NRC and now OECD programs to model SFP behavior. We have worked this for years and the skill to make MELCOR model SFP is not trivial nor accomplished on a Thursday afternoon. NRC has the best technology and talent at their disposal. NRC RES should not be put in the position of evaluating every Johnny-come-lately analysis out of left field when you are commander of the most elite troops.

Hope you will find the results informative.

We have also prepared SOURCE TERmS for Unit-4 pool accident and analagous MACCS analyses based on your request last thursday. You have lots of talent and results at your disposal, and I would be more than happy to brief you on that.

I am here all week supporting Dana in his severe accident class, and would be happy to come out and brief/brainstorm this mess. The KAPal analysis is very rudimentary and they had to have second thoughts about sending.

Jennifer - you have paid good money for the best research that there is - make use of it to show leadership that you so deserve.

You can reach me tomorrow: NRC training center (505)2646849 or by e-mail

Don't dump sand!!!!

Use our source terms !!!!!!!

Tell Naval Reactor what the source term is,

You need a briefing, - name your time!!!

Randy

---

**From:** Casey Wagner [kcw@dycoda.com]  
**Sent:** Friday, March 18, 2011 1:20 PM  
**To:** Gauntt, Randall O; Charles.Tinkler@nrc.gov; 'Schaperow, Jason'  
**Cc:** McClellan, Yvonne  
**Subject:** Fuku-4 Fuel Pool - MELCOR Results

Randy asked if I would let this calculation continue into severe accident degradation. The model needs a bit of work to convert to 1.8.6 and include latest SOARCA updates but here is the "out-of-the-box" results.

I noticed that debris flow blockage was not on and that probably contributes to the debris coolability.

Let me know if you want anything else.

---

**From:** Casey Wagner [mailto:kcw@dycoda.com]  
**Sent:** Friday, March 18, 2011 10:28 AM  
**To:** rogaunt@sandia.gov; Charles.Tinkler@nrc.gov; 'Schaperow, Jason' (Jason.Schaperow@nrc.gov)  
**Cc:** ymcclle@sandia.gov  
**Subject:** FW: Fuku-4 Fuel Pool - impact of dry pool -call#3 - 800-501-0843 code 6499646

Hi Randy, Charlie, and Jason,

Randy - Sorry to see you were up at 12:36 am.

Enclosed is a pretty good no leak case for Fukushima #4. I was able to use the PB decay routines to specify exactly 548 assemblies at 105 days (3.5 kW/assembly) and 659 assemblies at 500 days (1.5 kW/assembly) for a total pool power of 3.03 MW.

If Fukushima Unit 4 was uncovered in a week, it was not a simple boil-off.

KC

---

**From:** Gauntt, Randall O [mailto:rogaunt@sandia.gov]  
**Sent:** Friday, March 18, 2011 12:36 AM  
**To:** Gauntt, Randall O; 'Marquino, Wayne (GE Power & Water)'; 'Hammargren, Benjamin (GE Power & Water)'; andy.lingenfelter@ge.com; Burns, Shawn; Pickering, Susan Y  
**Cc:** 'Casey\_Wagner@comcast.net'; 'Bolger, Francis T. (GE Power & Water)'; 'Ellison, Phillip G (GE Power & Water)'; 'Ginsberg, Robert (GE Power & Water)'; 'Klapproth, James F (GE Power & Water)'; 'Charles.Tinkler@nrc.gov'; 'Madronero, Hernando (GE Power & Water)'; 'kcw@dycoda.com'  
**Subject:** RE: Fuku-4 Fuel Pool - impact of dry pool -call#3 - 800-501-0843 code 6499646

Dear Wayne (or anyone at GE!)

It would be of great value to confirm a few things. I think I heard yesterday that the SFP racking at Fukushima-4 had recently gone to high density racking. Can anyone confirm this?

Also, is there any latest best guess as to water level in FU-4 - yesterday NRC Chairman said it was dry; MELCOR says it covered; helicopter flyby says they saw a reflection of the sky in the top-down view. We would say that unless there was a leak, the fuel should only just now be uncovering????

Randy

---

**From:** Gauntt, Randall O  
**Sent:** Wednesday, March 16, 2011 11:06 PM  
**To:** 'Marquino, Wayne (GE Power & Water)'; 'Hammargren, Benjamin (GE Power & Water)'  
**Cc:** 'Casey\_Wagner@comcast.net'; 'Bolger, Francis T. (GE Power & Water)'; 'Ellison, Phillip G (GE Power & Water)'; 'Ginsberg, Robert (GE Power & Water)'; 'Klapproth, James F (GE Power & Water)'; 'Charles.Tinkler@nrc.gov'; 'Madronero, Hernando (GE Power & Water)'; 'kcw@dycoda.com'  
**Subject:** RE: Fuku-4 Fuel Pool - impact of dry pool -call#3 - 800-501-0843 code 6499646

Wayne,

Did GE get the Sandia reports that were being inquired about? I missed some of the conversations.

Randy

---

**From:** Marquino, Wayne (GE Power & Water) [mailto:wayne.marquino@ge.com]  
**Sent:** Wednesday, March 16, 2011 6:15 PM  
**To:** Hammargren, Benjamin (GE Power & Water); Gauntt, Randall O  
**Cc:** Casey\_Wagner@comcast.net; Bolger, Francis T. (GE Power & Water); Ellison, Phillip G (GE Power & Water); Ginsberg, Robert (GE Power & Water); Klapproth, James F (GE Power & Water); Charles.Tinkler@nrc.gov; Madronero, Hernando (GE Power & Water); kcw@dycoda.com  
**Subject:** RE: Fuku-4 Fuel Pool - impact of dry pool -call#3 - 800-501-0843 code 6499646

Ben - here is a customer for your Origen data

Please send it to Randy Gauntt

Wayne

---

**From:** Gauntt, Randall O [mailto:rogaunt@sandia.gov]  
**Sent:** Wednesday, March 16, 2011 7:56 PM  
**To:** Bolger, Francis T. (GE Power & Water); Buchholz, Carol E. (GE Power & Water); Ellison, Phillip G (GE Power & Water); Ginsberg, Robert (GE Power & Water); Klapproth, James F (GE Power & Water); Marquino, Wayne (GE Power &



Water); 'Charles.Tinkler@nrc.gov'; Madronero, Hernando (GE Power & Water); Heck, Charles (GE Power & Water); Loewen, Eric (GE Power & Water); Crawford, Douglas C (GNF); 'kcw@dycoda.com'; Upton, Hugh A. (GE Power & Water)  
**Cc:** 'Casey\_Wagner@comcast.net'  
**Subject:** RE: Fuku-4 Fuel Pool - impact of dry pool -call#3 - 800-501-0843 code 6499646

Is there any way anyone at GE could provide Sandia TONIGHT an Origen inventory that might approximate the SFP 4 inventory for the 100 day offload? We are trying to run a MACCS analysis for NRC tonight and need isotope mass and curies.

Randy Gauntt

-----Original Appointment-----

**From:** Bolger, Francis T. (GE Power & Water) [<mailto:Fran.Bolger@ge.com>]

**Sent:** Wednesday, March 16, 2011 5:37 PM

**To:** Buchholz, Carol E. (GE Power & Water); Ellison, Phillip G (GE Power & Water); Ginsberg, Robert (GE Power & Water); Klapproth, James F (GE Power & Water); Marquino, Wayne (GE Power & Water); Charles.Tinkler@nrc.gov; Madronero, Hernando (GE Power & Water); Heck, Charles (GE Power & Water); Loewen, Eric (GE Power & Water); Gauntt, Randall O; Crawford, Douglas C (GNF); kcw@dycoda.com; Upton, Hugh A. (GE Power & Water)

**Cc:** Casey\_Wagner@comcast.net

**Subject:** Fuku-4 Fuel Pool - impact of dry pool -call#3 - 800-501-0843 code 6499646

**When:** Wednesday, March 16, 2011 6:30 PM-7:30 PM (UTC-07:00) Mountain Time (US & Canada).

**Where:** ATC2 CR 25

**From:** Boyce, Tom (RES)  
**To:** Case, Michael; Richards, Stuart  
**Cc:** Karagiannis, Harriet  
**Subject:** FW: RST Watchbill  
**Date:** Monday, March 21, 2011 4:20:12 PM

Mike, Stu,

I will be on shift at the OPS center this Tuesday on day shift and again on Thursday evening. Harriet Karagiannis will be acting for me in RGDB on Tuesday and Friday (if she is in the office) although I'll try to be doing email.

Tom

**From:** RST01 Hoc  
**Sent:** Monday, March 21, 2011 8:51 AM  
**To:** Skeen, David; Uhle, Jennifer; Brown, Eva; Brown, Frederick; Brown, Michael; Holian, Brian; Ruland, William; Hiland, Patrick; Thomas, Eric; Collins, Frank; Rini, Brett; Boyce, Tom (RES); Hasselberg, Rick; Schoenebeck, Greg; Bukharin, Oleg; Morlang, Gary; Esmaili, Hossein; Gilmer, James; Fuller, Edward; Ward, Leonard; Circle, Jeff; Dozier, Jerry; Salay, Michael; Laur, Steven; Helton, Donald; Dozier, Jerry; Norton, Charles; Alter, Peter; Vick, Lawrence; Thorp, John; Roggenbrodt, William; Bloom, Steven; Isom, James; Williams, Joseph; Hart, Ken; Kugler, Andrew; Williams, Donna  
**Subject:** RST Watchbill

RST Watchbill as of the Day/Time Stamp of this email

Please Email [RST01.hoc@nrc.gov](mailto:RST01.hoc@nrc.gov) if there are any errors, or if you would like to fill the red holes.

Thanks,  
 RST Coordinator

Date	Day	Time	Shift	RST Director	RST Coordinator	Accident Analyst	BWR Expert	RST Communicator
3/21/2011	Monday	1500 - 2300	Swing	Dave Skeen	Greg Schoenebeck	Hossein Esmaili	Chuck Norton	John Thorp
3/21/2011	Monday	2300 - 0700	Midnight	Jennifer Uhle	Frank Collins	Jim Gilmer	Mike Brown	Bill Roggenbrodt
#VALUE!	Tuesday	0700 - 1500	Day	Fred Brown	Rick Hasselberg	Ed Fuller	Tom Boyce	Steve Bloom
3/22/2011	Tuesday	1500 - 2300	Swing	Dave Skeen	Mike Morlang	Len Ward	Chuck Norton	Jim Isom
3/22/2011	Tuesday	2300 - 0700	Midnight	Brian Holian	Oleg Bukharin		Mike Brown	Bill Roggenbrodt
#VALUE!	Wednesday	0700 - 1500	Day	Fred Brown	Eric Thomas	Jeff Circle	Larry Vick	Joe Williams
3/23/2011	Wednesday	1500 - 2300	Swing	Bill Ruland	Greg Schoenebeck	Jerry Dozier	Chuck Norton	Ken Hart
3/23/2011	Wednesday	2300 - 0700	Midnight	Brian Holian	Frank Collins	Mike Salay	Eva Brown	Bill Roggenbrodt
#VALUE!	Thursday	0700 - 1500	Day	Fred Brown	Rick Hasselberg	Jeff Circle	Peter Alter	Andrew Kugler
3/24/2011	Thursday	1500 - 2300	Swing	Bill Ruland	Brett Rini	Steve Laur	Chuck Norton	John Thorp
3/24/2011	Thursday	2300 - 0700	Midnight	Brian Holian	Tom Boyce	Don Helton	Eva Brown	Bill Roggenbrodt
#VALUE!	Friday	0700 - 1500	Day	Pat Hiland	Eric Thomas	Jerry Dozier?		Donna Williams
3/25/2011	Friday	1500 - 2300	Swing	Bill Ruland	Brett Rini	Steve Laur	Chuck Norton	Jim Isom
3/25/2011	Friday	2300 - 0700	Midnight	Brian Holian	Frank Collins	Don Helton	Eva Brown	Bill Roggenbrodt
#VALUE!	Saturday	0700 - 1500	Day	Pat Hiland	Eric Thomas	Jerry Dozier?		Donna Williams

X/248

**Lee, Richard**

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**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 7:38 AM  
**To:** Santiago, Patricia  
**Cc:** Lee, Richard; Gibson, Kathy; Scott, Michael  
**Subject:** RE: "Status of Japan-Related Requests" Sharepoint Page

Pat,

I just removed that comment about questioning the priority . . . please if anyone has comments about what they would like to see or not see on the Sharepoint site let me know ☺

Thanks,  
Katie

---

**From:** Santiago, Patricia  
**Sent:** Friday, March 18, 2011 7:21 PM  
**To:** Wagner, Katie; Gibson, Kathy; Scott, Michael  
**Cc:** Lee, Richard  
**Subject:** RE: "Status of Japan-Related Requests" Sharepoint Page

Looks good

On item 9, since it was completed do we need the note that I questioned the priority of it?  
thanks

---

**From:** Wagner, Katie  
**Sent:** Friday, March 18, 2011 4:55 PM  
**To:** Gibson, Kathy; Scott, Michael  
**Cc:** Lee, Richard; Santiago, Patricia  
**Subject:** "Status of Japan-Related Requests" Sharepoint Page

Good Afternoon All,

The Sharepoint page on the Status of Japan-Related Requests has been populated and updated:  
<http://portal.nrc.gov/edo/res/DSA/Shared%20Documents/JPN-Status-Request.aspx>

A report of requests is easily generated by clicking the "Japan Requests Status Report (EXCEL)" link near the top of the page. To ensure the generated report is current, navigate to the Data tab and click "refresh" so the excel files synchronizes the latest data. If a message pops up, click OK.

Thank you,

Katie Wagner  
General Engineer  
U.S. Nuclear Regulatory Commission  
(301) 251.7917  
[Katie.Wagner@nrc.gov](mailto:Katie.Wagner@nrc.gov)

**From:** [Bonaccorso, Amy](#)  
**To:** [Akstulewicz, Brenda](#)  
**Subject:** FW: OPA.Resource Mailbox  
**Date:** Monday, March 21, 2011 12:53:00 PM

---

Hey Brenda:

I don't see it....

---

**From:** OPA Resource  
**Sent:** Monday, March 21, 2011 12:46 PM  
**To:** Bonaccorso, Amy  
**Subject:** OPA.Resource Mailbox

Hi Amy,

I believe I have given you access to the OPA.Resource mailbox. Please see if this is so. Send me an email at my address if you can't access.

Thanks,  
Brenda

Office of Public Affairs  
US Nuclear Regulatory Commission  
301-415-8200  
[opa.resource@nrc.gov](mailto:opa.resource@nrc.gov)

X/250

## **Bonaccorso, Amy**

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**From:** Akstulewicz, Brenda  
**Sent:** Monday, March 21, 2011 12:54 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: I have a press release to be issued - ready when you are!

Please.

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 12:54 PM  
**To:** Akstulewicz, Brenda  
**Subject:** RE: I have a press release to be issued - ready when you are!

Should I come upstairs?

---

**From:** Akstulewicz, Brenda  
**Sent:** Monday, March 21, 2011 12:53 PM  
**To:** Bonaccorso, Amy  
**Subject:** I have a press release to be issued - ready when you are!

**Brenda Akstulewicz**  
Administrative Assistant  
Office of Public Affairs  
301-415-8209  
[brenda.akstulewicz@nrc.gov](mailto:brenda.akstulewicz@nrc.gov)



**Bonaccorso, Amy**

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**From:** Tobin, Jennifer  
**Sent:** Monday, March 21, 2011 3:10 PM  
**To:** Bonaccorso, Amy; Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** RE: OPA Assistance

Amy,  
You're fine. I can handle the more technical ones. Thanks for screening them for me!

-Jenny

Jenny (Tobin) Wollenweber  
Export Licensing Officer  
Office of International Programs  
office: 301-415-2328

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 3:05 PM  
**To:** Tobin, Jennifer; Harrington, Holly  
**Cc:** Deavers, Ron  
**Subject:** RE: OPA Assistance

Hi Jenny:

Please let me know if I am overwhelming you with emails and should stop sending them. I really value your ability to address some of the more technical questions. But – if you can't handle them, I'm sure Holly would help me find someone else....not that there is any real substitute for you!

Thank you so much for all of your help!!

Amy

---

**From:** Tobin, Jennifer  
**Sent:** Monday, March 21, 2011 3:02 PM  
**To:** Harrington, Holly  
**Cc:** Bonaccorso, Amy; Deavers, Ron  
**Subject:** OPA Assistance

Holly,  
Due to the small size of our office and our involvement with Japanese counterparts, my management has said that they need me in our office. I can still respond to the emails that you forward me but it doesn't look like I'll be able to "man a desk" with you guys for the remainder of the event. Hopefully things are calming down though!

-Jenny

Jenny (Tobin) Wollenweber  
Export Licensing Officer  
Office of International Programs  
office: 301-415-2328

X/252

**Bonaccorso, Amy**

---

**From:** Harrington, Holly  
**Sent:** Monday, March 21, 2011 3:14 PM  
**To:** Tobin, Jennifer  
**Cc:** Bonaccorso, Amy; Deavers, Ron  
**Subject:** RE: OPA Assistance

Jenny – Thank you for everything you'd done for us. With the call volume going down, I think we're OK without you directly staffing the "center." But I think Amy would appreciate it if you were able to answer e-mails, if necessary . . .

Holly

---

**From:** Tobin, Jennifer  
**Sent:** Monday, March 21, 2011 3:02 PM  
**To:** Harrington, Holly  
**Cc:** Bonaccorso, Amy; Deavers, Ron  
**Subject:** OPA Assistance

Holly,  
Due to the small size of our office and our involvement with Japanese counterparts, my management has said that they need me in our office. I can still respond to the emails that you forward me but it doesn't look like I'll be able to "man a desk" with you guys for the remainder of the event. Hopefully things are calming down though!

-Jenny

Jenny (Tobin) Wollenweber  
Export Licensing Officer  
Office of International Programs  
office: 301-415-2328

X/253

**Rebstock, Paul**

---

**From:** opa administrators [opa@nrc.gov]  
**Sent:** Monday, March 21, 2011 10:39 AM  
**To:** Rebstock, Paul  
**Subject:** Prepared Remarks for Commission Meeting Monday, March 21, 2011  
**Attachments:** 11-054.pdf

X/254





# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

Office of Public Affairs

Telephone: 301/415-8200

Washington, D.C. 20555-0001

E-mail: [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) Site: [www.nrc.gov](http://www.nrc.gov)

Blog: <http://public-blog.nrc-gateway.gov>

No. 11-054

March 21, 2011

## **PREPARED REMARKS FOR COMMISSION MEETING MONDAY, MARCH 21, 2011**

Good morning. The Commission meets today to discuss the tragic events in Japan and consider possible actions we may take to verify the safety of the nuclear facilities that we regulate in the United States. This meeting will—without a doubt—be one of the most heavily watched meetings in the history of this agency.

People across the country and around the world who have been touched by the magnitude and scale of this disaster are closely following the events in Japan, and the repercussions in this country and in many other countries. I would first like to offer my condolences to all those who have been affected by the earthquake and tsunami in Japan. Our hearts go out to all who have been dealing with the aftermath of these natural disasters, and we are mindful of the long and difficult road they will face in recovering. We know that the people of Japan are resilient and strong, and we have every confidence that they will come through this difficult time and move forward, with resolve, to rebuild their vibrant country.

I believe I speak for all Americans when I say that we stand together with the people of Japan at this most difficult and challenging time. The NRC is a relatively small agency, with approximately 4000 staff, but we play a critical role in protecting the American people and the environment. We have inspectors who work full-time at every nuclear plant in the country, and we are proud to have world-class scientists, engineers and professionals representing nearly every discipline.

Since Friday, March 11, when the earthquake and tsunami struck, the NRC's headquarters Operations Center has been operating on a 24-hour basis to monitor and analyze events at nuclear power plants in Japan. At the request of the Japanese government, and through the United States Agency for International Development (USAID), the NRC sent a team of its technical experts to provide on-the-ground support, and we have been in continual contact with them. And, within the United States, the NRC has been working closely with other Federal agencies as part of our government's response to the situation.

We have a responsibility to the American people to undertake a systematic and methodical review of the safety of our own domestic nuclear facilities, in light of the natural disaster and the resulting nuclear emergency in Japan. Beginning to examine all available

information is an essential part of our effort to analyze the event and understand its impact on Japan and implications for the United States. Our focus is always on keeping plants and radioactive materials in this country safe and secure.

As this immediate crisis in Japan comes to an end, we will look at any information we can gain from the event and see if there are changes we need to make, to further protect the public. Together with my colleagues on the Commission, we will review the current status and identify the steps we will take to conduct that review. In the meantime, we will continue to oversee and monitor plants to ensure that U. S. reactors remain safe.

On behalf of the Commission, I want to thank all of our staff for maintaining their focus on our essential safety and security mission throughout these difficult days. I want to acknowledge their tireless efforts and their critical contributions to the U.S. response to assist Japan. In spite of the evolving situation, the long hours, and the intensity of efforts over the past week, staff has approached their responsibilities with dedication, determination and professionalism, and I am incredibly proud of their efforts.

The American people also can be proud of the commitment and dedication within the Federal workforce, which is exemplified by our staff every day. Before we begin our meeting with Mr. Borchardt's presentation, would any of my fellow Commissioners like to make opening comments?

###

News releases are available through a free *listserv* subscription at the following Web address: <http://www.nrc.gov/public-involve/listserver.html>. The NRC homepage at [www.nrc.gov](http://www.nrc.gov) also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.

**Bonaccorso, Amy**

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**From:** Harrington, Holly  
**Sent:** Monday, March 21, 2011 11:37 AM  
**To:** Bonaccorso, Amy  
**Cc:** Akstulewicz, Brenda  
**Subject:** RE: Checking in

Yes, come by after lunch. Brenda is going to get you direct access to the opa.resource mail box and start teaching you how we post press releases, if that's OK . . .

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 11:27 AM  
**To:** Harrington, Holly  
**Subject:** Checking in

Hey Holly:

Looks like I cleaned out my inbox of inquiries...so I can do lunch without worrying about falling behind. Keep the OPA.Resource emails coming and I will stop by a little later to chat with Beth about the 1-month agreement.

I have forwarded a few items to Jenny – she may not be able to get to them immediately, but I know she is around. If something is too technical for me – I send it to her. It's only been a few – not a ton or anything.

Thank you!!

Amy

## **Bonaccorso, Amy**

---

**From:** Donaldson, Leslie  
**Sent:** Monday, March 21, 2011 6:40 AM  
**To:** Bonaccorso, Amy  
**Subject:** Re: Sunday Update - Next Wk in OPA

Thx Amy.

---

**From:** Bonaccorso, Amy  
**To:** Donaldson, Leslie  
**Sent:** Sun Mar 20 11:30:45 2011  
**Subject:** Sunday Update - Next Wk in OPA

Leslie:

I just met with Holly and they need me for the week (I'll update the PMDA Calendar). The public inquiry desk is still being hit pretty hard since things aren't quickly improving overseas, and other agencies are still getting their public inquiry response systems started.

There is some flexibility though, so I am going to focus in a few things here that need to get done regardless. Today, I am trying to figure out my time and attendance, going to send out the VTC request for Chernobyl, and check to see if I have other deadlines on things that I need to get off my plate so I can make a short list. We can get the Researcher out, but it probably won't be very long.

Thanks,

Amy

## **Bonaccorso, Amy**

---

**From:** Donaldson, Leslie  
**Sent:** Monday, March 21, 2011 8:49 AM  
**To:** Bonaccorso, Amy  
**Subject:** FW: Sunday Update - Next Wk in OPA

Hi Amy –

I understand they, CFO, need the days you worked in OPA on Japan, so can you email me this information, including half days (e.g., early last week).

Thanks, Leslie

---

**From:** Bonaccorso, Amy  
**To:** Donaldson, Leslie  
**Sent:** Sun Mar 20 11:30:45 2011  
**Subject:** Sunday Update - Next Wk in OPA

Leslie:

I just met with Holly and they need me for the week (I'll update the PMDA Calendar). The public inquiry desk is still being hit pretty hard since things aren't quickly improving overseas, and other agencies are still getting their public inquiry response systems started.

There is some flexibility though, so I am going to focus in a few things here that need to get done regardless. Today, I am trying to figure out my time and attendance, going to send out the VTC request for Chernobyl, and check to see if I have other deadlines on things that I need to get off my plate so I can make a short list. We can get the Researcher out, but it probably won't be very long.

Thanks,

Amy

**From:** [Bonaccorso, Amy](#)  
**To:** [JapanEmergencyUSC@state.gov](mailto:JapanEmergencyUSC@state.gov)  
**Subject:** Is this email address working?  
**Date:** Monday, March 21, 2011 9:08:00 AM

---

Good morning:

I am currently supporting the NRC Public Inquiry Desk in response to the crisis in Japan. We have this email address as a resource to give to people who have urgent questions on international travel. Someone told me that they attempted to send an email here and it was not working.

Please confirm that we can use this email address for referrals.

Thanks!

Amy

X/258

**From:** Bonaccorso, Amy  
**To:** Harrington, Holly  
**Subject:** RE: Thank You!  
**Date:** Monday, March 21, 2011 3:24:00 PM

---

Sounds good. I'll let her know.

---

**From:** Harrington, Holly  
**Sent:** Monday, March 21, 2011 3:13 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Thank You!

Maybe have her available at her own desk, just willing to handle things sent to her?

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 2:49 PM  
**To:** Harrington, Holly  
**Subject:** FW: Thank You!

Hey Holly:

Things have slowed to a point where I don't desperately need Christianne to address the volume....but she does have technical background....so she might be able to help on some highly technical inquiries that I have been emailing to Jenny. What do you think? We'll have Ron tomorrow in the afternoon. I guess we could request Christianne in the morning on Tues and Thurs. to look at technical questions. She is available Tues and Thurs. And I could send her things sporadically if she is open to it.

Thanks,

Amy

---

**From:** Ridge, Christianne  
**Sent:** Monday, March 21, 2011 1:20 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Thank You!

Hope things were as slow for you yesterday as they were for me Saturday. I'm waiting to hear if you'll need me this week. I'm available tomorrow (Tuesday) and Thursday.  
Thanks

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 9:32 AM  
**To:** Ridge, Christianne  
**Cc:** Deavers, Ron  
**Subject:** Thank You!

Hi Christianne:

X/259

Thank you so much for your help on Saturday. I'm sorry I didn't check my blackberry and send the exact text for suggestions, but I am sure you did fine.

Amy



**Bonaccorso, Amy**

---

**From:** Ridge, Christianne  
**Sent:** Monday, March 21, 2011 3:29 PM  
**To:** Bonaccorso, Amy  
**Cc:** Deavers, Ron  
**Subject:** RE: Thank You!

Can do.

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 3:27 PM  
**To:** Ridge, Christianne  
**Cc:** Deavers, Ron  
**Subject:** FW: Thank You!

The call volume has gone down...so if you can just be available to try to answer some technical-ish question at your desk, that would be really helpful. Jenny can't be here helping in person, but is somewhat available from her desk, so we'll also be sending her some technical questions.

Thanks,

Amy

---

**From:** Ridge, Christianne  
**Sent:** Monday, March 21, 2011 1:20 PM  
**To:** Bonaccorso, Amy  
**Subject:** RE: Thank You!

Hope things were as slow for you yesterday as they were for me Saturday. I'm waiting to hear if you'll need me this week. I'm available tomorrow (Tuesday) and Thursday.  
Thanks

---

**From:** Bonaccorso, Amy  
**Sent:** Monday, March 21, 2011 9:32 AM  
**To:** Ridge, Christianne  
**Cc:** Deavers, Ron  
**Subject:** Thank You!

Hi Christianne:

Thank you so much for your help on Saturday. I'm sorry I didn't check my blackberry and send the exact text for suggestions, but I am sure you did fine.

Amy

X/2600

**From:** [JapanEmergencyUSC](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** RE: Is this email address working?  
**Date:** Monday, March 21, 2011 9:26:42 AM

---

Hi Amy: I believe our emails just crossed. I hope my email answers your question.

Thanks

John

Japan Taskforce

PERSONAL

This email is UNCLASSIFIED.

---

**From:** Bonaccorso, Amy [mailto:[amy.Bonaccorso@nrc.gov](mailto:amy.Bonaccorso@nrc.gov)]  
**Sent:** Monday, March 21, 2011 9:22 AM  
**To:** JapanEmergencyUSC  
**Subject:** RE: Is this email address working?

We have had a few callers from Japan or those who are concerned about family in Japan. They want to know if they should leave Japan (I had someone who was 200 miles away from the plant) or if they should encourage their family to come to the U.S.

However, I think that some of our callers probably should be using the other email address you cited rather than this one. Sometimes, people call about a trip and want to know about travel warnings and alerts. Thanks for giving that to me.

Thanks,

Amy

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**From:** JapanEmergencyUSC [mailto:[JapanEmergencyUSC@state.gov](mailto:JapanEmergencyUSC@state.gov)]  
**Sent:** Monday, March 21, 2011 9:17 AM  
**To:** Bonaccorso, Amy; JapanEmergencyUSC  
**Subject:** RE: Is this email address working?

This email is working and has been monitored 24/7. It is intended for people who are in Japan and require emergency consular assistance, or who are contacting us on behalf of such people. Could you please specify the types of questions you are receiving, and from whom?

Questions from the general public concerning travel to Japan or other countries should be directed to [www.travel.state.gov](http://www.travel.state.gov) for the latest Department of State travel information, including Travel Warnings and Alerts.

X/261

Thank you,  
Japan Task Force

This email is UNCLASSIFIED.

---

**From:** Bonaccorso, Amy [mailto:amy.Bonaccorso@nrc.gov]  
**Sent:** Monday, March 21, 2011 9:08 AM  
**To:** JapanEmergencyUSC  
**Subject:** Is this email address working?

Good morning:

I am currently supporting the NRC Public Inquiry Desk in response to the crisis in Japan. We have this email address as a resource to give to people who have urgent questions on international travel. Someone told me that they attempted to send an email here and it was not working.

Please confirm that we can use this email address for referrals.

Thanks!

Amy

**From:** [JapanEmergencyUSC](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** RE: Is this email address working?  
**Date:** Monday, March 21, 2011 9:09:33 AM

---

Thank you for contacting the U.S. Department of State and the U.S. Embassy in Tokyo regarding the welfare of a U.S. citizen in Japan.

For inquiries regarding U.S. citizens not associated with the military:

In case we have any questions, please ensure that you provide your:

- \* Full name
- \* Phone numbers (day, evening, and mobile phone numbers)
- \* Email address
- \* Relationship to the person you are inquiring about

So that we may properly pursue your inquiry, we will need information about the person in Japan who may need assistance. For each person, please be sure you sent us his/her:

- \* Full Name
- \* Date of Birth
- \* Place of Birth
- \* As much information as possible regarding your/his/her physical location (address, hotel name, etc.) and contact information (home phone, cell phone, email address, etc.) within Japan.

Please also send us any other information you feel is important for us to know, such as any pre-existing medical conditions, or whether you or your loved one is either elderly or a child in Japan without his/her parent(s). If you have an existing case with the Office of Children's Issues, please contact your case officer directly.

While we understand that there have been disruptions in communications in Japan, including the interruption of internet and mobile telephone service, we encourage you to continue your efforts to be in contact with your loved one(s) using SMS texting and other social media (e.g., Facebook, My Space, Twitter, etc) that your loved one(s) may use.

X/262

Please also try to contact your loved one(s) via landline telephone. If you are able to be in touch with your loved one(s), please do write back to us and let us know.

## Frequently Asked Questions

### Assisted Departure

Q: Will the U.S. government help U.S. citizens depart from Japan?

A: U.S. citizens should defer all travel to Japan at this time and those in Japan should consider departing. International commercial carriers continue to offer flights from many Japanese airports. U.S. citizens wishing to depart Japan are encouraged to use commercial flights. Please contact your airline or travel agent for the most updated information.

The Department of State is assisting U.S. citizens to depart from affected areas by bus. U.S. citizens can now obtain transportation by bus from Sendai to Tokyo. U.S. citizens should review our Japan Earthquake/Pacific Tsunami webpage at <http://travel.state.gov> <<http://travel.state.gov>> for updated departure-related information.

Information on travel options can be located at:

[http://www.travel.state.gov/travel/cis\\_pa\\_tw/pa/pa\\_5388.html](http://www.travel.state.gov/travel/cis_pa_tw/pa/pa_5388.html)

<[http://www.travel.state.gov/travel/cis\\_pa\\_tw/pa/pa\\_5388.html](http://www.travel.state.gov/travel/cis_pa_tw/pa/pa_5388.html)> . Seats remain on commercial flights from Japan returning to the United States.

The Department of State issued a Travel Warning

<[http://travel.state.gov/travel/cis\\_pa\\_tw/tw/tw\\_japan.html%20](http://travel.state.gov/travel/cis_pa_tw/tw/tw_japan.html%20)> and has authorized the voluntary departure from Japan of eligible family members of U.S. government personnel assigned to the U.S. Embassy in Tokyo, the U.S. Consulate in Nagoya, and the Foreign Service Institute Field School in Yokohama.

Q: Will the U.S. government assist me at the airport?

A: A team of U.S. consular officers will be at Narita Airport to assist U.S. citizens from 10:00 a.m. to 6:00 p.m. over the next several days. They will be wearing bright orange vests that say "U.S. Embassy."

Q: What is the operational status of the airports?

A: All area airports are open with the exception of Sendai.

Q: I am in Japan and need emergency consular assistance. Who should I contact?

A: The U.S. Embassy continues to deploy consular assistance teams where needed; these teams are actively working with our taskforce and local authorities to locate U.S. citizens, visit shelters and assistance centers, and help U.S. citizens identify public and commercial transportation options away from affected areas. U.S. citizens requiring emergency consular assistance should contact the Department of State at [JapanEmergencyUSC@state.gov](mailto:JapanEmergencyUSC@state.gov) <<mailto:JapanEmergencyUSC@state.gov>> .

Q: I need a passport, what do I do?

A: The U.S. Embassy and U.S. consulates in Japan are open and able to assist U.S. citizens requiring passports for urgent travel. Tokyo Consular will be open during the upcoming three-day weekend to provide emergency passport services. The hours are 08:30 to 17:00. If you require a passport, please proceed to the closest U.S. Embassy or consulate and they will assist you.

Q: Have any U.S. citizens been injured or killed?

A: We have no confirmed reports of U.S. citizen deaths or serious injuries related to the earthquake. Our Embassy and Consulates in Japan are working to obtain information on the status of U.S. citizens and provide assistance, as necessary.

Q: I am concerned about a loved one in Japan

A: If you have concerns about a specific U.S. citizen in Japan, please send us an email at: [JapanEmergencyUSC@state.gov](mailto:JapanEmergencyUSC@state.gov) <<mailto:JapanEmergencyUSC@state.gov>> . Please also send an update if you have information that your loved one is safe.

Although telephone lines may be disrupted, we encourage you to try contacting your loved one by email, text (SMS) message, or other social media (Facebook, MySpace, Linked In, Twitter, etc.) that your loved one may use. AT&T and Verizon have announced that they are offering free text messaging and some free calling to post-paid wireless and home phone subscribers attempting to contact/locate loved ones in Japan for a limited period of time. Contact your telephone provider for specific terms and conditions.

Q: Are there power outages in Japan?

A: Rolling power outages continue in the Tokyo Metropolitan area and

areas in northeast Japan affected by the earthquake and tsunami. Tokyo Electric Company reports that three-hour outages may occur in various regions, including Tokyo. Please monitor the Tokyo Electric Power Company website, <http://www.tepco.co.jp/en/index-e.html> <<http://www.tepco.co.jp/en/index-e.html>> , and Japan's Nuclear and Industrial Safety Agency (NISA) at <http://www.nisa.meti.go.jp/english/> <<http://www.nisa.meti.go.jp/english/>> , and local news media for specific information and schedules for the planned outages. Radio stations in the Tokyo area that have emergency information in English include the U.S. Armed Forces station at 810AM and InterFM (76.1FM).

Q: Is the State Department advising U.S. citizens against travel to Japan?

A: The State Department issued a travel warning strongly urging U.S. citizens to defer travel to Japan at this time and those in Japan should consider departing. The earthquake and tsunami caused widespread destruction, and strong aftershocks continue.

#### Nuclear Concerns

Q: I am concerned about the situation at the nuclear plant in Fukushima Prefecture. What can you tell me?

A: The U.S. Government has issued a Travel Warning <[http://travel.state.gov/travel/cis\\_pa\\_tw/tw/tw\\_japan.html%20](http://travel.state.gov/travel/cis_pa_tw/tw/tw_japan.html%20)> regarding the deteriorating situation at the Fukushima Daiichi Nuclear Power Plant. The U.S. Nuclear Regulatory Commission (NRC) recommends that U.S. citizens within 50 miles (80 kilometers) of the Fukushima Daiichi Nuclear Power Plant evacuate the area or take shelter indoors if safe evacuation is not practical. U.S. citizens should defer all travel to the evacuation zone around Fukushima Daiichi Nuclear Power Plant, areas affected by the earthquake and tsunami and tourism and non-essential travel to the rest of Japan at this time.

Q: Is the radiation dangerous? What can I do to protect myself?

A: U.S. citizens should closely monitor the guidance provided by the Japanese civil defense authorities in the event of a radiation emergency. The U.S. government is communicating closely with the Japanese government. We are committed to providing you with the most current information as we receive it. You will find more detailed information on radiation emergencies from the Centers for Disease Control and Prevention Emergency Preparedness and Response website at <http://emergency.cdc.gov/radiation/> <<http://emergency.cdc.gov/radiation/>> .

Q: Do I need to find potassium iodide? Will the Department of State provide it?

A: The Department of State does not have the resources or authority to

provide medical treatment, including such things as potassium iodide, to private U.S. citizens. U.S. citizens should check the CDC guidance on the use of potassium iodide in the event of a radiological emergency <http://emergency.cdc.gov/radiation/ki.asp> <<http://emergency.cdc.gov/radiation/ki.asp>> . U. S. citizens are encouraged to monitor information provided by the Japanese Civil Defense Authorities regarding the use and availability of potassium iodide.

## Transportation

Q: Are transportation services operating in Japan?

A: Commercial flights are available at all airports that were closed by the earthquake, except Sendai Airport. In Tokyo, most public transportation including trains and subways are operating. Many roads have been damaged in the Tokyo area and in northern Japan, particularly in the Miyagi prefecture where government checkpoints have been established on damaged roadways. In Iwate Prefecture, toll road highways are restricted to emergency vehicles only.

For the most current information, please check the applicable transport company's website before you depart.

Q: What public transportation options are available from Sendai?

A: U.S. Government-chartered buses will depart Sendai from the Sendai City Hall on March 19th beginning at 9:00 a.m. and traveling to Tokyo. U.S. citizens wishing to depart Sendai should meet at the Sendai City Hall at 9:00 a.m.

DEPARTMENT OF DEFENSE INQUIRIES (including service members, civilian employees, and contract personnel)

Q: I have a loved one assigned to a U.S. military installation in Japan.

A: U.S. Forces Japan reports that all personnel have been accounted for, and there are no reports of injuries. The Department of Defense instructs that family members of Department of Defense personnel should call 1-800-342-9647 or send an email to [Mosdrt@militaryonesource.com](mailto:Mosdrt@militaryonesource.com) <<mailto:Mosdrt@militaryonesource.com>> to inquire about their loved ones or contact the individual unit command directly for more specific information.

## JAPANESE AND OTHER CITIZENS

Q: I have a loved one who is Japanese and may be affected by the earthquake and tsunami.

A: If you are concerned about a Japanese citizen, please contact the Japanese Embassy (Washington - 202-238-6700) or nearest Consulate.





**From:** [JapanEmergencyUSC](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** RE: Is this email address working?  
**Date:** Monday, March 21, 2011 9:24:59 AM

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Thank you for contacting the U.S. Department of State and the U.S. Embassy in Tokyo regarding the welfare of a U.S. citizen in Japan.

For inquiries regarding U.S. citizens not associated with the military:

In case we have any questions, please ensure that you provide your:

- \* Full name
- \* Phone numbers (day, evening, and mobile phone numbers)
- \* Email address
- \* Relationship to the person you are inquiring about

So that we may properly pursue your inquiry, we will need information about the person in Japan who may need assistance. For each person, please be sure you sent us his/her:

- \* Full Name
- \* Date of Birth
- \* Place of Birth
- \* As much information as possible regarding your/his/her physical location (address, hotel name, etc.) and contact information (home phone, cell phone, email address, etc.) within Japan.

Please also send us any other information you feel is important for us to know, such as any pre-existing medical conditions, or whether you or your loved one is either elderly or a child in Japan without his/her parent(s). If you have an existing case with the Office of Children's Issues, please contact your case officer directly.

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X/263

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## DEPARTMENT OF DEFENSE INQUIRIES (including service members, civilian employees, and contract personnel)

Q: I have a loved one assigned to a U.S. military installation in Japan.

A: U.S. Forces Japan reports that all personnel have been accounted for, and there are no reports of injuries. The Department of Defense instructs that family members of Department of Defense personnel should call 1-800-342-9647 or send an email to [Mosdrt@militaryonesource.com](mailto:Mosdrt@militaryonesource.com) <<mailto:Mosdrt@militaryonesource.com>> to inquire about their loved ones or contact the individual unit command directly for more specific information.

## JAPANESE AND OTHER CITIZENS

Q: I have a loved one who is Japanese and may be affected by the earthquake and tsunami.

A: If you are concerned about a Japanese citizen, please contact the Japanese Embassy (Washington - 202-238-6700) or nearest Consulate.

**From:** [JapanEmergencyUSC](#)  
**To:** [Bonaccorso, Amy](#)  
**Subject:** RE: Is this email address working?  
**Date:** Monday, March 21, 2011 9:24:31 AM

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Hello Amy:

The best email to provide information for *international travel* is actually [www.travel.state.gov](http://www.travel.state.gov) while our Task Force is primarily working to gather and provide info to US Citizens on the ground in Japan and their relatives back in the US. There are links and the latest updates on this site.

Thank You

John  
Japan Task Force

PERSONAL  
This email is UNCLASSIFIED.

---

**From:** Bonaccorso, Amy [mailto:[amy.Bonaccorso@nrc.gov](mailto:amy.Bonaccorso@nrc.gov)]  
**Sent:** Monday, March 21, 2011 9:08 AM  
**To:** JapanEmergencyUSC  
**Subject:** Is this email address working?

Good morning:

I am currently supporting the NRC Public Inquiry Desk in response to the crisis in Japan. We have this email address as a resource to give to people who have urgent questions on international travel. Someone told me that they attempted to send an email here and it was not working.

Please confirm that we can use this email address for referrals.

Thanks!

Amy

**From:** Bonaccorso, Amy  
**To:** Janbergs, Holly; Tobin, Jennifer; Deavers, Ron  
**Subject:** Secondary Email Address for Dept of State  
**Date:** Monday, March 21, 2011 9:26:00 AM

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Folks:

If someone is not actually in Japan or concerned for relatives in Japan – Department of State prefers that we direct them to this web site: [www.travel.state.gov](http://www.travel.state.gov)

I thought it was another useful data point to put in my script materials!

Thanks,

Amy

X/264



**Lee, Richard**

**From:** Zigh, Ghani  
**Sent:** Monday, March 21, 2011 8:01 AM  
**To:** Wagner, Katie  
**Cc:** Lee, Richard  
**Subject:** RE: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Yes, it is.

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

**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 7:55 AM  
**To:** Zigh, Ghani  
**Cc:** Lee, Richard  
**Subject:** RE: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Ghani,

Are the actions associated with this item "Complete" now? I am about to enter this item on the "Status of Japan-Related Requests" Sharepoint page.

Thanks,  
Katie Wagner

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

**From:** Gibson, Kathy  
**Sent:** Saturday, March 19, 2011 7:39 AM  
**To:** Bowman, Gregory  
**Cc:** Uhle, Jennifer; Scott, Michael; Zigh, Ghani; Sheron, Brian; Santiago, Patricia; Tinkler, Charles; Schaperow, Jason; Lee, Richard; Wagner, Katie  
**Subject:** Re: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Greg,  
I believe this information was requested by Commissioner Magwood's office.

Ghani Zigh is the RES staff contact if there are questions.

Thanks,  
Kathy

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

**From:** Zigh, Ghani  
**To:** Sheron, Brian; Santiago, Patricia  
**Cc:** Uhle, Jennifer; Gibson, Kathy; Scott, Michael  
**Sent:** Sat Mar 19 07:09:11 2011  
**Subject:** RE: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Yes, SNL did perform other studies about 5 years ago.  
These studies are in ADAMS under ML062550218, ML082261433, and ML0816800640.  
These reports discuss the coolability limits (i.e. age of the assembly) for PWR and BWR assemblies for different configurations (i.e. management).  
Five configuration were analyzed (Uniform, Checkerboard, 1X4, Checkerboard with empties, and 1x4 with empties)

X/265

for the BWR, the following results were found:

for Uniform configuration, the coolability limit is 310 days old fuel.

for Checkerboard configuration, the coolability limit is 117 days old fuel.

for 1x4 configuration, the coolability limit is 20 days old fuel.

for Checkerboard with empties configuration, the coolability limit is 25 days old fuel for 1x4 with empties configuration, the coolability limit is 20 days old fuel.

The age of the fuel assembly as function of power is as follows for the BWR assembly:

310 days old is 2.7 kWatt

117 days is 5 kWatt

25 days is 10 kWatt

20 days is 10.3 kWatt

---

From: Sheron, Brian

Sent: Friday, March 18, 2011 10:32 PM

To: Santiago, Patricia

Cc: Uhle, Jennifer; Gibson, Kathy; Scott, Michael; Zigh, Ghani

Subject: RE: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

If this is the BWR fuel bundle ignition test, I do not think this is what they are looking for. Did SNL do a SFP study some time ago? Like 5-10+ years ago?

---

From: Santiago, Patricia

Sent: Friday, March 18, 2011 6:36 PM

To: Tadesse, Rebecca

Cc: Bubar, Patrice; Sheron, Brian; Rini, Brett; Uhle, Jennifer; Gibson, Kathy; Scott, Michael; Bowman, Gregory; Zigh, Ghani; Navarro, Carlos

Subject: NEW URGENT REQUEST -- SNL BWR tests - (OUO-Privileged Information)

Rebecca,

I believe the attached report is what you are requesting ---- Final BWR Sandia Fuel Project (SFP) Sandia Report.

We also have a time lapse video (OUO as well) that we can make a copy and provide Monday.

If you have additional questions, Ghani Zigh is the best person to assist.

Thanks

Pat

**Scott, Michael**

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**From:** rmtpactsu\_ac@ofda.gov  
**Sent:** Monday, March 21, 2011 12:58 PM  
**To:** RMTPACTSU\_ELNRC  
**Subject:** Travel Reservation March 22 for MICHAEL LEE SCOTT

MICHAEL LEE SCOTT has asked us to deliver their itinerary information to you. You can [click here to view their travel information](#) using Sabre® Virtually There®

Y/206

**Lee, Richard**

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**From:** Navarro, Carlos  
**Sent:** Monday, March 21, 2011 10:56 AM  
**To:** Schaperow, Jason; Tinkler, Charles; Gauntt, Randall O  
**Cc:** Scott, Michael; Santiago, Patricia; Lee, Richard; Zigh, Ghani; 'Bixler, Nathan E'; Chang, Richard; Wagner, Katie  
**Subject:** Op Center request

The Op Center requested a response to the following question to Jennifer Uhle.

"Can someone call Brian McDermott and provide him information about what the chemistry of the emissions is during a zirc fire. Please do so sometime today, preferably before lunch."

Brian's phone number is (301) 415-2334.

Please let us all know if any of you have addressed the question and what was the answer for us to follow up.

Thanks,

C.

X/267

**Lee, Richard**

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**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 10:44 AM  
**To:** Schaperow, Jason  
**Cc:** Lee, Richard  
**Subject:** Naval Reactors request

Jason,

Is the following an accurate description of the request you received from Naval Reactors (since as I understand I am supposed to be logging all requests into the Sharepoint page  
(<http://portal.nrc.gov/edo/res/DSA/Shared%20Documents/JPN-Status-Request.aspx>):

Naval Reactors requested Sandia SFP reports.

Also, what is the contact info (phone # or email) for the person at naval reactors who contacted you?

Thanks!

Katie Wagner  
General Engineer  
U.S. Nuclear Regulatory Commission  
(301) 251.7917  
[Katie.Wagner@nrc.gov](mailto:Katie.Wagner@nrc.gov)

X/268

**Scott, Michael**

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**From:** Scott, Michael  
**Sent:** Monday, March 21, 2011 10:00 AM  
**To:** Zaki, Tarek  
**Subject:** Re: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Will let you know. Probably postpone. Thx

Sent from my NRC blackberry  
Michael Scott  
201-873-3285

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

**From:** Zaki, Tarek  
**To:** Scott, Michael  
**Cc:** Elkins, Scott  
**Sent:** Mon Mar 21 09:59:19 2011  
**Subject:** RE: DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Thanks Mike - How about the DISC training on Wednesday; is it still on or will you reschedule? I wanted to send out a reminder to the branch but I thought I'd check with you first. Tarek

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

**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 10:39 AM  
**To:** Zaki, Tarek; Bano, Mahmooda; Greenwood, Carol; Wach, Lisa; Bush-Goddard, Stephanie; Elkins, Scott; Hoxie, Chris; Lee, Richard; Santiago, Patricia; Armstrong, Kenneth; Bajorek, Stephen; Boyd, Christopher; Rubin, Stuart; Sherbini, Sami; Tinkler, Charles; Voglewede, John; Zigh, Ghani  
**Cc:** Gibson, Kathy; Uhle, Jennifer; Sheron, Brian  
**Subject:** DSA LEADERHSIP/MANAGEMENT TEAM STATUS

Kathy is on shiftwork in the OPCEN, and I have been alerted that I am going to Japan on Tuesday, likely for two weeks. In the event Kathy remains on shiftwork while I am gone, Scott Elkins will be acting DSA Division Director. Kathy and I are counting on our BCs, SLs, and Front Office staff to be instrumental in helping Scott and keeping DSA's great work humming while we are out. (Heck, you probably didn't need us to begin with!)

Please expect a high tempo of info and assistance requests to continue. We have the best team going, so we will be in good hands!

Best wishes

Mike

X/269

## Lee, Richard

**From:** Algama, Don  
**Sent:** Monday, March 21, 2011 9:57 AM  
**To:** Lee, Richard  
**Subject:** RE: NRC Operations Center Watchbill for Japan Event

Richard:

Reviewing the slots that have not been filled from Kathy's attached email, I would like to volunteer for the following (top to bottom). Please let me know if you have any concerns, etc.

### LT Federal Liaison:

Thur-Fri	3/24-3/25	11pm - 7am
Fri-Sat	3/25-3/26	11pm-7am

### PMTR Coordinator

Fri-Sat	3/25-3/26	11pm-7am
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### RST Comm/ERDS Coordinator:

Mon	21-Mar	3pm-11pm
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### EST Status Officer:

Sat	26-Mar	7am - 3pm
Sat	26-Mar	3pm-11pm
Sat-Sun	3/26-3/27	11pm - 7am
Sun	27-Mar	7am - 3pm
Sun	27-Mar	3pm-11pm
Sun-Mon	3/27-3/28	11pm - 7am
Mon	28-Mar	7am - 3pm
Mon	28-Mar	3pm-11pm
Mon-Tue	3/28-3/29	11pm - 7am
Tue	29-Mar	7am - 3pm
Tue	29-Mar	3pm-11pm
Tue-Wed	3/29-3/30	11pm - 7am
Wed	30-Mar	7am - 3pm
Wed	30-Mar	3pm-11pm
Wed-Thur	3/30-3/31	11pm - 7am
Thur	31-Mar	7am - 3pm
Thur	31-Mar	3pm-11pm
Thur-Fri	3/31-4/1	11pm - 7am
Fri	1-Apr	7am - 3pm
Fri	1-Apr	3pm-11pm
Fri-Sat	4/1-4/2	11pm-7am

### EST Actions Officer:

Sat	26-Mar	7am - 3pm
Sat	26-Mar	3pm-11pm
Sat-Sun	3/26-3/27	11pm - 7am
Sun	27-Mar	7am - 3pm
Sun	27-Mar	3pm-11pm

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Sun-Mon	3/27-3/28	11pm - 7am
Mon	28-Mar	7am - 3pm
Mon	28-Mar	3pm-11pm
Mon-Tue	3/28-3/29	11pm - 7am
Tue	29-Mar	7am - 3pm
Tue	29-Mar	3pm-11pm
Tue-Wed	3/29-3/30	11pm - 7am
Wed	30-Mar	7am - 3pm
Wed	30-Mar	3pm-11pm
Wed-Thur	3/30-3/31	11pm - 7am
Thur	31-Mar	7am - 3pm
Thur	31-Mar	3pm-11pm
Thur-Fri	3/31-4/1	11pm - 7am
Fri	1-Apr	7am - 3pm
Fri	1-Apr	3pm-11pm
Fri-Sat	4/1-4/2	11pm-7am

### EST Chronology Officer

Sat	26-Mar	7am - 3pm
Sat	26-Mar	3pm-11pm
Sat-Sun	3/26-3/27	11pm - 7am
Sun	27-Mar	7am - 3pm
Sun	27-Mar	3pm-11pm
Sun-Mon	3/27-3/28	11pm - 7am
Mon	28-Mar	7am - 3pm
Mon	28-Mar	3pm-11pm
Mon-Tue	3/28-3/29	11pm - 7am
Tue	29-Mar	7am - 3pm
Tue	29-Mar	3pm-11pm
Tue-Wed	3/29-3/30	11pm - 7am
Wed	30-Mar	7am - 3pm
Wed	30-Mar	3pm-11pm
Wed-Thur	3/30-3/31	11pm - 7am
Thur	31-Mar	7am - 3pm
Thur	31-Mar	3pm-11pm
Thur-Fri	3/31-4/1	11pm - 7am
Fri	1-Apr	7am - 3pm
Fri	1-Apr	3pm-11pm
Fri-Sat	4/1-4/2	11pm-7am

### International Liaison:

Fri-Sat	3/25-3/26	11pm-7am
Sat	26-Mar	7am - 3pm
Sat	26-Mar	3pm-11pm
Sat-Sun	3/26-3/27	11pm - 7am
Sun	27-Mar	7am - 3pm
Sun	27-Mar	3pm-11pm
Sun-Mon	3/27-3/28	11pm - 7am
Mon	28-Mar	7am - 3pm
Mon	28-Mar	3pm-11pm
Mon-Tue	3/28-3/29	11pm -



		7am
Tue	29-Mar	7am - 3pm
Tue	29-Mar	3pm-11pm
Tue-Wed	3/29-3/30	11pm - 7am
Wed	30-Mar	7am - 3pm
Wed	30-Mar	3pm-11pm
Wed-Thur	3/30-3/31	11pm - 7am
Thur	31-Mar	7am - 3pm
Thur	31-Mar	3pm-11pm
Thur-Fri	3/31-4/1	11pm - 7am
Fri	1-Apr	7am - 3pm
Fri	1-Apr	3pm-11pm
Fri-Sat	4/1-4/2	11pm-7am

#### PMTR Coordinator:

Fri-Sat	3/25-3/26	11pm-7am
Sat	26-Mar	7am - 3pm
Sat	26-Mar	3pm-11pm
Sat-Sun	3/26-3/27	11pm - 7am
Sun	27-Mar	7am - 3pm
Sun	27-Mar	3pm-11pm
Sun-Mon	3/27-3/28	11pm - 7am
Mon	28-Mar	7am - 3pm
Mon	28-Mar	3pm-11pm
Mon-Tue	3/28-3/29	11pm - 7am
Tue	29-Mar	7am - 3pm
Tue	29-Mar	3pm-11pm
Tue-Wed	3/29-3/30	11pm - 7am
Wed	30-Mar	7am - 3pm
Wed	30-Mar	3pm-11pm
Wed-Thur	3/30-3/31	11pm - 7am
Thur	31-Mar	7am - 3pm
Thur	31-Mar	3pm-11pm
Thur-Fri	3/31-4/1	11pm - 7am
Fri	1-Apr	7am - 3pm
Fri	1-Apr	3pm-11pm
Fri-Sat	4/1-4/2	11pm-7am

#### RST Coordinator

Sat	26-Mar	7am - 3pm
Sat	26-Mar	3pm-11pm
Sat-Sun	3/26-3/27	11pm - 7am
Sun	27-Mar	7am - 3pm
Sun	27-Mar	3pm-11pm
Sun-Mon	3/27-3/28	11pm - 7am

Mon	28-Mar	7am - 3pm
Mon	28-Mar	3pm-11pm
Mon-Tue	3/28-3/29	11pm - 7am
Tue	29-Mar	7am - 3pm
Tue	29-Mar	3pm-11pm
Tue-Wed	3/29-3/30	11pm - 7am
Wed	30-Mar	7am - 3pm
Wed	30-Mar	3pm-11pm
Wed-Thur	3/30-3/31	11pm - 7am
Thur	31-Mar	7am - 3pm
Thur	31-Mar	3pm-11pm
Thur-Fri	3/31-4/1	11pm - 7am
Fri	1-Apr	7am - 3pm
Fri	1-Apr	3pm-11pm
Fri-Sat	4/1-4/2	11pm-7am

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**From:** Gibson, Kathy  
**Sent:** Saturday, March 19, 2011 4:18 PM  
**To:** Gavrilas, Mirela; RES\_DSA  
**Subject:** Fw: NRC Operations Center Watchbill for Japan Event

Operations Center is looking for support. Please see the attached watchbill and if there is a position you can fill, let the ops center (and your supervisor) know.

Thanks!

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**From:** OST02 HOC

**To:** Abrams, Charlotte; Adams, John; Afshar-Tous, Mugeh; Alemu, Bezakulu; Alter, Peter; Anderson, James; Ashkeboussi, Nima; Athey, George <george.athey@nrc.gov>; Baker, Stephen; Bergman, Thomas; Berry, Rollie; Bhachu, Ujagar; Bloom, Steven; Blount, Tom; Boger, Bruce; Borchardt, Bill; Bower, Anthony; Bowman, Gregory; Brandon, Lou; Brandt, Philip; Brock, Kathryn; Brown, Cris; Brown, David; Brown, Eva; Brown, Frederick; Brown, Michael; Bukharin, Oleg; Camper, Larry; Carpenter, Cynthia; Carter, Mary; Case, Michael; Casto, Greg; Cecere, Bethany; Cervera, Margaret; Chazell, Russell; Chen, Yen-Ju; Cheok, Michael; Chokshi, Niles; Chowdhury, Prosanta; Circle, Jeff; Clement, Richard; Clinton, Rebecca; Coggins, Anita <anita.coggins@nrc.gov>; Collins, Frank; Cool, Donald; Costa, Richard; Crutchley, Mary Glenn; Cruz, Zahira; Cutaia, Robert <robert.cutaia@nrc.gov>; Dacus, Eugene; DeCicco, Joseph; Decker, David; Dembek, Stephen; Devlin, Stephanie; Doane, Margaret; Dorman, Dan; Dorsey, Cynthia; Dozier, Jerry; Droggitis, Spiros; Dube, Donald; Dudes, Laura; Eads, Johnny; Emche, Danielle; English, Lance; Erlanger, Craig; Esmaili, Hossein; Figueroa, Roberto; Fiske, Jonathan; Floyd, Daphene; Foggie, Kirk; Foster, Jack; Fragoyannis, Nancy; Franovich, Rani; Frazier, Alan; Freshwater, David <david.freshwater@nrc.gov>; Fuller, Edward; Galletta, Thomas; Gambone, Kimberly; Gibson, Kathy; Giitter, Joseph; Gilmer, James; Gordon, Dennis; Gott, William; Grant, Jeffery; Grimes, Kelly; Grobe, Jack; Gulla, Gerald; Hale, Jerry; Hardesty, Duane; Harris, Tim; Hart, Ken; Hart, Michelle; Harvey, Brad; Hasselberg, Rick; Henderson, Karen; Hiland, Patrick; Holahan, Patricia; Holahan, Vincent; Holian, Brian; Howard, Tabitha; Huffert, Anthony; Hurd, Sapna; Huyck, Doug; Isom, James; Jackson, Karen; Jacobson, Jeffrey; Jessie, Janelle; Johnson, Michael; Jolicoeur, John; Jones, Andrea; Jones, Cynthia; Kahler, Carolyn; Kammerer, Annie; Karas, Rebecca; Khan, Omar; Kolb, Timothy; Kotzalas, Margie; Kowalczyk, Jeffrey; Kratchman, Jessica; Kugler, Andrew; Lamb, Christopher; Lane, John; Larson, Emily; Laur, Steven; LaVie, Steve; Lewis, Robert; Li, Yong; Lising, Jason; Lombard, Mark; Lubinski, John; Lui, Christiana; Lynch, Jeffery; Mamish, Nader; Manahan, Michelle; Marksberry, Don; Marshall, Jane; Masao, Nagai <nagai.masao@nrc.gov>; Maupin, Cardilia <cardilia.maupin@nrc.gov>; Mayros, Lauren; Mazaika, Michael; McConnell, Keith; McCoppin, Michael; McDermott, Brian; McGinty, Tim; McGovern, Denise; McMurtry, Anthony; Merritt, Christina; Meyer, Karen; Miller, Charles; Miller, Chris; Milligan, Patricia; Mohseni, Aby; Moore, Scott; Morlang, Gary; Morris, Scott; Mroz (Sahm), Sara; Munson, Clifford; Murray, Charles; Nerret, Amanda; Nguyen, Carolyn <carolyn.nguyen@nrc.gov>; Norris, Michael; Norton, Charles; Ordaz, Vonna; Owens, Janice; Padovan, Mark; Parillo, John; Patel, Jay; Perin, Vanice; Pope, Tia; Powell, Amy; Purdy, Gary; Quinlan, Kevin; Ragland, Robert; Ragland, Randolph; Ralph, Melissa; Ramsey, Jack; Reed, Elizabeth;

Reed, Sara <sara.reed@nrc.gov>; Reed, Wendy; Reis, Terrence; Resner, Mark; Riley (OCA), Timothy; Riner, Kelly; Rini, Brett; Robinson, Edward; Rodriguez-Luccioni, Hector; Rosenberg, Stacey; Ross-Lee, MaryJane; Roundtree, Amy; Ruland, William; Salay, Michael; Salter, Susan; Salus, Amy; Sanfilippo, Nathan; Scarbrough, Thomas; Schaperow, Jason; Schmidt, Duane; Schmidt, Rebecca; Schoenebeck, Greg; Schrader, Eric; Schwartzman, Jennifer; Seber, Dogan; See, Kenneth; Shane, Raeann; Shea, James; Shepherd, Jill; Sheron, Brian; Skeen, David; Sloan, Scott; Smirolodo, Elizabeth; Smith, Brooke; Smith, Theodore; Stahl, Eric; Stang, Annette; Steger (Tucci), Christine; Stieve, Alice; Stone, Rebecca; Stransky, Robert; Sturz, Fritz; Sullivan, Randy; Sun, Casper; Tappert, John; Temple, Jeffrey; Thaggard, Mark; Thomas, Eric; Thorp, John; Tobin, Jennifer; Trefethan, Jean <jean.trefethan@nrc.gov>; Tschiltz, Michael; Turtill, Richard; Uhle, Jennifer; Valencia, Sandra; Vaughn, James; Vick, Lawrence; Virgilio, Martin; Virgilio, Rosetta; Ward, Leonard; Wastler, Sandra; Watson, Bruce; Webber, Robert; Weber, Michael; White, Bernard; Wiggins, Jim; Williams, Donna; Williams, Joseph; Williamson, Linda; Willis, Dori; Wimbush, Andrea; Wittick, Brian; Wray, John; Wright, Lisa (Gibney); Wright, Ned; Wunder, George; Young, Francis; Zimmerman, Roy

**Sent:** Sat Mar 19 06:23:06 2011

**Subject:** NRC Operations Center Watchbill for Japan Event

Good morning,

Attached is the schedule for Ops Center Watchbill March 18-26 and March 26 – April 1. You will be receiving updated copies as the schedule continues to change. We do recognize that some positions do not have full staffing. We are looking to fill those. If you know anyone who would want to fill them, have them contact OPS Center at 816-5100.

Thanks

**Lee, Richard**

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**From:** Wagner, Katie  
**Sent:** Monday, March 21, 2011 9:17 AM  
**To:** Lee, Richard  
**Subject:** RE: TASKING FROM BRIAN SHERON

Richard,

For the purposes of Sharepoint, who is the staff contact assigned for this item? I logged the staff contact as "TBD" for now.

Thanks,  
Katie

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**From:** Lee, Richard  
**Sent:** Monday, March 21, 2011 8:03 AM  
**To:** Wagner, Katie  
**Subject:** FW: TASKING FROM BRIAN SHERON

To log in.

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**From:** Scott, Michael  
**Sent:** Saturday, March 19, 2011 9:16 AM  
**To:** Gibson, Kathy; Santiago, Patricia; Lee, Richard; Ziqh, Ghani; Coyne, Kevin  
**Subject:** TASKING FROM BRIAN SHERON

Brian advised me yesterday that he would like us to evaluate the risk benefit of pulling spent fuel out of the SFP as soon as the specific assembly heat load permits. The risk reduction could be in terms of time to boiling (I believe that would be small, since by definition fuel old enough to be put in dry storage would not contribute all that much to pool heatup), and with reduced source term in the SFP. He may have already spoken to Ghani about this. He does not want this work to interfere with crisis work, but does want the evaluation done.

Mike

**Lee, Richard**

**From:** Voglewede, John  
**Sent:** Monday, March 21, 2011 8:55 AM  
**To:** Lee, Richard  
**Cc:** Esmaili, Hossein; Tinkler, Charles; Schaperow, Jason  
**Subject:** FW: Radionuclides in

FYI

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**From:** Wegner, Mary  
**Sent:** Monday, March 21, 2011 8:28 AM  
**To:** Karagiannis, Harriet; Voglewede, John  
**Subject:** Radionuclides in

**Fukushima Daiichi – Main Building (Source is NISA)**

The radioactive nuclide analysis is planned to be continued to confirm the situation.

Major radioactive nuclides detected	Concentration of radioactive nuclide (Bq/cm <sup>3</sup> )	Allowable concentration of radioactive nuclide in the air for radiation workers (Bq/cm <sup>3</sup> )	
Volatile	Iodine-131	5.940 x 10 <sup>-3</sup>	1.0 x 10 <sup>-3</sup>
Iodine-132		0.220 x 10 <sup>-2</sup>	7.0 x 10 <sup>-2</sup>
Iodine-133		0.035 x 10 <sup>-3</sup>	5.0 x 10 <sup>-3</sup>
Particulate	Cesium-134	0.022 x 10 <sup>-3</sup>	2.0 x 10 <sup>-3</sup>
Cesium-137		0.024 x 10 <sup>-3</sup>	3.0 x 10 <sup>-3</sup>

X/272

**Rebstock, Paul**

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**From:** Cathy Hawes [cmh2@nrc.gov]  
**Sent:** Tuesday, March 22, 2011 1:59  
**To:** Rebstock, Paul  
**Subject:** REVISED IN 2011-05 (ML110760432)  
**Attachments:** ML110760432.pdf

REVISED version of IN 2011-05. The revision are adding Nuclear Reactor of Operations to the Title on the first page and adding MShuaibi to the signature and concurrence pages indicating that he signed for LDudes.

Attached is an PDF version Information Notice 2011-05, Tohoku-Taiheiyu-Oki Earthquake Effects On Japanese Nuclear Power Plants, dated March 18, 2011, (ML110760432), that has been posted to the NRR GCC Web, along with the URL for Web access to generic communications files on the NRC Homepage:  
<http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/2011/>.

To subscribe or unsubscribe send an email to [lyris@nrc.gov](mailto:lyris@nrc.gov) , no subject, and use one of the following commands in the message portion:

subscribe gc-nrr (first and last name)

unsubscribe gc-nrr (first and last name)

thanks  
Cathy

X/273

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

March 18, 2011

NRC INFORMATION NOTICE 2011-05: TOHOKU-TAIHEIYOU-OKI EARTHQUAKE  
EFFECTS ON JAPANESE NUCLEAR POWER  
PLANTS

## ADDRESSEES

All holders of or applicants for operating licenses for nuclear power reactors under the provision of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of or applicants for a standard design certification, standard design approval, manufacturing license, limited work authorization, early site permits or combined license issued under 10 CFR Part 52, "Licenses, Certifications and Approvals for Nuclear Power Plants."

## PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees of effects of the Tohoku-Taiheiyou-Oki Earthquake on nuclear power plants in Japan. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. Suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

## DESCRIPTION OF CIRCUMSTANCES

The following summary of events is provided based on the best information available at this time. The situation in Japan regarding recovery efforts for the Fukushima Daiichi Nuclear Power Station continues to evolve on an hourly basis.

On March 11, 2011, the Tohoku-Taiheiyou-Oki Earthquake occurred near the east coast of Honshu, Japan. This magnitude 9.0 earthquake and the subsequent tsunami caused significant damage to at least four of the six units of the Fukushima Daiichi nuclear power station as the result of a sustained loss of both the offsite and on-site power systems. Efforts to restore power to emergency equipment have been hampered or impeded by damage to the surrounding areas due to the tsunami and earthquake.

ML110760432

Units 1 through 3, which had been operating at the time of the earthquake, scrambled automatically, inserting their neutron absorbing control rods to ensure immediate shutdown of the fission process. Following the loss of electric power to normal and emergency core cooling systems and the subsequent failure of back-up decay heat removal systems, water injection into the cores of all three reactors was compromised, and reactor water levels could not be maintained. Tokyo Electric Power Company (TEPCO), the operator of the plant, resorted to injecting sea water and boric acid into the reactor vessels of these three units, in an effort to cool the fuel and ensure the reactors remained shutdown. However, the fuel in the reactor cores became partially uncovered. Hydrogen gas built up in Units 1 and 3 as a result of exposed, overheated fuel reacting with water. Following gas venting from the primary containment to relieve pressure, hydrogen explosions occurred in both units and damaged the secondary containments. It appears that primary containments for Units 1 and 3 remain functional, but the primary containment for Unit 2 may be damaged. TEPCO cut a hole in the side of the Unit 2 secondary containment to prevent hydrogen buildup following a sustained period when there was no water injection into the core.

In addition, Units 3 and 4 have low spent fuel pool (SFP) water levels. Efforts continue to supply seawater to the SFPs for Units 1 through 4 using various methods. At this time, the integrity of the SFPs for Units 3 and 4 is unknown.

Fukushima Daiichi Units 4 through 6 were shutdown for refueling outages at the time of the earthquake. The fuel assemblies for Unit 4 had been offloaded from the reactor core to the SFP. The SFPs for Units 5 and 6 appear to be intact, but the temperature of the pool water appears to be increasing. Emergency power is available to provide cooling water flow through the SFPs for Units 5 and 6.

The Japanese Government ordered an evacuation out to 20 km for the area surrounding Fukushima Daiichi. Residents out to 30 km were ordered to shelter in place.

The damage to Fukushima Daiichi nuclear power station appears to have been caused by initiating events outside of the design basis for the facilities.

## **BACKGROUND**

10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 2, "Design Bases for Protection against Natural Phenomena," or similar appropriate requirements in the licensing basis for a reactor facility, requires that structures, systems, and components (SSCs) important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The design bases for these SSCs reflect: (1) appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) the importance of the safety functions to be performed.



As a result of the terrorist events of September 11, 2001, the NRC issued EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (the ICM Order) dated February 25, 2002. The ICM Order, which is designated as Safeguards Information (SGI), modified then-operating licenses for commercial power reactor facilities to require compliance with specified interim safeguards and security compensatory measures. Section B.5.b of the ICM Order requires licensees to adopt mitigation strategies using readily available resources to maintain or restore core cooling, containment, and SFP cooling capabilities to cope with the loss of large areas of the facility due to large fires and explosions from any cause, including beyond-design-basis aircraft impacts.

By letter, dated February 25, 2005, the NRC staff provided guidance for implementing Section B.5.b of the ICM Order. This guidance, designated as SGI, included best practices for mitigating losses of large areas of the plant and measures to mitigate fuel damage and minimize releases. Following issuance of the B.5.b Phase 1 Guidance, the NRC staff conducted inspections at operating reactor sites using Temporary Instruction (TI) 2515/164 (SGI) and subsequently TI 2515/168 (SGI) to ensure compliance with Section B.5.b of the ICM Order.

In December 2006, the Nuclear Energy Institute (NEI) issued NEI 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guideline." NEI 06-12 is designated for Official Use Only – Security Related Information (OUO-SRI). The NRC endorsed NEI 06-12, Revision 2, by letter dated December 22, 2006, also designated OUO-SRI, as an acceptable means for developing and implementing the mitigation strategies requirement in Section B.5.b of the ICM Order. NEI 06-12, Revision 2, provides guidance for implementing a set of strategies intended to maintain or restore core cooling, containment, and SFP cooling capabilities under the circumstances associated with the loss of a large area of the plant due to explosions or fire. NEI 06-12 provides guidance in the following areas:

- Adding make-up water to the SFP,
- Spraying water on the spent fuel,
- Enhanced initial command and control activities for challenges to core cooling and containment, and
- Enhanced response strategies for challenges to core cooling and containment.

The specific strategies covered in NEI 06-12, Revision 2, were developed based on the results of assessments conducted at currently licensed power reactor facilities for the purpose of enhancing plant specific mitigation capability for damage conditions caused by a large explosion or fire. These assessments identified a wide spectrum of potential plant specific strategies. NEI 06-12, Revision 2, specifies one set of strategies applicable to all pressurized-water reactors and another set applicable to all boiling-water reactors. Both sets are derived from the results of the plant specific assessments.

The B.5.b Phase 1 Guidance and NEI 06-12, Revision 2, were used by each licensee in preparing information submitted to the NRC that describes a plant specific approach to implementing mitigating strategies and supports each plant specific license condition. The NRC staff has completed its review of the information submitted by each licensee, as well as information obtained during prior NRC inspections, and has issued an OUO-SRI safety

evaluation (SE) that documents the bases for its approval of the license condition for each facility. The SE issued for each licensee includes regulatory guidance in Section 3.0 of Appendix A, "Phase 1 Assessment," that recites the generic B.5.b Phase 1 Guidance of Reference 3, as clarified in TI 2515/168, in a form that is designated OUO-SRI rather than SGI.

By publishing new requirements in the *Federal Register* dated March 27, 2009 (74 FR 13926), the NRC amended 10 CFR Part 50, 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and 10 CFR Part 73, "Physical Protection of Plants and Materials." This rulemaking added paragraph (i) to 10 CFR 50.34, "Contents of Applications; Technical Information," and paragraph (d) to 10 CFR 52.80 "Contents of Applications; Additional Technical Information," to require submittal of a "description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions or fire as required by § 50.54(hh)(2) of this chapter." This rulemaking also added 10 CFR 50.54(hh)(2) to impose the same mitigating strategies requirements on all reactor applicants and licensees as those imposed by the ICM Order and associated license conditions. The Statement of Considerations for this rulemaking specifically noted that the requirements in 10 CFR 50.54(hh) are intended to address certain events that are the cause of large fires and explosions that affect a substantial portion of the nuclear power plant and are not limited or directly linked to an aircraft impact. In addition, the rule contemplates that the initiating event for such large fires and explosions could be any number of beyond-design basis events. Such events include natural phenomena such as those described in GDC 2 (i.e., earthquakes, tornadoes, floods, tsunamis, and seiches), without regard to the GDC 2 provisions governing the severity of natural phenomena.

NRC regulations at 10 CFR 50.63, "Loss of All Alternating Current Power," require that light-water-cooled nuclear power plants be capable of withstanding for a specified duration and recovering from a station blackout.

## DISCUSSION

The nuclear power industry has taken the actions listed below at each licensed reactor site. Additional information is available in the NEI Fact Sheet, "Industry Taking Action to Ensure Continued Safety at U.S. Nuclear Energy Plants," dated March 16, 2011, available at [www.nei.org](http://www.nei.org).

1. verification of the capability to mitigate conditions that result from severe adverse events, including the loss of significant operational and safety systems due to natural events, fires, aircraft impact and explosions
2. verification of the capability to mitigate a total loss of electric power to a nuclear power plant
3. verification of the capability to mitigate flooding and the impact of floods on systems inside and outside the plant
4. identification of the potential for loss of equipment functions during seismic events appropriate for the site and the development of mitigating strategies to address potential vulnerabilities

NRC assessment of the implications of beyond design-basis natural phenomena is continuing as more information becomes available. The NRC staff is currently developing a TI to guide staff in performing independent assessments of nuclear power plant readiness to address beyond design-basis natural phenomena under the Reactor Oversight Process. The NRC is considering additional generic communications and additional action including requesting operating plants to provide specific information relating to their facilities to enable the NRC staff to complete a regulatory assessment of beyond design basis phenomena.

## **PAPERWORK REDUCTION ACT STATEMENT**

This Information Notice does not contain any information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.).

### **Public Protection Notification**

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

## **CONTACTS**

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

**/RA/**

Laura A. Dudes, Director  
Division of Construction Inspection,  
and Operational Programs  
Office of New Reactors

**/RA/**

Timothy J. McGinty, Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Technical Contact: Eric E. Bowman, NRR  
301-415-2963  
e-mail: [Eric.Bowman@nrc.gov](mailto:Eric.Bowman@nrc.gov)

Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.

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## PAPERWORK REDUCTION ACT STATEMENT

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### Public Protection Notification

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## CONTACTS

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact(s) listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

**/RA/**

Laura A. Dudes, Director  
Division of Construction Inspection,  
and Operational Programs  
Office of New Reactors

**/RA/**

Timothy J. McGinty, Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Technical Contact: Eric E. Bowman, NRR  
301-415-2963  
e-mail: [Eric.Bowman@nrc.gov](mailto:Eric.Bowman@nrc.gov)

Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.  
ADAMS Accession Number: ML110760432 \* by e-mail

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DATE	03/17/2011	03/17/2011	03/17/2011	03/17/2011	03/17/2011
OFFICE	NRO/DCIP/CAEB*	DPR/PGCB/LA	DPR/PGCB/BC	NRO/DCIP/D	NRR/DPR/D
NAME	TFrye	CHawes	SRosenberg	LDudes (MShuaibi for)	TMcGinty
DATE	03/18/2011	03/17/2011	03/17/2011	03/18/2011	03/18/2011

OFFICIAL RECORD COPY

## Yarsky, Peter

---

**From:** Carlson, Donald  
**Sent:** Tuesday, March 22, 2011 12:20 PM  
**To:** Yarsky, Peter  
**Subject:** RE: Fukushima Update

Pete,

On a lighter note: I bet you didn't know that zirconium can't burn in steam or air and that reactor grade graphite burns like coal. Neither did I. Some UC-Berkeley NE professors know all this and more and explain it for everyone on TV:

[http://abclocal.go.com/kgo/story?section=news/local/east\\_bay&id=8020441](http://abclocal.go.com/kgo/story?section=news/local/east_bay&id=8020441)

Don

---

**From:** Carlson, Donald  
**Sent:** Tuesday, March 22, 2011 12:08 PM  
**To:** Yarsky, Peter  
**Subject:** FW: Fukushima Update

Pete,

I am forwarding your comments to the RST. Thank you for being so helpful. I hope this helps make you better known.

It scares me a little to see that the Agency/Ops Center seems to have no database of staff capabilities and expertise. The RST members on duty call whoever they happen to know. A few of them happened to know me and that I sometimes claim to understand criticality. Fortunately I knew about you. It surprised me that so few others there did.

I am at a bit of a handicap in my role as a 'consultant' to the RST. Since I'm not a trained/qualified member of the team, I don't have logon access to any RST or other Ops Center info. So my limited understanding of conditions in Japan comes mainly from the information I get from external sources.

Maybe you can help me make sense of the water level numbers on page 3 of the JAIF update table linked below. To me they mean nothing, given my less-than-intimate knowledge of BWR systems.

Also, I think everyone must be anxious to know conditions in the SFPs. The table is somewhat reassuring for the Unit 2/5/6 SFPs, not so much for 4/1/3. Any thoughts?

Thanks again,  
Don

---

**From:** Williams, Joseph  
**Sent:** Tuesday, March 22, 2011 10:09 AM  
**To:** Araguas, Christian; Boyle, Thomas; Briggs, Christine; Carlson, Donald; Coffin, Stephanie; Costa, Arlon; Cranston, Gregory; DeGange, Jonathan; Goodwin, Cameron; Held, Wesley; Humberstone, Matthew; James, Deonna; Jones (NRO), Mike; Kenyon, Thomas; Kevern, Thomas; Magruder, Stewart; Malave, Yanelly; Mayfield, Michael; Mazza, Jan; Moore, Ross; Notich, Mark; Powell, Tamara; Reckley, William; RobinsonII, Richard; Shaikh, Samina; Shea, James; Smith, John; Starefos, Joelle; StPeters, Courtney; Stutzcage, Edward; Tello, Linda  
**Subject:** Fukushima Update

x/274

In my opinion, the Japan Atomic Industrial Forum is one of the best sources of information on the status of the plants at Fukushima. Updates are posted here a few times during the day. The most recent update is a couple hours old; Tokyo is 13 hours ahead.

The overall situation has been fairly stable for a few days. Offsite AC has been connected to the site, but there are challenges to ensure equipment can be safely energized. Some of the process parameter information in the update is suspect. For example, the report shows the Unit 2 and 3 containments at below atmospheric pressure, and I don't think indicated core water levels have moved from an indication that the fuel is uncovered, even though it is my understanding that water is being provided in excess of the decay heat load, so the core should be full of water. That's my personal opinion, not an official agency point of view, so it's worth what you're paying for it.

Joe

**Ramsey, Kevin**

---

**From:** Sreenivas, V  
**Sent:** Tuesday, March 22, 2011 8:42 AM  
**To:** NMSS Distribution  
**Subject:** FW: Japanese Event Response and Available Resources

FYI, if interested

---

V. Sreenivas, Licensing PM  
DORL/NRR on Detail  
with HLWRS/NMSS

---

**From:** Schwarz, Sherry On Behalf Of Leeds, Eric  
**Sent:** Monday, March 21, 2011 6:03 PM  
**To:** NRR Distribution  
**Subject:** Japanese Event Response and Available Resources

I want to echo the Commission and Bill Borchardt's words of appreciation and admiration spoken of the staff during the Commission Meeting this morning. NRR has provided tremendous support over the last week, and we will continue our efforts in the weeks, months, and years to come.

In our continued efforts to assist with responding and centralizing information related to events in Japan, we've added a new feature to the homepage of the NRR internal SharePoint site, "Japan Event Information." All of the information under this title has been publicly released or has been approved to be used publicly in our responses to related questions that might arise. Included in the list is a link to the NRC public web site, "NRC Actions on Japan's Emergency," where you may find information related to NRC actions, including news releases, NRC Blog posts, Frequently Asked Questions (FAQs), and other related information and sources. Please be sure to check these resources frequently, as information is being updated daily.

In addition, I've assigned Bob Nelson, Deputy Director, Division of Operating Reactor Licensing (DORL), as the NRR Coordinator for External Communications related to NRR's response to the recent events in Japan. Assisting Nelson will be Sean Meighan and Quynh Nguyen from the NRR front office, Eric Thomas from Division of Inspection and Regional Support, Eric Oesterle from the Office of New Reactors and a communications "tiger team" formulated in DORL headed by Mike Markley. Harold Chernoff will also provide assistance as needed. Nelson and his team will be responsible for coordinating the development and review of related Qs & As and coordinating the response to related controlled correspondence tasked to NRR, including related 2.206 petitions.

Please forward all of your requests for support in this area, to Nelson, 301-415-1453.

Thank you all for your continued support!

*Eric*

- NRR SharePoint Site: <http://portal.nrc.gov/edo/nrr/default.aspx>
- NRC Public Website: NRC Actions on Japan's Emergency: <http://www.nrc.gov/japan/japan-info.html>

X/215

## Schaperow, Jason

---

**From:** Schaperow, Jason  
**Sent:** Tuesday, March 22, 2011 8:26 AM  
**To:** Davidson, Lawrence  
**Subject:** RE: REMINDER: Please have your T&L entered in HRMS by COB Thursday, March 24th. Thank you. <eom>

Thanks so much.

---

**From:** Davidson, Lawrence  
**Sent:** Monday, March 21, 2011 4:32 PM  
**To:** Schaperow, Jason  
**Cc:** Santiago, Patricia; Wach, Lisa; Johns, Nancy; Scott, Tracy; Tallarico, Alison  
**Subject:** FW: REMINDER: Please have your T&L entered in HRMS by COB Thursday, March 24th. Thank you. <eom>

Jason,

It was good talking to you.

As we discussed, I've revised your table to reflect how you should record your time (see the second attachment). You should:

- Remain on NEWFlex.
- Record regular pay (TRC "REG") for your work up to 11.25 hours a day (that's the NEWFlex HRMS system limit). You need a total of 80 hours of REG for the pay period, unless you take leave, take comp time off, take credit hours off, etc.
- Record overtime pay (TRC "OT") or regular compensatory time off earned (TRC "COMPE") for your work in excess of 11.25 a day.
- Record night premium pay (TRC "NDIFF") for your nonovertime work at night (between 6:00 p.m. of one day and 6:00 a.m. of the following day), and for your overtime work at night if that work was scheduled in advance of the week that you performed it.
- Record Sunday premium pay (TRC "SUNP") for an entire shift if any part of that shift falls on a Sunday (see my comment below re. recording SUNP via a corrected timecard).

Note that because of the way that HRMS is programmed, it may appear that you're claiming more time than you're entitled to claim on a particular day, when in fact you're recording your time correctly. For example, on March 16, you worked a total of 11.5 hours and will record the time to 11.25 REG, .25 OT or COMPE, and 1 NDIFF, as we discussed. It may appear that you're claiming too much time because the system will report a total of 12.5 hours (11.25 + .25 + 1), but it's actually reporting the time correctly because it knows that the NDIFF overlaps with the REG and OT or COMPE.

As we discussed, your organization needs to contact Jackie Jones in CFO, provide her your name and the dates of your emergency response work, and ask her to lift the biweekly cap and apply an annual cap for the applicable pay period.

X/276



Last, CFO advises that HRMS isn't programmed to accept SUNP for employees who are on NEWFlex work schedules, so your organization will need to record SUNP via a corrected timecard (your T&L Coordinator can contact Jackie Jones for any additional info needed).

Please call me at 301-492-2286 if I can help further.

Larry

---

**From:** Schaperow, Jason  
**Sent:** Monday, March 21, 2011 1:43 PM  
**To:** Davidson, Lawrence  
**Cc:** Santiago, Patricia; Wach, Lisa  
**Subject:** RE: REMINDER: Please have your T&L entered in HRMS by COB Thursday, March 24th. Thank you. <eom>

Hi Larry,

How are you?

I saw the guidance that was issued for reporting hours worked in HRMS for responding to the Japanese reactor accident. However, I am somewhat confused about this.

In addition to my normal work hours, I have been called on at different times (such as 11:30 p.m. last night) to support Chairman Jaczko and the Ops Center. Attached is a table showing the hours I worked this pay period. How do I report them in HRMS? Also, I am a GG-15 step 8. So, am I working some of these hours for free?

Thanks,  
Jason

---

**From:** Wach, Lisa  
**Sent:** Monday, March 21, 2011 11:05 AM  
**To:** Schaperow, Jason  
**Cc:** Santiago, Patricia  
**Subject:** RE: REMINDER: Please have your T&L entered in HRMS by COB Thursday, March 24th. Thank you. <eom>

I would try Nadja Isakovic in our office, or Lawrence Davidson in HR to help with the HRMS entries.

---

**From:** Schaperow, Jason  
**Sent:** Monday, March 21, 2011 11:02 AM  
**To:** Wach, Lisa  
**Cc:** Santiago, Patricia  
**Subject:** RE: REMINDER: Please have your T&L entered in HRMS by COB Thursday, March 24th. Thank you. <eom>

Hi Lisa,

I appreciate the reminder. I think my HRMS entries may be very complicated this pay period, because I have been working in the Ops Center and at home all times of the day and night. Who can help me with my HRMS entries?

Thanks,  
Jason

---

**From:** Wach, Lisa  
**Sent:** Monday, March 21, 2011 9:06 AM

**To:** RES\_DSA

**Subject:** REMINDER: Please have your T&L entered in HRMS by COB Thursday, March 24th. Thank you. <eom>

**Importance:** High

## Lee, Richard

---

**From:** Gauntt, Randall O [rogaunt@sandia.gov]  
**Sent:** Wednesday, March 23, 2011 8:35 PM  
**To:** Kelly, John E (NE)  
**Cc:** Lee, Richard  
**Subject:** Water Level Diagnostics

John,

I would think it likely possibly to determine the water level in the drywell by acoustic means if one can excite the drywell shell with a sonic signal. I think it is possible to watch sonic reflections come back that are affected by the significant impedance encountered where the water level contacts the drywell shell. Acoustic guys are probably very good at interpreting wave speed in the steel and can see the reflection where the water level affects things.

Just a thought.

Randy

X/277

**Ward, Steven**

---

**From:** WINS Information [info@wins.org]  
**Sent:** Wednesday, March 23, 2011 11:23 AM  
**Subject:** WINS Special Publication on the Fukushima Daiichi accident

Dear Member,

WINS has produced a special publication on the lessons learnt from the Fukushima Daiichi accident.

The document is now available on our website!

Best regards,

**Mr. Jadallah Hammal**  
Project Manager  
E-mail: [jadallah.hammal@wins.org](mailto:jadallah.hammal@wins.org)  
Tel.: +43 1 23060 6086

WINS (World Institute for Nuclear Security)  
Graben 19,  
1010 Vienna,  
Austria  
[www.wins.org](http://www.wins.org)

X/218

## Rebstock, Paul

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**From:** Sydnor, Russell  
**Sent:** Thursday, March 24, 2011 8:47 AM  
**To:** Betancourt, Luis; Birla, Sushil; Burton, Thomas; Concepcion, Milton; Dion, Jeanne; Halverson, Derek; Hardin, Leroy; Rebstock, Paul; Sturzebecher, Karl; Waterman, Michael; Yang, Yaguang  
**Subject:** FW: SRM - COMGBJ-11-0002 - NRC Actions Following the Events in Japan  
**Attachments:** SRM-CmGBJ11-0002.docx

Attached has NRC plans for Short term and Long Term actions out of the Japanese Nuclear events.

Russell Sydnor  
Branch Chief  
NRC/RES/DE/DICB  
301-251-7405  
[Russell.Sydnor@nrc.gov](mailto:Russell.Sydnor@nrc.gov)

---

**From:** Richards, Stuart  
**Sent:** Wednesday, March 23, 2011 5:02 PM  
**To:** Boyce, Tom (RES); Csontos, Aladar; Gavrilas, Mirela; Hogan, Rosemary; Koshy, Thomas; Sydnor, Russell; Ali, Syed; Birla, Sushil; Murphy, Andrew; Santos, Daniel; Tregoning, Robert  
**Subject:** FW: SRM - COMGBJ-11-0002 - NRC Actions Following the Events in Japan

Fyi - Stu

---

**From:** Lewis, Antoinette  
**Sent:** Wednesday, March 23, 2011 4:34 PM  
**To:**  
**Subject:** SRM - COMGBJ-11-0002 - NRC Actions Following the Events in Japan

(ML110820875)

In an effort to keep the NRC staff informed of Commission decisions in a timely manner, attached for your information are the Staff Requirements Memoranda (SRMs) signed by the Secretary on March 23, 2011. Please make additional distribution to interested staff members in your office.

If you have any questions, please give me a call on 415-1969.

2/279

March 23, 2011

MEMORANDUM TO: Chairman Jaczko

FROM: Annette Vietti-Cook, Secretary /RA/

SUBJECT: COMGBJ-11-0002 – NRC ACTIONS FOLLOWING THE EVENTS  
IN JAPAN

This memorandum is to inform you that all Commissioners have concurred in your proposal regarding NRC actions following the events in Japan. The attached tasking memorandum provides staff direction on this issue.

This completes action on COMGBJ-11-0002.

Attachment:  
As stated

cc: Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
EDO  
OGC  
OPA  
OCA

March 23, 2011

MEMORANDUM TO: R. W. Borchardt  
Executive Director for Operations

FROM: Chairman Jaczko /RA/

SUBJECT: TASKING MEMORANDUM – COMGBJ-11-0002 – NRC  
ACTIONS FOLLOWING THE EVENTS IN JAPAN

The staff should establish a senior level agency task force to conduct a methodical and systematic review of our processes and regulations to determine whether the agency should make additional improvements to our regulatory system and make recommendations to the Commission for its policy direction. The review should address the following near term and then longer term objectives.

#### Near Term Review

- This task force should evaluate currently available technical and operational information from the events that have occurred at the Fukushima Daiichi nuclear complex in Japan to identify potential or preliminary near term/immediate operational or regulatory issues affecting domestic operating reactors of all designs, including their spent fuel pools, in areas such as protection against earthquake, tsunami, flooding, hurricanes; station blackout and a degraded ability to restore power; severe accident mitigation; emergency preparedness; and combustible gas control.
- The task force should develop recommendations, as appropriate, for potential changes to inspection procedures and licensing review guidance, and recommend whether generic communications, orders, or other regulatory requirements are needed.
- The task force efforts should be informed by some stakeholder input but should be independent of industry efforts.
- The report would be released to the public per normal Commission processes (including its transmission to the Commission as a Notation Vote Paper).

To ensure the Commission is both kept informed of these efforts and called upon to resolve any policy recommendations that surface, the task force should, at a minimum, be prepared to brief the Commission on a 30 day quick look report; on the status of the ongoing near term review at approximately the 60 day point; and then on the 90 day culmination of the near term efforts. Additional specific subject matter briefings and additional voting items that request Commission policy direction may also be added during the Commission's agenda planning meetings.

(EDO)

(SECY Suspense: 30, 60, & 90 days)

## Longer Term Review

- The task force's longer term review should begin as soon as NRC has sufficient technical information from the events in Japan with the goal of no later than the completion of the 90 day near term report, and the task force should provide updates on the beginning of the longer term review at the 30 and 60 day status updates.
- This effort would include specific information on the sequence of events and the status of equipment during the duration of the event.
- The task force should evaluate all technical and policy issues related to the event to identify potential research, generic issues, changes to the reactor oversight process, rulemakings, and adjustments to the regulatory framework that should be conducted by NRC.
- The task force should evaluate potential interagency issues such as emergency preparedness.
- Applicability of the lessons learned to non-operating reactor and non-reactor facilities should also be explored.
- During the review, the task force should receive input from and interact with all key stakeholders.
- The task force should provide a report with recommendations, as appropriate, to the Commission within six months from the start of the evaluation for Commission policy direction.
- The report would be released to the public per normal Commission processes (including its transmission to the Commission as a Notation Vote Paper).
- Before beginning work on the longer term review, staff should provide the Commission with estimated resource impacts on other regulatory activities.
- The ACRS should review the report as issued in its final form and provide a letter report to the Commission.

(EDO)

(SECY Suspense: 9 months, if needed)

cc: Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
OGC  
CFO  
OCA  
OPA  
Office Directors, Regions, ACRS, ASLBP (via E-Mail)  
PDR



**Valentine, Nicholee**

---

**From:** Bowman, Eric  
**Sent:** Thursday, March 24, 2011 12:36 PM  
**To:** Acevedo, Mariana (CIV)  
**Cc:** Rader, Robert  
**Subject:** RE: PPL Susquehanna, LLC v United States (04-0070)

Mariana,

I've checked through my files and been unable to locate the enclosure, which was issued by a different Office, the Office of Nuclear Security and Incident Response. I'll pull the string a bit to see if I can find the document, otherwise I'll have to turn this back over to Bob Rader.

Sorry about the delay.

Regards,

Eric

---

**From:** Acevedo, Mariana (CIV) [<mailto:Mariana.Acevedo@usdoj.gov>]  
**Sent:** Thursday, March 24, 2011 11:48 AM  
**To:** Bowman, Eric  
**Subject:** RE: PPL Susquehanna, LLC v United States (04-0070)

Eric,

My colleague has advised me that we need a copy of the enclosure. You can mail it to the address below.

Many thanks again for your help.

Best regards,

Mariana

Mariana Teresa Acevedo  
Trial Attorney  
United States Department of Justice  
Commercial Litigation Branch  
National Courts Section  
P.O. Box 480, Ben Franklin Station  
Washington, D.C. 20044  
(for overnight delivery, please use 1100 L Street, N.W., Room 7042, Washington, D.C. 20005)  
Ph. (202) 616-0316  
Fax (202) 514-8624

---

**From:** Bowman, Eric [<mailto:Eric.Bowman@nrc.gov>]  
**Sent:** Wednesday, March 23, 2011 1:23 PM  
**To:** Acevedo, Mariana (CIV)  
**Cc:** Rader, Robert; Rosenberg, Stacey  
**Subject:** RE: PPL Susquehanna, LLC v United States (04-0070)

X/280

Ms. Acevedo,

The letter itself and the first two enclosures are attached. The remaining enclosure is designated Safeguards Information. I would have to check upon my return to the office tomorrow to see if I have a copy of the enclosure in my safe. Please let me know if you need a copy of that enclosure as well.

Thanks.

Regards,

Eric

*Eric E. Bowman*  
Sr. Project Manager  
Generic Communications & Power Uprate Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-2963  
[Eric.Bowman@nrc.gov](mailto:Eric.Bowman@nrc.gov)

---

**From:** Acevedo, Mariana (CIV) [<mailto:Mariana.Acevedo@usdoj.gov>]  
**Sent:** Wednesday, March 23, 2011 11:15 AM  
**To:** Bowman, Eric  
**Subject:** PPL Susquehanna, LLC v United States (04-0070)

Mr. Bowman,

Per our earlier conversation, please send us a copy of the July 29, 2004 letter from the NRC to licensees regarding issuance of spent fuel pool mitigation measures referenced in the materials provided to us last week.

Thanks in advance for your help.

Best regards,

Mariana Teresa Acevedo  
Trial Attorney  
United States Department of Justice  
Commercial Litigation Branch  
National Courts Section  
P.O. Box 480, Ben Franklin Station  
Washington, D.C. 20044  
(for overnight delivery, please use 1100 L Street, N.W., Room 7042, Washington, D.C. 20005)  
Ph. (202) 616-0316  
Fax (202) 514-8624

## Pelton, David

---

**From:** Dias, Antonio  
**Sent:** Friday, March 25, 2011 10:55 AM  
**To:** Galloway, Melanie; Hiser, Allen; Lund, Louise; Auluck, Rajender; Imboden, Andy; Pelton, David; Pham, Bo; Wertz, Trent; Wrona, David  
**Cc:** Holian, Brian  
**Subject:** RE: Any Nominees for a 3rd team to Japan?

I would suggest Don Brittner for items (a) & (c). His Oyster Creek experience, including years of accident drill simulations, would be a great value. Don is currently sharing his expertise with the Ops Center. He has been attending a few meetings there.

For item (b) I suggest Bob Gramm. About 4-5 years ago he was involved in the development of the B5b process. I understand he had a leading role representing NRR.

I talked to both of them and they are interested. There are, of course, several questions the need to be addressed: when, where, how long, ...

- Antonio

---

**From:** Galloway, Melanie  
**Sent:** Friday, March 25, 2011 10:22 AM  
**To:** Hiser, Allen; Lund, Louise; Auluck, Rajender; Dias, Antonio; Imboden, Andy; Pelton, David; Pham, Bo; Wertz, Trent; Wrona, David  
**Cc:** Holian, Brian  
**Subject:** Any Nominees for a 3rd team to Japan?

Do any of your or your staffs have strong backgrounds in the following? If so, would he or she have availability to go to Japan?

- a. Severe Accident management knowledge
- b. B5b knowledge
- c. Accident Recovery knowledge

Please respond by 8 am Monday. Thanks.

x/281

**From:** Rini, Brett  
**To:** Richards, Stuart; Case, Michael; Coyne, Kevin; Coe, Doug; Gibson, Kathy; Elkins, Scott  
**Cc:** Sheron, Brian; Uhle, Jennifer  
**Subject:** FYI: RST Watch Bill through April 9th  
**Date:** Friday, March 25, 2011 12:37:36 PM  
**Attachments:** 03-24 to 04-09 RST Watch Bill.xlsx

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Division Directors,

Here is the most up to date watch bill for the Reactor Safety Team. All the positions have been filled through day shift on Friday, April 1. For your staff that are interested in joining the RST, I recommend they shadow someone in their position for at least a ½ shift, if not a full shift, to ensure they understand the duties of the position. I'm working swing shift this afternoon, and I will discuss this with the RST schedulers. I will also send out the specific duties of the positions that are being staffed, so staff can identify what position(s) they are qualified for.

If it would make things easier, I'm willing to serve as the RES POC for coordinating staffing of RES employees during our response to this event.

Let me know if you have any questions.

Thanks,

Brett

*Brett A. Rini*  
Technical Assistant  
Office of Nuclear Regulatory Research  
U.S. Nuclear Regulatory Commission  
(301)251-7615  
Brett.Rini@nrc.gov

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**From:** RST13 Hoc  
**Sent:** Friday, March 25, 2011 11:37 AM  
**To:** Brown, Frederick; Hasselberg, Rick; Circle, Jeff; Alter, Peter; Thorp, John; Ruland, William; Rini, Brett; Laur, Steven; Norton, Charles; Hart, Ken; Holian, Brian; Boyce, Tom (RES); Helton, Donald; Brown, Eva; Roggenbrodt, William; Hiland, Patrick; Thomas, Eric; Arndt, Steven; Summers, Raymond; Williams, Donna; Solorio, Dave; Collins, Frank; Reeves, Rosemary; Brown, Michael; Orr, Mark; Dozier, Jerry; Gardocki, Stanley; Skeen, David; Skarda, Raymond; McGovern, Denise; Howe, Andrew; Padovan, Mark; Mitman, Jeffrey; Gilmer, James; Ward, Leonard; Jervey, Richard; Morlang, Gary; Harrison, Donnie; Shea, James; Horn, Brian; Uhle, Jennifer; Esmaili, Hossein; Schoenebeck, Greg; Fuller, Edward; Kugler, Andrew; Bloom, Steven; Case, Michael; Chung, Donald; Bukharin, Oleg; Dudes, Laura; RST02 Hoc; RST03 Hoc; RST04 Hoc; RST05 Hoc; RST06 Hoc; RST07 Hoc; RST08 Hoc; RST09 Hoc; RST10 Hoc; RST11 Hoc; RST12 Hoc; RST13 Hoc; RST14 Hoc; RST15 Hoc  
**Cc:** Dozier, Jerry; Gray, Kathy; Hasselberg, Rick; Alter, Peter; RST01 Hoc  
**Subject:** URGENT RST Watch Bill through April 9th

Good Morning,

Attached and below is the Reactor Safety Team Watch Bill that goes through Saturday April 9 th [the end of the next pay period].

You have either signed up for or said you would cover the positions during the time/dates indicated.

If there are any mistakes on our part please email [rst01.hoc@nrc.gov](mailto:rst01.hoc@nrc.gov) [rick.hasselberg@nrc.gov](mailto:rick.hasselberg@nrc.gov) [peter.alter@nrc.gov](mailto:peter.alter@nrc.gov) as soon as possible. Also please volunteer for the RST Coordinator, BWR Expert, and RST Communicator positions that are blank.

If you wish to add to or change the RST Director Watch Bill, please contact [Kathy.Gray@nrc.gov](mailto:Kathy.Gray@nrc.gov) she is the POC for the RST Director Watch Bill. She will forward any changes to Rick and Peter [and RST01].

If you wish to add to or change the Accident Analyst Watch Bill, please contact [Jerry.Dozier@nrc.gov](mailto:Jerry.Dozier@nrc.gov) he is the POC for the Accident Analyst Watch Bill. He is also trying to get some volunteers from Research and NRO. He will forward any changes to Rick and Peter [and RST01].

*Rick & Peter*

Date	Day	Time	Shift	RST Director	RST Coordinator	Accident Analyst	BWR Expert	RST Communicator
3/24/2011	Thursday	0700 - 1500	Day	Fred Brown	R Hasselberg	Jeff Circle	Peter Alter	John Thorp
3/24/2011	Thursday	1500 - 2300	Swing	Bill Ruland	Brett Rini	Steve Laur	Chuck Norton	Ken Hart
2/24/2011	Thursday	2300 - 0700	Midnight	Brian Holian	Tom Boyce	Don Helton	Eva Brown	Bill Roggenbrodt
3/25/2011	Friday	0700 - 1500	Day	Pat Hiland	Eric Thomas	Steve Arndt	Bob Summers	Donna Williams

X/282

3/25/2011	Friday	1500 - 2300	Swing	Bill Ruland	Brett Rini	Steve Laur	Chuck Norton	Dave Solorio
3/25/2011	Friday	2300 - 0700	Midnight	Brian Holian	Frank Collins	Don Helton	Eva Brown	R Reeves
3/26/2011	Saturday	0700 - 1500	Day	Pat Hiland	Eric Thomas	Steve Arndt	Mike Brown	John Thorp
3/26/2011	Saturday	1500 - 2300	Swing	Bill Ruland	Mark Orr	Jerry Dozier	Chuck Norton	Stan Gardocki
3/26/2011	Saturday	2300 - 0700	Midnight	Dave Skeen	Bret Rini	Ray Skarda	Eva Brown	Denise McGovern
3/27/2011	Sunday	0700 - 1500	Day	Pat Hiland	Peter Alter	Andy Howe	Mike Brown	Mark Padovan
3/27/2011	Sunday	1500 - 2300	Swing	Fred Brown	R Hasselberg	Jeff Mitman	Chuck Norton	Bill Roggenbrodt
3/27/2011	Sunday	2300 - 0700	Midnight	Dave Skeen	Frank Collins	Jim Gilmer	Eva Brown	Denise McGovern
3/28/2011	Monday	0700 - 1500	Day	Pat Hiland	Peter Alter	Jeff Circle	Mike Brown	Mark Padovan
3/28/2011	Monday	1500 - 2300	Swing	Fred Brown	R Hasselberg	Len Ward	Chuck Norton	Rick Jervey
3/28/2011	Monday	2300 - 0700	Midnight	Dave Skeen	Mike Morlang	Donnie Harrison	Jim Shea	Brain Horn
3/29/2011	Tuesday	0700 - 1500	Day	Jennifer Uhle	Brett Rini	Hossein Esmaili	Mike Brown	John Thorp
3/29/2011	Tuesday	1500 - 2300	Swing	Fred Brown	G. Schoenebeck	Ed Fuller	Chuck Norton	Andy Kugler
3/29/2011	Tuesday	2300 - 0700	Midnight	Dave Skeen	Mike Morlang	Donnie Harrison	Jim Shea	Brain Horn
3/30/2011	Wednesday	0700 - 1500	Day	Jennifer Uhle	Peter Alter	Jim Gilmer	Mike Brown	Steve Bloom
3/30/2011	Wednesday	1500 - 2300	Swing	Fred Brown	G Schoenebeck	Hossein Esmaili	Chuck Norton	Bill Roggenbrodt
3/30/2011	Wednesday	2300 - 0700	Midnight	Mike Case	Frank Collins	Steve Arndt	Jim Shea	
3/31/2011	Thursday	0700 - 1500	Day	Jennifer Uhle	Peter Alter	Don Chung	Mike Brown	Jerry Dozier
3/31/2011	Thursday	1500 - 2300	Swing	Bill Ruland	G Schoenebeck	Hossein Esmaili	Chuck Norton	John Thorp
3/31/2011	Thursday	2300 - 0700	Midnight	Mike Case	Frank Collins	Steve Arndt	Jim Shea	
4/1/2011	Friday	0700 - 1500	Day	Jennifer Uhle	Brett Rini	Jeff Mitman	Mike Brown	Andy Kugler
4/1/2011	Friday	1500 - 2300	Swing	Bill Ruland		Don Helton	Chuck Norton	
4/1/2011	Friday	2300 - 0700	Midnight	Mike Case	Frank Collins	Ray Skarda	Eva Brown	
4/2/2011	Saturday	0700 - 1500	Day	Brian Holian	Peter Alter		Mike Brown	John Thorp
4/2/2011	Saturday	1500 - 2300	Swing	Bill Ruland	Brett Rini		Chuck Norton	
4/2/2011	Saturday	2300 - 0700	Midnight	Mike Case	Oleg Bukharin		Eva Brown	
4/3/2011	Sunday	0700 - 1500	Day	Brian Holian			Mike Brown	
4/3/2011	Sunday	1500 - 2300	Swing	Bill Ruland	Eric Thomas	Jerry Dozier	Chuck Norton	Andy Kugler
4/3/2011	Sunday	2300 - 0700	Midnight	Laura Dudes	Frank Collins			
4/4/2011	Monday	0700 - 1500	Day	Brian Holian	Peter Alter		Mike Brown	
4/4/2011	Monday	1500 - 2300	Swing			Hossein Esmaili	Chuck Norton	John Thorp
4/4/2011	Monday	2300 - 0700	Midnight	Laura Dudes	Mike Morlang			
4/5/2011	Tuesday	0700 - 1500	Day	Brian Holian		Jim Gilmer	Mike Brown	
4/5/2011	Tuesday	1500 - 2300	Swing		G. Schoenebeck	Ed Fuller	Chuck Norton	Andy Kugler
4/5/2011	Tuesday	2300 - 0700	Midnight	Laura Dudes	Mike Morlang			
4/6/2011	Wednesday	0700 - 1500	Day	Mike Case	Peter Alter		Mike Brown	Steve Bloom
4/6/2011	Wednesday	1500 - 2300	Swing	Brian Holian	G. Schoenebeck		Chuck Norton	
4/6/2011	Wednesday	2300 - 0700	Midnight	Fred Brown	Frank Collins			Rick Jervey
4/7/2011	Thursday	0700 - 1500	Day	Mike Case			Mike Brown	John Thorp
4/7/2011	Thursday	1500 - 2300	Swing		G. Schoenebeck		Chuck Norton	
4/7/2011	Thursday	2300 - 0700	Midnight					
4/8/2011	Friday	0700 - 1500	Day					
4/8/2011	Friday	1500 - 2300	Swing					
4/8/2011	Friday	2300 - 0700	Midnight					
4/9/2011	Saturday	0700 - 1500	Day					
4/9/2011	Saturday	1500 - 2300	Swing					
4/9/2011	Saturday	2300 - 0700	Midnight					

03-24 to 04-09 RST Watch Bill.xlsx

<u>Date</u>	<u>Day</u>	<u>Time</u>	<u>Shift</u>	<u>RST Director</u>	<u>RST Coordinator</u>	<u>Accident Analyst</u>	<u>BWR Expert</u>	<u>RST Communicator</u>
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3/27/2011	Sunday	2300 - 0700	Midnight	Dave Skeen	Frank Collins	Jim Gilmer	Eva Brown	Denise McGovern
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3/28/2011	Monday	1500 - 2300	Swing	Fred Brown	R Hasselberg	Len Ward	Chuck Norton	Rick Jervey
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3/29/2011	Tuesday	1500 - 2300	Swing	Fred Brown	G Schoenebeck	Ed Fuller	Chuck Norton	Andy Kugler
3/29/2011	Tuesday	2300 - 0700	Midnight	Dave Skeen	Mike Morlang	Donnie Harrison	Jim Shea	Brain Horn
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3/31/2011	Thursday	1500 - 2300	Swing	Bill Ruland	G Schoenebeck	Hossein Esmaili	Chuck Norton	John Thorp
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4/2/2011	Saturday	2300 - 0700	Midnight	Mike Case	Oleg Bukharin		Eva Brown	
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4/3/2011	Sunday	1500 - 2300	Swing	Bill Ruland	Eric Thomas	Jerry Dozier	Chuck Norton	Andy Kugler
4/3/2011	Sunday	2300 - 0700	Midnight	Laura Dudes	Frank Collins			

## 03-24 to 04-09 RST Watch Bill.xlsx

<u>Date</u>	<u>Day</u>	<u>Time</u>	<u>Shift</u>	<u>RST Director</u>	<u>RST Coordinator</u>	<u>Accident Analyst</u>	<u>BWR Expert</u>	<u>RST Communicator</u>
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4/4/2011	Monday	1500 - 2300	Swing			Hossein Esmali	Chuck Norton	John Thorp
4/4/2011	Monday	2300 - 0700	Midnight	Laura Dudes	Mike Morlang			
4/5/2011	Tuesday	0700 - 1500	Day	Brian Holian		Jim Gilmer	Mike Brown	
4/5/2011	Tuesday	1500 - 2300	Swing		G Schoenebeck	Ed Fuller	Chuck Norton	Andy Kugler
4/5/2011	Tuesday	2300 - 0700	Midnight	Laura Dudes	Mike Morlang			
4/6/2011	Wednesday	0700 - 1500	Day	Mike Case	Peter Alter		Mike Brown	Steve Bloom
4/6/2011	Wednesday	1500 - 2300	Swing	Brian Holian	G Schoenebeck		Chuck Norton	
4/6/2011	Wednesday	2300 - 0700	Midnight	Fred Brown	Frank Collins			Rick Jervey
4/7/2011	Thursday	0700 - 1500	Day	Mike Case			Mike Brown	John Thorp
4/7/2011	Thursday	1500 - 2300	Swing		G Schoenebeck		Chuck Norton	
4/7/2011	Thursday	2300 - 0700	Midnight					
4/8/2011	Friday	0700 - 1500	Day					
4/8/2011	Friday	1500 - 2300	Swing					
4/8/2011	Friday	2300 - 0700	Midnight					
4/9/2011	Saturday	0700 - 1500	Day					
4/9/2011	Saturday	1500 - 2300	Swing					
4/9/2011	Saturday	2300 - 0700	Midnight					

**Ramsey, Kevin**

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**From:** ANS Broadcasts [broadcasts@ans.org]  
**Sent:** Saturday, March 26, 2011 8:34 AM  
**To:** Ramsey, Kevin  
**Subject:** ANS Technical Brief: MOX Fuel & Fukushima  
**Attachments:** ANS-Technical-Brief-MOX-Fukushima.pdf

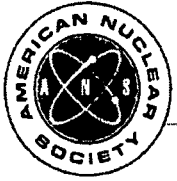
The ANS Special Committee on Nuclear Non-Proliferation has prepared the attached Technical Brief on The Impact of Mixed Oxide Fuel Use on Accident Consequences at Fukushima Daiichi.

For additional Fukushima resources, visit the "Featured Content" box on the front page of the American Nuclear Society's website:

<http://www.ans.org/>

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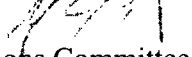
## AMERICAN NUCLEAR SOCIETY

555 North Kensington Avenue  
La Grange Park, Illinois  
60526-5592 USA

Tel: 708 / 352-6611  
E-Mail: [NUCLEUS@ans.org](mailto:NUCLEUS@ans.org)  
<http://www.ans.org>  
Fax: 708 / 352-0499

Date: March 25, 2011

To: Joe Colvin  
ANS President

From: Michael (Mikey) Brady Raap   
Chair, ANS Professional Divisions Committee

Below please find the Technical Brief on The Impact of Mixed Oxide Fuel Use on Accident Consequences at Fukushima Daiichi. This Technical Brief contains factual information prepared by the ANS Special Committee on Nuclear Non-Proliferation.

### **The Impact of Mixed Oxide Fuel Use on Accident Consequences at Fukushima Daiichi**

**American Nuclear Society Technical Brief – March 2011**

#### **Conclusion**

Mixed Oxide (MOX) fuel has been used safely in nuclear power reactors for decades. The presence of a limited number of MOX fuel assemblies at Fukushima Daiichi Unit 3 has not had a significant impact on the ability to cool the reactor or on any radioactive releases from the site due to damage from the earthquake and tsunami.

#### **Summary**

At the time of the magnitude 9.0 earthquake, Fukushima Daiichi Unit 3 was operating with 32 mixed oxide (MOX) fuel assemblies and 516 low enriched uranium (LEU) fuel assemblies in its reactor core. In other words, less than 6% of the fuel in the Unit 3 core was MOX fuel. There were no other MOX fuel assemblies (new, in operation or used) at the Fukushima Daiichi plant at the time of the accident.

MOX fuel assemblies were loaded into Fukushima Daiichi Unit 3 for the first time in the fall of 2010. The MOX fuel had been used for less than five months at the time of the accident. Differences in initial fuel composition between MOX and LEU fuel can lead to differences in consequences (prompt fatalities and latent cancers) following a core damage event with releases to the environment.

There are indications that Fukushima Daiichi Unit 3 suffered damage to some of its core. The core damage resulted from a loss of core cooling due to damage to plant systems from the tsunami that followed the earthquake. The damage was not related to the presence of MOX fuel.

There have been no prompt fatalities as a result of radiation exposure from Fukushima Daiichi. Prompt evacuation has minimized radiation exposure to the public, so long-term public health consequences from radiation exposure are expected to be small. Given the small number of MOX fuel assemblies at Fukushima Daiichi Unit 3 at the time of the event, coupled with the short time of irradiation of the MOX fuel, it can be concluded that MOX fuel has had and will have no perceptible impact on any consequences from the event.

## **Background**

It is important to note that while LEU fuel begins its useful life with no plutonium, as it is used in a light water reactor it builds up plutonium as a result of the nuclear reactions in the core. By the end of its useful life an LEU fuel assembly contains about 1% plutonium actually generates more power from plutonium than from uranium. All reactor cores contain plutonium; those cores loaded with some MOX fuel contain more.

Mixed oxide (MOX) fuel is comprised of a blend of uranium oxide and plutonium oxide. MOX fuel is predominantly uranium, with average concentrations of plutonium that range from 3-10%. The presence of plutonium produces modest changes in some physical characteristics of the fuel material such as thermal conductivity. However, MOX fuel and low-enriched uranium (LEU) fuel are fundamentally similar. Moreover, the physical dimensions and structural material of a MOX fuel assembly are essentially identical to that of a LEU fuel assembly. To the naked eye, a MOX fuel assembly and a LEU fuel assembly are identical.

Nuclear power plants have been generating electricity for use by the public since the 1950s, and over those years the industry has compiled an enviable safety record. Today over 400 reactors worldwide generate substantial amounts of emissions-free electricity. Dozens of those reactors currently generate power using a mixture of conventional LEU fuel assemblies and MOX fuel assemblies in their reactor cores. The majority of the fuel loaded into these reactors is LEU (60-70% or more), while the remainder (30-40% or less) is MOX. The use of MOX fuel allows the re-use of plutonium that was recovered during nuclear fuel recycling operations. The fabrication and use of MOX fuel has been carried out safely and efficiently on an industrial scale since the 1970s. Safety authorities in France, Belgium, Germany, Switzerland and Japan have all approved the use of MOX fuel in light water reactors using the same rigorous standards that are applied for the licensing of LEU fuel.

Safety is the cornerstone of nuclear power plant operations. Nuclear power plant operators perform safety analyses to determine how the plants will respond during various “what if” problem scenarios. Some of those scenarios involve extreme conditions coupled with multiple equipment failures that lead to estimates of damage to the fuel in the reactor core. Scenarios with significant damage to the reactor core are referred to as severe accidents, and such accidents can result in the calculated release of radionuclides to the environment. Severe accident consequences are the adverse public health effects – fatalities and latent cancers – that arise from the offsite release of radionuclides from a damaged reactor core.

When uranium or plutonium atoms split (fission), they release a relatively large amount of energy which is converted into heat and eventually electricity. The smaller atoms left behind after fission are referred to as fission products. In addition, some of the uranium and plutonium atoms in nuclear fuel assemblies absorb neutrons without fissioning, becoming even heavier atoms called actinides. Both fission products and actinides are radioactive, posing a health hazard if they are released to the environment. Using MOX fuel alters somewhat the “source term,” or mix of radionuclides in the core and available for release following a severe accident. The different source term between MOX fuel and LEU fuel leads to different calculated consequences following a postulated severe accident.

In November 1999 the Department of Energy published the Surplus Plutonium Disposition Environmental Impact Statement which documented, among other things, the consequences of four severe accident scenarios at three different reactors using some MOX fuel derived from weapons grade plutonium. Each reactor accident sequence was analyzed with two different reactor core assumptions: a reference case with all LEU fuel, and a second case with a mixed core of approximately 40% MOX fuel and the remainder LEU fuel. For each case the severe accident was assumed to progress in the same manner. Relative to the reference case with all LEU fuel, the offsite consequences to the public with the mixed MOX-LEU core ranged from 4% lower to 22% higher, depending on the reactor studied and the accident sequence. Most cases resulted in consequence increases of 10% or less. The differences between the consequences relate back to differences in the source term. The mixed MOX-LEU core consequences were generally higher because of the presence of more radioactive actinides in the MOX fuel at the time of the postulated accident. However, the differences were modest compared to the uncertainty associated with the consequence calculations for these extremely low probability events.

The type of plutonium used in MOX fuel can also impact severe accident consequences. The aforementioned analysis assumed weapons grade plutonium. If the calculations had been done for MOX fuel containing plutonium from recycled commercial nuclear fuel, as is the practice in Europe and Asia today, the difference between the all uranium cases and the 40% MOX fuel consequences would have been greater than cited above. This is again due primarily to the presence of more radioactive actinides in used “reactor grade” MOX fuel (with plutonium from recycled reactor fuel) than in used weapons grade MOX fuel (with plutonium from retired nuclear weapons).

Turning to the Fukushima Daiichi reactors in Japan, Unit 3 was using some reactor grade MOX fuel at the time of the March 2011 earthquake. Had it been using a 40% MOX fuel core, one could expect an increase in severe accident consequences on the order of 10% for weapons grade MOX. With a 40% reactor grade MOX core, and applying a bounding factor of four increase relative to weapons grade MOX, the overall increase in severe accident consequences would have been on the order of 40% relative to the all LEU fuel case. However, Unit 3 was loaded with only 32 MOX fuel assemblies during refueling operations in the fall of 2010. There are a total of 548 fuel assemblies in the Unit 3 reactor core, so this represents less than 6% of the total fuel in the core. The MOX fuel had been operating in Unit 3 for less than five months; fuel assemblies are typically used for a total of 3-4 years in reactor cores before being replaced by new fuel and discharged to used fuel pools. Therefore, the MOX fuel would have built up relatively few radioactive fission products and actinides at the time of the earthquake and subsequent damage to the reactor core. With these facts in mind – the low percentage of MOX fuel in the core and the short operation time for the MOX fuel – it is evident that the presence of MOX fuel at Fukushima Daiichi Unit 3 has had no significant impact on the offsite releases of radioactivity following the earthquake and tsunami.

Other than the 32 MOX fuel assemblies in the Unit 3 reactor core, at the time of the earthquake there were no other MOX fuel assemblies (new or used) at the Fukushima Daiichi plant. The problems encountered at Fukushima Daiichi reactors stem from plant damage due to the tsunami that followed the earthquake, not the use of MOX fuel in Unit 3.

It is also important to put the public health consequences from the event in perspective. There have been no prompt fatalities as a result of radiation exposure. Moreover, prompt evacuation has minimized the exposure of the population to radiation. At this point, the consequences of the event are expected to be small. MOX fuel effects, if any, would be a small change to an already small number.

In conclusion, MOX fuel has been used safely in nuclear power reactors for decades. The presence of a limited number of MOX fuel assemblies at Fukushima Daiichi Unit 3 has not had a significant impact on the ability to cool the reactor or on any radioactive releases from the site due to damage from the earthquake and tsunami.

**Bano, Mahmooda**

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**From:** Scott, Michael  
**Sent:** Sunday, March 27, 2011 6:22 PM  
**To:** Taylor, Robert  
**Subject:** RE: Status & Recommendations 3-26-11 21 hrs.docx

Your career likely over. He's probably piling it higher and deeper. ☺

---

**From:** Taylor, Robert  
**Sent:** Sunday, March 27, 2011 8:22 AM  
**To:** 'John\_P\_Holdren@ostp.eop.gov'  
**Cc:** 'JohnE.Kelly@nuclear.energy.gov'; 'cherryRC@state.gov'; Scott, Michael; Casto, Chuck  
**Subject:** FW: Status & Recommendations 3-26-11 21 hrs.docx

Mr. Holdren,

We were asked to email you the NRC's latest assessment document regarding the status of the Fukushima Daiichi nuclear power plants. We plan to provide the attached to our Japanese counterparts at NISA tomorrow so that we can continue our dialogue on the ongoing efforts to bring this issue to a safe closure. This continues to be a living document that we will periodically update as new information becomes available.

Please let us know if you have any questions.

Best regards,  
Rob Taylor  
NRC Japan Team

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**From:** RST01 Hoc  
**Sent:** Saturday, March 26, 2011 10:56 PM  
**To:** Blamey, Alan; Casto, Chuck; Dorman, Dan; GE Hitachi; Giessner, John; INPO ERC Main; INPO ERC Tech; John Kelly DOE; Monninger, John; Richard Stark - DOE; Rob Versluis - DOE; RST01B Hoc; RST03 Hoc; Sal Golub - DOE; Scott, Michael; Taylor, Robert  
**Cc:** Ruland, William; RST07 Hoc; RST08 Hoc; RST09 Hoc; RST03 Hoc; LIA07 Hoc; Orr, Mark  
**Subject:** Status & Recommendations 3-26-11 21 hrs.docx

Team:

Attached is the RST's Consensus Assessment of Fukushima Daiichi Units with input from the team.

Mark Orr  
RST Coordinator

## Galloway, Melanie

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**From:** Galloway, Melanie  
**Sent:** Wednesday, March 30, 2011 4:17 PM  
**To:** Bahadur, Sher  
**Subject:** RE: Teams to Japan

Sher,  
Sorry if I wasn't clear—I was hoping to get the agency list for the first team. Do you have?

Melanie

**From:** Bahadur, Sher  
**Sent:** Wednesday, March 30, 2011 4:14 PM  
**To:** Galloway, Melanie; Hiland, Patrick; Skeen, David; Brown, Frederick; McGinty, Tim; Blount, Tom; Giitter, Joseph; Nelson, Robert; Howe, Allen; Lee, Samson; Ruland, William; Givvines, Mary; Ferrell, Kimberly; Lubinski, John; Westreich, Barry; Thomas, Brian; Holian, Brian; Cheok, Michael  
**Subject:** Teams to Japan

In response to the question in Division Director Meeting this morning, following is the information on the teams to Japan:

Initial Team: Tony Ulses (NRR/DSS), Jim Trapp (RI/DRS)

1<sup>st</sup> Team: Tony Nakanishi (NRR/DSS), Tim Kolb (NRR/DIRS)

2<sup>nd</sup> Team: Rob Taylor (NRR/DCI), Abdul Sheikh (NRR/DLR)

3<sup>rd</sup> Team: No Selection is made yet. NRR nominees are Steve Arndt (NRR/DE), Tim Lupold (NRR/DCI)

Michele Evans (NSIR) is responsible for making final team selections.

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**SHER BAHADUR; DIRECTOR (ACTING)**  
NRR/DIVISION OF SAFETY SYSTEMS  
301-415-3263  
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## Galloway, Melanie

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**From:** Galloway, Melanie  
**Sent:** Wednesday, March 30, 2011 4:52 PM  
**To:** Wrona, David  
**Subject:** 3rd team to Japan

Just got work that no one from NRR was selected for the 3<sup>rd</sup> time. I suspect there's a prevailing thought that we are being taxed enough. Please let Rick know.

I do understand that there is a possibility of a 4<sup>th</sup> team. If the qualifications criteria are the same, I would suspect that we would nominate Rick again.

Thanks for forwarding his name and thank him for volunteering.

## Arndt, Steven

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**From:** Marksberry, Don  
**Sent:** Saturday, April 02, 2011 12:23 PM  
**To:** Tinkler, Charles; Helton, Donald; Esmaili, Hossein; Arndt, Steven; Schaperow, Jason; Salay, Michael  
**Cc:** Drouin, Mary  
**Subject:** New Status Info from 11:00 RST Call today (Saturday)

- Unit 1 - The Japanese estimated a 10 to 30% per day drywell turnover leakage; most likely from failed penetration(s). This info came from the Site Team during the 3:00 am call.
- Unit 1 - Concerning H2 and O2 concentrations:
  - The Japanese estimates concentrations of 1-3% O2 and 1-12% H2 (no one knows how they came up with this estimate).
  - GEH or EPRI (not sure who was talking) estimated concentrations of 8% O2 and 45% H2

Please delete after reading (since this is second or third hand information).

Thanks.



**Freeman, Eric**

**From:** Carnegie Endowment for International Peace [info@ceip.org]  
**Sent:** Thursday, April 07, 2011 5:27 PM  
**To:** Freeman, Eric  
**Subject:** Bahrain, Iran, and Japan's Nuclear Crisis

Commentary and Analysis from the Global Think Tank



APRIL 7, 2011



## Bahrain: Between the United States and Saudi Arabia

Marina Ottaway | commentary

The protests in Bahrain are not only a domestic struggle for political rights and liberal reform, but also part of the country's sectarian divide, writes [Marina Ottaway](#). The protests are reflective of the growing conflict between Saudi Arabia and the United States—with Iran ready to take advantage of the tension. | [Read More](#)

### More on the Region

[Democracy in the Arab World](#) (Mathews | PBS NewsHour)

[The Arab Reawakening](#) (Freeman | commentary)

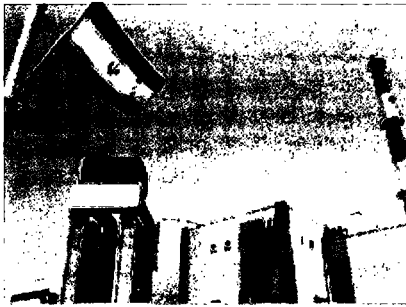
[What Does Auschwitz Have to Do With Benghazi?](#) (Naim | op-ed, Huffington Post)

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FOCUS ON IRAN

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## Will Fukushima Force Iran to Reconsider Nuclear Program?

Sadjadpour, Vaez, and Ghadar | op-ed, *Atlantic*

In light of Japan's nuclear crisis, a growing number of Iranian opinion makers are arguing that Tehran's nuclear program is in fact endangering—not enhancing—the security and economic well-being of its citizenry, write [Karim Sadjadpour](#), Ali Vaez, and Fariborz Ghadar. | [More](#)

### CARNEGIE COMMENTARY AND ANALYSIS



## Nuclear Crisis in Japan: Preliminary Policy Implications for China

commentary | Kevin Tu explains that

the ongoing nuclear crisis in Japan is expected to have a profound psychological impact on decision makers and ordinary citizens in China, where the world's most ambitious nuclear construction is scheduled to unfold in the coming decade.



## Too Big to Fail

op-ed, *World Affairs Journal* | [Michele Dunne](#) and Jeffrey Gedmin argue that it is in the West's interest to support Egypt for the long haul, not only for the sake of Egypt's

citizens but also to establish a successful Arab democracy.



## Belarus: Crushing Human Rights at Home?

testimony | In the wake of December's presidential election in Belarus and subsequent wave of political repression, [Matthew Rojansky](#) outlines steps the West should take to respond to the crackdown and lay the groundwork for positive, democratic

change in Belarus.

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Ottaway | commentary

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event, March 28-29

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event, March 25

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Ottaway and Kaysi | commentary

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**eric.freeman@nrc.gov** is subscribed to receive announcements and invitations from the Carnegie Endowment.

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## Carnegie Endowment for International Peace

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**Allen, Linda**

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**From:** Hiltz, Thomas  
**Sent:** Wednesday, April 13, 2011 11:38 AM  
**To:** Allen, Linda  
**Subject:** FW: FOR OFFICIAL USE ONLY : 0700 Talking Points Update  
**Attachments:** Talking Points Two Pager. 031711. 0700 EDT.docx

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**From:** Tschiltz, Michael  
**Sent:** Thursday, March 17, 2011 8:23 AM  
**To:** Smith, Brian; Habighorst, Peter; Hiltz, Thomas; Silva, Patricia; Bailey, Marissa; Johnson, Robert; Campbell, Larry  
**Subject:** FOR OFFICIAL USE ONLY : 0700 Talking Points Update

Attached .. please feel free to share with your staff with the precaution that this is OOU.. Also, inquiries from outside the agency should be referred to the Office of Public Affairs.

Thanks, Mike

---

**From:** LIA07 Hoc  
**Sent:** Thursday, March 17, 2011 7:27 AM  
**To:** LIA07 Hoc; Borchardt, Bill; Virgilio, Martin; Weber, Michael; Jaczko, Gregory; Pace, Patti; Speiser, Herald; Gibbs, Catina; Leeds, Eric; Haney, Catherine; Sheron, Brian; Johnson, Michael; Walker, Dwight; Flory, Shirley; Ostendorff, William; Svinicki, Kristine; Apostolakis, George; Magwood, William  
**Subject:** 0700 Talking Points Update

Please find attached a 0700 NRC talking points. This update corrects a statement in the 0600 talking points regarding the US State Department's actions for its employees in Japan.

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

Thank you,

-Jim

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

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NRC "Talking Points" – Current as of March 17, 2011, 0600 EDT

### Reactor Status

- Fukushima Daiichi Units 1 - 6
  - TEPCO is working to restore site power and anticipates restoration to Units 2, 5, and 6 today and Units 1, 3, and 4 tomorrow.

#### Unit 1

- Core damage occurred due to insufficient cooling water caused by loss of offsite power and onsite diesel generators following the tsunami
- As of 2200 JST (0900 EDT) on March 14, it is reported that sea water is being injected with reported stable cooling
- Containment described as "functional"
- Hydrogen explosion from overheated fuel-water reaction has damaged reactor building (secondary containment)
- The spent fuel pool level is unknown
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- Core cooling is via the core spray header.

#### Unit 2

- Core damage occurred due to insufficient cooling water caused by loss of offsite power and onsite diesel generators following the tsunami
- Reactor Core Isolation Cooling (RCIC) has failed
- Secondary containment: Cut hole in the side of the reactor building superstructure to reduce likelihood of hydrogen gas buildup
- Sea water injection restarted with core cooling reported as not stable
- Primary containment is intact
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- The spent fuel pool level is unknown. Some water is available as evidenced by steam emanating from hole.

#### Unit 3

- Core damage due to insufficient cooling water caused by loss of offsite power and onsite diesel generators following the tsunami
- Sea water is being injected with reported stable cooling
- Hydrogen explosion from overheated fuel-water reaction has severely damaged reactor building (secondary containment)
- Primary containment described as "functional"
- The spent fuel pool level is possibly drained – some evidence of steam.
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- Unit 3 is currently TEPCO's priority (unclear whether reactor or spent fuel pool)
- Water cannon should be onsite soon (as of 0400 EDT)

#### Unit 4

- Unit was in a refueling outage at the time of the event and core was off loaded to the SFP
- First fire in the reactor building was a small generator lube oil fire. IAEA reports that fire was put out at 2200 EDT, March 14.
- Radiation levels 150-1000 mrem/hour at 1000 EDT on March 16, 2011, at site gate. (Site gate is same for each unit.)
- Second fire began at 1645 EDT, March 15, 2011 in reactor building. Fuel reported to be uncovered.
- Radiation level outside Unit 4 reported to be 30R/hour following second fire.

- High radiation dose rates measured between Units 3 and 4, source is suspected to be the Unit 4 spent fuel pool.
- The spent fuel pool's ability to retain water is in doubt, no steam – likely dry.

#### Unit 5

- The reactor is defueled.
- IAEA Reports Temperature of pool at 64.5 degrees C at 1500 EDT, March 16, 2011.
- Unit 5 diesel generator is providing power to cool Units 5 and 6 spent fuel pools.

#### Unit 6

- The reactor is defueled.
- IAEA Reports Temperature of pool at 61.0 degrees C at 1300 EDT, March 16, 2011.
- Power to cool the Unit 6 spent fuel pool is being provided by the Unit 5 diesel generator.

#### Other Japanese Nuclear Sites:

- Fukushima Daiichi Units 1 - 4: As of 7:15 am on March 15 (Japan), Tepco press release reports reactors in cold shutdown and offsite power available.
- Onagawa Units 1 - 3: shutdown, stable, turbine building basement fire extinguished.
- Kashiwazaki Kariwa Nuclear Power Station (Advanced Reactors): Units 1, 5, 6, 7: normal operation / Units 2 to 4: regular outage
- Rokkasho: all units continue safe operations without malfunctions, impacts from earthquake quickly mitigated (emergency diesel generators used, spilt SFP liquid drained and recovered in liquid waste treatment)

#### Protective Action Recommendations

- For Fukushima Daiichi site, Japanese national government issued a protective action recommendation that instructed evacuation for local residents within a 20km radius of the site boundary and sheltering in place out to 30km for residents who stayed behind
- Japan has imposed no-fly zone (30km radius, altitude unlimited) over Daiichi plants.
- A RASCAL run at 06:54AM (EDT) on March 16, 2011 for hypothetical combined core based on the following assumptions: Units 2 & 3 each, 33% core melt & no containment; Unit 4, full core offload 100% melt in the Spent Fuel Pool (SFP) with no roof; wind direction from West Northwest blowing out to the ocean. Results: PAG exceeded at 50 miles (80.5 km) with TEDE of 24.0 rem, and CDE thyroid of 130 rem.
- Based upon the degrading situation at the Daiichi plant, the US NRC recommends that Americans within 50 miles of the Daiichi plant to evacuate the area.
- The US State Department has approved voluntary authorized departure of family members at the U.S. Embassy in Tokyo, the U.S. Consulate in Nagoya and the Foreign Service Institute in Yokohama.

#### Meteorological Conditions:

Forecast meteorological data for the 24 hour period (until 1200 EDT on March 17, 2011) indicates wind headed offshore (from NW).

#### General Talking Points

- TEPCO and US Forces in Japan (USFJ) are working together to allocate firefighting and heavy equipment capable of pumping seawater from the ocean into containment.
  - TEPCO appears to be supplying water by helicopter and water cannon.
  - A list of additional equipment to provide for accident mitigation has been developed by NRC and provided to USAID.
  - Five portable pumps arrived at the Daiichi facility Thursday (1130 SST) from Yokota Air Force Base. Additional equipment to connect pumps is being coordinated.
- Disaster Assistance Response Team arrived Sunday:

- ○ 11 NRC staff are in Tokyo with the Ambassador and getting information from Japanese officials.
- NRC continues to develop projections of the accident's progression, dose estimates and Q&As, including those addressing the safety of reactors in operation in the US.
- Government of Japan has accepted US offer to conduct aerial/ground monitoring and also requested potassium iodide tablets. DOE Aerial Measurement Teams have completed fly over the Daiichi site. Awaiting results.
- The NRC has been asked to provide recommendations for solutions to the spent fuel pool issues during conference call with NISA and TEPCO.

**Ward, Steven**

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**From:** Bill Kennedy [kennedy@moellerinc.com]  
**Sent:** Friday, April 15, 2011 10:03 AM  
**To:** Ward, Steven; Carpenter, Robert  
**Cc:** Steve Sohinki  
**Subject:** Task #26

Steve/Rob,

I just wanted to let you know that I have run into some minor delays in finishing the draft Technical Basis Report for Task Order # 26, largely stemming from interruptions caused by inquiries following the Fukushima reactor accidents. A number of concerned people and companies have contacted us with requests for Rad 101-type information. I have even provided input to a newspaper discussion of radiation fears and concepts. A lot of what we are doing is to provide free counseling and information services, but it all takes time. Some people ask questions like "Should I buy anti-radiation pills?" and "Will our food be safe?" To help allay fears, I developed a set of frequently asked questions for our website, and we have posted simple training materials so individuals can have a technical resource for free.

For Task Order # 26, we have drafted all sections, except for the final discussion of the regulatory roadmap (we have completed a detailed appendix) and our final conclusions. The sections that capture the ANSI standards and appendices with detailed sample problems have been finalized, and all completed sections have been through our editor. I will need likely until the end of April to complete the missing information, get it through editing, and finalizing the post-edit text. I will be on business travel Monday-Thursday next week, but should be able to read my email if you have any questions.

I sincerely apologize for my unexpected delay, and hope you understand. If you have any questions, please let me know.

Thanks,

Bill.

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