From:
 Operations Center Bulletin

 Sent:
 Friday, March 11, 2011 2:04 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 <u>www.nrc.gov</u>. Information is also available on the NRC External Blog at: <u>http://public-blog.nrc-gateway.gov</u>. 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

From: Sent: To: Cc: Subject: Collins, Elmo Friday, March 11, 2011 7:34 AM Lew, David; Howell, Art Dean, Bill; Collins, Daniel; Lorson, Raymond; Clifford, James; Wilson, Peter Re: Tsunami Warning

Thanks Dave

From: Lew, David
To: Collins, Elmo; Howell, Art
Cc: Dean, Bill; Collins, Daniel; Lorson, Raymond; Clifford, James; Wilson, Peter
Sent: Fri Mar 11 08:07:52 2011
Subject: Tsunami Warning

Elmo/Art,

While it's still early, let us know if you need any assistance, particularly with respect to the materials program. We are canvassing the availability of our materials inspectors in the event you need support.

Dave

to a mi

From:	McCree, Victor
Sent:	Friday, March 11, 2011 6:40 PM
То:	Virgilio, Martin
Cc:	Dean, Bill; Satorius, Mark; Collins, Elmo
Subject:	News Reports of Japanese NPP Status

I just listened to the NBC and ABC news "experts" accounts of the status of the Fukishima Daiichi Nuclear Power Plant (FDNPP) Units 1 (and 2) and their forecast of what could happen if electrical power was not soon restored. Their accounts included several mis-statements that we ought to be aware of, and perhaps provide clarity in any NRC public response and/or statements that we make on this subject.

- i. One expert implied that the BWR core is normally not covered, and that the ECCS systems only inject after core damage has begun.
- ii. The expert also indicated that although the release of pressure from the containment at FDNPP would be filtered, that the filtration was highly unlikely to be successful.
- iii. Another expert implied that nuclear power plants have a limited ability to withstand an "expected" earthquake, and that they are not designed to handle an "extraordinary" earthquake. [Note: Although the 8.9 Richter scale magnitude earthquake at FDNPP may have been beyond its design basis (or Safe Shutdown Earthquake) the SSE is, by definition, is an extraordinary earthquake.]

Vic

From: Sent: To: Subject: McCree, Victor Friday, March 11, 2011 8:52 PM Collins, Elmo; Satorius, Mark; Dean, Bill Japan Earthquake Media Comms

I don' know how closely you're following the media discussions of the Fukishiima events, but, IMHO, the communications lessons from this for NRC are already multi-fold. The President just referred to Secretary Chu and DOE offering support to Japan; however, thus far, I've not yet heard NRC mentioned by anyone, nor has any NRC official been quoted among the U.S., experts who are commenting on the event.

Vic

This email is being sent from an NRC Blackberry device.



From: Sent: To: Subject: Attachments: HOO Hoc Friday, March 11, 2011 11:50 AM Marshall, Jane; HOO Hoc UPDATE to Event Notice 46668: 3/11/2011 Events.pdf

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

03/11/2011

III This is a draft document, do not release to the public III

<u>Page 1</u>

Pow	ver Reactor					Event	#	46668
R	Site: Unit: Reactor Type:	DIABLO 1 2 [1] W-4-L	CANYON Regior .P,[2] W-4-L	n: 4 State : CA P	Notification Date / Ti Event Date / Ti Last Modificat	me: 03/11/2011 me: 03/11/2011 ion: 03/11/2011	04:40 01:23	(EST) (PST)
Reactor Type: [1] W-4-LP,[2] W-4-LP Last Mode Containment Type: DRY AMB DRY AMB NRC Notified by: K.R.THOMPSON Notifications: HQ Ops Officer: JOE O'HARA Emergency Class: UNUSUAL EVENT 10 CFR Section: 50.72(a) (1) (i) EMERGENCY DECLARED		Notifications: TH JAI ELI JA(OMAS FARNHOL NE MARSHALL MO COLLINS CK GROBE	TZ I	R4DO RD RA NRR			
Unit	Scram Code	RX Crit	Init Power	Initial RX Mode	Curr Power	Current RX Mod	de	
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III This is a draft document, do not release to the public III NOTICE OF UNUSUAL EVENT AS A RESULT OF A TSUNAMI WARNING IN THE AREA

The licensee declared a notice of unusual event as a result of a tsunami warning issued for the coastal areas of California. The tsunami warning is a result of a 8.9 magnitude earthquake off the coast of Japan. The licensee is in EAL HU1.5, 'Tsunami Affecting the Protected Area'. The NRC remains in the normal response mode.

The NRC Resident Inspector has been notified.

* * * UPDATE AT 1134 EST ON 3/11/2011 FROM MIKE QUITTER TO JOE O'HARA***

"A classification of unusual event was declared at 0123 PST on March 11, 2011 due to a tsunami warning issued by the NOAA for the California West Coast. Diablo Canyon Power Plant [DCPP] has implemented the requirements of Casualty Procedure M-5, 'Response to Tsunami Warning.' Plant personnel were evacuated from the DCPP intake structure at 0742 PST. Evacuation of personnel from the intake structure constitutes a deviation from DCPP license condition '2.E' and authorized pursuant! To 10CFR50.54(x).

"No damage or injuries has been observed as a result of this tsunami event and there is no impact on the health and safety of the general public."

Notified the R4DO (Farnholtz), R4RA (Collins), IRD (Marshall), and NRR (Grobe).

Owen, Lucy

From:	Mather, Allen
Sent:	Friday, March 11, 2011 10:54 AM
То:	ALL_R4
Subject:	CANCELED: EMail Outage

Due to heightened monitoring in the Region, we're canceling tonight's scheduled outage, and will reschedule at a future date.

Sincerely,

Allen Mather RIV Regional LAN Administrator 817-860-8266

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Owen, Lucy

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From:Owen, LucySent:Friday, March 11, 2011 1:21 PMTo:R4; PN_DistributionSubject:Issued: PNO-IV-11-001, Diablo Canyon Power Plant Notification of Unusual EventAttachments:PNO-IV-11-001 Diablo Canyon NOUE.docx

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ML1100700503

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March 11, 2011

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-IV-11-001

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region IV staff on this date.

<u>Facility</u>	Licensee Emergency Classification
Pacific Gas and Electric Company	XX_Notification of Unusual Event
Diablo Canyon Nuclear Plant Units 1 and 2	Alert
Avila Beach, CA.	Site Area Emergency
Docket: 50-275, 50-323	General Emergency
License: DPR-80, DPR-82	Not Applicable

SUBJECT: DIABLO CANYON POWER PLANT NOTIFICATION OF UNUSUAL EVENT

DESCRIPTION:

The agency entered Monitoring Mode at 9:46 a.m. EST, on March 11, 2011, in response to a tsunami warning at Diablo Canyon Power Plant, located near San Luis Obispo, California, as a result of the magnitude 8.9 earthquake in Japan. Diablo Canyon declared a Notification of Unusual Event at 4:23 a.m. EST, based on receipt of a tsunami warning from West California Emergency Management. Diablo Canyon anticipates a wave surge of approximately 3 feet at the intake structure. Diablo Canyon is designed to withstand tsunamis to a wave height of 35 feet. The licensee intends to keep both units at full power through the event. The NRC resident inspectors are on site and monitoring plant conditions and licensee actions from the control room.

The effects of the tsunami at San Onofre Nuclear Generating Station are expected to be less severe than at Diablo Canyon. San Onofre is under a tsunami advisory and has not reached any emergency action levels. Both units continue to operate.

The NRC is contacting Program Directors for states impacted by the tsunami. There are no known tsunami impacts to nuclear materials licensees in the affected states or U.S. territories. The NRC is also monitoring the Humboldt Bay spent fuel storage facility. The agency will continue to monitor the situation.

The State of California has been informed. This information has been discussed with licensee management and is current as of 12:19 p.m. EST.

This preliminary notification is issued for information only, and will be updated as more information becomes available.

ADAMS ACCESSION NUMBER: ML110700503

CONTACTS: Lara Uselding (817)917-0321 Lara.Uselding@nrc.gov

Geoffrey Miller (817)917-1212 Geoffrey.Miller@nrc.gov

From: Sent: To: Subject: Collins, Elmo Friday, March 11, 2011 9:16 AM Satorius, Mark; Dean, Bill; McCree, Victor Fw: Agency in Monitoing in Response to Tsunami Warnings and 8.9 Magniture Earthquake in Japan

From: R4 IRC To: R4 Sent: Fri Mar 11 10:05:10 2011 Subject: Agency in Monitoing in Response to Tsunami Warnings and 8.9 Magniture Earthquake in Japan

The NRC entered Monitoring at 09:46AM Eastern in response to the 8.9 magnitude earthquake in Japan and subsequent tsunami warnings. NRC Region IV is monitoring the impact on materials licensees in Alaska, Hawaii, and materials licensees and reactors on the Pacific Coast. NRC Headquarters is monitoring Japan's response to the current situation.

If you are not responding to the event, please stay clear of the incident response center. Thank you for your support.

Emergency Response Coordinator NRC – Region IV



<u>Hergenroder, Dan</u>

From: Sent: To: Subject:

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Collins, Elmo Friday, March 11, 2011 9:35 AM Virgilio, Martin; Leeds, Eric Fyi only: Do you hear us now?

From one of our california stake holders

From: Rochelle <beckers@thegrid.net> To: Coggins, Angela; Caniano, Roy; Vegel, Anton; Collins, Elmo Sent: Fri Mar 11 09:24:32 2011 Subject: Do you hear us now?

This tragedy should not become an argument about whether nuclear plants on California's coast are safe - it should be an opportunity for NRC to be proactive in addressing California's concerns - allowing an additional twenty years of radioactive waste to be produced and left on our fragile coast just isn't in anyone's best interest.

In Peace

Rochelle Becker

Quake starts fire in Japan nuclear plant

11/03/2011 - 11:08:51 http://www.breakingnews.ie/world/quake-starts-fire-in-japan-nuclear-plant-496826.html

One of the biggest earthquakes ever recorded has triggered tsunami warnings across the Pacific ocean.

The 8.9 magnitude quake hit Japan sparking huge fires and creating a ten metre high wall of water that has smashed into the north east of the country.

The quake started a fire in a turbine building at nuclear power plant in north-eastern Japan, but the reactor building was reported to be secure.

Tohoku Electric Power said smoke was observed coming out of the building, which is separate from the reactor, and the cause was under investigation. The plant is in Miyagi prefecture.

The company said there have been no reports of radioactive leaks or injuries.

It is sweeping away everything in its path, including houses, ships, cars and farm buildings.

At least 32 people have been killed, but that number is expected to rise significantly.

Meanwhile, coastal regions across the Pacific are being evacuated.

The Red Cross warns the tsunami is higher than some islands.

Dozens of countries are under threat, including the US, Australia and Mexico.

The quake was the largest to hit Japan since records began 140 years ago.

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It was followed by at least 19 aftershocks, most of them of more than magnitude 6.0. Dozens of cities and villages along the 1,300-mile stretch of the country's eastern shore were shaken by violent tremors.

"The earthquake has caused major damage in broad areas in northern Japan," Prime Minister Naoto Kan said.

Even for a country used to earthquakes, this one was of horrific proportions.

Large fishing boats and other sea vessels rode high waves into the cities, slamming against bridges. Upturned and partially submerged vehicles were seen bobbing in the water.

Waves of muddy water swept over farmland near the city of Sendai, carrying buildings, some on fire, inland as cars attempted to drive away.

Sendai airport was inundated with vehicles and thick mud deposited over its runways. Fires spread through a section of the city.

The tsunami roared over embankments, washing cars, houses and farm equipment inland before reversing direction and carrying them out to sea. Flames shot from some of the houses, probably from burst gas pipes.

"Our initial assessment indicate that there has already been enormous damage," a government spokesman said. "We will make maximum relief effort based on that assessment."

He said the Defence Ministry was sending troops to the quake-hit region.

Japan's worst previous quake was in 1923 in Canto, an 8.3-magnitude shock that killed 143,000 people. A 7.2-magnitude quake in Kobe city in 1996 killed 6,400 people.

Several nuclear plants along the coast were partially shut down, but there were no reports of any radioactive leaks.

A large fire erupted at the Cosmo oil refinery in Ichihara city near Tokyo and was burning out of control with 100-foot flames whipping into the sky.

The US Geological Survey said the quake was the biggest to hit Japan since officials began keeping records in the late 1800s.

It struck at a depth of six miles, about 80 miles off the eastern coast.

In central Tokyo, 240 miles away, large buildings shook violently and workers poured into the street for safety.

The tremor bent the upper tip of the Tokyo Tower, a 1,093-foot steel structure inspired by the Eiffel Tower in Paris.

Trains were stopped and passengers walked along the tracks to platforms. More than four million buildings were without power in Tokyo and its suburbs.

Crowds waited at Tokyo's Shinjuku station, the world's busiest train station, for service to resume so they could

go home. TV announcers urged workers not to leave their offices to prevent injuries in case of more strong aftershocks.

Osamu Akiya, 46, was working in Tokyo at his office in a trading company when the quake hit.

It sent bookshelves and computers crashing to the floor, and cracks appeared in the walls.

"I've been through many earthquakes, but I've never felt anything like this," he said. "I don't know if we'll be able to get home tonight."

Thirty minutes after the main quake, tall buildings were still swaying in Tokyo and mobile phone networks were not working. Japan's Coast Guard set up a task force and officials were standing by for emergency contingencies.

Tokyo's main airport was closed. A large section of the ceiling at the terminal at Ibaraki, about 50 miles outside Tokyo, collapse.

Dozens of fires were reported in northern districts of Fukushima, Sendai, Iwate and Ibaraki. Collapsed homes and landslides were also reported in Miyagi.

Japan lies on the "Ring of Fire" – an arc of earthquake and volcanic zones stretching around the Pacific where about 90% of the world's quakes occur, including the one that triggered the December 26, 2004, Indian Ocean tsunami that killed an estimated 230,000 people in 12 nations.

A magnitude-8.8 tremor that shook central Chile last February also generated a tsunami and killed 524 people.

In Peace

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Rochelle Becker, Executive Director Alliance for Nuclear Responsibility www.a4nr.org PO 1328 San Luis Obispo, Ca 93406-1328

Collins, Elmo
Friday, March 11, 2011 6:00 AM
Uselding, Lara
Re: DIABLO CANYON UNUSUAL EVENT

Thanks - looks like we'll have a little time Elmo

From: Uselding, Lara To: Collins, Elmo; Kennedy, Kriss Cc: Dricks, Victor Sent: Fri Mar 11 06:58:39 2011 Subject: DIABLO CANYON UNUSUAL EVENT

I'm headed into IRC so I can be in office to manage any needed public or press outreach once tsunamis hit Lara Uselding NRC Region 4 Public Affairs 817-917-0321

From: Collins, Elmo
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
Sent: Fri Mar 11 05:45:38 2011
Subject: Addl info: HOO HIGHLIGHT - DIABLO CANYON UNUSUAL EVENT

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.

White, Bernard

From: Sent: To: Subject:

UxC News [news@uxc.com] Friday, March 11, 2011 1:17 PM White. Bernard UxC News Headlines - March 11, 2011

ICNews Headlines

NEWS HEADLINES UX PRICES UX WEEKLY UXC CLIENT UXC PUBLIC AND A CONTRACT March 11, 2011 © The Ux Consulting Company, LLC

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Title: Emergency Declared at Japanese Nuclear Plant

Desc: Japan declares emergency at Fukushima No. 1 plant after earthquake. Date: March 11, 2011 Source: New York Times Link: http://www.nytimes.com/2011/03/12/world/asia/12nuclear.html

Title: U.S. delivers coolant to Japan nuclear plant: Clinton

Desc: U.S. Air Force delivers coolant to nuclear plant in Japan following earthquake. Date: March 11, 2011 Source: Reuters Link: http://www.reuters.com/article/2011/03/11/us-japan-guake-nuclear-clintonidUSTRE72A4LR20110311?feedType=RSS&feedName=domesticNews

Title: Pressure at Damaged Japanese Nuclear Reactor Rising With Fears

Desc: Pressure at Fukushima Daiichi plant rising due to damaged cooling system. Date: March 10, 2011 Source: ABC News

Link: http://abcnews.go.com/International/japanese-earthquake-stokes-nuclear-fears-damaged-power-plants/story?id=13114181

Title: US nuclear regulator OKs Vermont Yankee extension

Desc: NRC to renew Vermont Yankee license for additional 20 years. Date: March 11, 2011 Source: World Nuclear News Link: http://www.world-nuclear-news.org/RS-US_nuclear_regulator_OKs_Vermont_Yankee_extension-1103117.html

Title: Massive earthquake hits Japan

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Desc: Article details earthquake and nuclear utilities in Japan. Date: March 11, 2011 Source: World Nuclear News Link: http://www.world-nuclear-news.org/RS Massive_earthquake_hits_Japan_1103111.html

Title: California nuclear plants shut down as tsunami precaution

Desc: PG&E shuts down Diablo Canyon plant due to tsunami warning. Date: March 10, 2011 Source: Electric Light & Power Link: http://www.elp.com/index/display/article-display/9712058489/articles/electric-lightpower/generation/nuclear/2011/03/California_nuclear_plants_shut_down as_tsunami_precaution.html

Title: Entergy's Vermont Nuclear Unit Cleared for License Renewal Desc: NRC to issue 20 year license extension for Vermont Yankee. Date: March 10, 2011 Source: Bloombera Link: http://www.bloomberg.com/news/2011-03-10/entergy-s-vermont-nuclear-unit-cleared-for-license-renewal-1-.html

Title: Mo. Senate panel considers nuclear plant measure

Desc: Missouri Senate begins debate over several proposals enabling utilities to charge for costs associated with developing new

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Source: Associated Press Link: <u>http://www.businessweek.com/ap/financialnews/D9LSD5LG0.htm</u>

Title: Areva, Rolls-Royce team up for UK EPRs

facilities.

Date: March 10, 2011

Desc: AREVA in cooperation agreement with Rolls-Royce over manufacturing of components for nuclear plants. Date: March 11, 2011 Source: *World Nuclear News* Link: http://www.world-nuclear-news.org/C-Areva Rolls Royce team up for UK EPRs-1103114.html

Title: Energy association official advises more investment in uranium exploration

Desc: China Nuclear Energy Association vice director discusses need for more uranium in China. Date: March 11, 2011 Source: *Xinhua* Link: http://news.xinhuanet.com/english2010/china/2011-03/11/c 13773713.htm

Title: Communities split over nuclear shipments

Desc: Article discusses hearings over Bruce Power's plan to ship generators through Great Lakes. Date: March 10, 2011 Source: *CBC News* Link: <u>http://www.cbc.ca/news/politics/story/2011/03/10/pol-cnsc-hearings.html</u>

Title: Australia, UAE to negotiate uranium deal

Desc: Australian foreign minister discusses plans to begin talks with UAE for uranium trade. Date: March 10, 2011 Source: *MENAFN* Link: <u>http://www.menafn.com/qn_news_story_s.asp?StoryId=1093398243</u>

Title: Three uranium mines advance

Desc: Arizona regulators issue permits to several mines in state. Date: March 11, 2011 Source: *Arizona Daily Sun* Link: http://www.azdailysun.com/news/local/govt-and-politics/article_ddfb5dfd-2887-5180-86ec-86182392a202.html

Title: Major upgrade for Western Australian uranium project

Desc: Manhattan Resourses increases inferred resource of Double 8 prospect. Date: March 11, 2011 Source: *MineWeb* Link: <u>http://www.mineweb.com/mineweb/view/mineweb/en/page72103?oid=122647&sn=Detail&pid=102055</u>

Title: Vena Resources extends higher grade uranium zone at Macusani in Peru

Desc: Article highlights Vena Resources. Date: March 10, 2011 Source: *Proactive Investors* Link: <u>http://www.proactiveinvestors.com/companies/news/12845/vena-resources-extends-higher-grade-uranium-zone-at-macusani-inperu-12845.html</u>

Title: Extract Resources in play as Chinese firm launches offer for Kalahari Minerals

Desc: Article details China's move for more uranium with interest in Extract Resources and Kalahari Minerals. Date: March 12, 2011 Source: *The Australian* Link: <u>http://www.theaustralian.com.au/business/extract-resources-in-play-as-chinese-firm-launches-offer-for-kalahari-minerals/story-e6frg8zx-1226020028301</u>

Title: **Spent nuclear fuel: More opportunity than threat** Desc: Editorial discusses spent fuel issues and nuclear power in Minnesota. Date: March 11, 2011 Source: *StarTribune.com* Link: <u>http://www.startribune.com/opinion/commentary/117769458.html</u>

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End of news. A copyrighted service of The Ux Consulting Company, LLC. All news, views, and links are those of the sources cited.

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Basu, Sudhamay

From: Sent: To: Subject:

Michael Corradini [corradini@engr.wisc.edu] Friday, March 11, 2011 11:03 PM Basu, Sudhamay RE: Fukushima

i agree - i think there is a complete station blackout with a small LOCA in F#1

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 "Basu, Sudhamay" < <u>Sudhamay Basu@nrc.gov</u>>:

> I heard the same thing about the portable generators. But I also

> heard it is a race against time - being able to hook up the generators

- > before the situation worsens.
- > _
- > From: Michael Corradini [corradini@engr.wisc.edu]
- > Sent: Friday, March 11, 2011 9:08 PM
- > To: Farmer, Mitchell T.
- > Cc: Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard;
- > Grandy, Christopher
- > Subject: Re: Fukushima
- >

> I am with Dana and others at ACRS. We have gotten some small info from

> folks in Japan. Fukashima used up their DC battery energy powering

> their RCIC pumps after the AC diesel generators started and then

> failed. As of 7pm EST, portable generators had arrived but yet to have

> been hooked up. Charlie or Mirela may know more. Dana has been

> contacted by a DOE emergency response team (and I wished him well to
 > Japan).

> ---

>

- > Michael Corradini, Chair
- > Engineering Physics> University of Wisconsin
- > (608)263-1648 [Fax: 3-745)
- > corradini@engr.wisc.edu
- > http://www.engr.wisc.edu/ep
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> Quoting "Farmer, Mitchell T." < farmer@anl.gov>:

> >> 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 siliecous 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

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Ramsey, Kevin

From: Sent:	ANS Broadcasts [broadcasts@ans.org] Friday, March 11, 2011 9:14 PM
То:	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 <u>http://ansnuclearcafe.org/</u> for a collection of sources covering Japan's earthquake and Tsunami.

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Herrity, Thomas

From:	Dixon-Herrity, Jennifer
Sent:	Friday, March 11, 2011 1:06 PM
To:	Herrity, Thomas
Subject:	FW: News on TEPCO - the Fukushima Number One plant

For your info - earthquake outcome for NPs - article in Dan's email goes into detail.

-----Original Message-----From: Ashcraft, Joseph Sent: Friday, March 11, 2011 12:54 PM To: Santos, Daniel; Jung, Ian; Bergman, Thomas; Dixon-Herrity, Jennifer; Holahan, Gary Cc: Beacom, Royce; Li, Hulbert; Martinez, Erick; Nguyen, Khoi; Rhow, Sang; Truong, Tung; Jackson, Terry; Zhao, Jack Subject: RE: News on TEPCO, the Eukushima Number One plant

Subject: RE: News on TEPCO - the Fukushima Number One plant

Off of CNN blog...not confirmed.

[12:06 p.m. ET, 2:06 a.m. Tokyo] Radiation level rising in Fukushima No. 1 nuclear plant turbine building, Kyodo News Agency reports.

-----Original Message-----From: Santos, Daniel Sent: Friday, March 11, 2011 12:50 PM To: Jung, Ian; Bergman, Thomas; Dixon-Herrity, Jennifer; Holahan, Gary Cc: Ashcraft, Joseph; Beacom, Royce; Li, Hulbert; Martinez, Erick; Nguyen, Khoi; Rhow, Sang; Truong, Tung; Jackson, Terry; Zhao, Jack Subject: RE: News on TEPCO - the Fukushima Number One plant

Regarding Japan,

They have evacuated one area around a site because the DGs failed after one hour. They have brought in mobile power supply units. Please see the details and status of all the Japanese NPPs at:

http://www.world-nuclear-news.org/RS Massive earthquake hits Japan 1103111.html

One site has cross connected cooling systems to keep up with the decay heat cooling.

The reprocessing plant at Rokkasho is being powered by DGs. For the most updated reports see: <u>http://www.jaif.or.jp/english/_____</u> From: Jung, Ian

Sent: Friday, March 11, 2011 12:47 PM

To: Bergman, Thomas; Dixon-Herrity, Jennifer; Holahan, Gary

Cc: Ashcraft, Joseph; Beacom, Royce; Li, Hulbert; Martinez, Erick; Nguyen, Khoi; Rhow, Sang; Truong, Tung; Jackson, Terry; Santos, Daniel; Zhao, Jack

Subject: News on TEPCO - the Fukushima Number One plant

It seems like an SBO ... - Ian

Reactor cooling equipment fails at TEPCO

The government has declared an emergency situation at one of Tokyo Electric Power company's nuclear power plants in quake-stricken Fukushima Prefecture. It says no radioactive materials have been leaked.

Tokyo Electric said an equipment failure has made it impossible to cool two reactors at the Fukushima Number One plant.

The firm says it does not have enough electric power to cool the reactors, which automatically stopped operating when the quake struck.

The government has taken precautionary measures to ensure the safety of nearby residents. But it says that the residents should remain calm, and that currently no evacuation is needed.

The power company is sending eight power generators to the site, and the Ground Self Defense Force is sending one more.

Friday, March 11, 2011 19:53 +0900 (JST)

lan Jung, Chief ICE2/DE/NRO 301-415-2969 ian.jung@nrc.gov

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Murphy, Andrew

From:Richards, StuartSent:Friday, March 11, 2011 2:04 PMTo:Murphy, AndrewSubject:Please call Bob Bari (BNL) at 631-344-2629

High

Importance:

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CC/12

Lee, Richard

From: Sent: To: Cc: Subject: Gavrilas, Mirela Saturday, March 12, 2011 6:55 AM Gibson, Kathy; Case, Michael Lee, Richard FW: Fukushima

Any info that can be shared with our contractor at ANL? He has a very sharp mind and he is probably the world's foremost expert if the core did melt through the vessel.

They may have done exactly what Mitch said: flooded the cavity and then they got a steam explosion--Mike Corradini could give the best guess as to that. To me, the timeline fits.

Μ.

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From: Michael Corradini [corradini@engr.wisc.edu] Sent: Friday, March 11, 2011 9:08 PM To: Farmer, Mitchell T. Cc: Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Grandy, Christopher Subject: Re: Fukushima

I am with Dana and others at ACRS. We have gotten some small info from folks in Japan. Fukashima used up their DC battery energy powering their RCIC pumps after the AC diesel generators started and then failed. As of 7pm EST, portable generators had arrived but yet to have been hooked up. Charlie or Mirela may know more. Dana has been contacted by a DOE emergency response team (and I wished him well to Japan).

Michael Corradini, Chair Engineering Physics 1 4 University of Wisconsin (608)263-1648 [Fax: 3-7451] corradini@engr.wisc.edu http://www.engr.wisc.edu/ep · مر

Quoting "Farmer, Mitchell T." <<u>farmer@anl.gov</u>>:

> 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 siliecous 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

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Ramsey, Kevin

From: Sent: To: Subject: Attachments: Joe Colvin [president@ans.org] Saturday, March 12, 2011 8:34 PM Ramsey, Kevin Update on Japan Situation 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 (<u>http://ansnuclearcafe.org</u>) 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

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.

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.



Kock, Andrea

From: Sent: To: Cc: Subject: Attachments: Franovich, Mike Saturday, March 12, 2011 7:43 AM Ostendorff, William Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason FW: Just a tweak or two Chairman Jaczko_QA3_earthquake031111.docx

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From: Burnell, Scott
 Sent: Saturday, March 12, 2011 7:34 AM
 To: Franovich, Mike; Orders, William; Snodderly, Michael; Castleman, Patrick
 Cc: Brenner, Eliot
 Subject: Just a tweak or two

Gentlemen;

Just a couple of things courtesy of the EDO.

Scott

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TALKING POINTS

MARCH 11, 2011 JAPAN EARTHQUAKE AND WEST COAST TSUNAMI As of 3/12/2011 9:45 a.m. EST

- The Nuclear Regulatory Commission has spoken with its counterpart agency in Japan, offering the assistance of U.S. technical experts. Should the Japanese want to make use of U.S. expertise, NRC staffers with extensive background in boiling water reactors are available to assist efforts in Japan.
- The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response.
- 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 has regulations in place that require licensees to design their plants to withstand the effects of tsunamis.
 (10CFR 50, Appendix A, Criterion 2, "Design bases for protection against natural phenomenon" requires licensees to designs structures, systems, and components important to safety to withstand the effects of natural phenomenon, including tsunamis.)
- Nuclear power plants are built to withstand environmental hazards, including earthquakes. 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. The NRC then adds a margin for error to account for the historical data's limited accuracy. In other words, U.S. nuclear power plants are designed to be safe based on historical data from the area's maximum credible earthquake.

3_11_QUAKE_talk_pts5.docx

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OPA

TALKING POINTS

MARCH 11, 2011 JAPAN EARTHQUAKE AND WEST COAST TSUNAMI As of 3/12/2011 5:30 a.m. EST

- The Nuclear Regulatory Commission is following events in Japan, including media reports and footage of an apparent explosion at one of the Japanese reactors damaged in the wake of the March 11 earthquake in Japan and associated tsunami.
- 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 is ready to provide whatever assistance we can to our Japanese counterparts, should there be a specific request. The NRC is closely

coordinating its activities with other federal agencies. An NRC staff person is participating in the USAID team headed to Japan.

- The NRC resident inspector at the Diablo Canyon nuclear power plant on the central California coast remained on site for the duration of that area's tsunami warning and kept track of the plant's response. The plant is operating normally -- it declared an Unusual Event at 4:23 a.m. EST on March 11 and exited the Event at 6:30 p.m. EST the same day; the plant reported minimal tsunami effects.
- The San Onofre nuclear power plant on the southern California coast is operating normally.
- The Humboldt Bay spent fuel storage site on the northern California coast was in the tsunami warning area; site personnel have informed the NRC they were unaffected by the tsunami.
- NRC-regulated nuclear materials sites in Hawaii and Alaska were unaffected by the tsunami; the NRC remains in contact with these facilities.
- The NRC has regulations in place that require licensees to design their plants to withstand the effects of tsunamis.
 (10CFR 50, Appendix A, Criterion 2, "Design bases for protection against natural phenomenon" requires licensees to designs structures, systems, and components important to safety to withstand the effects of natural phenomenon, including tsunamis.)
- At Diablo Canyon, the plant is safe from a tsunami. The plants ability to withstand large waves and the maximum wave height at the intake structure were determined through extensive and detailed scaled model wave testing. To prevent water from entering the intake structure and affecting the pump motors, the structure is equipped with a snorkel valve that can close.

- Nuclear power plants are built to withstand environmental hazards, including earthquakes. 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. The NRC then adds a margin for error to account for the historical data's limited accuracy. In other words, U.S. nuclear power plants are designed to be safe based on historical data from the area's maximum credible earthquake.



From: Sent: To: Subject: Ostendorff, William Saturday, March 12, 2011 7:45 AM Franovich, Mike Re: Latest Talking Points and Q&A

Thanks.

From: Franovich, Mike
To: Ostendorff, William
Cc: Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason
Sent: Sat Mar 12 07:39:46 2011
Subject: RE: Latest Talking Points and Q&A

Greg and I are on the CA/ET briefing this at this moment. Virgilio leading the call. Update to follow.

From: Ostendorff, William Sent: Saturday, March 12, 2011 7:36 AM To: Franovich, Mike Cc: Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason Subject: Re: Latest Talking Points and Q&A

Mike-Thanks for your reports since midnight. These are very helpful. Am watching CNN now. WCO

From: Franovich, Mike
To: Ostendorff, William
Cc: Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason
Sent: Sat Mar 12 07:17:37 2011
Subject: FW: Latest Talking Points and Q&A

Good morning Sir,

Unfortunately this is the best we have at the moment. The attachment in the ET/liaison team report this morning simply stated possible core damage on Fukushima Daiichi unit 1.

The TEPCO site disclosed that some workers at the unit were injured and one was contaminated near 100 mRem.

Some images of an explosion at Unit 1 are on the web.

Mike

From: Burnell, Scott Sent: Saturday, March 12, 2011 7:05 AM To: Franovich, Mike; Orders, William; Snodderly, Michael; Castleman, Patrick Cc: Brenner, Eliot Subject: Latest Talking Points and Q&A

Gentlemen;

Current guidance is that all media requests go through OPA and all intergovernmental inquiries go through the Chairman's office. Thank you.

Scott

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Owen, Lucy

From: Sent: To: Subject: Howell, Linda Saturday, March 12, 2011 1:15 PM Howell, Art; Collins, Elmo; Kennedy, Kriss Re: PAO and SLO

I spoke with Rachel, she is going to circle back wit Randy and Bill.

----- Original Message -----From: Howell, Art To: Howell, Linda Sent: Sat Mar 12 13:06:20 2011 Subject: Fw: PAO and SLO

----- Original Message -----From: Collins, Elmo To: Howell, Art Sent: Sat Mar 12 13:05:17 2011 Subject: Re: PAO and SLO

I spoke to Maier

----- Original Message -----From: Howell, Art To: Collins, Elmo Sent: Sat Mar 12 12:54:21 2011 Subject: Fw: PAO and SLO

----- Original Message -----From: Kennedy, Kriss To: Howell, Art Cc: Collins, Elmo Sent: Sat Mar 12 12:49:37 2011 Subject: Re: PAO and SLO

Just spoke with Elmo. He also plans to call them.

This email is being sent from an NRC Blackberry device.

----- Original Message -----From: Howell, Art To: Kennedy, Kriss Sent: Sat Mar 12 12:47:50 2011 Subject: Re: PAO and SLO

Linda plans to call them to ensure they refer them to the liaison team.

----- Original Message -----From: Kennedy, Kriss

c/22



Are Victor, Lara, and Bill Maier aware of the protocol for responding to inquiries from the States and media?

This email is being sent from an NRC Blackberry device.
From: Sent: To: Subject: Collins, Elmo Saturday, March 12, 2011 3:50 PM Kennedy, Kriss; Howell, Linda; Vegel, Anton Query

Kriss/linda/Tony

Please refresh my memory, what, in simple terms, are the design criteria for Diablo and SONGS wrt: EQ - Tsunami -

Thanks Elmo

Elmo



From:	Uselding, Lara
Sent:	Saturday, March 12, 2011 7:41 AM
То:	Collins, Elmo; Howell, Art; Kennedy, Kriss; Pruett, Troy; Caniano, Roy; Cain, Chuck
Cc:	Dricks, Victor
Subject:	See first article on Japan Google Alert - diablo canyon nuclear power plant

Also, Mothers for Peace have already sent out a press release early this morning on Japan happenings and their concerns for Diablo. Will share that in separate email.

Lara Lara Uselding NRC Region 4 Public Affairs 817-917-0321

From: Google Alerts <<u>googlealerts-noreply@google.com</u>> To: Uselding, Lara Sent: Sat Mar 12 06:49:25 2011 Subject: Google Alert - diablo canyon nuclear power plant

News

3 new results for diablo canyon nuclear power plant

Japan Scrambles to Avert Meltdown

Wall Street Journal

... what improvements should be made, such as to emergency **power** systems. Tsunami fears spread to many nations with coastal **nuclear** reactors including Korea, China, Taiwan and the US In Calfornia, PG&E Corp's **Diablo Canyon nuclear plant** went on alert.

See all stories on this topic »

Tsunami threatens US nuclear power plants

PennEnergy- Energy News (press release)

The NRC is closely monitoring all nuclear facilities in the tsunami warning zone, including the **Diablo Canyon nuclear power plant**, the Sand Onofre nuclear power plant, the Humboldt Bay spent fuel storage site and the NRC-regulated nuclear materials ... See all stories on this topic »

FACTBOX-Calif. power plants on tsunami alert

Reuters Africa

March 11 (Reuters) - Power plants along the US West Coast were preparing themselves in light of the tsunami alert on Friday, after a massive earthquake off Japan. PG&E Corp (PCG.N: Quote) said its **Diablo Canyon nuclear power plant** was operating ... See all stories on this topic »

This as-it-happens Google Alert is brought to you by Google.

<u>Remove</u> this alert. <u>Create</u> another alert. <u>Manage</u> your alerts.

From:Operations Center BulletinSent:Saturday, March 12, 2011 3:20 PMTo:OST02 HOCSubject: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 <u>www.nrc.gov</u>. Information is also available on the NRC External Blog at: <u>http://public-blog.nrc-gateway.gov</u>. 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

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Hergenroder, Dan

From:Collins, ElmoSent:Saturday, MarTo:Kennedy, KrisSubject:Re: Query

Collins, Elmo Saturday, March 12, 2011 7:53 PM Kennedy, Kriss; Lantz, Ryan Re: Query

Thanks! This is good info. Elmo

----- Original Message -----From: Kennedy, Kriss To: Collins, Elmo; Lantz, Ryan Sent: Sat Mar 12 20:50:39 2011 Subject: Re: Query

Ryan - I just forwarded your prior email with this info. Sorry for the confusion.

This email is being sent from an NRC Blackberry device.

----- Original Message -----From: Collins, Elmo To: Lantz, Ryan; Kennedy, Kriss Sent: Sat Mar 12 20:46:29 2011 Subject: Re: Query

For tsunami - is it accurate to say the facility has design features for a 30 ft tsumani?

----- Original Message -----From: Lantz, Ryan To: Kennedy, Kriss; Collins, Elmo Sent: Sat Mar 12 19:50:48 2011 Subject: Re: Query

John confirmed the previous info, also, the plant auto trips at .6 vertical, .4 horizontal accel.

----- Original Message -----From: Kennedy, Kriss To: Lantz, Ryan Sent: Sat Mar 12 19:17:07 2011 Subject: Re: Query

Thanks Ryan.

This email is being sent from an NRC Blackberry device.

----- Original Message -----From: Lantz, Ryan To: Kennedy, Kriss Sent: Sat Mar 12 19:05:04 2011 Subject: Re: Query

Got your message - I'll ask Greg Tutak to get the info and send. I'll have him e-mail you and Elmo directly.

----- Original Message -----From: Kennedy, Kriss To: Lantz, Ryan Cc: Reynoso, John Sent: Sat Mar 12 17:33:46 2011 Subject: Fw: Query

Ryan

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Please get the info requested below for SONGS. (Tsunami design basis and seismic design basis).

,

Not urgent - but the sooner the better.

Thanks

Kriss

This email is being sent from an NRC Blackberry device.

----- Original Message -----From: Pruett, Troy To: Kennedy, Kriss Sent: Sat Mar 12 17:15:04 2011 Subject: Re: Query

Don't have SONGS. However the tsu is above 30 feet (height of wall facing ocean). For DC tsu is 35 feet (top of snorkel for intake). For safe shutdown (loss of BOP) it's .20 g, for double design (safety related equipment ok it's .4g. Hosgri is above .6g (not sure of exact number).

----- Original Message -----From: Kennedy, Kriss To: Pruett, Troy Sent: Sat Mar 12 16:52:01 2011 Subject: Fw: Query

Can you answer?

This email is being sent from an NRC Blackberry device.

----- Original Message -----From: Collins, Elmo To: Kennedy, Kriss; Howell, Linda; Vegel, Anton Sent: Sat Mar 12 16:50:04 2011 Subject: Query

Kriss/linda/Tony

Please refresh my memory, what, in simple terms, are the design criteria for Diablo and SONGS wrt: EQ - Tsunami -

Thanks Elmo

Elmo



From: Sent: To: Subject: Collins, Elmo Saturday, March 12, 2011 7:43 PM Kennedy, Kriss; Lantz, Ryan Re: Query

Thanks Are there any tsumani considerations for SONGS?

----- Original Message -----From: Kennedy, Kriss To: Lantz, Ryan; Collins, Elmo Cc: Vegel, Anton; Pruett, Troy; Howell, Linda Sent: Sat Mar 12 19:52:58 2011 Subject: Re: Query

Ryan

Thanks to you and your staff for the quick response.

Kriss

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Kriss/linda/Tony

Please refresh my memory, what, in simple terms, are the design criteria for Diablo and SONGS wrt: EQ -Tsunami -

Thanks Elmo

Elmo

From:Gavrilas, MirelaSent:Saturday, March 12, 2011 7:47 AMTo:Gibson, KathySubject:Re: Fukushima

Looks like Dana is going. Given his area of expertise, one can only assume how serious it really is.

I remember when I was taking R800 with Dana, his caution about you either cool a BWR on time or you have a really hard time keeping the core from melting.

I'm still trying to figure out if they managed to bring water in the cavity or if they are in fool fledged MCCI. I hope it's the former, even if it caused the building to explode.

After this, I'm going to try to get trained in Sangs.

I did not expect to hear from you till 10, but then obviously this is keeping you up as well.

How are you feeling? Throat still sore?

----- Original Message -----From: Gibson, Kathy To: Gavrilas, Mirela Sent: Sat Mar 12 07:15:24 2011 Subject: Re: Fukushima

I'm not aware of any further info than what's on the news or TEPCO website. This is so sad. Did I read below that Dana is going to Japan?

----- Original Message -----From: Gavrilas, Mirela To: Gibson, Kathy; Case, Michael Cc: Lee, Richard Sent: Sat Mar 12 06:55:28 2011 Subject: FW: Fukushima

Any info that can be shared with our contractor at ANL? He has a very sharp mind and he is probably the world's foremost expert if the core did melt through the vessel.

They may have done exactly what Mitch said: flooded the cavity and then they got a steam explosion--Mike Corradini could give the best guess as to that. To me, the timeline fits.

Μ.

From: Michael Corradini [corradini@engr.wisc.edu] Sent: Friday, March 11, 2011 9:08 PM To: Farmer, Mitchell T. Cc: Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Grandy, Christopher Subject: Re: Fukushima

128

I am with Dana and others at ACRS. We have gotten some small info from folks in Japan. Fukashima used up their DC battery energy powering their RCIC pumps after the AC diesel generators started and then failed. As for 7pm EST, portable generators had arrived but yet to have been hooked up. Charlie or Mirela may know more. Dana has been contacted by a DOE emergency response team (and I wished him well to Japan).

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 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

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> and you have any means to flood the cavity then you should do that.

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>

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No response to this message is required.

THIS IS NOT A DRILL

From:
Sent:
To:
Subject:

Gavrilas, Mirela Saturday, March 12, 2011 8:52 AM Case, Michael Re: Fukushima

Thanks, Mike. I've been exchanging e-mails with Mitch Farmer (our ANL contractor on core-concrete interaction) and Mike Corradini.

6rom what I heard earlier and what you confirmed, the core seems to have been partially uncovered for a long time. The fact that they decided to douse with salt water makes me think that they had vessel melt-through. Mike Corradini didn't say it, but was equally alarmed by the news that they are using salt water.

Mitch Farmer is correct: if we get into core-concrete interaction-that plant will have a hard time with coolability.

Keep me posted if you can, Mike, and I'll do the same.

Μ.

----- Original Message -----From: Case, Michael To: Gavrilas, Mirela Sent: Sat Mar 12 08:37:46 2011 Subject: Re: Fukushima

Hi M. Not a lot of solid info around. Wrt unit 1, "info" seemed to indicate that they were keeping (fire) water on the core at about 2/3 core coverage. Don't know the cause of the explosion other than "info" indicated the containment was at 100#. Unit 1 is an iso condenser plant Sent from Blackberry Michael Case.

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Michael Corradini, Chair Engineering Physics University of Wisconsin (608)263-1648 [Fax: 3-7451] corradini@engr.wisc.edu http://www.engr.wisc.edu/ep

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> They have siliecous concrete in Japan; too much interaction ex-vessel

> w/o water and coolability is lost. Let me know if there is anything 1
 > can do.

>

> Mitch

> >

From: Sent: To: Subject: Gavrilas, Mirela Saturday, March 12, 2011 9:10 AM Case, Michael; Gibson, Kathy A thought

If indeed the Fukushima 1 accident has progressed into a severe accident sequence and the agency will want to make a statement, whoever does the talking would be very wise to consult with Mike Corradini (who is as far as I know the foremost authority on steam explosion) and Mitch Farmer (who is the foremost authority on core concrete interaction).

Μ.

From: Sent: To: Subject: Gavrilas, Mirela Saturday, March 12, 2011 4:34 PM Gibson, Kathy Re: Have you heard who is going to japan?

I'll try to find out. But I think we should be sending severe accident experts...

I think the worse is over but I would not be surprised one bit to hear the vessel was breached.

It will be amazingly positive if you had that large a number of plants exposed to this big an earthquake and the consequences are so small when compared to other consequences.

I'm keeping my fingers crossed. I can't help but think of the poor folk who are at those plants.

----- Original Message -----From: Gibson, Kathy To: Gavrilas, Mirela Sent: Sat Mar 12 15:50:39 2011 Subject: Have you heard who is going to japan?

News and NRC website says we are sending 2 BWR experts. Do you know who?

From: Sent: To: Subject: Gavrilas, Mirela Saturday, March 12, 2011 4:46 PM Gibson, Kathy Re: Have you heard who is going to japan?

I could not watch CNN anymore. They had Layman, Gunter and Latch at various times, plus the reporters are so unbelievably uninformed it's maddening. Over these past few days they could have done some homework.

----- Original Message -----From: Gibson, Kathy To: Gavrilas, Mirela Sent: Sat Mar 12 16:41:14 2011 Subject: Re: Have you heard who is going to japan?

What I'm amazed at is the so called "experts" on TV spewing misinformation. There was one guy a radiologist from University of Miami that spoke accurately and credibly. I feel sorry for people getting information from the news media. I can't understand why the info coming out of japan is so sparse - especially to us insiders.

----- Original Message -----From: Gavrilas, Mirela To: Gibson, Kathy Sent: Sat Mar 12 16:34:29 2011 Subject: Re: Have you heard who is going to japan?

I'll try to find out. But I think we should be sending severe accident experts...

I think the worse is over but I would not be surprised one bit to hear the vessel was breached.

It will be amazingly positive if you had that large a number of plants exposed to this big an earthquake and the consequences are so small when compared to other consequences.

I'm keeping my fingers crossed. I can't help but think of the poor folk who are at those plants.

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NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-046

March 13, 2011

(Revised) 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 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.

###

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

20134

Owen, Lucy

From:	Howell, Art
Sent:	Sunday, March 13, 2011 6:56 AM
То:	Collins, Elmo
Subject:	Highlights from morning call

Elmo,

From this morning's call:

Plant Status

Daiichi, Unit 1 - nothing new

Unit 3: suspected core damage; flooding with sea water (from Japanese press conf: no indication of water level and having difficulty reducing pressure as valve may have failed (primary???).

Other

Teddy Olson is in Japan to assist US Ambassador and to liaison with NRC. Jim Trapp may still be in transit.

NRC coordinating with White House on a WH press release:

-US has responded and supporting requests from Japan

-no impact in USA

NEI (Fertel) may be on morning talk shows

USS Ronald Reagan is about 100 miles off-shore. Positive airborne samples and some returning helicopters that are contaminated. DOE and Naval Reactors are on it and coordinating with NRC to assess consistency with what little is known about releases up to this point.

Marty led the call. Didn't say when next call is.

Art



From:Virgilio, MartinSent:Sunday, March 13, 2011 9:43 AMTo:Collins, ElmoSubject:Re: Fyi: Mitigating steps

Elmo

Yes. It has come up several times. We are also wondering if they have a hardened vent

Marty

----- Original Message -----From: Collins, Elmo To: Virgilio, Martin Sent: Sun Mar 13 08:41:42 2011 Subject: Fyi: Mitigating steps

I'm sure folks have considered how a good set of b5b provision would have helped in circumstances such as those in Japan Elmo

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Owen, Lucy

From:	Maier, Bill
Sent:	Sunday, March 13, 2011 2:43 PM
То:	Collins, Elmo
Subject:	RE: TALKING POINTS FROM NRC

Yes Elmo, these points were intended to be provided to the states in written form for their use

From: Collins, Elmo Sent: Sunday, March 13, 2011 2:42 PM To: Maier, Bill Subject: Re: TALKING POINTS FROM NRC

Thanks Bill

Did we get the go ahead to send written talking points? Yesterday there was discussion of just verbalizing the key points.

From: Maier, Bill

To: 'Nakasone, Lynn M.' <<u>lynn.nakasone@doh.hawaii.gov</u>>; Dasher, Douglas H (DEC) <<u>doug.dasher@alaska.gov</u>>; 'Frazee, Terry (DOH)' <<u>Terry.Frazee@DOH.WA.GOV</u>>; 'Niles, Ken' <<u>ken.niles@odoe.state.or.us</u>>; 'Jim Boyd' <<u>Jboyd@energy.state.ca.us</u>>; 'Pearce, Clyde E (HSS)' <<u>clyde.pearce@alaska.gov</u>>; 'Jeff Eckerd' <<u>jeffrey.eckerd@doh.hawaii.gov</u>>; 'gary.butner@cdph.ca.gov' <<u>gary.butner@cdph.ca.gov</u>>; 'Lee Shin' <<u>Lee.Shin@calema.ca.gov</u>>; 'david.m.howe@state.or.us' <<u>david.m.howe@state.or.us</u>>
Sent: Sun Mar 13 15:19:09 2011
Subject: TALKING POINTS FROM NRC

We received clearance to send these to you last evening. I have just gotten on line and am forwarding them. There is a pdf and a Word version attached.

The request is that you keep them within State Govt. and use them orally for communication with the public.

The list is short because we thought these were the most immediate questions that needed to be answered. Are there other immediate questions that you need the answers to? One restriction is that the NRC <u>CANNOT</u> comment on the situation at the Japanese reactors as is stated on the last page of the attachment.

Also, I have attached a pdf version of the NRC's most recent news release, issued today (3/13) that states the NRC does not anticipate harmful levels of radioactive materials reaching the U.S. <u>based on current</u> <u>information</u>.

Please call if you have questions, but I will be here at the keyboard for much of today.

Bill Maier 817-917-1226

From: Sent: To: Subject: Collins, Elmo Sunday, March 13, 2011 12:42 PM Howell, Art Re:

Interesting question

Just the occurrence of a long duration SBO means designed features didn't work out

Technically, SBO was not considered in the original design so not surprisingly, if you get one, there is high uncertainty about the outcome

Note the sub-title of the book "the role of failure in successful design"

----- Original Message -----From: Howell, Art To: Collins, Elmo Sent: Sun Mar 13 12:48:58 2011 Subject:

Elmo,

Musing on some wisdom of Petroski, in a general sense. Earthquake, tsunami, and SBO are all analyzed and anticipated events. They're analyzed for the very purpose of accident prevention. And yet they occurred anyway. It makes this a double tragedy as Petroski would suggest. What does it suggest about design, construction or operation? We'll see.

Art



From: Sent: To: Subject: Collins, Elmo Sunday, March 13, 2011 3:01 PM Maier, Bill Re: TALKING POINTS FROM NRC

Thanks Elmo

From: Maier, Bill To: Collins, Elmo Sent: Sun Mar 13 15:43:12 2011 Subject: RE: TALKING POINTS FROM NRC

Yes Elmo, these points were intended to be provided to the states in written form for their use

From: Collins, Elmo Sent: Sunday, March 13, 2011 2:42 PM To: Maier, Bill Subject: Re: TALKING POINTS FROM NRC

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From: Maier, Bill

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Bill Maier 817-917-1226

Owen, Lucy

From:Howell, ArtSent:Sunday, March 13, 2011 12:57 PMTo:Collins, ElmoSubject:Re:

Right. As you know, he argues engineering design has at its foundation, at least in part, the notion of failure or at least it should.

----- Original Message -----From: Collins, Elmo To: Howell, Art Sent: Sun Mar 13 13:41:34 2011 Subject: Re:

Interesting question

Just the occurrence of a long duration SBO means designed features didn't work out

Technically, SBO was not considered in the original design so not surprisingly, if you get one, there is high uncertainty about the outcome

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Art

From: Sent: To: Subject:

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Collins, Elmo Sunday, March 13, 2011 7:42 AM Virgilio, Martin Fyi: Mitigating steps

I'm sure folks have considered how a good set of b5b provision would have helped in circumstances such as those in Japan Elmo

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From:	Maier, Bill
Sent:	Sunday, March 13, 2011 5:29 PM
To:	LIA04 Hoc
Cc:	Collins, Elmo; Howell, Art; Howell, Linda; Browder, Rachel; Erickson, Randy
Subject:	RICH, SOME INFO YOU MIGHT WANT TO PASS ON TO PMT
Attachments:	RE: FW: NRC Continues to Track Earthquake and Tsunami Issues; RE: FW: NRC Continues
	to Track Earthquake and Tsunami Issues

Rich,

This info (below) might be useful for the PMT. Also, please consider forwarding the attached e-mails from Doug Dasher, Alaska SLO. Doug is enroute back to Fairbanks and intends to conduct some sampling in the Aleutians (<u>Amchitka Island</u>, an AEC/DOE legacy site) in the near future, as well as monitor EPA's <u>RadNet</u> station results in Anchorage, Fairbanks, and Juneau.

Doug brings up a valid point in his mentioning of the capabilities of <u>NARAC</u>. He actually asked what NARAC was doing when we spoke earlier today on the phone. I couldn't tell him because I don't know. If we get shareable info for states from DOE/NARAC/IMAAC then it would go a long way to build bridges. That's **IF** we get an OK to share info.

Bill Maier

From: Pearce, Clyde E (HSS) [mailto:clyde.pearce@alaska.gov] Sent: Sunday, March 13, 2011 4:09 PM To: Maier, Bill Subject: RE: FW: NRC Continues to Track Earthquake and Tsunami Issues

The real time gamma-beta readings are from our office in Anchorage. We also have hot particle Erams in Anchorage, Fairbanks and Juneau that requires sending a filter to EPA twice a week, which we will be reviewing again tomorrow.

Thank you for the notifications.

Clyde

From: Maier, Bill [mailto:Bill.Maier@nrc.gov]
Sent: Sun 3/13/2011 10:45 AM
To: Pearce, Clyde E (HSS); Dasher, Douglas H (DEC)
Cc: Sonafrank, Nancy B (DEC)
Subject: RE: FW: NRC Continues to Track Earthquake and Tsunami Issues

Clyde,

Thanks for that information. My assumption is that these readings are for your office area in Anchorage. Is that correct?

Bill Maier 817-917-1226

From: Pearce, Clyde E (HSS) [mailto:clyde.pearce@alaska.gov] **Sent:** Saturday, March 12, 2011 11:26 PM **To:** Dasher, Douglas H (DEC); Maier, Bill

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Cc: Sonafrank, Nancy B (DEC) **Subject:** RE: FW: NRC Continues to Track Earthquake and Tsunami Issues

Thanks, Doug. Here is a copy of my report to Dr. Jilly, Director of the state laboratory on Firday (yesterday).

Hmmmm. Well, that's strange. It does not allow me to copy and paste from the clipboard.

Anyway, the bottom line is that our normal background surveys have been upgraded to daily now and we have no indication (yet) of any readings above historical background levels. The same was true today, and we will sample again tomorrow (Sunday). We do not expect to see changes at this time because of the travel time delay you mentioned, and the fact that there has not been a significant release reported at this time. In addition, prevailing winds are as they were with the Tokaimura incident you referred to, moving materials in the opposite direction from Alaska... for now. That condition has been forecast to continue for the next few days.

Also, we do have our rooftop particle monitor and will be evaluating the results again on Monday.

Clyde

From: Dasher, Douglas H (DEC) Sent: Fri 3/11/2011 6:08 PM To: Pearce, Clyde E (HSS); <u>Bill.Maier@nrc.gov</u> Cc: Sonafrank, Nancy B (DEC) Subject: RE: FW: NRC Continues to Track Earthquake and Tsunami Issues

Clyde and Bill - FYI. I am in Montana right now and will be back in Fairbanks on the 14th. Today I also talked with Dan Asker with EPA about the Fairbanks station, which is running through Saturday, and will have the filter changed when we get back on the 14th. DEC is running the EPA monitoring staiton in Juneau.

I am out of cell phone contact till the 13th, but can check E-mails several times a day.

Regards,

Doug Dasher

From: Barbara Byron [mailto:bbyron@energy.state.ca.us] Sent: Fri 3/11/2011 1:42 PM To: Pearce, Clyde E (HSS); Dasher, Douglas H (DEC); <u>bill.potter@calema.ca.gov; lee.shin@calema.ca.gov;</u> lynne.olson@calema.ca.gov; michael.warren@calema.ca.gov; ralsop@co.slo.ca.us; <u>bill.webb@dhs.gov;</u> craig.fiore@dhs.gov; jeffrey.eckerd@doh.hawaii.gov; lynn.nakasone@doh.hawaii.gov; leo.wainhouse@doh.wa.gov; Bill.Maier@nrc.gov; shelley.carlson@odoe.state.or.us Subject: Re: FW: NRC Continues to Track Earthquake and Tsunami Issues

Do you have any more news on the Japanese reactor with the cooling problem? CNN is reporting that is is releasing radiation at levels 1,000 times background.

>>> "Maier, Bill" <<u>Bill.Maier@nrc.gov</u>> 03/11/11 2:03 PM >>>

From: opa administrators [mailto:opa@nrc.gov] Sent: Friday, March 11, 2011 2:40 PM To: Maier, Bill Subject: NRC Continues to Track Earthquake and Tsunami Issues

Owen, Lucy

From:	Dasher, Douglas H (DEC) [doug.dasher@alaska.gov]
Sent:	Friday, March 11, 2011 9:09 PM
To:	Pearce, Clyde E (HSS); Maier, Bill
Cc:	Sonafrank, Nancy B (DEC)
Subject:	RE: FW: NRC Continues to Track Earthquake and Tsunami Issues

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Sent:	 Friday, March 11, 2011 8:58 PM
То:	Barbara Byron; Pearce, Clyde E (HSS); bill.potter@calema.ca.gov; lee.shin@calema.ca.gov; lynne.olson@calema.ca.gov; michael.warren@calema.ca.gov; ralsop@co.slo.ca.us; bill.webb@dhs.gov; craig.fiore@dhs.gov; jeffrey.eckerd@doh.hawaii.gov; lynn.nakasone@doh.hawaii.gov; leo.wainhouse@doh.wa.gov; Maier, Bill; shelley.carlson@odoe.state.or.us
Subject:	RE: FW: NRC Continues to Track Earthquake and Tsunami Issues
-	

Hello - Listening to the news gives one a mixed bag of information, with some TV anchor people trying to forecast meltdowns, doomsday scenarios. At the moment the Japanese appear to be handling the numerous problems, not only nuclear, and such spectualtion is in my view irresponsible.

I can say for Alaska we have time to track the event and have EPA radiation monitoring stations in Anchorage, Fairbanks and Juneau. In the late 1990's after a criticality event, due to improper handling of material, at a facility in Japan, the Lawrence Livermore's Atmospheric Release Atmospheric Release Advisory Capability (ARAC) modeled the release, which was inconsequencial in regards to raditiona hazard for Alaska, but did show that atmospheric transport time from Japan to Alaska was on the order of 3 to 5 days.

Such information from ARAC would be useful to Alaska and others if the suituation warrants it.

Regards,

. . .

Douglas Dasher

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Sent: Fri 3/11/2011 1:42 PM
To: Pearce, Clyde E (HSS); Dasher, Douglas H (DEC); <u>bill.potter@calema.ca.gov</u>; <u>lee.shin@calema.ca.gov</u>; <u>lynne.olson@calema.ca.gov</u>; <u>michael.warren@calema.ca.gov</u>; <u>ralsop@co.slo.ca.us</u>; <u>bill.webb@dhs.gov</u>; <u>craig.fiore@dhs.gov</u>; jeffrey.eckerd@doh.hawaii.gov; <u>lynn.nakasone@doh.hawaii.gov</u>; <u>leo.wainhouse@doh.wa.gov</u>; <u>Bill.Maier@nrc.gov</u>; <u>shelley.carlson@odoe.state.or.us</u>
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From: Sent: To: Subject: Operations Center Bulletin Sunday, March 13, 2011 10:12 AM OST02 HOC 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.

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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 <u>not</u> 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 <u>www.nrc.gov</u> or blog at <u>http://public-blog.nrc-gateway.gov</u>.

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.

Other Sources of Information:

USAID – <u>www.usaid.gov</u> U.S. Department of State – <u>www.state.gov</u> FEMA – <u>www.fema.gov</u> White House – <u>www.whitehouse.gov</u> Nuclear Energy Institute – <u>www.nei.org</u> International Atomic Energy Agency – <u>www.iaea.org/press</u>

No response to this message is required.

THIS IS NOT A DRILL

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ì Owen, Lucy

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From: Sent: To:	OPA Resource Sunday, March 13, 2011 3:27 PM 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 Revised - NRC Sees No Radiation at Harmful Levels Reaching U.S. From Damaged
Attachments:	Japanese Nuclear Power Plants
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For Immediate Release

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U.S. NUCLEAR REGULATORY COMMISSION Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-046

March 13, 2011

(Revised) 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 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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News releases are available through a free *listserv* subscription at the following Web address: <u>http://www.nrc.gov/public-involve/listserver.html</u>. The NRC homepage at <u>www.nrc.gov</u> also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website. From:Howell, ArtSent:Sunday, March 13, 2011 1:19 PMTo:Collins, ElmoSubject:Misc.

:....

Elmo,

FYI: NRC was covered on Fox news: sent 2 BWR experts and HQ Ops. Center staffed 24/7.

Also, Ray Golden, former SONGS PAO now at TVa, was interviewed on Bacground by Fos on nuke plants and accidents.

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From:	Uselding, Lara
Sent:	Sunday, March 13, 2011 12:47 PM
То:	Pruett, Troy; Kennedy, Kriss; Collins, Elmo; Howell, Art; Howell, Linda; Vegel, Anton; Caniano, Roy
Subject:	NEI posted the following fact sheet

You may have this but sharing as FYI Lara Uselding NRC Region 4 Public Affairs 817-917-0321

From: Hayden, Elizabeth
To: Sheehan, Neil; Burnell, Scott; McIntyre, David; Couret, Ivonne; Screnci, Diane; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Chandrathil, Prema; Dricks, Victor; Uselding, Lara; Janbergs, Holly
Sent: Sat Mar 12 20:23:12 2011
Subject: NEI has just posted the following fact sheet

FYI--Summary info on Japan from NEI

Events at the Fukushima Daiichi Nuclear Power Plant in Japan

March 12, 2011 (posted at 4:40 p.m. EST, Saturday, March 12)

Key Facts

The Incident

Unit 1 of the Fukushima Daiichi nuclear power plant was damaged in a magnitude 8.9 earthquake and subsequent tsunami on March 11. The plant is centered along the shore of the Sendai region, which contains the capital Tokyo.

The plant is a General Electric boiling water reactor 3 Mark 1 design, operated by Tokyo Electric Power Company (TEPCO).

Eleven of Japan's 55 nuclear reactors automatically shut down, as they are designed to do, when the earthquake hit.

After the earthquake and tsunami, there were difficulties powering the cooling system for unit 1 of the Fukushima Daiichi plant. After a buildup of hydrogen gas in the secondary containment structure at the plant, there was an explosion at that reactor on March 12.

The explosion caused a breach in the secondary containment. However, the primary containment that houses and protects the reactor vessel and fuel remains intact and is safe. This structure is made of steel and is extremely robust. The primary and secondary $\sqrt{1}$

containment are designed to prevent radiation from being released into the environment in the case of an accident. However, TEPCO intentionally vented steam from the secondary containment building in an effort to reduce pressure in that building. For a diagram of the reactor type used at Fukushima Daiichi, click here.

It appears that as the level of coolant in the reactor vessel lowered, a portion of the top of the uranium fuel rods was exposed. This may have caused zirconium cladding of the fuel rods to react with water to create hydrogen. This hydrogen was vented, then somehow ignited, causing the explosion.

As the explosion did not occur inside the reactor core—and the primary containment was not breached—there has not been a significant public health impact from the release of radiation from the containment structure.

Reactors 2 and 3 at Fukushima Daiichi were shut down in response to the earthquake. Units 4, 5 and 6 had been shut down prior to the earthquake for inspections and scheduled outages.

The Response

TEPCO has been pumping seawater, laced with boron, into the reactor core of Unit 1 of the Fukushima-Daiichi plant to cool the fuel.

Backup diesel generators and batteries have arrived at the Fukushima Daiichi plant. They will be used as an emergency source of electric power to pump water into the reactor core or containment of units 2 and 3 to continue cooling the reactor cores.

The Japanese government has expanded the evacuation zone around the facility to 20 kilometers, or about 12 miles.

TEPCO also is preparing to vent the containment structures at Fukushima Daiichi Units 2 and 3 to reduce the pressure inside primary containment in these reactors and maintain the structural integrity of the containment. Venting reduces pressure in the containment, but can be done in a safe manner.

Similar Reactors in the United States

The General Electric BWR 3 Mark 1 reactor design is used in six of 104 reactors in the United States. Every nuclear power plant is designed, built and managed to prevent radioactive releases, even in the event of natural disasters, operational accidents or security threats.

A variety of measures work together to protect public safety: the design and safety features built into nuclear power plants; the multiple layers of physical barriers that protect the reactor; and highly trained, federally certified professionals who operate the plant safely and know how to respond in the event of emergencies.

More information

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To learn about boiling water reactors in general, click here.

For more on nuclear reactors and seismic events, click here.

To stay up to date:

See these resources:

- NEI
- TEPCO
- World Nuclear News
- International Atomic Energy Agency

nuclear Putting Clean Air Energy to Work.

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Sent through mail.messaging.microsoft.com
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From: Sent: To:	OPA Resource Sunday, March 13, 2011 1:24 PM 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:	Press Release Being Published Shortly
Attachments:	11-046.docx

Press Release – NRC Sees No Radiation At Harmful Levels Reaching U.S.

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~c/48





U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-046

March 13, 2011

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

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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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Kock, Andrea

From:	Franovich, Mike
Sent:	Sunday, March 13, 2011 11:27 PM
То:	Ostendorff, William
Cc:	Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason
Subject:	FW: 2230 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep
Attachments:	USNRC Earthquake-Tsunami Update.031311.2230EDT.docx

There are several previous versions of this report that came out in rapid succession after the explosion at Daiichi Unit 3 at 22:00 EDT. Relevant excerpt below:....bberry friendly

Unit 3

- The reactor is shut down. No offsite power, no emergency diesel generators working.
- TEPCO is working with the Japanese national government to reduce the pressure in the reactor containment. Containment remains intact.
- TEPCO informed Japanese Cabinet that Unit 3 water injection stopped and water level decreased exposing fuel. Reactor water level decreased to -150 to -200 cm below the top of the core.
- Efforts to restart the Reactor Core Isolation Cooling System (high pressure injection) failed at 1510 EST (March 12, 2011). Emergency Core Cooling System flow could not be confirmed. Core damage likely.
- The national government has instructed evacuation for those local residents within 20km radius of the site periphery in accordance with clause 1 of the Article 15 of the Radiation Disaster Measure declared.
- Alternative methods to inject water into the core are being investigated.
- Containment sprays used to lower pressure within the reactor containment have been cancelled.
- A reactor pressure vessel manual safety valve was opened to lower the reactor pressure. The valve opening procedure ended at 1920 EST on March 12, 2011. This procedure was immediately followed at 1925 EST (March 12, 2011) by injection of sea water and boric acid into the reactor core (uncertain of success).
- TEPCO does not believe that there is any reactor coolant leakage inside the reactor containment vessel.
- At approximately 2200 EDT (March 13, 2011) there was a hydrogen explosion at Unit 3.

From: LIA07 Hoc

Sent: Sunday, March 13, 2011 10:45 PM

To: LIA07 Hoc; Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tifft, Doug; Timothy Greten; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena; Schmidt, Rebecca; Powell, Amy; Loyd, Susan; Coggins, Angela; Batkin, Joshua; <u>taskforce-1@state.gov</u>

Cc: LIA09 Hoc

Subject: RE: 2230 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 2230 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 13, 2011. This Update includes information on the status of Fukushima Daiichi, Unit 3.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions. -Jim

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

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From:	Franovich, Mike
То:	Ostendorff. William
Subject:	RE: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States
Date:	Sunday, March 13, 2011 11:45:00 AM

BTW, on Face the Nation, Joe Lieberman called for a pause in licensing plants in US to review implications from Japan, but he supported nuclear energy. He credited NRC and FEMA for periodic EP drills and he noted improvements in US plants since TMI.

From: Ostendorff, William Sent: Sunday, March 13, 2011 11:39 AM To: Franovich, Mike Subject: Re: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States

Mike- I have been getting these updates but thanks for checking with me.

From: Franovich, Mike
To: Ostendorff, William; Nieh, Ho; Warnick, Greg
Cc: Kock, Andrea; Zorn, Jason
Sent: Sun Mar 13 11:31:56 2011
Subject: FW: NRC IS RESPONDING TO AN EMERGENCY OUTSIDE of the United States

In case you didn't receive this notice...

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



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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 <u>www.nrc.gov</u> or blog at <u>http://public-blog.nrc-gateway.gov</u>.

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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.

Other Sources of Information:

USAID – <u>www.usaid.gov</u> U.S. Department of State – <u>www.state.gov</u> FEMA – <u>www.fema.gov</u> White House – <u>www.whitehouse.gov</u> Nuclear Energy Institute – <u>www.nei.org</u> International Atomic Energy Agency – <u>www.iaea.org/press</u>

No response to this message is required.

THIS IS NOT A DRILL

Kock, Andrea

From:	Franovich, Mike
Sent:	Sunday, March 13, 2011 4:07 PM
To:	Ostendorff, William
Cc:	Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason
Subject:	FW: 1600 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep
Attachments:	USNRC Earthquake-Tsunami Update.031311.1600EDT.docx

This update has more info on US Reagan and dose measurements (at end of paper)

From: LIA07 Hoc

Sent: Sunday, March 13, 2011 3:57 PM

To: Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tifft, Doug; Timothy Greten; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena

Subject: 1600 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 1600 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 13, 2011. This Update includes information related to NRC's evaluation of radiation measurements from the USS Ronald Reagan.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions. -Sara

Actor

Sara K. Mroz

Communications and Outreach

Office of Nuclear Security and Incident Response

US Nuclear Regulatory Commission

sara.mroz@nrc.gov

LIA07.HOC@nrc.gov (Operations Center)



From:Ostendorff, WilliamSent:Sunday, March 13, 2011 3:42 PMTo:Franovich, MikeCc:Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, JasonSubject:Re: 1400 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep

Thanks Mike. Commissioners have a conference call update at 4 pm.

From: Franovich, Mike
To: Ostendorff, William
Cc: Nieh, Ho; Warnick, Greg; Kock, Andrea; Zorn, Jason
Sent: Sun Mar 13 14:56:09 2011
Subject: FW: 1400 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep

Sir,

I will get better info at the 15:30 brief. Some of this material is old but is showing up now in this approved update document.

For reference, the core fuel height is 12 ft (approximately 365 cm). Again, in BWRs, if there is water in the lower part of the core, then steam cooling occurs for the upper part of the core and is adequate assuming the core hasn't melted from earlier in the event. Also, these NRC reports and Japanese reports state some number of "cm below top of fuel." Perhaps they did a conversion for us, but the reference level zero point for U.S. BWRs is usually **not** at the top of fuel but much higher in the vessel but we will need assume the report is correct to be conservative.

Mike

From: LIA07 Hoc

Sent: Sunday, March 13, 2011 2:33 PM

To: Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tifft, Doug; Timothy Greten; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena

Subject: 1400 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 1400 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 13, 2011.

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Please call the Headquarters Operations Officer at 301-816-5100 with questions. -Sara

Sara K. Mroz

Communifications and Outreach Office of Nuclear Security and Incident Response US Nuclear Regulatory Commission <u>sara.mroz@nrc.gov</u> LIA07.HOC@nrc.gov (Operations Center)

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Lee, Richard

Michael Corradini [corradini@engr.wisc.edu] From: Sent: Sunday, March 13, 2011 10:40 AM To: Lee, Richard RE: Fukushima Subject: agreed - i will add you to my list of what we hear Michael Corradini, Chair Engineering Physics 1.- 1 University of Wisconsin (608)263-1648 [Fax: 3-7451] corradini@engr.wisc.edu http://www.engr.wisc.edu/ep Quoting "Lee, Richard" <kichard.Lee@nrc.gov>: > Thanks, Mike: > I do not see what advise one can give at this time. TEPCO knows what > to do - cooling the core and the spent fuel pools. > Richard > > From: Michael Corradini [corradini@engr.wisc.edu] > Sent: Saturday, March 12, 2011 9:16 PM > To: Lee, Richard > Subject: RE: Fukushima > > Dear Richard - Dana was kidding with me that we should go, but he > later indicated that he was giving advice to Pete Lyons by phone and > that is all he could do. We all seem to be reading the papers and > websites > ^> - -> Michael Corradini, Chair > Engineering Physics £ > University of Wisconsin > (608)263-1648 [Fax: 3-7451] > corradini@engr.wisc.edu > http://www.engr.wisc.edu/ep 2 ⇒ > Quoting "Lee, Richard" <Richard.Lee@nrc.gov>: > >> Mike: >> >> Is Dana on his way to Japan? >> >> My contact at the Japan Nuclear Safety Commission told me that NRC >> Chairman called NSC Chairman to offer assistance. NSC Chairman said >> it did not need anything, and would ask NRC for help if needed. I do >> not know what NSC can do, othe than advising the Govt. to evacuate >> around the power plant. The utility is basically >> responsible for taking action. Legally, NSC and NRC are in the

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>> same boat - cannot tell them what to do next.
>>
>> Richard
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>> From: Michael Corradini [corradini@engr.wisc.edu]
>> Sent: Friday, March 11, 2011 9:08 PM
>> To: Farmer, Mitchell T.
>> Cc: Gavrilas, Mirela; Tinkler, Charles; Basu, Sudhamay; Lee, Richard;
>> Grandy, Christopher
>> Subject: Re: Fukushima
>>
>> I am with Dana and others at ACRS. We have gotten some small info
>> from folks in Japan. Fukashima used up their DC battery energy
>> powering their RCIC pumps after the AC diesel generators started and
>> then failed. As of 7pm EST, portable generators had arrived but yet
>> to have been hooked up. Charlie or Mirela may know more. Dana has
>> been contacted by a DOE emergency response team (and I wished him
>> well to Japan).
>> --
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>> Michael Corradini, Chair
>> Engineering Physics
>> University of Wisconsin
                                    1 .
>> (608)263-1648 [Fax: 3-7451]
>> corradini@engr.wisc.edu
http://www.engr.wisc.edu/cn
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•>
>> Quoting "Farmer, Mitchell T." <<u>farmer@anl.gov</u>>:
>>
>>> 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
             They have siliecous concrete in Japan; too much
>>> do that.
>>> interaction ex-vessel w/o water and coolability is lost. Let me
>>> know if there is anything I can do.
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>>> Mitch
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Gavrilas, Mirela

From:	Gavrilas Mirela
Sent:	Sunday, March 13, 2011 2:14 PM
To:	Gibson, Kathy
Subject:	Tony Ulses is one of the folk going to Japan. Hope you're feeling better. (eom)
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Ramsey, Kevin

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



A <u>dedicated page</u> 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 <u>FAQs on the Japanese Nuclear Energy Situation</u> and other fact sheets. NAN would also like to provide the <u>ANS Talking Points</u> to assist in your responses to inquiries and encourage you to visit <u>www.ansnuclearcafe.org</u>.

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here to unsubs

Ani, Suzanne

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

To: DC NA-YGN Members

Courtesy of Women in Nuclear

A <u>dedicated page</u> 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.

Ward, Steven

From: Sent: To: Subject: tomclements329@cs.com Monday, March 14, 2011 10:49 AM tomclements329@cs.com 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 weaponsgrade 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 <u>reactor-grade MOX</u>, thus making radioactive release potentially worse. <u>Weapons-grade MOX</u> has <u>never</u> 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

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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

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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."

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See <u>http://www.fissilematerials.org/blog/2011/03/us_plutonium_disposition_.html</u> and <u>http://www.foe.org/secret-plan-exposed-use-surplus-weapons-plutonium-washington-state-nuclear-reactor</u>.

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

Ramsey, Kevin

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From:Joe Colvin [president@ans.org]Sent:Monday, March 14, 2011 1:55 AMTo:Ramsey, KevinSubject:Talking Points on Implications of Fukushima Accident to U.S. Nuclear PlantsAttachments:ANS Talking Points - 2011-03-13 R1_2.pdf

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.

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Thank you all for your strong support!

Joe

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 hypotheses 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

Ward, Steven

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

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Connecting the Leaders in Nuclear Materials Management



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



INMM



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Dion, Jeanne

From: Sent: To: Subject:

Dion, Jeanne Monday, March 14, 2011 9:20 AM Coker, Shyrl RE: SVTC & Ops Center are not available

Thanks for letting me know, Shryl. ©

From: Simonian, Niry Sent: Monday, March 14, 2011 9:19 AM To: Coker, Shyrl; Dion, Jeanne; West, Garmon Subject: RE: SVTC & Ops Center are not available

Shyrl,

I didn't receive any worksheets for the SIF this week, so it was likely going to be canceled anyhow. I can go ahead and send out a cancellation notice now, to head off any possible submissions.

Niry

From: Coker, Shyrl Sent: Monday, March 14, 2011 9:11 AM To: Dion, Jeanne; Simonian, Niry; West, Garmon Subject: SVTC & Ops Center are not available

Because of the Japan issue all the rooms in the Ops Center are in use and Willie just called to make sure it is okay to cancel all the appointments we have this week.

Jeanne – yours are March 15th and March 17th Niry – yours is the SIF March 16th

Thanks,

Shyrl Coker Security Specialist Nuclear Regulatory Commission NSIR/DSO/DDSO/STSB 301-415-6490

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Lee, Richard

From:	Gibson, Kathy
Sent:	Monday, March 14, 2011 8:03 AM
То:	Scott, Michael; RES_DSA
Subject:	Re: Japan's Nuclear Plant Status

I have found the NISA (Japan's nuclear regukatory agency) and NEI websites to be the most informative. Also John Voglewede heard from Toyo Fuketa, one of our JAEA colleagues - he and his family are ok as well as those at JAEA's office.

----- Original Message -----From: Scott, Michael To: RES_DSA Sent: Mon Mar 14 07:47:41 2011 Subject: Japan's Nuclear Plant Status

Good morning.

I know you have heard a lot in the press about the challenging situation for the reactors in Japan nearby last week's quake. NRC does not post status on these reactors. A good clearinghouse for information on the status of the Japanese reactors can be found on the website of the American Nuclear Society at:

http://ansnuclearcafe.org/____

At least one of the DSA staff (Tony Huffert) has been called in as the NRC Command Center has been partially stood up to provide whatever support we can to Japan. It is possible more of us will be tapped as the event progresses. I'm sure we all share concern about this event and its impacts, and want to do all we can to help.

Mike

NRC Steffing.

Case, Michael

From:	Case, Michael
Sent:	Monday, March 14, 2011 2:52 PM
To:	Gavrilas, Mirela, Gibson, Kathy
Subject:	RE: Assessement of cooling requirements for Fukushima units 1-3

Thanks. That's actually very helpful to me.

From: Gavrilas, Mirela
Sent: Monday, March 14, 2011 2:37 PM
To: Case, Michael; Gibson, Kathy
Subject: Fw: Assessement of cooling requirements for Fukushima units 1-3

From: Farmer, Mitchell T. <<u>farmer@anl.gov</u>>
To: Tinkler, Charles; Basu, Sudhamay; Lee, Richard; Gavrilas, Mirela
Sent: Mon Mar 14 14:31:28 2011
Subject: FW: Assessement 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. Assessement 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/understimated 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 configuration was not coolable the material most likely would have failed the reactor pressure vessel.

Coyne, Kevin

From:	Coyne, Kevin
Sent:	Friday, April 15, 2011 8:30 AM
To:	'Milan Patrik'
Subject:	RE: Draft CAPS and Powerpoint Slides on Fukushima Task
Follow Up Flag:	Follow up

Flag Status:

Dear Milan –

Thank you for the email and your help on planning out this task. Have a good weekend!

Best regards,

Kevin

From: Milan Patrik [mailto:pat@ujv.cz]
Sent: Wednesday, April 13, 2011 11:03 AM
To: Coyne, Kevin
Cc: Abdallah.AMRI@oecd.org
Subject: RE: Draft CAPS and Powerpoint Slides on Fukushima Task

Flagged

Dear Kevin,

thank you for the new version of Fukushima CAPS. I think it is very well prepared, I do not have any additional comments.

Best regards,

Milan Patrik UJV Rez Czech Republic

>>> "Coyne, Kevin" <<u>Kevin.Coyne@nrc.gov</u>> 6.4.2011 18:24 >>> Dear Abdallah --

Please see attached revision to the Fukushima CAPS. I have incorporated the comments received from IRSN and made a few other changes. I replaced the phrase "research plan" with "activity plan", clarified some of the wording, and added an interim deliverable in December (draft status report). I think this should capture all the comments we received at the WGRisk annual meeting. Anyway, I think it is probably ready to go out to the wider WGRisk membership for review and comment at this point.

Please let me know if you have any additional comments or questions -

Best regards,

Kevin

From: <u>Abdallah.AMRI@oecd.org</u> [<u>mailto:Abdallah.AMRI@oecd.org</u>] Sent: Monday, April 04, 2011 10:16 AM To: Coyne, Kevin Subject: RE: Draft CAPS and Powerpoint Slides on Fukushima Task



Dear Kevin,

Thank you very much.

Should I wait for a revised version of the CAPS to distribute it to the whole WGRISK members for endorsement or can I distribute this one as it is already requested by some persons?

With my best regards.

From: Coyne, Kevin [mailto:Kevin.Coyne@nrc.gov] Sent: Friday, April 01, 2011 12:38 To: AMRI Abdallah, NEA/SURN Cc: Siu, Nathan; vinh.dang@psi.ch; reino.virolainen@stuk.fi; hollo@nubiki.hu; marina.roewekamp@grs.de; jeannemarie.lanore@irsn.fr; Milan Patrik Subject: Draft CAPS and Powerpoint Slides on Fukushima Task

Dear Abdallah and WGRisk Bureau members -

Please see attached draft caps and power point slides discussed this morning. Note that the CAPS still needs to be revised to reflect the comments from the discussion this morning.

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Best regards,

Kevin

From: Sent: To: Cc: Subject: Collins, Elmo Monday, March 14, 2011 4:58 PM Uselding, Lara Kennedy, Kriss; Pruett, Troy; Caniano, Roy; Vegel, Anton; Howell, Art FYI: Potential questions for EOC meetings

Lara

Some questions posed for our preparation for EOC meetings

Elmo

From: McCree, Victor
Sent: Monday, March 14, 2011 3:46 PM
To: Hannah, Roger; Ledford, Joey
Cc: Collins, Elmo; Dean, Bill; Satorius, Mark; Wert, Leonard; Casto, Chuck
Subject: FW: Potential questions for EOC meetings

Here are questions that OPA, et.al., are asked to consider in developing the agency Q&As for the Japanese earthquake/tsunami...and that can be referenced by NRC managers in preparation for the ROP end-of-cycle and other near term public meetings.

Vic

From: Croteau, Rick
Sent: Monday, March 14, 2011 4:35 PM
To: McCree, Victor
Cc: Wert, Leonard; Jones, William
Subject: Potential questions for EOC meetings

Vic,

Not sure how you wanted these, but here are some of the questions we could see being asked at EOCs:

- 1. Do US nuclear plants have better capabilities to respond to natural disasters than the plants in Japan?
- 2. Did the NRC share the post 9/11 enhancements to the U.S. facilities with the Japanese?
- 3. Could there be core damage and radiation release at a US plant if a natural disaster exceeding the plant design were to occur?
- 4. Could explosions like those that occurred in Japan happen at a U.S facility?
- 5. How would the U.S. have responded to the events of March 11?
- 6. How are US BWRs similar and/or different from the plants experience problems in Japan?
- 7. Why are US plants safe to operate considering the events in Japan?
- 8. How big an earthquake is plant X designed to handle (for each plant)?
- 9. Is plant X designed to withstand a tsunami (for each coastal plant)?
- 10. What is the NRC doing to ensure this (Japan event) doesn't happen at US plants?
- 11. How will the U.S. learn from the failures at the Japanese reactors?
- 12. Is the NRC relooking at seismic analysis for US plants?
- 13. Is the event in Japan worse than TMI and Chernobyl?
- 14. What is the longer term prognosis for keeping the reactors cooled at the Japanese facilities?
- 15. Does the NRC participate in inspection of the Japanese facilities?
- 16. Given low probability events do occur, how does the U.S. ensure that U.S. plant designs are not significantly degraded by risk-informed changes?

r)lo

17. How does the NRC ensure people can escape if an accident occurs from a natural disaster when the infrastructure is also affected or destroyed in an area around a plant?

Rick

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From:	
Sent:	
To:	
Cc:	
Subject:	

Collins, Elmo Monday, March 14, 2011 5:56 PM Maier, Bill Howell, Art Fw: Request from the States

From: LIA04 Hoc

To: Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard;
 Virgilio, Rosetta; Barker, Allan; Browder, Rachel; Collins, Elmo; Dean, Bill; Erickson, Randy; Heck, Jared; Logaras, Harral;
 Maier, Bill; McCree, Victor; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
 Sent: Mon Mar 14 18:05:43 2011
 Subject: RE: Request from the States

Copied from the LT Director in response to the State Questions -

This is email is primarily for Charlie and Rosetta, to close the loop. We discussed the need for providing consistent information to the States, via the RSLO's, with the Executive Team and the Chairman a few minutes ago. The Chairman directed us to coordinate with FEMA since they have an established relationship with the States. We settled on working with OPA to provide the information tailored to our best extent to the questions and concerns that would be expressed by the States, and provide to FEMA for awareness and commonality, and then the RSLO's for sharing.

A broad conference call with all States is not currently being contemplated, we'd like to see how providing a common set of information works first.

Tim McGinty , LT Director

From: McNamara, Nancy Sent: Monday, March 14, 2011 4:20 PM To: LIA04 Hoc Cc: Tifft, Doug Subject: Request from the States

We had a request from the States that if HQs rejects a question from the States that has been submitted, to please let the RSLOs know so we may tell them versus just letting them hang thinking we are getting them the answer.

-c165

Owen, Lucy

From:	
Sent:	
To:	
Subject	

Klein, Dale [dklein@utsystem.edu] Monday, March 14, 2011 12:22 PM Collins, Elmo RE: info



From: Collins, Elmo [mailto:Elmo.Collins@nrc.gov] Sent: Monday, March 14, 2011 11:10 AM To: Klein, Dale Subject: RE: info

Dr. Klein

I have not heard from the AP reporter you mentioned yesterday. I'll let you know if I am contacted.

Have a great day!

Elmo

From: Klein, Dale [mailto:dklein@utsystem.edu] Sent: Saturday, March 12, 2011 4:04 PM To: Collins, Elmo Subject: info

Elmo -- Thanks for your help on SO and DC. Coordinates are shown below. Dale

Dale Klein, Ph.D., P.E. Associate Vice Chancellor for Research The University of Texas System 601 Colorado Street, Room 302 Austin, Texas 78701 512/499-4689 Voice 512/499-4240 Fax dklein@utsystem.edu

cello

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From: Sent: To: Subject: Collins, Elmo Monday, March 14, 2011 5:48 AM Kennedy, Kriss; Howell, Art Re: All Hands Meeting?

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I think it is sa goog idea

----- Original Message -----From: Kennedy, Kriss To: Howell, Art; Collins, Elmo Sent: Sun Mar 13 22:47:27 2011 Subject: All Hands Meeting?

Elmo/Art

You may have already considered this, but we may want to consider having an all hands meeting tomorrow to communicate to the rest of the staff the events of the weekend, the info we know, NRC activities, etc.

Kriss

This email is being sent from an NRC Blackberry device.

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From: Sent: To: Subject: Collins, Elmo Monday, March 14, 2011 12:44 PM Uselding, Lara RE: Recent NRC blog posts and press releases with NRC messaging

Thank you! Elmo

From: Uselding, Lara Sent: Monday, March 14, 2011 11:53 AM To: R4; R4 IRC Subject: Recent NRC blog posts and press releases with NRC messaging

U.S. Nuclear Plants are Designed for Severe Natural Hazards

Leave a Comment Posted by Moderator on March 13, 2011

We've gotten some questions about how U.S. nuclear power plants would fare when faced with severe natural hazards. To answer: NRC's rigorous safety regulations ensure that U.S. nuclear facilities are designed to withstand tsunamis, earthquakes and other hazards. In addition to those plants in recognized earthquake zones, the NRC has been working with several agencies to assess recent seismic research for the central and eastern part of the country. That work continues to indicate U.S. plants will remain safe.

For more information on U.S. nuclear power plants and earthquakes, read our backgrounder on the subject here: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-seismic-issues.html

Eliot Brenner Public Affairs Director

Operating Reactors nuclear

Available Information Points to No Radiation Risk to U.S. From Damaged

Japanese Plants

2 Comments Posted by Moderator on March 13, 2011

We are working with other U.S. government agencies to monitor the situation in Japan — and to monitor for radioactive releases and to be prepared to predict their path. Fortunately, all the available information at this time indicates weather conditions have taken the small releases from the Fukushima reactors out to sea away from the population.

And, importantly, given the thousands of miles between Japan and us – including Hawaii, Alaska, the U.S. territories and the U.S. West Coast – we are not expecting to experience any harmful levels of radioactivity here. We would like to repeat — we are not expecting to experience any harmful levels of radioactivity here.

As expected, we are getting a lot of questions from people who are seeking information about developments at Japanese reactors. We understand the need for information, but we are not able to comment on the situation. It is an ongoing crisis for the Japanese and they have primary responsibility for handling it and communicating about it. But please stay tuned to this blog for the latest information we can provide.

Thank you for reading our blog. Remember to look at yesterday's post about how you can help Japan in this crisis with donations.

Eliot Brenner Public Affairs Director

The following is helpful as used in our press releases:

From: Sent: To: Subject: Attachments: Kennedy, Kriss Monday, March 14, 2011 11:20 AM Collins, Elmo; Howell, Art FW: ANS Update on Japan Situation ANS Japan Backgrounder.pdf

FYI

-----Original Message-----From: Allen, Don Sent: Monday, March 14, 2011 7:59 AM To: Lantz, Ryan; Warnick, Greg; Reynoso, John; Micewski, Laura; Kennedy, Kriss; Pruett, Troy Cc: Jayroe, Peter; Miller, Geoffrey; Deese, Rick Subject: ANS Update on Japan Situation

The attached file has a better description of what (possibly) happened than anything I saw on the news.

Don

-----Original Message-----From: Joe Colvin [mailto:president@ans.org] Sent: Saturday, March 12, 2011 5:39 PM To: Allen, Don 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 (<u>http://ansnuclearcafe.org</u>) 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.

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.

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This team has compiling relevant news reports and other publicly available information on the ANS blog, which can be found at 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.

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Owen, Lucy

From:	Tannenbaum, Anita
Sent:	Monday, March 14, 2011 9:19 AM
То:	R4
Subject:	Issued - Press Releases #1 through 5 - Japan Event Earthquake/Tsunami
Attachments:	Press Release 1.pdf; Press Release 2.pdf; Press Release 3.pdf; Press Release 4.pdf; Press Release 5.pdf

From: OST03 HOC

Sent: Sunday, March 13, 2011 2:09 PM

To: DOI; DTRA; chardin; <u>rfraass@crcpd.org</u>; james.d.lloyd@nasa.gov; PN_Distribution; FDA; State Dept; White House Sit Room; Bernie Beaudin; Canadian Nuclear Safety Commission (CNSC); <u>eoc2@cnsc-ccsn.gc.ca</u>; <u>DOEHQEOC@OEM.DOE.GOV</u>; <u>fldr-nrc@comdt.uscg.mil</u>; <u>EOC.EPAHQ@EPAMAIL.EPA.GOV</u>; Lawrence Koleff; SIOC; <u>FEMA-</u>

operations-center@dhs.gov; Health Canada Operations Center; IAEA Emergency Response Unit; USDA; Screnci, Diane; Sheehan, Neil; Dricks, Victor; Clifford, James; Gamberoni, Marsha; Heater, Keith; Holian, Brian; Kay Gallagher; Kinneman, John; Lew, David; Nick, Joseph; ODaniell, Cynthia; Powell, Raymond; R1 IRC; Roberts, Darrell; Thompson, Margaret; Davenport, Patricia; McCallie, Karen; Miles, Patricia; Quinones-Navarro, Joylynn; R2 IRC; Rudisail, Steven; R3 IRC; Smith, Desiree; Alferink, Beth; Andrews, Tom; Howell, Linda; R4 IRC

Subject: NRC Press Release #1 through 5 - Japan Event Earthquake/Tsunami

*****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.



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 safetysignificant 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.

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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 safetysignificant 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.

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



March 12, 2011

NRC IN COMMUNICATION WITH JAPANESE REGULATORS

Officials at Nuclear Regulatory Commission headquarters in Rockville, Md., have spoken with the agency's counterpart in Japan, offering the assistance of U.S. technical experts. Should the Japanese want to make use of this expertise, NRC staffers with extensive background in boiling-water reactors are available to assist ongoing efforts.

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. 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 is operating on a 24-hour basis.

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 into account the most severe natural phenomena historically estimated for the site and surrounding area.

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC's website at www.nrc.gov.

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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 administering.

"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 U.S. Dept. of State -- www.state.gov FEMA -- www.fema.gov White House -- www.whitehouse.gov Nuclear Energy Institute --- www.nei.org International Atomic Energy Agency -- 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.

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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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From: Sent: To: Subject: Attachments: Tannenbaum, Anita Monday, March 14, 2011 9:17 AM R4 Issued - Press Release 11-044.docx

NRC IN COMMUNICATION WITH JAPANESE REGULATORS

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March 12, 2011

NRC IN COMMUNICATION WITH JAPANESE REGULATORS

Officials at Nuclear Regulatory Commission headquarters in Rockville, Md., have spoken with the agency's counterpart in Japan, offering the assistance of U.S. technical experts. Should the Japanese want to make use of this expertise, NRC staffers with extensive background in boiling-water reactors are available to assist ongoing efforts.

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. 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 is operating on a 24-hour basis.

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 into account the most severe natural phenomena historically estimated for the site and surrounding area.

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC's website at www.nrc.gov.

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Owen, Lucy

From:	Leeds, Eric
Sent:	Monday, March 14, 2011 6:24 AM
То:	Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo; Sheron, Brian; Evans, Michele; Zimmerman, Rov: Johnson, Michael
Cc:	Holahan, Gary; Campbell, Andy; Correia, Richard; Uhle, Jennifer; Howell, Art; Pederson, Cynthia; Wert, Leonard; Lew, David; Weber, Michael; Virgilio, Martin; Grobe, Jack; Boger, Bruce; HOO Hoc
Subject:	ACTION: Assistance to Japanese

Folks -

The Japanese requested the US supply six individuals with knowledge of the BWR 3 & 4 design to assist them in their hour of need. I'd like to discuss potential candidates with you on a conference call today at 9:30 am. I will work through the HOOs to set up a conference call and send you the number. We do not have a lot of details with regard to how long, although we do know these folks will assist in their EOCs at two different locations in Japan. I'll keep you informed as we learn more.

Thanks for your help!

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





U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-048

March 14, 2011

NRC SENDS ADDITIONAL EXPERTS TO ASSIST JAPAN

Acting as part of a U.S. Agency for International Development assistance team, the NRC has dispatched nine additional experts to Tokyo to provide assistance as requested by the Japanese government.

The first members of the team left the United States Monday evening and were due to arrive in Tokyo Wednesday afternoon. The team includes additional reactor experts, international affairs professional staffers, and a senior manager from one of the NRC's four operating regions.

The team members come from the NRC's headquarters in Rockville, Md., and from offices in King of Prussia, Pa., and Atlanta. The team has been instructed to: conduct all activities needed to understand the status of efforts to safely shut down the Japanese reactors; better understand the potential impact on people and the environment of any radioactivity releases; if asked, provide technical advice and support through the U.S. ambassador for the Japanese government's decision making process; and draw on NRC-headquarters expertise for any other additional technical requirements. The team will be in communication with the Japanese regulator, the U.S. Embassy, NRC headquarters, and other government stakeholders as appropriate.

The team is led by Charles A. Casto, deputy regional administrator of the NRC's Center of Construction Inspection, based in NRC's office in Atlanta. Casto has worked in the commercial nuclear power industry at three different nuclear power plants, including Browns Ferry, which has three boiling water reactors, operated by the Tennessee Valley Authority in Alabama. He has also worked as a licensed reactor operator and operator instructor. Casto will provide a single point of contact for the U.S. Ambassador in Japan on nuclear reactor issues.

The two reactor experts sent Saturday to Japan will participate as members of this assistance team.

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From:	OPA Resource
Sent:	Monday, March 14, 2011 5:59 PM
Sent: To:	 Monday, March 14, 2011 5:59 PM 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, Evelvn; Zimmerman. Roy: Zorn. Jason
Subject: Attachments:	Press Release: NRC Sends Additional Experts to Assist Japan 11-048.docx

For immediate release.

Office of Public Affairs US Nuclear Regulatory Commission 301-415-8200 <u>opa.resource@nrc.gov</u>

From: Sent:	Leeds, Eric Monday, March 14, 2011 12:11 PM
10:	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; Muessle, Mary
Cc:	Boger, Bruce; Grobe, Jack; Ruland, William; Meighan, Sean
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

vc/74

From:	Leeds, Eric
Sent:	Monday, March 14, 2011 2:39 PM
То:	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
Subject:	FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link
Attachments:	Natural Phenomena Limitations.wpd

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

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 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

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 tsunami. 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).

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 ¹ (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/A²	N/A ³
STP	0.10	0.07g	70	290	125 at 30 ft.	23	N/A ³
Wolf Creek	0.20/ 0.12⁴	0.20/ 0.12⁴	70	290	100 at 30 ft.	N/A²	N/A ^{5,6}
Diablo Canyon	0.20	0.13	43	157	80'	N/A²	N/A²
Duane Arnold	0.12	0.10	60	300	105-145°	12	N/A⁵
Grand Gulf	0.15	0.10	70	290	90 at 30 ft.	N/A²	N/A ³

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

¹ Safe Shutdown Earthquake ² Maximum flood level or tsunami/storm surge is below grade

³ Tsunami is not a credible event in the Gulf Coast

⁴ Power-block/non-power-block
 ⁵ Not a coastal plant

⁶ Remote from large bodies of water
 ⁷ Gust factor of 1.1 will apply

⁸ Depending on height

From: Sent: To: Cc: Subject: McCree, Victor Monday, March 14, 2011 3:46 PM Hannah, Roger; Ledford, Joey Collins, Elmo; Dean, Bill; Satorius, Mark; Wert, Leonard; Casto, Chuck FW: Potential questions for EOC meetings

Here are questions that OPA, et.al., are asked to consider in developing the agency Q&As for the Japanese earthquake/tsunami...and that can be referenced by NRC managers in preparation for the ROP end-of-cycle and other near term public meetings.

Vic

From: Croteau, Rick
Sent: Monday, March 14, 2011 4:35 PM
To: McCree, Victor
Cc: Wert, Leonard; Jones, William
Subject: Potential questions for EOC meetings

Vic,

Not sure how you wanted these, but here are some of the questions we could see being asked at EOCs:

- 1. Do US nuclear plants have better capabilities to respond to natural disasters than the plants in Japan?
- 2. Did the NRC share the post 9/11 enhancements to the U.S. facilities with the Japanese?
- 3. Could there be core damage and radiation release at a US plant if a natural disaster exceeding the plant design were to occur?
- 4. Could explosions like those that occurred in Japan happen at a U.S facility?
- 5. How would the U.S. have responded to the events of March 11?
- 6. How are US BWRs similar and/or different from the plants experience problems in Japan?
- 7. Why are US plants safe to operate considering the events in Japan?
- 8. How big an earthquake is plant X designed to handle (for each plant)?
- 9. Is plant X designed to withstand a tsunami (for each coastal plant)?
- 10. What is the NRC doing to ensure this (Japan event) doesn't happen at US plants?
- 11. How will the U.S. learn from the failures at the Japanese reactors?
- 12. Is the NRC relooking at seismic analysis for US plants?
- 13. Is the event in Japan worse than TMI and Chernobyl?
- 14. What is the longer term prognosis for keeping the reactors cooled at the Japanese facilities?
- 15. Does the NRC participate in inspection of the Japanese facilities?
- 16. Given low probability events do occur, how does the U.S. ensure that U.S. plant designs are not significantly degraded by risk-informed changes?
- 17. How does the NRC ensure people can escape if an accident occurs from a natural disaster when the infrastructure is also affected or destroyed in an area around a plant?

Rick

\$

From:	LIA04 Hoc
Sent:	Monday, March 14, 2011 4:02 PM
То:	Tifft, Doug; McNamara, Nancy; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill; Dean, Bill; McCree, Victor; Collins, Elmo; Heck, Jared; Trojanowski, Robert; Browder, Rachel; Erickson, Randy
Cc:	Turtil, Richard; Virgilio, Rosetta; Rautzen, William; Ryan, Michelle; Rivera, Alison; Lukes, Kim; Flannery, Cindy
Subject:	OPA Talking Points
Attachments:	OPA Talking Points.docx

Please see the attached for your information and use.

Amanda Noonan State Liaison – Liaison Team Incident Response Center

Quaketalking points march 14.docx

OPA

TALKING POINTS

JAPAN NUCLEAR SITUATION

As of 3/14/2011 3 P.M. EST

In a White House briefing this morning, Chairman Jaczko said the type and design of the Japanese reactors and the way events have unfolded give us confidence in saying radiation at harmful levels will not reach the U.S.

Jaczko also said today that we believe the protective steps the Japanese are taking are comparable to ones we would use here and that we advise Americans in Japan to follow the guidance of Japanese officials.

According to Chairman Jaczko, the NRC is always looking to learn information that can be applied to the U.S. reactors and we will certainly be looking at the information that comes from this incident.

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. The NRC is assembling a team to send over in response to the request for help.

The NRC already has two experts in boiling-water reactors (BWR) in Tokyo offering technical assistance. They are part of a USAID team.

The NRC is working with other U.S. agencies to monitor radioactive releases from Japan and to 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 results of the monitoring and distance between Japan and Hawaii, Alaska, the U.S. Territories and the U.S. West Coast, the NRC does NOT expect the U.S. to experience any harmful levels of radioactivity.

Nuclear power plants are built to withstand environmental hazards, including earthquakes. 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. The NRC then adds a margin for error to account for the historical data's limited accuracy. In other words, U.S. nuclear power plants are designed to be safe based on historical data from the area's maximum credible earthquake.

The NRC is coordinating its actions with other federal agencies as part of the U.S. government response. The NRC's headquarters Operations Center is activated and monitoring the situation on a 24-hour basis.



Fact Sheet Nuclear Program Update

Safety is TVA's top priority. TVA's nuclear plants are designed, built and operated to run safely and to properly shut down when conditions warrant. The reactors are designed and maintained to handle situations that may result from natural or man-made disasters. TVA will incorporate lessons learned from events in Japan into its existing plants, the construction at Watts Bar and projects that may be considered in the future.

Background

The March 11, 2011, earthquake and tsunami that damaged the Fukushima Nuclear Plant in Japan have prompted an industry-wide review, including by TVA, to make sure their nuclear plants are prepared to withstand significant natural and man-made disasters. TVA is confident in the safe operations of its plants, is reviewing enhancements to make them even safer, and believes nuclear energy is an important source of carbon-free power generation for the future.

Key points

- Following the initial event in Japan, TVA established a Centralized Response Center to monitor and coordinate with the Institute of Nuclear Power Operations and the World Association of Nuclear Operators the evaluation of information about the evolving conditions at the Fukushima plant.
- Since the Fukushima emergency, TVA has reviewed the requirements and verified the approaches for responding to design basis events at each of its three operating plants (Sequoyah, Browns Ferry and Watts Bar).
- TVA is looking beyond the design basis by evaluating potential vulnerabilities from a chain of events, such as damage from a tornado or earthquake combined with flooding from a dam failure, and emergencies involving more than one reactor at a site.
- Short-term and longer-term (within 12 months) recommendations being considered to enhance already robust defenses include:
 - Moving additional nuclear fuel into dry cask storage.
 - Hardening cooling-water supply pipes to spent fuel pools.
 - Adding satellite phones and small electric generators for charging phone batteries and lights to maintain communications.
 - o Adding a fifth diesel generator for backup power at Sequoyah and Watts Bar.
 - o Hardening electrical switchyards to better withstand seismic impacts.
- All six of TVA's nuclear reactors are in areas that are not prone to frequent or extremely large earthquakes. They are designed, built and operated to withstand an earthquake of larger magnitude than any recorded in the geographic region, as required by the U.S. Nuclear Regulatory Commission.
- TVA nuclear plants have numerous redundant safety systems to assure safe shutdown should an extreme event occur. The safety systems include a multi-foot thick, air-tight, containment building which is designed to safely house the nuclear reactor and critical equipment in the event of an earthquake or other natural or man-made emergency.

• In 2010, the Nuclear Regulatory Commission re-evaluated all nuclear power plants in the Central and Eastern United States, including all six TVA reactors, using the latest earthquake information. The report found that the seismic design of currently operating reactors provides an adequate safety margin.

Additional information (new and potential plants)

Lessons learned from the events in Japan will be incorporated into the operations, designs and emergency features of our nuclear facilities, including those under construction and projects under consideration.

Watts Bar Unit 2

- The five-year, \$2.5 billion construction of the Unit 2 reactor at Watts Bar Nuclear Plant is
 proceeding as TVA gathers facts and gains a clear understanding about the events in Japan
 and any implications for TVA.
- Watts Bar Unit 2 will incorporate the same enhancements that are made to Watts Bar Unit 1 as a result of the Japanese events.
- Watts Bar Unit 2 is scheduled to be online by 2013.

Bellefonte Site

- Bellefonte remains an option for future nuclear generation and supports TVA's renewed vision to provide the region with cleaner, reliable low-cost energy.
- TVA will make a decision on moving ahead with Bellefonte construction after a clear and complete understanding of the Japanese nuclear situation and any potential impact on the project.
- Pre-decisional engineering work at Bellefonte is moving forward, including evaluations of potential seismic and flooding events.

Small Modular Reactors

 TVA has discussed with the Department of Energy a concept to develop small modular reactors for a site near Oak Ridge National Laboratory in Tennessee. The reactors are being designed with advanced safety features. The project is some years in the future.

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From: Sent:	LIA04 Hoc Monday, March 14, 2011 6:19 PM
10:	ElAU4 Hot, ElAU0 Hot
Cc:	Logaras, Harral; Maier, Bill; McCree, Victor; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject:	Please disregard the last e-mail entitled RE: ACTION: Do States Require Additional Information?
Importance:	High

rc179

Owen, Lucy

From: Sent: To: Subject:	Harrington, Holly Monday, March 14, 2011 7:48 PM OPA Resource; 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; 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 RE: Press Release: NRC Sends Additional Experts to Assist Japan
Attachments:	11-048.docx

This press release has gone out with slight change. See attached.

From: OPA Resource

Sent: Monday, March 14, 2011 6:59 PM

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: Press Release: NRC Sends Additional Experts to Assist Japan

For immediate release.

Office of Public Affairs US Nuclear Regulatory Commission 301-415-8200 opa.resource@nrc.gov



NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-048

March 14, 2011

NRC SENDS ADDITIONAL EXPERTS TO ASSIST JAPAN

Acting as part of a U.S. Agency for International Development assistance team, the NRC has dispatched eight additional experts to Tokyo to provide assistance as requested by the Japanese government.

The first members of the team left the United States Monday evening and were due to arrive in Tokyo Wednesday afternoon. The team includes additional reactor experts, international affairs professional staffers, and a senior manager from one of the NRC's four operating regions.

The team members come from the NRC's headquarters in Rockville, Md., and from offices in King of Prussia, Pa., and Atlanta. The team has been instructed to: conduct all activities needed to understand the status of efforts to safely shut down the Japanese reactors; better understand the potential impact on people and the environment of any radioactivity releases; if asked, provide technical advice and support through the U.S. ambassador for the Japanese government's decision making process; and draw on NRC-headquarters expertise for any other additional technical requirements. The team will be in communication with the Japanese regulator, the U.S. Embassy, NRC headquarters, and other government stakeholders as appropriate.

The team is led by Charles A. Casto, deputy regional administrator of the NRC's Center of Construction Inspection, based in NRC's office in Atlanta. Casto has worked in the commercial nuclear power industry at three different nuclear power plants, including Browns Ferry, which has three boiling water reactors, operated by the Tennessee Valley Authority in Alabama. He has also worked as a licensed reactor operator and operator instructor. Casto will provide a single point of contact for the U.S. Ambassador in Japan on nuclear reactor issues.

The two reactor experts sent Saturday to Japan will participate as members of this assistance team.

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Owen, Lucy

From: Sent: To:	OPA Resource Monday, March 14, 2011 4:38 PM 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:	Press Release: NRC Sends Special Inspection Team to Global Nuclear Fuel Plant

Subject: Attachments:

Office of Public Affairs US Nuclear Regulatory Commission 301-415-8200 opa.resource@nrc.gov

11-007.ii.docx





Office of Public Affairs, Region II 245 Peachtree Center Ave. NE, Suite 1200 Atlanta, GA 30303-1257 Web Site: <u>www.nrc.gov</u>

No. II-11-007 CONTACT: Roger Hannah (404) 997-4417 Joey Ledford (404) 997-4416 March 14, 2011 E-mail: OPA2@nrc.gov

NRC SENDS SPECIAL INSPECTION TEAM TO GLOBAL NUCLEAR FUEL PLANT

The Nuclear Regulatory Commission has sent a Special Inspection Team to Global Nuclear Fuel-Americas, LLC, to examine the circumstances associated with an event in which the licensee failed to maintain required process control over a small quantity of enriched uranium. The nuclear fuel manufacturing facility is located in Wilmington, N.C.

The event, reported to the NRC on March 2, occurred in a grinding station in one of the facility's process lines. A quantity of uranium dioxide beyond prescribed limits was found to have accumulated in a filter in the grinding station.

Upon discovery of the condition, all of the facility's grinding stations were shut down to assess their conditions. No other examples of powder accumulation were discovered. Other process controls and systems ensured that event posed no danger to plant employees or the public.

The three-member NRC special inspection team, which is expected to begin its work at the facility today, will determine the safety implications of the event and the adequacy of the licensee's corrective actions.

The NRC will issue a publicly available inspection report documenting the findings within 30 days after the inspection is completed.

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From:	OPA Resource
Sent:	Monday, March 14, 2011 11:02 AM
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;
Orthingto	Vvilliams, Evelyn; Zimmerman, Roy; Zorn, Jason
Subject:	Government and NRC Preparing Response
Attachments:	11-047.docx

For release and posting in approximately 15 minutes.

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NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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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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Smith, Jeremy

From: Sent: To: Subject:

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A-44 1 34

The Washington Post [newsletters@email.washingtonpost.com] Monday, March 14, 2011 4:22 PM Smith, Jeremy Your afternoon update: Japan's nuclear crisis deepens as third reactor loses cooling capacity

If you have difficulty viewing this newsletter, <u>click here</u> to view as a Web page. <u>Click here</u> to view in plain text.

The Washington Post

Monday, March 14, 2011

AFTERNOON BUZZ

The Washington Post is providing an afternoon e-newsletter to keep you up-to-date on the news that has occurred since you received your morning paper. This is just one of the many benefits you get as a home delivery subscriber, courtesy of **PostPoints**, the reader rewards program from The Washington Post.

To opt-out of future editions of Afternoon Buzz, <u>click here</u>. To sign-up for additional e-newsletters from The Washington Post, visit <u>washingtonpost.com/newsletters</u>.

Today's News Update

Japan's nuclear crisis deepens as third reactor loses cooling capacity

Utility officials say four of the five pumps being used to flood the Unit 2 reactor had failed.

Japanese production of autos, computer chips, other goods at risk

The Japanese stock market fell 6.2 percent Monday as investors began to appraise the full scope of the damage.

<u>Report finds no wrongdoing in Fenty's</u> <u>handling of contracts</u>

Allegations that former mayor Adrian M. Fenty steered contracts to friends and

fraternity brothers became a key issue in his unsuccessful bid for reelection.

Prince George's gets new housing director

County Executive Rushern L. Baker III has tapped a former executive director of the



Annapolis Housing Authority.



Sports

The 68: Eric Prisbell's first-round picks for the NCAA tournament

Let the madness begin.

Capitals Insider: It's time for the Caps to commit to Michael Neuvirth

With 12 games remaining before the playoffs begin, it's time for Boudreau to finally hand out the starting job.

D.C. Sports Bog: D.C. United's season preview video isn't bad

The team's marketing department has launched a "preseason push of unprecedented proportions."

Features

The Checkup: Good news about coffee and dogs

New studies tout the health benefits of a little java and four-legged friends.

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	Post	Points	
	The Was	shington Post	
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White, Bernard

From: Sent: To: Subject: UxC News [news@uxc.com] Monday, March 14, 2011 2:34 PM White, Bernard UxC News Headlines - March 14, 2011

UCNews Headlines

NEWS HEADLINES UX PRICES UX WEEKLY UXC CLIENT UXC PUBLIC

March 14, 2011

© The Ux Consulting Company, LLC

Title: Japanese Officials: Nuclear Fuel Rods Melting in 3 Reactors Desc: Article says Japanese officials confirm that fuel rods are melting in three reactors. Date: March 14, 2011 Source: National Journal Link: http://www.nationaljournal.com/energy/japanese-officials-nuclear-fuel-rods-melting-in-3-reactors-20110314

Title: Cold shutdowns at Fukushima Daini

Desc: Article highlights successful shutdowns at Fukushima Daini plant. Date: March 14, 2011 Source: *World Nuclear News* Link: <u>http://www.world-nuclear-news.org/RS_Cold_shutdowns_at_Fukushima_Daini_1403112.html</u>

Title: Explosion rocks third Fukushima reactor

Desc: Second hydrogen explosion happens at third reactor at Fukushima Daiichi nuclear plant. Date: March 14, 2011 Source: *World Nuclear News* Link: http://www.world-nuclear-news.org/RS Explosion rocks third Fukushima reactor 1402111.html

Title: Contamination checks on evacuated residents

Desc: Article discusses radioactivity contamination checks and concerns in Japan. Date: March 14, 2011 Source: *World Nuclear News* Link: <u>http://www.world-nuclear-news.org/RS-Contamination found on evacuated residents-1303114.html</u>

Title: Rolling blackouts as Japanese efforts continue

Desc: Japanese utilities to use rolling blackouts to address energy shortages. Date: March 14, 2011 Source: *World Nuclear News* Link: <u>http://www.world-nuclear-news.org/RS-Rolling_blackouts_as_Japanese_efforts_continue-1403117.html</u>

Title: Information on the Japanese Earthquake and Reactors in That Region

Desc: NEI to continually update with most recent information available. Date: March 14, 2011 Source: *NEI* Link: <u>http://www.nei.org/newsandevents/information-on-the-japanese-earthquake-and-reactors-in-that-region/</u>

Title: **Nuclear Reactor Problem Explained** Desc: Video explains situation in Fukushima nuclear plant. Date: March 14, 2011 Source: *NHK via CNN* Link: <u>http://www.cnn.com/video/#/video/world/2011/03/14/dnt.japan.reactor.explainer.nhk?hpt=C2</u>

Title: **Nuclear power – some perspective** Desc: Editorial discusses nuclear incident in Japan.

Date: March 14, 2011 Source: *Telegraph*

Link: http://blogs.telegraph.co.uk/news/jamesdelingpole/100079763/nuclear-power-some-perspective/

Title: Try Our Famous Meltdown Special Desc: Blog discusses media reaction to nuclear incident in Japan. Date: March 13, 2011 Source: Reason Link: http://reason.com/blog/2011/03/13/try-our-famous-meltdown-specia Title: SA has 'nuclear safety culture': Eskom Desc: Eskom spokesman discusses nuclear safety culture in South Africa. Date: March 14, 2011 Source: Sapa Link: http://www.timeslive.co.za/local/article966537.ece/SA-has-nuclear-safety-culture--Eskom Title: Post Primer: Inside Japanese nuclear reactors Desc: Article details nuclear plant safeguards and incident in Japan. Date: March 14, 2011 Source: National Post Link: http://news.nationalpost.com/2011/03/14/post-primer-inside-japanese-nuclear-reactors/ Title: Why I am not worried about Japan's nuclear reactors. Desc: Blog details Zircaloy casing in Fukushima reactors, discusses other safety containment design issues. Date: March 14, 2011 Source: Morasatlarae Link: http://morgsatlarge.wordpress.com/2011/03/13/why-i-am-not-worried-about-japans-nuclear-reactors/ Title: Finland to review contingency plans at nuclear sites Desc: Finland commissions safety agency to review contingency plans at nuclear plants. Date: March 14, 2011 Source: Deutsche Presse Agentur Link: http://www.monstersandcritics.com/news/asiapacific/news/article_1625905.php/Finland-to-review-contingency-plans-at-nuclear-<u>sites</u> Title: Finnish nuclear industry says Japan scenario unlikely in Finland Desc: Article highlights reactor to Japanese earthquake and nuclear incident in Finland. Date: March 14, 2011 Source: Helsingin Sanomat Link: http://www.hs.fi/english/article/Finnish+nuclear+industry+says+Japan+scenario+unlikely+in+Finland/1135264562980 Title: Despite Japan Crisis, Indonesia Pursues Nuclear Power Desc: Spokesman for Indonesian National Nuclear Energy Agency says country to continue pursuit of nuclear power. Date: March 14, 2011 Source: Voice of America Link: http://www.voanews.com/english/news/asia/Despite-Japan-Crisis-Indonesia-Pursues--Nuclear-Power-117924389.html Title: Explosion in Japan have some questioning safety of nuclear power plants in Illinois Desc: Article highlights concerns over nuclear power in Illinois. Date: March 14, 2011 Source: WBEZ Link: http://www.wbez.org/episode-segments/2011-03-14/explosion-japan-have-some-guestioning-safety-nuclear-power-plants-illino Title: Tokyo nuclear facility has insurance through Chaucer syndicate Desc: Chaucer Holdings discusses insurance at Fukushima nuclear plants. Date: March 14, 2011 Source: Business Insurance Link: http://www.businessinsurance.com/article/20110314/NEWS/110319961 Title: Czechs say no nuclear review yet on expansion plans Desc: Czech Republic not planning to alter nuclear expansion plans. Date: March 14, 2011

Source: Reuters

Link: http://af.reuters.com/article/energyOilNews/idAFLDE72D1NG20110314

Title: Some have concerns over building a nuclear power plant in Utah

Desc: Article discusses potential for nuclear plant in Utah.

Date: March 13, 2011

Source: ABC 4

Link: <u>http://www.abc4.com/content/news/state/story/Some-have-concerns-over-building-a-nuclear-power/pK3ftBoJ7kmX-wP2KwaYJw.cspx</u>

Title: Will German Nuclear Angst Turn Merkel Into a Lame Duck Chancellor?

Desc: Editorial discusses political fallout in Germany over nuclear incident in Japan. Date: March 14, 2011 Source: *Wall Street Journal* Link: http://blogs.wsi.com/source/2011/03/14/will-german-nuclear-angst-turn-merkel-into-a-lame-duck-chancellor/

Title: Lawmakers urge government to stop building No. 4 nuclear plant

Desc: Legislators in Taiwan seeking immediate suspension of work at No. 4 nuclear plant pending review of safety concerns. Date: March 13, 2011 Source: *FocusTaiwan*

Link: http://focustaiwan.tw/ShowNews/WebNews Detail.aspx?ID=201103140035&Type=aSOC

Title: Stricken Japan nuclear plant rocked by 2nd blast

Desc: Article says fuel rods completely exposed at reactor. Date: March 14, 2011 Source: *Associated Press* Link: <u>http://www.newsday.com/news/world/stricken-japan-nuclear-plant-rocked-by-2nd-blast-1.2755772</u>

Title: Reactor reaction wipes \$1.5bn from uranium holdings

Desc: Several uranium miners hit hard in large stock sale following events in Japan. Date: March 15, 2011 Source: *Sydney Morning Herald* Link: http://www.smh.com.au/business/reactor-reaction-wipes-15bn-from-uranium-holdings-20110314-1buh0.html

Title: No laws needed for German nuclear deal suspension

Desc: Chancellor Merkel suspends nuclear extension plan. Date: March 14, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/14/germany-nuclear-merkel-idUSBAT00608420110314</u>

Title: The week ahead: Nuclear safety, EPA climate rules in focus

Desc: NRC Chairman Jaczko and DOE Secretary Chu to appear in front of House Energy and Commerce Committee on Wednesday. Date: March 14, 2011 Source: *The Hill*

Link: http://thehill.com/blogs/e2-wire/677-e2-wire/149211_the-week-ahead-nuclear-safety-epa-climate-rules-in-focus

Title: Experts divided over safety of nuclear plants

Desc: Article discusses concern in South Korea over nuclear plants. Date: March 14, 2011 · Source: *The Hankyoreh* Link: <u>http://english.hani.co.kr/arti/english_edition/e_national/467931.html</u>

Title: McConnell Defends Nuclear Power Amid Japan Fears

Desc: Senate Minority Leader discusses support for nuclear power. Date: March 13, 2011 Source: *Wall Street Journal* Link: <u>http://blogs.wsj.com/washwire/2011/03/13/mcconnell-defends-nuclear-power-amid-japan-fears/?mod=google_news_blog</u>

Title: Obama Administration, Senators Stand Behind Nuclear Power Amid Japan Meltdown Scar

Desc: Article highlights political support for nuclear power in U.S. Date: March 14, 2011 Source: *Huffington Post*

Link: http://www.huffingtonpost.com/2011/03/13/japan-nuclear-reactor n 835057.html

Title: Event on 11-3-2011 at Fukushima Daiichi Nuclear Power Plant unit-1, Japan

Desc: In press release responding to incidents in Japan, Nuclear Power Corporation of India points out that its reactors were able to withstand 2004 tsunami.

Date: March 14, 2011 Source: *Nuclear Power Corporation of India Ltd.* Link: <u>http://www.npcil.nic.in/pdf/press 13mar2011.pdf</u>

Title: **CNDP demands safety audit of nuclear plants** Desc: Anti-nuclear group seeking audit of nuclear facilities in India. Date: March 14, 2011 Source: *The Hindu* Link: http://www.thehindu.com/news/national/article1537557.ece

Title: Nuclear Industry Hit Short Term By Japan -OECD

Desc: OECD head discusses nuclear expansion outlook and several other nations reacting to nuclear incident in Japan. Date: March 14, 2011 Source: *Dow Jones* Link: <u>http://online.wsj.com/article/BT-CO-20110314-707862.html</u>

Title: Iowa Lt. Gov. Reynolds says Japan's crisis should not deter nuclear progress

Desc: Iowa's Lt. Governor discusses need for new energy sources, including nuclear power. Date: March 14, 2011 Source: *Associated Press* Link: http://www.wgad.com/news/sns-ap-ia--iowa-nuclearpower,0,1794923.story

Title: Lee breaks ground on nuclear plant in UAE

Desc: South Korea's President breaks ground at nuclear site in UAE. Date: March 15, 2011 Source: *Korea JoongAng Daily* Link: <u>http://joongangdaily.joins.com/article/view.asp?aid=2933462</u>

Title: Tokyo Electric faces long, painful recovery from nuclear disaster

Desc: Article discusses problems facing Tokyo Electric Power Co. Date: March 14, 2011 Source: *Reuters* Link: <u>http://af.reuters.com/article/energyOilNews/idAFL3E7EE1BO20110314</u>

Title: Japanese Government Responsible for Nuclear Cleanup Costs, Brokers Say

Desc: Insurance industry experts say liability costs for clean-up at Fukushima nuclear plant to be paid for by government. Date: March 13, 2011 Source: *Wall Street Journal*

Link: http://online.wsj.com/article/SB10001424052748704296604576197140783552776.html

Title: Westinghouse shuts two Japan nuclear fuel plants

Desc: Westinghouse closes two nuclear fuel plants due to earthquake. Date: March 14, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/14/us-japan-toshiba-fuel-idUSTRE72D3PZ20110314</u>

Title: Spot uranium seen sliding, recovering in long term

Desc: Article speculates that uranium price will drop. Date: March 14, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/14/uranium-price-idUSLDE72D1AJ20110314</u>

Title: China's Nuclear Energy Officials Watch Japan

Desc: China's nuclear expansion unchanged after earthquake. Date: March 14, 2011 Source: *Wall Street Journal* i vor

Link: http://blogs.wsj.com/chinarealtime/2011/03/14/chinas-nuclear-energy-officials-watch-japan/

Title: **Fuel Rods at Nuclear Plant May Have Melted, Edano Says** Desc: Japanese spokesman discusses possible fuel rods melting at nuclear reactors. Date: March 14, 2011 Source: *Bloomberg* Link: http://www.bloomberg.com/news/2011-03-14/fuel-rods-at-nuclear-plant-may-have-melted-edano-says-correct-.html

Title: GE hopes Japan disaster won't impact global nuclear plans

Desc: Article discusses GE's nuclear ambitions in India and concern over Fukushima plant. Date: March 14, 2011 Source: *The Hindu* Link: http://www.thehindu.com/business/companies/article1537519.ece

Title: GE offers help to Japan's nuclear industry

Desc: GE offers emergency technical assistance to Japanese nuclear industry. Date: March 14, 2011 Source: *Financial Times* Link: <u>http://www.ft.com/cms/s/0/56fb5f92-4e0e-11e0-a9fa-00144feab49a.html?ftcamp=rss#axzz1GaUD1WKV</u>

Title: USEC shares plunge on nuclear industry fears

Desc: USEC sees shares decline over nuclear industry concerns. Date: March 14, 2011 Source: *Washington Business Journal* Link: <u>http://www.bizjournals.com/washington/news/2011/03/14/usec-shares-plunge-on-nuclear-industry.html</u>

Title: Yucca Mountain site still alive under GOP plan

Desc: Article discusses battle over Yucca Mountain. Date: March 14, 2011 Source: *Bellingham Herald* Link: <u>http://www.bellinghamherald.com/2011/03/14/1915212/yucca-mountain-site-still-alive.html</u>

Title: NRC looks at seismic risk at Peach Bottom, 26 other nuclear plants

Desc: NRC reviewing risk from earthquakes at several plants. Date: March 14, 2011 Source: *York Dispatch* Link: <u>http://www.yorkdispatch.com/ci 17604746?source=most_emailed</u>

Title: Stocks slide as GE, utilities hit by nuclear doubts

Desc: Overview of companies hit by stock declines following nuclear incident at Fukushima plants. Date: March 14, 2011 Source: *Marketwatch* Link: <u>http://www.marketwatch.com/story/stocks-drop-as-ge-utilities-hit-by-nuclear-doubts-2011-03-14</u>

Title: Swiss suspend approvals for new nuclear plants

Desc: Switzerland suspends approval process for new nuclear plants. Date: March 14, 2011 Source: *Reuters* Link: http://www.reuters.com/article/2011/03/14/nuclear-switzerland-idUSLDE72D1EJ20110314

Title: Nuclear Power Stocks Under the Microscope

Desc: Article discusses decline in nuclear power stocks worldwide. Date: March 14, 2011 Source: *Wall Street Journal* Link: <u>http://blogs.wsj.com/marketbeat/2011/03/14/nuclear-power-stocks-under-the-microscope/</u>

Title: Local govt in Japan calls for caution over new nuclear plant

Desc: Yamaguchi Governor seeking extra precautions at planned Chugoku Electric Power Co plant to open in 2018. Date: March 14, 2011 Source: *Reuters*
Link: http://www.reuters.com/article/2011/03/14/idUSL3E7EE2GG20110314



Title: **Markey: U.S. nuclear plants may lack sufficient safeguards** Desc: Anti-nuclear representative discusses concerns of nuclear energy in U.S. Date: March 14, 2011 Source: *CNN* Link: <u>http://www.cnn.com/2011/POLITICS/03/14/congress.nuclear.power/</u>

Title: **Nuclear inspectors to check out Wilmington facility after uranium exposure** Desc: NRC dispatches Special Inspection Team to Global Nuclear Fuel-Americas over uranium exposure. Date: March 14, 2011 Source: *WECT* Link: <u>http://www.wect.com/Global/story.asp?S=14246633</u>

Title: **NM uranium enrichment plant considering expansion** Desc: Urenco considering third expansion at enrichment plant in New Mexico. Date: March 14, 2011 Source: *Associated Press* Link: <u>http://www.daily-times.com/ci_17610548</u>

Title: Pacific Bay Commences Argentina Uranium Exploration Program; Chubut Province

Desc: Pacific Bay Minerals begins exploration program at uranium properties in Argentina. Date: March 14, 2011 Source: *Pacific Bay Minerals* Link: <u>http://www.sys-con.com/node/1751752</u>

Title: **Further assay results from A238 uranium prospect, Mauritania** Desc: Assay results received from a further 17 holes drilled at the A238 uranium prospect, Mauritania. Date: March 14, 2011 Source: *Forte Energy* Link: <u>http://www.marketwire.com/press-release/Further-assay-results-from-A238-uranium-prospect-Mauritania-LSE-FTE-1410353.htm</u>

Title: Nuclear Disaster 'Will Have Political Impact as Great as 9/11'

Desc: German media commentators suggesting that nuclear power is not safe. Date: March 14, 2011 Source: *Spiegel* Link: http://www.spiegel.de/international/world/0,1518,750810,00.html

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Hornseth, Geoffrey

From: Sent: To: Subject: Garcia-Santos, Norma Monday, March 14, 2011 8:12 AM NMSS_DSFST Distribution FYI ONLY

Good morning,

FYI ONLY - Some news articles about Japan's situation:

http://www.financialexpress.com/news/japan-warns-of-2nd-blast-at-nplant/761976/

http://ansnuclearcafe.org/

Norma Garcia Santos, Acting Chief Thermal and Containement Branch Division of Spent Fuel Storage and Transportation Office of Nuclear Material Safety and Safeguards Mail Stop EBB-3D-02M Washington, DC 0020555

E-mail: <u>Norma.Garcia-Santos@nrc.gov</u> Phone No.: (301)-492-3290 Fax Nos.: (301)-492-3342 or (301)-492-3348



Japan warns of 2nd blast at N-plant



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Japan warns of 2nd blast at N-plant

Press Trust of India

Posted: Monday, Mar 14, 2011 at 0158 hrs IST

Tags: Fukushima Plant | 2nd Blast At N-plant | Control Overheating Reactors | Radiaton Threats; Death Toll Crosses 10 | 000

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Tokyo: Japan on Sunday warned of another explosion at Fukushima plant as it battled hard to avert multiple meltdowns at two of its nuclear reactors damaged by the devastating tsunami triggered earthquake amid fears of the toll exceeding 10,000 in the ravaged northeastern coast.

As Japanese authorities scrambled to control overheating reactors and fresh radiation threats at the quake-hit Fukushima nuke reactor, the government warned of the risk of a second explosion.

The reactor faced serious troubles after its emergency cooling system failed, triggering a fresh radiation threat, a day after a blast rocked the site following country's biggest quake, the magnitude of which has been revised from 8.9 to 9 by the Japanese Meteorological Agency. The Fukushima power plant's operator said pressure wasrising inside reactor No.3 after it lost its cooling system.

The development came a day after a blast and leakage from the No. 1 reactor at Fukushima, 240 km north of...

Japan warns of 2nd blast at N-plant

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Japan warns of 2nd blast at N-plant



Helton Donald

From:Helton, DonaldSent:Monday, March 14, 2011 12:23 PMTo:Rich WestSubject:RE: Heard that NRC is headed to Japan

Actually, it is work travel, just not related to the events in Japan...

From: Rich West uriwest@cisco.com] Sent: Monday, March 14, 2011 8:55 AM To: Helton, Donald Subject: Re: Heard that NRC is headed to Japan

I figured it was due to vacation.

Rich

Helton, Donald wrote:

> By the way...my absence from the office this week (auto-reply) is unrelated to the events in japan...

7 Ç.

> From: Rich Wesi [riwest@cisco.com]

> Sent: Sunday, March 13, 2011 11:03 PM

- > John Develop Develop Helter Change
- > To: Helton, Donald; Helton, Shana
- > Subject: Heard that NRC is headed to Japan
- >
- > Are either of you involved?

> > Rich

>

>

cc/86

and the second second

Helton, Donald

From:Helton, DonaldSent:Monday, March 14, 2011 7:45 AMTo:Rich WestSubject:RE: Heard that NRC is headed to Japan

By the way...my absence from the office this week (auto-reply) is unrelated to the events in japan...

From: Rich West [riwest@cisco.com] Sent: Sunday, March 13, 2011 11:03 Point for To: Helton, Donald; Helton, Shana Subject: Heard that NRC is headed to Japan

Are either of you involved?

Rich

I'm available to cover for you/Dan on Friday, if needed.

•

Vonna

Helton, Donald

From: Sent: To: Subject: Helton, Donald Monday, March 14, 2011 7:43 AM Rich West; Helton, Shana RE: Heard that NRC is headed to Japan

Rich,

No. Neither of us are amongst the very small NRC contingency headed to Japan.

Best, Don

From: Rich West [riwest@cisco.com]

Sent: Sunday, March 13, 2011 11:03 PM To: Helton, Donald; Helton, Shana Subject: Heard that NRC is headed to Japan

Are either of you involved?

Rich

Lee, Richard

From: Sent: To: Cc: Subject: Lee, Richard Monday, March 14, 2011 7:29 AM RES_DSA_FSTB Voglewede, John FW: UPDATE from NEI and WNN

fyi

From: Michael Corradini [mailto:corradin@cae.wisc.edu] Sent: Sunday, March 13, 2011 11:20 AM To: Lee, Richard; Basu, Sudhamay; Tinkler, Charles Subject: UPDATE from NEI and WNN

HERE IS THE LATEST I RECEIVED FROM MANY SOURCES.

AT BOTTOM IS ANALYSIS FROM LAKE BARRETT - ALOT IS HIS PERSONAL SPECULATION

ALSO THE NY TIMES SUMMARY

http://www.nytimes.com/interactive/2011/03/12/world/asia/the-explosion-at-the-japanese-reactor.html?ref=asia.

Japanese nuclear plant status update, March 13, 8:30 a.m.

Tokyo Electric Power Co. continues to implement emergency cooling and pressure relief operations at Fukushima Daiichi nuclear power station. In addition, at Fukushima Daini, three reactors remain shut down. They have electrical power available at Daini, but the suppression pools are saturated at both sites.

Fukushima Daiichi: There is a state of emergency declared at Fukushima Daiichi 1, 2 and 3. The company is venting containment at units 1 and 3. Unit 3 uses mixed-oxide fuel. Electrical power is not available at any of the reactors at this site and there is not backup power available at units 1, 2 and 3. TEPCO has been pumping seawater into units 1 and 3 to maintain cooling and there is fuel damage suspected at both reactors. There is no ultimate heat sink at any of the reactors at this site. Public evacuation has been ordered and executed in a 12-mile radius and there has been radiation released into the environment as a result of venting and the explosion at unit 1 secondary containment. The maximum reported dose at the site is 128 millirem per hour. One worker at the site has received a radiation dose of 10.6 rem.

Fukushima Daini: There is a state of emergency at units 1, 2 and 4 and evacuation has been ordered and executed for 2.5 miles around the plant. There has been no radioactive release reported at the site. There is electric power available at all 4 reactors at the site, but there is limited use of cooling water pumps at units 1, 2 and 4. The suppression pools are saturated at all three reactors. The intake structures at the plant have flooded and have prevented the use of the cooling water intake systems.

We do not currently have any status on the fuel pools at the two plants.

(E)(9)

Comments from Japanese officials:

The company is providing seawater and boron for core cooling at Fukushima Daiichi units 1 and 3 and is venting containment at the reactors, Japan's Chief Cabinet Secretary, Yukio Edano, said on Sunday. Officials are acting on the assumption that a meltdown could be underway at Fukushima Daiichi unit 3. "Unlike the No.1 reactor, we ventilated and injected water at an early stage," Edano said.

Edano said that the water level is thought to be rising in unit 3, "but a gauge, which seems to be broken, is not showing this."

Authorities are preparing to distribute iodine to protect people from radioactive exposure.

At 10:15pm, an earthquake occurred centered in offshore Fukushima prefecture. No damage to the plant has been found at this moment. Here are updates from Tokyo Electric Power on the status of reactors at both the Fukushima-Daiichi and Fukushima-Daini plants. Japanese officials expanded the evacuation zone at Fukushima-Daaichi from 3km to 10km as radiation readings at the plant continue to increase, particularly in the control room. Operators are seeking to vent steam from the containment structure of Unit 1 at Fukushima-Daaichi. This release would be filtered before entering the atmosphere.

Status of the Fukushima-Daiichi Plants (Tepco)

http://www.tepco.co.jp/en/press/corp-com/release/11031203-e.html

Status of the Fukushima-Daini Plants (Tepco)

http://www.tepco.co.jp/en/press/corp-com/release/11031209-e.html

For Tepco news releases in English: http://www.tepco.co.jp/en/index-e.html

Tom Kauffman

۰.

Senior Media Relations Manager

Nuclear Energy Institute

1776 I Street, NW, Suite 400

Washington, D.C. 20006

E: tmk@nei.org P: 202-739-8010 C: 202-439-6349

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FROM LAKE BARRETT

Here is some more information from over night (over day there). It appears that TEPCO was not able to keep the Unit 3 core covered and cooled. Apparently 3 meters of fuel was uncovered, overheated, and oxidized releasing hydrogen. I am sure the core has collapsed and is partially melted. Since this reactor is doomed (like Unit 1 is), TEPCO started to inject seawater and boron. They are currently venting gases (mostly hydrogen, noble gasses, and vapor) from both Unit 1 and Unit 3 primary containments. So far nothing has ignited and exploded in Unit 3 like happened in Unit 1 where the reactor building roof was blown off. Hopefully Unit 3 venting can continue without another explosion, but one could happen at any moment with highly variable hydrogen gas concentrations. But at this point, after quite a bit of venting, I would think hydrogen levels should be decreasing overall with building explosion risk dropping. Once the initial core exothermic oxidation disintegration hydrogen burst is diluted and dispersed, explosion risks should decrease. Of course I have no way of knowing how much of the core is continuing to generate hydrogen, but it should be decreasing fairly rapidly. But like Three Mile Island, accurate information is impossible to obtain during the crisis.

TEPCO learned from the Unit 1 experience and started venting Unit 3 primary containment earlier. Also it is possible that by now, they have been able to get their new portable diesel generators to power various exhaust fans and hydrogen recombiners to better control explosive gases in Unit 3. But according to press reports, the are still in station blackout conditions, so it is hard to tell what is really going on.

For reference, Unit 3 is twice the size of Unit 1 (784 vs. 460Mwe). For comparison TMI Unit 2 was 900Mwe, but TMI 2 only had ~90 full power days on the core whereas all the Fukushima cores are at equilibrium fission product inventories.

Although not really a significant technical issue, the Unit 3 reactor has MOX fuel in the core. MOX has higher decay heat generation than standard Uranium fuel, but it is technically negligible. But

politically I expect the anti-nuclear crowd will make big public noises about MOX contributing to the accident. Not really true, but a challenge from a public relations perspective.

There were three reactors running at Fukushima Daiichi when the earthquake occurred, Units 1, 2, & 3. All shutdown and all have had loss of power and other problems leading to inability to keep the cores covered, cool the primary containment suppression pools, and control primary containment overpressure. The progression of these challenges has been Unit 1, Unit 3, and Unit 2. As I am writing this email I have received reports that TEPCO is now injecting seawater into the Unit 2 core also. I infer from this that Unit 2 is in the same technical progression of Units 1 and 3. I have not received reports of core damage at Unit 2, but I would suspect that it has overheated, is oxidizing (or has already oxidized), releasing hydrogen, being vented also, and is at risk of another hydrogen explosion.

There are offsite releases continuing from the venting of the units. As I would expect, site doses are being reported in the 100mr/hr range. There are several dozen people contamination incidents being reported. One worker received a 10.6Rem dose. All within what is expected and I am sure there will be many emotional press reports. There are already scary pictures of full suited technicians surveying cute little children for contamination. A public relations meltdown.

So the three operating Daiichi units are kaput. The other three units, that we not operating (thank goodness for spring outages) are safe and OK. Of course restart will be a huge public/political/regulatory/economic challenge. It will take a long time.

The above Fukushima Daiichi reactors have been the main concern because of long duration loss of power situation. The four 1,100 MWe BWRs at the Fukushima Daini site are also were heavily impacted by the earthquake/tsunami. At Daini, the main damage is again from the tsunami. However they were able to maintain AC power with emergency diesels where as Daiichi was not. At both sites the tsunami severely damaged and rendering the safety service water systems, especially the intake structures, inoperable. The safety service water systems are necessary to cool the BWR primary containment suppression pool water. This is a significant problem also, and here is why.

When the three operating reactors at Daini shutdown during the earthquake the high pressure core injection systems kicked in to keep the core covered. The following tsunami took out the normal and safety grade service water heat exchanger cooling water system so they had no heat rejection capability. Thus the high pressure core water injections dumped decay heat from the core into the big water pressure suppression pools in the lower section of the primary containment (see attached diagram). But without active cooling of the suppression pool the temperature and pressures rise. Of course there is a lot of thermal inertia with the big pools so there is time to restore cooling. But the destruction of the tsunami apparently has prevented cooling of the suppression pools so they are having great difficulties keeping the pools from overheating and pressurization. Pool temperatures appear to be well over 100C (212F boiling). So these Daini reactors have also declared States of Emergency.

There are ways to cool the pools, but I don't know what they are doing.

Also this morning the Tohoku Electric Power Co. Onagawa nuclear power plant in Miyagi Prefecture on the Pacific coast declared an alert situation based on detected increase in radiation levels being about 700 times as high as normal. This is likely fallout from Fukushima Daiichi venting, but I am not sure.

I also want to tell you that the ANS paper that I sent last evening has an error in it about the Fukushima Daiichi Unit 1 sequence of events. The old Unit 1 does not have a RICI core cooling system, but apparent has an early design core isolation condenser. The end result was the same as apparently the cooling water in the condenser could not be replenished because they had no pumping power and lead to core overheating. Units 3 and 2 have RCIC systems and not isolation condensers.

This is enough of now. A good description of Daiichi is here at the NY Times:

http://www.nytimes.com/interactive/2011/03/12/world/asia/the-explosion-at-the-japanesereactor.html?ref=asia.

Note that the big ~100ton bridge crane is gone from the top of the Unit 1 reactor building. I hope it did not fall into the spent fuel pool that is below it on the refueling floor. It should have been parked away from the pool. I have no information on the Unit 1 spent fuel pool. But in general, packed spent fuel pools are not a good thing, especially when bad things like this happen.

Murphy, Andrew

From: Sent: To: Subject: Attachments:

> Anooshehpoor, Rasool Tuesday, March 15, 2011 1:05 PM Murphy, Andrew FW: 1st accelerograms I've seen IMregion1.pdf

Here is the map.

Rasool

From: John Anderson [mailto:jga.seismo@gmail.com] Sent: Tuesday, March 15, 2011 11:48 AM To: Anooshehpoor, Rasool Subject: Re: 1st accelerograms I've seen

Rasool, Here is one map that I have handy. John

--

John G. Anderson

Nevada Seismological Laboratory & Department of Geological Sciences and Engineering MS 174 University of Nevada Reno, Nevada 89557 Office: 775-784-1954 email: jga@unr.edu





Murphy, Andrew

From:Murphy, AndrewSent:Tuesday, March 15, 2011 10:09 AMTo:Anooshehpoor, RasoolSubject:RE: 1st accelerograms I've seen

Thanks – Are these tables indicating acceleration in excess of 2 g? These are quite high. Any idea where the stations are?

Andy

From: Anooshehpoor, Rasool Sent: Tuesday, March 15, 2011 8:46 AM To: Murphy, Andrew Subject: FW: 1st accelerograms I've seen

John Anderson sent me this file. I am forwarding it to you.

Rasool

From: John Anderson [mailto:jga.seismo@gmail.com] Sent: Tuesday, March 15, 2011 4:38 AM To: Anooshehpoor, Rasool; Anooshehpoor, Rasool Subject: 1st accelerograms I've seen

fyi

John G. Anderson

Nevada Seismological Laboratory & Department of Geological Sciences and Engineering MS 174 University of Nevada Reno, Nevada 89557 Office: 775-784-1954 email: jga@unr.edu

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Smith, Jeremy

From: Sent: To: Subject:

The Washington Post [newsletters@email.washingtonpost.com] Tuesday, March 15, 2011 4:16 PM Smith, Jeremy Your afternoon update: Japan works to contain nuclear fires, radiation leaks

If you have difficulty viewing this newsletter, <u>click here</u> to view as a Web page. <u>Click here</u> to view in plain text.

The Washington Post

Tuesday, March 15, 2011

AFTERNOON BUZZ

The Washington Post is providing an afternoon e-newsletter to keep you up-to-date on the news that has occurred since you received your morning paper. This is just one of the many benefits you get as a home delivery subscriber, courtesy of **PostPoints**, the reader rewards program from The Washington Post.

To opt-out of future editions of Afternoon Buzz, <u>click here</u>. To sign-up for additional e-newsletters from The Washington Post, visit <u>washingtonpost.com/newsletters</u>.

Today's News Update

Japan works to contain nuclear fires, radiation leaks

Officials are considering dropping water from a helicopter to prevent new fires in a pool of spent fuel at the Fukushima Daiichi power plant.

<u>Nuclear crisis rocks Japanese, global</u> <u>markets</u>

The Nikkei index of Japanese stocks fell 10.5 percent and is down 17.5 percent in the three trading days since the earthquake.

Man's body found in car in Oxon Hill

The family of Maurice Bynum said he was last seen Nov. 28 driving his sister's car, in which a man's body was found Monday.



Jack Johnson enters not guilty plea in corruption case

The former Prince George's county executive said he will fight federal bribery charges.

'East Coast Rapist' suspect indicted in Loudoun

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Aaron H. Thomas faces life in prison for a 2001 attack.

Sports

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D.C. Sports Bog: Did Bruce Boudrea really slam anyone?

Capitals coach is in the middle of another Canadian media firestorm over comments about a planned fan protest.

Terrapins Insider: NIT snub behind him, Coach Williams looks ahead

Facing his first absence from the post-season in 17 years, Williams said the goal is "making sure we get back" to the NCAA tournament.

Nationals Journal: Wang, Cole and Ray throw

Chien-Ming Wang threw another bullpen Tuesday, making some progress but not enough, the pitching coach said.

Features

Arts Post: Deborah Eisenberg named winner of the 2011 PEN/Faulkner Award for Fiction

The University of Virginia professor won for her volume, "The Collected Stories of Deborah Eisenberg."

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Owen, Lucy

From: Sent: To: Subject: Attachments: Tannenbaum, Anita Tuesday, March 15, 2011 2:40 PM R4 Issued - Press Release 11-049 (2).docx

NRC ANALYSIS CONTINUES TO SUPPORT JAPAN'S PROTECTIVE ACTIONS

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U.S. NUCLEAR REGULATORY COMMISSION Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-049

March 15, 2011

NRC ANALYSIS CONTINUES TO SUPPORT JAPAN'S PROTECTIVE ACTIONS

NRC analysts overnight continued their review of radiation data related to the damaged Japanese nuclear reactors. The analysts continue to conclude the steps recommend by Japanese authorities parallel those the United States would suggest in a similar situation.

The Japanese authorities Monday recommended evacuation to 20 kilometers around the affected reactors and said that persons out to 30 kilometers should shelter in place.

Those recommendations parallel the protective actions the United States would suggest should dose limits reach 1 rem to the entire body and 5 rem for the thyroid, an organ particularly susceptible to radiation uptake.

A rem is a measure of radiation dose. The average American is exposed to approximately 620 millirems, or 0.62 rem, of radiation each year from natural and manmade sources.

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Questions and Answers for OPA: March 15, 2011; 8:50 pm

1. Can this happen here?

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The events that have occurred in Japan are the result of a combination of highly unlikely natural disasters. These include the fifth largest earthquake in recorded history and the resulting devastating tsunami. It is highly unlikely that a similar event could occur in the United States.

2. I live near a nuclear power plant similar to the ones having trouble in Japan. How can we now be confident that this plant won't experience a similar problem?

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 into account the most severe natural phenomena historically reported for the site and surrounding area. The NRC is confident that the robust design of these plants makes it highly unlikely that a similar event could occur in the United States.

3. Has this crisis changed your opinion about the safety of U.S. nuclear power plants?

No. The NRC remains confident that the design of U.S. nuclear power plants ensures the continued protection of public health and safety and the environment.

4. With all this happening, how can the NRC continue to approve new nuclear power plants?

It is premature to speculate what, if any, effect the events in Japan will have on the licensing of new nuclear power plants.

5. What is the NRC doing in response to the situation in Japan?

The NRC has taken a number of actions:

- a. Since the beginning of the event, the NRC has continuously manned its Operations Center in Rockville, MD in order to gather and examine all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States.
- b. A team of 11 officials from the NRC with expertise in boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team.

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- c. The NRC has spoken with its counterpart agency in Japan, offering the assistance of U.S. technical experts.
- d. The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response.

6. What other U.S. agencies are involved, and what are they doing?

The entire federal family is responding to this event. The NRC is closely coordinating its efforts with the White House, DOE, DOD, USAID, and others. The U.S. government is providing whatever support requested by the Japanese government.

7. What else can go wrong?

The NRC is continuously monitoring the developments at the nuclear power plants in Japan. Circumstances are constantly evolving and it would be inappropriate to speculate on how this situation might develop over the coming days.

8. What is the worst-case scenario?

In a nuclear emergency, the most important action is to ensure the core is covered with water to provide cooling to remove any heat from the fuel rods. Without adequate cooling, the fuel rods will melt. Should the final containment structure fail, radiation from these melting fuel rods would be released to the atmosphere and additional protective measures may be necessary depending on factors such as prevailing wind patterns.

9. The United States has troops in Japan and has sent ships to help the relief effort – are they in danger from the radiation?

The NRC is not the appropriate federal agency to answer this question. DOD is better suited to provide information regarding its personnel.

10. Is there a danger of radiation making it to the United States?

In response to nuclear emergencies, the NRC works with other U.S. agencies to monitor radioactive releases and predict their path. The NRC continues to monitor information regarding wind patterns near the Japanese nuclear power plants. Nevertheless, 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.

11. Is the U.S. government tracking the radiation released from the Japanese plants?

Yes, a number of U.S. agencies are involved in monitoring and assessing radiation including EPA, DOE, and NRC. The best source of additional information is the Environmental Protection Agency.

12. Has the government set up radiation monitoring stations to track the release?

The NRC understands that EPA is utilizing its existing nationwide radiation monitoring system, RadNet, to monitor continuously the nation's air and regularly monitors drinking water, milk and precipitation for environmental radiation. EPA has publicly stated its agreement with the NRC's assessment that we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. Nevertheless, EPA has stated that it plans to work with its federal partners to deploy additional monitoring capabilities to parts of the western U.S. and U.S.territories.

13. The radiation "plume" seems to be going out to sea – what is the danger of it reaching Alaska? Hawaii? The west coast?

See response to Question 10.

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14. I live in the Western United States – should I be taking potassium iodide (KI)?

At this time, the NRC does not believe that protective measures are necessary in the United States. We do not expect any U.S. states or territories to experience harmful levels of radioactivity. In the unlikely event that circumstances change, U.S. residents should listen to the protective action decisions of their states and counties. These protective action decisions could include actions such as sheltering, evacuation, or taking potassium iodide. The NRC will provide technical assistance to the states should they request it.

15. Are there other protective measures I should be taking?

At this time, the NRC does not believe that protective measures are necessary in the United States. We do not expect any U.S. states or territories to experience harmful levels of radioactivity. In the unlikely event that circumstances change, U.S. residents should listen to the protective action decisions of their states and counties. These protective action decisions could include actions such as sheltering, evacuation, or taking potassium iodide. The NRC will provide technical assistance to the states should they request it. 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.

16. What are the risks to my children?

See response to Question 15.

17. My family has planned a vacation to Hawaii/Alaska/Seattle next week -- is it safe to go, or should we cancel our plans?

The NRC does not expect that residents of the United States or its territories are at any risk of exposure to harmful levels of radiation resulting from the events in Japan. Any changes to travel are a personal decision. The NRC is unaware of any travel restrictions within the United States or its territories.

18. What are the short-term and long-term effects of exposure to radiation?

The NRC does not expect that residents of the United States or it territories are at any risk of exposure to harmful levels of radiation resulting from the events in Japan.

On a daily basis, people are exposed to naturally occurring sources of radiation, such as from the sun or medical X-rays. The resulting effects are dependent on the strength and type of radiation as well as the duration of exposure.

19. I am traveling to Asia (not Japan). Should I adjust my travel plans to avoid flying through plume or being contaminated once on the ground?

The NRC is not the responsible federal agency to advise U.S. citizens on foreign travel restrictions. That responsibility belongs to the Department of State.

20. What is the official agency to report radiation numbers and what is the public contact?

NRC regulations require nuclear power plants to report any radiation doses detected at the plant that could be harmful to the public. This would include doses that are generated by the plant or by an external source. During an event in the U.S., it is the state's responsibility to provide protective action decisions for public health and safety. For this incident, the Japanese are responsible for reporting the public dose; nevertheless, should radiation doses be detected within the U.S., it would still be the state's responsibility to provide protective action decisions for public health and safety.

21. How many plants are located in seismic areas?

Although we often think of the US as having "active" and "non-active" earthquake zones, earthquakes can actually happen almost anywhere. Seismologists typically separate the US into low, moderate, and high seismicity zones. The NRC requires that every plant be designed for site-specific ground motions that are appropriate for their location. In

addition, the NRC has specified a minimum ground shaking level to which the plants must be designed.

22. Where would I get IOSAT Potassium lodide if my city should experience fallout from the Japanese nuclear disaster? Is this the right precaution or is there anything else that can be done to protect myself?

We do not expect any U.S. states or territories to experience harmful levels of radioactivity. As such, we do not believe that there is any need for residents of the United States to take potassium iodide. U.S. residents should listen to the protective action decisions by their states and counties. If necessary, protective action decisions could include actions such as sheltering, evacuating, or taking potassium iodide.

Additional information regarding the use of potassium iodide can be found on NRC's webpage at the following link: <u>http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/about-emerg-preparedness/potassium-iodide-use.html</u>

Since Potassium lodide is classified as a drug. Additional information is on the Food and Drug Administration's web site. <u>www.fda.gov</u>

23. My loved one is overseas, how do I find out if they are ok?

We are directing public inquiries with regard to concern for loved ones overseas to the State Department, Consular Services at 202-647-7004.

Hergenroder, Dan

From: Sent: To: Subject: McCree, Victor Tuesday, March 15, 2011 9:11 AM Collins, Elmo; Satorius, Mark; Dean, Bill FW: Response to Japan Earthquake/Tsunami

FYI

From: McCree, Victor Sent: Tuesday, March 15, 2011 10:08 AM To: R2MAIL; R2RESIDENTS; R2_RESIDENT SITES Subject: Response to Japan Earthquake/Tsunami

Good Morning.

I'm sure that all of you are aware of the ongoing events in Japan following last Friday's massive earthquake and tsunami. The loss of life and property due to these catastrophic events is truly devastating, and the U.S., along with a host of other countries are extending support to the Japanese government.

Shortly after the event, the NRC entered the Monitoring Mode and staffed the Headquarters Operations (Ops) Center. Our colleagues in the Ops Center have continued to gather information from media sources and the International Atomic Energy Agency which indicate that the condition of the Unit 1, 2 and 3 reactors at the Fukishima Daiichi nuclear station remains dynamic and represents a continuing safety concern. The Japanese government has implemented protective measures for persons within the emergency planning zone of the Fukishima station, including evacuation, sheltering, and issuance of potassium iodide. The NRC does not expect the U.S. to experience any harmful levels of radioactivity.

On yesterday, the NRC dispatched additional experts to Japan to better understand the status of efforts to safely shut down the damaged reactors at the Fukishima Daiichi site. They will provide technical advice to the U.S. Ambassador in Japan and contribute to the communications among stakeholders (see <u>http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-048.pdf</u>). Chuck Casto has been designated to lead the NRC team and will serve as the single point of contact for the U.S. Ambassador on nuclear reactor issues. We wish Chuck and his team the best as they take on this challenging and important assignment. Please note that others in Region II also volunteered to support the response to the events in Japan and they may be asked in the coming weeks and months to supplement and/or replace the current U.S. team members.

The extraordinary events in Japan and their impact on that nation's nuclear infrastructure highlight some of the known risks involved in the technology we regulate. The events have also prompted widespread media and public interest in the safe use of nuclear power in this country. In addition, media commentary on the NRC's role in assuring safety of U.S., plants underscores the vital role that we play in ensuring that nuclear facilities are constructed, maintained, and operated in accordance with the requirements of their design and license. Despite these potential distractions, I echo the Chairman's message today in encouraging you to remain focused on carrying out the NRC mission as well as Region II's vision.

Once again, I truly appreciate your professional, safety-focused, and high quality work.



Thank you, Vic

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Hergenroder, Dan

From: Sent: To: Subject: Attachments:

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Satorius, Mark Tuesday, March 15, 2011 10:00 AM McCree, Victor, Collins, Elmo, Dean, Bill RE: Response to Japan Earthquake/Tsunami Update on Japan

I'm headed into a 'routine' all-staff meeting in 5 minutes and have decided to hijack the agenda and pretty much turn the meeting into an a informational update by myself and going into taking all questions from the staff (knowing that I will probably not be able to answer all comers). In addition, I decided this morning to send out the attached email w/ the OUO status as of 730. Not sure the last was kosher, but decided to move forward and beg for forgiveness later rather than ask permission...

From: McCree, Victor
Sent: Tuesday, March 15, 2011 9:11 AM
To: Collins, Elmo; Satorius, Mark; Dean, Bill
Subject: FW: Response to Japan Earthquake/Tsunami

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Owen, Lucy

From: Sent: To: Subject: Attachments: Tannenbaum, Anita Tuesday, March 15, 2011 1:00 PM R4 Issued - Press Release 11-049.docx

NRC ANALYSIS CONTINUES TO SUPPORT JAPAN'S PROTECTIVE ACTIONS





NRC NEWS

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No. 11-049

March 15, 2011

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Hergenroder, Dan

From:Andreas, Dorothy C [Dorothy.Andreas@pepperdine.edu]Sent:Tuesday, March 15, 2011 12:46 AMTo:Collins, ElmoSubject:Link to Japanese news video streaming in Englsih

This is a link the NHK live streaming of news.

http://wwitv.com/tv_channels/6810.htm

Love, Dorothy

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Hergenroder, Dan

From: Sent: To: Subject: Attachments:

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Tannenbaum, Anita Tuesday, March 15, 2011 7:02 AM R4 Issued - Press Release 11-048.docx

NRC SENDS ADDITIONAL EXPERTS TO ASSIST JAPAN

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NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-048

March 14, 2011

NRC SENDS ADDITIONAL EXPERTS TO ASSIST JAPAN

Acting as part of a U.S. Agency for International Development assistance team, the NRC has dispatched nine additional experts to Tokyo to provide assistance as requested by the Japanese government.

The first members of the team left the United States Monday evening and were due to arrive in Tokyo Wednesday afternoon. The team includes additional reactor experts, international affairs professional staffers, and a senior manager from one of the NRC's four operating regions.

The team members come from the NRC's headquarters in Rockville, Md., and from offices in King of Prussia, Pa., and Atlanta. The team has been instructed to: conduct all activities needed to understand the status of efforts to safely shut down the Japanese reactors; better understand the potential impact on people and the environment of any radioactivity releases; if asked, provide technical advice and support through the U.S. ambassador for the Japanese government's decision making process; and draw on NRC-headquarters expertise for any other additional technical requirements. The team will be in communication with the Japanese regulator, the U.S. Embassy, NRC headquarters, and other government stakeholders as appropriate.

The team is led by Charles A. Casto, deputy regional administrator of the NRC's Center of Construction Inspection, based in NRC's office in Atlanta. Casto has worked in the commercial nuclear power industry at three different nuclear power plants, including Browns Ferry, which has three boiling water reactors, operated by the Tennessee Valley Authority in Alabama. He has also worked as a licensed reactor operator and operator instructor. Casto will provide a single point of contact for the U.S. Ambassador in Japan on nuclear reactor issues.

The two reactor experts sent Saturday to Japan will participate as members of this assistance team.

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Owen, Lucy

From: Sent: To: Subject: Hilton HHonors [hhonors@h1.hiltonhhonors.com] Tuesday, March 15, 2011 9:44 AM Collins, Elmo Help the Earthquake Victims in Japan with your HHonors Points.

Help the Earthquake Victims in Japan

Forward to a Friend | Trouble viewing?

Dear Hilton HHonors Members:

Please Help Japan.

Hilton HHonors[™] has partnered with the International Federation of Red Cross and Red Crescent Societies to help victims affected by the devastating earthquake and tsunami in Japan. If you would like to help, we have arranged for HHonors members to be able to donate points to the International Federation of Red Cross and Red Crescent Societies.

Hilton HHonors has pledged that it will match total member donations dollar for dollar up to US\$250,000 for Japan.

If you would like to join us in supporting the victims of the earthquake in Japan by donating points <u>please visit us here</u>.

Or if you prefer to make a cash donation, please donate directly at <u>donate.ifrc.org</u>.

+C International Federation of Red Cross and Red Crescent Societies



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Congress of the United States Washington, DC 20515

March 15, 2011

The Honorable Greg Jaczko Chairman Nuclear Regulatory Commission 11555 Rockville Pike Rockville, MD 20852

Dear Chairman Jaczko:

We write to request additional information related to the seismic safety features that are included in nuclear reactors currently in operation in this country. We are concerned that these reactors may not have the features necessary to withstand the sort of catastrophic earthquake and tsunami that has crippled several reactors in Japan, and caused a meltdown and the release of the highly radioactive materials contained within them.

The 9.0 magnitude earthquake caused a number of Japan's nuclear reactors to shut down automatically. However, a combination of tsunami-related damage and the long duration of the external power outages have subsequently led some of these reactors' emergency diesel generators, and thus cooling systems, to fail. To reduce rising pressure inside the Fukushima reactors, radioactive vapor is being vented, but three explosions have occurred as these pressures grew too high.¹ It appears as though meltdowns are proceeding at these reactors. Now life-threatening levels of radiation are being emitted, a 19-mile evacuation and no-fly zone has been established, a fire at a spent fuel pool at one of the units occurred, and 1,350 of the plant's 1,450 workers have been evacuated. Radioactive materials such as cesium and iodine have been detected as much as 100 miles away from these reactors.²

According to analysis prepared by Rep. Markey (see Appendix A, the map appended to this letter), there are eight nuclear reactors located on the seismically active West Coast of the United States, and twenty-seven nuclear reactors located near the New Madrid fault line in the Midwest.³ There are additionally thirty-one nuclear reactors in

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¹ http://www.washingtonpost.com/business/economy/nuclear-crisis-deepens-as-third-reactor-loses-cooling-capacity/2011/03/14/ABk6rQV_story.html

² http://www.msnbc.msn.com/id/42066534/ns/world_news-asia-pacific/

³ See http://pubs.usgs.gov/fs/2009/3071/pdf/FS09-3071.pdf In 1811-1812, three major earthquakes (magnitude 7 to 7.7 on the commonly used Richter Scale) occurred near the town of New Madrid, MO. In 1886, a large earthquake (Richter Scale magnitude of about 7) occurred near Charleston, S.C. The United States Geological Survey has estimated that the chance of having an earthquake similar to one of the 1811-12 sequence in the next 50 years is about 7 to 10 percent, and the chance of having a magnitude 6 or larger earthquake in 50 years is 25 to 40 percent.

the United States that are of the same Mark 1 or Mark 2 design as those currently imperiled in Japan, and twelve of these are located in seismically active zones.

The Nuclear Regulatory Commission (NRC)⁴ indicates that safety-significant structures, systems, and components of nuclear reactors must 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 historical data's limited accuracy;
- appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena; and
- the importance of the safety functions to be performed."

According to its website³, the San Onofre nuclear power plant, which is located 45 miles from Long Beach, California, is designed to withstand a 7.0 magnitude earthquake. An NRC staff memo⁶ indicates that the Diablo Canyon nuclear power plant, which is located 12 miles from San Luis Obispo, California, is designed to withstand a 7.5 magnitude earthquake. But according to the Southern California Earthquake Center,⁷ there is an 82 percent probability of an earthquake of 7.0 magnitude occurring in the next 30 years, and a 37 percent probability that an earthquake of 7.5 magnitude will occur.

It is not just resilience to the direct effects of an earthquake that raises concerns. While all nuclear power plants are equipped with emergency diesel generators, it is clear from the Japanese catastrophe that these are not themselves infallible, since they all appear to have failed at the Fukushima reactors. These can also fail for other reasons. For example, in 1990,⁸ the Vogtle plant in Georgia experienced a station blackout when a truck knocked over a transmission pole in the switchyard causing a loss of offsite power. The emergency diesel generator started but failed to load. The power plant suffered a complete station blackout, but fortunately power was restored in just over half an hour. NRC regulations only require nuclear power plants to be able to sustain cooling function in a station blackout for 4-8 hours⁹ using back-up battery powered generation capacity.

The vulnerability to the effects of a total station blackout was also noted by the NRC in its 2003 report entitled "Regulatory Effectiveness of the Station Blackout

⁴ http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-seismic-issues.html

http://www.sce.com/PowerandEnvironment/PowerGeneration/SanOnofreNuclearGeneratingStation/publics afety.htm

⁶Research Information Letter 09-001: Preliminary Deterministic Analysis of Seismic Hazard at Diablo Canyon Nuclear Power Plant from Newly Identified "Shoreline Fault"

⁷ http://www.scec.org/core/public/sceccontext.php/3935/13662

http://query.nytimes.com/gst/fullpage.html?res=9C0CEEDF123AF932A35757C0A966958260

http://adamswebsearch2.nrc.gov/idmws/DocContent.dll?library=PU_ADAMS^pbntad01&Logon1D=ba229 e2ba98e61e668d07a5da3c0e726&id=032520158

Rule."¹⁰ Appendix B of this report (attached to this letter) provides reactor-specific information related to outages experienced, demonstrating that many nuclear reactors in this country have already experienced lengthy power outages. The second column in this table reports the overall risk of core damage frequency as calculated by the plant owners. The third column reports the risk of core damage due to complete station blackout as calculated by the plant owners, which is also expressed as a percentage in column 4. If emergency diesel generators were truly fully reliable, there would be no risk associated with a complete station blackout. Instead, many nuclear reactors are estimated to have a real risk of core damage due to a complete station blackout. The fifth column in this table shows four parameters. The first parameter is the battery coping duration in hours, which can easily be seen to be four hours for most reactors, so some reactors can operate on batteries for eight hours.

Clearly, the risks of core damage to reactors due to a complete power outage are non-trivial and have already been contemplated by the NRC. The 4-8 hour battery generation capacity currently in place at U.S. reactor sites would not have helped mitigate the effects of the Japanese earthquake and subsequent tsunami.

Finally, the spent fuel pools at these nuclear reactors can also fail. If the water that cools these fuel rods drains, the zirconium cladding them can catch fire and lead to another source of melting fuel that can spew high level radioactive materials into the environment. This appears to have already occurred in Japan.

We are concerned that San Onofre, Diablo Canyon, and possibly other nuclear reactors located in seismically active areas are not designed with sufficient levels of resiliency against the sort of earthquakes scientists predict they could experience. We are also interested in more detailed information about just what it means to take the "most severe natural phenomena historically reported for the site and surrounding area" into account when designing the safety related features of nuclear reactors. Consequently, we ask for your prompt response to the following questions and requests for information.

- 1) Please provide the Richter or moment magnitude scale rating for each operating nuclear reactor in the United States. If no such rating information exists, then on what basis can such an assertion be made regarding the design of any single nuclear power plant?
- 2) The San Qnofre reactor is reportedly designed to withstand a 7.0 earthquake, and the Diablo Canyon reactor is designed to withstand a 7.5 earthquake. According to the Southern California Earthquake Center,¹¹ there is an 82 percent probability of an earthquake of 7.0 magnitude in the next 30 years, and a 37 percent probability that an earthquake of 7.5 magnitude will occur. Shouldn't these reactors be retrofitted to ensure that they can withstand a stronger earthquake than a 7.5? If not, why not?
- 3) Please provide specific information regarding the differences in safety-significant structures between a nuclear power plant that is located in a seismically active area and one that is not. Please provide, for each operating nuclear reactor in a seismically

¹⁰ See http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1776/sr1776.pdf

¹¹ http://www.scec.org/core/public/sceccontext.php/3935/13662

active area, a full list and description of the safety-significant design features that are included that are not included in similar models that are not located in seismically active areas.

- 4) Please fully describe the emergency back-up power requirements that operating nuclear power plants must possess. How long are emergency diesel generators and back-up battery-powered generators required to be able to operate? If different requirements exist for different locations in the United States or for different types of reactors, please also include this information in your response.
- 5) For each operating nuclear power plant, please indicate a) whether the spent fuel pools are located inside or out of the containment structure, b) whether the emergency diesel generators are connected to the cooling and other equipment associated with the spent fuel pools, c) whether the battery-powered generators are connected to the cooling and other equipment associated with the spent fuel pools.
- 6) Please provide a list of all incidents at operating nuclear reactors since 1990 that have involved a) the loss of off-site power, b) a station blackout, or c) a failure of the battery-powered generators at the reactor. For each such incident, please fully describe the circumstances and duration, and impacts or damages, if any.
- 7) In your opinion, can any of the operating nuclear reactors in the United States withstand an earthquake of the magnitude experienced in Japan?

Please provide your response no later than close of business on Friday April 8, 2011. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Natural Resources Committee staff or Dr. Ilya Fischhoff of Rep. Markey's staff at 202-225-2836 or Jonathan Levenshus of Rep. Capps' staff at 202-225-3601.

Sincerely,

Edward J. Markey Member of Congress

Member of Congress

APPENDIX A



APPENDIX B

Plant-Specific Station Blackout Information by Reactor Type and Operating Status

Plant Plant CDF		Hant CDF SBO Percent C CDF SBO CDF	ent Coping time in Modification 2DF hours/EDG summary reliability/Aac including dc			SBO fact	ors	•			
		Plant CDF	of Plant CDF	of reliability/Aac access time in minutes/	ry/Aac including oc PRA time in load shed initi otes/ procedural en imely modifications freq	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times > 240 minutes	
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Arkansas Nuclear One Unit 1	4.67E-05	1.58E-05	33.8	4/.95/10/1	Added 1 DG and crosstie	3.58E-02	2	1			
Arkansas Nuclear One Unit 2	3.40E-05	1.23E-06	3.6	4/.95/10/1	Added crosstie	5.84E-02	1	1			
Beaver Valley Unit 1	2.14E-04	6.51E-05	30.4	4/.975/60/1	Added crosstie	6.64E-02	2				
Beaver Valley Unit 2	1.92E-04	4.86E-05	25.3	4/.975/60/1	Added crosstie	7.44E-02	1				
Braidwood Units 182	2.74E-05	6.20E-06	22.6	4/.95/10/1		4.53E-02	2				
Bryon Units 1&2	3.09E-05	4.30E-06	13.9	4/.95/10/1		4.43E-02					
Callaway	5.85E-05	1.80E-05	30.8	4/.975/-/1		4.608-02					
Calvert Cliffs Units 1&2	2.40E-04	8.32E-06	3.4	4/.975/60/4	Added 1 EDG and one 1 DG	1.36E-01	3				
Catawba Units 182	5.80E-05	6.0E-07	10.3	4/.95/10/1		2.0E-03	1			330	
Comanche Peak Units 182	5.72E-05	1.5E-05	26.2	4/.95/-/1							

Table B-1 Operating pressurized-water reactors

Plant Plant CDF		nt CDF SBO Percent CDF SBO CDF of		Percent Coping time in bours/EDG Modification summary of reliability/Aac including dc			SBO fact	Órs			
			of Plant CDF	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Numbe a comr	er of LOOP e t power since nercial opera	events e ation	LOO recove 240	P event ry times ≥ minutes
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Crystal River Unit 3	1.53E-05	3.28E-06	21.5	4/.975/-/4	dc load shed. Added nonclass 1E battery	4.35E-01	3				
Davis-Besse	6.6E-05	3.50E-05	53	4/.95/10/2	Added 1 DG	3.50E-02	2	1		1680	
DC Cook Units 1&2	6.2E-05	1.13E-05	18.1	4/.975/-/2	dc load shed	4.0E-02	1				
Diablo Canyon Units 1&2	8.8E-05	5.0E-06	5.68	4/.95/-/1	Added 1 DG	9.1E-02	1				261 917
Farley Units 1&2	1.3E-04	1.22E-05	9.4	4/.95/10/3	Service water to Aac, auto load shedding	4.70E-02	2				
Fort Calhoun	1.36E-05	NA	-	4/.95/-/2	DC load shed	2.17E-01	2				
Ginna	8.74E-05	1.0E-06	1.14	4/.975/-/1		3.50E-03	4				
Harris	7.0E-05	1.71E-05	24.4	4/.95/-/3	Lighting in several areas, ladder to isolation valve				1		
Indian Point Unit 2	3.13E-05	4.47E-06	14.3	8/.95/60/2	Added a DG for gas turbine auxiliaries	6.91E-02	2		3	390	

Table B-1 Operating pressurized-water reactors (Cont.)

Plant	Plant CDF		Percent SBO CDF	Coping time in hours/EDG	Modification summary			SBO fact	ors		
			of Plant CDF	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP Number of LOOP events initiating at power since event commercial operation		events e ation	LOOP event recovery times ≥ 240 minutes		
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Indian Point Unit 3	4.40E-05	4.80E-06	10.9	8/.95/60/2	•	6.80E-02	1				
Kewaunee	6.6E-05	2.64E-05	40	4/.95/60/2	Cross-tie to nonsafety power source	4.4E-02					
McGuire Units 1&2	4.0E-05	9.26E-06	23.3	4/.95/10/1		7.0E-02	3				
Millstone Unit 2	3.42E-05	1.0E-10	NMN	8/.975/60/5	Upgraded unit 1-2 crosstie	9.10E-02	1	1		330	
Millstone Unit 3	5.61E-05	5.10E-06	6	8/.975/60/5	Added DG	1.12E-01					
North Anna Units 1&2	7.16E-05	8.0E-06	11.2	4/.95/60/4	Added DG, switchgear, crosstie	1.14E-02		_			
Oconee Units 1, 2&3	2.3E-05	2.57E-06	11.2	4/.975/10/1		9.0E-02	2				
Palisades	5.07E-05	9.10E-06	17.9	4/.95/-/1	DC load shed, compressed air for ADVs	3.0E-02	3 [.]			388	
Palo Verde Units 1, 2&3	9.0E-05	1.91E-05	21.2	4/.95/10/2	Added 2 gas turbines	7.83E-02	3			1138	
Point Beach Units 1&2	1.15E-04	1.51E-05	13.1	4/.975/60/2	Gas turbine modifications	6.10E-02	4				

Table B-1 Operating pressurized-water reactors (Cont.)

B--3

Plant	Plant CDF		Plant CDF SBO Percent C CDF SBO CDF of r	Coping time in hours/EDG	Modification summary			SBO fact	ors		
		Plant CDF	access time in minutes/ extremely	load shed procedural modifications	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes			
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Prairie Island Units 1&2	5.05E-05	3.1E-06	6.14	4/.975/10/3	Added 2 EDGs	-	1	2		296 296	
Robinson Unit 2	3.20E-04	2.6E-05	8.13	8/.95/60/4	Modified conduit supports in switchgear room	6.1E-02	2			454	
Salem Unit 1	5.20E-05	2.10E-05	40.4	41.975/-/2	EDG compressed air mod	6.0E-02	1				
Salem Unit 2	5.5E-05	1.70E-05	30.9	4/.975/-/2	EDG compressed air mod	6.0E-02	2			655	1675
San Onofre Units 2&3	3.0E-05	2.0E-06	6.67	4/.95/-/1	DC load shed and crosstie	1.1E-01			2		
St. Lucie Unit 1	2.30E-05	2.65E-06	11.5	4/.975/10/5	Added crosstie	1.5E-01	1		3		
St. Lucie Unit 2	2.62E-05	2.64E-06	10.1	4/.975/10/5	Added crosstie	1.5E-01					-
Seabrook	6.86E-05	1.53E-05	22.3	4/.975/-/3	DC load shed	4.93E-02					
Sequoyah Units 182	1.70E-04	5.32E-06	3.2	4/.975/-/2	DC load shed, added air supply	5.16E-03	2				

Table B-1 Operating pressurized-water reactors (Cont.)

B-4

Plant Plant CDF	CDF SBO Percent Coping CDF SBO CDF hours of reliable		cent Coping time in Modification CDF hours/EDG summary of reliability/Aac including dc DDA I			SBO fact	ors				
			Plant CDF ad	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	load shed procedural modifications	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes	
				severe weather	ere weather	frequency	Plant	Weather	Grid	Power	Shutdow n
Summer	2.0E-04	4.9E-05	24.5	4/.95/-/3	DC load shed, battery mod	7.3E-02			1		
South Texas Units 1&2	4.3E-05	1.46E-05	34.9	4/.975/10/5	Procedural cross-tie						
Surry Units 1&2	1.25E-04	8.09E-06	6.47	4/.975/10/4	Added DG	7.69E-02					
Three Mile Island Unit 1	4.49E-04	1.57E-05	3.5	4/.975/10/3	Modifications to existing DGs	5.68E-02					
Turkey Point Units 3&4	3.73E-04	4.70E-06	1.2	8/.95/10/5	Added 2 EDGs and cross-tie	1.7E-01	4	2	7	7950 7908	335
Vogtle Units 1&2	4.9E-05	4.4E-07	11	4/.95/-/2	Added 5 circuit breakers and lighting	6.6E-04					-
Waterford Unit 3	1.80E-05	6.24E-06	34.7	4/.975/-/4	DC load shed. Added portable air compressors for EDGs	3.6E-02					
Watts Bar Unit 1	8.0E-05	1.73E-05	21.6	4/.975/-?/1		3.64E-02					
Wolf Creek	4.2E-05	1.88E-05	44.8	4/.95/-/1		5.12E-02					

Table B-1 Operating pressurized-water reactors (Cont.)

B–5

Plant Plant CDF	CDF SBO Percent C CDF SBO CDF of n	Coping time in hours/EDG	Modification summary			SBO fac	tors				
		Plant CDF	of Plant CDF	access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes	
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdown
Browns Ferry Units 2&3	4.80E-05	1.30E-05	27	4/.95/-/1	dc load shed	1.12E-01					
Brunswick Units 1&2	2.70E-05	1.80E-05	<u>6</u> 6.7	4/.975/60/5	Modified controls for existing crosstie	7.40E-02	3				1508 814
Clinton	2.66E-05	9.8E-06	36.8	4/.95/10/1	Added gas fans for selected room cooling	8.40E-02					
Cooper	7.97E-05	2.77E-05	34.8	4/.95/-/2		3.50E-02	·				
Dresden Units 2&3	1.8E-05	9.30E-07	5.03	4/.95/60/2	Added 2 DGs	1.12E-01	3	1		240	
Duane Arnold	7.84E-06	1.90E-06	24.2	4/.975/-/2	dc load shed, RCIC insulation & main control room lighting	1.17E-01			1		
Fermí	5.70E-06	1.3E-07	NMN	4/.95/60/1		1.88E-01					
FitzPatrick	1.92E-06	1.75E-06	NMN	4/.95/-/1	dc load shed, instrumentation and power supply mods	5.70E-02					
Grand Gulf	1.77E-05	7.46E-06	36.8	4/.95/-/2	dc load shed	6.80E-02					

Table B-2 Operating boiling-water reactors

B--6

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Plant Plant CDF	nt CDF SBO Percent Copin CDF SBO CDF hour of reliab		Percent Coping time in Modification 30 CDF hours/EDG summary of reliability/Aac including dc DBA LOC		SBO factors						
			Plant CDF	CDF access time in minutes/ extremely severe weather	s time in load shed F utes/ procedural emely modifications weather	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ₂ 240 minutes	
						frequency	Plant	Weather	Grid	Power	Shutdown
Hatch Unit 1	2.23E-05	3.30E-06	14.8	4/.95/60/2	Replaced battery chargers	2.20E-02					
Hatch Unit 2	2.36E-05	3.23E-06	1 <u>3</u> ,7	4/.95/60/2	Replaced battery chargers	2.20E-02					
Hope Creek	4.63E-05	3.38E-05	73	4/.95/-/2	Valve modifications	3.4E-02					
LaSalle Units 1&2	4.74E-05	3.82E-05	80.6	4/.975/-/1 [·]	dc load shed, New battenes	9.60E-02	1		5		
Limerick Units 1&2	4.30E-06	1.0E-07	NMN	4/.95/60/3	Upgraded cross-ties	5.9E-02					
Monticello	2.60E-05	1.20E-05	46.2	4/.95/-/1	dc load shed	7.90E-02					
Nine Mile Point Unit 1	5.50E-06	3.50E-06	NMN	4/.975/-/1	dc load shed, added two safety related batteries	5.00E-02	4			595	
Nine Mile Point Unit 2	3.10E-05	5.50E-06	17.7	4/.975/-/1	dc load shed	1.20E-01					

Table B-2 Operating boiling-water reactors (Cont.)

B–7

Piant	lant Plant CDF		ant CDF SBO Percent CDF SBO CDF		Modification summary			SBO fac	tors		
		Plant CDF	of Plant CDF	access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes	
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdown
Oyster Creek	3.90E-06	2.30E-06	NMN	4/.975/60/1	Added crosstie & reactor pressure indication	3.26E-02	3				240
Peach Bottom Units 2 & 3	5.53E-06	4.81E-07	8.7	8/.975/60/3	Cross-tie to hydro unit	5.9E-02					
Репу	1.30E-05	2.25E-06	43.4	4/.95/10/1	Replaced selected cables	6.09E-02					
Pilgrim	5.80E-05	1.0E-10	NMN	8/.975/10/4	Alarms to line- up Aac	6.17E-01	1	5		_	1263 534
Quad Cities Units 1&2	1.2E-06	5.72E-07	NMN	4/.95/60/1	Added 2 DGs	4.81E-02	2				
River Bend	1.55E-05	1.35E-05	87.5	4/.95/-/2	Minor structural mod	3.50E-02	1				
Susquehanna Units 1&2	1.7E-05	4.2E-11	NMN	4/.975/-/2	dc load shed	-	1				
Vermont Yankee	4.30E-06	9.17E-07	21.3	8/.975/10/4	Modified incoming line and controls	1.0E-01	2			277	
Washington Nuclear Plant Unit 2	1.73E-05	1.07E-05	61.1	4/.95/-/1	dc load shed, replaced inverters	2.46E-02					

Table B-2 Operating boiling-water reactors (Cont.)

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Kock, Andrea

From: Sent: To: Subject: Attachments:

7

Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov] Wednesday, March 16, 2011 5:48 PM Nieh, Ho; Sharkey, Jeffry; Bubar, Patrice JMI's statement from this afternoon's briefing EPW stmt re Fukushima.docx ,

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Sen. Inhofe's Statement on Fukushima Nuclear Station Tuesday, March 16, 3:30 PM

Our thoughts and prayers are with the Japanese people as they struggle to cope with this catastrophe. Their calm and perseverance in the face of this crisis is a testament to their character.

Chairman Jaczko, I appreciated your phone call on Monday. I want to emphasize my commitment to support the NRC with any resources they may need in their efforts to assist the Japanese.

Thinking closer to home, I was pleased to hear you say that the NRC is continuing its work and not halting licensing efforts in a knee-jerk reaction to current events.

Clearly, there will be lessons that the nuclear industry world-wide will need to learn from this to make nuclear energy safer. However, it is premature to draw conclusions about the U.S. nuclear energy program from the tragedy in Japan.

I agree with Chairman Jaczko that our nuclear plants are safe. Our reactors are robust and designed to withstand significant natural disasters like earthquakes, tornados and hurricanes. They incorporate a defense-in-depth approach and have multiple levels of redundant systems. The NRC and the industry have a systematic process to incorporate lessons learned from events worldwide and improve the safety of our plants. For example, the NRC and industry worked together to revise plant protections in the wake of the embassy bombings in 1998 and to address aircraft concerns following September 11. I agree with Sec. Chu that we should continue to develop new nuclear plants. While every nuclear country will draw their OWN conclusions on the future of nuclear, I firmly believe the U.S. should continue forward.

In the wake of this disaster, I believe that any immediate scrutiny by the NRC should be measured and limited to those plants which face a significant tsunami risk. The two new nuclear plants under development in Georgia and South Carolina DO NOT face such risks and should move forward. The NRC and its advisory body of experts have reviewed the AP1000 design proposed for both sites and declared that it is safe and meets all regulatory requirements. It is appropriate that we move forward with the licensing work and construction of these new reactors while we look closely for lessons learned for the existing fleet, rather than pursue an unnecessary delay. Our nation's need for reliable, affordable energy won't wait.

Sen. Inhofe's Questions Fukushima Nuclear Station Tuesday, March 16, 3:30 PM

To Chairman Jaczko:

- 1. Aren't potential nuclear plant sites and reactor designs evaluated for seismic and tsunami activity before NRC approves them for construction? In other words, the one in 10,000 year event?
- 2. What is the Advisory Committee on Reactor Safeguards, or ACRS? What did the ACRS conclude about the safety of the AP1000 design?

To Mr. Pietrangelo (pronounced Pa-TRAN-jello)

 I understand that each of our nuclear utilities is undertaking a review of their plants to verify their safety systems and personnel are ready to respond to any adverse events such as flooding or electricity blackouts. Would you please describe this in more detail?

White, Bernard

From: Sent: To: Subject: UxC News [news@uxc.com] Tuesday, March 15, 2011 1:34 PM White, Bernard UxC News Headlines - March 15, 2011

UCNews Headlines

NEWS HEADLINES UX PRICES UX WEEKLY UXC CLIENT UXC PUBLIC March 15, 2011

March 15, 2011

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Title: Radiation decreasing, fuel ponds warming

Desc: Latest from World Nuclear News on situation in Japan. Date: March 15, 2011 Source: *World Nuclear News* Link: <u>http://www.world-nuclear-news.org/RS Possible damage_at Fukushima Daiichi 2 1503111.html</u>

Title: France backs its "safe" nuclear reactors

Desc: France continues to support its nuclear industry. Date: March 15, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/15/us-nuclear-france-areva-idUSTRE72E41520110315</u>

Title: French nuclear agency now rates Japan accident at 6

Desc: France's nuclear safety authority rates crisis in Japan as a six on an scale of one to seven. Date: March 15, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/15/us-japan-quake-nuclear-france-idUSTRE72E3UB20110315</u>

Title: Germany to Shut Down 7 Nuclear Reactors

Desc: Germany to shut down 7 nuclear plants for three months while review takes place. Date: March 15, 2011 Source: *Voice of America* Link: <u>http://www.voanews.com/english/news/Germany-to-Shut-Down-7-Nuclear-Reactors-118004304.html</u>

Title: Japan meltdown fears fuel nuclear debate in Europe

Desc: Article highlights reactions to fears over nuclear power in Europe.

Date: March 15, 2011

Source: Deutchse Press Agengtur

Link: http://www.monstersandcritics.com/news/asiapacific/news/article 1626248.php/Japan-meltdown-fears-fuel-nuclear-debate-in-Europe

Title: Swiss suspend approvals for new nuclear plants

Desc: Switzerland suspends approval process for three proposed reactors so that it can review safety standards. Date: March 14, 2011

Source: Reuters

Link: http://www.reuters.com/article/2011/03/14/nuclear-switzerland-idUSLDE72D1EJ20110314

Title: Tokyo Electric may be held liable for nuclear plant explosions

Desc: TEPCO could be held liable depending on how Japan's government decides to classify nuclear incidents. Date: March 15, 2011 Source: *Reuters*

Link: http://www.reuters.com/article/2011/03/15/us-japan-quake-insurance-idUSTRE72E61E20110315

Title: Fukushima triggers debate in India

Desc: Nuclear Power Corporation of India to review safety of its reactors following events in Japan. Date: March 15, 2011

cc/104

Source: *Hindustan Times* Link: <u>http://www.hindustantimes.com/Fukushima-triggers-debate-in-India/H1-Article1-673446.aspx</u>

Title: Commissioners Receive Briefing from Georgia Power Company On Nuclear Incident in Japan

Desc: Georgia Public Service Commission does not believe events in Japan will significantly affect the schedule for licensing and building new AP1000s reactors at Plant Vogtle. Date: March 14, 2011

Source: Georgia Public Service Commission Link: http://www.psc.state.ga.us/GetNewsRecordAttachment.aspx?ID=28

Title: Luminant Statement Regarding Comanche Peak Development

Desc: Luminant says it remains committed to development of new reactors. Date: March 15, 2011 Source: *Luminant* Link: http://www.luminant.com/news/newsrel/detail.aspx?prid=1197

Title: Exelon Statement on Japan Disaster

Desc: Exelon says its plants are safe and that it will work Nuclear Regulatory Commission and other policymakers to apply lessons from situation in Japan. Date: March 14, 2011 Source: *Exelon*

Link: http://www.exeloncorp.com/Newsroom/pr 20110314 exc statementaboutjapan.aspx

Title: Japanese nuclear problems will be taken into account here, minister

Desc: Netherlands economic affairs minister comments on situation in Japan. Date: March 15, 2011 Source: *DutchNews.nl* Link: <u>http://www.dutchnews.nl/news/archives/2011/03/japanese_nuclear_problems_will.php</u>

Title: Minn. push for nuclear power on hold after Japan crisis; Republicans say gov too demanding

Desc: Bill to repeal ban on new nuclear power in Minnesota fails due to concern over nuclear issue in Japan. Date: March 15, 2011 Source: *Associated Press* Link: http://www.canadianbusiness.com/markets/market_news/article.jsp?content=D9LVNVD80

Title: Revised - NRC Sends Experts to Assist Japan

Desc: U.S. NRC sends nine additional experts to provide Japan with requested assistance. Date: March 14, 2011 Source: U.S. Nuclear Regulatory Commission Link: http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-048R.pdf

Title: Nuclear power: The end, or a new beginning?

Desc: Editorial argues that U.S. should continue building reactors. Date: March 15, 2011 Source: *Los Angeles Times* Link: <u>http://opinion.latimes.com/opinionla/2011/03/you-can-stick-a-fork-in-it-the-future-of-nuclear-power-in-america-that-is-theres-nothing-guite-like-seeing-the-words-i.html</u>

Title: Finnish nuclear authority investigates problems in online reporting on Japan

Desc: Finland's nuclear regulator to investigate disaster preparedness of nation's nuclear facilities. Date: March 15, 2011 Source: *Helsingin Sanomat* Link: <u>http://www.hs.fi/english/article/Finnish+nuclear+authority+investigates+problems+in+online+reporting+on+Japan+/1135264600262</u>

Title: **GE shares fall on fear of lost sales, economy** Desc: GE sees shares decline by 3.9% due to concerns over reactors in Japan. Date: March 15, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/15/us-ge-shares-idUSTRE72E5FZ20110315</u> Title: Spent nuke fuel pool may be boiling, further radiation leak feared Desc: TEPCO says water at spent fuel pool for No. 4 reactor may have dropped. Date: March 15, 2011 Source: Kyodo News Link: http://english.kyodonews.jp/news/2011/03/78318.html Title: Panicked residents start to flee Tokyo as radiation levels rise after THIRD blast at stricken nuclear power plant Desc: Article discusses concerns over radiation levels in Japan. Date: March 15, 2011 Source: Dailv Mail Link: http://www.dailymail.co.uk/news/article-1366308/Japan-earthquake-tsunami-Meltdown-3rd-reactor-blast-hits-nuclear-plant.html Title: Stocks plummet on nuclear crisis worries Desc: Stocks in Dow Jones industrial average decline due to nuclear incidents in Japan. Date: March 15, 2011 Source: CNN Link: http://money.cnn.com/2011/03/15/markets/markets_newyork/ Title: The 13 Countries Most Exposed To A Nuclear Industry Backlash Desc: Article lists countries that are likely to have most backlash against nuclear power. Date: March 15, 2011 Source: Business Insider Link: http://www.businessinsider.com/the-15-countries-most-exposed-to-japans-nuclear-crisis-2011-3 Title: ?Worst Case? Nuclear Disaster in Japan Hangs on Unlikely Events Desc: Article discusses potential for worst case scenario in Fukushima plant. Date: March 15, 2011 Source: Bloomberg Link: http://www.bloomberg.com/news/2011-03-15/-worst-case-nuclear-disaster-in-japan-hangs-on-string-of-unlikely-events.html Title: Nuclear energy lobbyists scramble on Capitol Hill Desc: Article highlights Alex Flint of NEI. Date: March 15, 2011 Source: CNN Link: http://www.cnn.com/2011/POLITICS/03/15/nuclear.lobby/ Title: California Nuclear Plants Face Scrutiny After Japan Crisis Desc: Article discusses potential for enhanced scrutiny for Diablo Canyon and San Onofre nuclear plants. Date: March 15, 2011 Source: Dow Jones (subscription required) Link: http://online.wsi.com/article/BT-CO-20110314-715430.html Title: Southeast Asia Nuclear Power Plans Unfazed by Japan Emergency Desc: Article lists Asian nations looking at nuclear energy options. Date: March 15, 2011 Source: Voice of America Link: http://www.voanews.com/english/news/Southeast-Asia-Nuclear-Power-Plans-Unfazed-by-Japan-Emergency-117998719.html Title: SIEMENS' share in AREVA NP valued at 1,620 million euros Desc: Indpendent expert calculates value of Siemens 34 percent share in AREVA NP. Date: March 15, 2011 Source: AREVA Link: http://www.areva.com/EN/news-8785/siemens-share-in-areva-np-valued-at-1620-million-euros.html Title: Japanese nuclear crisis spurs rout in Canadian uranium stocks Desc: Cameco CEO Jerry Grandey says sell-off of uranium stocks "largely driven by emotion." Date: March 14, 2011 Source: Globe and Mail Link: http://www.theglobeandmail.com/globe-investor/uranjum-share-selloff-largely-driven-by-emotion-cameco-ceo/article1940867/

Title: Cameco optimistic

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Desc: Jerry Grandey does not believe Cameco will have significant short-term or long-term impacts from events in Japan. Date: March 15, 2011 Source: *The StarPhoenix*

Link: http://www.thestarphoenix.com/news/Cameco+optimistic/4439962/story.html

Title: Denison Mines Corp. Closes Bought Deal Financing

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Desc: Denison closes on previously announced bought deal financing with proceeds of C\$64,965,000. Date: March 15, 2011 Source: *Denison Mines* Link: <u>http://www.marketwire.com/press-release/Denison-Mines-Corp-Closes-Bought-Deal-Financing-TSX-DML-1411625.htm</u>

Title: Powertech Closes Unit Offering and Refinancing Transaction

Desc: Previously announced public offering completed with gross proceeds of \$22,500,000. Date: March 15, 2011 Source: *Powertech Uranium* Link: <u>http://www.marketwire.com/press-release/Powertech-Closes-Unit-Offering-and-Refinancing-Transaction-TSX-PWE-1411620.htm</u>

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Title: Mega Uranium closes well-timed share sale

Desc: Mega Uranium closes well timed private placement. Date: March 15, 2011 Source: *Mining Weekly* Link: <u>http://www.miningweekly.com/article/mega-uranium-had-good-timing-for-share-sale-2011-03-14</u>

Title: Chile Mulls Delaying Nuclear Cooperation Pact With US -Report

Desc: Chile may delay nuclear cooperation pact with U.S. due to events in Japan. Date: March 15, 2011 Source: *Dow Jones (subscription required)* Link: <u>http://online.wsj.com/article/BT-CO-20110315-707793.html</u>

End of news. A copyrighted service of The Ux Consulting Company, LLC. All news, views, and links are those of the sources cited.



Barto, Andrew

From: Sent: To: Subject:

Call, Michel Tuesday, March 15, 2011 11:30 AM NMSS_DSFST_CSDAB; Saverot, Pierre Further updates on Fukushima Daiichi power station

This information in the links associated with the stuff below is probably already known, but I thought I'd share it any way. To activate the links, you may need to hit the control button when you click on the link (orange/red text).

Mike

From: World Nuclear News [mailto:wnn=world-nuclear-news.org@mcsv1.net] On Behalf Of World Nuclear News Sent: Tuesday, March 15, 2011 8:00 AM To: Call, Michel Subject: WNN Weekly 8-14 March 2010

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world nuclear ne	ews	The we	ek's top storie
8-14 March 201	1	。 2) 第日	
REGULATION & S	AFETY:		
Dramatic escalatio	on in Japan		
Loud noises were beneath the react completed, while change'.	heard at Fukushima Daiichi or is confirmed to be damag a fire on site was put out. Te	2 at 6.10am this morning. A r ed. Evacuation to 20 kilometr pco have said containment sl	najor compone es is being nows 'no
Loss of coolant at	Fukushima Daiichi 2		
14 March 2011 Serious damage t lost for a period.	o the reactor core of Fukushi	ma Daiichi 2 seems likely afte	er all coolant w
Explosion rocks th	nird Fukushima reactor		
14 March 2011 Another hydrogen time at the third r	n explosion has rocked the Fu reactor unit. Analysis shows t	kushima Daiichi nuclear powe	er plant, this nains intact.
Cold shutdowns a	t Fukushima Daini		
Two more reactor of cooling system	s at Fukushima Daini have n s. Engineers are working for	ow achieved cold shutdown w the same at the last unit.	ith full operation
Rolling blackouts 14 March 2011	as Japanese efforts continue	· 7	I
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Japanese utilities are introducing rolling blackouts in the face of energy shortages following the natural disasters of the last few days. Meanwhile, the country is relying more than ever on the continued operation of its other nuclear reactors.

Efforts to manage Fukushima Daiichi 3

13 March 2011

Operations to relieve pressure in the containment of Fukushima Daiichi 3 have taken place after the failure of a core coolant system. Seawater is being injected to make certain of core cooling. Malfunctions have hampered efforts but there are strong indications of stability.

Contamination check on evacuated residents

13 March 2011

Potential contamination of the public is being studied by Japanese authorities as over 170,000 residents are evaquated from within 20 kilometres of Fukushima Daini and Daiichi nuclear power plants. Nine people's results have shown some degree of contamination.

Battle to stabilise earthquake reactors

1 March 2011

Attention remains focused on the Fukushima Daiichi and Daini nuclear power plants as Japan struggles to cope in the aftermath of its worst earthquake in recorded history. A dramatic explosion did not damage containment and sea water injection continues through the night.

Massive earthquake hits Japan 🐇

1 March 2011

Nuclear reactors shut down during today's massive earthquake in Japan. Official sources have reported no detected radioactive release but are still monitoring the situation, meanwhile work to establish adequate cooling at Fukushima Daiichi continues.

US nuclear regulator OKs Vermont Yankee extension

1 March 2011

The US Nuclear Regulatory Commission has said that it will renew the operating licence for the Vermont Yankee nuclear power plant for a further 20 years, although the regulator does not have the final say in the plant's future operation.

Two US nuclear projects put back 18 months 8 March 2011

The US Nuclear Regulatory Commission has told Dominion and Luminant that their licence applications to build at North Anna and Comanche Peak will be delayed by some 18 months due after changes in the design of Mitsubishi Heavy Industries' Advanced Pressurized Water Reactor.

WASTE & RECYCLING:

Double attack on US nuclear waste fees 10 March 2011

American utilities and regulators have both filed lawsuits against the Department of Energy for continuing to charge for the halted Yucca Mountain project.

CORPORATE:

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Areva, Rolls-Royce team up for UK EPRs

11 March 2011

Areva has signed an industrial cooperation agreement with the UK's Rolls-Royce for the manufacture of components for nuclear energy related projects both in the UK and overseas.

Endesa to access AP1000 technology 9 March 2011

St. A.

Westinghouse has signed an agreement with Spanish utility Endesa to share information on

2

its AP1000 reactor technology. The move makes Endesa a likely partner for nuclear new build projects in Spain and South America.

Import agreement: Baltic to Lithuania 8 March 2011

A deal has been struck that will see major power exports from the Baltic nuclear power plant to Lithuania. Russian-controlled utilities will transmit 1000 MWe across the border shortly after the start of operation.

EXPLORATION & NUCLEAR FUEL:

China Guangdong makes Kalahari offer

8 March 2011

A deal in the offing could give China Guangdong Nuclear Power Corporation's uranium subsidiary a major stake in the Husab uranium project in Namibia.

INDUSTRY TALK:

Shin Kori 1 enters commercial operation

10 March 2011

Shin Kori unit 1 entered commercial operation on 28 February, according to the Korea Institute of Nuclear Safety (KINS). The indigenously designed OPR-1000 is South Korea's seventh such unit and 21st nuclear power reactor overall.

ESBWR approaches design certification

10 March 2011

The US Nuclear Regulatory Commission has found GE-Hitachi's Economic Simplified Boiling Water Reactor (ESBWR) to be safe and technically acceptable. After five years of consideration the NRC has issued a final safety evaluation report and final design approval for the reactor. Full design certification should follow later this year.

Reactors continue through earthquake 9 March 2011

Nuclear power plants were barely affected by the Sanriku offshore earthquake that rocked Japan at 11.45am this morning. The earthquake measured 7.3 on the Richter scale and originated 160 kilometres offshore some 8 kilometres underground. Nuclear power plants on the Pacific coast that felt the quake include Onagawa, Higashidori and Fukushima Daini and Fukushima Daiichi.

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3

Ramsey, Kevin

From:	ANS Broadcasts [broadcasts@ans.org]
Sent:	Tuesday, March 15, 2011 10:38 PM
То:	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 <u>Japanfacts@ans.org</u> 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 <u>Japanfacts@ans.org</u> 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 <u>Japanfacts@ans.org</u> 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 <u>Japanfacts@ans.org</u> with HELP in the subject line.

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~c/106

ANS RESOURCES

ANS continues to provide a news aggregation service on the ANS Nuclear Cafe blogsite at <u>http://ansnuclearcafe.org/</u>. I urge you to share this link with friends, colleagues, and your social networks.

The ANS Professional Divisions are currently engaged in an urgent effort to develop talking points on the Japan situation for distribution to members. Additionally, ANS-HQ will be providing a periodic update of communications efforts under a 'What's New' link at <u>http://www.ans.org/</u>.

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: <u>diysrv@gmail.com</u> Twitter: @djysrv Mobile: 208-521-5726

Laura Scheele American Nuclear Society Communications & Outreach Email: <u>Ischeele@ans.org</u> Twitter: @Ischeele Phone: (708) 579-8224 -----

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Laura Scheele American Nuclear Society Communications & Outreach Email: <u>lscheele@ans.org</u> Twitter: @lscheele 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 <u>NOT</u> 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.

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 <u>NOT</u> responding on behalf of ANS or your employer.

Please send us a copy of your letters (published and unpublished) to 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.

Murphy, Andrew

From:Anooshehpoor, RasoolSent:Tuesday, March 15, 2011 10:36 AMTo:Murphy, AndrewSubject:RE: 1st accelerograms I've seen

I know. Earlier, I sent an email to john Anderson to see why the ShakeMap estimates are an order of magnitude lower. The record in Tokyo shows PGA of about 2.7 g. Something must not be right!!

I'll keep you posted if I find out more.

Rasool

From: Murphy, Andrew Sent: Tuesday, March 15, 2011 10:09 AM To: Anooshehpoor, Rasool Subject: RE: 1st accelerograms I've seen

Thanks – Are these tables indicating acceleration in excess of 2 g? These are quite high. Any idea where the stations are?

Andy

From: Anooshehpoor, Rasool Sent: Tuesday, March 15, 2011 8:46 AM To: Murphy, Andrew Subject: FW: 1st accelerograms I've seen

John Anderson sent me this file. I am forwarding it to you.

Rasool

From: John Anderson [mailto:jga.seismo@gmail.com] **Sent:** Tuesday, March 15, 2011 4:38 AM **To:** Anooshehpoor, Rasool; Anooshehpoor, Rasool **Subject:** 1st accelerograms I've seen

fyi

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John G. Anderson

Nevada Seismological Laboratory & Department of Geological Sciences and Engineering MS 174 University of Nevada Reno, Nevada 89557 Office: 775-784-1954 email: jga@unr.edu

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war Wood, Jeffery

From: Sent: To:	Coe, Doug Wednesday, March 16, 2011 7:36 PM Coyne, Kevin; Salley, MarkHenry; Kuritzky, Alan; Marksberry, Don; Ott, William; Beasley,
Cc:	Benjamin Demoss, Gary; Stutzke, Martin; Ibarra, Jose; Hudson, Daniel; Peters, Sean; Xing, Jing; Correia, Richard
Subject:	RE: RES support for commission meeting on Monday 3/21.

I expect this will be a public meeting and therefore our key messages must be couched accordingly. RES/DRA will likely get asked to provide bullets on our work on PRA model improvement in general and on GI-199 in particular. The level J^{TT} work is still formative, and we should be careful not to over-commit it toward seismic or any other particular focus area. We'll see what the scheduling call brings tomorrow.

From: Coyne, Kevin

Sent: Wednesday, March 16, 2011 6:56 PM

To: Salley, MarkHenry; Kuritzky, Alan; Marksberry, Don; Ott, William; Beasley, Benjamin **Cc:** Demoss, Gary; Stutzke, Martin; Ibarra, Jose; Hudson, Daniel; Peters, Sean; Xing, Jing; Coe, Doug; Correia, Richard **Subject:** FW: RES support for commission meeting on Monday 3/21.

Just wanted to give you a head's up...

Still a bit fuzzy exactly what we need to provide, but we will need to help NRR with this emergent Commission briefing. NRR has the lead, but we need to be ready to lend a hand. More specifics will come after an Office TA scheduling call tomorrow, but you may want to start thinking about these topics:

Bill Borchardt intends to cover:

Advance Our Understanding of Safety and Risk

Marty Virgilio's portion will cover:

- External Events
 - o Seismic
 - o Flood
 - o Tsunamis
- Severe Accidents
 - o SBO
 - o B.5.b/50.54 (hh)(2)
 - o SAMGs
 - o Hydrogen control
 - o Emergency planning

Spent Fuel

Bill Borchardt's talk seems more in the DSA area (but might provide an opening for the emerging Level 3 project). Marty Virgilio appears to be touching on topics with some tie to DRA (particularly if NRR wants to address relative risk significance of these events for the US or touch on GI-199). It's a short briefing, so everything would be at a very bigh level. Obviously, once we have feedback from NRR we'll have a better idea where to head with this..

Ú.

Kevin

From: Dion, Jeanne
Sent: Wednesday, March 16, 2011 6:43 PM
To: Coe, Doug; Gibson, Kathy; Coyne, Kevin; Case, Michael; Sheron, Brian; Uhle, Jennifer
Cc: Rini, Brett; Armstrong, Kenneth
Subject: RES support for commission meeting on Monday 3/21.

NRR has requested RES to support a commission briefing on Monday 3/21. They are looking for background information, slides, key messages, talking points and possible Q&A- see the attached message. This might be a public meeting- our input will need to be fairly high level. NRR will provide more information after the EDO alignment meeting tomorrow 3/17.

Bill Borchardt's presentation, "Overview of Japanese Event and US response"

RES to provide slides/information on "Advancing our understanding of safety and risk" (more info to come)

Mike Weber's presentation, "Situation assessment for US reactors and applicants"

 RES to provide slides/information on "Consequence Projections in Japan and what we might expect to see in the US"

Marty Virgilio's presentation, "Situation assessment for US reactors and applicants."

-RES to assist NRR as requested

I will be in a meeting tomorrow morning (8am to noon)- Kenneth Armstrong will attend the 8:45am meeting.

Thanks,

Jeanne Dion Technical Assistant (Acting) U.S. Nuclear Regulatory Commission Office of Nuclear Regulatory Research Jeanne.dion@nrc.gov 301-251-7482
White, Bernard

From: Sent: To: Subject: UxC News [news@uxc.com] Wednesday, March 16, 2011 1:52 PM White, Bernard UxC News Headlines - March 16, 2011

UCNews Headlines

NEWS HEADLINES UX PRICES UX WEEKLY UXC CLIENT UXC PUBLIC

March 16, 2011

Title: **Problems for units 3 and 4** Desc: Japanese government official comments on nuclear crisis. Date: March 16, 2011 Source: *World Nuclear News* Link: <u>http://www.world-nuclear-news.org/RS Second fire reported at unit 4 1603111.html</u> Title: **Fukushima 50 Stay Behind to Prevent Nuclear Meltdown**

Desc: Article highlights 50 workers at Fukushima plant trying to prevent worst case scenario. Date: March 16, 2011 Source: *Fox News*

Link: http://www.foxnews.com/world/2011/03/16/fukushima-50-stay-prevent-nuclear-meltdown/

Title: China suspends new nuclear plants

Desc: China to revise safety standards and temporary halts nuclear expansion work.

Date: March 16, 2011

Source: Times of India

¹Link: http://timesofindia.indiatimes.com/world/china/China-suspends-new-nuclear-plants/articleshow/7719509.cms

Title: Nuclear Plant Funding Undeterred Amid Japan Crisis: China Credit

Desc: President of China National Nuclear Corp. does not believe Japanese crisis will have a serious impact on China's nuclear industry. Date: March 16, 2011

Source: *Bloomberg*

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Link: http://www.bloomberg.com/news/2011-03-15/nuclear-plant-funding-undeterred-amid-japan-crisis-china-credit.html

Title: China Vows to Press Ahead With Nuclear Energy Plans

Desc: China to continue plans with nuclear expansion. Date: March 16, 2011 Source: *Voice of America*

Link: http://www.voanews.com/english/news/asia/China-Vows-to-Press-Ahead-with-Nuclear-Energy-Plans-118081964.html

Title: Nuclear industry will survive Japanese crisis - EDF

Desc: EDF comments on impact of Japan's nuclear crisis. Date: March 16, 2011

Source: Reuters

Link: http://uk.reuters.com/article/2011/03/16/uk-japan-quake-edf-idUKTRE72F2JQ20110316

Title: Bulgaria may freeze Belene nuclear scheme -minister

Desc: Bulgaria could decide to install reactor order from Russia at existing Kozloduy nuclear power plant instead of Belene. Date: March 15, 2011

Source: Reuters

Link: http://af.reuters.com/article/energyOilNews/idAFLDE72E2HC20110315

Title: ConverDyn Predicts Adverse Impact on U.S. Conversion Industry

Desc: ConverDyn express concern over impact of U.S. government inventory sales on the uranium conversion market. Date: March 10, 2011

Source: ConverDyn

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Link: http://www.converdyn.com/press_room/pdf/3-10-11.pdf

Title: **Russia, Belarus sign \$9 billion nuclear plant deal** Desc: Russia and Belarus sign contract for construction of nuclear plant. Date: March 16, 2011 Source: *Associated Press* Link: <u>http://www.businessweek.com/ap/financialnews/D9LVUFBO0.htm</u>

Title: UAE and South Korea unite on nuclear plan

Desc: Nuclear regulators in United Arab Emirates and South Korea sign agreement. Date: March 16, 2011 Source: *The National* Link: <u>http://www.thenational.ae/featured-content/channel-page/business/middle-article-list/uae-and-south-korea-unite-on-nuclear-plan</u>

Title: Precautions Should Limit Health Problems From Nuclear Plant's Radiation

Desc: Article discusses radiation concerns over Fukushima incident, says it won't be like Chernobyl. Date: March 15, 2011 Source: *New York Times* Link: <u>http://www.nytimes.com/2011/03/16/world/asia/16health.html?partner=rss&emc=rss</u>

Title: France sees lessons from Japan nuclear crisis

Desc: President Sarkozy discusses nuclear safety systems review. Date: March 16, 2011 Source: *Reuters* Link: <u>http://uk.reuters.com/article/2011/03/16/us-japan-quake-france-idUKTRE72F5RE20110316</u>

Title: Georgia Residents Still Support Expansion of Local Nuclear Plant Despite Japan Crisis

Desc: Article highlights support for building new reactors at Vogtle nuclear power plant. Date: March 15, 2011 Source: *Fox News* Link: <u>http://www.foxnews.com/politics/2011/03/15/japan-nuclear-watchdogs-push-obama-hold-new-reactor-funding/</u>

Title: Is nuclear energy safe?

Desc: WSJ running poll asking if nuclear energy is safe. Date: March 16, 2011 Source: *Wall Street Journal* Link: <u>http://online.wsj.com/community/groups/nuclear-energy/topics/nuclear-energy-safe?commentid=2222188</u>

Title: Drive against Jaitapur nuclear plant picks steam

Desc: Opposition to planned Jaitapur nuclear plant in India increases. Date: March 16, 2011 Source: *Daily News & Analysis* Link: <u>http://www.dnaindia.com/mumbai/report_drive-against-jaitapur-nuclear-plant-picks-steam_1520567</u>

Title: Japan crisis causes run on anti-radiation pills in U.S.

Desc: West coast in U.S. seeing people overly concerned about radiation from Japan plant crisis. Date: March 16, 2011 Source: *Washington Post* Link: <u>http://www.washingtonpost.com/national/japan-nuclear-crisis-triggers-run-on-anti-radiation-pills/2011/03/12/ABIdRIe_story.html</u>

Title: House Panel Questions Nuclear Regulatory and Energy Chiefs

Desc: Article highlights House Energy and Commerce hearing with Energy Secretary and NRC Chairman as witnesses. Date: March 16, 2011 Source: *New York Times* Link: <u>http://green.blogs.nytimes.com/2011/03/16/house-panel-to-question-nuclear-regulatory-and-energy-chiefs-face/?partner=rss&emc=rss</u>

Title: Global nuclear debate heats up

Desc: Gallery of various nuclear plants, discusses concerns over earthquakes. Date: March 16, 2011 Source: *Washington Post*

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Title: E.ON Begins Isar Reactor Halt as Germany Plans Safety Check

Desc: E.ON begins safety review of Istar 1. Date: March 16, 2011 Source: *Bloomberg* Link: <u>http://www.bloomberg.com/news/2011-03-16/e-on-halts-isar-1-nuclear-reactor-as-germany-orders-safety-check.html</u>

Title: 2012 Republicans Embrace Nuclear Power, So Far

Desc: Blog highlights likely Republican Presidential candidates support for nuclear energy. Date: March 16, 2011 Source: *New York Times* Link: <u>http://thecaucus.blogs.nytimes.com/2011/03/16/2012-republicans-embrace-nuclear-power-so-far/?partner=rss&emc=rss</u>

Title: New U.S. air rules may benefit nuclear energy

Desc: EPA to unveil new pollution rules today. Date: March 16, 2011 Source: *Reuters* Link: <u>http://af.reuters.com/article/energyOilNews/idAFN1611200120110316</u>

Title: Vermont Yankee license on hold

Desc: NRC puts temporary hold on Vermont Yankee license extension due to staff shortage. Date: March 16, 2011 Source: *Boston Globe* Link: <u>http://www.boston.com/news/world/asia/articles/2011/03/16/vermont_yankee_license_extension_on_hold/</u>

Title: Fukushima crisis in Japan is no reason to drop our nuclear programme

Desc: Letters in support of UK's nuclear expansion program. Date: March 16, 2011 Source: *Telegraph* Link: <u>http://www.telegraph.co.uk/comment/letters/8383860/Fukushima-crisis-in-Japan-is-no-reason-to-drop-our-nuclearprogramme.html</u>

Title: Power play: Haley goes nuclear

Desc: Presidential hopeful discusses support for nuclear power. Date: March 15, 2011 Source: *Politico* Link: <u>http://www.politico.com/news/stories/0311/51374.html</u>

Title: Nuclear problems like Japan's unlikely here

Desc: Scana Corp. CEO discusses nuclear plant safety. Date: March 15, 2011 Source: *Associated Press* Link: <u>http://www.businessweek.com/ap/financialnews/D9LVS5800.htm</u>

Title: Stress tests for Europe's atomic power plants after nuclear scare in Japan

Desc: EU Commissioner to prepare new nuclear assessment criteria by June. Date: March 15, 2011 Source: *European Parliament* Link: <u>http://www.europarl.europa.eu/en/pressroom/content/20110315IPR15584/html/Stress-tests-for-Europe%27s-atomic-power-plants-after-nuclear-scare-in-Japan</u>

Title: **EC Wants to 'Reexamine' Bulgaria's Belene NPP amidst Japan Nuclear Emergency** Desc: EU Commissioner discusses additional need for safety studies at potential nuclear sites. Date: March 16, 2011 Source: *Sofia News Agency*

Link: http://www.novinite.com/view_news.php?id=126243

Title: **Nuclear industry will survive Japanese crisis - EDF** Desc: EDF CEO discusses nuclear industry safety record. Date: March 16, 2011

Source: *Reuters* Link: <u>http://uk.reuters.com/article/2011/03/16/uk-japan-quake-edf-idUKTRE72F2JQ20110316</u>

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Title: Chavez Halts Venezuela Nuclear Plans After Japanese Crisis

Desc: Venezuelan President orders freeze to all nuclear development plans. Date: March 16, 2011 Source: *Bloomberg*

Link: http://www.bloomberg.com/news/2011-03-16/chavez-halts-venezuela-nuclear-plans-after-japanese-crisis.html

Title: US Rep Hoyer: Japan Nuclear Disaster Should Be 'Wake Up Call' For US

Desc: House Minority Whip says new nuclear inspections should happen to ensure safety. Date: March 16, 2011 Source: *Dow Jones (subscription required to view full article)* Link: <u>http://online.wsj.com/article/BT-CO-20110315-712490.html</u>

Title: High Grade Uranium Confirmed at Sight 22 - Karoo Project

Desc: First drilling results released from Project Sight 22 at Karoo in South Africa. Date: March 15, 2011 Source: *Peninsula Energy* Link: <u>http://www.pel.net.au/images/peninsul---yaevaijood.pdf</u>

Title: Colorado uranium-mill plan still a go despite Japan's nuclear nightmare

Desc: Energy Fuels still plans to open Pinon Ridge uranium mill. Date: March 16, 2011 Source: *Denver Business Journal* Link: http://www.bizjournals.com/denver/news/2011/03/15/colorado-uranium-mill-plan-still-a-go.html

Title: Uranium shares rebound

Desc: Uranium One, Denison Mines, Paladin and Mega Uranium recover some losses. Date: March 16, 2011 Source: *Mining Weekly* Link: <u>http://www.miningweekly.com/article/uranium-shares-rebound-2011-03-16</u>

Title: Wyoming uranium industry not concerned about Japan

Desc: Uranium industry executives see strong future for nuclear power despite situation in Japan. Date: March 16, 2011 Source: *Associated Press* Link: http://www.victoriaadvocate.com/news/2011/mar/16/bc-wy-uranium-mining-japan1st-ld-writethru/?business&business-wire

Title: South Dakota eases state uranium mining rules

Desc: Governor of South Dakota signs bill into law that loosens state oversight of uranium mining. Date: March 16, 2011 Source: *Reuters* Link: <u>http://www.reuters.com/article/2011/03/16/us-uranium-southdakota-idUSTRE72F0CX20110316</u>

Title: CanAlaska Uranium Commences Diamond Drilling at Fond Du Lac Main Deposit

Desc: Current phase of drilling program to test new targets identified by ongoing reverse circulation drilling program. Date: March 16, 2011 Source: Candlaska Uranium

Source: CanAlaska Uranium

Link: <u>http://www.prnewswire.com/news-releases/canalaska-uranium-commences-diamond-drilling-at-fond-du-lac-main-deposit-118066959.html</u>

End of news.

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Smith, Jeremy

From: Sent: To: Subject:

Our Start Scart

The Washington Post [newsletters@email.washingtonpost.com] Wednesday, March 16, 2011 4:16 PM Smith, Jeremy Your afternoon update: Jury awards \$11.5 million to family of man shot by officer

If you have difficulty viewing this newsletter, <u>click here</u> to view as a Web page. <u>Click here</u> to view in plain text.

The Washington Post

Wednesday, March 16, 2011

AFTERNOON BUZZ



The Washington Post is providing an afternoon e-newsletter to keep you up-to-date on the news that has occurred since you received your morning paper. This is just one of the many benefits you get as a home delivery subscriber, courtesy of **PostPoints**, the reader rewards program from The Washington Post.

To opt-out of future editions of Afternoon Buzz, <u>click here</u>. To sign-up for additional e-newsletters from The Washington Post, visit <u>washingtonpost.com/newsletters</u>.

Today's News Update

Jury awards \$11.5 million to family of man shot by officer

The jury also found that a county police officer violated the constitutional rights of Manuel de Jesus Espina in the 2008 shooting.

U.S. urges Americans within 50 miles of Japanese nuclear plan to evacuate

Japanese officials scrambled Wednesday for a way to cool overheated elements at the damaged Fukushima Daiichi plant.

How the U.S. government is helping Japan

Dozens of nuclear energy experts have

joined thousands of troops providing assistance to the Japanese government in the wake of last week's quake.

Airport board delays vote on new chief



The Metropolitan Washington Airports Authority has been bitterly divided over the leading candidate to be its next leader.

Facebook loses comment button, just hit enter

The social networking site has made a small change in the way users comment on each others' posts.

Sports

Capitals Insider: Ted Leonsis: It's not 'Stanley Cup or bust' this year for Capitals

While regular-season success has been established in the past three years, the Caps have yet to assert themselves in the postseason.

Hokies Journal: Virginia Tech gets ready to face Bethune-Cookman in NIT first round

This is Bethune-Cookman's first postseason appearance at the Division I level and it seems the Wildcats could not be happier about the situation.

Nationals Journal: Spring training live blog, Nationals at Astros

Updates from today's game.

Cavaliers Journal: Miles Gooch settles in at WR on first day of Virginia's spring practice

Good had served as a scout team quarterback last fall during his first collegiate season.

Features

Going Out Guide: Where to watch March Madness

A list of old favorites and news sports bars with buzz.

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United States Senate

WASHINGTON, DC 20510-4605

April 15, 2011

The Honorable Gregory B. Jaczko Chairman U.S. Nuclear Regulatory Commission Washington, DC 20555-0001

Dear Chairman Jaczko:

I write regarding the March 16, 2011 Nuclear Regulatory Commission (NRC) evacuation recommendation for U.S. residents within 50 miles of the Fukushima reactors. According to the NRC, this recommendation was issued under guidelines for public safety that would be used in the United States under similar circumstances.

As this recommendation could have important implications for U.S. energy security, public health, and environmental protection, I respectfully request that you disclose all assumptions that were used in reaching this conclusion. In addition to any other relevant information, please address the following points:

1) The assumed magnitudes of the total releases (in Curies) to the atmosphere of the radioisotopes dominating the inhalation, cloudshine, and 4-day groundshine effective whole body doses and the thyroid inhalation doses;

2) The assumed duration of the releases;

3) The assumed wind speed and deposition velocities;

4) Any assumption concerning wind wander;

5) The height of the assumed release including any height increase of the mid-line of the plume due to heat buoyancy effects; and

6) The dose conversion factor that the NRC uses for Iodine-131 for converting exposure to airborne I-131 measured in Ci-seconds/m3 exposure to thyroid doses in rem for adults and children of different ages.

I appreciate your prompt attention to this matter.

Webb Inited States Senator

. j /) .

Ani, Suzanne

From: Sent: To: Subject: NEIGA@nei.org Wednesday, March 16, 2011 2:01 PM Ani, Suzanne

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 <u>Used Nuclear Fuel Storage at the Fukushima</u> <u>Daiichi Nuclear Power Plant</u>. Also available is a new fact sheet called <u>Industry Taking Action to</u> <u>Ensure Continued Safety at U.S. Nuclear Energy Plants</u>.

As always, please go to http://resources.nei.org/japan for the latest updates.

Click here to unsubscribe

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From:	Markley, Christopher
To:	Haney, Catherine; Kokajko, Lawrence; Mohseni, Aby; Davis, Jack
Cc:	Hill, Brittain
Subject:	NRC, DOE House Committee Web Feed Links
Date:	Wednesday, March 16, 2011 9:15:04 AM

The following is a link to C-SPAN.org... and looks like it will air their cable feed: <u>http://www.c-span.org/Events/Congress-looks-at-Nuclear-Safety-and-Crisis-in-Japan/10737420229-1/</u>

The following is the committee website, though I don't yet see a link for their webcast: <u>http://energycommerce.house.gov/news/PRArticle.aspx?NewsID=8352</u>



CUB

United States Senate

WASHINGTON, DC 20510

March 16, 2011

The Honorable Gregory Jaczko Chairman U. S. Nuclear Regulatory Commission Washington, DC 20555-0001

Dear Chairman Jaczko:

The unfolding nuclear disaster in Japan has raised questions about the safety of nuclear power plants here in the U.S. As Senators from California, we are particularly interested in the safety of San Onofre Nuclear Generating Station, located in San Clemente, and the Diablo Canyon Nuclear Power Plant near San Luis Obispo, both of which are near earthquake faults.

Roughly 424,000 live within 50 miles of the Diablo Canyon and 7.4 million live within 50 miles of San Onofre Nuclear Generating Station. Although many safety measures have been taken to address potential hazards associated with these facilities, we need to ensure that the risk is fully evaluated.

For example, a 2008 California Energy Commission report presented very clear warnings of potential threats at both of these plants. This report found that the San Onofre plant could experience "larger and more frequent earthquakes" than the maximum 7.0 magnitude earthquake predicted when the plant was designed. It is our understanding that the NRC has not taken action to address these warnings in the report. It is also our understanding that the 2008 report found that there is an additional fault near the Diablo Canyon plant that should be taken into consideration as part of NRC's relicensing process. We want to know if the NRC will address all of the threats, including seismic threats, described in the 2008 report at these facilities.

We ask that the Nuclear Regulatory Commission (NRC) perform a thorough inspection at these two plants to evaluate their safety and emergency preparedness plans.

ccliff

In addition, we ask the NRC to answer the questions below regarding plant design and operations, type of reactor, and preparedness to withstand an earthquake or tsunami and other potential threats.

Plant Design and Operations

- 1. What changes to the design or operation of these facilities have improved safety at the plants since they began operating in the mid-1980s?
- 2. What emergency notification systems have been installed at California nuclear power plants? Has there ever been a lapse of these systems during previous earthquakes or emergencies?
- 3. What safety measures are in place to ensure continued power to California reactors in the event of an extended power failure?

Type of Reactor

1. What are the differences and similarities between the reactors being used in California (pressurized water reactors) and those in Japan (boiling water reactors), as well as the facilities used to house the reactors, including the standards to which they were built and their ability to withstand natural and manmade disasters?

Earthquakes and Tsunamis

- 1. We have been told that both Diablo Canyon and San Onofre Nuclear Generating Station are designed to withstand the maximum credible threat at both plants, which we understand to be much less than the 9.0 earthquake that hit Japan. What assumptions have you made about the ability of both plants to withstand an earthquake or tsunami? Given the disaster in Japan, what are our options to provide these plants with a greater margin for safety?
- 2. Have new faults been discovered near Diablo Canyon or San Onofre Nuclear Generating Station since those plants began operations? If so, how have the plants been modified to account for the increased risk of an earthquake? How will the NRC consider information on ways to address risks posed by faults near these plants that is produced pursuant to state law or recommendations by state agencies during the NRC relicensing process?

- 3. What are the evacuation plans for both plants in the event of an emergency? We understand that Highway 1 is the main route out of San Luis Obispo, what is the plan for evacuation of the nearby population if an earthquake takes out portions of the highway and a nuclear emergency occurs simultaneously?
- 4. What is the NRC's role in monitoring radiation in the event of a nuclear accident both here and abroad? What is the role of EPA and other federal agencies?
- 5. What monitoring systems currently are in place to track potential impacts on the U.S., including California, associated with the events in Japan?
- 6. Which federal agency is leading the monitoring effort and which agencies have responsibility for assessing human health impacts? What impacts have occurred to date on the health or environment of the U.S. or are currently projected or modeled in connection with the events in Japan?
- 7. What contingency plans are in place to ensure that the American public is notified in the event that hazardous materials associated with the events in Japan pose an imminent threat to the U.S.?

The NRC was created in the mid-1970s specifically to ensure the protection of public health and safety with regard to civilian nuclear power. The Commission plays an essential role ensuring that we learn from nuclear accidents and near misses. We hope you agree that we must identify whatever lessons are to be learned from the disaster in Japan in order to make facilities in the United States as safe as possible.

We look forward to working with you to ensure the safety of our nation's nuclear power plants and to make the changes necessary to ensure a nuclear tragedy does not occur in this country.

Barbara Boxer

Sincerely,

Dianne Feinstein

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Discussion of the MARCH 16, 2011 PRESS RELEASE DOSE ASSESSMENT ASSUMPTIONS

There are two dose assessments attached to the March 16th press release. Both assessments are worst case hypothetical, computer model analyses of consequences for releases from the Fukushima site. The first assessment assumed a Unit 2 reactor 100% core melt as an unfiltered release from a totally failed containment and actual meteorological conditions during early morning hours of the date indicated. The low dispersion characteristics included low wind speeds, relatively stable air, and light precipitation.

The second assessment represented multiple unit failures: 1) Unit 2 with 33% reactor core damage as an unfiltered release from a totally failed containment ; 2) Unit 3 spent fuel pool with 50% damage (with 180 bundles of spent fuel discharged 105 days ago) ; and 3) Unit 4 spent fuel pool with 100% damage (with 550 bundles of spent fuel discharged 30 days ago) . To account for the combined inventories of the three units, the staff adjusted the reactor power level, fuel burnup and number of assemblies in the calculation. The meteorological conditions for the second assessment also assumed actual conditions, but no precipitation, greater wind speeds, and less stable atmospheric conditions, result in greater atmospheric dispersion. In addition, the source term included two additional days of decay before release. For the multi-unit assessment, the increased decay time before release and the greater atmospheric dispersion significantly reduced the resultant dose estimate.

Although the dose projections for the first assessment are somewhat higher than the second assessment, the differences in the modeling assumptions did not affect the overall conclusion that protective action guides would be exceeded beyond fifty miles. Both assessments are highly speculative, given the lack of actual (representative) site data and assumed no mitigation of the current situation at the time of the press release.

Although there is postulated reactor core damage in Unit 1 and Unit 3, the primary containment structure is reported to be intact.

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From:	Lu, Shanlai
Sent:	Wednesday, March 16, 2011 5:32 PM
То:	Donoghue, Joseph
Cc:	Thomas, George; Schmidt, Jeffrey; Hsii, Yi-Hsiung; Ader, Charles; Lombard, Mark
Subject:	SRSB staff comments and questions regarding Fukushima disaster in preparation of green ticket regarding new reactor regulation improvement
Attachments:	Fukushima.docx

Joe,

Per your request, George, Hsii, Jeff and I gave a first shot about the requested action. It is a draft.

Thanks.

Shanlai

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Shanlai Lu 3116/2011

REACTOR SYSTEM ISSUES AND COMMENTS

Based on discussions among the lead reviewers of SRSB, the following is the draft questions related to new reactor design based on Fukushima Daiichi nuclear event. The questions and comments are developed in six areas: 1) tsunami and seismic load assumption, 2). station blackout conditions and mitigation, 3). spent fuel pool design criteria improvement, 4). site requirements, 5).hydrogen recombiner, 6). operator actions.

Tsunami and seismic load

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Q1. What should be the maximum design basis seismic load on each plant site? Should we ask licensees or applicants to assume the worst based on 150 years history? What should be the practical limit while, at the same time, prevent the similar situation from happening.

Q2. If we raise the design basis seismic limit, what will be the impact on fuel seismic evaluation, the control rod insertability and coolability? What will be the requirements on spent fuel rack structure requirements?

Station blackout conditions and mitigation

Q1. For new reactor designs, we should locate the diesel generators or gas turbine generators at high ground to prevent the flooding and associated damage due to tsunami while satisfying seismic requirements.

Q2. For new reactor designs with backup AC power, one of the diesel engine or gas turbine may need to be installed away from the site to prevent the localized damage.

Q3. For new reactors with passive designs, if the seismic or tsunami damage the gravity cooling system, there is no way to cool the reactor core. Therefore, it may be necessary to install AC backup power unit away from the site.

Q4. In passive plants DGs are not safety grade, RTNSS treatment of DGs is enough? DG fuel tanks buried or on ground? Are they seismically and tsunami proof?

Spent fuel pool design criteria improvement

Q1. Considering the possibility of flooding the spent fuel pool due to tsunami, no spent fuel pool should be designed to take the credit of solute Boron in the water.

Q2. AC backup power and safety rated cooling system should be made available to cool the pool and supply fresh water.

Shanlai Lu 311612011

Q3. We should immediately move all the spent fuel from all over the country into Yucca Mountain. Leaving large number of spent fuel all over the 104 plants makes US vulnerable to deal with this kind of unexpected natural disaster.

Site Requirements

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Q1. Considering the collateral damage between many reactor units on one site, should we limit the number of reactor unit on each site or the minimum distance between every two reactor units?

Q2. With some in-land plants in US, it may be feasible not to assume tsunami load but flooding from nearby water source should be considered.

Hydrogen Recombiner

Q1. We should require licensees to install hydrogen recombiner in each containment and the reactor building above the reactor.

Operator Actions

Q.1. Are the EPG/ERG/SAG adequate to mitigate the accidents?

Q.2. What instruments become unavailable due to SBO?

NRC Safety and Regulation

Q1. Should we redefine the DBA requirements based on unexpected earth quake with the combination of tsunami?

McKelvey, Harold

4

From:	Collins, Elmo
Sent:	Wednesday, March 16, 2011 6:16 AM
То:	Caniano, Roy; Kennedy, Kriss; Vegel, Anton; Hays, Myra; Pruett, Troy; Pellet, John; Uselding, Lara; Dricks, Victor
Subject: Attachments:	Fw: QA's for Talking to the Public boardfile.docx

In case you have not seen Elmo

From: LIA04 Hoc

To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Satorius, Mark
Cc: Piccone, Josephine; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Sent: Wed Mar 16 07:08:01 2011
Subject: QA's for Talking to the Public

Please see attached

Amanda Noonan State Liaison – Liaison Team Incident Response Center

Questions and Answers for OPA: March 15, 2011; 8:50 pm

1. Can this happen here?

The events that have occurred in Japan are the result of a combination of highly unlikely natural disasters. These include the fifth largest earthquake in recorded history and the resulting devastating tsunami. It is highly unlikely that a similar event could occur in the United States.

2. I live near a nuclear power plant similar to the ones having trouble in Japan. How can we now be confident that this plant won't experience a similar problem?

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 into account the most severe natural phenomena historically reported for the site and surrounding area. The NRC is confident that the robust design of these plants makes it highly unlikely that a similar event could occur in the United States.

3. Has this crisis changed your opinion about the safety of U.S. nuclear power plants?

No. The NRC remains confident that the design of U.S. nuclear power plants ensures the continued protection of public health and safety and the environment.

4. With all this happening, how can the NRC continue to approve new nuclear power plants?

It is premature to speculate what, if any, effect the events in Japan will have on the licensing of new nuclear power plants.

5. What is the NRC doing in response to the situation in Japan?

The NRC has taken a number of actions:

- a. Since the beginning of the event, the NRC has continuously manned its Operations Center in Rockville, MD in order to gather and examine all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States.
- b. A team of 11 officials from the NRC with expertise in boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team.

- c. The NRC has spoken with its counterpart agency in Japan, offering the assistance of U.S. technical experts.
- d. The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response.

6. What other U.S. agencies are involved, and what are they doing?

The entire federal family is responding to this event. The NRC is closely coordinating its efforts with the White House, DOE, DOD, USAID, and others. The U.S. government is providing whatever support requested by the Japanese government.

7. What else can go wrong?

The NRC is continuously monitoring the developments at the nuclear power plants in Japan. Circumstances are constantly evolving and it would be inappropriate to speculate on how this situation might develop over the coming days.

8. What is the worst-case scenario?

In a nuclear emergency, the most important action is to ensure the core is covered with water to provide cooling to remove any heat from the fuel rods. Without adequate cooling, the fuel rods will melt. Should the final containment structure fail, radiation from these melting fuel rods would be released to the atmosphere and additional protective measures may be necessary depending on factors such as prevailing wind patterns.

9. The United States has troops in Japan and has sent ships to help the relief effort – are they in danger from the radiation?

The NRC is not the appropriate federal agency to answer this question. DOD is better suited to provide information regarding its personnel.

10. Is there a danger of radiation making it to the United States?

In response to nuclear emergencies, the NRC works with other U.S. agencies to monitor radioactive releases and predict their path. The NRC continues to monitor information regarding wind patterns near the Japanese nuclear power plants. Nevertheless, 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.

11. Is the U.S. government tracking the radiation released from the Japanese plants?

Yes, a number of U.S. agencies are involved in monitoring and assessing radiation including EPA, DOE, and NRC. The best source of additional information is the Environmental Protection Agency.

12. Has the government set up radiation monitoring stations to track the release?

The NRC understands that EPA is utilizing its existing nationwide radiation monitoring system, RadNet, to monitor continuously the nation's air and regularly monitors drinking water, milk and precipitation for environmental radiation. EPA has publicly stated its agreement with the NRC's assessment that we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. Nevertheless, EPA has stated that it plans to work with its federal partners to deploy additional monitoring capabilities to parts of the western U.S. and U.S.territories.

13. The radiation "plume" seems to be going out to sea – what is the danger of it reaching Alaska? Hawaii? The west coast?

See response to Question 10.

14. I live in the Western United States – should I be taking potassium iodide (KI)?

At this time, the NRC does not believe that protective measures are necessary in the United States. We do not expect any U.S. states or territories to experience harmful levels of radioactivity. In the unlikely event that circumstances change, U.S. residents should listen to the protective action decisions of their states and counties. These protective action decisions such as sheltering, evacuation, or taking potassium iodide. The NRC will provide technical assistance to the states should they request it.

15. Are there other protective measures I should be taking?

At this time, the NRC does not believe that protective measures are necessary in the United States. We do not expect any U.S. states or territories to experience harmful levels of radioactivity. In the unlikely event that circumstances change, U.S. residents should listen to the protective action decisions of their states and counties. These protective action decisions could include actions such as sheltering, evacuation, or taking potassium iodide. The NRC will provide technical assistance to the states should they request it. 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.

16. What are the risks to my children?

See response to Question 15.

17. My family has planned a vacation to Hawaii/Alaska/Seattle next week – is it safe to go, or should we cancel our plans?

The NRC does not expect that residents of the United States or its territories are at any risk of exposure to harmful levels of radiation resulting from the events in Japan. Any changes to travel are a personal decision. The NRC is unaware of any travel restrictions within the United States or its territories.

18. What are the short-term and long-term effects of exposure to radiation?

The NRC does not expect that residents of the United States or it territories are at any risk of exposure to harmful levels of radiation resulting from the events in Japan.

On a daily basis, people are exposed to naturally occurring sources of radiation, such as from the sun or medical X-rays. The resulting effects are dependent on the strength and type of radiation as well as the duration of exposure.

19. I am traveling to Asia (not Japan). Should I adjust my travel plans to avoid flying through plume or being contaminated once on the ground?

The NRC is not the responsible federal agency to advise U.S. citizens on foreign travel restrictions. That responsibility belongs to the Department of State.

20. What is the official agency to report radiation numbers and what is the public contact?

NRC regulations require nuclear power plants to report any radiation doses detected at the plant that could be harmful to the public. This would include doses that are generated by the plant or by an external source. During an event in the U.S., it is the state's responsibility to provide protective action decisions for public health and safety. For this incident, the Japanese are responsible for reporting the public dose; nevertheless, should radiation doses be detected within the U.S., it would still be the state's responsibility to provide protective action decisions for public health and safety.

21. How many plants are located in seismic areas?

Although we often think of the US as having "active" and "non-active" earthquake zones, earthquakes can actually happen almost anywhere. Seismologists typically separate the US into low, moderate, and high seismicity zones. The NRC requires that every plant be designed for site-specific ground motions that are appropriate for their location. In

addition, the NRC has specified a minimum ground shaking level to which the plants must be designed.

22. Where would I get IOSAT Potassium lodide if my city should experience fallout from the Japanese nuclear disaster? Is this the right precaution or is there anything else that can be done to protect myself?

We do not expect any U.S. states or territories to experience harmful levels of radioactivity. As such, we do not believe that there is any need for residents of the United States to take potassium iodide. U.S. residents should listen to the protective action decisions by their states and counties. If necessary, protective action decisions could include actions such as sheltering, evacuating, or taking potassium iodide.

Additional information regarding the use of potassium iodide can be found on NRC's webpage at the following link: <u>http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/potassium-iodide-use.html</u>

Since Potassium Iodide is classified as a drug. Additional information is on the Food and Drug Administration's web site. <u>www.fda.gov</u>

23. My loved one is overseas, how do I find out if they are ok?

We are directing public inquiries with regard to concern for loved ones overseas to the State Department, Consular Services at 202-647-7004.

McKelvey, Harold

From: Sent: To: Subject: Attachments:

) 1 16

> Champ, Billie Wednesday, March 16, 2011 11:14 AM Commission E-Reader Distribution; E-Reader Distribution COMMISSION E-READER....WEDNESDAY, MARCH 16, 2011 Tab A 03-15-11 Reps. Markey-Capps 11-0118.pdf; Tab B 03-15-11 Rep. Lowey 11-0119.pdf

INTERNAL USE ONLY Some of the information contained in the Reader is <u>not publicly available</u>. If there are any questions, please contact SECY.

READING FILE

INDEX

March 16, 2011

INCOMING CORRESPONDENCE

- Tab "A" 03/15/11 -- Letter from Reps. Edward Markey and Lois Capps, requests additional information related to the seismic safety features in nuclear reactors in the U.S.
- Tab "B" 03/15/11 -- Letter from Rep. Nita Lowey, concerns safety factors at Indian Point.

Billie A. C-Lopes

Congress of the United States Washington, DC 20515

March 15, 2011

The Honorable Greg Jaczko Chairman Nuclear Regulatory Commission 11555 Rockville Pike Rockville, MD 20852

Dear Chairman Jaczko:

We write to request additional information related to the seismic safety features that are included in nuclear reactors currently in operation in this country. We are concerned that these reactors may not have the features necessary to withstand the sort of catastrophic earthquake and tsunami that has crippled several reactors in Japan, and caused a meltdown and the release of the highly radioactive materials contained within them.

The 9.0 magnitude earthquake caused a number of Japan's nuclear reactors to shut down automatically. However, a combination of tsunami-related damage and the long duration of the external power outages have subsequently led some of these reactors' emergency diesel generators, and thus cooling systems, to fail. To reduce rising pressure inside the Fukushima reactors, radioactive vapor is being vented, but three explosions have occurred as these pressures grew too high.¹ It appears as though meltdowns are proceeding at these reactors. Now life-threatening levels of radiation are being emitted, a 19-mile evacuation and no-fly zone has been established, a fire at a spent fuel pool at one of the units occurred, and 1,350 of the plant's 1,450 workers have been evacuated. Radioactive materials such as cesium and iodine have been detected as much as 100 miles away from these reactors.²

According to analysis prepared by Rep. Markey (see Appendix A, the map appended to this letter), there are eight nuclear reactors located on the seismically active West Coast of the United States, and twenty-seven nuclear reactors located near the New Madrid fault line in the Midwest.³ There are additionally thirty-one nuclear reactors in

3/15...To EDO to Prepare Response for Chaiman's Signature...Date due Comm: March 31..Cpy to: RF, OCA to Ack...11-0118...Commission Correspondence Note: Response requested: PRIME Dow REFELICION APRIL 8, 2011

¹ http://www.washingtonpost.com/business/economy/nuclear-crisis-deepens-as-third-reactor-loses-coolingcapacity/2011/03/14/ABk6rQV_story.html

² http://www.msnbc.msn.com/id/42066534/ns/world_news-asia-pacific/

³ See <u>http://pubs.usgs.gov/fs/2009/3071/pdf/FS09-3071.pdf</u> In 1811–1812, three major earthquakes (magnitude 7 to 7.7 on the commonly used Richter Scale) occurred near the town of New Madrid, MO. In 1886, a large earthquake (Richter Scale magnitude of about 7) occurred near Charleston, S.C. The United States Geological Survey has estimated that the chance of having an earthquake similar to one of the 1811–12 sequence in the next 50 years is about 7 to 10 percent, and the chance of having a magnitude 6 or larger earthquake in 50 years is 25 to 40 percent.

the United States that are of the same Mark 1 or Mark 2 design as those currently imperiled in Japan, and twelve of these are located in seismically active zones.

The Nuclear Regulatory Commission (NRC)⁴ indicates that safety-significant structures, systems, and components of nuclear reactors must 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 historical data's limited accuracy;
- appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena; and
- the importance of the safety functions to be performed."

According to its website⁵, the San Onofre nuclear power plant, which is located 45 miles from Long Beach, California, is designed to withstand a 7.0 magnitude earthquake. An NRC staff memo⁶ indicates that the Diablo Canyon nuclear power plant, which is located 12 miles from San Luis Obispo, California, is designed to withstand a 7.5 magnitude earthquake. But according to the Southern California Earthquake Center,⁷ there is an 82 percent probability of an earthquake of 7.0 magnitude occurring in the next 30 years, and a 37 percent probability that an earthquake of 7.5 magnitude will occur.

It is not just resilience to the direct effects of an earthquake that raises concerns. While all nuclear power plants are equipped with emergency diesel generators, it is clear from the Japanese catastrophe that these are not themselves infallible, since they all appear to have failed at the Fukushima reactors. These can also fail for other reasons. For example, in 1990,⁸ the Vogtle plant in Georgia experienced a station blackout when a truck knocked over a transmission pole in the switchyard causing a loss of offsite power. The emergency diesel generator started but failed to load. The power plant suffered a complete station blackout, but fortunately power was restored in just over half an hour. NRC regulations only require nuclear power plants to be able to sustain cooling function in a station blackout for 4-8 hours⁹ using back-up battery powered generation capacity.

The vulnerability to the effects of a total station blackout was also noted by the NRC in its 2003 report entitled "Regulatory Effectiveness of the Station Blackout

⁴ http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-seismic-issues.html

http://www.sce.com/PowerandEnvironment/PowerGeneration/SanOnofreNuclearGeneratingStation/publics afety.htm

⁶Research Information Letter 09-001: Preliminary Deterministic Analysis of Seismic Hazard at Diablo Canyon Nuclear Power Plant from Newly Identified "Shoreline Fault"

http://www.scec.org/core/public/sceccontext.php/3935/13662

⁸ http://query.nytimes.com/gst/fullpage.html?res=9C0CEEDF123AF932A35757C0A966958260

http://adamswebsearch2.nrc.gov/idmws/DocContent.dll?library=PU_ADAMS^pbntad01&Logon1D=ba229 e2ba98e61e668d07a5da3c0e726&id=032520158

Rule."¹⁰ Appendix B of this report (attached to this letter) provides reactor-specific information related to outages experienced, demonstrating that many nuclear reactors in this country have already experienced lengthy power outages. The second column in this table reports the overall risk of core damage frequency as calculated by the plant owners. The third column reports the risk of core damage due to complete station blackout as calculated by the plant owners, which is also expressed as a percentage in column 4. If emergency diesel generators were truly fully reliable, there would be no risk associated with a complete station blackout. Instead, many nuclear reactors are estimated to have a real risk of core damage due to a complete station blackout. The fifth column in this table shows four parameters. The first parameter is the battery coping duration in hours, which can easily be seen to be four hours for most reactors, so some reactors can operate on batteries for eight hours.

Clearly, the risks of core damage to reactors due to a complete power outage are non-trivial and have already been contemplated by the NRC. The 4-8 hour battery generation capacity currently in place at U.S. reactor sites would not have helped mitigate the effects of the Japanese earthquake and subsequent tsunami.

Finally, the spent fuel pools at these nuclear reactors can also fail. If the water that cools these fuel rods drains, the zirconium cladding them can catch fire and lead to another source of melting fuel that can spew high level radioactive materials into the environment. This appears to have already occurred in Japan.

We are concerned that San Onofre, Diablo Canyon, and possibly other nuclear reactors located in seismically active areas are not designed with sufficient levels of resiliency against the sort of earthquakes scientists predict they could experience. We are also interested in more detailed information about just what it means to take the "most severe natural phenomena historically reported for the site and surrounding area" into account when designing the safety related features of nuclear reactors. Consequently, we ask for your prompt response to the following questions and requests for information.

- 1) Please provide the Richter or moment magnitude scale rating for each operating nuclear reactor in the United States. If no such rating information exists, then on what basis can such an assertion be made regarding the design of any single nuclear power plant?
- 2) The San Onofre reactor is reportedly designed to withstand a 7.0 earthquake, and the Diablo Canyon reactor is designed to withstand a 7.5 earthquake. According to the Southern California Earthquake Center,¹¹ there is an 82 percent probability of an earthquake of 7.0 magnitude in the next 30 years, and a 37 percent probability that an earthquake of 7.5 magnitude will occur. Shouldn't these reactors be retrofitted to ensure that they can withstand a stronger earthquake than a 7.5? If not, why not?
- 3) Please provide specific information regarding the differences in safety-significant structures between a nuclear power plant that is located in a seismically active area and one that is not. Please provide, for each operating nuclear reactor in a seismically

¹⁰ See http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1776/sr1776.pdf

¹¹ http://www.scec.org/core/public/sceccontext.php/3935/13662

active area, a full list and description of the safety-significant design features that are included that are not included in similar models that are not located in seismically active areas.

- 4) Please fully describe the emergency back-up power requirements that operating nuclear power plants must possess. How long are emergency diesel generators and back-up battery-powered generators required to be able to operate? If different requirements exist for different locations in the United States or for different types of reactors, please also include this information in your response.
- 5) For each operating nuclear power plant, please indicate a) whether the spent fuel pools are located inside or out of the containment structure, b) whether the emergency diesel generators are connected to the cooling and other equipment associated with the spent fuel pools, c) whether the battery-powered generators are connected to the cooling and other equipment associated with the spent fuel pools.
- 6) Please provide a list of all incidents at operating nuclear reactors since 1990 that have involved a) the loss of off-site power, b) a station blackout, or c) a failure of the battery-powered generators at the reactor. For each such incident, please fully describe the circumstances and duration, and impacts or damages, if any.
- 7) In your opinion, can any of the operating nuclear reactors in the United States withstand an earthquake of the magnitude experienced in Japan?

Please provide your response no later than close of business on Friday April 8, 2011. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Natural Resources Committee staff or Dr. Ilya Fischhoff of Rep. Markey's staff at 202-225-2836 or Jonathan Levenshus of Rep. Capps' staff at 202-225-3601.

Sincerely,

Edward J. Markey Member of Congress

Lols Capps

Member of Congress

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEES: RANKING MEMBER, STATE, FOREIGN OPERATIONS, AND RELATED PROGRAMS

LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION

HOMELAND SECURITY



Nita M. Lowey Congress of the United States

lowey,house.gov <u>WASHINGTON</u> 2369 RAYBLIRN HOUSE OFFICE-BUILDING WASHINGTON, DC 30515 (202) 226-0506 FAX: (302) 226-0546 <u>WESTCCHSSTER</u> 222 MAMARONECK AVENUE SUITE 310 FYMITE PLAINS, NY 16605 (914) 328-1707 FAX: (314) 328-1005 <u>BOSKLAND</u>

(845) 632-3485

18th District, New York

Chairman Gregory B. Jaczko U.S. Nuclear Regulatory Commission Mail Stop O-16G4 Washington, DC 20555-0001

March 15, 2011

Dear Chairman Jaczko:

The tragedy in Japan and the threat of meltdowns at the Fukushima Daiichi Nuclear Power Station shine a new light on the need for the heightened evaluation of nuclear power plants within high-population areas. Following the Japan tragedy, it is imperative that the NRC evaluate all possible threats, including terrorism, natural disasters, and the challenges that must be met in developing safety standards and evacuation procedures while determining the re-licensing of the Indian Point Nuclear Facility in Buchanan, New York.

A 2008 study by seismologists at the Columbia University Lamont-Doherty Earth Observatory found that earthquakes in the New York metropolitan area are common and that risks are particularly high due to infrastructure and high population. A 3.9 magnitude earthquake occurred in the Atlantic Ocean approximately 80 miles off Long Island as recently as November 30, 2010. In fact, there have been five earthquakes in the same area in the past two decades, including a 4.7 magnitude earthquake in 1992.

The Ramapo Seismic Zone is a particular threat because the zone passes within two miles of Indian Point. The Ramapo Seismic Zone includes the Dobbs Ferry fault in Westchester, which generated a 4.1 magnitude earthquake in 1985. The Columbia University study suggests that this pattern of subtle but active faults increases the risk to the New York City area and that an earthquake with a magnitude of 7.0 on the Richter scale is within reach. Disturbingly, Entergy measures the risk of an earthquake near Indian Point to be between 1.0 and 3.0 on the Richter scale, despite evidence to the contrary.

As our nation stands ready to assist the Japanese to calm this potential nuclear meltdown and disaster, we must not let the same mistakes happen on our shores. The NRC should study Indian Point's risk of and ability to sustain a disaster, including the impact of earthquakes and hurricanes, as well as collateral impacts such as loss of power, inability to cool reactors, and emergency evacuation routes. The NRC should evaluate how a similar incident in the New York metropolitan area could be further complicated due to a dramatically higher population and the effectiveness of proposed evacuation routes. We simply cannot allow those who live in the New York metropolitan area to be susceptible to such risks.

Sincerely,

'Soury

Nita M. Lowey Member of Congress

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3/15...To EDO to Prepare Response for Chairman's Signature...Date due Comm: March 30...Cpy to: RF, OCA to Ack....11-0119 Commission Correspondence

APPENDIX A



APPENDIX B

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Plant-Specific Station Blackout Information by Reactor Type and Operating Status

Plant	Plant CDF	SBO Percen CDF SBO CD	Percent Coping time in SBO CDF hours/EDG	Modification summary	SBO factors						
			of Plant CDF	reliability/Aac access time in minutes/ extremely severe weather	including dc load shed procedural modifications	PRA LOOP initiating event frequency	Number of LOOP events at power since commercial operation			LOOP event recovery times > 240 minutes	
							Plant	Weather	Grid	Power	Shutdow n
Arkansas Nuclear One Unit 1	4.67E-05	1.58E-05	33.8	4/.95/10/1	Added 1 DG and crosstie	3.58E-02	2	1			
Arkansas Nuclear One Unit 2	3.40E-05	1.23E-06	3.6	4/.95/10/1	Added crosstie	5.84E-02	1	1			
Beaver Valley Unit 1	2.14E-04	6.51E-05	30.4	4/.975/60/1	Added crosstie	6.64E-02	2				
Beaver Valley Unit 2	1.92E-04	4.86E-05	25.3	4/.975/60/1	Added crosstie	7.44E-02	1				
Braidwood Units 182	2.74E-05	6.20E-06	22.6	4/.95/10/1		4.53E-02	2				
Bryon Units 1&2	3.09E-05	4.30E-06	13.9	4/.95/10/1		4.43E-02					
Callaway	5.85E-05	1.80E-05	30.8	4/.975/-/1		4.60E-02					
Calvert Cliffs Units 1&2	2.40E-04	8.32E-06	3.4	4/.975/60/4	Added 1 EDG and one 1 DG	1.36E-01	3				
Catawba Units 1&2	5.80E-05	6.0E-07	10.3	4/.95/10/1		2.0E-03	1			330	
Comanche Peak Units 1&2	5.72E-05	1.5E-05	26.2	4/.95/-/1							

Table B-1 Operating pressurized-water reactors

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Plant	Plant CDF	CDF SBO CDF	SBO Percent CDF SBO CDF	Percent SBO CDF	Percent Coping time in SBO CDF hours/EDG	Modification summary	SBO factors						
			of Plant CDF	reliability/Aac access time in minutes/	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ₂ 240 minutes			
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n		
Crystal River Unit 3	1.53E-05	3.28E-06	21.5 🕔	4/.975/-/4	dc load shed. Added nonclass 1E battery	4.35E-01	3						
Davis-Besse	6.6E-05	3.50E-05	53	4/.95/10/2	Added 1 DG	3.50E-02	2	1		1680			
DC Cook Units 1&2	6.2E-05	1.13E-05	18.1	4/.975/-/2	dc load shed	4.0E-02	1						
Diablo Canyon Units 1&2	8.8E-05	5.0E-06	5.68	4/.95/-/1	Added 1 DG	9.1E-02	1				261 917		
Farley Units 1&2	1.3E-04	1.22E-05	9.4	4/.95/10/3	Service water to Aac, auto load shedding	4.70E-02	2						
Fort Calhoun	1.36E-05	NA	-	4/.95/-/2	DC load shed	2.17E-01	2						
Ginna	8.74E-05	1.0E-06	1.14	4/.975/-/1		3.50E-03	4						
Harris	7.0E-05	1.71E-05	24.4	4/.95/-/3	Lighting in several areas, ladder to isolation valve								
Indian Point Unit 2	3.13E-05	4.47E-06	14.3	8/.95/60/2	Added a DG for gas turbine auxiliaries	6.91E-02	2		3	390			

Table B-1 Operating pressurized-water reactors (Cont.)

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Plant	Plant CDF	Plant CDF SBO CDF	F SBO CDF	Percent SBO CDF	ent Coping time in DF hours/EDG	Modification summary	SBO factors						
			of Plant CDF	reliability/Aac access time in minutes/ extremety	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation		vents ation	LOOP event recovery times ≥ 240 minutes			
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n		
Indian Point Unit 3	4.40E-05	4.80E-06	10.9	8/.95/60/2		6.80E-02	1						
Kewaunee	6.6E-05	2.64E-05	40	4/.95/60/2	Cross-tie to nonsafety power source	4.4E-02				•			
McGuire Units 1&2	4.0E-05	9.26E-06	23.3	4/.95/10/1		7.0E-02	3						
Millstone Unit 2	3.42E-05	1.0E-10	NMN	8/.975/60/5	Upgraded unit 1-2 crosstie	9.10E-02	1	1		330			
Millstone Unit 3	5.61E-05	5.10E-06	6	8/.975/60/5	Added DG	1.12E-01							
North Anna Units 1&2	7.16E-05	8.0E-06	11.2	4/.95/60/4	Added DG, switchgear, crosstie	1.1 <u>4</u> E-02							
Oconee Units 1, 2&3	2.3E-05	2.57E-06	11.2	4/.975/10/1		9.0E-02	2						
Palisades	5.07E-05	9.10E-06	17.9	4/.95/-/1	DC load shed, compressed air for ADVs	3.0E-02	3 [.]			388			
Palo Verde Units 1, 2&3	9.0E-05	1.91E-05	21.2	4/.95/10/2	Added 2 gas turbines	7.83E-02	3			1138			
Point Beach Units 1&2	1.15E-04	1.51E-05	13.1	4/.975/60/2	Gas turbine modifications	6.10E-02	4						

Table B-1 Operating pressurized-water reactors (Cont.)

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Plant	Plant CDF	SBO CDF S	Percent SBO CDF	Coping time in hours/EDG reliability/Aac access time in minutes/ extremely severe weather	Modification summary including dc load shed procedural modifications	SBO factors					
			of Plant CDF			PRA LOOP initiating event frequency	Number of LOOP events at power since commercial operation			LOOP event recovery times 2 240 minutes	
							Plant	Weather	Grid	Power	Shutdow n
Prairie Island Units 1&2	5.05E-05	3.1E-06	6.14	4/.975/10/3	Added 2 EDGs	1	1	2		296 296	_
Robinson Unit 2	3.20E-04	2.6E-05	8.13	8/.95/60/4	Modified conduit supports in switchgear room	6.1E-02	2			454	
Salem Unit 1	5.20E-05	2.10E-05	40.4	4/.975/-/2	EDG compressed air mod	6.0E-02	1				
Salem Unit 2	5.5E-05	1.70E-05	30.9	4/.975/-/2	EDG compressed air mod	6.0E-02	2			655	1675
San Onofre Units 2&3	3.0E-05	2.0E-06	6.67	4/.95/-/1	DC load shed and crosstie	1.1E-01			2		_
St. Lucie Unit 1	2.30E-05	2.65E-06	11.5	4/.975/10/5	Added crosstie	1.5E-01	1		3		
St. Lucie Unit 2	2.62E-05	2.64E-06	10.1	4/.975/10/5	Added crosstie	1.5E-01			_		
Seabrook	6.86E-05	1.53E-05	22.3	4/.975/-/3	DC load shed	4.93E-02				_	
Sequoyah Units 1&2	1.70E-04	5.32E-06	3.2	4/.975/-/2	DC load shed, added air supply	5.16E-03	2				

Table B-1 Operating pressurized-water reactors (Cont.)

B--4

Plant	Plant CDF	SBO CDF	Percent SBO CDF	Coping time in hours/EDG reliability/Aac access time in minutes/ extremely severe weather	Modification summary including dc load shed procedural modifications	SBO factors						
			of Plant CDF			PRA LOOP initiating event frequency	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes		
							Plant	Weather	Grid	Power	Shutdow n	
Summer	2.0E-04	4.9E-05	24.5	4/.95/-/3	DC load shed, battery mod	7.3E-02			1			
South Texas Units 1&2	4.3E-05	1.46E-05	34.9	4/.975/10/5	Procedural cross-tie							
Surry Units 1&2	1.25E-04	8.09E-06	6.47	4/.975/10/4	Added DG	7.69E-02						
Three Mile Island Unit 1	4.49E-04	1.57E-05	3.5	4/.975/10/3	Modifications to existing DGs	5.68E-02						
Turkey Point Units 3&4	3.73E-04	4.70E-06	1.2	8/.95/10/5	Added 2 EDGs and cross-tie	1.7E-01	4	2	7	7950 7908	335	
Vogtle Units 1&2	4.9E-05	4.4E-07	11	4/.95/-/2	Added 5 circuit breakers and lighting	6.6E-04						
Waterford Unit 3	1.80E-05	6.24E-06	34.7	4/.975/-/4	DC load shed. Added portable air compressors for EDGs	3.6E-02						
Watts Bar Unit 1	8.0E-05	1.73E-05	21.6	4/.975/-?/1		3.64E-02						
Wolf Creek	4.2E-05	1.88E-05	44.8	4/.95/-/1		5.12E-02						

Table B-1 Operating pressurized-water reactors (Cont.)

Plant	Plant CDF	Plant CDF SBO CDF	SBO Percent CDF SBO CDF	Coping time in hours/EDG reliability/Aac access time in minutes/ extremely severe weather	Modification summary including dc load shed procedural modifications	SBO factors						
			of Plant CDF			PRA LOOP initiating event frequency	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes		
							Plant	Weather	Grid	Power	Shutdown	
Browns Ferry Units 2&3	4.80E-05	1.30E-05	27	4/.95/-/1	dc load shed	1.12E-01						
Brunswick Units 1&2	2.70E-05	1.80E-05	66.7	4/.975/60/5	Modified controls for existing crosstie	7.40E-02	3				1508 814	
Clinton	2.66E-05	9.8E-06	36.8	4/.95/10/1	Added gas fans for selected room cooling	8.40E-02	_					
Cooper	7.97E-05	2.77E-05	34.8	4/.95/-/2		3.50E-02						
Dresden Units 2&3	1.8E-05	9.30E-07	5.03	4/.95/60/2	Added 2 DGs	1.12E-01	3	1.		240		
Duane Arnold	7.84E-06	1.90E-06	24.2	. 41.975/-/2	dc load shed, RCIC insulation & main control room lighting	1.17E-01			1.			
Fermi	5.70E-06	1.3E-07	NMN	4/.95/60/1		1.88E-01						
FitzPatrick	1.92E-06	1.75E-06	NMN	4/.95/-/1	dc load shed, instrumentation and power supply mods	5.70E-02						
Grand Gulf	1.77E-05	7.46E-06	36.8	4/.95/-/2	dc load shed	6.80E-02					•	

Table B-2 Operating boiling-water reactors
Plant-Specific Station Blackout Information by Reactor Type and Operating Status

Plant	Plant CDF	SBO CDF	Percent SBO CDF	Percent SBO CDF of Plant CDF Plant CDF Severe weather	Modification summary including dc load shed procedural modifications	SBO factors					
			of Plant CDF			PRA LOOP initiating event frequency	Number of LOOP events at power since commercial operation		LOOP event recovery times ≥ 240 minutes		
							Plant	Weather	Grid	Power	Shutdown
Hatch Unit 1	2.23E-05	3.30E-06	14.8	4/.95/60/2	Replaced battery chargers	2.20E-02					
Hatch Unit 2	2.36E-05	3.23E-06	13.7	4/.95/60/2	Replaced battery chargers	2.20E-02					
Hope Creek	4.63E-05	3.38E-05	73	4/.95/-/2	Valve modifications	3.4E-02					
LaSalle Units 1&2	4.74E-05	3.82E-05	80.6	4/.975/-/1	dc load shed, New batteries	9.60E-02	1		-		
Limerick Units 1&2	4.30E-06	1.0E-07	NMN	4/.95/60/3	Upgraded cross-ties	5.9E-02					
Monticello	2.60E-05	1.20E-05	46.2	4/.95/-/1	dc load shed	7.90E-02					
Nine Mile Point Unit 1	5.50E-06	3.50E-06	NMN	4/.975/-/1	dc load shed, added two safety related batteries	5.00E-02	4			595	
Nine Mile Point Unit 2	3.10E-05	5.50E-06	17.7	4/.975/-/1	dc load shed	1.20E-01					

Table B-2 Operating boiling-water reactors (Cont.)

Plant-Specific Station Blackout Information by Reactor Type and Operating Status

Plant	Plant CDF SBO Percent CDF SBO CDF		Percent SBO CDF	Coping time in hours/EDG	Modification summary	SBO factors					
	of reliability/Aac including dc Plant CDF access time in load shed minutes/ procedural	PRA LOOP initiating event	Number of LOOP events at power since commercial operation		LOOP event recovery times ≥ 240 minutes						
	·			severe weather		frequency	Plant	Weather	Grid	Power	Shutdown
Oyster Creek	3.90E-06	2.30E-06	NMN	4/.975/60/1	Added crosstie & reactor pressure indication	3.26E-02	3				240
Peach Bottom Units 2 & 3	5.53E-06	4.81E-07	8.7	8/.975/60/3	Cross-tie to hydro unit	5.9E-02					
Репу	1.30E-05	2.25E-06	43.4	4/.95/10/1	Replaced selected cables	6.09E-02					
Pilgrim	5.80E-05	1.0E-10	NMN	8/.975/10/4	Alarms to line- up Aac	6.17E-01	1	5			1263 534
Quad Cities Units 1&2	1.2E-06	5.72E-07	NMN	4/.95/60/1	Added 2 DGs	4.81E-02	2				
River Bend	1.55E-05	1.35E-05	87.5	4/.95/-/2	Minor structural mod	3.50E-02	1				
Susquehanna Units 1&2	1.7E-05	4.2E-11	NMN	4/.975/-/2	dc load shed	-	1				
Vermont Yankee	4.30E-06	9.17E-07	21.3	8/.975/10/4	Modified incoming line and controls	1.0E-01	2			277	
Washington Nuclear Plant Unit 2	1.73E-05	1.07E-05	61.1	4/.95/-/1	dc load shed, replaced inverters	2.46E-02					

Table B-2 Operating boiling-water reactors (Cont.)

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From:	Meighan, Sean
Sent:	Wednesday, March 16, 2011 10:58 AM
То:	Dean, Bill; Lew, David; Wert, Leonard; Casto, Chuck; McCree, Victor; Satorius, Mark;
	Pederson, Cynthia; Collins, Elmo; Howell, Art
Cc:	Leeds, Eric; Grobe, Jack
Subject:	INPO SER and Chairman's Q&A as requested
Attachments:	23QuestionsOPA3_16.docx; INPO Event Report (IER) L1-11-1.pdf

Importance:

High

Please find attached the two documents requested.

Very Respectfully

Sean C. Meighan Technical Assistant Nuclear Reactor Regulation Division of Operating Reactor Licensing U.S. Nuclear Regulatory Commission 301-415-1020



ccluq

Questions and Answers for OPA: March 15, 2011; 8:50 pm

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3. Has this crisis changed your opinion about the safety of U.S. nuclear power plants?

No. The NRC remains confident that the design of U.S. nuclear power plants ensures the continued protection of public health and safety and the environment.

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- c. The NRC has spoken with its counterpart agency in Japan, offering the assistance of U.S. technical experts.
- d. The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response.

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The entire federal family is responding to this event. The NRC is closely coordinating its efforts with the White House, DOE, DOD, USAID, and others. The U.S. government is providing whatever support requested by the Japanese government.

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From:	LIA04 Hoc
Sent:	Wednesday, March 16, 2011 6:08 AM
То:	Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara,
	Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck,
	Jared; McCree, Victor; Satorius, Mark
Cc:	Piccone, Josephine; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William;
	Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject:	QA's for Talking to the Public
Attachments:	boardfile.docx

Please see attached

Amanda Noonan State Liaison – Liaison Team Incident Response Center

cc/19D

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Questions and Answers for OPA: March 15, 2011; 8:50 pm

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We are directing public inquiries with regard to concern for loved ones overseas to the State Department, Consular Services at 202-647-7004.

From: Sent: To: Subject: Howell, Linda Wednesday, March 16, 2011 1:26 PM Collins, Elmo; Howell, Art; Kennedy, Kriss; Pruett, Troy; Caniano, Roy; Vegel, Anton Update on Regional Assistance to the Ops Center

I've had some discussions with Bill Gott about how we can balance work between the HOOs and ROOs. We've agreed that effective 3/17, the ROOs will be adjusting work schedules so that we can assist the HOOs in performing some routine tasks. We will be conducting the morning plant status calls and putting together the report. The ROOs will also begin preparing and delivering the EDO briefing. During routine daytime periods, the ROOs will being fielding some non-event calls that come through the Ops Center to relieve the HOOs. Bill and I will re-visit weekend needs for the plant status reports later this week. Our handling them would largely depend on how the situation in Japan unfolds.

Although this will require some shift in work schedules, our ROOs are quite willing to assist in this effort. (If you have a chance, some recognition or thanks would be welcomed.)

c)//2

From:	McCree, Victor
Sent:	Wednesday, March 16, 2011 1:35 PM
То:	Collins, Elmo; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven
Cc:	Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick;
	Munday, Joel; Christensen, Harold; Jones, William
Subject:	RE: Info: Possible request wrt Kl

Thanks Elmo – we had provided a "stash" of KI for Chuck to carry along with him, but he inadvertently left it in his office. I'll ask our guys (Steve – your action) to interface with yours and share as much as we can.

Vic

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 2:33 PM
To: Satorius, Mark; Dean, Bill; McCree, Victor; Wiggins, Jim
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art
Subject: Info: Possible request wrt KI

All

Chuck Casto had a layover here in Texas on his way to Japan. In the hurriedness of getting on the plane, he found that he might not have been equipped as he needed to be, especially wrt KI. So, Region IV gave all our KI (53 packets) to Chuck for use in Japan, along with dosimeters and pocket dosimeters. So, Region IV finds itself without an immediate stash of KI for use if we had to send a site team.

Needless to say, given the high demand for KI, it is difficult to purchase on the open market.

Your staff will likely be contacted to see if we can beg, borrow, or steal enough packets of KI in order to equip a site team.

Thank you for your cooperation and generosity.

Elmo

201123

From: Sent: To: Subject: Ruland, William Wednesday, March 16, 2011 12:21 PM Collins, Elmo; McCree, Victor; Satorius, Mark; Dean, Bill A link for information about the Japanese reactors.

http://www.jaif.or.jp/english/

00/123

From:	Howell, Linda
Sent:	Wednesday, March 16, 2011 12:28 PM
То:	R4
Subject:	CLARIFICATION ON MY LAST MESSAGE

I need to provide you clarification on the e-mail from the Operations Center that I forwarded with my last message. Inquiries from the media may be passed to our regional public affairs officers. Inquiries from the public should be passed to the Public Affairs "Communications Line" at 301-415-8200.

ccliza

From:	Howell, Linda
Sent:	Wednesday, March 16, 2011 12:50 PM
То:	Collins, Elmo, Howell, Art
Subject:	Misc. Info

I have reached out to Bill Gott and offered our assistance in taking on routine HOO tasks to relieve the Ops Officers of some duties. Things are very busy in the Ops Center and given the current situation, I think they could use some relief (whether recognized right now or not). Bill & I will be talking again later on this.

CC/125

From: Sent: To: Subject: NEIGA@nei.org Wednesday, March 16, 2011 1:01 PM Collins, Elmo **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 <u>Used Nuclear Fuel Storage at the Fukushima</u> <u>Daiichi Nuclear Power Plant</u>. Also available is a new fact sheet called <u>Industry Taking Action to</u> <u>Ensure Continued Safety at U.S. Nuclear Energy Plants</u>.

As always, please go to http://resources.nei.org/japan for the latest updates.

Click here to unsubscribe

ce/1226

From:	LIA04 Hoc
Sent:	Wednesday, March 16, 2011 5:58 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; Turtil, 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 Turtil State Liaison – Liaison Team Incident Response Center

20/127

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McKelvey, Harold	
From: Sent: To: Subject:	Uselding, Lara Wednesday, March 16, 2011 5:43 PM Collins, Elmo; Lantz, Ryan; Miller, Geoffrey FYI for now- Boxer and Feinstein request for comprehensive investigation at Cali nukes?
I'm taking care of reporte Lara Uselding NRC Region 4 Public Aff 817-917-0321	r airs
Original Message From: Mavis Scanlon < <u>m</u> To: Uselding, Lara Sent: Wed Mar 16 17:53 Subject: Re: Can you co	 <u>avis@newsdata.com</u> > :36 2011 mment on Boxer and Feinstein request for comprehensive investigation at Cali nukes?
Here is Boxer's statemer http://boxer.senate.gov/e	it from earlier today: n/press/releases/031611.cfm
Uselding, Lara wrote: > Have not heard that so > will be reviewing japan > info that arises Lara Us > 817-917-0321 >	I do not have info on that at this time. We incident and will look at this and any new selding NRC Region 4 Public Affairs
 > Original Message > From: Mavis Scanlon > To: Uselding, Lara > Sent: Wed Mar 16 17:4 > Subject: Can you comr > Hi Lara, > Immediately after I resp > afternoon, called on the > into safety issues, with > California. Can you comr > plan to conduct such a 	mavis@newsdata.com> 11:19 2011 nent on Boxer and Feinstein request for comprehensive investigation at Cali nukes? ponded, I saw that Sen Boxer, in a hearing this PNRC to conduct a comprehensive investigation a focus on seismically active areas like mment on that request to the NRC - does the NRC n investigation?
 thanks again, -Mavis > Uselding, Lara wrote: 	
>> No delays on reviews >> Yes.	at this time.
>> Lara Uselding >> U.S. Nuclear Regulat >>	ory Commission (NRC) Public Affairs - Region IV
>> Lara.Uselding@nrc.g >> For more information	ov visit <u>www.nrc.gov</u>

>>

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>>
>>Original Message
>> From: Mavis Scanlon [mailto:mavis@newsdata.com]
>> Sent: Wednesday, March 16, 2011 3:49 PM
>> To: Uselding, Lara
>> Subject: Diablo Canyon guestion - request for comment
>>
>> Hi Lara.
>> I'm following up an earlier message regarding Diablo Canyon. I wanted
>> to get a comment on whether the NRC is considering suspending or
>> delaying its review of PG&E's application to renew licenses for
>> Diablo Canyon until the utility completes additional seismic reports.
>> I also wanted to confirm whether the schedule for the review that is
>> on the NRC's website is the most current, updated schedule.
>>
>> Best regards,
>> -Mavis
>>
>>
>> Mavis Scanlon
>> Associate Editor
>> California Energy Markets
>> 425 Divisadero St. Ste. 303
>> San Francisco CA 94605
>> 415.963.4439 x12
>> <u>mavis@newsdata.com</u>
>>
>>
>>

J

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From:	LIA04 Hoc
Sent:	Wednesday, March 16, 2011 7:57 PM
To:	Kate Fuller
Cc:	Kate Fuller; Maier, Bill; Collins, Elmo; OST05 Hoc; Flannery, Cindy; Lukes, Kim; Noonan,
	Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject:	RE: U.S. Nuclear Regulatory Commission Communication to Northern Mariana Islands

Thank you Ms. Fuller (Northern Mariana Islands). We are on a call this moment that is organized by HHS. NMI (Mr. Seman), Guam, American Samoa, HI, FEMA, CDC, EPA, NRC, and others are all on. It is a good gathering of interested and concerned territories and Fed and State agencies. Again, thank you for contacting me. We shall reach out to Mr. Seaman and/or Mr. Mease.

I'm finding that Jerold Fenner of HHS will also be a good resource for contacting Pacific Island Countries (PICs). Thank you.

Richard Turtil State Liaison – Liaison Team Incident Response Center

From: Kate Fuller [mailto:katebfuller@hotmail.com]
Sent: Wednesday, March 16, 2011 8:42 PM
To: LIA04 Hoc
Cc: Kate Fuller
Subject: RE: U.S. Nuclear Regulatory Commission Communication to Northern Mariana Islands

Dear Mr. Turtil:

I am glad to know that the NRC is thinking of the CNMI and was happy to be of assistance.

I haven't spoken to Nathan in some time, but I believe he is still the legal counsel for the ASEPA. His contact information is

Nathan Mease AS-EPA Legal Counsel PO Box PPA Pago Pago, Am. Samoa 96799 Ph:684-633-2304 Fx:684-633-5801

Let me know if you cannot reach him and I'll try to find another contact for you.

Kate B. Fuller
CNMI Assistant Attorney General/Legal Counsel to the Division of Environmental Quality/Acting Air Branch Manger, CNMI DEQ
(P) 670-664-8503
(F) 670-664-8540 From: LIA04.Hoc@nrc.gov

To: <u>katefuller@deq.gov.mp</u> CC: <u>OST05.Hoc@nrc.gov</u>; <u>Bill.Maier@nrc.gov</u>; <u>Jared.Heck@nrc.gov</u>; <u>Mark.Satorius@nrc.gov</u>; <u>Cindy.Flannery@nrc.gov</u>; <u>Kim.Lukes@nrc.gov</u>; <u>Amanda.Noonan@nrc.gov</u>; <u>William.Rautzen@nrc.gov</u>; <u>Alison.Rivera@nrc.gov</u>; <u>Michelle.Ryan@nrc.gov</u>; <u>Richard.Turtil@nrc.gov</u>; <u>Rosetta.Virgilio@nrc.gov</u> Date: Wed, 16 Mar 2011 19:50:24 -0400 Subject: U.S. Nuclear Regulatory Commission Communication to Northern Mariana Islands

Thank you Ms. Fuller (Northern Mariana Islands) for your assistance in developing appropriate contacts within your government and with Guam and American Samoa. In response to the events in Japan, the attached U.S. Nuclear Regulatory Commission (NRC) press releases have been released by the NRC and can also be found at NRC's web site at www.nrc.gov.

These press releases reflect the following: 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 continues to indicate Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

The NRC's web site will continue to be updated with press releases that address ongoing events in Japan.

Again, thank you for your assistance.

Richard Turtil State Liaison – Liaison Team Incident Response Center 301-816-5100, State Liaison

From:	McCree, Victor
Sent:	Wednesday, March 16, 2011 9:17 AM
То:	Collins, Elmo; Satorius, Mark; Dean, Bill
Cc:	Wert, Leonard; Howell, Art
Subject:	RE: Additional Staff requirements outside Ops Center Long Term Staffing

Thanks. IF he goes..., it'll be sufficiently brief in duration (no more than a week), and he'll be back in time to support our EOC public meetings which start late next week.

Vic

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 10:14 AM
To: McCree, Victor; Satorius, Mark; Dean, Bill
Cc: Wert, Leonard; Howell, Art
Subject: RE: Additional Staff requirements outside Ops Center Long Term Staffing

Vic

Here in Region IV, one of the PAOs is out for medical reasons, the remaining is swamped – very tough - something to think about before you let one of yours go Elmo

From: McCree, Victor
Sent: Wednesday, March 16, 2011 8:59 AM
To: Collins, Elmo; Satorius, Mark; Dean, Bill
Cc: Wert, Leonard
Subject: RE: Additional Staff requirements outside Ops Center Long Term Staffing

Thanks Mary...and I agree with Bill. However, we may have one nominee—one of our PAOs to provide temporary support to OPA.

Vic

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 9:57 AM
To: Satorius, Mark; Dean, Bill; McCree, Victor
Subject: FW: Additional Staff requirements outside Ops Center Long Term Staffing
Importance: High

I suggest that regions not be first in line to support this function Elmo

From: Muessle, Mary

Sent: Wednesday, March 16, 2011 8:32 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

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

From: 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

From: Sent: To: Subject: OST05 Hoc Wednesday, March 16, 2011 9:25 AM Collins, Elmo; Dean, Bill; McCree, Victor; Satorius, Mark Test



From:	Dean, Bill
Sent:	Wednesday, March 16, 2011 9:52 AM
То:	Evans, Michele
Cc:	McCree, Victor; Collins, Elmo; Pederson, Cynthia; Howell, Art; Wert, Leonard; Satorius, Mark
Subject:	Re: Follow-up from 4 pm teleconference on Ops Center Long Term Staffing

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

From: Evans, Michele
To: Dean, Bill
Cc: Lew, David
Sent: Wed Mar 16 10:14:59 2011
Subject: RE: Follow-up from 4 pm teleconference on Ops Center Long Term Staffing

Bill,

Nothing yet. For now it is the same skill set as before. As soon as I have additional guidance, I will share. That may not come for a few days though - since the situation is evolving in Japan.

Michele

From: Dean, Bill
Sent: Tuesday, March 15, 2011 6:12 PM
To: Evans, Michele
Cc: Lew, David; Wilson, Peter; Lorson, Raymond; Roberts, Darrell; Collins, Daniel; Weerakkody, Sunil; Clifford, James
Subject: Re: Follow-up from 4 pm teleconference on Ops Center Long Term Staffing

Michele, is there any further clarification on skill sets for the people possibly going to Japan?? Bill Dean Regional Administrator Region I, USNRC Sent from NRC BlackBerry

From: Evans, Michele

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

C(132

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

Statement of Mr. Banri Kaleda, Minister of Economy, Trade and Industry at the press conference following the announcement of Roadmap by Tokyo Electric Power Company (TEPCO)

1. Presentation at the earliest possible date of a roadmap towards settling the situation at Fukushima Dalichi Nuclear Power Station has been requested by geople home and abroad, especially the residents around Eukushima Dalichi Nuclear Power Station.

TERCO has just released this roadmap, which is an important step forward. Taking this opportunity, we would like to move from the "emergency response phase" up until now to the "planned & stabilizing action phase" in which the settlement of the situation will be afmed under the solid roadmap.

- 2. In response to the release of the roadmap.
 - (1) The Government will request TEPCO to ensure the implementation of this roadmap steadily and as early as possible. To this end, the Nuclear and industrial Safety Agency and others will make regular follow=up, monitoring of the progress of the works and necessary safety checks;
 - (2) The Government will request TERCO to ensure the mobilization and deployment of workers, the procurement and preparation of equipment and materials, and the arrangement of accommodation and other facilities, which are necessary to ensure implementation of the roadmap:
 - (3) At the end of Step 2, the release of radioactive materials will be under control. At this stage, the Government will, tollowing advices of the Nuclear Safety Commission of Japan, review the Deliberate Evacuation Area" and the "Evacuation Prepared Area". Up until that time, we will consider the details of review criteria, and will decontaminate the widest possible area.

By implementing this, we would like to announce, within 6 to 9 months as our target, to the residents of some of the areas whether they will be able to come home.

> (Division in Charge) Nuclear and Industrial Safety Agency Nuclear Safety Public Relations and Thaining Division

Owen, Lucy	· · · · · · · · · · · · · · · · · · ·
То:	Howell, Art; Howell, Linda; Caniano, Roy; Cain, Chuck; Vegel, Anton; Pruett, Troy; Kennedy, Kriss
Subject:	FW: UPDATE: NRC IS RESPONDING TO JAPANESE EVENTS

From: Operations Center Bulletin Sent: Wednesday, March 16, 2011 11:51 AM 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.

134

From:	Howell, Linda Wednesday, March 16, 2011 12:09 PM
To: Subject:	R4 FW: UPDATE: NRC IS RESPONDING TO JAPANESE EVENTS
Importance:	High

Good Afternoon, I know that many of you have seen the Operations Center message below concerning inquiries from members of the media as well as the general public. Elmo and Art have asked me stress that it is imperative that Region IV personnel adhere to the guidance below given the changing nature of the ongoing events in Japan. The telephone number provided below is a communications "center" or "clearing house" for providing information to the public as well as the media. OPA is working with other Federal agencies to ensure that communications and messages are consistent for the U.S. government. Those efforts are very important given the media attention for this event as well as the changing nature. This will also serve to relieve you of providing responses and researching Qs&As.

Separate guidance will be forthcoming about how to handle inquiries from the states and other government entities. In the interim, please follow the guidance provided in the EDO's update from yesterday. We'll continue to keep you informed of how to handle inquiries from external parties.

If you have any questions about this e-mail or the message below, please feel free to give me a call.

From: Operations Center Bulletin Sent: Wednesday, March 16, 2011 11:51 AM 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.

cc/133

From:	Satorius, Mark
Sent:	Wednesday, March 16, 2011 12:58 PM
То:	Collins, Elmo
Cc:	Pederson, Cynthia
Subject:	Re: who are you sending to succession planning meeting?

Don't know. Marty and I talked last Thursday whether Cindy should go and Marty was going to speak w/ Borchardt. This Japanese thing has prevented that discussion from occurring. Cindy is going to pulse marty again later this week. Mark Satorius

From: Collins, Elmo To: Satorius, Mark Sent: Wed Mar 16 12:46:54 2011 Subject: who are you sending to succession planning meeting?

cc/136



From: Sent: To: Subject: Attachments: Tannenbaum, Anita Wednesday, March 16, 2011 12:59 PM R4 Issued - Press Release 11-050.pdf

NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES

00/137





U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-050

March 16, 2011

NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES

Under the guidelines for public safety that would be used in the United States under similar circumstances, the NRC believes it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate.

Among other things, in the United States protective actions recommendations are implemented when projected doses could exceed 1 rem to the body or 5 rem to the thyroid. A rem is a measure of radiation dose. The average American is exposed to approximately 620 millirems, or 0.62 rem, of radiation each year from natural and manmade sources.

In making protective action recommendations, the NRC takes into account a variety of factors that include weather, wind direction and speed, and the status of the problem at the reactors.

Attached are the results of two sets of <u>computer calculations</u> used to support the NRC recommendations.

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 continues to indicate Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

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News releases are available through a free *listserv* subscription at the following Web address: <u>http://www.nrc.gov/public-involve/listserver.html</u>. The NRC homepage at <u>www.nrc.gov</u> also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website.
From: Sent: To: Cc: Subject: Evans, Michele Wednesday, March 16, 2011 1:33 PM Collins, Elmo; Virgilio, Martin; Wiggins, Jim Leeds, Eric; McDermott, Brian; Morris, Scott; Gott, William RE: Update on Regional Assistance to the Ops Center

Elmo,

Region IV support is greatly appreciated! Thank you.

Michele

Michele Evans Acting Deputy OD, NSIR

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 2:28 PM
To: Virgilio, Martin; Wiggins, Jim; Evans, Michele
Cc: Leeds, Eric
Subject: Fyi: Update on Regional Assistance to the Ops Center

Marty

We're glad that we're able to take on some of the Ops Center work

Elmo

From: Howell, Linda **Sent:** Wednesday, March 16, 2011 1:26 PM **To:** Collins, Elmo; Howell, Art; Kennedy, Kriss; Pruett, Troy; Caniano, Roy; Vegel, Anton **Subject:** Update on Regional Assistance to the Ops Center

I've had some discussions with Bill Gott about how we can balance work between the HOOs and ROOs. We've agreed that effective 3/17, the ROOs will be adjusting work schedules so that we can assist the HOOs in performing some routine tasks. We will be conducting the morning plant status calls and putting together the report. The ROOs will also begin preparing and delivering the EDO briefing. During routine daytime periods, the ROOs will being fielding some non-event calls that come through the Ops Center to relieve the HOOs. Bill and I will re-visit weekend needs for the plant status reports later this week. Our handling them would largely depend on how the situation in Japan unfolds.

Although this will require some shift in work schedules, our ROOs are quite willing to assist in this effort. (If you have a chance, some recognition or thanks would be welcomed.)

~())%

From:	Howell, Linda
Sent:	Wednesday, March 16, 2011 2:00 PM
To:	Collins, Elmo
Subject:	RE: Info: Possible request wrt KI

Thanks

From: Collins, Elmo Sent: Wednesday, March 16, 2011 1:37 PM To: Howell, Linda Subject: FW: Info: Possible request wrt KI

Perhaps some KI is available

From: McCree, Victor
Sent: Wednesday, March 16, 2011 1:35 PM
To: Collins, Elmo; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William
Subject: RE: Info: Possible request wrt KI

Thanks Elmo – we had provided a "stash" of KI for Chuck to carry along with him, but he inadvertently left it in his office. I'll ask our guys (Steve – your action) to interface with yours and share as much as we can.

Vic

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 2:33 PM
To: Satorius, Mark; Dean, Bill; McCree, Victor; Wiggins, Jim
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art
Subject: Info: Possible request wrt KI

All

Chuck Casto had a layover here in Texas on his way to Japan. In the hurriedness of getting on the plane, he found that he might not have been equipped as he needed to be, especially wrt KI. So, Region IV gave all our KI (53 packets) to Chuck for use in Japan, along with dosimeters and pocket dosimeters. So, Region IV finds itself without an immediate stash of KI for use if we had to send a site team.

Needless to say, given the high demand for KI, it is difficult to purchase on the open market.

Your staff will likely be contacted to see if we can beg, borrow, or steal enough packets of KI in order to equip a site team.

Thank you for your cooperation and generosity.

Elmo

-C/13



From: Sent: To:	Mehrhoff, Vivian Wednesday, March 16, 2011 3:39 PM Ahn, Tae; Albert, Michelle; Alferink, Beth; Andersen, James; Bahadur, Sher; Bailey, Marissa; Bielecki, Jessica; BowdenBerry, Elva; Brach, Bill; Bradbury, John; Brooks, David; Bupp, Margaret; Campbell, Andy; Campbell, Larry; Camper, Larry; Cao, Tianqing; Cermeno, Andrea; Chang, Kien; Ciocco, Jeff; Coleman, Neil; Collins, Elmo; Comar, Manny; Compton, Keith; Cuadrado, Jose; Damon, Dennis; David Turner; Davis, Jack; Dricks, Victor; Eubanks-White, Darlene; Everett, Vincent; Fedors, Randall; Fetter, Allen; Firth, James; Ford, William; Francis, Karin; Freeman, Denise; Garcia-Santos, Norma; Gendelman, Adam; Glenn, Chad; Gray, Anita; Guttmann, Jack; Gwo, Jin-Ping; Hair, Christopher; Hamdan, Latif; Haney, Catherine; Higgs, Gloria; Howell, Art; Hull, John; Jagannath, Banad; John Stamatkos; Johnson, Robert; Kobetz, Timothy; Kokajko, Lawrence; Kotra, Janet; Latta, Robert; Lee, Mike; Leeds, Eric; Lenehan, Danie!; Leslie, Bret; Lewis, Robert; Maier, Bill; Markley, Christopher; Matula, Thomas; McCartin, Timothy; McIntyre, David; McKenney, Christopher; Misenhimer, David; Mohseni, Aby; Mullins, Alicia; Nataraja, Mysore; Ordaz, Vonna; Parker, Nicole; Parrott, Jack; Pineda, Christine; Powell, Amy; Rahimi, Meraj; Rivera, Carmen; Roach, Kevin; Rubenstone, James; Salomon, Stephen; Sampson, Michele; Schlapper, Gerald; Self, Stephen; Silvia, Andrea; Spitzberg, Blair; Stablein, King; StAmour, Norman; Staub, Janet; Sulima, John; Tannenbaum, Anita: Trifiletti, Sue: Uselding, Lara; Valencia, Jennifer; Viroilio, Rosetta;
Subiect:	Tannenbaum, Anita; Trifiletti, Sue; Uselding, Lara; Valencia, Jennifer; Virgilio, Rosetta; Wastler, Sandra; Waters, Michael; Weaver, Doug; Weber, Michael; Whaley, Sheena; White, Bernard; Willoughby, Leonard; Young, Mitzi FW: eRJ Afternoon Update

Subject:

FYI...LAWMAKERS INVOKE JAPA CATASTROPHE TO MAKE CASE FOR YUCCA MOUNTAIN ...

From: Review Journal [mailto:erj@reviewjournal.com] Sent: Wednesday, March 16, 2011 2:58 PM To: Mehrhoff, Vivian Subject: eRJ Afternoon Update



eRJ Afternoon Update



Lawmakers invoke Japan catastrophe to make case for Yucca Mountain

WASHINGTON -- Several members of Congress Wednesday said the nuclear disaster in Japan might justify reviving plans for a nuclear waste site at Yucca...

Construction employment continues to drop

Construction employment continues to diminish in Las Vegas as 7,800 jobs were lost in the last 12 months, a new report from Washington, D.C.-based...

rclKPD



Patients of suspended doctor advised to speak with personal physicians

The Southern Nevada Health District announced Wednesday that the time frame when patients of Dr. Michael Kaplan were at risk for contracting blood...

Shareholders' lawsuit against IGT can proceed, judge rules

A class-action lawsuit filed by shareholders against slot machine giant International Game Technology can proceed, a Reno federal judge has...

Dion opens new show at Caesars

"I'm an open book," Celine Dion admits. "I've been an open book all my life." So the Canadian...

First Guiness store in U.S. to open in Vegas

How fitting for St. Patrick's Day.

The first Guinness store in the United States will open on Thursday in the Shoppes at Mandalay Place on the...

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From: Sent: To: Subject: Howell, Linda Wednesday, March 16, 2011 4:08 PM Collins, Elmo; Howell, Art; Kennedy, Kriss; Pruett, Troy; Vegel, Anton; Caniano, Roy White House Press Briefing

Following our conversation this morning (Roy, Chuck sat in for you), the media announced that DOD was moving its resources out to the 50 mi. distance from the Daiichi facility. The White House has also gotten the word out that the U.S. government is recommending that U.S. citizens evacuate to a distance of 50 mi. During the mid-day press briefing, the WH Press Secretary directly addressed questions about whether the U.S. recommendations were the same as those issued by Japan. He clearly stated that the U.S. government would issue different protective action recommendations (aka decisions).

cc/H

From:	Harrington, Holly
Sent:	Wednesday, March 16, 2011 5:37 PM
То:	Harrington, Holly
Subject:	Tomorrow's News Tonight Please Read and Delete

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JAPAN, ETC. – The onslaught of media calls continues. Reporter questions include status of Japanese reactors, plume modeling and radiation monitoring, KI, seismic standards for NRC reactors, security vulnerabilities at U.S. plants, the Chairman's Hill briefing, Cong. Markey's letter to the NRC, and many other related topics. Some media outlets we talked to include: Platts; Ocala (Fla.)Star-Banner; Wall Street Journal; WBBH-TV, Ft. Myers, Fla.; WKMS-FM, Murray, Ky.; CBS-New York; Reuters-Washington; Tampa Tribune; ABC-Washington; WSPA-TV. Spartanburg, S.C.; Chattanooga (Tenn.) Times-Free Press; Miami Herald; The State of Columbia, S.C.; The Monroe (La.) News-Star CNN, LA Times, Associated Press, Reuters, ABC News, CBS Evening news, NPR, CBS TV (Bakersfield, CA), OC Register, Kansas City Star, Science World Magazine, Argus Media, Dallas Morning News, St. Louis Beacon, Channel News Asia, WAMU radio (D.C.), KHO-TV Houston, CNN Online, Huffington Post, Beijing TV station, Anchorage Daily News, KXXV TV Colleen, Texas, Cleveland Plain Dealer, MSNBC, Columbia Chronicle (Chicago), Fox News, Michigan Messenger, Il Riformista (Italy), AFP, Chicago Tribune, Bio World Today, National Journal, Xhinhua News Agency (China), Patch.com, Quad Cities Tribune, KSTT, The Vindicator, Columbus Dispatch, the Mirror Evening (China), TBS, 60 Minutes, Environmental and Energy, PA Cable Network, WAMC-AM, Nashua Telegraph, Greenfield Recorder, Journal News, Congressional Quarterly, Reading Eagle, Albany Times Union, Pittsburgh Tribune, TV Golo, Good Morning America, Channel 10 Philadelphia, WNYC, SNL, ABC.

VICTORIA COUNTY SITE – CNN Online, Victoria Advocate and Houston TV stations attended ASLB oral argument to hear contentions by public interest group. Judge Baretta did a number of interviews explaining the process but not talking about the case. He also explained that this meeting was previously scheduled prior to Japan and that they would not be discussing Japan incident. OPA provided interview to Texas Public Radio and talked to the Austin American Statesmen and San Antonio Express.

HONEYWELL – The Huffington Post continues to show interest in Honeywell as a staff "labor reporter" called Region II to ask a series of questions related to our past inspections, the safety of the facility, and the \$11.8 million EPA fine assessed last week. The reporter was told that the waste storage violations cited by the EPA are outside the NRC's jurisdiction and we are satisfied that the process lines we regulate are running safely. She asked for and will be granted an interview with an NRC DFFI branch chief tomorrow.

Press Releases Issued Today

NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES

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cc/142

From: Sent: To: Cc: Subject: HRMSBulletin Resource Wednesday, March 16, 2011 8:52 AM HRMSBulletin Resource HRMSBulletin Resource New Agency Wide TAC Number

All Employees,

Due to the most current event in Japan, the Agency has decided to establish a new Agency wide Activity Code. It is: ZG0061 - Japan Earthquake and Tsunami. The PA will be: 111180 – Response Program-Event/Response - Operating RX. Please be reminded that if you charged hours to D92374 in PP6, you will need to submit a corrected time card and use the new TAC number ZG0061 under PA 111180. Also please contact your T & L Coordinator to have that TAC established in your profile.

Thank you for your cooperation.

Time, Labor and Payroll Services

٦

cc/143

From: Sent: To: Subject: Hays, Myra Wednesday, March 16, 2011 11:50 AM Howell, Art; Collins, Elmo FW: Travel to Japan

I do not know if anyone is traveling to Japan from here. HQ would be funding the international travel not us.

From: Matheson, Mary Sent: Wednesday, March 16, 2011 8:20 AM To: Baker, Pamela; Holt, BJ; Coleman, Judy; Hays, Myra Cc: Mitchell, Reggie; Kaplan, Michele Subject: Travel to Japan

Good morning,

I need to ask that if any travel is approved for someone in your region that is traveling to Japan that you send me their names and a copy of their authorization. We are trying to monitor charge card balances so there are no issues while they are traveling. If you had travelers that left this week please send me their names. I did receive a list from OIP but I want to ensure that we have a comprehensive list. I would recommend you create paper authorizations with \$0.00 funding for the travelers that have already left. We are trying to obtain the details of the agreement that was made with AID. As we get this information we will update you with guidance.

As a heads up, I suspect distinct job codes will need to be established in travel and contract support for Japan events. More information will follow. Also, we have established an agency-wide TAC ZG0061. Please have employees charge all activity related to the Japan response to this TAC. If time was charged in PP 6 under a different TAC we will need a corrected card. An HRMS bulletin will go out shortly to T & L coordinators and also to all employees.

Let me know if you have any questions.

Thanks, Mary

cc1.144

From:	Kennedy, Kriss
Sent:	Wednesday, March 16, 2011 11:00 AM
To:	Howell, Art; Collins, Elmo
Subject:	Fw: Action: Consider potential on-site activities in near-term
Importance:	High

This email is being sent from an NRC Blackberry device.

From: Brown, Frederick

To: Roberts, Darrell; Clifford, James; Croteau, Rick; Jones, William; Croteau, Rick; Roberts, Darrell; Clifford, James; Jones, William; Kennedy, Kriss; Shear, Gary; Pruett, Troy; West, Steven
Cc: Vegel, Anton; Wilson, Peter; Miller, Chris; Weerakkody, Sunil; OBrien, Kenneth; Reynolds, Steven; Munday, Joel; Moorman, James; Christensen, Harold; Westreich, Barry
Sent: Wed Mar 16 11:17:03 2011
Subject: Action: Consider potential on-site activities in near-term

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

ce/145

From:	Uselding, Lara
Sent:	Wednesday, March 16, 2011 6:19 AM
To:	Collins, Elmo
Subject:	Re: QA's for Talking to the Public

Thanks! I did but appreciate Lara Uselding NRC Region 4 Public Affairs 817-917-0321

From: Collins, Elmo

To: Caniano, Roy; Kennedy, Kriss; Vegel, Anton; Hays, Myra; Pruett, Troy; Pellet, John; Uselding, Lara; Dricks, Victor **Sent**: Wed Mar 16 07:16:18 2011 **Subject**: Fw: QA's for Talking to the Public

In case you have not seen Elmo

From: LIA04 Hoc

To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Satorius, Mark
Cc: Piccone, Josephine; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Sent: Wed Mar 16 07:08:01 2011
Subject: QA's for Talking to the Public

Please see attached

Amanda Noonan State Liaison – Liaison Team Incident Response Center

cc/146

J

From: Sent: To: Subject: Vegel, Anton Wednesday, March 16, 2011 7:18 AM Collins, Elmo RE: QA's for Talking to the Public

Elmo Thanks! Tony V.

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 6:16 AM
To: Caniano, Roy; Kennedy, Kriss; Vegel, Anton; Hays, Myra; Pruett, Troy; Pellet, John; Uselding, Lara; Dricks, Victor
Subject: Fw: QA's for Talking to the Public

In case you have not seen Elmo

From: LIA04 Hoc

To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Satorius, Mark
Cc: Piccone, Josephine; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Sent: Wed Mar 16 07:08:01 2011
Subject: QA's for Talking to the Public

Please see attached

Amanda Noonan State Liaison – Liaison Team Incident Response Center

cc/147

McKelvey, Harold

From: Sent: To: Subject: Attachments: Collins, Elmo Wednesday, March 16, 2011 11:28 AM Maier, Bill Fw: COMMISSION E-READER....WEDNESDAY, MARCH 16, 2011 Tab A 03-15-11 Reps. Markey-Capps 11-0118.pdf; Tab B 03-15-11 Rep. Lowey 11-0119.pdf

From: Champ, Billie
To: Commission E-Reader Distribution; E-Reader Distribution
Sent: Wed Mar 16 12:13:42 2011
Subject: COMMISSION E-READER....WEDNESDAY, MARCH 16, 2011

INTERNAL USE ONLY Some of the information contained in the Reader is <u>not publicly available</u>. If there are any questions, please contact SECY.

READING FILE

INDEX

March 16, 2011

INCOMING CORRESPONDENCE

- Tab "A" 03/15/11 -- Letter from Reps. Edward Markey and Lois Capps, requests additional information related to the seismic safety features in nuclear reactors in the U.S.
- Tab "B" 03/15/11 -- Letter from Rep. Nita Lowey, concerns safety factors at Indian Point.

Billie a. C-Lopes

cc/ 148

Congress of the United States Washington, DC 20515

March 15, 2011

The Honorable Greg Jaczko Chairman Nuclear Regulatory Commission 11555 Rockville Pike Rockville, MD 20852

Dear Chairman Jaczko:

We write to request additional information related to the seismic safety features that are included in nuclear reactors currently in operation in this country. We are concerned that these reactors may not have the features necessary to withstand the sort of catastrophic earthquake and tsunami that has crippled several reactors in Japan, and caused a meltdown and the release of the highly radioactive materials contained within them.

The 9.0 magnitude earthquake caused a number of Japan's nuclear reactors to shut down automatically. However, a combination of tsunami-related damage and the long duration of the external power outages have subsequently led some of these reactors' emergency diesel generators, and thus cooling systems, to fail. To reduce rising pressure inside the Fukushima reactors, radioactive vapor is being vented, but three explosions have occurred as these pressures grew too high.¹ It appears as though meltdowns are proceeding at these reactors. Now life-threatening levels of radiation are being emitted, a 19-mile evacuation and no-fly zone has been established, a fire at a spent fuel pool at one of the units occurred, and 1,350 of the plant's 1,450 workers have been evacuated. Radioactive materials such as cesium and iodine have been detected as much as 100 miles away from these reactors.²

According to analysis prepared by Rep. Markey (see Appendix A, the map appended to this letter), there are eight nuclear reactors located on the seismically active West Coast of the United States, and twenty-seven nuclear reactors located near the New Madrid fault line in the Midwest.³ There are additionally thirty-one nuclear reactors in

3/15...To EDO to Prepare Response for Chaiman's Signature...Date due Comm: March 31..Cpy to: RF, OCA to Ack...11-0118...Commission Correspondence Note: Response requested: REFELICATE, April 8, 2011

¹ http://www.washingtonpost.com/business/economy/nuclear-crisis-deepens-as-third-reactor-loses-cooling-capacity/2011/03/14/ABk6rQV_story.html

² http://www.msnbc.msn.com/id/42066534/ns/world_news-asia-pacific/

³ See <u>http://pubs.usgs.gov/fs/2009/3071/pdf/FS09-3071.pdf</u> In 1811–1812, three major earthquakes (magnitude 7 to 7.7 on the commonly used Richter Scale) occurred near the town of New Madrid, MO. In 1886, a large earthquake (Richter Scale magnitude of about 7) occurred near Charleston, S.C. The United States Geological Survey has estimated that the chance of having an earthquake similar to one of the 1811–12 sequence in the next 50 years is about 7 to 10 percent, and the chance of having a magnitude 6 or larger earthquake in 50 years is 25 to 40 percent.

the United States that are of the same Mark 1 or Mark 2 design as those currently imperiled in Japan, and twelve of these are located in seismically active zones.

The Nuclear Regulatory Commission (NRC)⁴ indicates that safety-significant structures, systems, and components of nuclear reactors must 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 historical data's limited accuracy;
- appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena; and
- the importance of the safety functions to be performed."

According to its website⁵, the San Onofre nuclear power plant, which is located 45 miles from Long Beach, California, is designed to withstand a 7.0 magnitude earthquake. An NRC staff memo⁶ indicates that the Diablo Canyon nuclear power plant, which is located 12 miles from San Luis Obispo, California, is designed to withstand a 7.5 magnitude earthquake. But according to the Southern California Earthquake Center,⁷ there is an 82 percent probability of an earthquake of 7.0 magnitude occurring in the next 30 years, and a 37 percent probability that an earthquake of 7.5 magnitude will occur.

It is not just resilience to the direct effects of an earthquake that raises concerns. While all nuclear power plants are equipped with emergency diesel generators, it is clear from the Japanese catastrophe that these are not themselves infallible, since they all appear to have failed at the Fukushima reactors. These can also fail for other reasons. For example, in 1990,⁸ the Vogtle plant in Georgia experienced a station blackout when a truck knocked over a transmission pole in the switchyard causing a loss of offsite power. The emergency diesel generator started but failed to load. The power plant suffered a complete station blackout, but fortunately power was restored in just over half an hour. NRC regulations only require nuclear power plants to be able to sustain cooling function in a station blackout for 4-8 hours⁹ using back-up battery powered generation capacity.

The vulnerability to the effects of a total station blackout was also noted by the NRC in its 2003 report entitled "Regulatory Effectiveness of the Station Blackout

⁴ http://www.nrc.gov/reading-m/doc-collections/fact-sheets/fs-seismic-issues.html

http://www.sce.com/PowerandEnvironment/PowerGeneration/SanOnofreNuclearGeneratingStation/publics afety.htm

⁶Research Information Letter 09-001: Preliminary Deterministic Analysis of Seismic Hazard at Diablo Canyon Nuclear Power Plant from Newly Identified "Shoreline Fault" ⁷ http://www.scec.org/core/public/sceccontext.php/3935/13662

⁸ http://query.nytimes.com/gst/fullpage.html?res=9C0CEEDF123AF932A35757C0A966958260

http://adamswebsearch2.nrc.gov/idmws/DocContent.dll?library=PU_ADAMS^pbntad01&Logon1D=ba229 e2ba98e61e668d07a5da3c0e726&id=032520158

Rule."¹⁰ Appendix B of this report (attached to this letter) provides reactor-specific information related to outages experienced, demonstrating that many nuclear reactors in this country have already experienced lengthy power outages. The second column in this table reports the overall risk of core damage frequency as calculated by the plant owners. The third column reports the risk of core damage due to complete station blackout as calculated by the plant owners, which is also expressed as a percentage in column 4. If emergency diesel generators were truly fully reliable, there would be no risk associated with a complete station blackout. Instead, many nuclear reactors are estimated to have a real risk of core damage due to a complete station blackout. The fifth column in this table shows four parameters. The first parameter is the battery coping duration in hours, which can easily be seen to be four hours for most reactors, so some reactors can operate on batteries for eight hours.

Clearly, the risks of core damage to reactors due to a complete power outage are non-trivial and have already been contemplated by the NRC. The 4-8 hour battery generation capacity currently in place at U.S. reactor sites would not have helped mitigate the effects of the Japanese earthquake and subsequent tsunami.

Finally, the spent fuel pools at these nuclear reactors can also fail. If the water that cools these fuel rods drains, the zirconium cladding them can catch fire and lead to another source of melting fuel that can spew high level radioactive materials into the environment. This appears to have already occurred in Japan.

We are concerned that San Onofre, Diablo Canyon, and possibly other nuclear reactors located in seismically active areas are not designed with sufficient levels of resiliency against the sort of earthquakes scientists predict they could experience. We are also interested in more detailed information about just what it means to take the "most severe natural phenomena historically reported for the site and surrounding area" into account when designing the safety related features of nuclear reactors. Consequently, we ask for your prompt response to the following questions and requests for information.

- 1) Please provide the Richter or moment magnitude scale rating for each operating nuclear reactor in the United States. If no such rating information exists, then on what basis can such an assertion be made regarding the design of any single nuclear power plant?
- 2) The San Onofre reactor is reportedly designed to withstand a 7.0 earthquake, and the Diablo Canyon reactor is designed to withstand a 7.5 earthquake. According to the Southern California Earthquake Center,¹¹ there is an 82 percent probability of an earthquake of 7.0 magnitude in the next 30 years, and a 37 percent probability that an earthquake of 7.5 magnitude will occur. Shouldn't these reactors be retrofitted to ensure that they can withstand a stronger earthquake than a 7.5? If not, why not?
- 3) Please provide specific information regarding the differences in safety-significant structures between a nuclear power plant that is located in a seismically active area and one that is not. Please provide, for each operating nuclear reactor in a seismically

¹⁰ See http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1776/sr1776.pdf

¹¹ http://www.scec.org/core/public/sceccontext.php/3935/13662

active area, a full list and description of the safety-significant design features that are included that are not included in similar models that are not located in seismically active areas.

- 4) Please fully describe the emergency back-up power requirements that operating nuclear power plants must possess. How long are emergency diesel generators and back-up battery-powered generators required to be able to operate? If different requirements exist for different locations in the United States or for different types of reactors, please also include this information in your response.
- 5) For each operating nuclear power plant, please indicate a) whether the spent fuel pools are located inside or out of the containment structure, b) whether the emergency diesel generators are connected to the cooling and other equipment associated with the spent fuel pools, c) whether the battery-powered generators are connected to the cooling and other equipment associated with the spent fuel pools.
- 6) Please provide a list of all incidents at operating nuclear reactors since 1990 that have involved a) the loss of off-site power, b) a station blackout, or c) a failure of the battery-powered generators at the reactor. For each such incident, please fully describe the circumstances and duration, and impacts or damages, if any.
- 7) In your opinion, can any of the operating nuclear reactors in the United States withstand an earthquake of the magnitude experienced in Japan?

Please provide your response no later than close of business on Friday April 8, 2011. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Natural Resources Committee staff or Dr. Ilya Fischhoff of Rep. Markey's staff at 202-225-2836 or Jonathan Levenshus of Rep. Capps' staff at 202-225-3601.

Sincerely,

Edward J. Markey Member of Congress

Lois Capps

Member of Congress

APPENDIX A



APPENDIX B

.

Plant-Specific Station Blackout Information by Reactor Type and Operating Status

Plant	Plant CDF	SBO CDF	Percent SBO CDF	Coping time in hours/EDG	Modification summary			SBO fact	ors		
			of Plant CDF	reliability/Aac access time in minutes/ extremety	including dc load shed procedural modifications	PRA LOOP initiating event	Numbe at comr	er of LOOP e t power since nercial opera	LOOP event recovery times 2 240 minutes		
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Arkansas Nuclear One Unit 1	4.67E-05	1.58E-05	33.8	4/.95/10/1	Added 1 DG and crosstie	3.58E-02	2	1			
Arkansas Nuclear One Unit 2	3.40E-05	1.23E-06	3.6	4/.95/10/1	Added crosstie	5.84E-02	1	1			
Beaver Valley Unit 1	2.14E-04	6.51E-05	30.4	4/.975/60/1	Added crosstie	6.64E-02	2				
Beaver Valley Unit 2	1.92E-04	4.86E-05	25.3	4/.975/60/1	Added crosstie	7.44E-02	1				
Braidwood Units 182	2.74E-05	6.20E-06	22.6	4/.95/10/1		4.53E-02	2				
Bryon Units 1&2	3.09E-05	4.30E-06	13.9	4/.95/10/1		4.43E-02					
Callaway	5.85E-05	1.80E-05	30.8	4/.975/-/1		4.60E-02					
Calvert Cliffs Units 1&2	2.40E-04	8.32E-06	3.4	4/.975/60/4	Added 1 EDG and one 1 DG	1.36E-01	3				
Catawba Units 1&2	5.80E-05	6.0E-07	10.3	4/.95/10/1		2.0E-03	1			330	
Comanche Peak Units 1&2	5.72E-05	1.5E-05	26.2	4/.95/-/1							-

Table B-1 Operating pressurized-water reactors

Plant	Plant CDF	SBO CDF	Percent SBO CDF	cent Coping time in CDF hours/EDG	Modification summary including dc load shed procedural	SBO factors							
			of Plant CDF	reliability/Aac access time in minutes/ extremely		PRA LOOP initiating event	Numbe a comr	er of LOOP e t power since nercial opera	LOOP event recovery times ₂ 240 minutes				
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n		
Crystal River Unit 3	1.53E-05	3.28E-06	21.5	4/.975/-/4	dc load shed. Added nonclass 1E battery	4.35E-01	3						
Davis-Besse	6.6E-05	3.50E-05	53	4/.95/10/2	Added 1 DG	3.50E-02	2	1		1680			
DC Cook Units 1&2	6.2E-05	1.13E-05	18.1	4/.975/-/2	dc load shed	4.0E-02	1						
Diablo Canyon Units 1&2	8.8E-05	5.0E-06	5.68	4/.95/-/1	Added 1 DG	9.1E-02	1				261 917		
Farley Units 1&2	1.3E-04	1.22E-05	9.4	4/.95/10/3	Service water to Aac, auto load shedding	4.70E-02	2			•			
Fort Calhoun	1.36E-05	NA	-	4/.95/-/2	DC load shed	2.17E-01	2						
Ginna	8.74E-05	1.0E-06	1.14	4/.975/-/1		3.50E-03	4						
Harris	7.0E-05	1.71E-05	24.4	4/.95/-/3	Lighting in several areas, ladder to isolation valve								
Indian Point Unit 2	3.13E-05	4.47E-06	14.3	8/.95/60/2	Added a DG for gas turbine auxiliaries	6.91E-02	2		3	390			

Table B-1 Operating pressurized-water reactors (Cont.)

Plant	Plant CDF	SBO CDF	Percent SBO CDF	Coping time in hours/EDG	Modification summary			SBO fact	ors		
			of Plant CDF	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation		LOOP event recovery times ≥ 240 minutes		
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Indian Point Unit 3	4.40E-05	4.80E-06	10.9	8/.95/60/2	•	6.80E-02	1				
Kewaunee	6.6E-05	2.64E-05	40	4/.95/60/2	Cross-tie to nonsafety power source	4.4E-02				•	
McGuire Units 1&2	4.0E-05	9.26E-06	23.3	4/.95/10/1		7.0E-02	3				
Millstone Unit 2	3.42E-05	1.0E-10	NMN	8/.975/60/5	Upgraded unit 1-2 crosstie	9.10E-02	1	1		330	
Millstone Unit 3	5.61E-05	5.10E-06	6	8/.975/60/5	Added DG	1.12E-01					
North Anna Units 1&2	7.16E-05	8.0E-06	11.2	4/.95/60/4	Added DG, switchgear, crosstie	1.14E-02					
Oconee Units 1, 2&3	2.3E-05	2.57E-06	11.2	4/.975/10/1		9.0E-02	2				
Palisades	5.07E-05	9.10E-06	17.9	4/.95/-/1	DC load shed, compressed air for ADVs	3.0E-02	3.			388	
Palo Verde Units 1, 2&3	9.0E-05	1.91E-05	21.2	4/.95/10/2	Added 2 gas turbines	7.83E-02	3			1138	
Point Beach Units 1&2	1.15E-04	1.51E-05	13.1	4/.975/60/2	Gas turbine modifications	6.10E-02	4				

Table B-1 Operating pressurized-water reactors (Cont.)

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Plant	Piant CDF	SBO CDF	Percent SBO CDF	Coping time in hours/EDG	Modification summary	SBO factors					
			of Plant CDF	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	A LOOP Number of LOOP events tiating at power since event commercial operation			LOOP event recovery times ≥ 240 minutes	
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n
Prairie Island Units 1&2	5.05E-05	3.1E-06	6.14	4/.975/10/3	Added 2 EDGs	-	1	2		296 296	
Robinson Unit 2	3.20E-04	2.6E-05	8.13	8/.95/60/4	Modified conduit supports in switchgear room	6.1E-02	2			454	
Salem Unit 1	5.20E-05	. 2.10E-05	40.4	4/.975/-/2	EDG compressed air mod	6.0E-02	1				
Salem Unit 2	5.5E-05	1.70E-05	30.9	4/.975/-/2	EDG compressed air mod	6.0E-02	2			655	1675
San Onofre Units 2&3	3.0E-05	2.0E-06	6.67	4/.95/-/1	DC load shed and crosstie	1.1E-01			2		
St. Lucie Unit 1	2.30E-05	2.65E-06	11.5	4/.975/10/5	Added crosstie	1.5E-01	1		3		
St. Lucie Unit 2	2.62E-05	2.64E-06	10.1	4/.975/10/5	Added crosstie	1.5E-01					
Seabrook	6.86E-05	1.53E-05	22.3	4/.975/-/3	DC load shed	4.93E-02					
Sequoyah Units 1&2	1.70E-04	5.32E-06	3.2	4/.975/-/2	DC load shed, added air supply	5.16E-03	2				

Table B-1 Operating pressurized-water reactors (Cont.)

Plant	Plant CDF	ant CDF SBO CDF	SBO Percent CDF SBO CDF	Percent SBO CDF	Percent Coping time in BO CDF hours/EDG	Modification summary	SBO factors						
	of reliability/A Plant CDF access time minutes extremel	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes					
				severe weather		frequency	Plant	Weather	Grid	Power	Shutdow n		
Summer	2.0E-04	4.9E-05	24.5	4/.95/-/3	DC load shed, battery mod	7.3E-02			1				
South Texas Units 1&2	4.3E-05	1.46E-05	34.9	4/.975/10/5	Procedural cross-tie								
Surry Units 1&2	1.25E-04	8.09E-06	6.47	4/.975/10/4	Added DG	7.69E-02							
Three Mile Island Unit 1	4.49E-04	1.57E-05	3.5	4/.975/10/3	Modifications to existing DGs	5.68E-02							
Turkey Point Units 3&4	3.73E-04	4.70E-06	1.2	8/.95/10/5	Added 2 EDGs and cross-tie	1.7E-01	4	2	7	7950 7908	335		
Vogtle Units 1&2	4.9E-05	4.4E-07	11	4/.95/-/2	Added 5 circuit breakers and lighting	6.6E-04							
Waterford Unit 3	1.80E-05	6.24E-06	34.7	4/.975/-/4	DC load shed. Added portable air compressors for EDGs	3.6E-02							
Watts Bar Unit 1	8.0E-05	1.73E-05	21.6	4/.975/-?/1		3.64E-02							
Wolf Creek	4.2E-05	1.88E-05	44.8	4/.95/-/1		5.12E-02							

Table B-1 Operating pressurized-water reactors (Cont.)

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Plant	Plant CDF	SBO CDF	Percent SBO CDF	Coping time in hours/EDG	Modification summary			SBO fac	tors		
			of Plant CDF	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOC recove 240)P event ery times ≥ minutes
				severe weather	mounications	frequency	Plant	Weather	Grid	Power	Shutdown
Browns Ferry Units 2&3	4.80E-05	1.30E-05	27	4/.95/-/1	dc load shed	1.12E-01					
Brunswick Units 1&2	2.70E-05	1.80E-05	66.7	4/.975/60/5	Modified controls for existing crosstie	7.40E-02	3				1508 814
Clinton	2.66E-05	9.8E-06	36.8	4/.95/10/1	Added gas fans for selected room cooling	8.40E-02			-		
Cooper	7.97E-05	2.77E-05	34.8	4/.95/-/2		3.50E-02					
Dresden Units 2&3	1.8E-05	9.30E-07	5.03	4/.95/60/2	Added 2 DGs	1.12E-01	3	1.		240	
Duane Arnold	7.84E-06	1.90E-06	24.2	4/.975/-/2	dc load shed, RCIC insulation & main control room lighting	1.17E-01			1		
Fermi	5.70E-06	1.3E-07	NMN	4/.95/60/1		1.88E-01					
FitzPatrick	1.92E-06	1.75E-06	NMN	4/.95/-/1	dc load shed, instrumentation and power supply mods	5.70E-02					
Grand Gulf	1.77E-05	7.46E-06	36.8	4/.95/-/2	dc load shed	6.80E-02					

Table B-2 Operating boiling-water reactors

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Plant	Plant CDF	SBO CDF	Percent SBO CDF	Coping time in hours/EDG	Modification summary			SBO fac	tors		
			of Plant CDF	reliability/Aac access time in minutes/ extremely	including dc load shed procedural modifications	PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes	
				severe weather	modifications	frequency	Plant	Weather	Grid	Power	Shutdown
Hatch Unit 1	2.23E-05	3.30E-06	14.8	4/.95/60/2	Replaced battery chargers	2.20E-02					
Hatch Unit 2	2.36E-05	3.23E-06	13.7	4/.95/60/2	Replaced battery chargers	2.20E-02					
Hope Creek	4.63E-05	3.38E-05	73	4/.95/-/2	Valve modifications	3.4E-02					
LaSalle Units 1&2	4.74E-05	3.82E-05	80.6	4/.975/-/1	dc load shed, New batteries	9.60E-02	1		·		
Limerick Units 1&2	4.30E-06	1.0E-07	NMN	4/.95/60/3	Upgraded cross-ties	5.9E-02					
Monticello	2.60E-05	1.20E-05	46.2	4/.95/-/1	dc load shed	7.90E-02					
Nine Mile Point Unit 1	5.50E-06	3.50E-06	NMN	4/.975/-/1	dc load shed, added two safety related batteries	5.00E-02	4			595	
Nine Mile Point Unit 2	3.10E-05	5.50E-06	17.7	4/.975/-/1	dc load shed	1.20E-01					

Table B-2 Operating boiling-water reactors (Cont.)

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Plant	Plant CDF SBO CDF Percent SBO CDF Coping time in hours/EDG Modification summary of reliability/Aac including dc including dc Plant CDF access time in minutes/ load shed procedural extremely modifications severe weather	SBO CDF	SBO Percent CDF SBO CDF of Plant CDF	Coping time in hours/EDG reliability/Aac access time in minutes/ extremely	Modification summary including dc load shed procedural modifications	SBO factors					
						PRA LOOP initiating event	Number of LOOP events at power since commercial operation			LOOP event recovery times ≥ 240 minutes	
		frequency	Piant	Weather	Grid	Power	Shutdown				
Oyster Creek	3.90E-06	2.30E-06	NMN	4/.975/60/1	Added crosstie & reactor pressure indication	3.26E-02	3				240
Peach Bottom Units 2 & 3	5.53E-06	4.81E-07	8.7	8/.975/60/3	Cross-tie to hydro unit	5.9E-02					
Perry	1.30E-05	2.25E-06	43.4	4/.95/10/1	Replaced selected cables	6.09E-02					
Pilgrim	5.80E-05	1.0E-10	NMN	8/.975/10/4	Alarms to line- up Aac	6.17E-01	1	5		_	1263 534
Quad Cities Units 1&2	1.2E-06 ·	5.72E-07	NMN	4/.95/60/1	Added 2 DGs	4.81E-02	2				
River Bend	1.55E-05	1.35E-05	87.5	4/.95/-/2	Minor structural mod	3.50E-02	1				
Susquehanna Units 1&2	1.7E-05	4.2E-11	NMN	4/.975/-/2	dc load shed	-	1				
Vermont Yankee	4.30E-06	9.17E-07	21.3	8/.975/10/4	Modified incoming line and controls	1.0E-01	2			277	
Washington Nuclear Plant Unit 2	1.73E-05	1.07E-05	61.1	4/.95/-/1	dc load shed, replaced inverters	2.46E-02					

Table B-2 Operating boiling-water reactors (Cont.)

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COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEES: RANKING MEMBER, STATE, FOREIGN OPERATIONS, AND RELATED PROGRAMS

LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION

HOMELAND SECURITY



Nita M. Lowey Congress of the United States 18th District, New York IOWEY, HOUSO, GOV WASHINGTON 2369 RAYBLIRN HOUSE OFFICE BUILDING WASHINGTON, DC 90518 (202) 228-5526 PAX: (202) 228-5526 WESTCHESTER 227 MAMARONECK AVENUE SUITE 310 WHITE PLAINS, NY 16505 (914) 428-1707 FAX: (314) 328-1605 EQCKLAND (945) 639-3488

Chairman Gregory B. Jaczko U.S. Nuclear Regulatory Commission Mail Stop O-16G4 Washington, DC 20555-0001

March 15, 2011

Dear Chairman Jaczko:

The tragedy in Japan and the threat of meltdowns at the Fukushima Daiichi Nuclear Power Station shine a new light on the need for the heightened evaluation of nuclear power plants within high-population areas. Following the Japan tragedy, it is imperative that the NRC evaluate all possible threats, including terrorism, natural disasters, and the challenges that must be met in developing safety standards and evacuation procedures while determining the re-licensing of the Indian Point Nuclear Facility in Buchanan, New York.

A 2008 study by seismologists at the Columbia University Lamont-Doherty Earth Observatory found that earthquakes in the New York metropolitan area are common and that risks are particularly high due to infrastructure and high population. A 3.9 magnitude earthquake occurred in the Atlantic Ocean approximately 80 miles off Long Island as recently as November 30, 2010. In fact, there have been five earthquakes in the same area in the past two decades, including a 4.7 magnitude earthquake in 1992.

The Ramapo Seismic Zone is a particular threat because the zone passes within two miles of Indian Point. The Ramapo Seismic Zone includes the Dobbs Ferry fault in Westchester, which generated a 4.1 magnitude earthquake in 1985. The Columbia University study suggests that this pattern of subtle but active faults increases the risk to the New York City area and that an earthquake with a magnitude of 7.0 on the Richter scale is within reach. Disturbingly, Entergy measures the risk of an earthquake near Indian Point to be between 1.0 and 3.0 on the Richter scale, despite evidence to the contrary.

As our nation stands ready to assist the Japanese to calm this potential nuclear meltdown and disaster, we must not let the same mistakes happen on our shores. The NRC should study Indian Point's risk of and ability to sustain a disaster, including the impact of earthquakes and hurricanes, as well as collateral impacts such as loss of power, inability to cool reactors, and emergency evacuation routes. The NRC should evaluate how a similar incident in the New York metropolitan area could be further complicated due to a dramatically higher population and the effectiveness of proposed evacuation routes. We simply cannot allow those who live in the New York metropolitan area to be susceptible to such risks.

Sincerely,

Saren Nita M. . Lowey

Member of Congress

PRRITED ON RECYCLED PAPER

3/15...To EDO to Prepare Response for Chairman's Signature...Date due Comm: March 30...Cpy to: RF, OCA to Ack....11-0119 Commission Correspondence

McKelvey, Harold

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From: Sent:	Collins, Elmo Wednesday, March 16, 2011 1:40 PM
To:	Andreas, Dorothy C
Subject:	FW: Latest Attached NRC Press Releases and associated computer calculations (see web or the attached)
Attachments:	PressReleaseNRCProvides PAG Rec11-050.pdf; PressReleaseNRC PAGAttachment11-050 _Attchmt.pdf
Importance:	High

From: LIA04 Hoc

Sent: Wednesday, March 16, 2011 1:28 PM

To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Satorius, Mark; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta **Cc:** Piccone, Josephine; Jackson, Deborah; Noonan, Amanda

Subject: Latest Attached NRC Press Releases and associated computer calculations (see web or the attached) **Importance:** High

cc/149





U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-050

March 16, 2011

NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES

Under the guidelines for public safety that would be used in the United States under similar circumstances, the NRC believes it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate.

Among other things, in the United States protective actions recommendations are implemented when projected doses could exceed 1 rem to the body or 5 rem to the thyroid. A rem is a measure of radiation dose. The average American is exposed to approximately 620 millirems, or 0.62 rem, of radiation each year from natural and manmade sources.

In making protective action recommendations, the NRC takes into account a variety of factors that include weather, wind direction and speed, and the status of the problem at the reactors.

Attached are the results of two sets of <u>computer calculations</u> used to support the NRC recommendations.

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 continues to indicate Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

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News releases are available through a free *listserv* subscription at the following Web address: <u>http://www.nrc.gov/public-involve/listserver.html</u>. The NRC homepage at <u>www.nrc.gov</u> also offers a SUBSCRIBE link. E-mail notifications are sent to subscribers when news releases are posted to NRC's website. 15 March 2010 02:51am (EDT), NRC Operations Center, Protective Measures Team

This data is based on system condition estimates for a hypothetical, single reactor site, 2350 MWt, Boiling Water Reactor. Model results are projections only and may <u>not</u> be representative of an actual release. This projection uses modeled forecast meteorological conditions and is subject to change.

Maximum Dose Values (rem) - Close-In

Dist from release miles (kilometers)	0.5 (0.8)	1. (1.61)	1.5 (2.41)	2. (3.22)	3. (4.83)	5. (8.05)	7. (11.27)	10. (16.09)
Total EDE	<u>5.4E+03</u>	<u>2.0E+03</u>	<u>1.2E+03</u>	<u>8.2E+02</u>	<u>4.8E+02</u>	<u>2.4E+02</u>	<u>1.6E+02</u>	<u>9.5E+01</u>
Thyroid CDE	<u>2.8E+04</u>	<u>1.1E+04</u>	<u>6.2E+03</u>	<u>4.3E+03</u>	<u>2.5E+03</u>	<u>1.3E+03</u>	<u>8.4E+02</u>	5.1E+02
Inhalation CEDE	3.7E+03	1.4E+03	8.0E+02	5.6E+02	3.3E+02	1.7E+02	1.1E+02	6.7E+01
Cloudshine	1.9E+01	9.3E+00	5.8E+00	4.1E+00	2.5E+00	1.4E+00	9.7E-01	6.2E-01
4-day Groundshine	1.7E+03	6.5E+02	3.8E+02	2.6E+02	1.5E+02	7.3E+01	4.6E+01	2.8E+01
Inter Phase 1st Yr	<u>2.4E+04</u>	<u>9.4E+03</u>	5.4E+03	<u>3.8E+03</u>	<u>2.2E+03</u>	<u>1.1E+03</u>	<u>6.6E+02</u>	3.9E+02
Inter Phase 2nd Yr	1.1E+04	4.4E+03	2.6E+03	1.8E+03	1.0E+03	4.9E+02	3.1E+02	1.8E+02

Notes:

• Doses exceeding PAGs are underlined.

• Early-Phase PAGs: TEDE - 1 rem, Thyroid (iodine) CDE - 5 rem

• Intermediate-Phase EPA PAGs: 1st year - 2 rem, 2nd year - 0.5 rem

*** indicates values less than 1 mrem

· To view all values - use Detailed Results | Numeric Table

• Total EDE = Inhalation CEDE + Cloudshine + 4-Day Groundshine

Maximum Dose Values (rem) - To 50 mi

Dist from release miles (kilometers)	15 (24.1)	20 (32.2)	30 (48.3)	40 (64.4)	50 (80.5)
Total EDE	<u>8.6E+01</u>	<u>6.3E+01</u>	<u>3.7E+01</u>	<u>1.8E+01</u>	<u>8.1E+00</u>
Thyroid CDE	<u>3.3E+02</u>	<u>2.7E+02</u>	<u>1.3E+02</u>	<u>5.9E+01</u>	<u>2.3E+01</u>
Inhalation CEDE	3.9E+01	3.1E+01	1.3E+01	4.4E+00	1.3E+00
Cloudshine	4.5E-01	3.8E-01	1.7E-01	7.4E-02	2.7E-02
4-day Groundshine	4.7E+01	3.2E+01	2.4E+01	1.3E+01	6.7E+00
Inter Phase 1st Yr	<u>7.2E+02</u>	<u>4.8E+02</u>	<u>3.8E+02</u>	<u>2.2E+02</u>	<u>1.3E+02</u>
Inter Phase 2nd Yr	3.4E+02	2.3E+02	1.8E+02	<u>1.1E+02</u>	6.9E+01

Notes:

• Doses exceeding PAGs are underlined.

• Early-Phase PAGs: TEDE - 1 rem, Thyroid (iodine) CDE - 5 rem

• Intermediate-Phase PAGs: 1st year - 2 rem, 2nd year - 0.5 rem

• *** indicates values less than 1 mrem

• To view all values - use Detailed Results | Numeric Table

• Total EDE = CEDE Inhalation + Cloudshine + 4-Day Groundshine

• Total Acute Bone = Bone Inhalation + Cloudshine + Period Groundshine

16 March 2010 12:24pm (EDT), NRC Operations Center, Protective Measures Team

This data is based on system condition estimates for a hypothetical, four reactor site. Model results are projections only and may **<u>not</u>** be representative of an actual release. This projection uses modeled forecast meteorological conditions and is subject to change.

Maximum Dose Values (rem) - Close-In

Dist from release miles (kilometers)	0.5 (0.8)	1. (1.61)	1.5 (2.41)	2. (3.22)	3. (4.83)	5. (8.05)	7. (11.27)	10. (16.09)
Total EDE	<u>5.4E+03</u>	<u>1.5E+03</u>	<u>6.7E+02</u>	<u>3.9E+02</u>	<u>1.8E+02</u>	7.5E+01	<u>4.0E+01</u>	<u>1.4E+01</u>
Thyroid CDE	2.9E+04	7.9E+03	3.6E+03	2.1E+03	9.6E+02	4.0E+02	2.1E+02	7.5E+01
Inhalation CEDE	3.8E+03	1.0E+03	4.8E+02	2.8E+02	1.3E+02	5.4E+01	2.9E+01	1.0E+01
Cloudshine	2.2E+01	8.0E+00	3.9E+00	2.3E+00	8.0E-01	2.6E-01	2.1E-01	1.1E-01
4-day Groundshine	1.5E+03	4.1E+02	1.9E+02	1.1E+02	5.0E+01	2.1E+01	1.1E+01	4.3E+00
Inter Phase 1st Yr	2.6E+04	7.0E+03	3.2E+03	1.9E+03	8.5E+02	3.6E+02	1.9E+02	7.5E+01
Inter Phase 2nd Yr	1.3E+04	3.5E+03	1.6E+03	9.2E+02	4.2E+02	1.8E+02	9.5E+01	3.8E+01

Notes:

• Doses exceeding PAGs are underlined.

• Early-Phase PAGs: TEDE - 1 rem, Thyroid (iodine) CDE - 5 rem

Intermediate-Phase EPA PAGs: 1st year - 2 rem, 2nd year - 0.5 rem

*** indicates values less than 1 mrem

• To view all values - use Detailed Results | Numeric Table

• Total EDE = Inhalation CEDE + Cloudshine + 4-Day Groundshine

Maximum Dose Values (rem) - To 50 mi

Dist from release miles (kilometers)	15 (24.1)	20 (32.2)	30 (48.3)	40 (64.4)	50 (80.5)
Total EDE	1.5E+01	<u>1.3E+01</u>	<u>1.1E+01</u>	<u>1.0E+01</u>	9.9E+00
Thyroid CDE	8.6E+01	<u>7.0E+01</u>	<u>5.2E+01</u>	<u>4.9E+01</u>	4.8E+01
Inhalation CEDE	1.1E+01	9.2E+00	7.7E+00	7.6E+00	7.3E+00
Cloudshine	1.2E-01	9.7E-02	7.3E-02	7.0E-02	6.6E-02
4-day Groundshine	4.1E+00	3.4E+00	2.8E+00	2.6E+00	2.5E+00
Inter Phase 1st Yr	7.1E+01	<u>6.0E+01</u>	<u>4.7E+01</u>	<u>4.5E+01</u>	4.3E+01
Inter Phase 2nd Yr	3.6E+01	<u>3.0E+01</u>	<u>2.3E+01</u>	<u>2.2E+01</u>	2.1E+01

Notes:

• Doses exceeding PAGs are underlined.

• Early-Phase PAGs: TEDE - 1 rem, Thyroid (iodine) CDE - 5 rem

• Intermediate-Phase PAGs: 1st year - 2 rem, 2nd year - 0.5 rem

*** indicates values less than 1 mrem

• To view all values - use Detailed Results | Numeric Table

• Total EDE = CEDE Inhalation + Cloudshine + 4-Day Groundshine

• Total Acute Bone = Bone Inhalation + Cloudshine + Period Groundshine

T EDE - Total Effective Dose Equivalent

CDE - Committed Dose Equivalent

CEDE - Committed Effective Dose Equivalent

PAGs – Protective Action Guidelines

EPA – Environmental Protection Agency

McKelvey, Harold

From: Sent: To: Subject:

<u>.</u>

Collins, Elmo Wednesday, March 16, 2011 9:55 AM Andreas, Dorothy C FW: UPDATE: NRC IS RESPONDING TO JAPANESE EVENTS

From: Operations Center Bulletin Sent: Wednesday, March 16, 2011 9:40 AM 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 the 301-415-8200 number.

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. NRC representatives 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 <u>www.nrc.gov</u> or blog at <u>http://public-blog.nrc-gateway.gov</u>.

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.

³ Other Sources of Information:

1

USAID – <u>www.usaid.gov</u> U.S. Department of State – <u>www.state.gov</u> FEMA – <u>www.fema.gov</u> White House – <u>www.whitehouse.gov</u> Nuclear Energy Institute – <u>www.nei.org</u> International Atomic Energy Agency – <u>www.iaea.org/press</u>

No response to this message is required.

THIS IS NOT A DRILL

McKelvey, Harold

From:Collins, ElmoSent:Wednesday, March 16, 2011 7:48 AMTo:Howell, ArtSubject:FYI: E-News from Nuclear Plant Journal

Interesting – link to IAEA

From: Nuclear Plant Journal [mailto:anu@goinfo.com]
Sent: Tuesday, March 15, 2011 4:49 PM
To: Collins, Elmo
Subject: E-News from Nuclear Plant Journal

Having trouble viewing this email? Click here



Nuclear Plant Journal E-News

Japan Update March 15, 2011

Dear ELMO E,

Nuclear Plant Journal brings you a special E-edition of the Journal with the latest information from events related to the Miyagiken-Oki Earthquake and ensuing tsunami on March 11, 2011, in northern Japan.

All Fukushima Daiichi Nuclear Power Plants have an INES Radiation Alert Level 4. Please see this <u>IAEA link</u> for an explanation of the levels.

The following two links provides updates as of March 15, 2011:

- On the JAIF website, there is a <u>complete summary PDF</u> that includes status updates of all units at the Fukushima plant.
- The Prime Minister's office update.

Organizations which are currently providing the current status of the Japanese affected nuclear power stations are listed below.

TEPCO News Releases

Tokyo Electric Power Company provides the latest updates from the utility that owns the Fukushima



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TOKYO ELECTRIC POWER COMPANY

Japan Atomic Industrial Forum

Please see this link for the most current from the Japan Atomic Industrial Forum.



Nuclear and Industrial Safety Agency (NISA)

Please see this link for the most current from NISA.

N I S A Nuclear and Industrial Safety Agency

Quick Links...

Nuclear Plant Journal Website

View the Most Recent Digital Issue

Subscribe, Cost-free (hard-copy version of the Journal)

Contact Information

phone: 630-313-6739 email: <u>NPJ@goinfo.com</u>

Forward email to an associate.

№ SafeUnsubscribe

This email was sent to elmo.collins@nrc.gov by <u>anu@goinfo.com</u> | <u>Update Profile/Email Address</u> | Instant removal with <u>SafeUnsubscribe</u>[™] | <u>Privacy Policy</u>. Nuclear Plant Journal | 1400 Opus Place, Suite 904 | Downers Grove | IL | 60515



McKelvey, Harold

From:	Collins, Elmo
Sent:	Wednesday, March 16, 2011 7:50 AM
То:	Blood, Michael
Cc:	Uselding, Lara
Subject:	RE: Diablo Canyon, San Onofre questions from AP
Attachments:	image001.jpg

Mike

Thank you for your inquiry. I have indicated your interest to NRC's Office of Public Affairs and they should be contacting you shortly.

Elmo Collins US NRC Region IV Regional Administrator

From: Blood, Michael [mailto:mblood@ap.org]
Sent: Tuesday, March 15, 2011 4:50 PM
To: Collins, Elmo
Subject: Diablo Canyon, San Onofre questions from AP

Elmo Collins,

I'm a reporter with AP. I'm working on a story about the new faults around Diablo and San Onofre and the potential threat to plant safety, and I have some questions I'd like to ask you.

Can you give me a call, or would you prefer to use e-mail?

Thanks.

AD Associated Press

Michael R. Blood Political Writer, Los Angeles (213) 346-3116, office (213) 379-1278, cell

http://twitter/michaelrbloodap

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From:	Collins, Elmo
Sent:	Wednesday, March 16, 2011 9:14 AM
То:	McCree, Victor; Satorius, Mark; Dean, Bill
Cc:	Wert, Leonard; Howell, Art
Subject:	RE: Additional Staff requirements outside Ops Center Long Term Staffing

Vic

Here in Region IV, one of the PAOs is out for medical reasons, the remaining is swamped – very tough - something to think about before you let one of yours go Elmo

From: McCree, Victor
Sent: Wednesday, March 16, 2011 8:59 AM
To: Collins, Elmo; Satorius, Mark; Dean, Bill
Cc: Wert, Leonard
Subject: RE: Additional Staff requirements outside Ops Center Long Term Staffing

Thanks Mary...and I agree with Bill. However, we may have one nominee—one of our PAOs to provide temporary support to OPA.

Vic

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 9:57 AM
To: Satorius, Mark; Dean, Bill; McCree, Victor
Subject: FW: Additional Staff requirements outside Ops Center Long Term Staffing
Importance: High

I suggest that regions not be first in line to support this function Elmo

From: Muessle, Mary

Sent: Wednesday, March 16, 2011 8:32 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

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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

-10

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

From: 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

From: Sent: To: Subject:

-5

Collins, Elmo Wednesday, March 16, 2011 9:56 PM Powell, Amy Fw: FYI for now- Boxer and Feinstein request for comprehensive investigation at Cali nukes?

Any insights? Thanks Elmo

----- Original Message -----From: Uselding, Lara To: Collins, Elmo; Lantz, Ryan; Miller, Geoffrey Sent: Wed Mar 16 18:42:58 2011 Subject: FYI for now- Boxer and Feinstein request for comprehensive investigation at Cali nukes?

I'm taking care of reporter Lara Uselding NRC Region 4 Public Affairs 817-917-0321

----- Original Message -----From: Mavis Scanlon <mavis@newsdata.com> To: Uselding, Lara Sent: Wed Mar 16 17:53:36 2011 Subject: Re: Can you comment on Boxer and Feinstein request for comprehensive investigation at Cali nukes?

Here is Boxer's statement from earlier today: http://boxer.senate.gov/en/press/releases/031611.cfm

Uselding, Lara wrote:

> Have not heard that so I do not have info on that at this time. We

> will be reviewing japan incident and will look at this and any new

> info that arises Lara Uselding NRC Region 4 Public Affairs

> 817-917-0321

>

> ----- Original Message -----

> From: Mavis Scanlon <mavis@newsdata.com>

> To: Uselding, Lara

> Sent: Wed Mar 16 17:41:19 2011

> Subject: Can you comment on Boxer and Feinstein request for comprehensive investigation at Cali nukes? >

> Hi Lara.

- > Immediately after I responded, I saw that Sen Boxer, in a hearing this
- > afternoon, called on the NRC to conduct a comprehensive investigation
- > into safety issues, with a focus on seismically active areas like
- > California. Can you comment on that request to the NRC does the NRC
- > plan to conduct such an investigation?

1997 J.

>

- > thanks again,
- > -Mavis >

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> Uselding, Lara wrote: > >> No delays on reviews at this time. >> Yes. >> >> Lara Uselding >> U.S. Nuclear Regulatory Commission (NRC) Public Affairs - Region IV >> >> Lara.Uselding@nrc.gov >> For more information visit www.nrc.gov >> >> >> >> -----Original Message----->> From: Mavis Scanlon [mailto:mavis@newsdata.com] >> Sent: Wednesday, March 16, 2011 3:49 PM >> To: Uselding, Lara >> Subject: Diablo Canyon guestion - request for comment >> >> Hi Lara. >> I'm following up an earlier message regarding Diablo Canyon. I wanted >> to get a comment on whether the NRC is considering suspending or >> delaying its review of PG&E's application to renew licenses for >> Diablo Canyon until the utility completes additional seismic reports. >> I also wanted to confirm whether the schedule for the review that is >> on the NRC's website is the most current, updated schedule. >> >> Best regards, >> -Mavis >> >> >> Mavis Scanlon >> Associate Editor >> California Energy Markets >> 425 Divisadero St. Ste. 303 >> San Francisco CA 94605 >> 415.963.4439 x12 >> mavis@newsdata.com >> >> >>

3_11_QUAKE_talk_pts3.docx

OPA

TALKING POINTS

MARCH 11, 2011 JAPAN EARTHQUAKE AND WEST COAST TSUNAMI As of 6/7/2011 4:50 PM

- 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 licensee continues to monitor the event to assess whether additional planned actions,

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to include plant shutdown, are appropriate. NRC resident inspector staff is on site monitoring the licensee's activities.

- 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.
- The NRC has regulations in place that require licensees to design their plants to withstand the effects of tsunamis.
 (10CFR 50, Appendix A, Criterion 2, "Design bases for protection against natural phenomenon" requires licensees to designs structures, systems, and components important to safety to withstand the effects of natural phenomenon, including tsunamis.)
- At Diablo Canyon, the plant is safe from a tsunami. The plants ability to withstand large waves and the maximum wave height at the intake structure were determined through extensive and detailed scaled model wave testing. To prevent water from entering the intake structure and affecting the pump motors, the structure is equipped with a snorkel valve that can close.
- Nuclear power plants are built to withstand environmental hazards, including earthquakes. 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. The NRC then adds a margin for error to account for the historical data's limited accuracy. In other words, the licensing bases for existing nuclear power plants are based on historical data from the area's maximum credible earthquake, with an additional margin included.

From: Sent: To: Subject: Collins, Elmo Wednesday, March 16, 2011 11:52 AM Hays, Myra; Howell, Art RE: Travel to Japan

Thanks Elmo

From: Hays, Myra Sent: Wednesday, March 16, 2011 11:50 AM To: Howell, Art; Collins, Elmo Subject: FW: Travel to Japan

I do not know if anyone is traveling to Japan from here. HQ would be funding the international travel not us.

From: Matheson, Mary Sent: Wednesday, March 16, 2011 8:20 AM To: Baker, Pamela; Holt, BJ; Coleman, Judy; Hays, Myra Cc: Mitchell, Reggie; Kaplan, Michele Subject: Travel to Japan

Good morning,

I need to ask that if any travel is approved for someone in your region that is traveling to Japan that you send me their names and a copy of their authorization. We are trying to monitor charge card balances so there are no issues while they are traveling. If you had travelers that left this week please send me their names. I did receive a list from OIP but I want to ensure that we have a comprehensive list. I would recommend you create paper authorizations with \$0.00 funding for the travelers that have already left. We are trying to obtain the details of the agreement that was made with AID. As we get this information we will update you with guidance.

As a heads up, I suspect distinct job codes will need to be established in travel and contract support for Japan events. More information will follow. Also, we have established an agency-wide TAC ZG0061. Please have employees charge all activity related to the Japan response to this TAC. If time was charged in PP 6 under a different TAC we will need a corrected card. An HRMS bulletin will go out shortly to T & L coordinators and also to all employees.

Let me know if you have any questions.

Thanks, Mary

~c1154

From:Collins, ElmoSent:Wednesday, March 16, 2011 1:38 PMTo:McCree, Victor; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, StevenCc:Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick;
Munday, Joel; Christensen, Harold; Jones, WilliamSubject:RE: Info: Possible request wrt KI

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From: McCree, Victor
Sent: Wednesday, March 16, 2011 1:35 PM
To: Collins, Elmo; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William
Subject: RE: Info: Possible request wrt KI

Thanks Elmo – we had provided a "stash" of KI for Chuck to carry along with him, but he inadvertently left it in his office. I'll ask our guys (Steve – your action) to interface with yours and share as much as we can.

Vic

From: Collins, Elmo
Sent: Wednesday, March 16, 2011 2:33 PM
To: Satorius, Mark; Dean, Bill; McCree, Victor; Wiggins, Jim
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art
Subject: Info: Possible request wrt KI

All

Chuck Casto had a layover here in Texas on his way to Japan. In the hurriedness of getting on the plane, he found that he might not have been equipped as he needed to be, especially wrt KI. So, Region IV gave all our KI (53 packets) to Chuck for use in Japan, along with dosimeters and pocket dosimeters. So, Region IV finds itself without an immediate stash of KI for use if we had to send a site team.

Needless to say, given the high demand for KI, it is difficult to purchase on the open market.

Your staff will likely be contacted to see if we can beg, borrow, or steal enough packets of KI in order to equip a site team.

Thank you for your cooperation and generosity.

Elmo

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From:	Collins, Elmo
Sent:	Wednesday, March 16, 2011 1:37 PM
То:	Howell, Linda
Subject:	FW: Info: Possible request wrt KI

Perhaps some KI is available

From: McCree, Victor
Sent: Wednesday, March 16, 2011 1:35 PM
To: Collins, Elmo; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William
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Sent: Wednesday, March 16, 2011 2:33 PM
To: Satorius, Mark; Dean, Bill; McCree, Victor; Wiggins, Jim
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art
Subject: Info: Possible request wrt KI

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Elmo

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From:	OPA Resource
Sent:	Wednesday, March 16, 2011 12:55 PM
То:	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:	Press Release: NRC Provides Protective Action Recommendations Based on U.S.
	Guidelines
Attachments:	11-050.pdf

Attachments:

For immediate release.

Office of Public Affairs US Nuclear Regulatory Commission 301-415-8200 opa.resource@nrc.gov

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U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-050

March 16, 2011

NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES

Under the guidelines for public safety that would be used in the United States under similar circumstances, the NRC believes it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate.

Among other things, in the United States protective actions recommendations are implemented when projected doses could exceed 1 rem to the body or 5 rem to the thyroid. A rem is a measure of radiation dose. The average American is exposed to approximately 620 millirems, or 0.62 rem, of radiation each year from natural and manmade sources.

In making protective action recommendations, the NRC takes into account a variety of factors that include weather, wind direction and speed, and the status of the problem at the reactors.

Attached are the results of two sets of <u>computer calculations</u> used to support the NRC recommendations.

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 continues to indicate Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

###

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

Ruland, William
Wednesday, March 16, 2011 12:19 PM
Williams, Donna; Uhle, Jennifer; Sheron, Brian; Moore, Scott; Miller, Charles; Brenner, Eliot; Haney, Catherine; Dorman, Dan; Wiggins, Jim; Evans, Michele; Doane, Margaret; Mamish, Nader
Johnson, Michael; Holahan, Gary; Leeds, Eric; Grobe, Jack; Howe, Allen
Planning for upcoming, short notice Commission meeting Scheduling NoteMar2011_JapaneseEvent agh 3-16-2011.docx

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 21st. 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

ccl kbo

Draft: 3/16/11

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SCHEDULING NOTE

BRIEFING ON JAPANESE EVENT and US RESPONSE (Public)		NSE (Public?)
Purpose: To provide the Commission a status on the recent event in Jap and to provide an overview of staff actions to date, early planne actions		ent in Japan, arly planned
Scheduled: March XX, 2011 9:00 am		
Duration:	Duration: Approx. 2 hours	
Location:	Commissioners' Conference Room OWFN	
Participants:		Presentation
NRC Staff Panel		50 mins.*
Bill Borchardt, Executive Director for Operations15 mins.*Topic: Overview of Japanese Event and U.S. response		15 mins.*
Mike Weber, Deputy Executive Director Materials, Waste, Research, State, Tribal and Compliance Programs10 mins.*Topic:Potential consequences; what will be seen in U.S.		10 mins.*
Marty Virgilio, Deputy Executive Director for Reactor10 mins.and Preparedness ProgramsTopic: Situation assessment for U.S. reactors and applicants		10 mins.*
Elliot Brenner, OPA Topic: Communication Challenges		5 mins.*
Eric Leeds, Director, NRR 10 mins.* <u>Topic:</u> Path forward; Near term and longer term		10 mins.*
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.

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From: Sent: To: Subject:

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Operations Center Bulletin Wednesday, March 16, 2011 9:40 AM Operations Center Bulletin 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 the 301-415-8200 number.

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. NRC representatives 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 <u>not</u> 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 <u>www.nrc.gov</u> or blog at <u>http://public-blog.nrc-gateway.gov</u>.

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.

Other Sources of Information:

USAID – <u>www.usaid.gov</u> U.S. Department of State – <u>www.state.gov</u> FEMA – <u>www.fema.gov</u> White House – <u>www.whitehouse.gov</u> Nuclear Energy Institute – <u>www.nei.org</u>

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International Atomic Energy Agency – <u>www.iaea.org/press</u>

No response to this message is required.

THIS IS NOT A DRILL

From:	LIA04 Hoc
Sent:	Wednesday, March 16, 2011 1:13 PM
To:	OST05 Hoc; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill;
	McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean,
	Bill; Heck, Jared; McCree, Victor; Satorius, Mark; Flannery, Cindy; Lukes, Kim; Noonan,
	Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Cc:	Piccone, Josephine; Jackson, Deborah; Noonan, Amanda
Subject:	Please see attached Press Release. This is on our External NRC WEB site. (eom)
Attachments:	PressReleaseNRCProvides PAG Rec11-050.pdf

NRC's Web site contains the attached, "NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES" as just released. The referenced "computer calculations" are forthcoming; there appear to be technical difficulties wrt/ communicating the "attached" calculations

Richard Turtil State Liaison – Liaison Team Incident Response Center







U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Telephone: 301/415-8200 Washington, D.C. 20555-0001 E-mail: <u>opa.resource@nrc.gov</u> Site: <u>www.nrc.gov</u> Blog: <u>http://public-blog.nrc-gateway.gov</u>

No. 11-050

March 16, 2011

NRC PROVIDES PROTECTIVE ACTION RECOMMENDATIONS BASED ON U.S. GUIDELINES

Under the guidelines for public safety that would be used in the United States under similar circumstances, the NRC believes it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate.

Among other things, in the United States protective actions recommendations are implemented when projected doses could exceed 1 rem to the body or 5 rem to the thyroid. A rem is a measure of radiation dose. The average American is exposed to approximately 620 millirems, or 0.62 rem, of radiation each year from natural and manmade sources.

In making protective action recommendations, the NRC takes into account a variety of factors that include weather, wind direction and speed, and the status of the problem at the reactors.

Attached are the results of two sets of <u>computer calculations</u> used to support the NRC recommendations.

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 continues to indicate Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

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

White, Bernard

From:	Nuclear Street [cabernethy@nuclearstreet.com]
Sent:	Thursday, March 17, 2011 1:57 PM
To:	Bajwa, Chris
Subject:	Nuclear Street - Fukushima Video of Damaged Reactors, Chu on US New Nuclear Build, SMRs, and more

To view this newsletter online, click here: http://nuclearstreet.com/newsletters/3_17_11.html



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THURSDAY MARCH 17, 2011: NEWSLETTER

Focus at Fukushima Daiichi Now on Spent Fuel Tanks as Helicopters and Water Cannons Work to Quench Unit 3 - New Video Shows Extensive Damage

A Japanese TV station has obtained this video of the damaged Fukushima Daiichi nuclear plant taken from a nearby helicopter:



II de centre -----

Japanese defense forces enlisted lead-shielded helicopters to drop water into the damaged roof of Fukushima Daiichi unit 3 Wednesday night, with water cannon trucks also standing by to replenish the reactor's spent-fuel tank.

Government and Tokyo Electric Power Co. officials said that securing the spent fuel pools in units 3 and 4 has become the top priority at the nuclear plant, which has struggled with a loss of cooling systems and potential core damage in three reactors following a magnitude 9 earthquake last week. Two helicopters made four attempts to drop water into unit 3 with mixed success. Radiation readings taken from a smaller helicopter beforehand indicated levels of 4.13 millisieverts per hour at 1,000 feet above the unit and 87.7 millisieverts at 300 feet. Although crews were equipped with protective gear, radiation levels limited the amount of time the helicopters could work in the area, and they did not hover directly above the unit. Read More>>>

Energy Secretary Defends Nuclear Construction

In a press conference Tuesday, Energy Secretary Steven Chu defended nuclear energy and said he expected new reactor projects in the U.S. will proceed.

His comments come as a number of politicians, including Senate Majority Leader Harry Reid, have called for a pause in nuclear construction. For the last six days, Japan has grappled with crises at four units of the Fukushima Daiichi nuclear power plant.

Currently, license applications for 30 new reactors are under review by the Nuclear Regulatory Commission.

Asked about "putting the brakes" on nuclear development – as suggested by independent Vermont Senator Joe Lieberman Sunday – Chu said in congressional testimony reported by Reuters "we have to take a hard look. Were there any lessons learned from this tragedy that can further improve the safety? ... It's probably premature to say anything except we will learn from this. Read More>>>

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Duke Energy Restates Commitment to New S.C. Nuclear Plant, Seeks Further Spending

At a hearing before the North Carolina Utilities Commission, Duke Energy CEO Jim Rogers made the case for continued work on two new reactors.

entire providal service

The hearing was held as Duke seeks regulatory permission to invest an additional \$287 million in the project over the next two years. In 2008 the company applied for a license to build the reactors at the site of a previous nuclear project near Gaffney, S.C., that was abandoned in the 1980s. Read More>>>

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U.S. Nuclear Power Plant Maps and Directions

Are you working at one or more of the 45 outages this spring? Do you have directions to the plant? Do you need to find the closest hotels around the plant? Check out the Nuclear Plants Section on Nuclear Street. We have dedicated plant pages that provide maps, directions, news, weather, and other useful inforation for **every plant in the U.S.**! We also have special outage rates for select hotels at Turkey Point and Palo Verde. This is great resource for the travelling contractor, visiting supplier, and/or prospective new employee.

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<u>ement</u>

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Radiological Control Technicians (RCT)

Project Manager

The Spear Group, Inc.

The Spear Group, Inc.

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PROPOSED NEW PLANTS





TOP NEWS REPORT

2



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ZIRCONIUM FIRE RESEARCH: <u>Thermal-Hydraulics and Axial Heating and Burn</u> <u>Propagation of a Single PWR Assembly</u>

Objective

The objective of the Spent Fuel Pool Phase 1 work is to perform a detailed thermal-hydraulic characterization of a single full-length commercial 17x17 pressurized-water reactor (PWR) fuel assembly. The collected data from the separate and integral effect tests will be used for the validation of the MELCOR code or any other appropriate severe accident codes. The Phase 1 experiment has been designed to investigate heat transfer and flow phenomena of the single insulated PWR assembly. The experiment will be useful for modeling accident scenarios such as late core melt progression, complete loss of water during refueling, and dry cask storage. MELCOR modeling results will be used to guide the experimental test assembly design and instrumentation. The results of the separate effect and burn tests will be used to improve the MELCOR modeling.

Phase 1 Test Assembly

The main structural component of the test assembly is the core skeleton that consists of 11 grid spacers permanently attached to 25 guide tubes. In addition, 264 fuel rods pass through the grid spacers and are held captive in the assembly by the top and bottom nozzles. The rods consist of a nichrome heat element surrounded by compacted magnesium oxide (MgO) powder that electrically insulates the central heating element from the cladding.



Figure 1. Cell 1 test assembly (left) for Phase 1 testing and a schematic diagram of the assembly showing locations of pressure ports.

The porosity of the compacted MgO powder was determined such that the thermal mass and conductivity are similar to those of spent fuel rods over the entire temperature range of interest. The rods will heat at the same rate and store the same amount of thermal energy as spent fuel rods. The spent fuel rod simulators will have a linear power profile and a maximum output of 82 W/m (25 W/ft). Two storage cells sizes will be surrounding the assembly (i.e., cell 1 and cell 2). The cells will be insulated to represent a "hot neighbor" bounding scenario. The experiment addresses the simulation of decay heat, temperature profile measurements, peak clad temperature versus power input, and peak clad temperature versus time to the ignition of the PWR assembly.

<u>Cell 1</u>

The first cell has an inner diameter (ID) of 221.3 mm. Figure 1 shows a picture of cell 1 being assembled. Seven separate effects tests (i.e. preignition tests) were performed in this configuration to investigate the thermal response for various assembly power levels (i.e., 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, and 3.5 kilowatts [kW]). The maximum temperatures for the preignition tests were kept below 900k to avoid excessive oxidation of the zirconium components. Figure 2 shows the experimental data and MELCOR validation for the cell 1 preignition test at 3.5 kW.



Figure 2. Bundle temperatures as a function of axial height in the assembly at 3.5 kW simulated decay power and 12 hours elapsed for the maximum test temperature (red squares), average test temperature (blue diamond's), and MELCOR (green dashed).

Cell 2

Cell 2 has an ID of 223.4 mm. Preignition tests are being conducted with the same power level input as in cell 1. The preignition tests are expected to be completed by the end of February 2011. The ignition test will follow and it is expected to be conducted in early March 2011. A power level of 5.0 kW was predetermined using MELCOR for this ignition test. This final destructive test will focus on axial heating and burn propagation along the axis of the assembly. Post-test analyses and data comparisons will be made for the ignition test.

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For more Information

Contact Ghani Zigh, RES/DSA, at 301-251-7505 or Ghani.Zigh@nrc.gov

From: Sent: To: Subject: Collins, Elmo Thursday, March 17, 2011 10:03 AM Hay, Michael RE: HQ sharepoint for Japan FAQ's

Thanks! Elmo

From: Hay, Michael
Sent: Thursday, March 17, 2011 8:52 AM
To: Collins, Elmo
Cc: Kennedy, Kriss; Pruett, Troy; Vegel, Anton; Uselding, Lara
Subject: HQ sharepoint for Japan FAQ's

Elmo,

Not sure if you have seen the HQ sharepoint site they set up to support responding to the public and media regarding the Japan event. The link is **FAQ Related to Events Occurring in Japan**

I made contact with the owners of this site and told them I would be the Region IV point of contact so that we can coordinate any requests they may have of us and vice versa.

Mike

cc/165

Owen, Lucy

From: Sent: To: Subject: Defense Media Network [publisher@defensemedianetwork.com] Thursday, March 17, 2011 7:04 AM Collins, Elmo Photo Gallery: Japan Disaster and Relief Operations



Featured Story



Photo Gallery: Japan Disaster and Relief Operations

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Featured Event



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When? Mar 29 - 31, 2011

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This message was sent to elmo.collins@nrc.gov from:

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From:	Hay, Michael
Sent:	Thursday, March 17, 2011 8:52 AM
То:	Collins, Elmo
Cc:	Kennedy, Kriss; Pruett, Troy; Vegel, Anton; Uselding, Lara
Subject:	HQ sharepoint for Japan FAQ's

Elmo,

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I made contact with the owners of this site and told them I would be the Region IV point of contact so that we can coordinate any requests they may have of us and vice versa.

Mike

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From:	Collins, Elmo
Sent:	Thursday, March 17, 2011 2:59 PM
То:	Maier, Bill
Subject:	FW: Exec summary in the 2008 Integrated Energy Policy Report (California)
Attachments:	Excerpt from the Executive Summary of the California 2008 Integrated Energy Policy Report Update.docx

From: Lantz, Ryan
Sent: Thursday, March 17, 2011 2:41 PM
To: Miller, Geoffrey; Hay, Michael; Hall, Randy
Cc: Collins, Elmo; Kennedy, Kriss; Pruett, Troy
Subject: Exec summary in the 2008 Integrated Energy Policy Report (California)

This report was referenced in the Boxer/Feinstein letter to the Chairman.

RYAN LANTZ CHIEF, REACTOR PROJECTS BRANCH D NRC REGION IV

diles

Excerpt from the Executive Summary of the California 2008 Integrated Energy Policy Report Update

http://www.energy.ca.gov/2008_energypolicy/index.html

Assessment of California's Operating Nuclear Plants

Assembly Bill 1632 directed the Energy Commission to assess the potential vulnerability of "large baseload generation facilities of 1,700 megawatts or greater" to a major disruption due to a seismic event or plant agerelated issues. The Energy Commission was directed to adopt this assessment on or before November 1, 2008, and include it in the **2008 Integrated Energy Policy Report Update**.

The Energy Commission's Electricity and Natural Gas Committee developed the <u>AB 1632 Assessment of</u> <u>California's Operating Nuclear Plants: AB 1632 Committee Report</u> based on a consultant report prepared by MRW & Associates that evaluated seismic and age-related issues along with other issues like reliability, economic impacts, and waste storage and disposal. The **2008 Integrated Energy Policy Report Update** includes a summary of the findings and recommendations from the AB 1632 Committee Report.

California's two operating nuclear facilities, the Diablo Canyon Power Plant and the San Onofre Nuclear Generating Station, fall under the Assembly Bill 1632 requirement. Although two natural-gas fired facilities in California - Alamitos and Moss Landing - have a nameplate capacity greater than 1,700 megawatts, these facilities operate below a 60 percent capacity factor and are not considered baseload facilities.

Diablo Canyon and San Onofre represent 12 percent of California's overall electricity supply. A major disruption because of an earthquake or plant aging could shut down one or both plants anywhere from several months up to a year or even cause the retirement of a plant's reactor.

Each plant faces seismic hazards which can include uncertainties about the type of fault zone near the plant, potential impacts from earthquakes directly below the plants, or ground motion resulting from an earthquake rupture. Non-safety related systems and structures, such as electrical switchyards, are the most vulnerable to damage from earthquake and could result in plant outages lasting weeks or months. A seismic event also poses a risk to spent fuel storage facilities at the plants.

Because of the importance of these facilities to the state's electricity supply, the Energy Commission believes Pacific Gas and Electric Company and Southern California Edison should report in the 2009 Integrated Energy Policy Report on their seismic research efforts. In particular, Southern California Edison should develop an active seismic hazards research program similar to Pacific Gas and Electric's Long Term Seismic Program.

Age-related degradation is also a concern because these plants are approaching their fourth decade of operation. Effective maintenance programs and regulatory oversight are essential in identifying aging plant equipment and components since failure to do so could have serious long-term implications. The Energy Commission recommends that effective safety culture and plant maintenance programs be maintained at the nuclear plants along with enhanced oversight mechanisms by the Energy Commission, the Nuclear Regulatory Commission, and the Institute for Nuclear Power Operations.

An earthquake, age-related plant or equipment failure, or other event could lead to one or both of California's nuclear plants going off-line for extended periods, requiring replacement power from other sources. The reliability, cost, and environmental implications of using replacement power will depend on the time of the outage and type of replacement power available. The Energy Commission, the California Public Utilities Commission, and the California Independent System Operator should evaluate the uncertainties of losing the electricity supplied by the state's nuclear plants and modify the long-term planning and procurement processes to ensure that replacement resources are acquired in a timely way.

Diablo Canyon and San Onofre have been operating for roughly half of their 40-year initial license periods, and Pacific Gas and Electric and Southern California Edison are exploring the feasibility of seeking 20-year license renewals from the Nuclear Regulatory Commission. Diablo Canyon Unit 1's operating license expires in 2024 and Unit 2's expires in 2025, while San Onofre Nuclear Generating Station Units 2 and 3's operating licenses

expire in 2022. If license renewals are granted, these facilities could continue to operate until the early to mid 2040s.

These plants produce significant quantities of radioactive waste in the form of spent fuel and other radioactively contaminated materials. The plants must carefully handle, store, transport, and dispose of the waste to protect humans and the environment from exposure to radioactive materials. As part of license renewal feasibility studies, Pacific Gas and Electric and Southern California Edison should evaluate the costs of disposing of low-level nuclear waste generated during a 20-year license extension and provide information on plans for storage and disposal of low-level waste and spent fuel through plant decommissioning.

In addition, the Energy Commission should work with the California Public Utilities Commission, as part of that agency's authority to fund and oversee plant relicensing feasibility studies, to develop a list of issues the utilities should address in those studies, including plant maintenance programs, safety cultures, waste storage, transport, and disposal; seismic hazards; life cycle comparison to alternative generating and transmission resources; contingency plans for prolonged outages; grid reliability; and overall economic and environmental costs and benefits of license extension. The utilities should report on the status and results of the feasibility studies in future Integrated Energy Policy Reports, beginning in 2009.

. . . .

Owen, Lucy

From:	Howell, Linda
Sent:	Thursday, March 17, 2011 10:37 AM
То:	Collins, Elmo
Subject:	RE: Info: Possible request wrt KI

We are sending a message back thanking our counterparts (RI, RII, and RIII) for their donations. We will have replenished our site team supply.

-----Original Message-----From: Collins, Elmo Sent: Thursday, March 17, 2011 10:35 AM To: Howell, Linda Subject: RE: Info: Possible request wrt KI

We don't want to get too much - do we?

-----Original Message-----From: Howell, Linda Sent: Thursday, March 17, 2011 10:33 AM To: Collins, Elmo; Wilson, Peter Cc: Lew, David; Dean, Bill; Weerakkody, Sunil; Henderson, Pamela Subject: RE: Info: Possible request wrt KI

Thanks to RI!!!

-----Original Message-----From: Collins, Elmo Sent: Thursday, March 17, 2011 10:02 AM To: Wilson, Peter Cc: Lew, David; Dean, Bill; Weerakkody, Sunil; Henderson, Pamela; Howell, Linda Subject: RE: Info: Possible request wrt KI

Thank you! Elmo

-----Original Message-----From: Wilson, Peter Sent: Thursday, March 17, 2011 9:53 AM To: Collins, Elmo Cc: Lew, David; Dean, Bill; Weerakkody, Sunil; Henderson, Pamela; Howell, Linda Subject: FW: Info: Possible request wrt KI

Elmo,

We will be shipping out 252 KI tablets to you today via FedEx.

Hope all is well in Region IV.

Pete

Peter R. Wilson Acting Director

Divsion of Reactor Safety, Region I U.S. Nuclear Regulatory Commission 610-337-5126 (W) 267-414-3248 (C) 610-337-6928 (fax) peter.wilson@nrc.gov

-----Original Message-----From: Hinson, Felicia Sent: Thursday, March 17, 2011 10:29 AM To: McKinley, Raymond; Wilson, Peter Subject: RE: Info: Possible request wrt KI

Pete,

`.

We are sending 252 tablets to Region IV today (via Federal Express).

--Felicia

-----Original Message-----From: McKinley, Raymond Sent: Thursday, March 17, 2011 9:25 AM To: Wilson, Peter; Hinson, Felicia Subject: RE: Info: Possible request wrt KI

Yes, but we need to keep a minimum of 50 packs to accommodate two 25 person Site Teams for 14 days. We do not have a minimum standard, but I think that should be our minimum stock for planning purposes. We will send what we have above our 50 pack minimum.

Ray

-----Original Message-----From: Wilson, Peter Sent: Thursday, March 17, 2011 6:28 AM To: McKinley, Raymond; Hinson, Felicia Subject: FW: Info: Possible request wrt KI Importance: High

Ray and Felicia,

Do we have any spare KI that we can send to Region IV?

Thanks,

Pete

-----Original Message-----From: Dean, Bill Sent: Wednesday, March 16, 2011 10:37 PM To: Henderson, Pamela Cc: Lew, David; Wilson, Peter; Weerakkody, Sunil Subject: FW: Info: Possible request wrt KI what does our stash look like and can we help region IV?

From: Collins, Elmo Sent: Wednesday, March 16, 2011 2:38 PM To: McCree, Victor; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William Subject: RE: Info: Possible request wrt KI

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From: McCree, Victor Sent: Wednesday, March 16, 2011 1:35 PM To: Collins, Elmo; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William Subject: RE: Info: Possible request wrt KI

Thanks Elmo – we had provided a "stash" of KI for Chuck to carry along with him, but he inadvertently left it in his office. I'll ask our guys (Steve – your action) to interface with yours and share as much as we can.

Vic From: Collins, Elmo Sent: Wednesday, March 16, 2011 2:33 PM To: Satorius, Mark; Dean, Bill; McCree, Victor; Wiggins, Jim Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art Subject: Info: Possible request wrt KI

All

Chuck Casto had a layover here in Texas on his way to Japan. In the hurriedness of getting on the plane, he found that he might not have been equipped as he needed to be, especially wrt KI. So, Region IV gave all our KI (53 packets) to Chuck for use in Japan, along with dosimeters and pocket dosimeters. So, Region IV finds itself without an immediate stash of KI for use if we had to send a site team.

Needless to say, given the high demand for KI, it is difficult to purchase on the open market.

Your staff will likely be contacted to see if we can beg, borrow, or steal enough packets of KI in order to equip a site team.

Thank you for your cooperation and generosity.

Elmo

1

From:	Lantz, Ryan
Sent:	Thursday, March 17, 2011 2:41 PM
То:	Miller, Geoffrey, Hay, Michael, Hall, Randy
Cc:	Collins, Elmo; Kennedy, Kriss; Pruett, Troy
Subject:	Exec summary in the 2008 Integrated Energy Policy Report (California)
Attachments:	Excerpt from the Executive Summary of the California 2008 Integrated Energy Policy Report Update.docx

This report was referenced in the Boxer/Feinstein letter to the Chairman.

64

Ryan Lantz Chief, Reactor Projects Branch D NRC Region IV

cc/170

Excerpt from the Executive Summary of the California 2008 Integrated Energy Policy Report Update

http://www.energy.ca.gov/2008_energypolicy/index.html

Assessment of California's Operating Nuclear Plants

1

Assembly Bill 1632 directed the Energy Commission to assess the potential vulnerability of "large baseload generation facilities of 1,700 megawatts or greater" to a major disruption due to a seismic event or plant agerelated issues. The Energy Commission was directed to adopt this assessment on or before November 1, 2008, and include it in the **2008 Integrated Energy Policy Report Update**.

The Energy Commission's Electricity and Natural Gas Committee developed the <u>AB 1632 Assessment of</u> <u>California's Operating Nuclear Plants: AB 1632 Committee Report</u> based on a consultant report prepared by MRW & Associates that evaluated seismic and age-related issues along with other issues like reliability, economic impacts, and waste storage and disposal. The **2008 Integrated Energy Policy Report Update** includes a summary of the findings and recommendations from the AB 1632 Committee Report.

California's two operating nuclear facilities, the Diablo Canyon Power Plant and the San Onofre Nuclear Generating Station, fall under the Assembly Bill 1632 requirement. Although two natural-gas fired facilities in California - Alamitos and Moss Landing - have a nameplate capacity greater than 1,700 megawatts, these facilities operate below a 60 percent capacity factor and are not considered baseload facilities.

Diablo Canyon and San Onofre represent 12 percent of California's overall electricity supply. A major disruption because of an earthquake or plant aging could shut down one or both plants anywhere from several months up to a year or even cause the retirement of a plant's reactor.

Each plant faces seismic hazards which can include uncertainties about the type of fault zone near the plant, potential impacts from earthquakes directly below the plants, or ground motion resulting from an earthquake rupture. Non-safety related systems and structures, such as electrical switchyards, are the most vulnerable to damage from earthquake and could result in plant outages lasting weeks or months. A seismic event also poses a risk to spent fuel storage facilities at the plants.

Because of the importance of these facilities to the state's electricity supply, the Energy Commission believes Pacific Gas and Electric Company and Southern California Edison should report in the 2009 Integrated Energy Policy Report on their seismic research efforts. In particular, Southern California Edison should develop an active seismic hazards research program similar to Pacific Gas and Electric's Long Term Seismic Program.

Age-related degradation is also a concern because these plants are approaching their fourth decade of operation. Effective maintenance programs and regulatory oversight are essential in identifying aging plant equipment and components since failure to do so could have serious long-term implications. The Energy Commission recommends that effective safety culture and plant maintenance programs be maintained at the nuclear plants along with enhanced oversight mechanisms by the Energy Commission, the Nuclear Regulatory Commission, and the Institute for Nuclear Power Operations.

An earthquake, age-related plant or equipment failure, or other event could lead to one or both of California's nuclear plants going off-line for extended periods, requiring replacement power from other sources. The reliability, cost, and environmental implications of using replacement power will depend on the time of the outage and type of replacement power available. The Energy Commission, the California Public Utilities Commission, and the California Independent System Operator should evaluate the uncertainties of losing the electricity supplied by the state's nuclear plants and modify the long-term planning and procurement processes to ensure that replacement resources are acquired in a timely way.

Diablo Canyon and San Onofre have been operating for roughly half of their 40-year initial license periods, and Pacific Gas and Electric and Southern California Edison are exploring the feasibility of seeking 20-year license renewals from the Nuclear Regulatory Commission. Diablo Canyon Unit 1's operating license expires in 2024 and Unit 2's expires in 2025, while San Onofre Nuclear Generating Station Units 2 and 3's operating licenses
expire in 2022. If license renewals are granted, these facilities could continue to operate until the early to mid 2040s.

These plants produce significant quantities of radioactive waste in the form of spent fuel and other radioactively contaminated materials. The plants must carefully handle, store, transport, and dispose of the waste to protect humans and the environment from exposure to radioactive materials. As part of license renewal feasibility studies, Pacific Gas and Electric and Southern California Edison should evaluate the costs of disposing of low-level nuclear waste generated during a 20-year license extension and provide information on plans for storage and disposal of low-level waste and spent fuel through plant decommissioning.

In addition, the Energy Commission should work with the California Public Utilities Commission, as part of that agency's authority to fund and oversee plant relicensing feasibility studies, to develop a list of issues the utilities should address in those studies, including plant maintenance programs, safety cultures, waste storage, transport, and disposal; seismic hazards; life cycle comparison to alternative generating and transmission resources; contingency plans for prolonged outages; grid reliability; and overall economic and environmental costs and benefits of license extension. The utilities should report on the status and results of the feasibility studies in future Integrated Energy Policy Reports, beginning in 2009.

Hergenroder, Dan

From:	Kennedy, Kriss
Sent:	Thursday, March 17, 2011 4.37 PM
То:	Collins, Elmo; Howell, Art; Caniano, Roy; Vegel, Anton; Pruett, Troy; Walker, Wayne; Miller, Geoffrey; Gaddy, Vincent; Lantz, Ryan; Clark, Jeff; Hay, Michael; Howell, Linda; Uselding, Lara
Subject:	FW: Japanese Earthquake-related Information Notice
Attachments:	IN 11-xx B5b Earthquake.docx

FYI -- Draft of IN.

From: Nelson, Robert
Sent: Thursday, March 17, 2011 2:31 PM
To: Roberts, Darrell; Lara, Julio; Croteau, Rick; Kennedy, Kriss
Cc: West, Steven; Shear, Gary
Subject: FYI: Japanese Earthquake-related Information Notice

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For info only. Trying to keep you up to date. We plan on completing concurrence on it this afternoon so that it will be ready for review by the Ops Center ET tonight.

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UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555-0001

NRC INFORMATION NOTICE 2011-05:

TOHOKU-TAIHEIYOU-OKI EARTHQUAKE EFFECTS ON JAPANESE NUCLEAR POWER PLANTS

ADDRESSEES

All holders of operating licensees 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.

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

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, including damage to the cooling water systems, a sustained loss of both the off-site and on-site power systems, and a loss of spent fuel pooling (SFP) cooling. Efforts to restore power to emergency equipment have been impacted by damage to the surrounding areas due to the tsunami and earthquake.

Tokyo Electric Power Company, the operator of the plant, resorted to injecting sea water and boric acid into the reactor vessels Units One through Three, which had been operating at the time of the earthquake and subsequently scrammed, in an effort to cool the fuel and ensure they remained shutdown. Hydrogen explosions from overheated fuel-water reaction damaged the secondary containment, apparently leaving the primary containment functional in all three units. In addition, all three units suffered from decreasing SFP levels.

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Units Four through Six had been shutdown for refueling outages at the time of the earthquake, with the core for Unit Four offloaded to the SFP. Subsequent damage to the Unit Four SFP resulted in the inability for the SFP structure to retain water and thus completely drained the SFP of cooling water. The SFPs for Units Five and Six appeared intact, but heating up.

The areas surrounding Fukushima Daiichi were evacuated under the instructions of the Government of Japan.

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

Appendix A to 10 CFR Part 50, General design criteria (GDC) 2, "Design Bases for Protection against Natural Phenomena," or, as appropriate, similar 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 reflects: (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 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, (designated safeguards information (SGI)), which 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 is designated SGI and is commonly referred to as the B.5.b Phase 1 Guidance.

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) to gather information on actions taken in response to the February 25, 2005, guidance. The NRC staff then convened assessment panels to evaluate the adequacy of licensee actions taken to date. These assessment panels developed acceptance criteria to determine the adequacy of licensee responses to each of the 34 expectations identified in Attachment B to the B.5.b Phase 1 Guidance. On January 18 and 26, 2006, the NRC staff met with industry representatives and provided further clarifying information, including staff acceptance criteria on how licensees could meet Section B.5.b of the ICM Order. The NRC clarifying information for acceptance of each

expectation was disseminated in Section 05.02.c and 05.02.d of TI 2515/168 (SGI). This clarifying information represents acceptable methods, along with staff acceptance criteria, for satisfying the expectations. The staff used this clarifying information in developing its safety evaluation and inspection of current reactor licensee's compliance with Section B.5.b of the ICM Order.

In December 2006, 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, 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.

On March 27, 2009, the NRC amended 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and Part 73, "Physical Protection of Plants and Materials," with new requirements published in the *Federal Register* dated March 27, 2009 (74 FR 13926). This rulemaking added paragraph (i) to 10 CFR 50.34, "Contents of applications; 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) in order to impose the same mitigating strategies requirements on new 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 described in Section 50.54(hh) are for addressing 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, including natural phenomena such as those described in GDC 2 (i.e., earthquakes, tornadoes, floods, tsunami, and seiches), without regard to the GDC 2 limitation in magnitude of the design bases for the natural phenomena.

NRC regulations at 10 CFR 50.63 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 <u>www.nei.org</u>.

- 1. Verification of the capability to mitigate conditions that result from sever 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's functions during seismic events appropriate for the site and development of mitigating strategies of potential vulnerabilities.

Assessment of the implications of beyond design-basis natural phenomena, including earthquakes, is continuing as more information becomes available. In the near term, the NRC is considering additional generic communications and additional action that requests operating plants to provide specific information relating to their facilities to enable the NRC staff to complete the Regulatory Assessment. The NRC staff is currently developing a TI in order to perform independent assessment of nuclear power plant readiness to address beyond design-basis natural phenomena under the Reactor Oversight Process.

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

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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 listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

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

Note: NRC generic communications may be found on the NRC public Web site, <u>http://www.nrc.gov</u>, under Electronic Reading Room/Document Collections.

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Pstrak, David

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From:	
Sent:	
To:	
Cc:	
Subject:	
Attachments:	

Einziger, Robert Thursday, March 17, 2011 9:19 AM OPA Resource Ordaz, Vonna; Rahimi, Meraj; Pstrak, David; Einziger, Robert proposal for dry Japanese SNF pool Proposal to handle dried Spent fuel pool.docx

Proposal to handle dried spent fuel pool

RE Einziger, Ph.D. SFST/MNSS/NRC

Credential: I have over 30 yrs experience at National Laboratories studying the behavior of Spent Fuel rods in an Oxidizing Atmosphere.

The spent fuel consists of UO2 fuel inside a Zircaloy-2 cladding covered with a Zirconium oxide layer and a layer of CRUD. If the pool goes dry, the rods will heat up until the rate of heat production is balanced by the rate of heat removal by conduction, convection, and radiation. As the rod is heating up the gas inside the rod will be stressing the cladding, that has a lower yield strength and thus the cladding will expand. The expansion will cause the CRUD to flake off and break up to particulate in the 1-10 micron range as it hits the pool floor. This CRUD, with a main radioactive component as Co-60 may become airborne

Somewhere between 600 and 1000C the Zircaloy cladding that has a high concentration of zirconium hydrides on the outer surface may catch on fire. Zirconium hydride is pyrophoric but the ignition temperature is not an intrinsic properties but is dependent onn many features including the surface to volume ratio of the cladding.. Concurrently the pressure in the rod will continue to rise until ~750C when the rod will burst, ejecting fission gases and volatiles in the gap including Cs and I compounds. Some fuel particulate will also be ejected.

As these temperatures the exposed fuel will rapidly oxidize to U3O8 with a ~32% volume expansion. This expansion will split the cladding from end to end in a relatively short time. The fuel, now in grain size articulate (~10-15 micron) will stay in the cladding as a compact until it experiences a mild physical force at which time it will fall to the bottom of the pool.

Of primary important is to prevent the oxidation of the UO2 fuel that contains the preponderance of the radionuclides. Unless you can cover the fuel completely with water the fuel will oxide. When water is sprayed on the fuel, steam is formed which further oxidizes the fuel. A better choice would be to put liquid Argon in the pool if it is available. In not then use liquid N2. The benefits of these gases are that they have a large, (`1000 times) volume expansion when they vaporize thus a small volume has to be put in the pool then the volume of water and more importantly, both will displace the oxygen and prevent the further oxidation of the fuel. (note that this is more effective for the Argon than the N2). Once the oxygen is displaced, both the fire, if it occurs, and fuel oxidation will stop. At this point it would be best to fill the pool with sand and glass formers and let the fuel melt into a glass. Since the assemblies are ~ 50% dense, and the pool is about ½ to 2/3 full (at least it was when I was there in November). The glass layer would be about 3-5 feet high. The molten glass could then be quenched to solidify it. One has to be aware though, if the fuel is allowed to melt into a glass, most of the fission gases, and volatiles trapped in the fuel pellets would escape.

Any success of this plan would be dependent on the availability of liquid gases in Japan, and ability to deliver them. That is out of my range of expertise.

Just a suggestion.

Smith, Jeremy

From:	The Washington Pos
Sent:	Thursday, March 17,
To:	Smith, Jeremy
Subject:	Your afternoon upda

he Washington Post [newsletters@email.washingtonpost.com] hursday, March 17, 2011 4:39 PM mith, Jeremy 'our afternoon update: U.S. seeks more U.N. authority to intervene in Libya

If you have difficulty viewing this newsletter, <u>click here</u> to view as a Web page. <u>Click here</u> to view in plain text.

×	Thursday, March 17, 2011

The Washington Post is providing an afternoon e-newsletter to keep you up-to-date on the news that has occurred since you received your morning paper. This is just one of the many benefits you get as a home delivery subscriber, courtesy of **PostPoints**, the reader rewards program from The Washington Post.

To opt-out of future editions of Afternoon Buzz, <u>click here</u>. To sign-up for additional e-newsletters from The Washington Post, visit <u>washingtonpost.com/newsletters</u>.

Today's News Update

U.S. seeks more U.N. authority to intervene in Libya

The Obama administration pressed Thursday for greater authority to confront Moammar Gaddafi's forces by land, air and sea.

District investigates special-ed school

A Northwest Washington private school that has collected more than \$16 million in tuition from the city is being looked at for high rates of truancy and inadequate academic programs.

<u>No 'substantive issues' in training of Pr.</u> <u>George's cadets accused of cheating</u>

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State auditors have determined that more

than 30 county police recruits caught in a cheating scandal need not be removed from the streets.

Japan races to diminish risk of radiation leaks

In a dangerous emergency mission, two Japanese military helicopters dropped more than 30

tons of water on the Fukushima Daiichi nuclear power plant.

Sports

The Early Lead: NCAA tournament: Must-see madness

It's going to be tricky watching 16 games on four networks.

D.C. Sports Bog: Virginia Tech fan protests Hokies' exclusion

During the first media timeout at the Old Dominion-Butler game, Dan noticed a man in Virginia Tech colors waving signs with the school's logo.

Soccer Insider: Kitchen named to U.S. under-20 roster

The Americans' first match is March 20 vs. Suriname. Check out the rest of the roster.

Features

Going Out Guide: On St. Patrick's Day, green means go out

There's no wrong way to celebrate St. Patrick's Day, but here's help navigating the bewildering volume of holiday happenings.

Multimedia

Going Out Guide: On St. Patrick's Day, green means go out

The first lady joined students from two D.C. elementary schools for the third planing of the White House Kitchen Garden.

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United States Senate

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS WASHINGTON, DC 20510-6175

March 17, 2011

The Honorable Gregory Jaczko Chairman U. S. Nuclear Regulatory Commission Washington, DC 20555-0001

Dear Chairman Jaczko:

The loss of life and physical damage that Japan sustained in last week's devastating earthquake and subsequent destructive tsunami is catastrophic and heartbreaking. Our thoughts and prayers, as well as those of the American people, go out to all citizens of Japan and especially to the families of the thousands of disaster victims.

As this tragedy continues to unfold, we encourage the Nuclear Regulatory Commission and other U.S. agencies to continue to coordinate fully with the Japanese government to assess the status of public safety in light of the reactors' failures and to provide all technical assistance required.

The earthquake and tsunami that struck Japan are chilling reminders that we are all vulnerable to unexpected disasters, whether they are an act of nature or a terrorist attack. While we cannot predict with any certainty when or where the next major disaster will occur, we know that adequate preparation and response planning are absolutely vital to minimize injury, death, and destruction when it does happen.

As the Committee with oversight responsibilities on nuclear safety, we believe it is important to assist Japan to ensure that this nuclear disaster is contained as quickly and effectively as possible. For the long term, the multiple simultaneous failures of backup coolant systems at nuclear reactors in Japan are a clear warning that we must step up efforts to ensure that every precaution is taken to safeguard the American people from a similar incident at a U.S. nuclear facility.

Therefore, we call on the NRC to conduct a comprehensive investigation of all nuclear facilities in the United States to assess their capacity to withstand catastrophic natural or man-made disasters including scenarios that may be considered remote like the recent events in Japan. These domestic nuclear reactors must be fully evaluated to ensure that they are as safe and resilient as possible, that worst case scenarios are examined and addressed, and that personnel training and equipment for emergency responses are in place and up-to-date. Special and immediate attention should be given to those U.S. nuclear reactors that share similar characteristics as the failing reactors in Japan, including similar designs or located near a coastline or seismic fault line.

rc/114

In addition to updating the EPW Committee on a regular basis, we also request that the NRC supply information to the committee as soon as possible regarding the following issues:

- 1. Please identify all U.S. nuclear facilities subject to significant seismic activity and/or tsunamis.
- 2. U.S. nuclear power plants are designed to be safe based on historical data of the area's maximum credible threat (including earthquakes and tsunamis). What extra safety features does the NRC currently require for facilities that have a credible threat of an earthquake and/or tsunami? In light of the recent events in Japan, we would also like the NRC to re-examine the assumptions used to determine the maximum credible threat and suggest additional options that could provide a greater margin for safety at plants nationwide that might be subject to challenges similar to those currently being seen in Japan following the earthquake and tsunami.
- 3. Which U.S. nuclear power plants share similar design features with the affected Japanese reactor facilities? Do these facilities have design vulnerabilities that should be addressed to ensure their cooling systems do not fail when confronted by stresses including those similar to what we have seen in Japan following the earthquake and tsunami?
- 4. How comprehensive is the radiation monitoring system in Japan? Would the U.S. take a similar monitoring approach if a serious accident were to occur here? What increased risk is associated with exposure to mixed oxide fuel?
- 5. Given what has happened at the Japanese facilities, please describe how the NRC currently ensures the safety of spent fuel pools at U.S. facilities and identify additional steps the NRC could take to better address the vulnerabilities of spent fuel pools at plants in the U.S.
- 6. Has the NRC modeled what could happen if the U.S. had multiple nuclear accidents simultaneously? If so, how would the NRC respond to such a disaster?

Safety is always our number one priority, and therefore it is vital that the NRC immediately evaluate the risks posed to nuclear reactors in the United States. We look forward to working with you to ensure that the nuclear energy industry and NRC regulators are adequately prepared to prevent accidents and to fully address the risks of serious events in the future.

Sincerely yours,

Barbara Boxer Chairman Committee on Environment and Public Works

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Tom Carper Chairman Subcommittee on Clean Air and Nuclear Safety

Einziger, Robert

From: Sent: To: Cc: Subject: Attachments: Ordaz, Vonna Thursday, March 17, 2011 12:39 PM Dudes, Laura; Ruland, William; McIntyre, David Dorman, Dan; Haney, Catherine; Einziger, Robert; Rahimi, Meraj Proposal to handle dried Spent fuel pool.docx 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

·c/175

Proposal to handle dried spent fuel pool

RE Einziger, Ph.D. SFST/MNSS/NRC

Credential: I have over 30 yrs experience at National Laboratories studying the behavior of Spent Fuel rods in an Oxidizing Atmosphere.

The spent fuel consists of UO2 fuel inside a Zircaloy-2 cladding covered with a Zirconium oxide layer and a layer of CRUD. If the pool goes dry, the rods will heat up until the rate of heat production is balanced by the rate of heat removal by conduction, convection, and radiation. As the rod is heating up the gas inside the rod will be stressing the cladding, that has a lower yield strength and thus the cladding will expand. The expansion will cause the CRUD to flake off and break up to particulate in the 1-10 micron range as it hits the pool floor. This CRUD, with a main radioactive component as Co-60 may become airborne

Somewhere between 600 and 1000C the Zircaloy cladding that has a high concentration of zirconium hydrides on the outer surface may catch on fire. Zirconium hydride is pyrophoric but the ignition temperature is not an intrinsic properties but is dependent onn many features including the surface to volume ratio of the cladding.. Concurrently the pressure in the rod will continue to rise until ~750C when the rod will burst, ejecting fission gases and volatiles in the gap including Cs and I compounds. Some fuel particulate will also be ejected.

As these temperatures the exposed fuel will rapidly oxidize to U3O8 with a ~32% volume expansion. This expansion will split the cladding from end to end in a relatively short time. The fuel, now in grain size articulate (~10-15 micron) will stay in the cladding as a compact until it experiences a mild physical force at which time it will fall to the bottom of the pool.

Of primary important is to prevent the oxidation of the UO2 fuel that contains the preponderance of the radionuclides. Unless you can cover the fuel completely with water the fuel will oxide. When water is sprayed on the fuel, steam is formed which further oxidizes the fuel. A better choice would be to put liquid Argon in the pool if it is available. In not then use liquid N2. The benefits of these gases are that they have a large, ('1000 times) volume expansion when they vaporize thus a small volume has to be put in the pool then the volume of water and more importantly, both will displace the oxygen and prevent the further oxidation of the fuel. (note that this is more effective for the Argon than the N2). Once the oxygen is displaced, both the fire, if it occurs, and fuel oxidation will stop. At this point it would be best to fill the pool with sand and glass formers and let the fuel melt into a glass. Since the assemblies are ~ 50% dense, and the pool is about ½ to 2/3 full (at least it was when I was there in November). The glass layer would be about 3-5 feet high. The molten glass could then be quenched to solidify it. One has to be aware though, if the fuel is allowed to melt into a glass, most of the fission gases, and volatiles trapped in the fuel pellets would escape.

Any success of this plan would be dependent on the availability of liquid gases in Japan, and ability to deliver them. That is out of my range of expertise.

Just a suggestion.

Ward, Steven

From: Sent: To: Subject: CDMC [newsletter@chinadecisionmakers.com] Thursday, March 17, 2011 6:26 AM Ward, Steven Praying for Japanese Disaster-China Nuclear Energy Congress 2011



Current Status of Fukushima Daiichi NPPs

'Unit	Status
1	Reactor cold shutdown, stable water level, offsite power is available o refrigerant is leaked in the reactor contaminant vessel Maintain average water temperature at 100°Cin the pressure restraint
2	Reactor cold shutdown, stable water level, offsite power is available No refrigerant is leaked in the reactor contaminant vessel Maintain average water temperature at 100°Cin the pressure restraint
3	Reactor cold shutdown, stable water level, offsite power is available No refrigerant is leaked in the reactor contaminant vessel Maintain average water temperature at 100°Cin the pressure restraint
4	Reactor cold shutdown, stable water level, offsite power is available No refrigerant is leaked in the reactor contaminant vessel Maintain average water temperature at 100°Cín the pressure restraint

From TEPCO Press Release 13:00 PM Mar. 15

All units at the Fukushima II Daini, Onagawa, and Tokai nuclear power plants are in a safe and stable condition. Japan's top government spokesperson says the radiation level at the guake-hit nuclear power plant in Fukushima Prefecture,

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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.

At this moment, what we can do is just praying for Japanese disaster.

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.

Join China Nuclear Energy Congress 2011

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Agenda at a glance:

	Day one (May 12)	Day two (May 113)
Morning	S1. Outlook of Nuclear Market S2. Reactor Debate	S4. Bottleneck: Safety and Uranium Uranium Mining Companies focus
Afternoon	S3. Dialogue Between Operators Equipment supplies highly suggested	S5. Reviewing Other Asia Nuclear Energy Users
Exhibit at CN	EC 2011 and meet with:	
Policy Makers		· · · · · · · · · · · · · · · · · · ·
China Nuclear Troika		
Domestic EPC Contra	actor	
Chinese Uranium Tra	ders	
Large equipment pro- Utilities	viders	

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If you are interested in sponsorship, exhibit & speaking opportunities, please contact us at 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,

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Michael LIU Porject Director China Nuclear Energy Congress 2011 T: +8621-6840-7631 E:michaell@cdmc.org.cn -->> <u>Register to attend China</u> <u>Nuclear Energy Congress 2011</u>

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Rathbun, Howard

From:Rathbun, HowardSent:Thursday, March 17, 2011 9:15 AMTo:'Brad Bogard'Subject:RE: nuke

Hey man,

Well, it's of significant concern to us here. Since it's an international event, we don't really have much better information than what's in the media. This is fairly helpful:

http://www.cnn.com/interactive/2011/03/world/interactive.nuclear.japan/index.html?hpt=C2

Haven't made any real progress in operation westward ho, but still working on it.

-h

From: Brad Bogard [mailto:brad.bogard@sage-mgt.net] Sent: Wednesday, March 16, 2011 9:24 AM To: Rathbun, Howard Subject: nuke

Herd!

How're things?

What can you tell me - or what are you willing/interested in telling me about the Japan nuke situation? You know me, always seeking knowledge!

Any news on "Operation Westward Ho!!" ??

take care, BBB

http://pim.math.berkeley.edu/wft/refrep.php?s=450553be3657e864&rr=24745

Based on your estimate of the time needed for reporting on an earlier version, we hope you can send us your comments at your earliest convenience.

Thank you for reviewing for the Journal of Mechanics of Materials and Structures,

Sincerely,

Yasuhide Shindo, co-Editor of JoMMS

Tohoku University <u>shindo@material.tohoku.ac.jp</u>

They're starting to extend watchbills into next week. I assume you're still on your way to France in a few days and we need to factor office coverage into the decisionmaking. Please let me know if otherwise.

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Press Releases

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Press Release (Mar 17,2011) March 17th (Thu): Group 1 (Original Schedule: 16:50 - 20:30)

-Blackout Period: Approximately 3 hours (16:50PM - 20:30PM) -Customers (planned): Approximately 2,890,000 customers -Areas : Chiba pref., Tochigi pref., Saitama pref., Gunma pref., Kanagawa pref. No.A Kyonan Town, Kamogawa City, Tateyama City, Kimitsu City, Ichihara City, Sodeqaura City, Chonan Town, Nagara Town, Minamiboso City, Futtsu City, Mobara City, Kisarazu City No.B Sakura City, Otawara City, Nasukarasuyama City, Nasushiobara City, Nakagawa Town, Nasu Town, Yaita City No.C Saitama City (Nishi ward), Fujimino City, Sayama City, Sakado City, Shiki City, Tokorozawa City, Niiza City, Kawagoe City, Asaka City, Miyoshi Town, Iruma City, Fujimi City, Wako City No.D Yotsukaido City*, Isumi City, Sakura City, Oamishirasato Town, Ichihara City, Chiba City (Inage Ward, Hanamigawa Ward, Wakaba Ward, Chuo Ward, Mihama Ward, Midori Ward), Funabashi City, Ichinomiya Town, Chosei Village, Chonan Town, Nagara Town, Shirako Town, Mutsuzawa town, Togane city, Yachimata city, Yachiyo city, Mobara city No.E Minano Town, Ogano Town, Chichibu City, Yorii Town, Nagatoro Town, Higashichichibu Village, Yokoze Town, Hanno City, Ogawa Town, Tokigawa Town, Ranzan Town No.F Yokosuka City, Yokohama City (Isogo Ward, Sakae Ward, Kanazawa Ward, Konan Ward), Kamakura City, Chigasaki City, Hayama Town, Zushi City, Fujisawa City No.G Kamagaya City, Funabashi City, Shiroi City No.H Kawasaki City (Saiwai Ward*, Kawasaki Ward*) No.I Midori City, Isesaki City, Kiryu City, Tamamura Town, Maebashi City No.J Aikawa Town, Kiyokawa Village, Ayase City, Isehara City, Ebina City, Chigasaki City, Atsugi City, Samukawa Town, Zama City, Sagamihara City (Chuo Ward, Minami Ward), Yamato City, Fujisawa City, Hiratsuka City No.K Shibukawa City, Maebashi City, Showa Village

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Press Releases

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Press Release (Mar 17.2011) March 17th (Thu): Group 4 (Original Schedule: 18:20 - 22:00) -Blackout Period: Approximately 3 hours (18:20PM - 22:00PM) -Expected Number of Customers: Approximately 2,310,000 customers -Applicable Region: Saitama pref., Kanagawa pref., Tokyo,. Yamanashi pref., Gunma pref.,Tochigi pref No.A Kawaguchi city, Soka city, Yashio city, Warabi city No.B Saitama city[Urawa ward, Minuma ward, Sakura ward, Nishi ward, Omiya ward, Chuo ward, Minami ward, Kita ward, Midori ward], Toda city, Kawaguchi city, Warabi citv No.C Isehara city, Atsugi city, Zama city, Sagamihara city{Chuo ward, Minami ward, Midori ward], Machida city, Aikawa town No.D Okegawa city, Kazo city, Kuki city, Satte city, Ageo city, Miyashiro town, Shiraoka town, Ina town, Hasuda city No.E Inagi city, Kunitachi city, Akishima city, Hino city, Hachioji city, Tachikawa city No.F Yokohama city[Tsurumi ward], Kawasaki city[Saiwai ward, Kawasaki ward, Nakahara ward] No.G No.G Saitama City[Minuma ward, Nishi ward, Omiya ward, Chuo ward, Kita ward], Fujimino city, Okegawa city, Sayama city, Kumagaya city, Kounosu city, Sakado city, Ageo city, Niza city, Fukaya city, Kawagoe city, Yorii town, Yokoze town, Minano town, Nagatoro town, Higashichichibu village, Chichibu city, Asaka city, Tsurugashima city, Higashimatsuyama city, Hidaka city, Ogose town, Moroyama town, Iruma city, Hanno city, Tokigawa town, Namegawa town, Yoshimi town, Ogawa town, Kawajima town, Hatoyama town, Ranzan town, Fujimi city, Wako city Koshu city, Kai city, Kofu city, Yamanashi city, Ichikawamisato town, Chuo city, Showa town, Fuefuki city, Minamiarupusu city No.I Isesaki city, Ota city, Chiyoda town, Oizumi town, Oura town, Kumagaya city No.J Midori city, Isesaki city, Kiryu city, Ota city, Honjo city, Ashikaga city No.K Saitama city[Urawa ward, Minami ward, Midori ward], Toda city, Warabi city, Kawaguchi city No.b Saitama city[Urawa ward, Omiya ward, Minami ward, Midori ward], Toda city, Kawaguchi city, Hatogaya city, Warabi city, Adachi ward No.M Odawara city, Hadano city, Yugawara city, Hakone town, Kaisei town, Yamakita town, Matsuda town, Oi town, Nakai town, Minamiashigara city No.N Iwafune town, Tatebayashi city, Sano city, Ashikaga city, Tochigi city, Chiyoda town, Itakura town, Meiwa town, Oura town •No. is based on each substation's coverage area. •We will make maximum efforts to continue supplying electricity to the railroad services and may not carry out the rolling blackout. *Newly applicable areas due to operations from substations. However, those areas could be out of the target if the network systems change in future.

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Press Releases

Press Release (Mar 17,2011) Thursday, March 17: Group 3(Original Schedule 15:20 - 19:00)

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-Blackout Period: Approximately 3 hours ( 15:20 - 19:00 )
-Customers (planned): Approximately 2.9 million
-Areas:Saitama pref, Tokyo Metropolitan, Chiba pref, Kanagawa pref,
       Tochigi pref, Yamanashi pref, Gunma pref and
       Shizuoka pref(limited area).
No.A
Fujimino City, Shiki City, Niiza City, Asaka City, Miyoshi Town,
Itabashi Ward, Fujimi City, Wako City, Nerima Ward
No.B
Inzai City, Shisui Town, Abiko City, Sakura City (Chiba Pref.),
Shibayama Town, Oamishirosato Town, Narita City, Shiroi City,
Yachimata City, Tomisato City
No.C
Miura City*1, Yokosuka City*1, Zushi City*1
No.D
Akiruno City, Hamura City, Akishima City, Okutama Town, Mizuho Town,
Hinode Town, Hinohara Village, Oume Town, Hachiouji City,
Musashimurayama City, Fussa City, Kosuge Village, Tabayama Village,
Iruma City, Moroyama Town, Hanno City, Tokorozawa City
No.E
 Utsunomiya City, Shioya Town, Mibu Town, Shimotsuke City, Kaminokawa Town,
 Kanuma City, Nishikata Town, Tochigi City, Nikko City
No.F
 Yokohama City (Isogo Ward, Totsuka Ward, Kounan Ward, Kouhoku Ward,
 Kanagawa Ward, Naka Ward, Tsurumi Ward, Minami Ward, Hodogaya Ward),
Kawasaki City (Saiwai Ward, Kawasaki Ward, Nakahara Ward)
No.G
Saitama City (Urawa Ward, Iwatsuki Ward, Minuma Ward, Nishi Ward,
Omiya Ward, Chuo Ward, Kita Ward, Midori Ward), Kasukabe City,
Miyashiro Town, Sugito Town
No.H
Kai City, Kofu City, Nirasaki City, Hokuto City
No.T
 Odawara City, Hadano City, Manazuru City, Yugawara Town, Matsuda Town,
Minamiashigara City, Atami City *2
No.J
 Kokubunji City, Kunitachi City, Mitaka City, Koganei City, Kodaira City,
 Akishima City, Nishitokyo City, Chofu City, Higashimurayama City,
 Higashiyamato City, Fuchu City, Musashimurayama City, Musashino City,
Tachikawa City
No.K
 Tatebayashi City, Ota City, Chiyoda Town, Oizumi Town, Oura Town,
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Mooka City, Ashikaga City

No.L Saitama City (Urawa Ward, Minuma Ward, Sakura Ward, Nishi Ward, Omiya Ward, Chuo Ward, Minami Ward, Kita Ward, Midori Ward), Hanyu City, Okegawa City, Toda City, Gyoda City, Konosu City, Ageo City, Ina Town, Kitamoto City, Hasuda City, Warabi City No.M Yokosuka City, Kamakura City, Hayama Town, Miura City, Zushi City No.N Utsunomiya City, Iwafune Town, Mibu Town, Shimotsuke City, Kaminokawa Town, Sano City, Kanuma City, Oyama City, Mooka City, Ashikaga City, Tochigi City, Nikko City, Nishikata Town, Shioya Town No.0 Isesaki City, Kumagaya City, Gyoda City, Kamisato Town, Kamikawa Town, Misato Town, Fukaya City, Ota City, Yorii Town, Higashimatsuyama City, Namegawa Town, Yoshimi Town, Ogawa Town, Ranzan Town, Honjo City, Oizumi Town No.P Yokohama City (Sakae Ward, Totsuka Ward, Konan Ward) . Locations are divided into each blocks based on each substation's coverage area. *1 Newly applicable areas due to opeartions from substations. However, those areas could be out of the target if the network systems change in future. *2 Shizuoka prefecture including Atami City is not subject to the rolling blackout, however, customers in Atami City whose power is supplied through inter-prefecture lines from the prefecture may have the rolling blackout.

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We will make maximum efforts to continue supplying electricity to the railroad services and may not carry out the rolling blackout.

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Press Releases

Press Release (Mar 17,2011) Thursday, March 17: Group 5(Original Schedule 13:50 - 17:30)

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-Blackout Period: Approximately 3 hours (13:50 - 17:30) -Customers (planned):approximately 3.1 million -Areas:Chiba pref., Yamanashi pref., Kanagawa pref., Gunma pref., Saitama pref. Tochigi pref. and Tokyo Metropolitan No.A Misato City, Sòka City, Yashio City No.B Koshu City, Yamanashi City, Otsuki City, Tsuru City, Yamanakako Village, Nishikatsura Town, Oshino Village, Fujikawaguchiko Town, Narusawa Village, Fujiyoshida City, KosugeVillage No.C Hiratsuka City, Oiso Town, Ninomiya Town, Isehara City, Chigasaki City, Atsugi City, Hadano City, Ebina City, Samukawa Town No.D Otawara City, Utsunomiya City, Sakura City (Tochigi pref.), Nikko City, Yaita City, Nasushiobara City, Takanezawa Town, Shioya Town No.E Annaka City, Shimonita Town, Kanra Town, Nanmoku Village, Takasaki City, Tamamura Town, Kamisato Town, Kamikawa Town, Misato Town, Fukaya City, Kanna Town, Chichibu City, Fujioka City, Tomioka City, Honjo City No.F Koshigaya City, Arakawa Ward, Misato City, Kawaguchi City, Soka City, Adachi Ward, Yashio City No.G Yokohama City (Aoba Ward, Tsuzuki Ward), Kawasaki City (Miyamae Ward, Takatsu Ward) No.H Isesaki City, Kusatsu Town, Nakanojo Town, Naganohara Town, Tsumagoi Village, Takasaki City, Tamamura Town, Shibukawa City, Maebashi City No.I Aikawa Town, Uenohara City, Sagamihara City (Chuo Ward, Minami Ward, Midori Ward), Machida City, Doshi Village No.J Utsunomiya City, Sakura City (Tochigi pref.), Nasukarasuyama City, Yaita City, Otawara City, Nakagawa Town, Ichikai Town, Motegi Town, Kaminokawa Town, Shioya Town No.K Yokohama City (Isogo Ward, Sakae Ward, Totsuka Ward, Konan Ward, Izumi Ward, Minami Ward), Kamakura City, Fujisawa City

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No.L Abiko City, Kamagaya City, Matsudo City, Kashiwa City, Shiroi City, Noda City, Nagareyama City No.M

Kumagaya City, Gyoda City, Fukaya City, Honjo City

No.N Hiratsuka City, Aikawa Town, Kiyokawa Village, Zama City, Isehara City, Atsugi City, Hadano City, Ebina City

Locations are divided into each blocks based on each substation's coverage area.
We will make maximum efforts to continue supplying electricity to the railroad services and may not carry out the rolling blackout.

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Press Releases

Press Release (Mar 17,2011) Impact to TEPCO's Facilities due to Tohoku-Taiheiyou-Oki Earthquake (as of 10:00AM)

Due to the Tohoku-Taiheiyou-Oki Earthquake which occurred on March 11th 2011, TEPCO's facilities including our nuclear power stations have been severely damaged. We deeply apologies for the anxiety and inconvenience caused.

Below is the status of TEPCO's major facilities. *<u>new items are underlined</u>

[Nuclear Power Station]
Fukushima Daiichi Nuclear Power Station:
 Units 1 to 3: shutdown due to earthquake
 (Units 4 to 6: outage due to regular inspection)

* The national government has instructed to evacuate for those local residents within 20km radius of the site periphery and to remain indoors for those local residents between 20km and 30km radius of the site periphery.

* Unit 1

The explosive sound and white smoke was confirmed near Unit 1 when the big quake occurred at 3:36pm, March 12th. We have started injection of sea water at 8:20 pm and then boric acid into the reactor afterwards.

* Unit 2

At 1:25 pm, March 14th, since the Reactor Core Isolation Cooling System has failed, it was determined that a specific incident stipulated in article 15, clause 1 occurred (failure of reactor cooling function). At 5:17 pm, while the water level in the reactor reached the top of the fuel rod, we have restarted the water injection with the valve operation. At approximately 6:14 am, March 15th, the abnormal sound was confirmed near the suppression chamber and the pressure inside the chamber decreased afterwards. It was determined that there is a possibility that something happened in the suppression chamber. While sea water injection to the reactor continued, TEPCO employees and workers from other companies not in charge of injection work started tentative evacuation to a safe location.

Sea water injection to the reactor is still under operation.

* Unit 3

At 6:50 am, March 14th, while water injection to the reactor was under operation, the pressure in the reactor containment vessel increased to 530 kPa. As a result, at 7:44 am, it was determined that a specific incident stipulated in article 15, clause 1 occurred (abnormal increase of the pressure of reactor containment vessel). Afterwards, the pressure has gradually decreased (as of 9:05 am, 490 kPa).

At approximately 11:01 am, March 14th, an explosion followed by white smoke occurred near Unit 3. 4 TEPCO employees and 3 workers from other companies (all of them are conscious) have sustained injuries and they were already dispatched to the hospital by ambulances.

As the temperature of water in the spent fuel pool rose, spraying water by helicopters with the support of the Self Defense Force was considered,

however the works on March 16th was cancelled.

At 6:15 am Today, March 17th, the pressure of the Suppression Chamber temporally increased, but currently it is stable in a certain range. Monitoring will be continued. In order to cool spent fuel pool, water discharge by helicopters has been conducted today on March 17th with the cooperation of Self-Defense Force.

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* Unit 4

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At approximately 6:00 am, March 15th, an explosive sound occurred and the damage in the 5th floor roof of Unit 4 reactor building was confirmed. At 9:38 am, the fire near the north-west part of 4th floor of Unit 4 reactor building was confirmed. At approximately 11:00 am, TEPCO employee confirmed that the fire was off.

At approximately 5:45 am, a TEPCO employee discovered a fire at the northwest corner of the Nuclear Reactor Building. TEPCO immediately reported this incident to the fire department and the local government and proceeded with the extinction of fire. At approximately 6:15 am, TEPCO staff confirmed at the site that there are no signs of fire.

*We will continuously endeavor to securing safety, and monitoring of the surrounding environment.

Fukushima Daini Nuclear Power Station:

Units 1 to 4: shutdown due to earthquake

 \star The national government has instructed evacuation for those local residents within 10km radius of the periphery.

* In order to achieve cold shutdown, reactor cooling function was restored and cooling of reactors was conducted. As a result, all reactors achieved cold shutdown: Unit 1 at 5:00 pm, March 14th, Unit 2 at 6:00 pm, March 14th, Unit 3 at 0:15 pm, March 12th, Unit 4 at 7:15 am, March 16th.

* (Unit 1)

As it is confirmed that the temperature of the Emergency Equipment Cooling Water System *1 has increased, at 3:20 pm, March 15th, we stopped the Residual Heat Removal System (B) for the inspection. Subsequently, failure was detected in the power supply facility associated with the pumps of the Emergency Equipment Cooling Water System. At 4:25 pm, March 15th, after replacing the power facility, the pumps and the Residual Heat Removal System (B) have been reactivated.

* (Unit 4)

As it is confirmed that the pressure at the outlet of the pumps of the Emergency Equipment Cooling Water System*1 has been decreased, at 8:05 pm, March 15th, we stopped the Residual Heat Removal System (B) for the inspection. Subsequently, failure was detected in the power supply facility associated with the pumps of the Emergency Equipment Cooling Water System. At 9:25 pm, March 15th, after replacing the relevant facility, the pumps and the Residual Heat Removal System (B) have been reactivated.

^{*1}:emergency water system in which cooling water (pure water) circulates which exchanged the heat with sea water in order to cool down bearing pumps and/or heat exchangers etc.

Kashiwazaki Kariwa Nuclear Power Station:

Units 1, 5, 6, 7: normal operation (Units 2 to 4: outage due to regular inspection)

[Thermal Power Station]

Hirono Thermal Power Station Units 2 and 4: shutdown due to earthquake Hitachinaka Thermal Power Station Unit 1: shutdown due to earthquake Kashima Thermal Power Station Units 2, 3, 5, 6: shutdown due to earthquake Ohi Thermal Power Station Unit 2: shutdown due to earthquake Higashi-Ohgishima Thermal Power Station Unit 1: shutdown due to earthquake

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[Hydro Power Station]

* All the stations have been restored.

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[Transmission System, etc.]

All substation failed due to the earthquake have been restored.

[Blackout in TEPCO's Service Area] Total of about 2,600 households are out of power (as of 10:00 today). Tokyo: 0 Kanagawa Pref.: 0 Tochigi Pref.: 0 Chiba Pref.: 0 Saitama Pref: 0 Gunma Pref: 0 Ibaraki Pref:2,561 Yamanashi Pref: 0 Shizuoka Pref: 0 (east of Fuji River)

[Supply and Demand Status within TEPCO's Service Area to Secure Stable Power Supply]

Backup supply from Shinshinano Conversion Station: 600MW Backup supply from Sakuma Conversion Station: 300MW Backup supply from Higashi Shimizu Conversion Station: 100MW Backup supply from Kitahon Interconnection Facility: 600MW

Considering the critical balance of our power supply capacity and expected power demand forward, in order to avoid unexpected blackout, TEPCO has implemented rolling blackout (planned blackout alternates from one area to another) since yesterday. We will make our utmost to secure the stable power supply as early as possible.

For customers who will be subject to rolling blackout, please be prepared for the announced blackout periods. Also for customers who are not subject to blackouts, TEPCO appreciates your continuous cooperation in reducing electricity usage by avoiding using unnecessary lighting and electrical equipment.

[Others]

Please do NOT touch cut-off electric wires. In order to prevent fire, please make sure to switch off the electric appliances such as hair drier and to shut down the breaker of distribution board when you leave your house. For the customer who has in-house power generation, please secure fuel for generator.

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Press Releases

Press Release (Mar 17,2011) Plant Status of Fukushima Daiichi Nuclear Power Station (as of 9:00 am Mar 17th)

All 6 units of Fukushima Daiichi Nuclear Power Station have been shut down. Unit 1 (Shut down) -Reactor has been shut down. However, the explosive sound and white smoke were confirmed after the big quake occurred at 3:36PM Mar 12th. It was assumed to be hydrogen explosion and currently under the investigation. -We have been injecting sea water into the reactor pressure vessel. Unit 2(Shut down) -Reactor has been shut down and Reactor Core Isolation Cooling System has been injecting water to the reactor. However, reactor pressure has increased because the system stopped, causing reactor water level to drop. Following the instruction by the government and with fully securing safety, measure to lower the pressure level within the reactor containment vessel and injection of sea water were taken, reactor pressure and water level resumed. -We are continuing the injection of sea water into the reactor. -At approximately 6:00am, an abnormal noise began emanating from nearby Pressure Suppression Chamber and the pressure within this chamber decreased. -While we continue sea water injection operations, the temporary transfer of TEPCO employees and workers from other companies not directly involved in this work has begun. Unit 3(Shut down) -Reactor has been shut down. However, the explosive sound and white smoke were confirmed at 11:01AM Mar 14th. It was assumed to be hydrogen explosion and currently under the investigation. -As fog like steam was confirmed from reactor building at 8:30AM on March 16th, we transferred the workers to safe area. After that, we decided to discharge water to the upper side of reactor building by helicopters, but could not do that because there was a trouble with implementation of work. -We plan to discharge water in order to cool spent fuel pool after we complete the preparations by confirming the process of discharging, personnel, and a situation of the site. -We continue monitoring as it was reported that the pressure of the Suppression Chamber temporally increased at around 6:15AM on March 17th. -We have been injecting sea water into the reactor pressure vessel. Unit 4 (shut down due to regular inspection) -Reactor has been shut down. However, we have confirmed the sustained damage around the 5th floor rooftop area of the Nuclear Reactor Building. -Afterwards, we confirmed the outbreak of fire at the northwestern part of Nuclear Reactor Building. We immediately reported this matter to the fire department and the related authorities. -However, at approximately 11:00am, when TEPCO employee arrived at the seen to confirm, the fire had already died down. At 5:45AM on March 16th, we confirmed the outbreak of the fire again but could not confirm it at 6:15AM. We will continue to monitor the situation carefully.

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Unit 5 (outage due to regular inspection) -Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained. -Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel. Unit 6 (outage due to regular inspection) -Reactor has been shut down and sufficient level of reactor coolant to ensure safety is maintained. -Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel. Casualty -2 workers of cooperative firm were injured at the occurrence of the earthquake, and were transported to the hospital. -1 TEPCO employee who was not able to stand by his own with his hand holding left chest was transported to the hospital by an ambulance. -1 subcontract worker at important earthquake-proof building was unconscious and transported to the hospital by an ambulance. -The radiation exposure of 1 TEPCO employee, who was working inside the reactor building, exceeded 100mSv and was transported to the hospital. -2 TEPCO employees felt bad during their operation in the central control rooms of Unit 1 and 2 while wearing full masks, and were transferred to Fukushima Daini Power Station for consultation with a medical advisor. -4 workers were injured and transported to the hospital after explosive sound and white smoke were confirmed around the Unit 1. -11 workers were injured and transported to Fukushima Daini Nuclear Power Station after explosive sound and white smoke were confirmed around the Unit 3. One of the injured workers got medical treatment on March 16th, but the worker reported a flank pain. We required to the offsite center that the worker should be transported to the hospital. After that, the helicopter of JSDF arrived and transported the worker to the FUKUSHIMA Medical University Hospital at 10:56AM -Presence of 2 TEPCO employees at the site is not confirmed. Others -We are currently coordinating with the relevant authorities and departments as to how to secure the cooling water to cool down the water in the spent nuclear fuel pool of the plant. -We measured radioactive materials inside of the nuclear power station area (outdoor) by monitoring car and confirmed that radioactive materials level is getting higher than ordinary level. As listed below, we have determined that specific incidents stipulated in article 15, clause 1 (Abnormal increase in radiation dose measured at site boundary) have occurred. Determined at 4:17 pm Mar 12th (Around Monitoring Post 4) •Determined at 8:56 am Mar 13th (Around Monitoring Post 4) •Determined at 2:15 pm Mar 13th (Around Monitoring Post 4) •Determined at 3:50 am Mar 14th (Around Monitoring Post 6) •Determined at 4:15 am Mar 14th (Around Monitoring Post 2) •Determined at 9:27 am Mar 14th (Around Monitoring Post 3) •Determined at 9:37 pm Mar 14th (Around main entrance) •Determined at 6:51 am Mar 15th (Around main entrance) •Determined at 8:11 am Mar 15th (Around main entrance) •Determined at 4:17 pm Mar 15th (Around main entrance) •Determined at 11:05 pm Mar 15th (Around main entrance) -We will continue to make announcements when it was determined that a specific incident stipulated in article 15, clause 1 has occurred. -The national government has instructed evacuation for those local residents within 20km radius of the periphery and evacuation to inside for those residents from 20km to 30km radius of the periphery, because it's possible that radioactive materials are discharged. -Today, at approximately 10am, we observed 400mSv/h at the inland side of the Unit 3 reactor building and 100mSv/h at the inland side of the Unit 4 reactor building. -We will continue to take all measures to restore the security of the site and to monitor the environment of the site periphery.

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Press Releases

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Press Release (Mar 17,2011)

March 17th (Thu): Group 2 (Original Schedule: 12:20 - 16:00) -Blackout Period: Approximately 3 hours (12:20PM - 16:00PM) -Expected Number of Customers: Approximately 3,220,000 customers -Applicable Region: Saitama pref., Chiba pref., Kanagawa pref., Tokyo, Tochigi pref., Yamanashi pref. [Areas] No. is based on each substation's coverage area. No.A Sayama City, Sakado City, Tokorozawa City, Kawagoe City, Tsurugashima City, Hidaka City, Ogose Town, Moroyama Town, Iruma City, Hanno City, Tokigawa Town, Kawashima Town No.B Sakura City, Narashino City, Yachiyo City No.C Sagamihara City (*Chuo Ward, *Minami Ward, *Midori Ward), Kawasaki City (Asao Ward), *Machida City No.D Hanyu City, Okegawa City, Kazo City, Kuki City, Kumagaya City, Satte City, Gyoda City, Kounosu City, Ageo City, Shiraoka Town, Kitamoto City No.E Inagi City, Komae City, Mitaka City, Koganei City, Tama City, Chofu City, Fuchu City, Musashino City No.F Iwafune Town, Nogi Town, Kanuma City, Oyama City, Tochigi City No.G Saitama City (Urawa Ward, Sakura Ward, Omiya Ward, Chuo Ward, Minami Ward, Midori Ward), Koshigaya City, Yoshikawa City, Toda City, Misato City, Kasukabe City, Kawaguchi City, Soka City, Matsubushi Town, Warabi City No.H Ichikawa City, Matsudo City, Funabashi City No.T Chigasaki City, Samukawa Town, Oiso Town, Hiratsuka City No.J Kamagaya City, Ichikawa City, Narashino City, Chiba City (Hanamigawa Ward, Wakaba Ward, Mihama Ward, Midori Ward), Funabashi City, Yachiyo City No.K Hino City, Hachioji City No. L Akishima City, Hino City, Hachioji City No.M Saitama City (Urawa Ward, Iwatsuki Ward, Sakura Ward, Minami Ward,

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Press Releases

Press Release (Mar 17,2011) March 17th (Thu): Group 1 (Original Schedule: 9:20 - 13:00)

-Blackout Period: Approximately 3 hours (9:20AM - 13:00PM) -Expected Number of Households: Approximately 2,890,000 customers -Applicable Region: Chiba pref., Tochigi pref., Saitama pref., Gunma pref., Kanagawa pref.

[Areas] No. is based on each substation's coverage area.

No.A

Kyonan Town, Kamogawa City, Tateyama City, Kimitsu City, Ichihara City, Sodegaura City, Chonan Town, Nagara Town, Minamiboso City, Futtsu City, Mobara City, Kisarazu City

No.B

Sakura City, Otawara City, Nasukarasuyama City, Nasushiobara City, Nakagawa Town, Nasu Town, Yaita City

No.C

Saitama City (Nishi ward), Fujimino City, Sayama City, Sakado City, Shiki City, Tokorozawa City, Niiza City, Kawagoe City, Asaka City, Miyoshi Town, Iruma City, Fujimi City, Wako City

No.D

Yotsukaido City*, Isumi City, Sakura City, Oamishirasato Town, Ichihara City, Chiba City (Inage Ward, Hanamigawa Ward, Wakaba Ward, Chuo Ward, Mihama Ward, Midori Ward), Funabashi City, Ichinomiya Town, Chosei Village, Chonan Town, Nagara Town, Shirako Town, Mutsuzawa Town, Togane City, Yachimata City, Yachiyo City, Mobara City

No.E

Kanna Town, Minano Town, Ogano Town, Chichibu City, Yorii Town, Nagatoro Town, Higashichichibu Village, Yokoze Town, Hanno City, Ogawa Town, Tokigawa Town, Ranzan Town

No.F

Yokosuka City, Yokohama City (Isogo Ward, Sakae Ward, Kanazawa Ward, Konan Ward), Kamakura City, Chigasaki City, Hayama Town, Zushi City, Fujisawa City

No.G

Kamagaya City, Funabashi City, Shiroi City

No.H Kawasaki City (Saiwai Ward*, Kawasaki Ward*)

No.I

Midori City, Isesaki City, Kiryu City, Tamamura Town, Maebashi City

No.J Aikawa Town, Kiyokawa Village, Ayase City, Isehara City, Ebina City, Chigasaki City, Atsuqi City, Samukawa Town, Zama City, Sagamihara City (Chuo Ward, Minami Ward), Yamato City, Fujisawa City, Hiratsuka City

No.K Shibukawa City, Maebashi City, Showa Village

No.L

Ayase City, Yokohama City (Sakae Ward, Totsuka Ward, Konan Ward, Izumi Ward), Kamakura City, Chigasaki City, Yamato City, Fujisawa City, Hiratsuka City

 egarding railroad systems, TEPCO is endeavoring to secure continuous supply of electricity. For this reason, rolling blackout may not be implemented in some areas.

*Newly applicable areas due to operations from substations. However, those areas could be out of the target if the network systems change in future.

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Press Releases

Press Release (Mar 17,2011) Plant Status of Fukushima Daini Nuclear Power Station (as of 9:00 am March 17th)

[No Latest Developments since 9:00pm, 16th March]

Unit Status

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3

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• Reactor cold shutdown, stable water level, offsite power is available.

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- No refrigerant is leaked in the reactor contaminant vessel.
- Maintain average water temperature at 100°C in the pressure restraint.

Reactor cold shutdown, stable water level, offsite power is available. No refrigerant is leaked in the reactor contaminant vessel.

Maintain average water temperature at 100°C in the pressure restraint.

Reactor cold shutdown, stable water level, offsite power is available.
No refrigerant is leaked in the reactor contaminant vessel.
Maintain average water temperature at 100°C in the pressure restraint.

- Reactor cold shutdown, stable water level, offsite power is available.
 - No refrigerant is leaked in the reactor contaminant vessel.
 - ${\mbox{\cdot}}$ Maintain average water temperature at 100°C in the pressure restraint.

other none

[The next information in regard to the plant is planned to be released at 0:00 pm, 17th March.]

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ERIC T. SCHNEIDERMAN Attorney General DIVISION OF SOCIAL JUSTICE Environmental Protection Bureau

March 18, 2011

Chairman Gregory B. Jaczko Commissioner Kristine L. Svinicki Commissioner George Apostolakis Commissioner William D. Magwood, IV Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission Washington, D.C. 20555 Via electronic and U.S. Mail

Re: Seismic Risk at Indian Point Nuclear Generating Station

Dear Chairman Jaczko and Commissioners Svinicki, Apostolakis, Magwood, and Ostendorff:

I am writing you as a nuclear crisis, initiated by the March 11 earthquake and subsequent tsunami in Northern Japan, is still unfolding. In addition to its potentially devastating impact on the people of Japan, this crisis serves as a graphic demonstration that nuclear power facilities in the U.S. may be vulnerable to seismic activity and experience catastrophic failures that compromise their ability to control and cool multiple nuclear reactors. Data from your staff analysis (GS-199), which demonstrates an increased risk of seismic activity at some nuclear power plants in the country add to my concern.

These factors underscore the importance of a fair, open, and full assessment of seismic risks in the relicensing of Indian Point.

New York State has raised concerns about seismic risk and other issues in relation to the relicensing of Indian Point with your staff on numerous occasions. At each turn, however, the NRC has refused to consider these critical issues in the relicensing review process.

As you know, the Indian Point nuclear power station in Buchanan, New York sits 24 miles from New York City. Of all the power reactors in the United States, the two operating Indian Point reactors have the highest surrounding population both within a 50-mile radius and a 10-mile radius. Seventeen million people live within 50 miles of these reactors. Indian Point Units 2 and 3, which initially came on line in 1973 and 1975, are currently the subject of an adjudicatory proceeding to extend their license by another 20 years (Unit 1 ceased generating in the 1970s).

120 Broadway, 26th Fl. New York, N.Y. 10271-0332 • Phone (212) 416-8446 • Fax (212) 416-6007 • WWW.AG.NY.GOV

c/188

As the NRC has acknowledged, Indian Point Unit 1, which was authorized in 1956, was built prior to any specific requirement for earthquake protection. Although the NRC revoked the operating license for the Indian Point Unit 1 power reactor in 1980, many of Unit 1's system, structures, and components were conjoined to Unit 2 and Unit 3 and are still in use today. These aging Unit 1 systems, structures, and components were built to inferior seismic specifications, and Unit 2 and Unit 3's continued reliance on these systems today poses significant safety questions.

The NRC has consistently blocked consideration of New York's seismic concerns, as well as related concerns about population, emergency evacuation, fire safety, and site security.

In November of 2007, the Attorneys General of New York, Connecticut, Delaware, Illinois, Kentucky, and Vermont submitted a letter to the NRC which expressed the states' serious concerns about the NRC's failure to confront issues such as local seismic activity when deciding whether to renew the operating license of a nuclear power plant beyond its initial fortyyear term. The states requested that the NRC expand relicensing criteria to include seismic analysis. On December 30, 2007, the NRC rejected this request.

The NRC also disregarded New York's "scoping" comments in 2007, which noted that the Indian Point operator's Environmental Report and Updated Final Safety Analysis Reports do not reflect seismic information developed after the early 1980s, and which asked the NRC to require the owner to revise those outdated documents. The NRC subsequently issued a Draft Environmental Impact Statement (DSEIS) based on this out-of-date information. The DSEIS failed to mention new information regarding seismic activity developed recently by the United States Geological Survey (USGS) that included the area around Indian Point or to account for the findings of Columbia's Lamont-Doherty Earth Observatory 2008 study. In fact, the NRC has not revised any of its Indian Point-related environmental analyses to take into account findings from this important independent study.

Perhaps most egregious is the NRC Staff's issuance of the Final Supplemental Environmental Impact Statement (FSEIS) for Indian Point, which it issued three months after Staff issued the GS-199 analysis on seismic activity. The FSEIS did not make any reference to the NRC's own findings of increased seismic risk at Indian Point.

In November of 2007, the state submitted two contentions in the license renewal proceeding arguing that the applicant's "Updated" Safety Evaluation Report and Environmental Report insufficiently analyzed alternatives for mitigation of severe accidents like earthquakes in that it (1) failed to include recent information regarding the type, frequency, and severity of potential earthquakes and (2) failed to include an analysis of mitigation measures which could reduce the effects of an earthquake damaging the parts of inactive Indian Point Unit 1 which are currently in use at Units 2 and 3. The NRC Staff opposed acceptance of these contentions, and the Atomic Safety and Licensing Board excluded them from consideration in the adjudicatory proceeding because, it said, the state did not suggest feasible alternatives to address risks posed by the new data, or estimate the cost of the increased margin of safety that would result from any

severe accident mitigation action. This burden is clearly not the public's to bear and these contentions were excluded in error.

Earlier this week, in testimony before the Senate Committee on Environment and Public Works, Chairman Jaczko stated the NRC's intention to conduct a review of the earthquakerelated risks faced by nuclear power facilities operating in the central and eastern U.S. He stated that this review would take one to two years to complete, followed by a similar period of time to consider and implement mitigation measures. Indian Point Units 2 and 3 are currently the subject of a proceeding to extend their licenses by another 20 years – a proceeding in which the NRC has consistently ignored serious consideration of the risks that earthquakes and related issues pose to the Indian Point facility.

NRC should not contemplate relicensing Indian Point without first completing an open and public review of earthquake-related risks faced by this facility.

For this reason, <u>the NRC must undertake an immediate</u>, <u>full</u>, <u>fair</u>, <u>and open assessment of</u> <u>all public health and safety risks that earthquakes pose to this facility</u>, <u>and provide the public an</u> <u>opportunity to fully review and comment on all phases of this review</u>.

In addition, the NRC must take the following actions:

- 1. Promulgate an amendment to Part 54 and any other relevant regulations, which exclude seismicity analysis from the scope of safety review in relicensing proceedings, to specifically require the preparation of a public site-specific seismic analysis for the Indian Point and other reactors;
- 2. Open up the GS-199 seismic analysis proceeding for meaningful participation by states and the public so that all assumptions can be identified and tested and ensure that all information used in this proceeding is made available in the public record;
- 3. Address the risk posed by the Indian Point Unit 1 facilities, which share many common components and systems with the other Indian Point units, in a complete and transparent way;
- 4. Incorporate USGS findings and Columbia Lamont-Doherty's findings into the Indian Point FSEIS for license renewal and re-issue the document for additional public review and comment;
- 5. Make public immediately the Commission's plans, in their entirety, for addressing seismic risk at all three Indian Point plants; and
- 6. Maximize public involvement in the Commission's and the NRC Staff's actions regarding seismic risk at Indian Point.

Whether or not one supports the re-licensing of Indian Point Units 2 and 3, we can all agree that we must protect the health, safety, and environment of the nearly 20 million people

living in close proximity to the facility. Only through a full, fair, and open assessment of the earthquake and related security risks surrounding this uniquely-situated plant – one that precedes any consideration of approving an extension of the Indian Point facility for another 20 years – can we provide these fundamental protections.

I thank you for your attention this request, and please do not hesitate to contact me at any time if I can provide additional information or you would like discuss this matter in greater detail.

Sincerely,

Enie Suhh

Eric T. Schneiderman Attorney General



Presentation on Fukushima

681/5-

Nuclear Regulatory Commission Region IV Arlington, Texas



2

U.S. Nuclear Regulatory Commission

- Earthquake & tsunami sequence of events
- Friday March 11th @ 2:36 pm local
 - Magnitude 9.0 earthquake 231 miles northeast of Tokyo
 - Quake is fifth largest in the world (since 1900)
- Earthquake generated a 14m Tsunami



Plant Response

- <u>Earthquake</u>
 - Earthquake Caused Automatic Shutdown
 - of 3 Operating Units
- Offsite Power Lost
 - Initial indications were that Emergency Diesels operated
- 14m Tsunami (less than 1 hour later)
- All Emergency Back-up Power Lost
- 8-10 hours later Station Batteries Depleted



- NRC Response
 - Ops Center 24/7
 - Team of experts to Tokyo
 - Support to U.S. Ambassador and Japanese
 - Coordinating Environmental Monitoring with DOE & EPA



Domestic Considerations

- No anticipated U.S. Health Effects from Fukushima
- U.S. Plants Designed for External Events
- NRC has initiated additional inspections at all U.S. Plants
- NRC conducting Near-Term and Long-Term Reviews.

Protecting People and the Environment

5



NRC Near Term Actions

- **Evaluate Fukushima Daiichi Events**
- Domestic Operating Reactors and Spent Fuel Pools
 - External Events
 - Station Blackout
 - Severe Accident Mitigation
 - Emergency Preparedness
 - Combustible Gas Control
- Near Term Review due in 90 days (mid June)



NRC Longer Term Actions

- Based on Near Term Review and Additional Insights from Fukushima Event
- Identify Potential Technical and Policy Issues
 - Research Activities
 - Generic Issues
 - Reactor Oversight Process
 - Regulatory Framework
 - Interagency Emergency Preparedness



8

U.S. Nuclear Regulatory Commission

Questions?

Lee, Richard

From:Bonaccorso, AmySent:Friday, March 18, 2011 3:33 PMTo:Lee, RichardSubject:FW: Spent fuel q's deadline 1pm EST Fri

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

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 (<u>https://lersearch.inl.gov/Entry.aspx</u>) 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 Any luck? Eli

Eli Kintisch, Reporter Science Magazine 202 326 6446

>>> "Burnell, Scott" <<u>Scott.Burnell@nrc.gov</u>> 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" <<u>Scott.Burnell@nrc.gov</u>> 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

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Eli Kintisch, Reporter Science Magazine 202 326 6446

Smith, Jeremy

From: Sent: To: Subject: The Washington Post [newsletters@email.washingtonpost.com] Friday, March 18, 2011 4:20 PM Smith, Jeremy Your afternoon update: Judge blocks Wisconsin law curbing labor rights

If you have difficulty viewing this newsletter, <u>click here</u> to view as a Web page. <u>Click here</u> to view in plain text.

The Washington Post

AFTERNOON BUZZ

Friday, March 18, 2011

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The Washington Post is providing an afternoon e-newsletter to keep you up-to-date on the news that has occurred since you received your morning paper. This is just one of the many benefits you get as a home delivery subscriber, courtesy of **PostPoints**, the reader rewards program from The Washington Post.

Today's News Update

Judge blocks Wisconsin law curbing labor rights

The judge's order came after the Dane County district attorney filed suit alleging that a joint committee of the legislature violated the state's open meeting law.

<u>Two years for woman in deadly crash</u> that injured soccer star

A 23-year-old Clarksville woman had pleaded guilty to involuntary manslaughter and maiming while driving intoxicated in the incident that killed her friend and injured D.C. United player Charlie Davies. Read Davies's court statement during the sentencing here.

<u>Slim majority back gay marriage, Post-</u> ABC poll says

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The results parallel a string of recent legal and legislative victories for gay rights advocates.

Japan raises severity level at damaged nuclear plant

The reassessment came on a day when further challenges emerged that could make it difficult

to regain control of the overheated reactor units.

Another weekend of Orange Line work

This is the last weekend of Metro track work for a while because the springtime crowds are about to arrive for the Cherry Blossom Festival.

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Sports

The 68: NCAA tournament

Get updates on today's game and check out our scoreboard and tournament bracket.

D.C. Sports Bog: D.C. United at Ben's Chili Bowl

The team took over the famous U Street eatery Thursday night.

Wizards Insider: Back in starting lineup, Yi Jianlian hopes to take advantage

In Tuesday night's game, Yi scored the team's first four points, knocking down back-to-back 19-foot jumpers.

Features

Beer Madness: Round 2

Time to check out the match-ups and select which beers should move to the third round.

Multimedia

Photos: New Forever stamps honor Latin music legends

Selena, Tito Puente among those included in the series.

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United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation on Fukushima Region IV



Earthquake & tsunami sequence of events

Friday March 11th @ 2:36 pm local

- Magnitude 9.0 earthquake 231 miles northeast of Tokyo.
- Quake is fifth largest in the world (since 1900).
- Earthquake generated a 14m Tsunami



Plant Response

<u>Earthquake</u>

- Earthquake Caused Automatic Shutdown of 3 Operating Units
- Offsite Power Lost
- Initial indications were that Emergency Diesels operated

14m Tsunami (less than 1 hour later)

- All Emergency Back-up Power Lost
- 8-10 hours later Station Batteries Depleted



NRC Response

- Ops Center 24/7
- Team of experts to Tokyo
- Support to U.S. Ambassador and Japanese
- Coordinating Environmental Monitoring with DOE & EPA



Domestic Considerations

- No anticipated U.S. Health Effects from Fukushima
- U.S. Plants Designed for External Events
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NRC Near Term Actions

- Evaluate Fukushima Daiichi Events
- Domestic Operating Reactors and Spent Fuel Pools
 - External Events
 - Station Blackout
 - Severe Accident Mitigation
 - Emergency Preparedness
 - Combustible Gas Control
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NRC Longer Term Actions

- Based on Near Term Review and Additional Insights from Fukushima Event
- Identify Potential Technical and Policy Issues
 - Research Activities
 - Generic Issues
 - Reactor Oversight Process
 - Regulatory Framework
 - Interagency Emergency Preparedness



Questions?

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PARS

- NRC Regulations have 2 Emergency Planning Zones (EPZs)10/50 miles
- EPZs are not limits, but frameworks that allow for expansion as needed
- 50 miles in Japan due to extraordinary situation
 - 4 units severely challenged
 - Unclear information as to state of reactors, mitigative strategies, radiological releases
 - Decision to evacuate conservative, better to err on conservative
- Precautionary evacuation occurred days before fuel melt.



Generic BWR



10

McKelvey, Harold

From: Sent: To: Subject: Collins, Elmo Wednesday, March 16, 2011 12:41 PM Ruland, William RE: A link for information about the Japanese reactors.

Thanks Bill Elmo

From: Ruland, William
Sent: Wednesday, March 16, 2011 12:21 PM
To: Collins, Elmo; McCree, Victor; Satorius, Mark; Dean, Bill
Subject: A link for information about the Japanese reactors.

http://www.jaif.or.jp/english/

cella3

Esmaili, Hossein

From:
Sent:
To:
Cc:
Subject:

Lee, Richard Friday, March 18, 2011 4:37 PM Gibson, Kathy Salay, Michael; Tinkler, Charles; Esmaili, Hossein; Scott, Michael RE: Effects of salt deposition on cooling of BWR fuel assemblies

Kathy:

Radiolytic processes will convert some of the salt into chlorox (sodium chlorate) which will kill any algae or bacteria in the water. Recall, 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.

Absence, of de-mineralized water, sea water should be used to cool the pool or core. Of course, if one can switch to de-mineralized as soon as one can.

I do not think we should spend our resources doing this type of analysis. As you can see, INL (Jim Fink) is doing something. The only lab director at the meeting was from INL.

Richard

-----Original Message-----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: <u>Phillip Finck@inl.gov</u> [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; <u>Harold.McFarlane@inl.gov</u>; Owens, Missy; Poneman, Daniel; <u>Ronaldo.Szilard@inl.gov</u>; 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" <<u>Peter.Lyons@Nuclear.Energy.gov</u>>; "Kelly, John E (NE)"

<<u>JohnE.Kelly@Nuclear.Energy.gov</u>>

Cc: SCHU <<u>SCHU@hq.doe.gov</u>>; "Adams, Ian" <<u>Ian.Adams@hq.doe.gov</u>>; "Aoki, Steven"

<<u>Steven.Aoki@nnsa.doe.gov</u>>; Bob Budnitz <<u>RJBudnitz@lbl.gov</u>>; Brian Sheron <<u>Brian.sheron@nrc.gov</u>>; "DAgostino, Thomas" <<u>Thomas.DAgostino@nnsa.doe.gov</u>>; Dick Garwin <<u>rlg2@us.ibm.com</u>>; Dick Garwin <<u>rrgarwin@ostp.eop.gov</u>>; John Grossenbacher; "Hurlbut, Brandon" <<u>Brandon.Hurlbut@hq.doe.gov</u>>; John Holdren <<u>iholdren@ostp.eop.gov</u>>; "Koonin, Steven" <<u>Steven.Koonin@science.doe.gov</u>>; Harold McFarlane; "Owens, Missy" <<u>Missy.Owens@hq.doe.gov</u>>; Per Peterson <<u>peterson@nuc.berkeley.edu</u>>; Phillip Finck; "Poneman, Daniel" <<u>Daniel.Poneman@hq.doe.gov</u>>; Ronaldo Szilard; Steve Fetter

<<u>Steven A. Fetter@ostp.eop.gov</u>>

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 <u>peterson@nuc.berkeley.edu</u> Office: (510) 643-7749 Fax: (510) 643-9685 <u>http://www.nuc.berkeley.edu/People/Per_Peterson</u>

Allen, Linda

From: Sent:	T	shiltz, Michael
To:	S	ith, Brian; Hiltz, Thomas; Habighorst, Peter; Campbell, Larry; Silva, Patricia; Johnson, bert
Cc: Subject: Attachments:	B "(Ū	ley, Marissa; Kinneman, John ficial <u>Use Only"</u> : USNRC Earthquake-Tsunami Update - 0600 EDT (March 19, 2011) NRC Earthquake-Tsunami Update.031911.0600EDT.pdf
Follow Up Flag:	· F	low up

Please share with your staff.. Thanks. Mike

From: LIA07 Hoc

Sent: Sat Mar 19 06:15:50 2011

Subject: USNRC Earthquake-Tsunami Update - 0600 EDT (March 19, 2011)

Attached, please find an 0600 EDT March 19, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

Thanks,

Christine

Christine A. Steger US Nuclear Regulatory Commission <u>Christine.Steger@nrc.gov</u> <u>LIA07.HOC@nrc.gov</u> (Operations Center)

20/195
Ramsey, Kevin

From: Sent: To: Subject: Attachments: Joe Colvin [president@ans.org] Saturday, March 19, 2011 7:52 AM Ramsey, Kevin Arranging In-State Meetings With Your Senators/Members of Congress 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 <<u>http://www.senate.gov/general/contact_information/senators_cfm.cfm</u>>. You can find your Member of Congress' district office by clicking here <<u>http://www.house.gov/zip/ZIP2Rep.html</u>>.

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

- * Nuclear Energy Institute www.nei.org
- * World Nuclear News www.world-nuclear-news.org

* ANS Radiation Dose Chart www.new.ans.org/pi/resources/dosechart/_

* NHK Television <u>www3.nhk.or.jp/nhkworld/index.html</u>

* Japan Times <u>www.japantimes.co.jp</u>

4. On the day of the meeting,



AMERICAN NUCLEAR SOCIETY

555 North Kensington Avenue La Grange Park, Illinois 60526-5592 USA Tel: 708/352-6611 E-Mail: 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 <u>www.ans.org/relief</u>
- U.S. Agency for International Development <u>www.usaid.gov</u>
- U.S. State Department <u>www.state.gov</u>
- U.S. Red Cross <u>www.redcross.org</u>

News Updates on Japan's Nuclear Crisis

- American Nuclear Society <u>www.ans.org</u>
- Nuclear Energy Institute <u>www.nei.org</u>
- World Nuclear News <u>www.world-nuclear-news.org</u>

Understanding Radiation Measurements

- ANS Radiation Dose Chart (interactive) <u>www.ans.org/pi/resources/dosechart/</u>
- ANS Radiation Dose Chart (in print form)
 www.ans.org/pi/resources/dosechart/docs/dosechart.pdf

English Language News in Japan

- NHK Television www3.nhk.or.jp/nhkworld/index.html
- Japan Times <u>www.japantimes.co.jp</u>

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.

Lee, Richard

From:	Voglewede, John
Sent:	Sunday, March 20, 2011 1:20 PM
То:	Gibson, Kathy
Cc:	Scott, Michael; Lee, Richard; Scott, Harold; Flanagan, Michelle; Raynaud, Patrick
Subject:	Minor Improvements in Japan

Kathy,

Here is another message from Toyoshi Fuketa in Japan. He lives near Tokai on the way to Mito, at least an hour southwest of the Fukushima Dai ichi plant.

It sounds like things will take a long time to return to normal in Japan.

John

-----Original Message-----From: FUKETA Toyoshi [mailto:fuketa.toyoshi@jaea.go.jp] Sent: Sunday, March 20, 2011 6:10 AM To: Radomir.REHACEK@oecd.org Cc: Wolfgang WIESENACK; Voglewede, John; Marc PETIT Subject: Re: WGFS: Interim meeting Agenda, registration - 8/4/2011

Dear Radomir,

Thank you for the notification.

For a few weeks from now or more, I must concentrate on my responsibility to lead a team making analyses on ongoing events in Fukushima Dai-ichi NPPs.

At the moment, I have totally no idea for my schedule for the next week, or even tomorrow. I am not sure whether I will be able to go Budapest. Sorry about it.

Water supply recovered in my home last night.

Now I can take a bath and flush the toilet.

Food became available, but no gasoline.

We need to wait more than several hours in front of service station in order to get 20 liter. More than one mile line.

In my case, riding a bike.

Electricity and water are available at home, but no water in the JAEA site.

Best regards,

Тоуо

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

From: Radomir.REHACEK@oecd.org

Sent: Tuesday, March 15, 2011 2:44 AM

To: jinzhao.zhang@gdfsuez.com ; k097wsw@kins.re.kr ; andrew@kins.re.kr ; joachim.herb@grs.de ; radomir.rehacek@oecd.org ; jim.gulliford@oecd.org ; francesco.corleoni@studsvik.se ; wowi@hrp.no ; magiel.versteeg@minvrom.nl ; risto.sairanen@stuk.fi ; hozer@aeki.kfki.hu ; marc.petit@irsn.fr ; jmrg@csn.es ; john.voglewede@nrc.gov ; m.adorni@ing.unipi.it ; aude.taisne@irsn.fr ; olja@bochvar.ru ;

patrick.blanpain@areva.com; gsauh@kins.re.kr; philippe.chapelot@cea.fr; marc.verwerft@sckcen.be; matthew.a.barker@nnl.co.uk; jean-christophe.brachet@cea.fr; dostal@ujv.cz; michel.couture@cnscccsn.gc.ca; christian.bernaudat@edf.fr; rikard.kallstrom@studsvik.se; k.bakker@nrg.eu; georges.hache@irsn.fr; nagase.fumihisa@jaea.go.jp; Branislav.Hatala@vuje.sk; svatobor.stech@cez.cz; kedsinger@epri.com; kamimura-katsuichiro@jnes.go.jp; vrtilkova@ujp.cz; dmaertens@tuev-nord.de; kyueh@epri.com; shejbal@ujp.cz; rulkor@cnsc-ccsn.gc.ca; valach@nri.cz; fuketa.toyoshi@jaea.go.jp; luisen.herranz@ciemat.es; n.tricot@iaea.org; grigori.khvostov@psi.ch; andreas.gorzel@e.nsi.ch; christine.struzik@cea.fr; biya.sebbari@edf.fr; son@grs.de; nadine.hollasky@belv.be; yhkoo@kaeri.re.kr; alexander.miasnikov@sujb.cz; jslee2@kins.re.kr; yvonnevan.leeuwen@minvrom.nl; nicolas.waeckel@edf.fr; ian.wilson@hse.gsi.gov.uk; kjellp@matsafe.se; marek.stepniewski@vattenfall.com; vincent.georgenthum@irsn.fr; carlo.vitanza@hrp.no; keijo.valtonen@stuk.fi; seppo.kelppe@vtt.fi; jan.indebetou@ssm.se; jmcl@csn.es; mqg@enusa.es; sunders@aecl.ca; nakajima-tetsuo@jnes.go.jp; claude.grandjean@irsn.fr; andrej.prosek@ijs.si; a.delnevo@ing.unipi.it; antonino.romano@enusa.es; kimsk@kaeri.re.kr; joelle.papin@irsn.fr; jeanpaul.mardon@areva.com; nathalie.girault@irsn.fr Subject: WGFS: Interim meeting Agenda, registration - 8/4/2011

Dear All,

First I would like to express my sadness about disaster in Japan. Among all these bad messages there was at least one positive news, which I received from Toyo on Saturday that his family and him, and as far as he knew, JAEA colleagues and their families were all OK. I believe that we will meet all Japanese members as soon as they recover from this terrible situation.

Further I am sending you an update concerning the WGFS 2011 Interim meeting, which will be held on 13 May 2011 at 13.30 at Hotel Mercure Budapest Korona (Meeting Room "István"), Budapest, Hungary. The meeting has been organised in cooperation with Zoltan Hozer of KFKI. Enclosed you can find a preliminary meeting Agenda.

As the meeting will be held back-to-back a Halden Program Group (HPG) meeting, I suppose that all the HPG members, who have also been the WGFS members, will participate in the WGFS Interim meeting too. Those who haven't been the HPG members, but they are staff members of the institutions being the Halden Reactor Project signatories or associated parties, have been invited to participate in the HPG meeting as well. The HPG meeting preliminary notification has been attached.

Please use attached form, which includes information about hotel's accommodation as well, for the registration into the meetings.

The filled in forms should be sent to Turid Danielsen (Turid.Danielsen@hrp.no) by 8 April 2011. I would like to ask also the HPG members, if they could preferably use the form attached, if they haven't registered for the HPG meeting yet.

Registering for the WGFS Interim meeting please be so kind and notified me about this.

Once more I would like to remind you about the events linked together in Budapest:

11 May 2011: Workshop on VVER fuel behavior (notification attached)

12 – 13 May 2011: 144th Halden Program Group meeting

13 May 2011 (afternoon): WGFS 2011 interim meeting

If you would have any questions don't hesitate to contact me. I will keep you also informed about all changes, if there will be any.

With best regards

Radomir REHACEK

NEA/Nuclear Safety Division

Phone: +33 1 45 24 10 58

e-mail: radomir.rehacek@oecd.org

Update your bookmarks! On 1 December 2010, the NEA's Website moved to: www.oecd-nea.org

P Please don't print this e-mail unless you really need to.

White, Bernard

From: Sent: To: Subject: White, Bernard Monday, March 21, 2011 8:41 AM 'X.Zou@iaea.org' RE: Status of nuclear accident

Xuxin,

Would you please forward the news paper report that Dr. Saegusa included in his email?

Thank you and best regards, Bernie White

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

From: X.Zou@iaea.org [mailto:X.Zou@iaea.org]

Sent: Monday, March 21, 2011 4:43 AM

To: saegusa@criepi.denken.or.jp

Cc: White, Bernard; Z.Lovasic@iaea.org; A.Bevilacqua@iaea.org; G.Dvck@iaea.org; V.Prohaska@iaea.org Subject: RE: Status of nuclear accident

Dear Dr. Saegusa,

Many thanks for your message.

We are preparing an IAEA CS on spent fuel storage operation-lessons learned on 20-22 June 2011 in Vienna and we have the pleasure of inviting you to this meeting.

Spent fuel had been stored safely and effectively for several decades but the current accident in the Japanese Fukushima Daiichi units has caught the world's attention.

It is time for us to take quick actions to discuss the current accident in Fukushima Daiichi units spent fuel pools, reconsider the evaluation for the reliable spent fuel storage related to the components in the system and share lessons learned among the IAEA Member States, highlighting practices to apply and which to avoid. We would like to continue with meetings on spent fuel storage-lessons learned which would include some preliminary technical analysis of this accident to collect the information and draft a technical report on this topic. Could you please confirm your participation of this meeting at your earliest convenience? We look forward to

Best regards,

Zou, Xuxin

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

From [Idl04432@nifty.com [mailto:Idl04432@nifty.com]

hearing from you soon. Many thanks for your cooperation.

Sent: Sunday,20 March 2011 16:13

To: per.h.grahn@skb.se; Charlie Pennington; Jiri.Dus@ensi.ch; kcole@nacintl.com;

<u>paul.n.standring@sellafieldsites.com;</u> Dietmar Wolff; Holger Voelzke; Guy Demazy; RYU, Ho Jin; ZOU, Xuxin; <u>jan.vanaarle@axpo.ch</u>; Bruce Birk; Morton; Phil Winston; Sandra M. Birk; Sheryl L Morton; Paul E MaCconell; Robert Niclell; Dana K Morton; Ken Sorenson; Yoshimura, Richard H; Jerry Johnson; Robert E. Einziger; <u>ikessler@epri.com</u>; <u>roland.hueggenberg@gns.de</u>; <u>AMACHIEL@epri.com</u>; Fernandes Lopez, Francisco Javier; Pablo Vizcaino; Morton; Rebecca Winston

Cc: 白井孝治; 竹田浩文; 三枝 利有; 亘 真澄; 笹原昭博 Subject: Status of nuclear accident

Dear Overseas Friends,

I am grateful for your kind and supportive message.

The Fukushima NPP of Tokyo Electric Power Company is still facing the crises a nd in the unstable condition. They need water supply to cool down the spent fu el both in the reactor vessels and storage pools in the reactor buildings. The restoring work is not easy due to radiation from unshielded and damaged spen t nuclear fuel.

Nevertheless, the electric power supply at the site is being restored by despe rate attempt and will be hopefully used to supply water for cooling the spent fuel.

Attached is information translated from an article in a Japanese newspaper.

Residents near the Fukushima NPP are evacuated from the site. Those near Toky o area including my family are suffering from periodical interruption of the e lectricity service, etc.

Regards

Mobile PC Toshiari Saegusa Executive Research Scientist CRIEPI Please response to <u>saegusa@criepi.denken.or.jp</u> and <u>LDL04432@nifty.com</u>

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Garcia-Santos, Norma

From:	White, Bernard			
Sent:	Monday, March 21, 2011 9:50 AM			
To:	Ordaz, Vonna			
Cc:	Benner, Eric; Berry, Rollie; Bjorkman, Gordon; Easton, Earl; Garcia-Santos, Norma; Khodorkovsky, Bella; Pstrak, David; Rahimi, Meraj; Waters, Michael; Weaver, Doug; Witt Kevin			
Subject:	FW: Status of nuclear accident			
Attachments:	Staus of Fukushima Units 1 to 6, as of March 18.pdf			

Attached is an English translation of an article from a Japanese Newspaper report I received via IAEA contact.

Bernie

-----Original Message-----From: <u>X.Zou@iaea.org</u> [mailto:X.Zou@iaea.org] Sent: Monday, March 21, 2011 9:15 AM To: White, Bernard Cc: <u>V.Prohaska@iaea.org</u>; <u>Z.Lovasic@iaea.org</u> Subject: FW: Status of nuclear accident

Dear Dr White,

Please find the attached report form Dr. Saegua, confirm your participation of this meeting and nominate two experts soon. Many thanks.

Best regards,

Xuxin

-----Original Message-----From: Idl04432@nifty.com [mailto:Idl04432@nifty.com] (火 つ Sent: Sunday,20 March 2011 16:13 To: per.h.grahn@skb.se; Charlie Pennington; Jiri.Dus@ensi.ch; kcole@nacintl.com; paul.n.standring@sellafieldsites.com; Dietmar Wolff; Holger Voelzke; Guy Demazy; RYU, Ho Jin; ZOU, Xuxin; jan.vanaarle@axpo.ch; Bruce Birk; Morton; Phil Winston; Sandra M. Birk; Sheryl L Morton; Paul E MaCconell; Robert Niclell; Dana K Morton; Ken Sorenson; Yoshimura, Richard H; Jerry Johnson; Robert E. Einziger; jkessler@epri.com; roland.hueggenberg@gns.de; AMACHIEL@epri.com; Fernandes Lopez, Francisco Javier; Pablo Vizcaino; Morton; Rebecca Winston Cc: 白井孝治; 竹田浩文; 三枝 利有; 亘 真澄; 笹原昭博 Subject: Status of nuclear accident

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Nevertheless, the electric power supply at the site is being restored by desperate attempt and will be hopefully used to supply water for cooling the spent fuel.

Attached is information translated from an article in a Japanese newspaper.

Residents near the Fukushima NPP are evacuated from the site. Those near Toky o area including my family are suffering from periodical interruption of the e lectricity service, etc.

Regards

Mobile PC Toshiari Saegusa Executive Research Scientist CRIEPI Please response to <u>saegusa@criepi.denken.or.jp</u> and <u>LDL04432@nifty.com</u>

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Status of Reactor Units 1 to 6 in Fukushima Dai-ichi NPP of Tokyo Electric Power Company (as of March 18, 2011) (ref from Asahi Newspaper on March 19, 2011)

	Unit	<u> </u>	2	3	4	5	6 •
		Mrach 11 Shut down by the erathquak Emergency core cooling sys [:]	March 11 When the earthquake attacked, the reactors were in their periodical inspection.				
Events		March 12 Sea water was poured into the pressure vessel. The vent valve was open to release vapor. Hydrgen blasted and the reactor building was damaged.	March 14 Sea water was poured into the pressure vessel. All the spent fuel were exposed outside the water. The vent valve was open to release vapor. March 15 Radioactive materials in the containment vessel were released with the vapor. The suppression chamber (containment vesel) was damaged by a blast.	March 13 Part of the spent fuel was exposed outside the water. The vent valve was open to release vapor. Sea water was poured into the pressure vessel. March 14 Hydrgen blasted and the reactor building was damaged. March 16 White fumes were blown out. March 17, 18 Water was poured into the	March 15 The reactor building was damaged by (hydrogen) blast and showed fire. Radioactive contamination was detected by the buildiing debris. The emergency cooling system is hypofunction. March 16 Second fire was observed.	March 16 The pool wate temperature i	er s increasing.
	Capacity	1020 m3	1425	1425	1425	1425	1497
Pool	SE Heat	292	<u> </u>	<u>514</u> 200.000		940	018 000 000
	SF integrity	unkown	400,000	Damage suspicious	2,000,000	integral	integral
SF ii	n reactor	Danmage suspicious	Danmage suspicious	Danmage suspicious	No SF in	reactor	incogi ui
Con	tainment	Safe	Danmage suspicious	Safe	Safe	Safe	Safe
React	or Building	Damaged	Safe	Damaged	Damaged	Safe	Safe



White, Bernard

From:	X.Zou@iaea.org
Sent:	Monday, March 21, 2011 9:15 AM
То:	White, Bernard
Cc:	V.Prohaska@iaea.org; Z.Lovasic@iaea.org
Subject:	FW: Status of nuclear accident
Attachments:	Staus of Fukushima Units 1 to 6, as of March 18.pdf

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Xuxin

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Regards

Mobile PC Toshiari Saegusa Executive Research Scientist CRIEPI

20120

Please response to <u>saegusa@criepi.denken.or.jp</u> and <u>LDL04432@nifty.com</u>

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Status o	r Reactor L	Inits I to b in Fukushima Dai-	ICHI NEP OF Tokyo Electric P	ower Company (as of March 1	(8, 2011) (ret from Asahi New	spaper on Mar	<u>cn 19, 2011)</u>
	Unit	1	2	3	4	5	6
		Mrach 11 Shut down by the erathquake. Emergency core cooling system (ECCS) is hypofunction.			March 11 When the earthquake attacked, the reactors were in their periodical inspection.		
Events		March 12 Sea water was poured into the pressure vessel. The vent valve was open to release vapor. Hydrgen blasted and the reactor building was damaged.	March 14 Sea water was poured into the pressure vessel. All the spent fuel were exposed outside the water. The vent valve was open to release vapor. March 15 Radioactive materials in the containment vessel were released with the vapor. The suppression chamber (containment vessel) was damaged by a blast.	March 13 Part of the spent fuel was exposed outside the water. The vent valve was open to release vapor. Sea water was poured into the pressure vessel. March 14 Hydrgen blasted and the reactor building was damaged. March 16 White fumes were blown out. March 17, 18 Water was poured into the	March 15 The reactor building was damaged by (hydrogen) blast and showed fire. •Radioactive contamination was detected by the buildiing debris. •The emergency cooling system is hypofunction. March 16 •Second fire was observed.	March 16 The pool watı temperature i	er is increasing.
	Capacity	1020 m3	1425	1425	1425	1425	1497
Pool	SF Assbly	292	587	514	1331	946	876
	SF Heat	60,000 kcal/h	400,000	200,000	2,000,000	700,000	600,000
	SF integrity	unkown	unknown	Damage suspicious	Damage suspicious	integral	integral
SF in	reactor	Danmage suspicious	Danmage suspicious	Danmage suspicious	No SF in	reactor	
Cont	ainment	Safe	Danmage suspicious	Sate	Sate	Safe	Safe
Reacto	or Building	Damaged	Safe	Damaged	Damaged	Safe	Safe
Dama Spent (SF) Storag Pool Reacto Vessel	age Status Fuel ge pr	of Fukushima dai-ichi NPP	P (Press released by Nuclear 分子 分子 小子 小子 の の の の の の の の の の の の の の の の	Installation Safety Agency			Auto Soundare

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